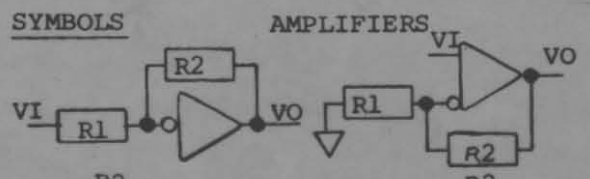
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

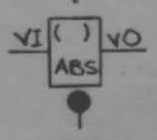
SYMBOLS

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	SCOTT MOTOR	LOC	JUMPERS	GEC MOTOR
60HZ		MCC MFC	AA-AS, BA-BS, CA-CS ZA-ZB (IF USED)	
50HZ	X	MCC	AA-AF, BA-BF, CA-CF	X
IOC-400% -500% -300%	X		NONE	X
		IFC	I-IHI	
		IFC	I-ILO	
SR5 - 9v			(NONE)	
9 - 20v	X	MCC	SRH-COM	X
JOGR 10v			(NONE)	
20V	X	MCC	JH - COM	X
LT.3-7sec.	X		(NONE)	X
2 - 60sec		MCC	332ΩFROM LT1TOCOM	
VREG		IFC	NT-CEMF, CC-COM	
DC TACHO AC TACHO	X		(NONE)	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		IFC	NT-NT2, PT-PT2	
110-300vdc	X	IFC	NT-NT3, PT-PT3	X
120-300vac		IFC	NT-NT3, PT-PT3	
G134 G256 Max AMPS .8 1.7 1.3 2.8 2.4 5.0 4.0 8.0 7.0 13 13 25	X	MFC	NONE	
		MFC	XB-XD	
		MFC	XA-XB	
		MFC	XA-XB, YC-YD	X
		MFC	XA-YC	
		MFC	XA-YC, YB-XD	
L/R < .25S		MFC	QA-QB	X
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 (NS28)
	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.

DR 1 SH 2 CONTD. ELEMENTARY DIAGRAM 902M122AY

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE		IDENT
NGM	AP	30/3/79		
7 SEE SHEET 10 24/2/81	2 SEE SHEET 10	TECHN.		DR SH
		ENG. AP		
		APPD.		

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD.
5OHP BDC 3034R THYRISTOR DRIVE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	2

902HM100DF

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
XO
SHA
1.68MΩ EACH
DCP
DCN
6C
6G
5C
5G
4C
4G
MOV
CPT
X3
X4
X5
X2
X1
H1
H2
H3
H4
1.6A
500V
CFU 1
CFU 2
CFU 3
3MΩ EA
RT1
RT2
RT3
40Ω-Press-pak SCR
100Ω- Stud SCR
.22mF
TO IFC
NS 03
AIRFLOW UP
MAX
NSO2
7
4
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
MFC
1FU
2FU
K1 L1 L1
XO XO XO
F1
F2
F2
F1
+
PSC
FX1
1A
X1
FU102
AC2
50V
AC1
FU101
1.5A
FU100
REG
-30 +20 COM +20 +30
FDR
CRM
CEMF
WFR
SA
SB
SC
ZF
RF
SFB
DM21
DM22
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
TACHO TF
SLIM
ALIGN
FAULT OUTPUT
FIELD LOSS
FLOSS
+20 COM -20 TA SYS FF
TO IFC
NS 13
TO DGC
4 - 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

DR | SH 2 | CONTD. 3 | ELEMENTARY DIAGRAM 902M122AY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 30/3/79
						TECHN.
						ENG. AP
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD.
50HP BDC 3034R THYRISTOR DRIVE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	3

IDENT DR SH 2

902HM100DR

DR 3 SH 4 CONTD. 902M122AY ELEMENTARY DIAGRAM

▽ OPENED FOR SOME CONTROL OP

INSTRUMENT LO H1

[PS13]

(PS16) 2TB7 3 MAX 2TB 6 9 MAX 6 2TB5

2TB2 2TB1 [PS34] -30

IFC MAC RSTOP + +20V COM -20V PRE PRE COM RN RP 2 MAX 8 A B MAX

OR AND (+) ABS OA7 CMFA ZSPD

RT1 RT2 RT3 DCP DCN IN IP

ISOLATE & PHASE SHIFT

(+) (-) ISOLATE (-) (-) (+) ISOLATE (-)

APPROX 2.5V AT RATED 1A

[5-17]

REMOVE IF DC TACHO

2TB 30 TACHO 2TB 29 5K

150K TKN TC TKP TC SEE TABLE1 TACHO V SCALING NT- NT CEMF 475K PT- PT 475K

OA3 (-)

COM CC

IABS (-) ABS OA4 5K IMET 7.3V AT TOP SPEED 2TB 22

SABS (-) ABS OA5 10K SMET 2TB 23

OA6-1 OA6-2 DM13 TFR 18 PUL/REV

2TB 3 5 FLT 7 2TB 4

[PS 31] SYS EST FAULT TRIP FALT Ø SEQ FAULT +20

2TB9 2TB8 [PS 35] ILO IHI I

OSC 6KHZ

RTR FT1 FT2 B FLT A

RESET RSET RESET RTB

CEMF SA SB SC VFB DM11 RTB CFB IPU DM12 OSC

[NS16] 2TB12 [5-5] C

[PS 18]

MCC MAC WFR TA FC SFB SYS RTR SMAX TFB CEMF VFB DAMP CFB IPU SA SB SC OSC

PRE RUN JOG DP1 DP2 FEA DFP FET CONTROL LOGIC (SEE NOTE) TO FETS 10V AT TOP SP

2TB14

READY TO RUN MAX SPEED 5.6V FOR RATED ARM VOLTS. (-) OA8 (-)

20K AT2 AT1 RECTIFY POLARITY 10K 475K

(+) OA12 FB1 POL 0-0-1-1

SPILL OVER ELR ELF ELJ

SPILL OVER CLR CLF ILA CUR LIMIT

COMP CL1 CLJ R381 C70 PO PCR

20K 27.4K CEMF LIMIT SFB C52 TL R257 3320 (2-60SEC) COM

NDE DRIVER

SRH 2.2K 20K 3.3K 475K 4.0K TIR OA10-1 LIN TIME 2.2K 0-0-1-1

LT1 4MFD 10V AT TOP SPD OA10-2 1-0-0-0 0-1-0 LT2 RJ

GAIN 475K OA11-2 RERR RIJ OA11-1 DRX DR (+) 4MFD

RESP 50K 22K 50K RRB RRA MSW 1-WF-I/O-1 WEAK FIELD=0 FULL FIELD =1 1-0-1-1

10V FOR RATED ARMATURE VOLTS

REF SCALE (-) 10K 1-RUN-I-0 RUN=0 SR SMIN MIN SPEED 1K

[5-26] 2TB28 2TB26

(-) JOGR 20K 27K JH 12K COM 1-JOG-1-1 JOG=0

IC IG 2C 2G 3C 3G 4C 4G 5C 5G 6C 6G

50/60 HZ SELECT TABLE

+30 +20 COM -20 LR DM1 DM2 TR DM3 DM4 DM5 EAO DM6 DM7 DM8 DR

[NS03] [NS03] [NS09]

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 30/3/79	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	ALFRED HERBERT LTD. 50HP BDC 3034R THYRISTOR DRIVE	IDENT DR 3 SH
		TECHN.			
		ENG. AP			
		APPD.		GO NUMBER 908N10 / ELEMENTARY DIAGRAM 902M122AY / CONTD. 4	

DR 4 SH 5 CONTD. 902M122AY ELEMENTARY DIAGRAM

[PS35]

[PS34]

DP2 DP1 RESET

MONO STABLE PG

LOC+ REF

LR FDR FDR

CUR REF + -

CFB

[PS35]

DIAG RUN +20V NORM

DIAG STATIC

CRM CRM

MAC +20 -20V COM -20

D2 D1 -20V

DGC

[2-32]

(SP2) (SP3)

2 15 2 16

[PS17]

MFTD

+20 COM -20

SYS SYS

-20 IBA TTA

R4A - 2K. (IBA - COM)

IABS

[NS17]

TOC

SLD - IR SLB

TP3 TP4

15K 15K 38K 3.8K 10K .47 MF

HYSTERESIS +20V 31

18

SLB

12 11

[5-28] SFB

B LEVEL ADJ

COM

1 DCOM

32

INSTRUCTIONS VSD: 211

14 13 17 2

[2] 17 (SP4)

[2] 18 (SP5)

[2] 19 (SP6)

[3] 13 (SP23)

[3] 14 (SP24)

[3] 15 (SP25)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
	NGM			NGM		30/3/79
6	10/6/80		4	21/3/80		TECHN.
						ENG. AP
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD.
50 HP BDC 3034R THYRISTOR DRIVE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	5

IDENT DR SH 4

DR | SH 5 | CONTD. 6 | ELEMENTARY DIAGRAM 902M122AY

SLD-1S

SLA

TP1 TP2

15K

15K

+20V 31

-20V 2

HYSTERESIS

23

39K 39K

20

SLA

[3-19] SFB 22

29

0.47 μF

25

10K

30

A LEVEL ADJ

15

COM

26

28

27

D.COM

SET TO D.O. AT 30 R.P.M.

1

32

INSTRUCTIONS VSDI 211 24 19 21

[3] 4 (SP14)

[3] 5 (SP15)

[3] 6 (SP16)

[3] 10 (SP20)

[3] 11 (SP21)

[3] 12 (SP22)

[3] 6 (SP16)

SLD-1S

SLB

TP3 TP4

15K

15K

+20V 31

-20V 2

HYSTERESIS

12

18

SLB

39K 3.9K

9

11

0.47 μF

3

10K

10

B LEVEL ADJ

15

COM

5

8

6

1 D COM

SET TO P.U. AT 150 R.P.M

32

INSTRUCTIONS VSDI 211 14 13 17

[PS21]

[3-09]

SP1

[3-28] SR

IT 32K IT 32 IT 33K IT 28

90K

[4-28] SFB

IT 29K IT 29 IT 28K

R1

SLD-1R

SLA

TP1 TP2

15K

15K

HYSTERESIS

+20V 31

23

20

SLA

39K 3.9K

29

22

25

10K

30

.47 MF

A LEVEL ADJ.

26

28

COM

27

1 D COM

SET TO D.O. WITHIN 10% SET SPEED

-20V

32

INSTRUCTIONS VSDI 211 24 18 21

2

[3] 7 (SP17)

[3] 8 (SP18)

[3] 9 (SP19)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		30/3/79
						TECHN.
			4			ENG. AP
				21/3/80.		APPD.

ALLENWEST

Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD

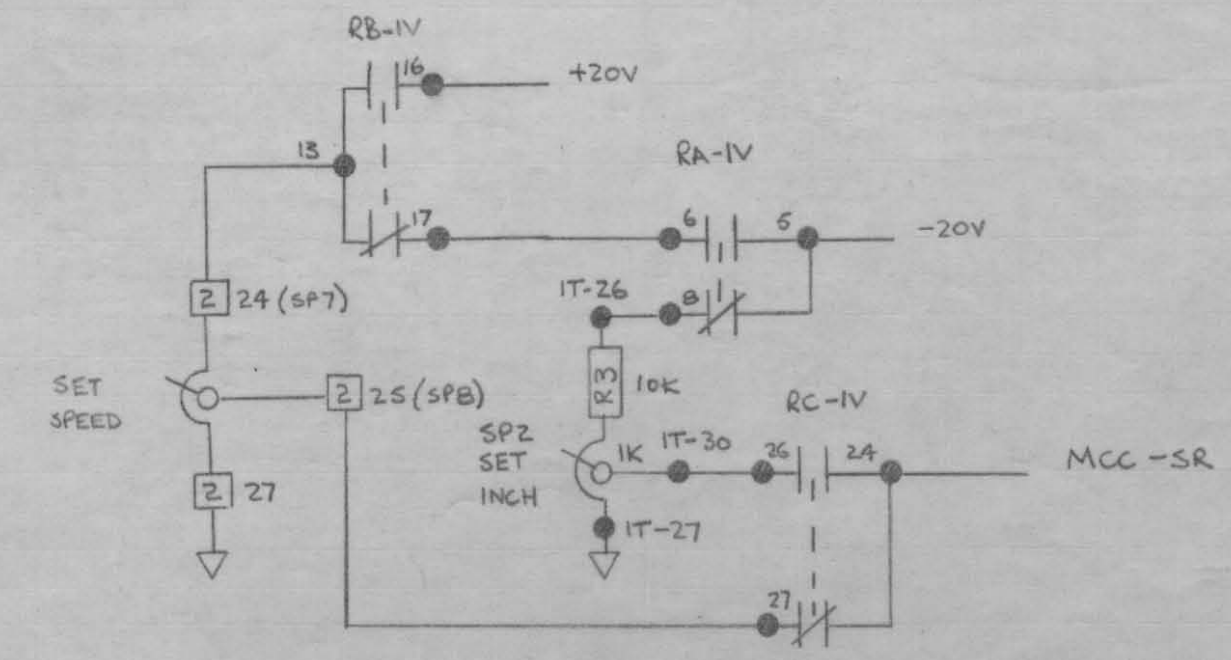
50HP BDC 3034R THYRISTOR DRIVE

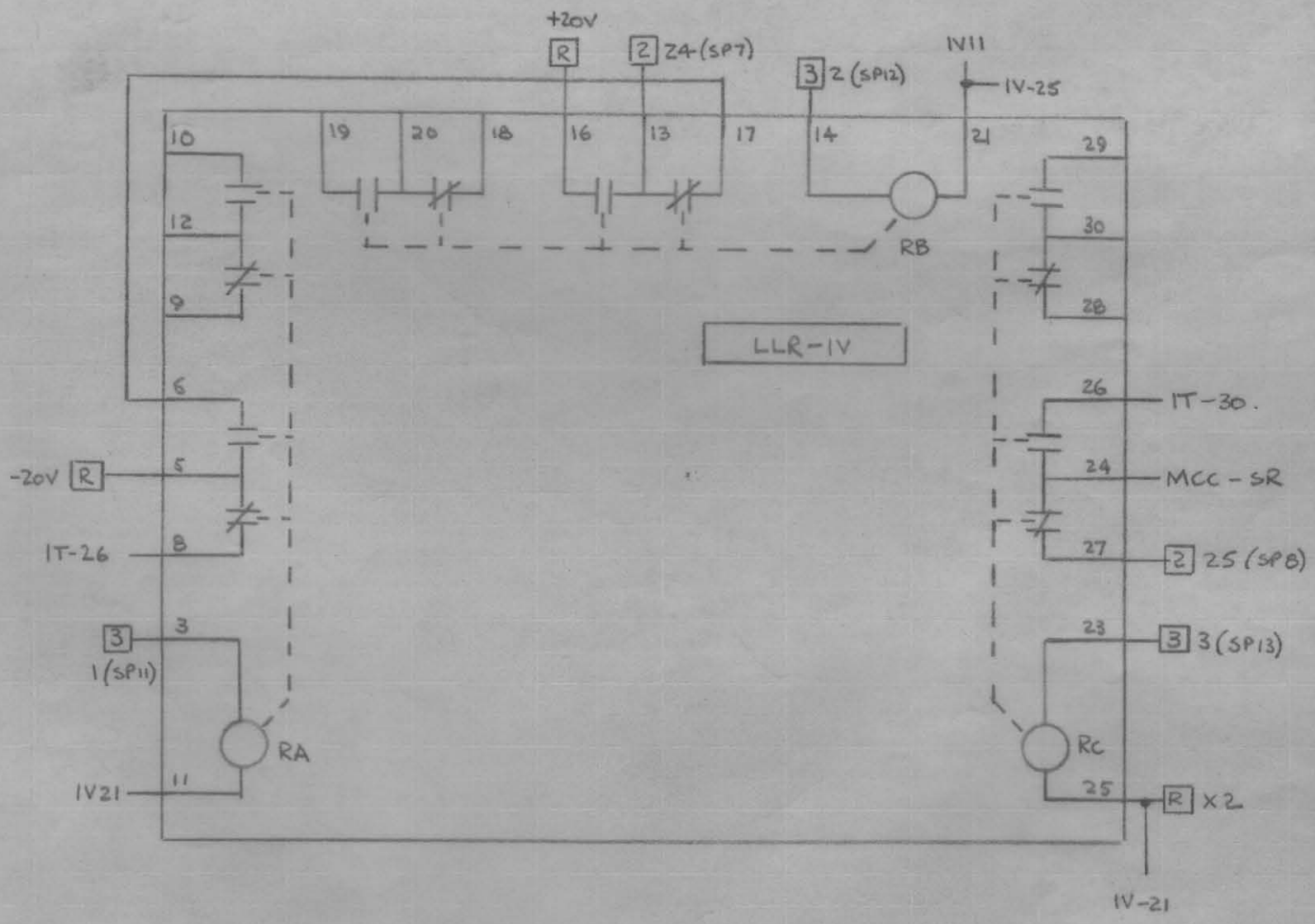
SIGNAL LEVEL DETECTORS.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	6

IDENT

DR | SH 5





DR | SH 6 | CONTD. 7 | ELEMENTARY DIAGRAM 902M122AY

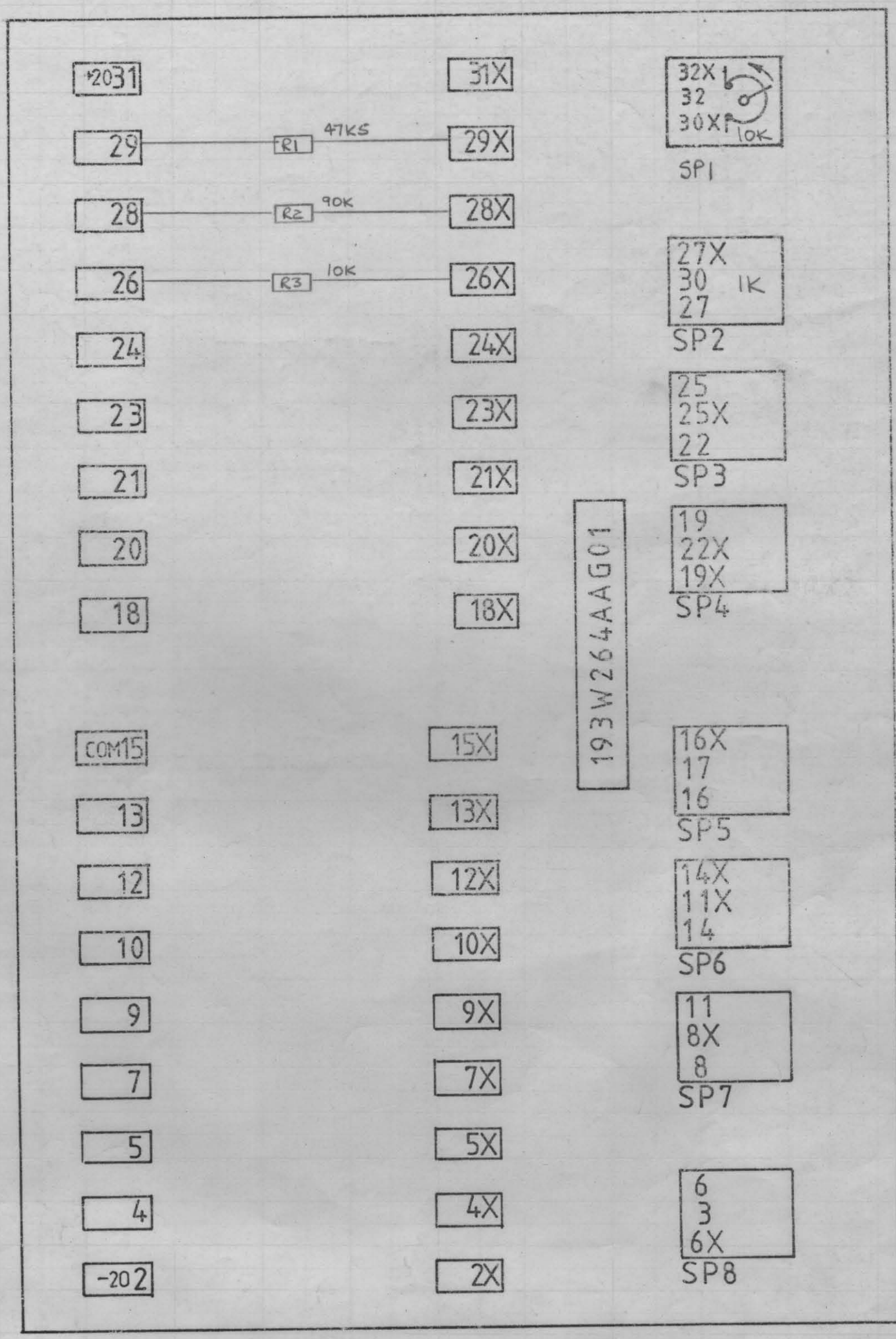
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 30/3/79
						TECHN.
						ENG. AP
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD.
50 HP BDC 3034R THYRISTOR DRIVE.
REFERENCE CIRCUIT.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	7

IDENT | DR | SH 6



CARD PART NO. 909W317AAG03 FIT IN RACK POSITION IT

DR 7 SH 8 CONTD. ELEMENTARY DIAGRAM 902M122AY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 30/3/79
						TECHN.
						ENG. AP
						APPD.

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

ALFRED HERBERT LTD
50HP BDC 3034R THYRISTOR DRIVE COMPONENT CARD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	8

IDENT DR 7 SH

902HM100EA

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V
															SLD	SLD	CC		LLR
															193W 277 AAG02	193W 277 AAG02	909W 317 AAG03	193W 279 AAG03	

DR 8 SH CONTD. 9 ELEMENTARY DIAGRAM 902M122AY

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
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

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

IABS(IFC) - IS 10	IVB - IT 26	IT29X - IR 11	
IS 3 - IABS(TDC)	IT 26X - IT 27X	IR 9 - SP4	
MCC·SFB - IS·22	IT 27 - IT15	IR3 - SP5	
IS·22 - IS·11	IT30 - IV26	IR10 - SP6	
IS·11 - IT29X	MCC·SR - IV24	IR5 - SP23	
SP14 - IS·29	SP8 - IV27	IR8 - SP24	
SP15 - IS·25	RTB(X2) - IV21	IR6 - SP25	
SP16 - IS·30	IV21 - IV11	IR13 - IR17	
	SP11 - IV3	DGC(D1) - SP2	
MCC·SR - IT32X	SP12 - IV14	DGC(D2) - SP3	
IT32X - IT32	SP13 - IV23		
IT30X - IT28	IV16 - IT31		
IT29 - IT28X	IV5 - IT2		
IT28X - IR22	RTB(COM) - IT15		
SP17 - IR29	IS13 - IS17		
SP18 - IR25	IS19 - IS21		BUS ALL PINS 2 IR - IT
SP19 - IR30	IR19 - IR21		BUS ALL PINS 15 IR - IT
RTB(+20V) - IV16	IV21 - IV25		BUS ALL PINS 31 IR - IT
SP7 - IV13	SP20 - IS26		
IV17 - IV6	SP21 - IS28		
RTB(-20V) - IV5	SP22 - IS27		

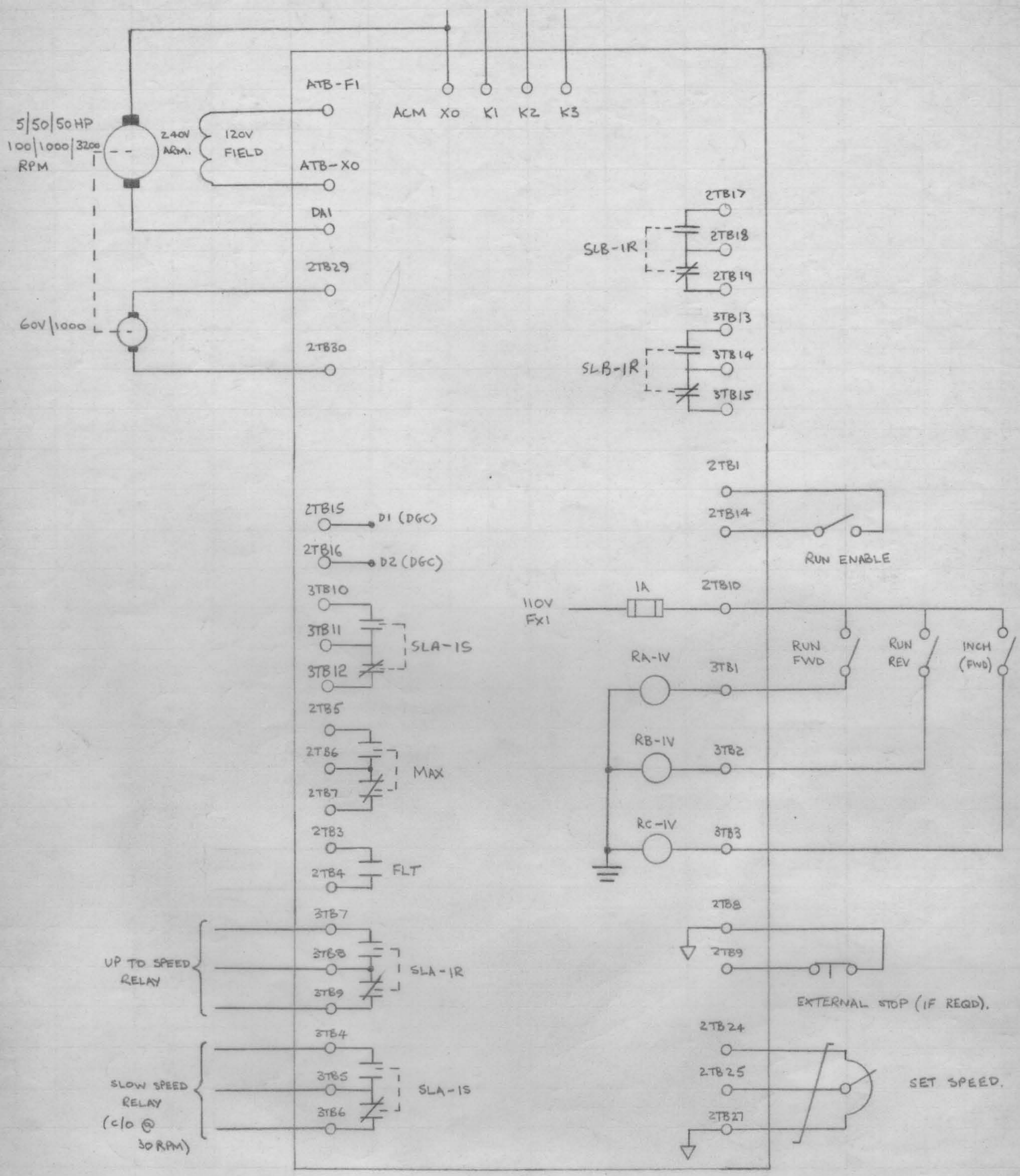
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
	NGM			NGM		
6		10/6/80	4		21/3/80	TECHN.
						ENG. AP
						APPD.

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

ALFRED HERBERT LTD.
50HP BDC 3034R THYRISTOR DRIVE
RACK LAYOUT.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	9

IDENT DR 8 SH 8



DR | SH 9 | CONTD. 10 | ELEMENTARY DIAGRAM 902M122AY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
	NGM			NGM		30/3/79
6	10/6/80.		4	21/3/80		TECHN.
						ENG. AP
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD.
50 HP BDC 3034R THYRISTOR DRIVE.
CUSTOMER'S CONNECTIONS.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	10

IDENT | DR | SH 9

DR 10 SH FL CONTD. 902M122AY ELEMENTARY DIAGRAM

RECORD OF ELEMENTARY DIAGRAM CHANGES

SHEET NO.	REVISION	DATE	LOCATION AND DESCRIPTION OF CHANGE	CHANGED BY
9	2	9/10/79	DESIGNATIONS 3TB4 – 3TB9 ADDED	AP.
9	3	11/12/79	DESIGNATIONS 3TB10 – 3TB12 ADDED & ALSO EFFECTS SHEETS 5 & 8 } CUSTOMER'S LETTER 16/11/79	NGM
4 5 8 9	4	21/3/80	SLD-1R CHANGED FROM G01 TO G02 (TWO CHANNEL) & WIRING ADDED. EFFECTIVE FROM SERIAL Nos 923N06, 940N07 & 002N09 & FUTURE. CUSTOMER'S LETTER 15/2/80.	NGM
8	5	2/4/80	JUMPER 1R13–1R17 ADDED.	NGM.
4 8 9	6	10/6/80	D1 & D2 ON DIAGNOSTIC CARD WIRED TO 2TB15 & 2TB16 RESPECTIVELY. EFFECTIVE FROM SERIAL NUMBERS – 933N06 940N07 002N09 & FUTURE	NGM
1	7	24/2/81	JUMPER TABLE FOR GEC MOTORS ADDED. GEC MOTORS USED ON SERIAL NUMBERS 940N07/ TO 940N07/ ONLY.	NGM

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
	NGM			NGM		30/3/79
7	24/2/81		4	21/3/80.		TECHN.
						ENG. AP
						APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD.
5DHP BDC 3034R THYRISTOR DRIVE.
DIAGRAM CHANGE RECORD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
908N10	902M122AY	FL

IDENT DR SH 10

VARIABLE SPEED DRIVES OPERATION

SILCON 'B' DRIVE SYSTEM

902M102RE | SH. No | CONT. ON

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

SYMBOLS

- SCREENED LEADS
- TWISTED LEADS
- TERMINAL BOARD JUMPER
- M - MOUNTED IN MOTOR
- R - REMOTE MOUNTED DEVICE
- OS - DEVICES IN OPERATOR STATION
- EXTERNAL TERMINAL
- TERMINAL FOR "OFF" PANEL UNITS
- DRIVER REGULATOR TERMINAL.

THE TABLE BELOW LISTS CONNECTIONS THAT HAVE BEEN MADE IN THE DRIVER/REGULATOR TO PROVIDE THE REQUIRED SYSTEM OPERATION. REFER TO THE SYSTEM INSTRUCTION BOOK FOR CIRCUIT AND OPERATING DETAILS OF THE DRIVE REGULATOR.

FOR MULTIPLE DRIVE EQUIPMENTS, DRIVER/REGULATOR OPERATING TABLES ARE ON SHEETS 1A, 2A, 3A ETC.

DRIVER/REGULATOR OPERATING TABLE

(LEFT BLANK FOR MULTIPLE DRIVES)

LINE FREQUENCY
60HZ ___ 50HZ ✓

DRIVER CURRENT LIMIT
NONE ___ 0-75HP ✓ 75 HP ___

REGULATING LOOP
VOLTAGE ✓ CURRENT ___ DC TACH ___ AC TACH ___

SYSTEM REFERENCE
20V ✓ 10V ___ 3V ___

LINEAR TIMING
0 SEC ___ 0.5-3SEC ✓
3-30SEC ___ 30- SEC ___

TACHOMETER VOLTAGE — N.A.
43-62 VDC, 26-48 VAC ___ 60-115 VDC, 47-85VAC ___
100-200VDC, 82-152VAC ___ 180-380VDC, 151-275VAC ___

AUXILIARY PRESET REFERENCE
NONE ___ TIMED ___ UNTIMED ✓

AUXILIARY PRESET REF DIRECTION
FWD ___ REV ___ EXTERNAL ___

REGULATOR COMPENSATION
NONE ___ LOAD ✓

RESPONSE
NORMAL ✓ LOW ___

CURRENT LIMIT
46A

SEE SYSTEM ELEMENTARY FOR ADDITIONAL REGULATOR CIRCUITRY —

TOP SPEED/BASE SPEED
0.9-1.0 ✓ 1.0-1.1 ___ 1.1-1.2 ___ 1.2-1.2 ___ 1.3-1.5 ___
1.5-1.6 ___ 1.6-1.8 ___ 1.8-2.0 ___ 2.0-2.2 ___ 2.2-2.5 ___
2.5-2.7 ___ 2.7-3.0 ___ 3.0-3.3 ___ 3.3-3.7 ___

DRIVER/REGULATOR INCLUDES INSTRUMENT FUNCTION ✓
DIAGNOSTIC FUNCTION ✓

WASTNES USED:-
MAINS AC: R31
DC: PS
CONTROL: S1

902HM100AE SHEET 1

CONT.ON SH. 2	SH.NO. 1	902M102RE

DATE 17-7 27-9-77
ISSUED USOQ/R.G.B.
APPD FRh

FIRST MADE FOR 701409

ALLENWEST
VARIABLE SPEED DRIVES OPERATION
BRIGHTON, ENGLAND

ELEMENTARY DIAGRAM NOTES
SCHEMATIC DIAGRAM FOR CRANK GRINDING M/C (MODEL 'F') (ALFRED HERBERT)

SUPPLY 380V 50H2 3φ

L1 L2 L3

100A Q1A061

F1A031 10A (YEL) L1 1

F1A051 10A (YEL) L2 2

SHROUD

T1A041 20 0 380 420 400VA HVT 110V

F1A032 4A 3 5

(INSIDE PANEL) PANEL HEATERS

S1A031 ON HEATERS OFF (YEL) 6

K1A151 HR 7 E1A031 100W 9

HR K1A151 8 100W

SHROUDS HEATERS ON

X1A051 4 9 (YEL) H1A061

F1A081 10A (BLK) K1 10

T1A081 20 0 380 420 LVT 200VA 50V

F1A082 2A 12 14

R S1A081 ON OFF 16

MACHINE LIGHTING E1A101 R

F1A101 10A (BLK) K2 11

X1A101 13 15

K1A151 HR 19 (R) 1A21

T1A141 20 10 0 380 420 CVT 400VA

F1A141 4A 17 CFS

110 X1A161 18 CLK 20

K1A151 HR HEATER RELAY 1A03 1A04 1A12 (R) 1A20

110V CONTROL SUPPLY TO SHEETS 1B, 1E, 1F,

R1A191 FTR (BLU) DC+ 250R FFR 650R 23

K1D321 FTR 250R FER R1A211 10 22

(3.5A) Ψ1A211 DC+ DC- 11 19

K1A201 (1024)

M WORKHEAD MOTOR FIELD (SHEET 1B)

FIELD VOLTS: 300V

I_F: 0.7/0.84A

R_F: 360Ω/296Ω

F1A281 K1 K4 F1A292 WHOL K7 K1D131 WHLC A2 A1 K1D091 WHSC

F1A291 K2 K5 (1D09) K8 B2 B1 K10

F1A301 50A K3 K6 RANGE: 33-40A K9 C2 C1

K1D171 WHDC (BLK)

(BLK) K1 K2 K3

25 HP WHEELHEAD FLC: 39.5

K10 - MAINS
23 - CONTROL

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 27-4-77 17.7
						TECHN. VS00/R.G.B.
						ENG.
						APPD.

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

SCHEMATIC DIAGRAM FOR CRANK GRINDING M/C (ALFRED HERBERT)

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
701N09	902M102RE	1B

IDENT DR 1 SH A

DR 1 SH A CONTD. 1B ELEMENTARY DIAGRAM 902M102RE

DR 1 | SH 13 | CONTD. 1C | ELEMENTARY DIAGRAM 902M102RE

SET SPEED
F1B061

R

1K

2G

25

24

HTB150
SCR

SET MIN
R1B091

WKLR
WKLRR
WKLF
WKLC
WKAR

KID261
KID221
KID261
KID301
KID221

27
31

2G (R) (BLU) (GRY)
27 28 29 30

GTB

(7) COMP
(14) SFB
(1) APR.
(12) FCM
(8) COM
(4) REF
(3) +20
(17) -30
(19) OARP
(20) OSR
(18) ORR
(6) FB+
(9) FB-

DIAGNOSTIC
(IF FITTED)
FC1 (16)
FCR (5)
NORM. (21)
(11)
(10)
ICST (22)
CFB (13)
+20V (3)
COM (8)
GTB. -20V (2)
-30V (17)
SYS (15)

1050
WIRE LINK
1039
TO SH,1022

INSTRUCTIONS VSD1 206
INSTRUCTIONS VSD1 204
SET INCH
REGULATOR
DRIVER

110V CONTROL FROM SH1A14
1A21 (R) (H1)
1A20 (R) (H2)

DR/REG. MODEL LIST. 901K104XA

FOR ASSOCIATED CARDS SEE SHT. —

HTB
(AC1) (AC2) (AC3)
32 33 34

RPL SPL

HTB
PDC PDCF NDC NDCF

PDC
NDC

(1)
(2)
(T1)
(T2)
(T3)

FWD. POWER CONVERSION MODULE
W/O FAN

INSTRUCTIONS VSD1 202.

FIB241
FIB251
FIB261
60A

FROM SH1A35
(BLK) K1 K11
K2 K12
K3 K13

+ DC1
— DC2

P1 P2 P3 P4 P5

PDC
NDC

FIB281
(1D22)

WKOL
RANGE: 2.7–32A

WKLC KID301 (SGA)

M
WORKHEAD MOTOR 15HP

A AA
A
R

WKLC RIB331 P5
KID301 DBR 9R7G

(BLK)
(BLU)

ARM VOLTS ; 410V F.L.C: 31A
SPEED RANGE: 400/2,400 rpm

P5 - D.C.
K13 - A.C. } MAINS
34 - CONTROL

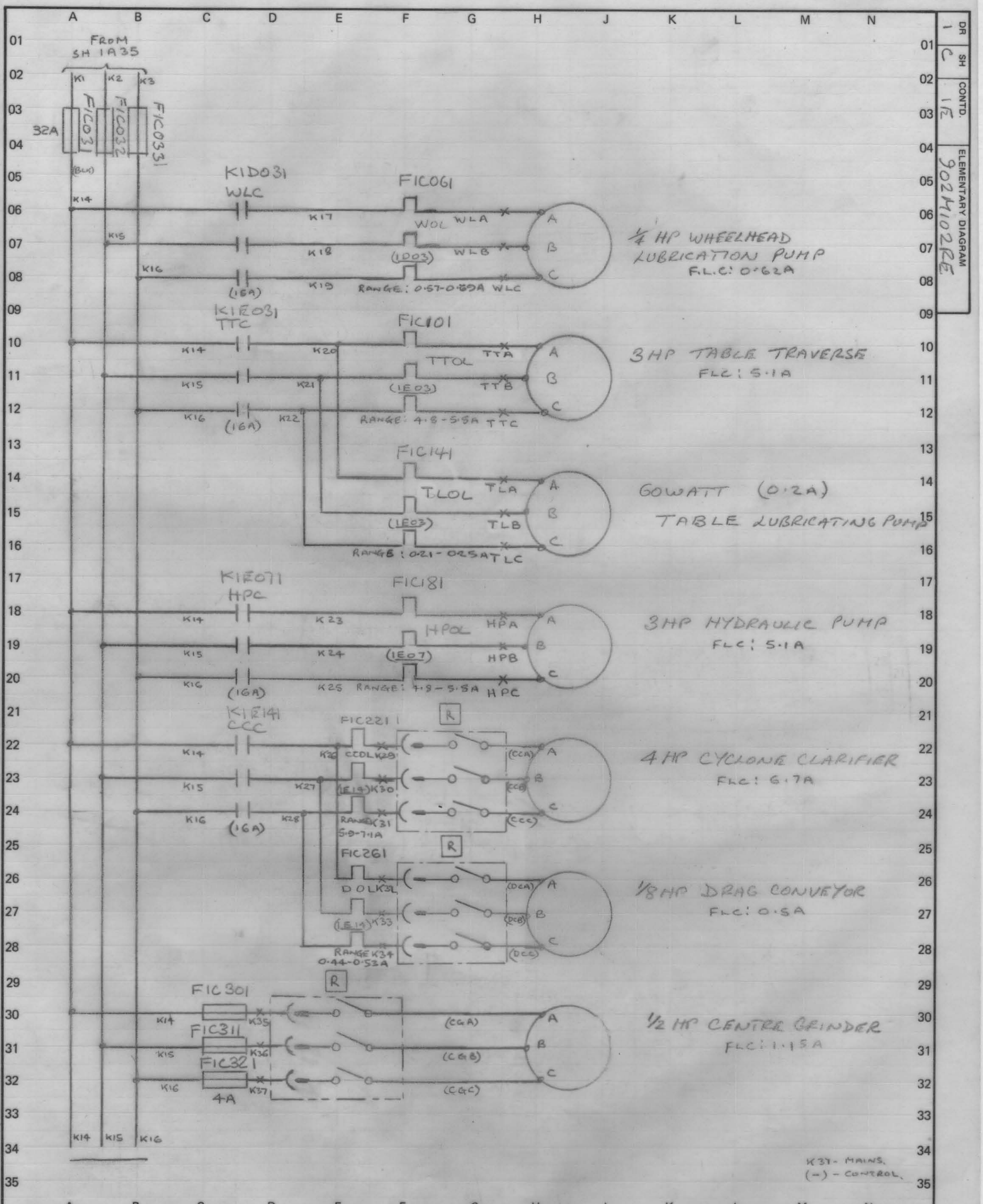
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 27-4-77	17.7
						TECHN. VSD01/R.G.B.	
						ENG. FRS	
						APPD.	

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

SCHEMATIC DIAGRAM FOR CRANK GRINDING M/C

IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
701N09	902M102RE	1C	1	B



DR 1 | SH C | CONTD. 1E | ELEMENTARY DIAGRAM 902M102RE

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 27-4-77 17·7	TECHN. VSOO/R.G.B.	ENG.	APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

SCHEMATIC DIAGRAM FOR CRANK GRINDING M/C.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
701N09	902M102RE	1D

IDENT

DR 1 | SH C

FROM SH 1A14 — 110 V AC CONTROL SUPPLY.

1A21

SID031 STOP — (R) — R — WHLTR KID141 — 35

SID032 START — R — KID031 WLC

36

FIC061 WOL — 37 — KID031 WLC — 1A20 — WHEELHEAD LUBRICATION PUMP CONTACTOR 1D05 1D07 1D09

KID031 WLC — 38 — HID07 WHSC — WHEELHEAD LUB PUMP RUNNING R

SID091 EM. STOP — R — 39

KID031 WLC

FIA292 WHOL — 40 — 41

SID092 STOP — R — 42

SID093 START — R — KID091 WHSC

43

KID191 WHTR — 9SEC — 44

KID171 WHDC — 45 — KID091 WHSC — WHEELHEAD STAR CONTACTOR 1D11 1D13 1D17

KID091 WHSC — KID131 WHLC — 46 — KID131 WHLC — WHLTR KID141 — WHEELHEAD LINE CONTACTOR 1D15 1D17

KID131 WHLC — 42 — 47

KID191 WHTR — 9SEC — 48

KID091 WHSC — 49 — KID171 WHDC — WHEELHEAD DELTA CONTR 1D09

KID191 WHTR — WHEELHEAD START TIMER 1D09T 1D17T

(SH13) DRIVER-REG — F — NORM — WIRE LINK — 40 GTB 10 — GTB 11 — GTB 21

K WHOL FIB281 — 50

SID221 STOP — R

MOTOR THERMOSTAT — R — 52

SID222 START — R — 53 — KID221 WKRR — WORKHEAD RUN RELAY 1D24 1D26 1D30 1B05 1B05

KID301 WKLC — KID1A20 FFR — KID24 WKRR — 54 — 55

SID261 INCH — R — 56 — KID221 WKRR — WKIR KID261 WHIR — 57 — WORKHEAD INCH RELAY 1D32 1B05 1B05

SID281 INCH — 52 — R

KID221 WKRR — KID261 WKIR — 58 — WKLC KID301 — WORKHEAD LOOP CONDACTOR 1D24 1B08 M1B30 M1B30 M1B33

KID321 FTR — FIELD RETAIN TIMER 1A20T

(R) (R) (R)

TO SH 1E01 — 1A20

1A21 1D39 1D40 — 58-CONTROL

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 27-4-77 17.7	TECHN. VSDO/R.G.B	ENG. F.R.G	APPD.

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

SCHEMATIC DIAGRAM FOR CRANK GRINDING M/C

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
	902M102RE	1E		1	D

DR 1 | SH E | CONTD. — | ELEMENTARY DIAGRAM 902M102RE

1A21 (R) 21 | 1039 (R) 39 | 1040 (R) 40

SIE031 STOP — 59 — SIE032 START (R) — 60 — FIC101 TTOL — 61 — FIC141 SLOL — 62 — KIE031 TTC — 1A20 (R) — TABLE TRAVERSE CONTACTOR 1E05

KIE031 TTC

SIE071 STOP — 39 — 63 — SIE072 START (R) — 64 — FIC181 HYPOL — 65 — KIE071 HPC — HYDRAULIC PUMP CONTACTOR 1E09

KIE071 HPC

(R) SIE111 — 21 — HYDRAULIC FILTER SWITCH — 66 — HIE111 — HYDRAULIC OIL FILTER BLOCKED (R)

SIE141 STOP — 39 — 67 — SIE142 START (R) — 68 — FIC221 CCOL — 69 — FIC261 DOL — 70 — KIE141 CCC — CYCLONE CLARIFIER CONTACTOR 1E16 1E18

KIE141 CCC

COOLANT SIE181 ON/OFF (R) — 39 — 71 — KIE181 CCC — 92 — KIE181 CSR — COOLANT SOLENOID RELAY 1E21 1E21

KIE181 CSR — 72 — YIF261 (R) — 73 — KIE181 CSR — COOLANT SOLENOID

TABLE LUBRICATION SIE241 ON/OFF (R) FILTER SWITCH. — 21 — 93 — HIE241 (R) — TABLE LUBRICATION OIL FILTER BLOCKED LAMP

TO SH 1F 01

1A 20

1A21 (R) | 1039 (R)

73 - CONTROL (92 & 93)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 27-9-77 (17.7)	TECHN. V500/R.G.B.	ENG. F.R.S.	APPD.

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

SCHEMATIC DIAGRAM FOR CRANK GRINDING M/C.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
701N09	902M102RE	1F		1	E

DR 1 | SH F | CONTD. — | ELEMENTARY DIAGRAM 902M102RE

1A21 (R)

1D39 (R)

1A20 (R)

39 (R) — SIF051 — R — 74 — K1F071 HRR — 75 — K1F051 HFR — HANDWHEEL FORWARD RELAY 1F07 1F10 1F10

39 — SIF071 — R — 76 — K1F051 HFR — 77 — K1F071 HRR — HANDWHEEL REVERSE RELAY 1F05. 1F12 1F12

K1F051 HFR — 78 — Y1F101 — R — 79 — K1F051 HFR — HANDWHEEL FORWARD SOL

K1F071 HRR — 80 — Y1F121 — R — 81 — K1F071 HRR — HANDWHEEL REVERSE SOL.

R — FWD LIMIT — 82 — 94 — K1F151 WFR — WHEELHEAD POWER FORWARD RELAY. 1F19 1F19

39 — SIF161 — REV LIMIT — 83 — 95 — K1F171 WRR — WHEELHEAD POWER REVERSE RELAY. 1F21 1F21

K1F151 WFR — 84 — Y1F191 — R — 85 — K1F151 WFR — WHEELHEAD POWER FORWARD SOLENOID

K1F171 WRR — 86 — Y1F221 — R — 87 — K1F171 WRR — WHEELHEAD POWER FORWARD SOLENOID

SIF241 WHEELHEAD FEED — R — FWD / REV

39 — 88 — K1F241 WFR — WHEELHEAD FEED RELAY 1F26 1F26

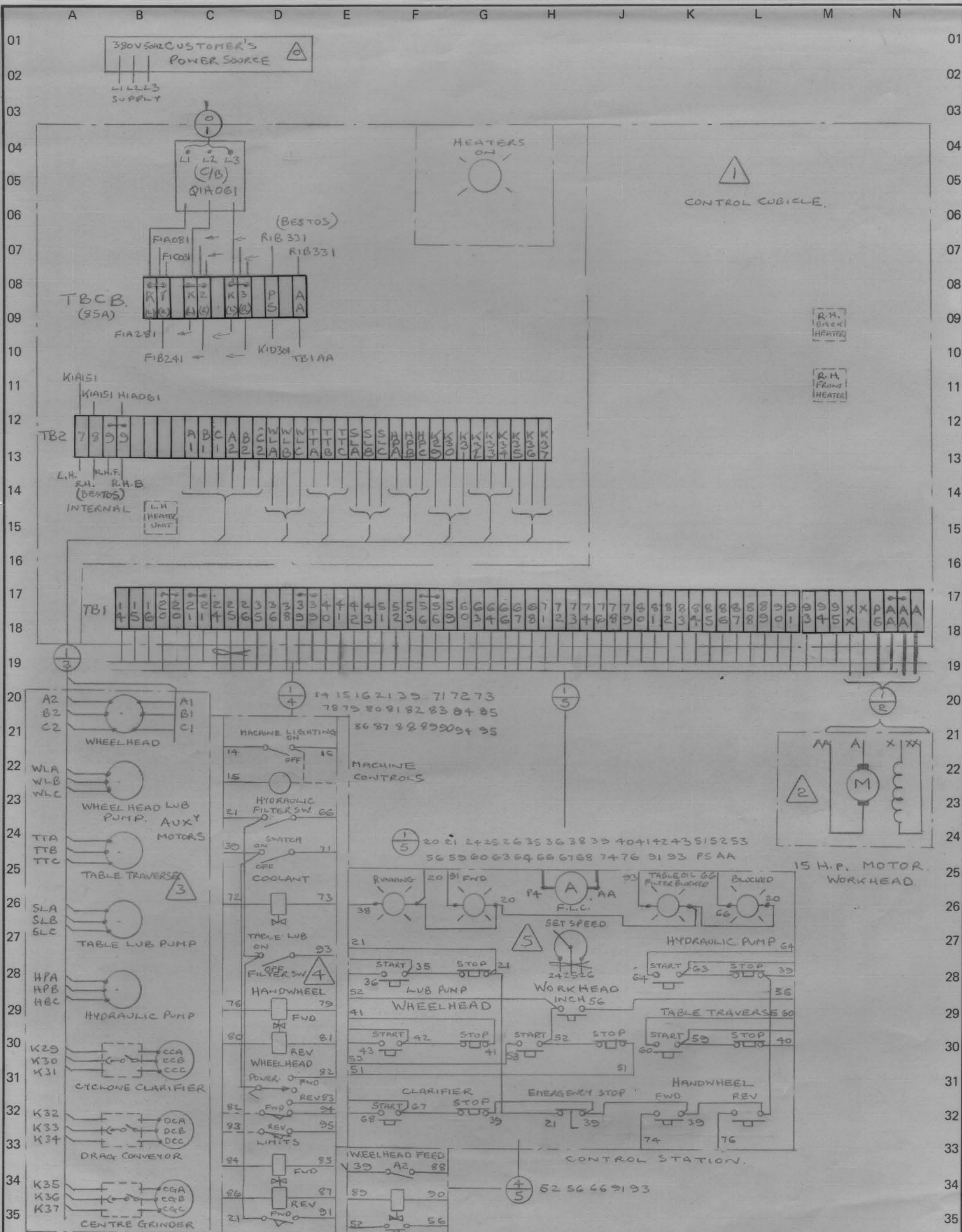
K1F241 WFR — 89 — Y1F261 — R — 90 — K1F241 WFR — WHEELHEAD FEED SOLENOID

WHEELHEAD FORWARD SIF291 — 21 — R A2 — 91 — HIF291 — R — WHEELHEAD FORWARD

1A21 1D39 1A20

95 - CONTROL (94+95)

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 27-4-77 17.7	ALLENWEST / Simplex — VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	SCHEMATIC DIAGRAM FOR CRANK GRINDING M/C (HYDRAULIC SOL.)(ALFRED HERBERT)	IDENT
		TECHN. VSDD/R.G.B			DR 1 / SH F
		ENG. F.R.G		GO NUMBER 70N09 / ELEMENTARY DIAGRAM 902M102RE / CONTD. —	
	DATE	APPD.			



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 2-5-77 18.7
						TECHN. VSDO/R.G.B.
						ENG. [illegible]
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

INTER-CONNECTIONS.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	
701N09	902M102RE	FL	DR 1	SH H

DR 0 | SH 0 | CONTD. 0A | ELEMENTARY DIAGRAM 902M122EC

AL100 LATHE.

SCHEMATIC DIAGRAM FOR C.N.C./3034R CABINET

ALFRED HERBERT LTD.,
P.O. BOX 45,
CANAL ROAD,
COVENTRY,
CV6 5GT

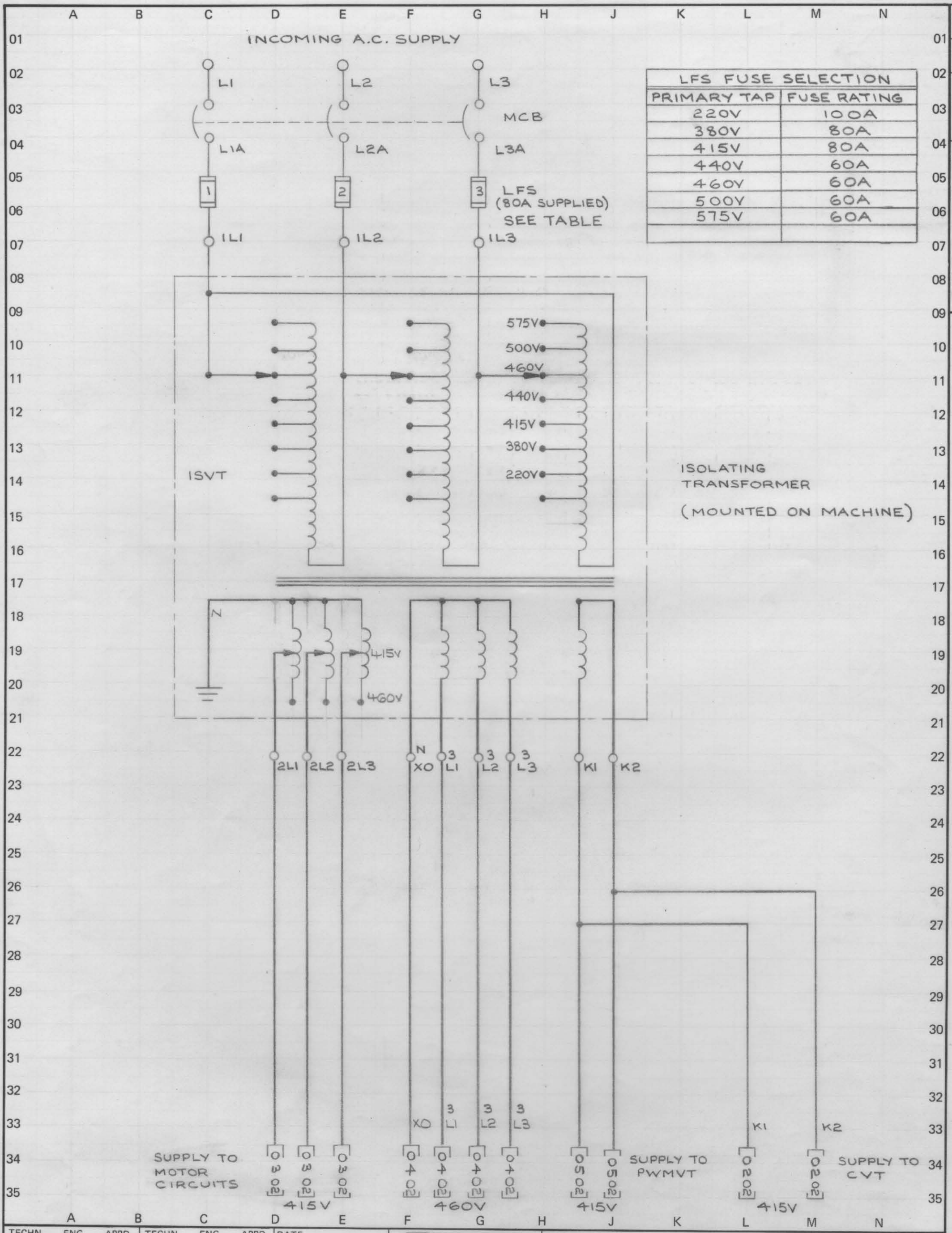
ORIGINAL ORDER No: 2/11884

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			2 AS SHIPPED 30-9-80	DM		17-6-80

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

TITLE PAGE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
012N03/	902M122EC	0A	0	0



LFS FUSE SELECTION	
PRIMARY TAP	FUSE RATING
220V	100A
380V	80A
415V	80A
440V	60A
460V	60A
500V	60A
575V	60A

DR 0 | SH 1 | CONTD. 02 | ELEMENTARY DIAGRAM 902M122EC

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 17-6-80
						TECHN. DM
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED
DRIVES OPERATION,
BRIGHTON, ENGLAND.

AL100 LATHE

MAIN A.C. SUPPLIES

IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
012N03/	902M122EC	02	0	1

DR 0 | SH 2 | CONTD. 03 | ELEMENTARY DIAGRAM 902M122EC

0135 0135

415V FROM ISVT

K1 K2

CVTFS (20A)

T1 T2

420 380 0 20

CVT

115 0 120 115 110 95 12 10·5 0 20 16 0 2 20 16 0 2

01 96 03 04 07 97 08 09 10 11

NCFS (2A) CFS (4A) CFFS (2A) MLFS (2A) CRFFS (6A) CLRFS (6A)

21

12 13 14 15

16 19

REC1 REC2

C1 C2

10,000μF 10,000μF

R1 R2

100R 100R

M/C LIGHT

CRFS (6A) CLFS (6A)

17 LK1 18 98 20 99

02 96 05 06 97

0602 0514 0602 0423 1002 0902 0927 0927

TO 1050HL

CONTROL CIRCUITS

24VDC RELAYS

TURRET SOLENOIDS

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 17-6-80
						TECHN. DM
						ENG.
						APPD.

ALLENWEST Simplex

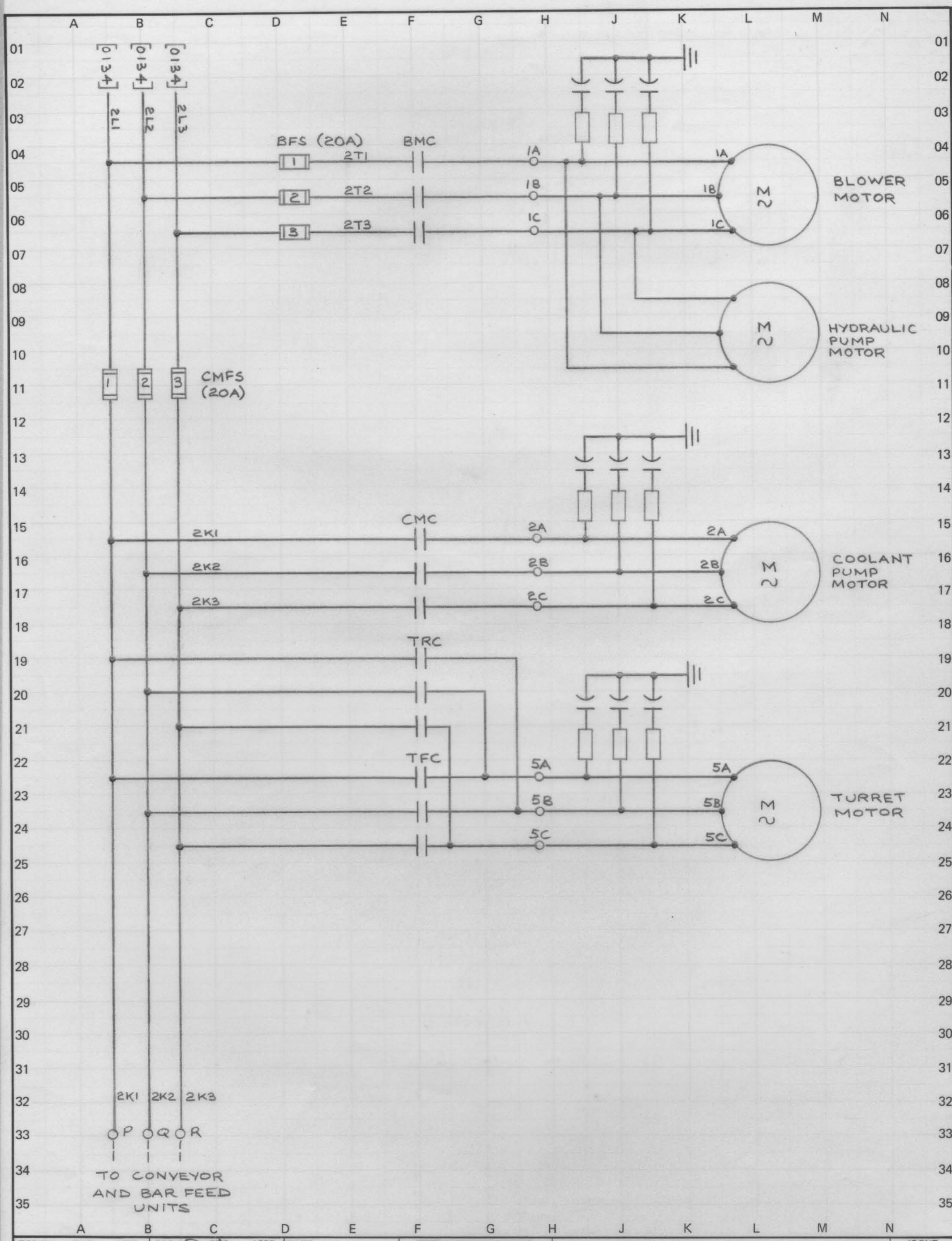
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE

CVT CONTROL TRANSFORMER OUTPUTS

IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
012N03/	902M122EC	03	0	2



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			DM			17-6-80
		2	BAR FEED CONTR DELETED			TECHN. DM
			8-9-80			ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE

415 VOLT SUPPLIES TO MOTORS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
012N03/	902M122EC	04

IDENT

DR	SH
0	3

902HM100EX

DR 0 | SH 4 | CONTD. 05 | ELEMENTARY DIAGRAM 902M122EC

0=34

XO L1 3 L2 3 L3 3

460 VAC FROM ISOLATING TRANSFORMER

SEE INSTRUCTION BOOK FOR CONNECTIONS.

XO

XO L1 L2 L3

AA XX ATB-F1 ATB-F2 A X DA-1

01 2TB29 TG 02 2TB30

BDC 3034R SPINDLE DRIVE

DIAGRAM 902M122EY

03 2TB22 A 04 2TB8

2TB23

[0234] 0217 2TB3 FAULT SIGNAL

[1317] 06 2TB4 CLOSED UNDER NORMAL CONDITIONS.

2TB5 2TB6 OPERATED WITH CONVERTER ON

2TB7

19 2TB10 JR [0913] 20 3TB3

[0618] 0608 2TB15

INHIBIT DIAGNOSTIC RUN

D1 D2 PSTB 7 PSTB 10

MSR 24 SER 25

2TB2 07 CONTROL ON

2TB1 08 [0907] MSR 09 SER [0909] RUN ENABLE

2TB14 10

2TB12

2TB8 THSW 2TB9

2TB20 +20V

2TB21 -20V

1050HL PL

2TB28 11 VELOCITY COMMAND 12 2TB27

3TB5 0218 [1015]

3TB6 14 [1015]

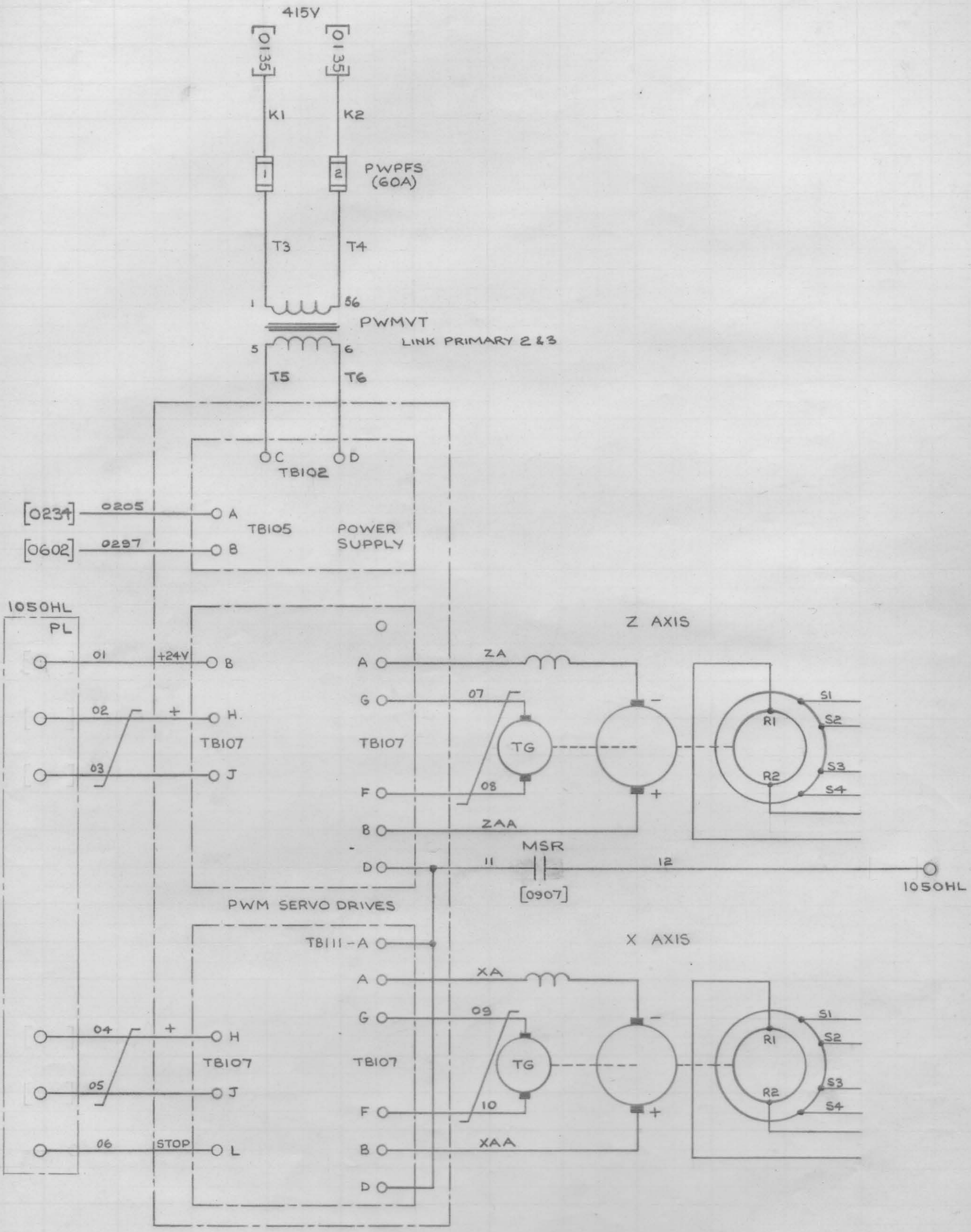
3TB8 0218 [1016]

3TB9 16 [1016]

3TB11 0218 [1017]

3TB12 15 [1017]

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE	ALLENWEST Simplex	ALIOO LATHE	IDENT
	2 ADDED DIAGNOS. INHIBIT CCT, DELETED MISC. NON REQUIRED OPTIONS. 5-9-80	17-6-80 TECHN. DM ENG. APPD.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CONNECTIONS TO 3034R DRIVE	DR 0 SH 4
				GO NUMBER 012N03/ ELEMENTARY DIAGRAM 902M122EC CONTD. 05	



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 17-6-80
						TECHN. DM
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE

PWM SERVO DRIVE CIRCUITS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
012N03/	902M122EC	06	0	5

DR 0 | SH 6 | CONTD. 07 | ELEMENTARY DIAGRAM 902M122EC

[0234]

0205

THE 1

THE 5

THE 4

THE 3 — Z-AXIS

THE 2 — X-AXIS

MSR [0907]

0205 ACEC [0614]

08

PS8

LUB. CONTROL UNIT [C]

CR1 [0804]

CR4 [0810]

0608 [0702]

01 — 1 — IN-RA — BFOL R (3, 11) — 9 — [0234] — BAR FEED O/L RELAY 1003

02 — 5 — IN-RB — COL R (14, 21) — COOLANT O/L RELAY 1005

03 — 8 — IN-RC — HPOL R (23, 25) — HYD. PUMP O/L RELAY 0907, 1007

04 — 14 — IQ-RA — SOL R (14, 21) — SPINDLE O/L RELAY 0907, 1009

05 — 12 — IQ-RB — AOL R (3, 11) — AXIS O/L RELAY 0907, 1011

06 — ACEC — AC ENABLE CONTACTOR 0616

MER [0911] — 07 — BMC — BLOWER MOTOR CONTACTOR

08 — 15 — IQ-RC — MRR (23, 25) — MACHINE READY RELAY 0905, 1013

09 — ECLFS (2A) — 15 — END OF CYCLE LAMP

14 — CMC — COOLANT MOTOR CONTACTOR

0297 [0702]

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						17-6-80
		2	THE 1 TO 5 ADDED PS8 ADDED: CR2 & 3, SBS AND BAR FEED CONTACTORS DELETED: 8-9-80	TECHN.	DM	
				ENG.		
				APPD.		

ALLENWEST Simplex

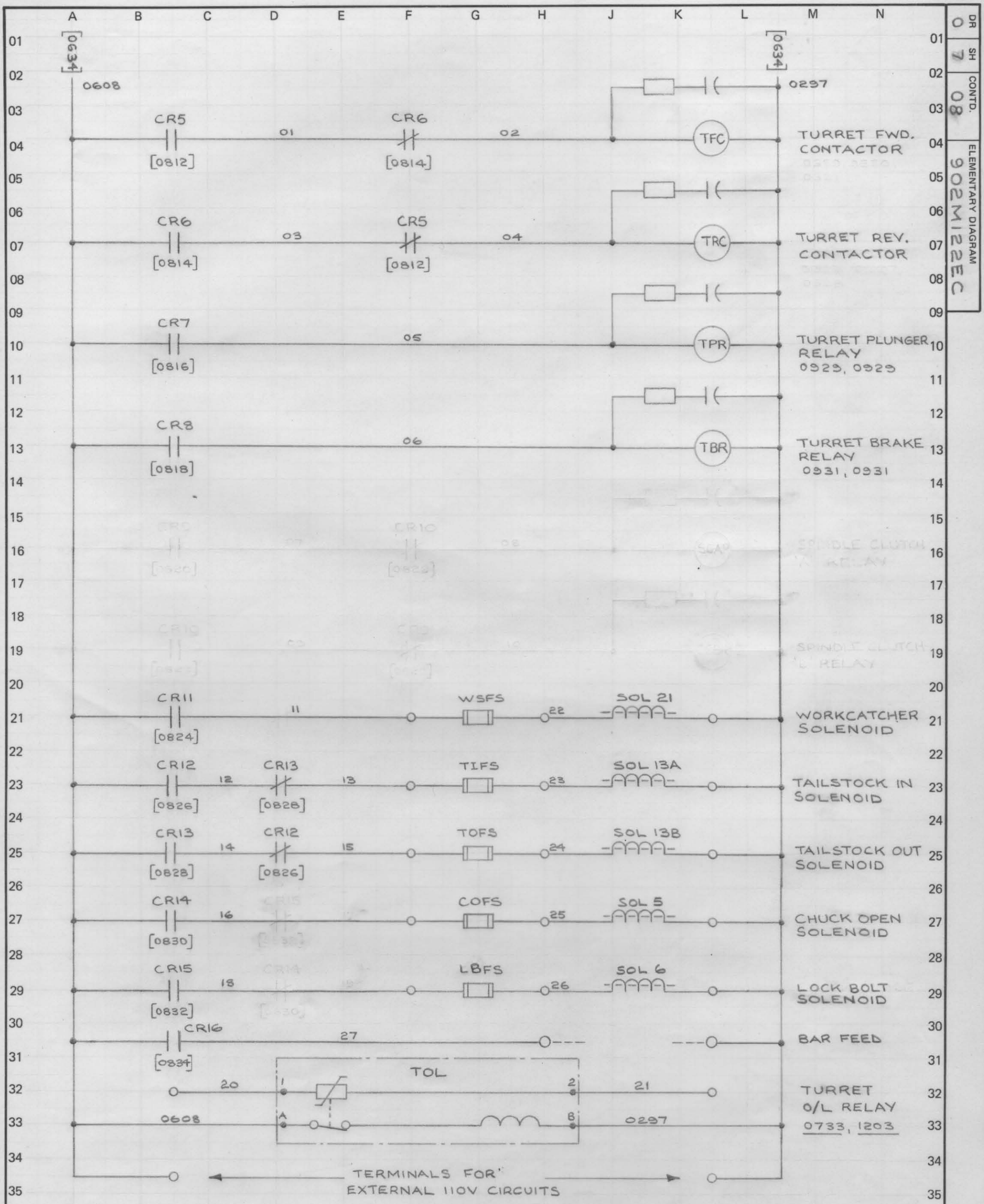
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE

110V CONTROL CIRCUITS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
012N031	902M122EC	07

IDENT — DR 0 — SH 6



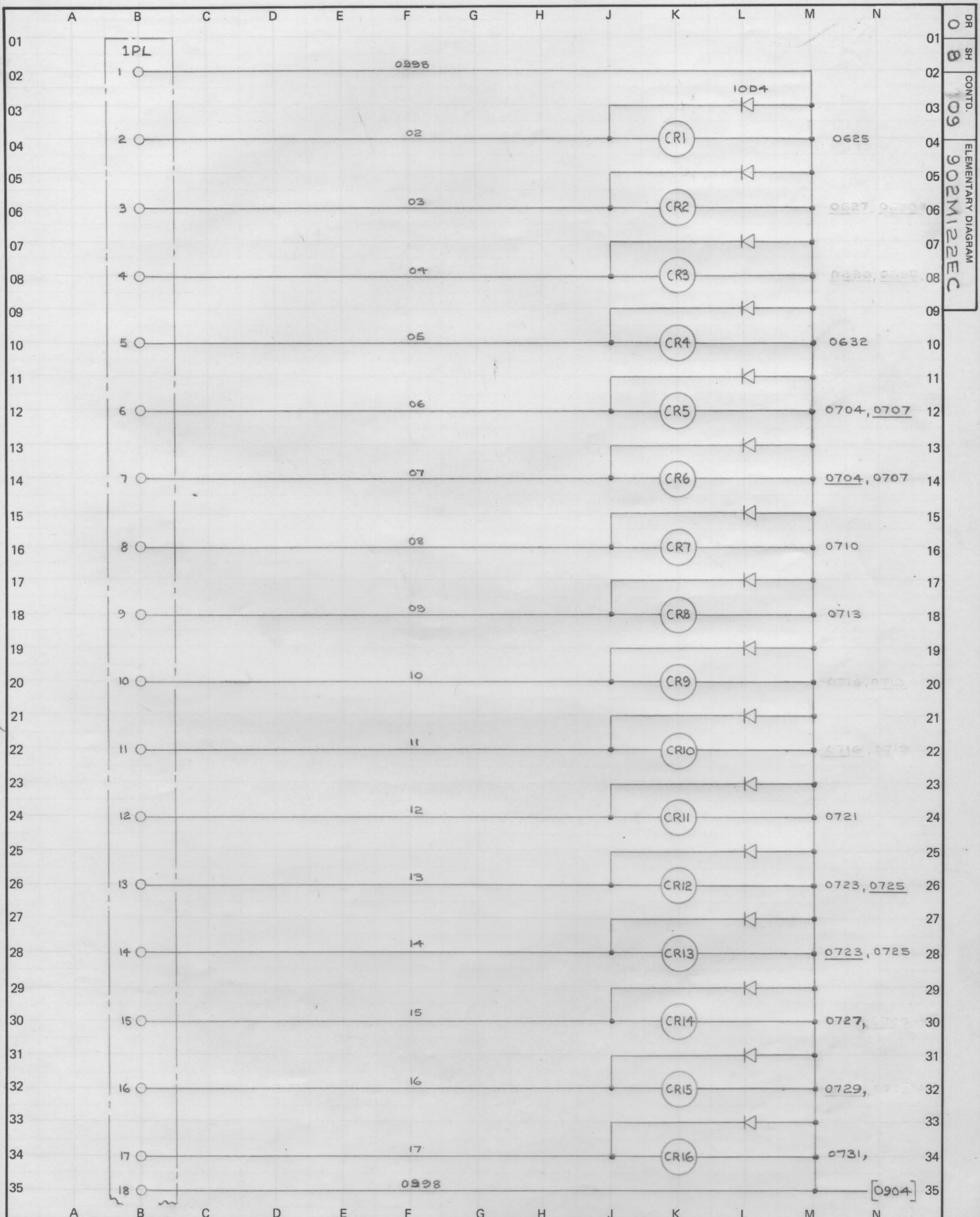
DR 0 | SH 7 | CONTD. 08 | ELEMENTARY DIAGRAM 902M122EC

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	ALLENWEST
			2	SPINDLE CLUTCH RELAYS DELETED. CR16 CONTACT & SOLENOID Nos. ADDED. 8-9-80		17-6-80	
						TECHN. DM	Simplex
						ENG.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.
						APPD.	

AL100 LATHE

110V CONTROL CIRCUITS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
012N03/	902M122EC	08	△	0	7



DR 0 | SH 8 | CONTD. 09 | ELEMENTARY DIAGRAM 902M122EC

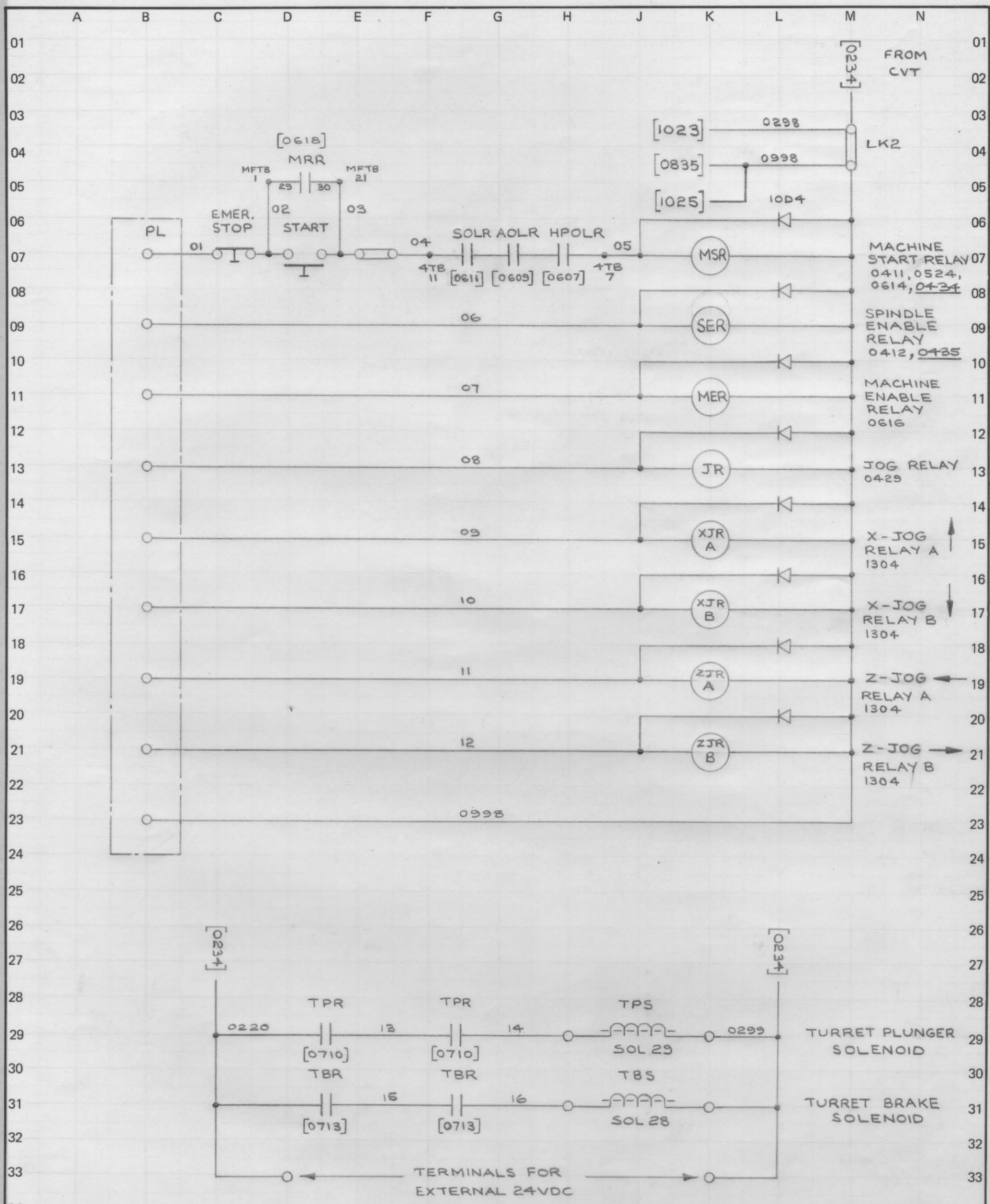
TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 17-6-80	ALLENWEST / Simplex — VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.
	2 SURPLUS CONTACTS DELETED. CR16 CONTACT ADDED. CR2,3,9,10 SPARE ONLY. 8-9-80	TECHN. DM	
		ENG.	
		APPD.	

AL100 LATHE

+24VDC OUTPUTS FROM 1050HL

IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
012N03/	902M122EC	09	0	8



DR 0 | SH 9 | CONTD. 10 | ELEMENTARY DIAGRAM 902M122EC

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 17-6-80
						TECHN. DM
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE
24VDC COIL FEEDS FROM 1050HL AND
24VDC SOLENOID CIRCUITS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
012N03	902M122EC	10		0	9

DR 0 | SH 10 | CONTD. 11 | ELEMENTARY DIAGRAM 902M122EC

[0234]

0218

3 4

IN-LLR
BFOLR 6 5 [06]
2 4 01

COLR 16 13
4 4 02

HPOLR 29 30
6 4 03

IQ-LLR
SOLR 16 13 [06]
13 4 04

AOLR 10 12
10 4 05

MRR 26 24
15 4 06

PL

SLD-1S
0218 5 3 — 25 30 — 6 3 0414
SLD-1R
8 3 — 25 30 — 9 3 0416
SLD-1S
11 3 — 28 27 — 12 3 0418

MACHINE GUARD SWITCHES.

LMS6A — LMS6B — 07

0218 — G

CONVEYOR ENABLE

[0903] 0298 — H

SKT. 52

START — 09

SPINDLE

STOP — 10

JOG — 11

0218

[1102]

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	
			2	LIMIT SW. 6A ADDED. CONVEYOR CCT MODIFIED. 8-9-80		TECHN.	DM
						ENG.	
						APPD.	

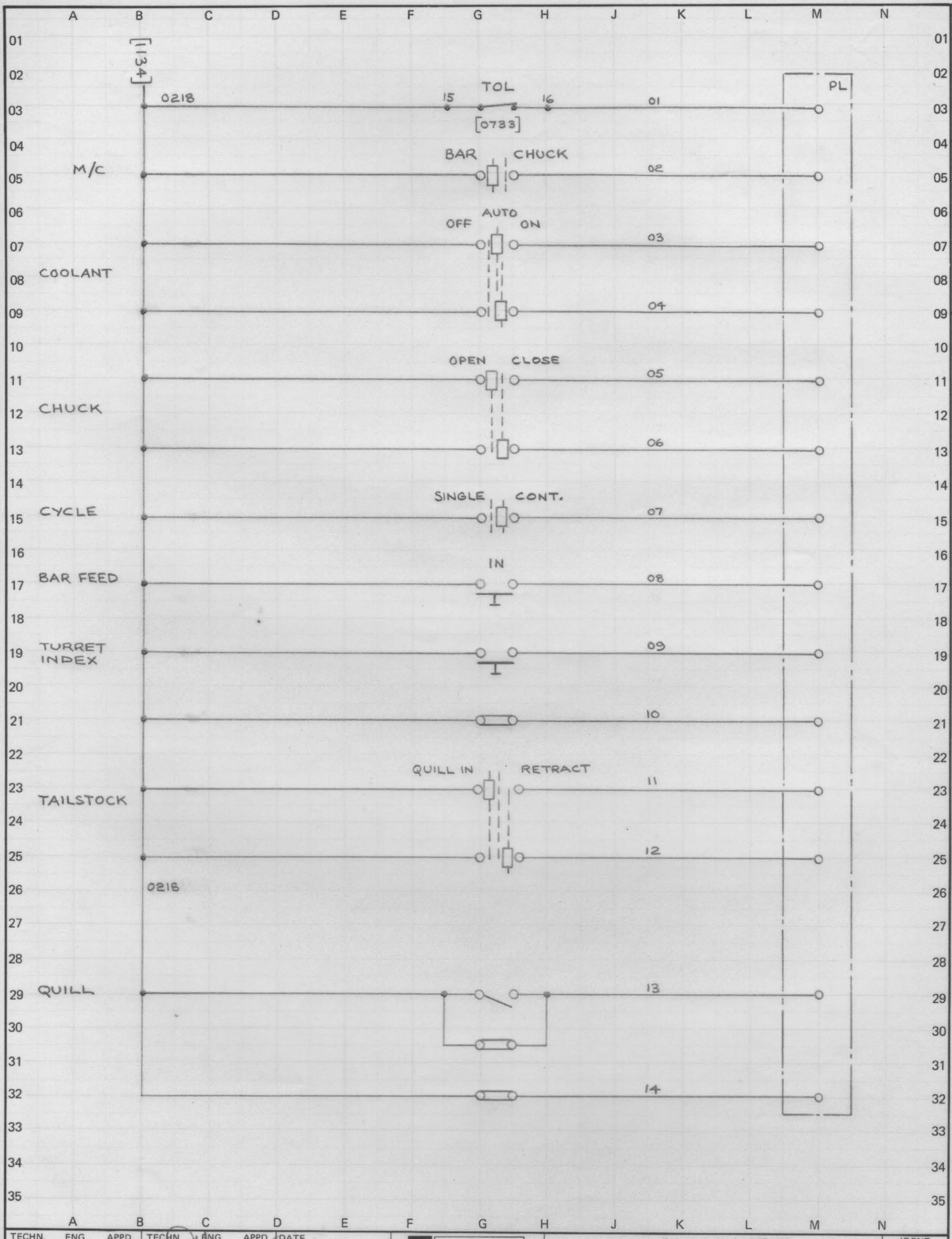
17-6-80

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE

24VDC INPUTS TO 1050HL

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
012N03/	902M122EC	11	1	0



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			KM			17-6-80
			2 TURRET INDEX AND TAILSTOCK CONTROLS ADDED 9-9-80			TECHN. DM
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE

24VDC INPUTS TO 1050HL

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
012N03/	902M122EC	13	1	2

DR 0 | SH 11 | CONTD. 12 | ELEMENTARY DIAGRAM 902M122EC

[1034]

0218

END OF BAR — 01 — PL

WORKCATCHER PARKED — LMS 29 — 02

HYD. PRESSURE — PS1 — 03

CHUCK CLOSED — PS4 — 04

SPARE — 05

LUB UNIT — 06

B1 — 07
B2 — 08
B3 — 09
B4 — 10
B5 — 11
B15 — 12

(24V) 8 — 0218
(0V) 9 — 0298

DISC TURRET
B7 — 13

QUILL FWD — LMS 41 — 14

TAILSTOCK BACK — LMS 21 — 15

0218

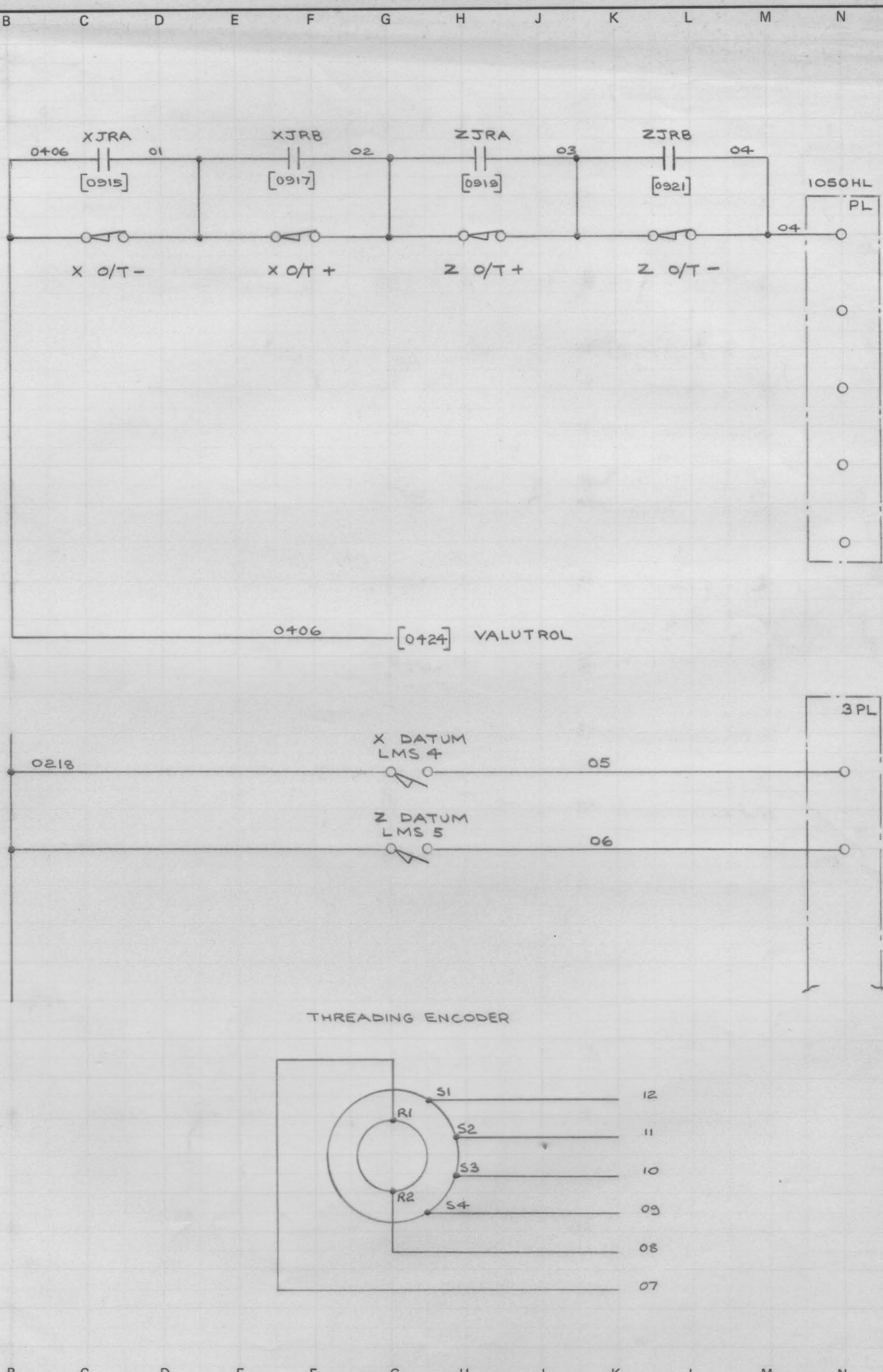
[1202]

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	ALLENWEST
						17-6-80	
		2	DISC TURRET ADDED. (FORMERLY LINKS AND SWS) 8-9-80			TECHN. DM	Simplex
						ENG.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.
						APPD.	

AL100 LATHE

24VDC INPUTS TO 1050HL

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
012N03/	902M122EC	12		1	1



DR | SH | CONTD. | ELEMENTARY DIAGRAM

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 17-6-80
	2 OVERTRAVEL CIRCUIT SIMPLIFIED DATUM SWITCHES AND ENCODER ADDED. 9-9-80	TECHN. DM
		ENG.
		APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE
OVER TRAVEL LIMIT SWITCHES, AXIS DATUM SWITCHES, THREADING ENCODER.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
012N03/	902M122EC	14	1	3

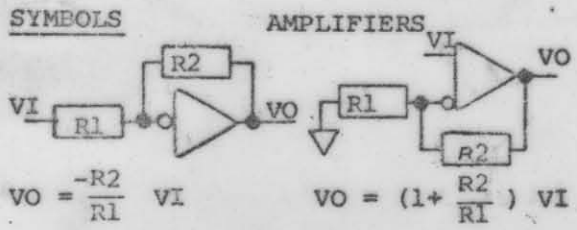
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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



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	 IFC IFC	NONE I-IHI I-ILO
SR5 - 9v 9 - 20v	 X	 MCC	(NONE) SRH-COM
JOGR 10v 20V	 X	 MCC	(NONE) JH - COM
LT.3-7sec. 2 - 60sec	X	 MCC	(NONE) 332ΩFROM LT1TOCOM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1-AT2
TACHO FIL?		IFC	TC-TC
TACHO V. 24-64vdc 27-71vac 60-160vdc 66-177vac 110-300vdc 120-300vac	 X 	 IFC IFC IFC IFC IFC IFC	 NT-NT1, PT-PT1 NT-NT1, PT-PT1 NT-NT2, PT-PT2 NT-NT2, PT-PT2 NT-NT3, PT-PT3 NT-NT3, PT-PT3
MAX AMPS G134 .8 G134 1.3 G134 2.4 G134 4.0 G134 7.0 G256 1.7 G256 2.8 G256 5.0 G256 8.0 G256 13 G256 25	 X	 MFC MFC MFC MFC MFC MFC MFC MFC MFC MFC	 NONE YB-YD YA-YB YA-YB, YC-YD YA-YC YA-YC, YB-YD
L/R < .25S		MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)

SIGNAL DEFINITIONS AND LOCATIONS

*	CEMF	COUNTER EMF (1B16)
*	CFB	CURRENT FEEDBACK (1C20)
	CMFA	ABSOLUTE VALUE CEMF (1C08)
	CRM	CROSSOVER MODIFY (1D11)
	DFP	DELAYED FIRING POWER (1C25)
*	DR	DRIVER REFERENCE (1C33)
*	EAO	ERROR AMP OUTPUT (1C33)
	EST	EXTERNAL FLT STOP INPUT (1C14)
	FALT	FAULT (1C14)
*	FC	FIELD CURRENT (NS26)
	FDR	FIELD DIAGNOSTIC REFERENCE (1D08)
	FEA	FIELD ECONOMY ADJUST (1C25)
	FF	FIELD FAULT (1B28)
	IABS	MOTOR CURRENT ABSOLUTE (1C09)
	ILA	CURRENT LIMIT ADJUST (1C23)
	IMET	CURRENT SIGNAL FOR METER (1C10)
*	IPU	INITIAL PULSE (1C20)
*	LR	LOCAL REF. FROM DGC (1C33)
*	JOG	JOG SWITCH INPUT (1C23)
*	JOGR	JOG REFERENCE INPUT (1C31)
*	MAC	MAX/MA CONTROL SIGNAL (1C20)
	MSW	MODE SWITCH (1C30)
*	OSC	OSCILLATOR (1C17)
*	PCR	PHASE CONTROL REF. (1C26)
*	PRE	DRIVE PRECONDITION (1C21)
	ØSEQ	PHASE SEQUENCE (1C14)
	RERR	REGULATOR ERROR (1C27)
	RIJ	INTEGRATOR SUMMING JUNCTION (1C27)
	RJ	REGULATOR SUMMING JUNCTION (1C31)
	RRA	REGULATOR RESPONSE ADJUST (1C30)
	RSET	RESET (1C16)
*	RTR	READY TO RUN (1C16)
*	RUN	RUN SWITCH INPUT (1C21)
*	SA-C	PHASE SYN OUTPUT (1C16)
*	SFB	SPEED FEEDBACK (1C20)
	SMET	SPEED SIGNAL FOR METER (1C12)
*	SR	SYSTEM REFERENCE INPUT (1C29)
*	SYS	SYSTEM FAULT TRIP (1C13)
*	TA	OUTPUT FOR TACHO TRIP ADJUST (1C20)
	TF	TACHO FAULT (NS28)
*	TFB	TACHOMETER FEEDBACK (1C20)
	TFR	AC TACHO FREQUENCY OUTPUT (1C13)
*	TR	TIMED REFERENCE (1C33)
*	VFB	VOLTAGE FEEDBACK (1C19)
*	WFR	WEAK FIELD REFERENCE (1C20)

(* - 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.

DR 1 | SH A | CONTD. 1B | ELEMENTARY DIAGRAM 902M122EY

TECHN.	ENG.	APPD.			
			2	AS SHIPPED 30-9-80	TECHN. DM ENG. APPD.

DATE 1-7-80

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL 100 LATHE
15HP BDC 3034R THYRISTOR DRIVE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
012N03	902M122EY	1B

IDENT DR 1 SH A

902HM100DX

DR 1 | SH D | CONTD. 1E | ELEMENTARY DIAGRAM 902M122EY

[PS35]

[PS34]

DP2 DP1 RESET

MONO STABLE PG

LOC+ REF

LR FDR FDR

CUR REF

CFB

[PS35]

DIAG RUN

+20V

NORM

DIAG STATIC

CRM CRM

MAC +20

-20V COM -20

D2 D1 ⊥20V

DGC

[1B-32]

[PS17]

MFTB

+20 COM -20

SYS

SYS

TTA

+20

1BA

R4A - 2K. (1BA - COM)

IABS

[NS17]

TOC

SLD - 1R

SLB

TP3 TP4

15K

HYSTERESIS

+20V 31

18

12

38K

3.9K

15K

SLB

[1E-28] SFB

11

10K

.47 MF

COM

B LEVEL ADJ.

9 17 (SP4)

3 18 (SP5)

10 19 (SP6)

5 13 (SP23)

8 14 (SP24)

6 15 (SP25)

-20V 2

1 DCOM

32

INSTRUCTIONS VSD1 211

14 13 17

TECHN.	ENG.	APPD	TECHN.	ENG.	APPD	DATE 1-7-80
						TECHN. D.M.
						ENG.
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

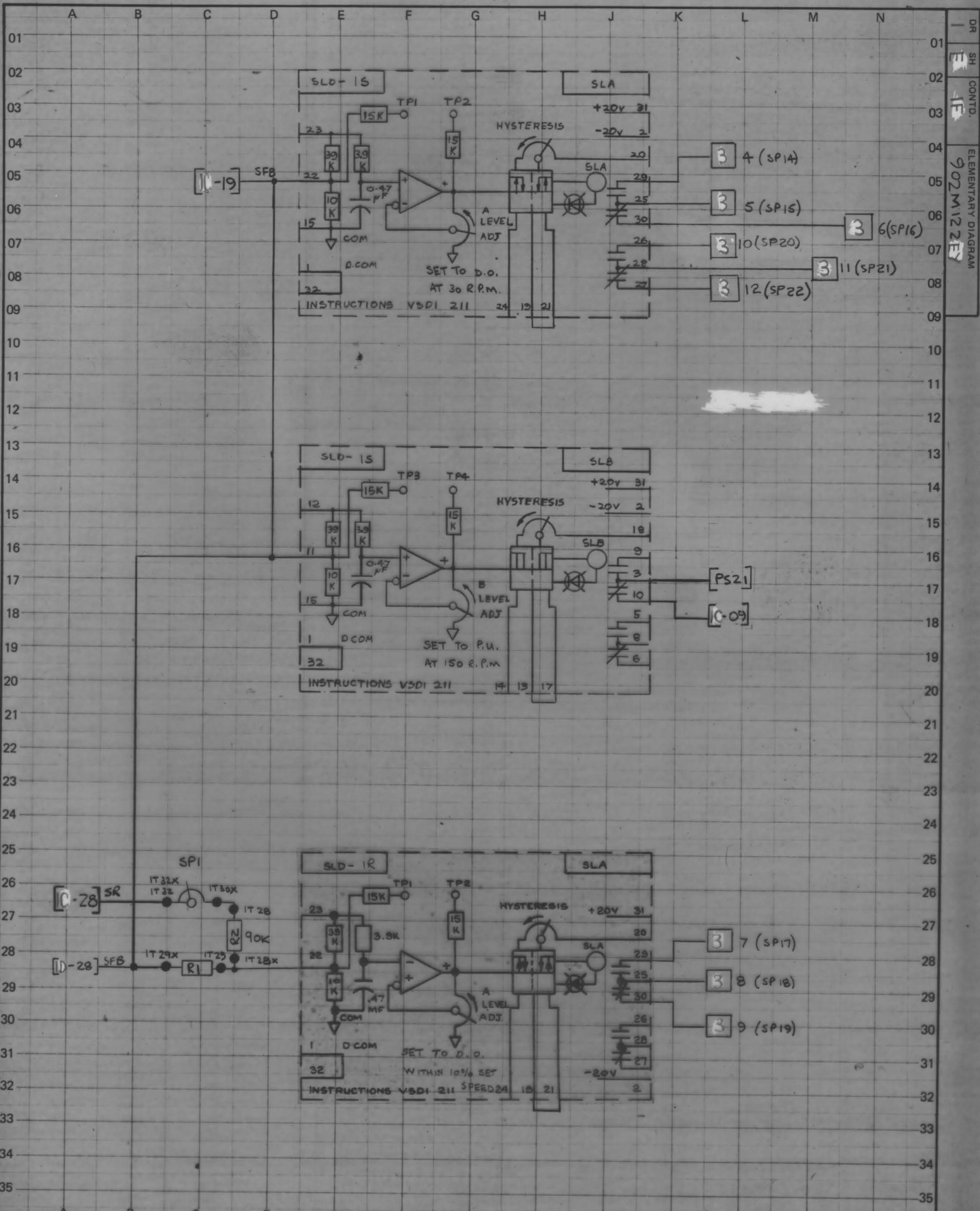
AL 100 LATHE

15 HP BDC 3034R THYRISTOR DRIVE

DIAGNOSTIC, TOC, SIG. LEVEL DET.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
012N03	902M122EY	1E

IDENT DR 1 SH D



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD	DATE 1-7-80

TECHN. D.M.

ENG.

APPD.

ALLENWEST

Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL100 LATHE

15 HP BDC 3034R THYRISTOR DRIVE

SIGNAL LEVEL DETECTORS.

GO NUMBER 012N03

ELEMENTARY DIAGRAM 902M122EY

CONTD. 1F

IDENT

DR 1 SH E

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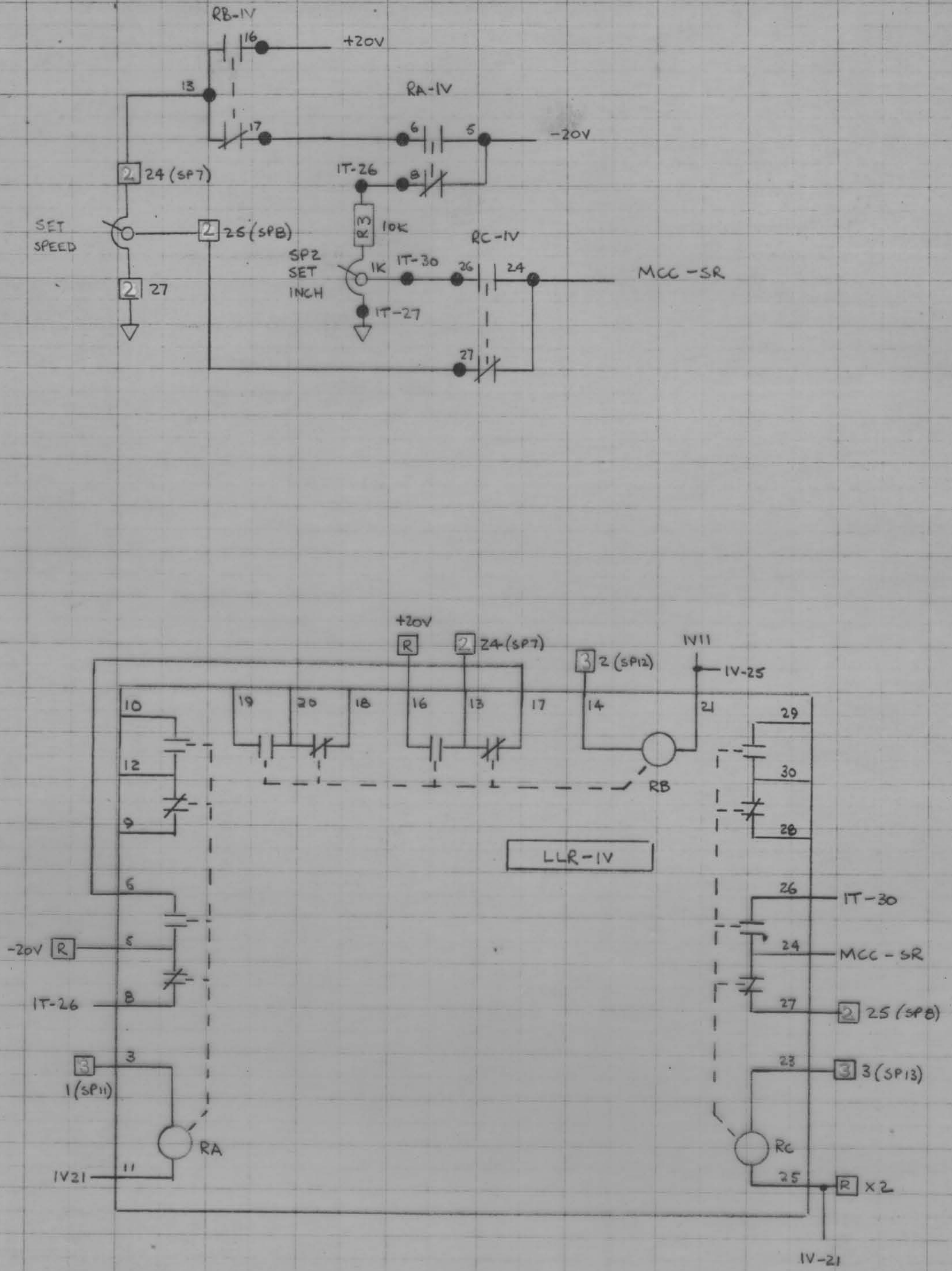


DR	SH	CONTD.	ELEMENTARY DIAGRAM
1	F	1G	902M122EY

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

DATE 1-7-80
TECHN. D.M.
ENG.
APPD.

ALLENWEST
Simplex
VARIABLE SPEED
DRIVES OPERATION,
BRIGHTON, ENGLAND.

AL 100 LATHE
15 HP BDC 3034R THYRISTOR DRIVE.
REFERENCE CIRCUIT.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
012N03	902M122EY	1G		1	F

DR 1 | SH H | CONTD. 1J | ELEMENTARY DIAGRAM 902M122EY

SP39 4 4

SP40 4 5

10 19 20 18 16 13 17 14 21 29

12 9 6 5 8 3 11

RB RA RC

30 28 26 24 27 23 25

6 4 SP41

7 4 SP42

8 4 SP43

9 4 SP44

LLR- IN

INSTRUCTIONS VSDI 213

3 4 SP38

2 4 SP37

1 4 SP36

SP48 4 13 SP49 4 14

10 19 20 18 16 13 17 14 21 29

12 9 6 5 8 3 11

RB RA RC

30 28 26 24 27 23 25

MFTB 1

21

15 4 SP50

15 2 SP2

16 2 SP3

LLR- 1Q

INSTRUCTIONS VSDI 213

10 4 SP45

11 4 SP46

12 4 SP47

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 24-5-80	ALLENWEST / Simplex	ALIOO LATHE 15 HP BDC 3034R THYRISTOR DRIVE RELAY CARDS	IDENT
		TECHN. DM	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER 012N031 / ELEMENTARY DIAGRAM 902M122EY / CONTD. 1J	DR 1 / SH H
		ENG.			
		APPD.			

460V.A.C. FROM ISOLATING TRANSFORMER.

XO

AA

A

XX

X

ATB-F1

ATB-F2

DA1

2TB29

TG

2TB30

XO L1 L2 L3

REMOVE THIS LINK IF CONTROL ON FUNCTION REQUIRED

2TB2

2TB1

CONTROL ON

MSR

SER

RUN ENABLE

2TB14

2TB12

TRIP RESET (IF REQ'D)

2TB8

EXTERNAL TRIP (COAST STOP ONLY)

2TB9

2TB3

FAULT SIGNAL

2TB4

FLT

2TB5

CONVERTER ON SIGNAL

2TB6

MAX

2TB7

1A

110V FX1

2TB10

RA-1V

3TB1

RB-1V

3TB2

RC-1V

3TB3

JOG RELAY

3TB4

3TB5

SLA-1S

3TB6

2TB17

2TB18

2TB19

3TB7

3TB8

SLA-1R

3TB9

TO 1050HL

3TB13

3TB14

3TB15

3TB10

3TB11

SLA-1S

3TB12

2TB22

+20V

2TB20

-20V

2TB21

A

3

2TB8

2TB28

VELOCITY COMMAND

2TB27

TO 1050HL

2TB23

4TB7

4TB11

M/C START CCT.

2TB15

110V.A.C.

4TB9

4TB15

4TB3

4TB 1 4TB 5 4TB 8 4TB 12 4TB 14 4TB 2 4TB 4 4TB 6 4TB 10 4TB13

24V.D.C.

TO PANEL TERMLS.

TO 1050HL

DR 1 | SH L | CONTD. 1M | ELEMENTARY DIAGRAM 902M122EY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	1-7-80
						TECHN.	DM
						ENG.	
						APPD.	

ALLENWEST

Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

AL 100 LATHE
15 HP BDC 3034R THYRISTOR DRIVE
INCOMING CONNECTIONS

IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
012N03	902M122EY	1M	1	L

902HM100DY

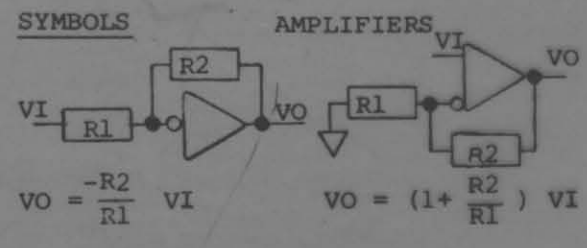
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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



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 MAX AMPS .8 1.7 1.3 2.8 2.4 5.0 4.0 8.0 7.0 13 13 25		MFC	NONE
		MFC	YB-YD
		MFC	YA-YB
		MFC	YA-YB, YC-YD
	X	MFC	YA-YC
		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 (NS28)
	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.

DR 1 | SH 2 | CONTD. | ELEMENTARY DIAGRAM 902M122BB

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE
NGM	NGM	9/5/79
6 SEE REVISION 6 ON SHEET 10 10/6/80	2 SEE REVISION 1 ON SHEET 10 30/8/79	TECHN. / ENG. NGM / APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD
15/20HP BDC 3034R THYRISTOR DRIVE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
917N11	902M122BB	2

IDENT | DR 1 | SH 1

DR 4 SH CONTD. 5 ELEMENTARY DIAGRAM 902 M122BB

[PS35]

[PS34]

DP2 DP1 RESET

MONO STABLE PG

LOC+ REF

LR FDR FDR

CUR REF

CFB

[PS35]

DIAG RUN +20V

NORM

DIAG STATIC

CRM CRM

MAC +20

-20V COM -20

D2 D1 -20V

DGC

[2-32]

(SP2) (SP3)

2 15 2 16

[PS17]

MFTB

+20 com -20

SYS SYS

+20 IBA

TTA

[NS17]

TOC

SLD -

SLB

TP3 TP4

15K

12

39K 3.9K

15K

HYSTERESIS

+20V 31

18

SLB

[5-28] SFB

11

10K .47 MF

COM

B LEVEL ADJ.

9 3 10 5 8 6

-20V

2 17 (SP4)

2 18 (SP5)

2 19 (SP6)

3 13 (SP23)

3 14 (SP24)

3 15 (SP25)

1 DCOM

32

INSTRUCTIONS VSD1 211

14 13 17 2

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE		
	NGM			NGM		10	5	79
6	10/6/80		4	21/3/80		TECHN.		
						ENG.	NGM	
						APPD.		

ALLENWEST Simplex

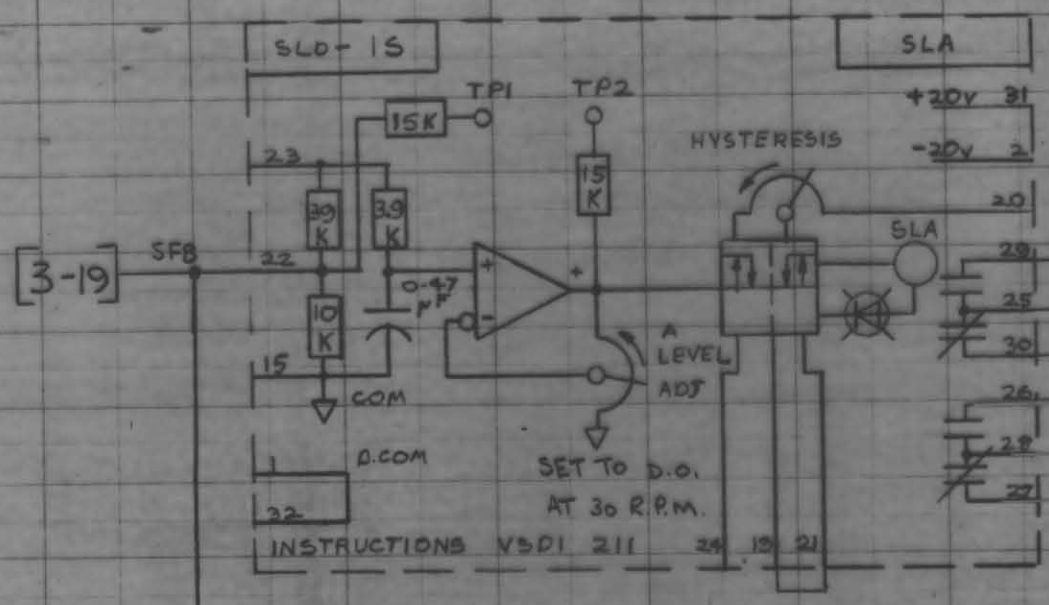
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

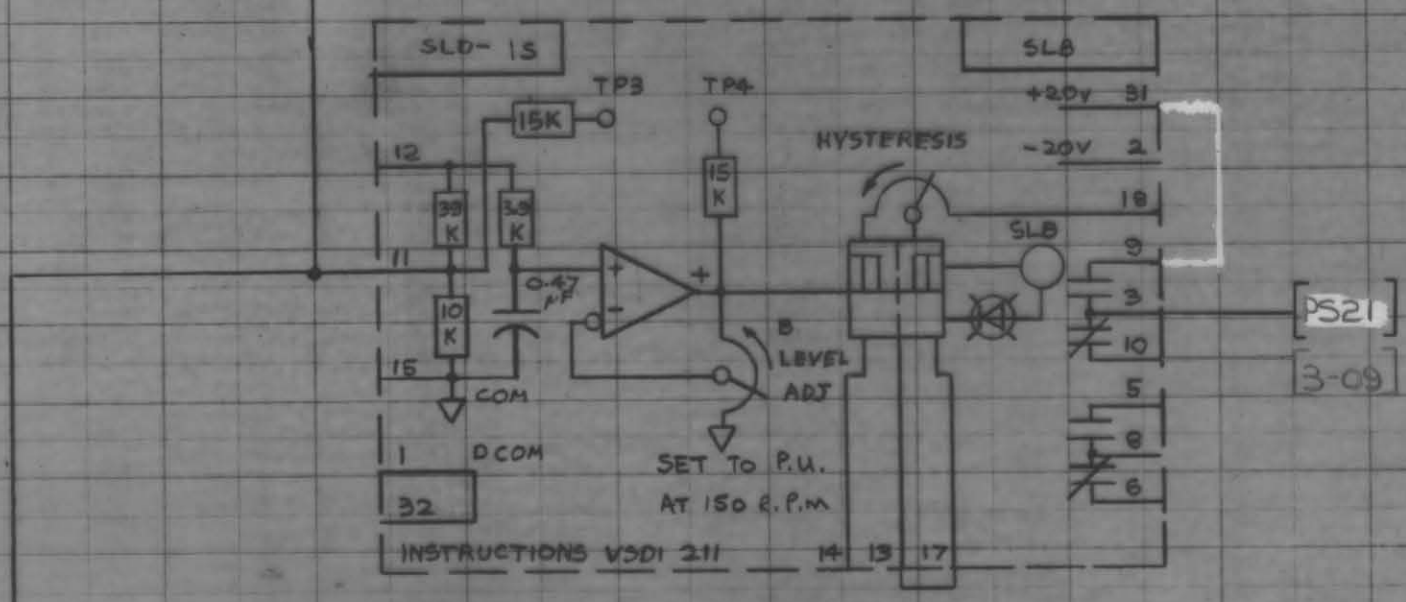
ALFRED HERBERT LTD

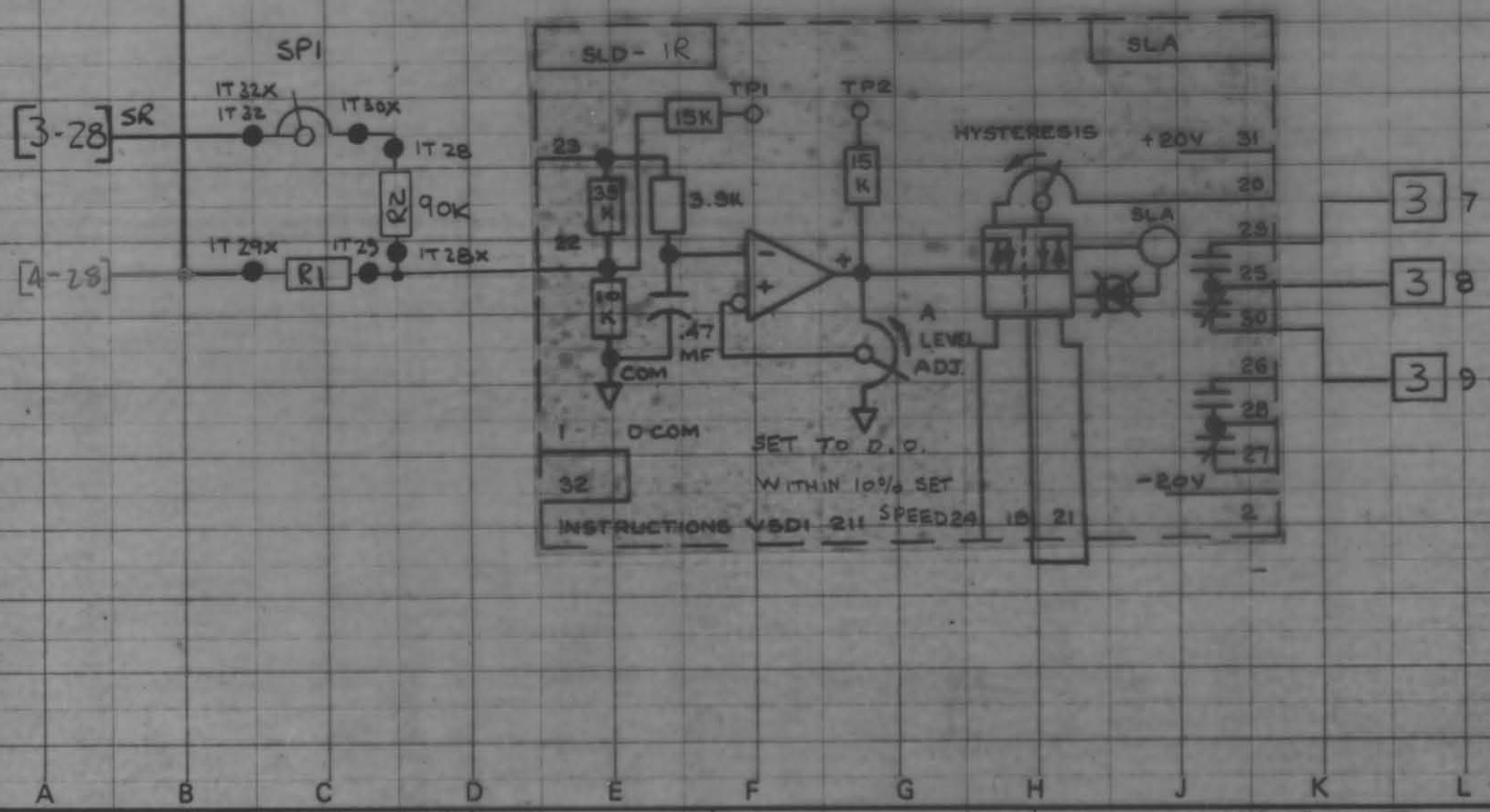
15/20 HP BDC 3034R THYRISTOR DRIVE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
917 N11	902M122BB	5

IDENT DR 4 SH







DR 5 SH 5 CONTD. 6 ELEMENTARY DIAGRAM 902M122BB

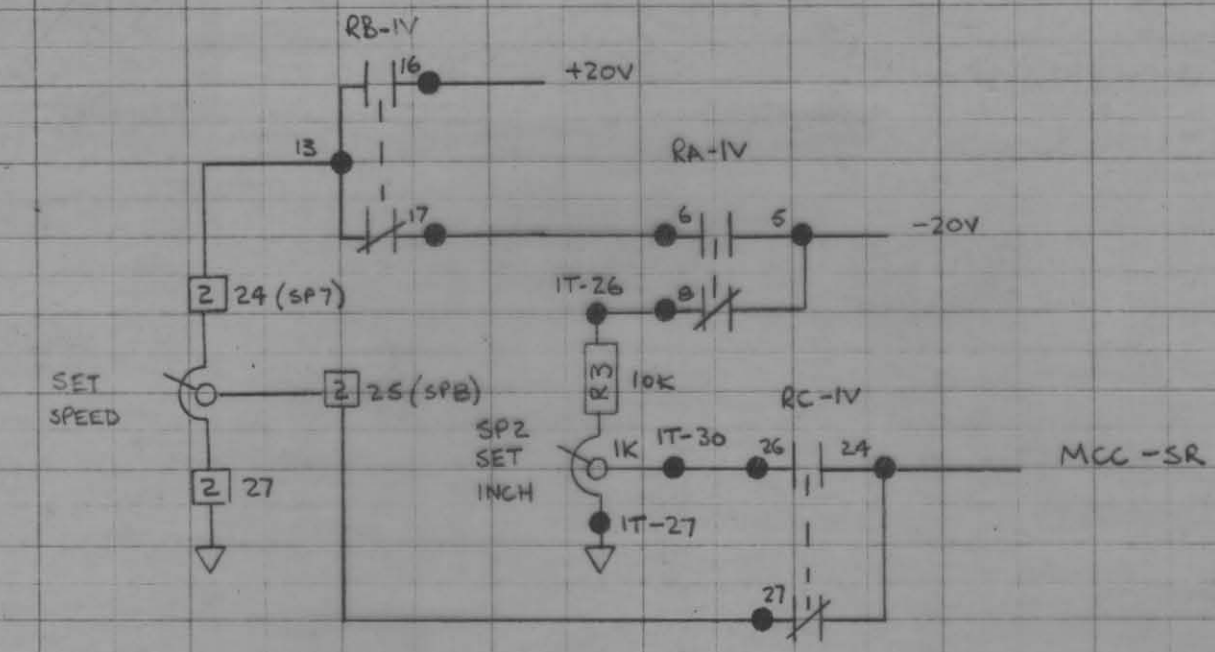
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		10/5/79
						TECHN.
			4			ENG. NGM
			21/3/80			APPD.

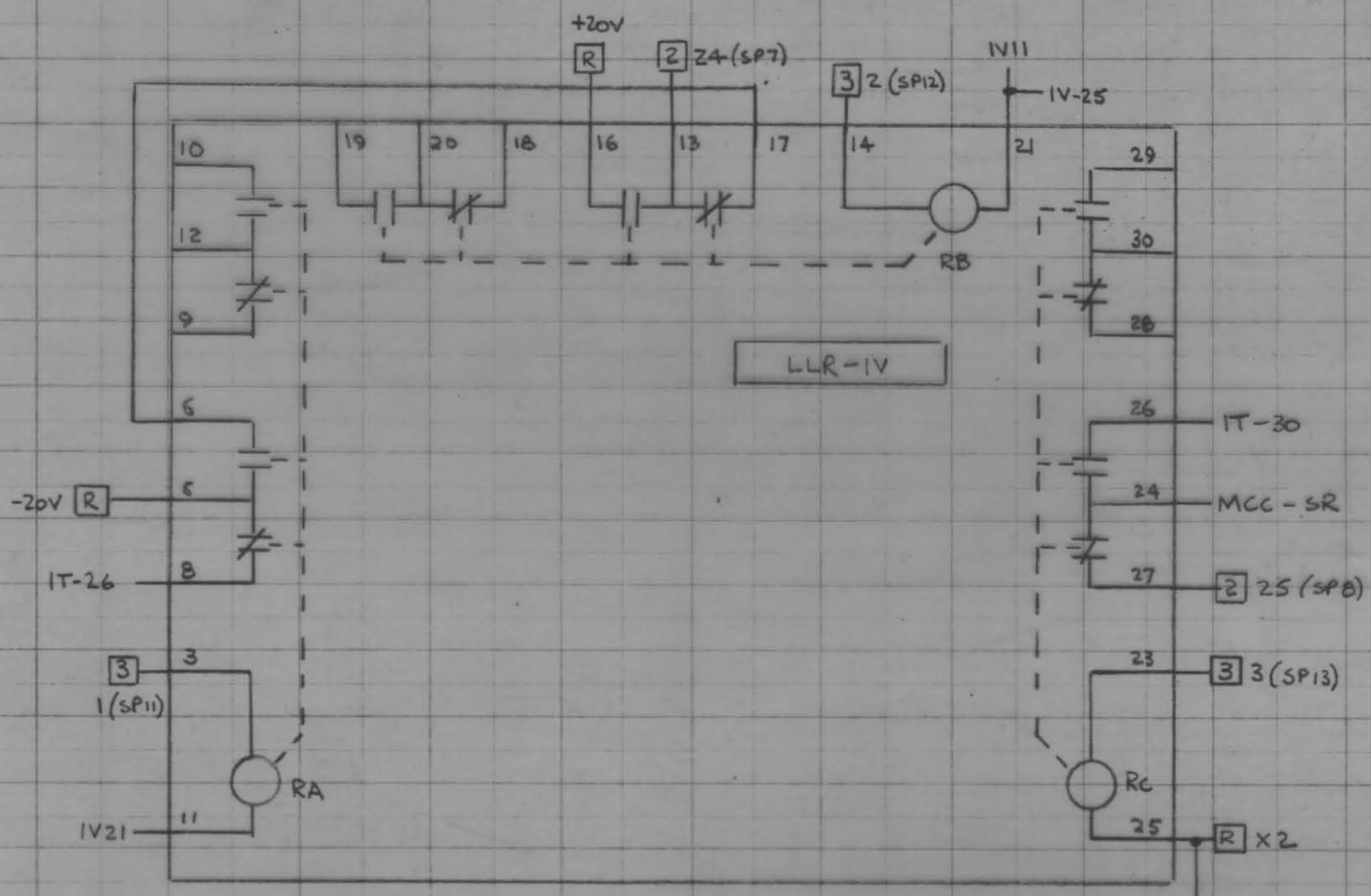
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD
15/20HP BDC 3034R. THYRISTOR DRIVE
SIGNAL LEVEL DETECTORS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
917N11	902M122BB	6

IDENT DR 5 SH 5





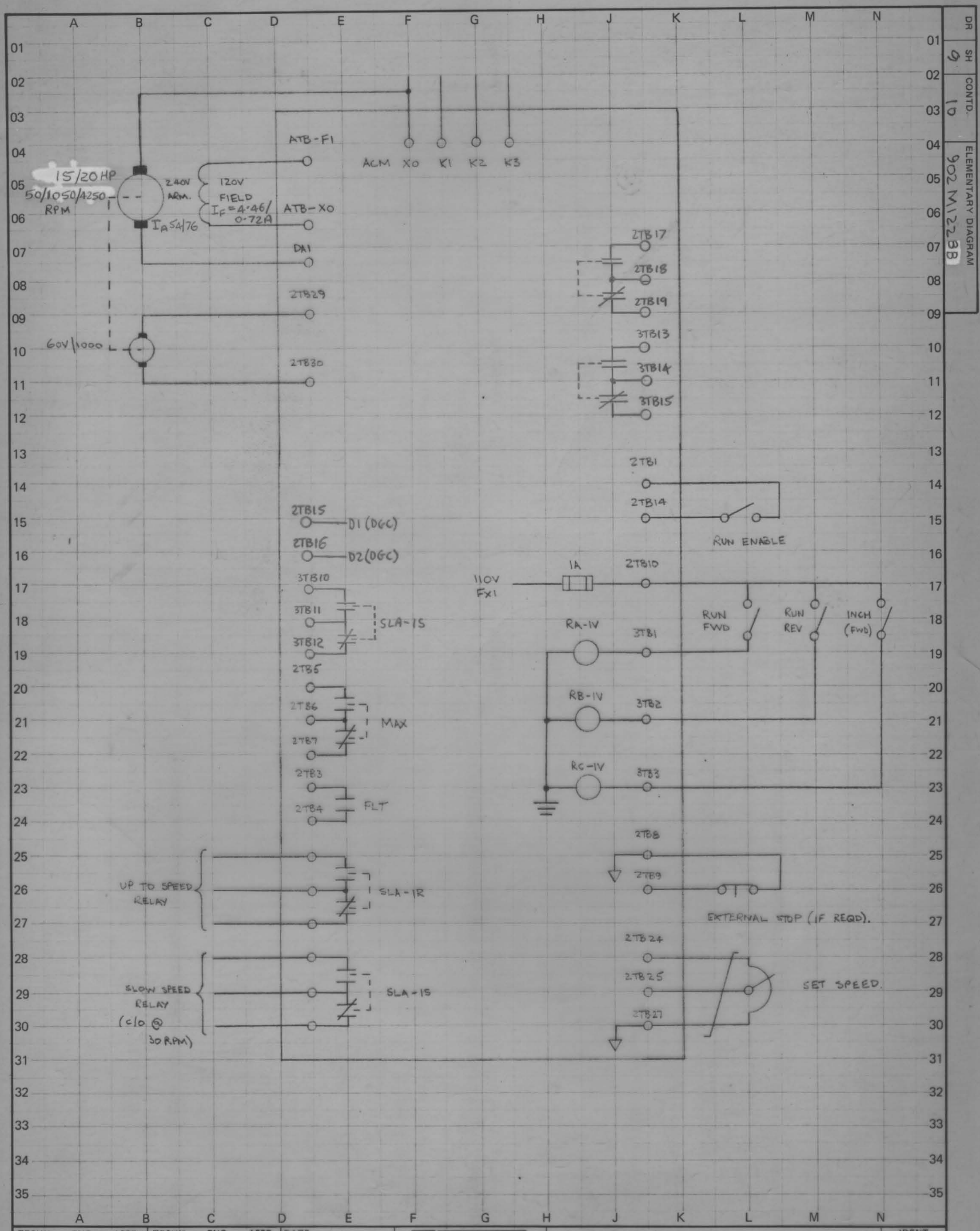
DR 6 SH 7 CONTD. ELEMENTARY DIAGRAM 902M122BB

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 10/5/79
						TECHN.
						ENG. NGM
						APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD
15/20HP BDC 3034R THYRISTOR DRIVE
REFERENCE CIRCUIT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
917 N11	902M122BB	7		6



DR | SH 9 | CONTD. 10 | ELEMENTARY DIAGRAM 902M122BB

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
	NGM			NGM		10/5/79
6 10/6/80			4 21/3/80			TECHN.
						ENG. NGM
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALFRED HERBERT LTD
15/20 HP BDC 3034R THYRISTOR DRIVE
CUSTOMER'S CONNECTIONS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
917N11	902M122BB	10

IDENT | DR | SH 9

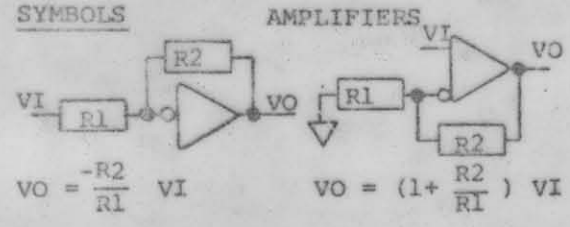
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

HARDWARE ABBREVIATIONS

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

SYMBOLS

AMPLIFIERS



CASE GROUND

VI ( ) ABS VO 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	LCC	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	X	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		IFC	NT-NT2 PT - PT2
110-300vdc		IFC	NT-NT3 PT - PT3
120-300vac	X	IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
.8T 1.7		MF	NONE
1.3 2.8		MF	YB - YD
2.4 5.0	X	MF	YA - YB
4.0 8.0		MF	YA-YB, YC-YD
7.0 13		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

SIGNAL DEFINITIONS AND LOCATIONS

*	CEMF	COUNTER EMF (1B28)
*	CFB	CURRENT FEEDBACK (1C16)
	CMFA	ABSOLUTE VALUE CEMF (1C08)
	CRM	CROSSOVER MODIFY (1D11)
	DFP	DELAYED FIRING POWER (1C25)
*	DR	DRIVER REFERENCE (1C33)
*	EAO	ERROR AMP OUTPUT (1C33)
	EST	EXTERNAL FLT STOP INPUT (1C14)
	FALT	FAULT (1C14)
*	FC	FIELD CURRENT (NS31)
	FDR	FIELD DIAGNOSTIC REFERENCE (1D08)
	FEA	FIELD ECONOMY ADJUST (1C25)
	FF	FIELD FAULT (1B32)
	IABS	MOTOR CURRENT ABSOLUTE (1C09)
	ILA	CURRENT LIMIT ADJUST (1C23)
	IMET	CURRENT SIGNAL FOR METER (1C10)
*	IPU	INITIAL PULSE (1C20)
*	LR	LOCAL REF. FROM DGC (1C33)
*	JOG	JOG SWITCH INPUT (1C23)
*	JOGR	JOG REFERENCE INPUT (1C31)
*	MAC	MAX/MA CONTROL SIGNAL (1C20)
	MSW	MODE SWITCH (1C30)
*	OSC	OSCILLATOR (1C16)
*	PCR	PHASE CONTROL REF. (1C26)
*	PRE	DRIVE PRECONDITION (1C21)
	ØSEQ	PHASE SEQUENCE (1C14)
	RERR	REGULATOR ERROR (1C27)
	RIJ	INTEGRATOR SUMMING JUNCTION (1C27)
	RJ	REGULATOR SUMMING JUNCTION (1C31)
	RRA	REGULATOR RESPONSE ADJUST (1C30)
	RSET	RESET (1C16)
*	RTR	READY TO RUN (1C16)
*	RUN	RUN SWITCH INPUT (1C21)
*	SA-C	PHASE SYN OUTPUT (1C16)
*	SFB	SPEED FEEDBACK (1C20)
	SMET	SPEED SIGNAL FOR METER (1C12)
*	SR	SYSTEM REFERENCE INPUT (1C29)
*	SYS	SYSTEM FAULT TRIP (1C13)
*	TA	OUTPUT FOR TACHO TRIP ADJUST (1C20)
	TF	TACHO FAULT (NS28)
*	TFB	TACHOMETER FEEDBACK (1C20)
	TFR	AC TACHO FREQUENCY OUTPUT (1C13)
*	TR	TIMED REFERENCE (1C33)
*	VFB	VOLTAGE FEEDBACK (1C19)
*	WFR	WEAK FIELD REFERENCE (1C20)

(* - 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.	DATE
C.W.H.			30-4-81
C.W.H.			TECHN. DM
			ENG.
			APPD.

3 AS SHIPPED 13-8-81

2 SEE SHEET 00 27-5-81

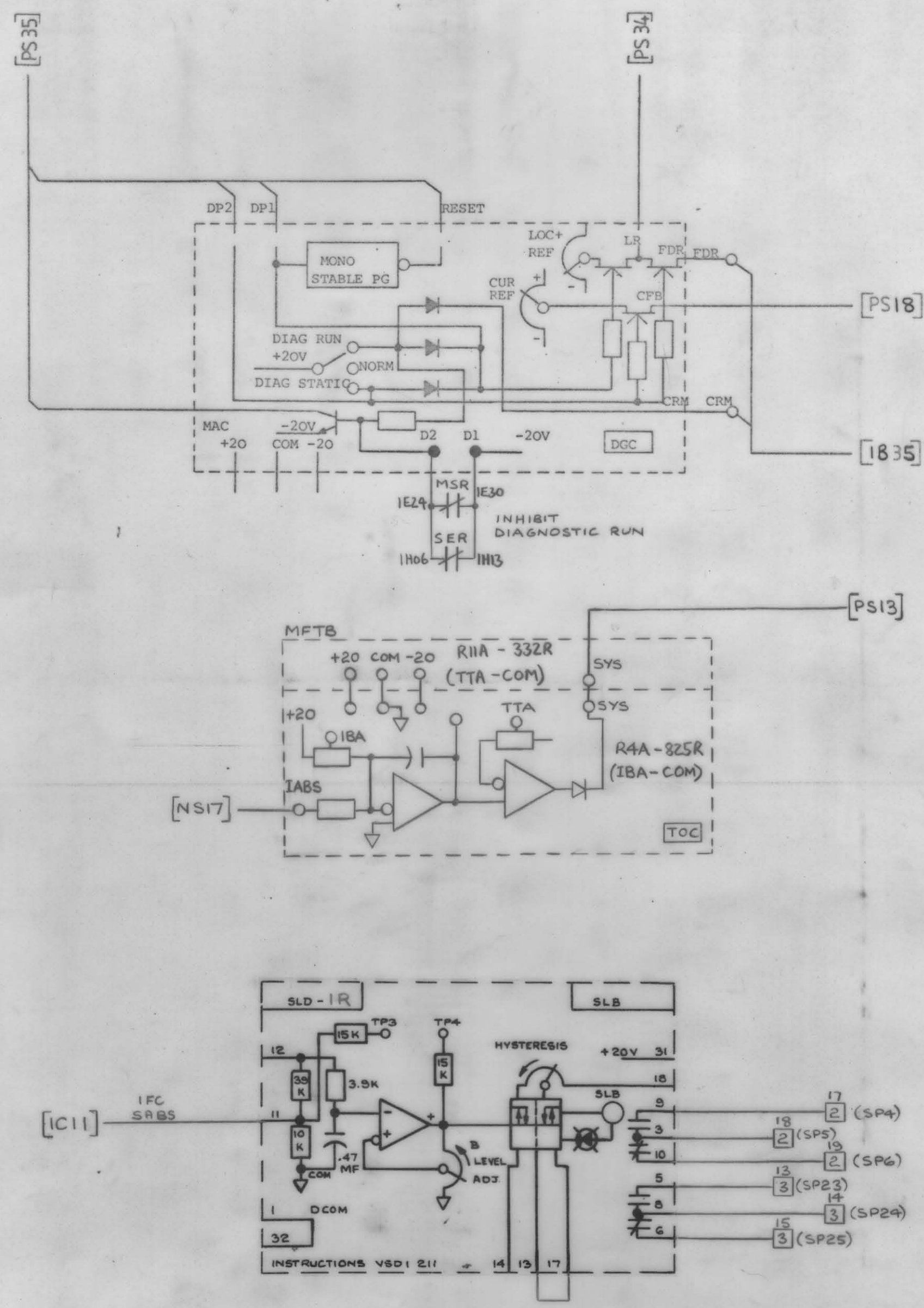
ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND

ALFRED HERBERT ALIO LATHE

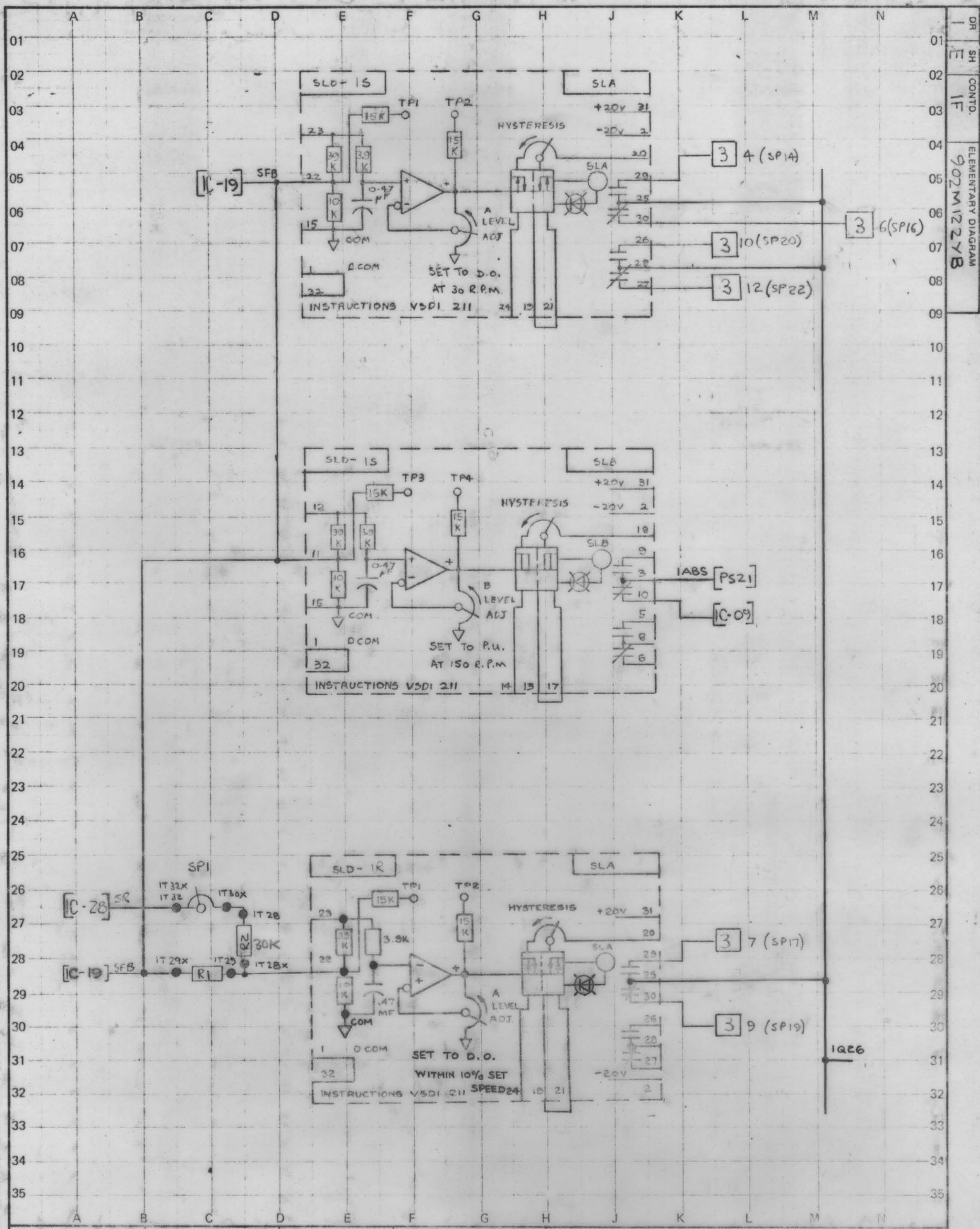
15 HP BDC 3064R THYRISTOR DRIVE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD	IDENT	DR	SH
113N07	902M122YB	1B	△	1	A

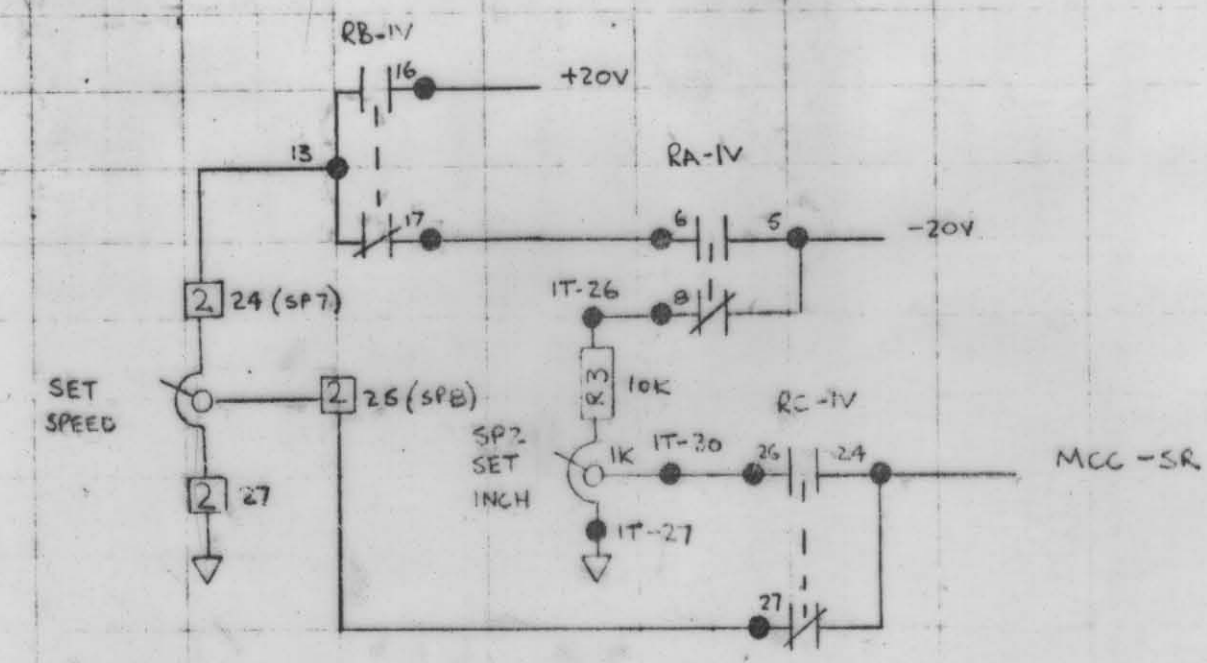
DR 1 | SH D | CONTD. 1E | ELEMENTARY DIAGRAM 902M122YB

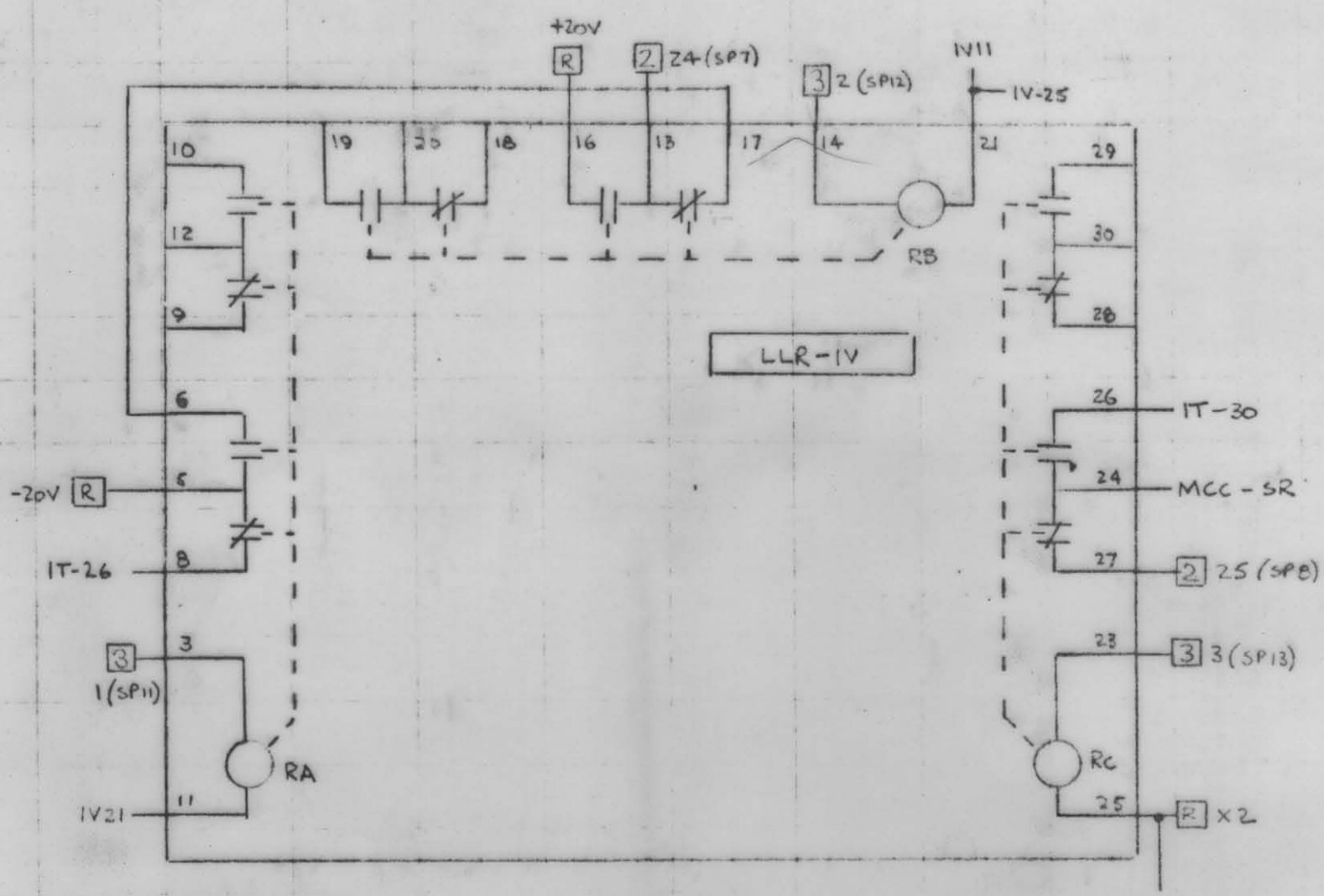


TECHN. ENG. APPD.	TECHN. C.WH. ENG. APPD.	DATE 30-4-81	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	ALFRED HERBERT ALIO LATHE 15HP BDC 3064R THYRISTOR DRIVE	IDENT
	3 SEE SHEET 00	TECHN. DM			
	13-8-81	ENG.			
		APPD.		GO NUMBER 113N07 / ELEMENTARY DIAGRAM 902M122YB / CONTD. 1E	DR 1 / SH D

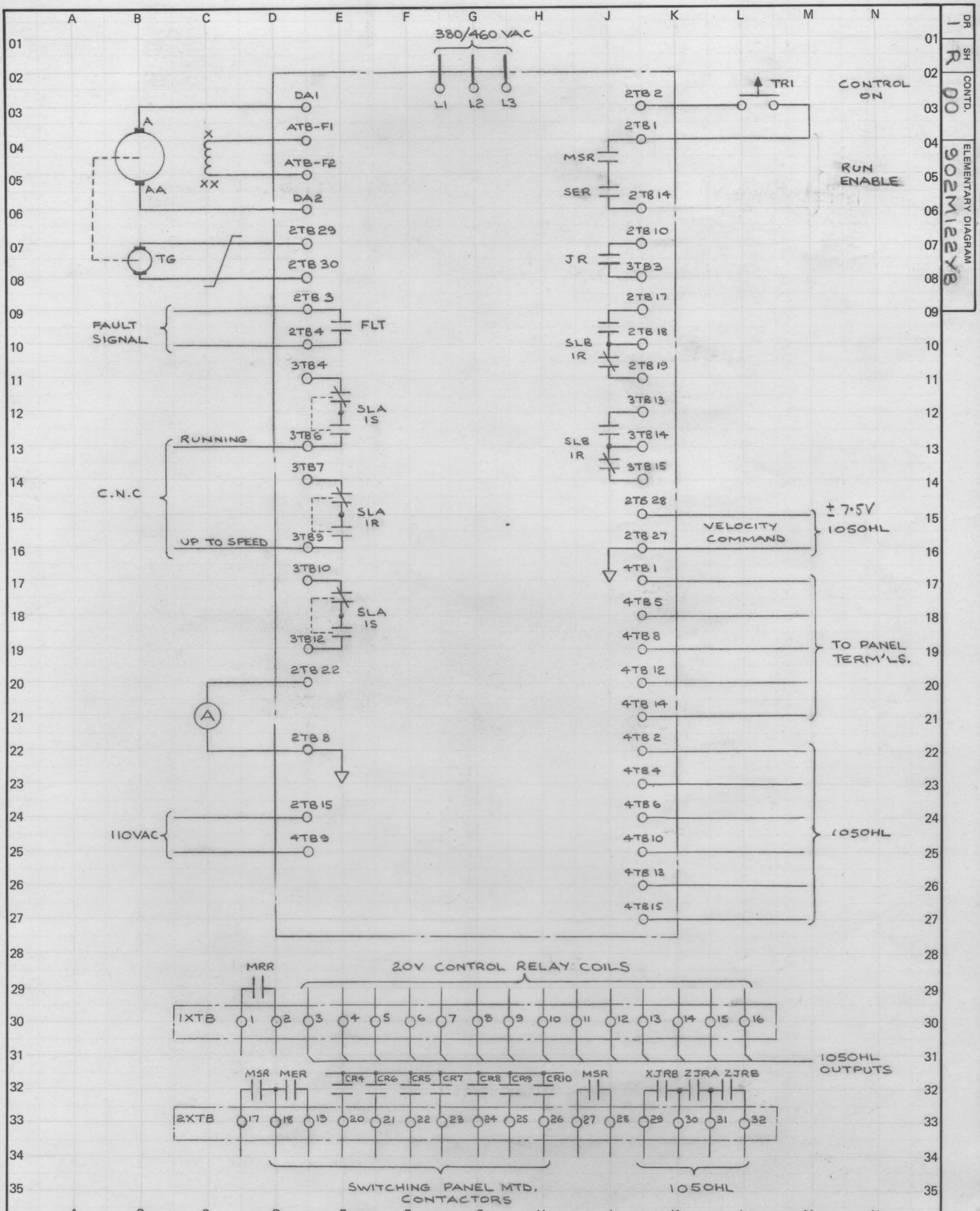


TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE	ALLENWEST	AL10 LATHE		IDENT	
	C.W.H	1-5-81		15 HP RDC 3064R THYRISTOR DRIVE			
3	SEE SHEET 00	TECHN. D.M.	Simplex	SIGNAL LEVEL DETECTORS.		DR 1	SH E
	13-8-81	ENG.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER 113N07	ELEMENTARY DIAGRAM 902M122YB	CONTD. 1F	
		APPD.					





TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 5-5-81	ALLENWEST Simplex	AL10 LATHE 15 HP BDC 3064R THYRISTOR DRIVE REFERENCE CIRCUIT.			IDENT
		TECHN. D.M					DR 1 / SH F
		ENG.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER 113N07	ELEMENTARY DIAGRAM 902M122YB	CONTD. 1G	
		APPD.					



DR	SH	CONTD.	ELEMENTARY DIAGRAM
1	R	00	902M122YB

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			CWH			8-5-81
		3	SEE SHEET 00			TECHN. DM
			13-8-81			ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

ALIO LATHE

CONNECTIONS TO 3064R

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
113N07/01	902M122YB	00

IDENT

DR	SH
1	R

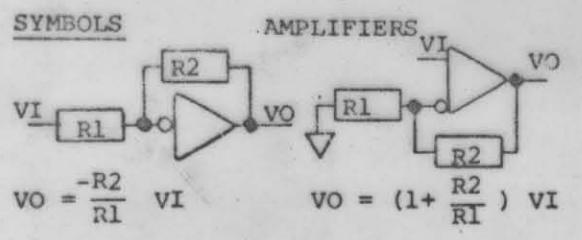
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

HARDWARE ABBREVIATIONS

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

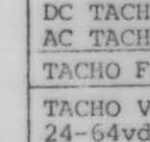
SYMBOLS

AMPLIFIERS



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

CASE GROUND

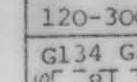


VO = SIGN () X ABSOLUTE VALUE OF VI

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		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	HZA - PHA
IOC-400%			(NONE)
-500%		IFC	I - IHI
-300%	X	IFC	I-ILO
SR5 - 9v			NONE)
9 - 20v	X	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		IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
Max AMPS .8 1.7		MF	NONE
1.3 2.8		MF	YB - YD
2.4 5.0		MF	YA - YB
4.0 8.0		MF	YA-YB, YC-YD
7.0 13		MF	YA - YC
13 25		MF	YA-YC, YB-YD
L/R<.25S	X	MFC	QA - QB
INH RUN		DGC	D1-D2 (IF USED)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX

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)
	FLA	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.

DR 01 SH 02 CONTD. ELEMENTARY DIAGRAM 902M126CR

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						18/12/81
						TECHN.
						ENG. NGM
						APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND

BDC 3064R, 38 KW

ALFRED HERBERT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
147N00	902M126CR	02

IDENT DR SH 01

DR 04 | SH 05 | CONTD. | ELEMENTARY DIAGRAM 902M126CR

[PS35]

[PS34]

DP2 DP1 RESET

MONO STABLE PG

LOC+ REF

LR FDR FDR

CUR REF

CFB

[PS35]

DIAG RUN +20V

NORM

DIAG STATIC

CRM CRM

MAC +20 COM -20 -20V

D2 D1 -20V

DGC

[0232]

(SP2) (SP3)

15 [2] [2] 16

[PS13] IFC(SYS)

MFTB

+20V COM -20V

SYS

+20V COM -20V

IXT TTA SYS

(IF USED)

R3A (+20V-IBA)

+20V IBA +20V

R4A 1K (IBA-COM)

IABS OA1 OA1

R10A (+20V-ITA)

TOC

R11A 560R (TTA-COM)

STALL DETECTOR

SLD-1S SLB

TP3 TP4

15K

12 39K 3.9K 15K

HYSTERESIS +20V 31

18

SLB

9

[PS18] MCC(SFB)

11 10K .47 MF COM

3

10

IFC(IABS) [PS09]

B LEVEL ADJ

5

8

6

[NS05]

1 DCOM

32

INSTRUCTIONS VSD1 211 14 13 17

P/U 150 RPM

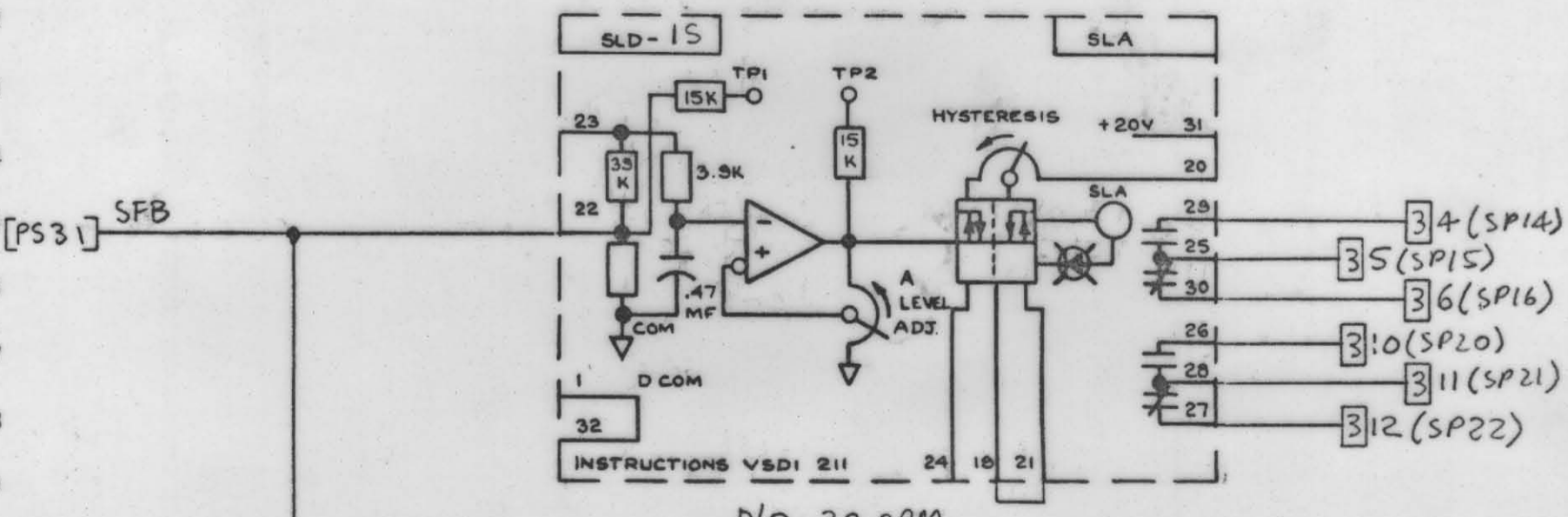
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 18/12/81
						TECHN.
						ENG. NGM
						APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

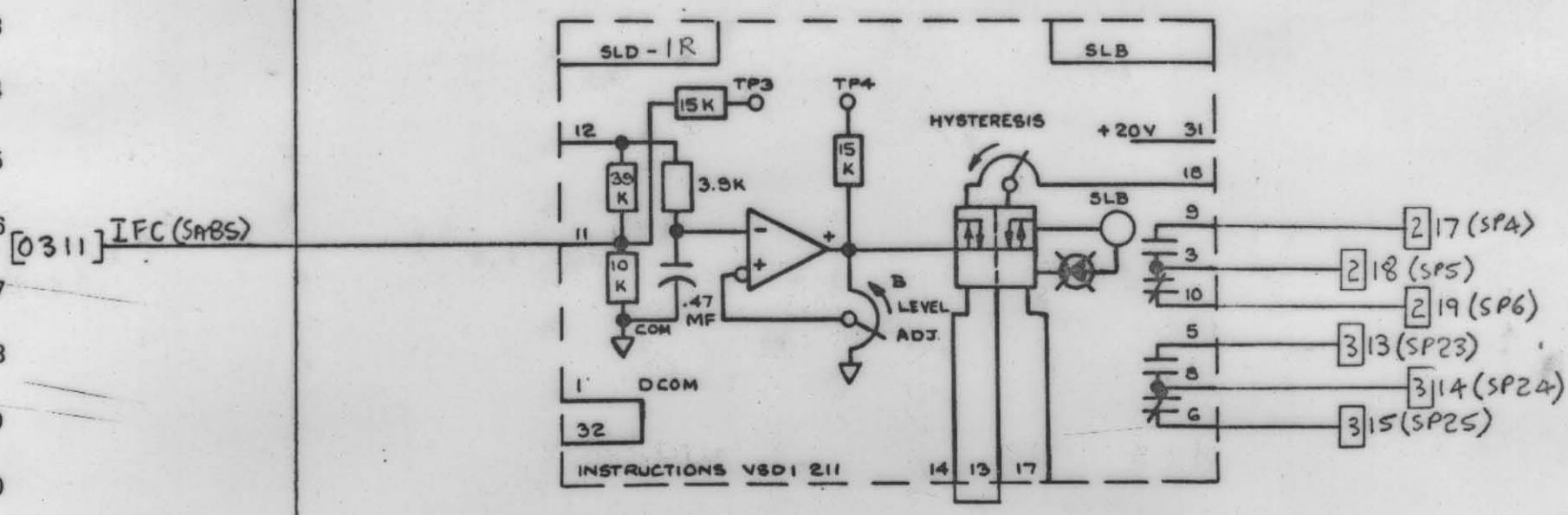
BDC 3064R, 38KW

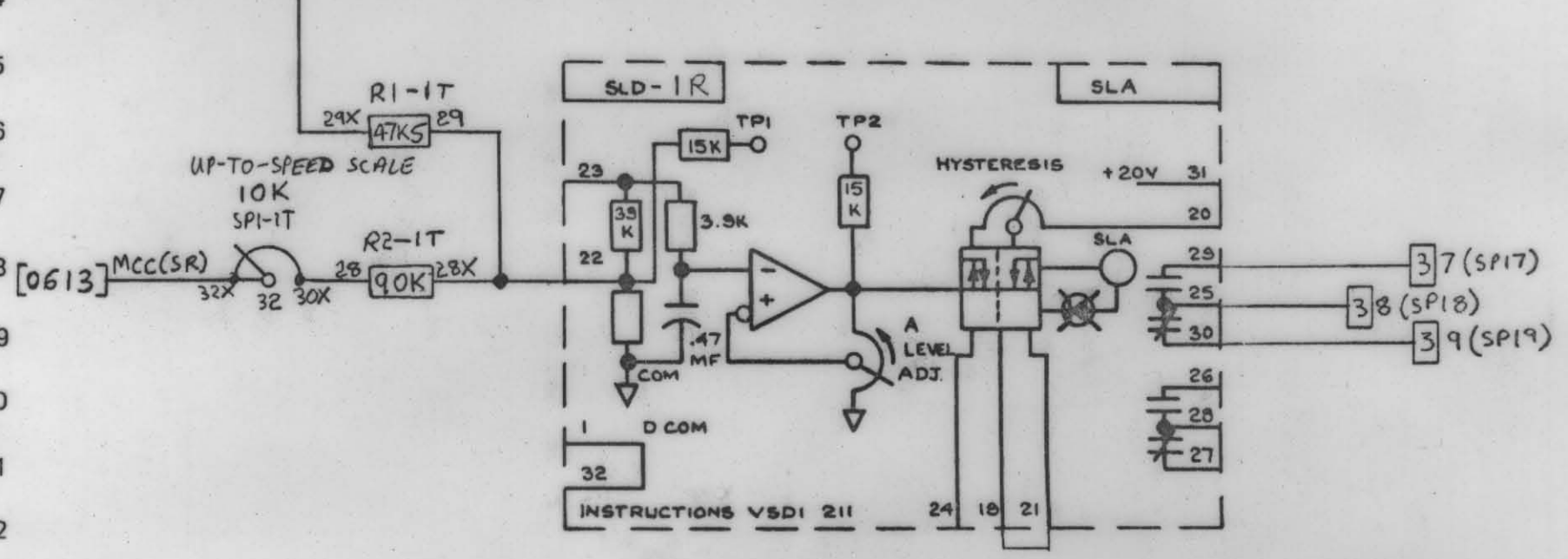
ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD	IDENT DR	IDENT SH
147N00	902M126CR	05		04



D/O 30 RPM





D/O WITHIN 10% SPEED

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 18/12/81
						TECHN.
						ENG. NGM
						APPD.

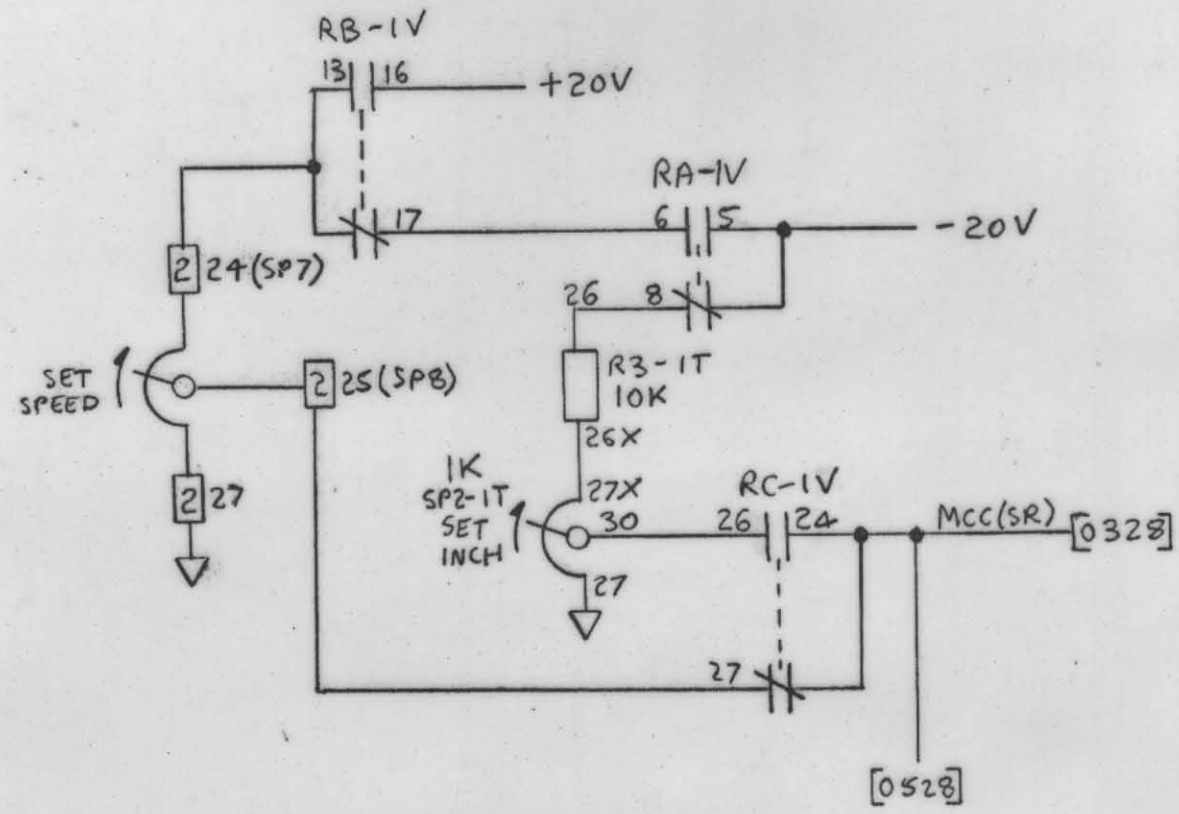
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

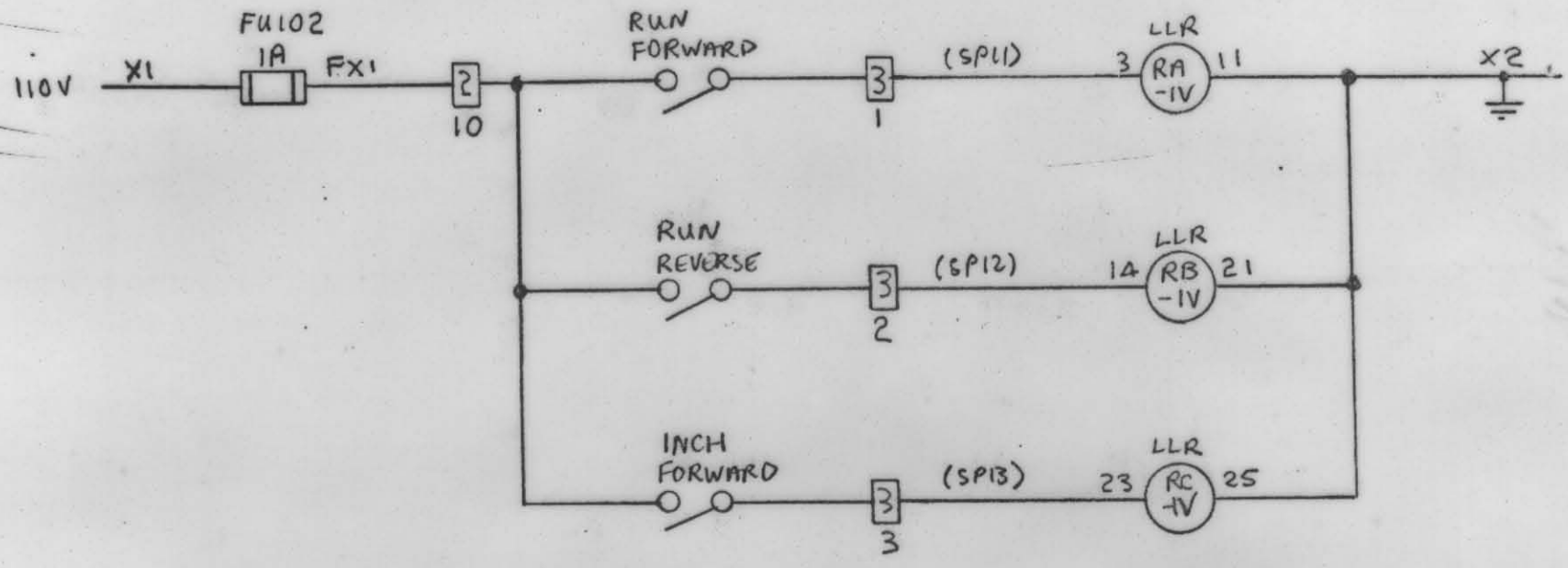
BDC 3064R, 38KW

ALFRED HERBERT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
147N00	902M126CR	06		05

DR | SH 06 | CONTD. 07 | ELEMENTARY DIAGRAM 902M126CR





TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 18/12/81
						TECHN.
						ENG. NGM
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 38KW

ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
	902M126CR	07		06

MOTOR DATA (GEC MANUFACTURE).

KW 1-9/38/38 CONTINUOUS

KW 2-85/57/57 FOR 15MINS.

RPM 50/1000/3200

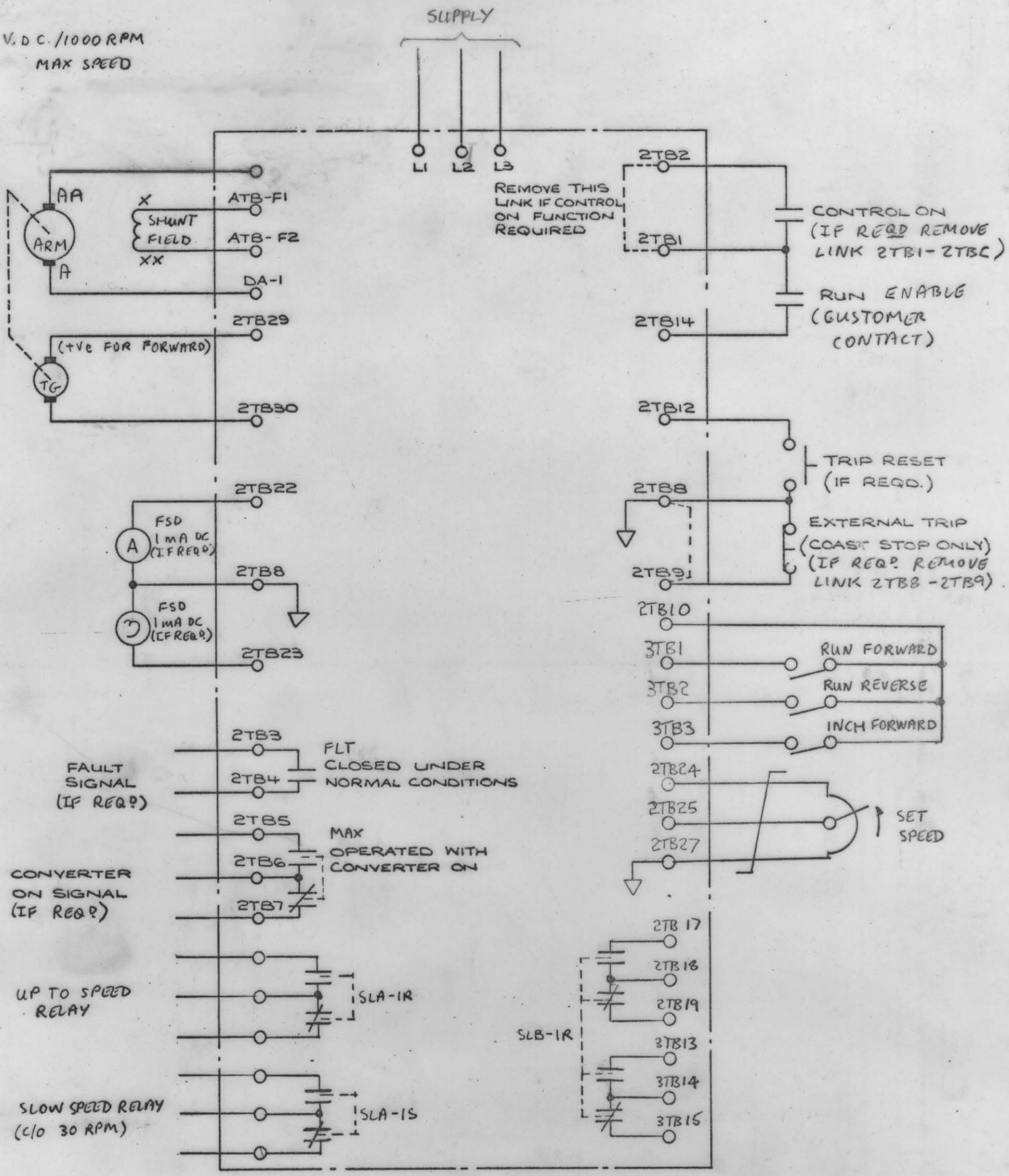
V_A 400 VOLTS

I_A 106 Amp (159 for 15mins)

V_F 240 VOLTS

I_F

TACHO V.D.C./1000 RPM MAX SPEED



DR	SH	CONTD.	ELEMENTARY DIAGRAM
	09	10	902M126CR

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						18/12/81
						TECHN.
						ENG. NGM
						APPD.

ALLENWEST

Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 38KW

ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
147N00	902M126CR	10

IDENT

DR SH 09

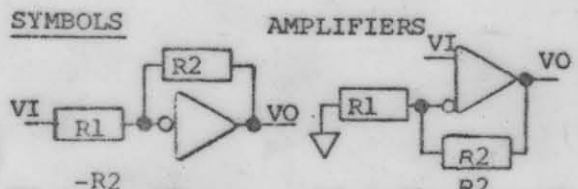
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

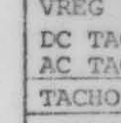
SYMBOLS

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 CRIMPED IN WIRE HARNESS

FUNCTION	USE	LOC	JUMPERS
60Hz		MCC MFC	AA-AS, BA-BS, CA-CS ZA-ZB (IF USED)
50Hz	X	IFC IFC IFC MCC	0·0047μF RT1-RT2 0·0047μF RT2-RT3 0·0047μF RT3-RT1 AA-AF, BA-BF, CA-CF
IOC-400% -500% -300%	 X	 IFC IFC	NONE I-IHI I-ILO
SR5 - 9v 9 - 20v	 X	 MCC	(NONE) SRH-COM
JOGR 10v 20V	 	 MCC	(NONE) JH - COM
LT.3-7sec 2 - 60sec	X 	 MCC	(NONE) 332ΩFROM LT1TOCOM
VREG DC TACHO AC TACHO	 X 	IFC MCC	NT-CEMF, CC-COM (NONE) AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V. 24-64vdc 27-71vac 60-160vdc 66-177vac 110-300vdc 120-300vac	 X 	 IFC IFC IFC IFC IFC IFC	 NT-NT1, PT-PT1 NT-NT1, PT-PT1 NT-NT2, PT-PT2 NT-NT2, PT-PT2 NT-NT3, PT-PT3 NT-NT3, PT-PT3
G134 G256 Max AMPS .8 1.7 1.3 2.8 2.4 5.0 4.0 8.0 7.0 13 13 25	 X 	 MFC MFC MFC MFC MFC MFC	 NONE YB-YD YA-YB YA-YB, YC-YD YA-YC YA-YC, YB-YD
L/R < .25S	X	MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)

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.

TECHN.	ENG.	APPD.			
			TECHN.	ENG. NGM	APPD.
			DATE	21/1/81	
		2	AS SHIPPED SEE SHEET 10	TECHN.	
				ENG. NGM	
			14/5/81	APPD.	

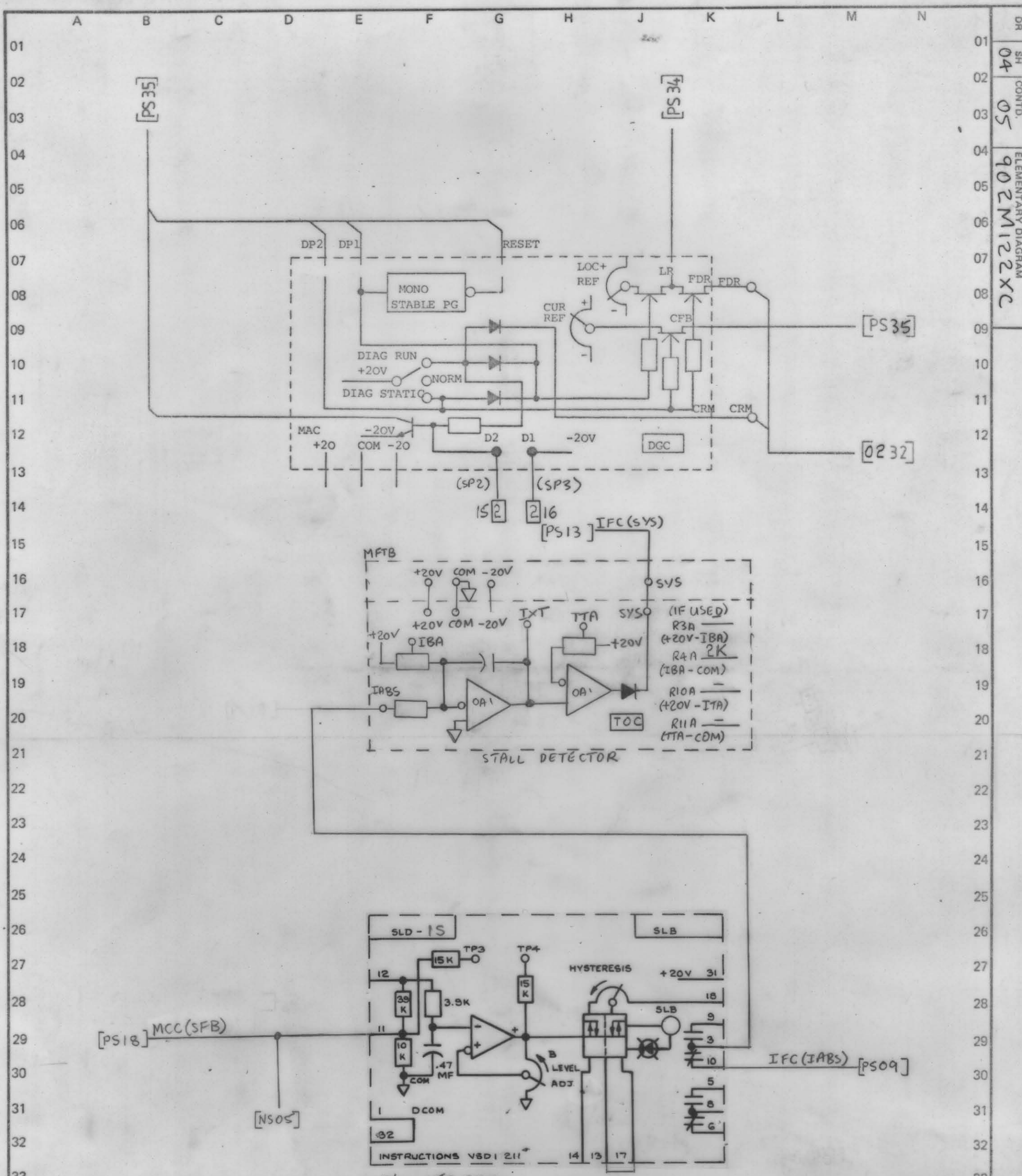
ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R, 50HP

ALFRED HERBERT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
103N07	902M122XC	02			01

DR | SH 04 | CONTD. 05 | ELEMENTARY DIAGRAM 902M122XC



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			NGM			23/1/81
						TECHN.
		2				ENG. NGM
			14/5/81			APPD.

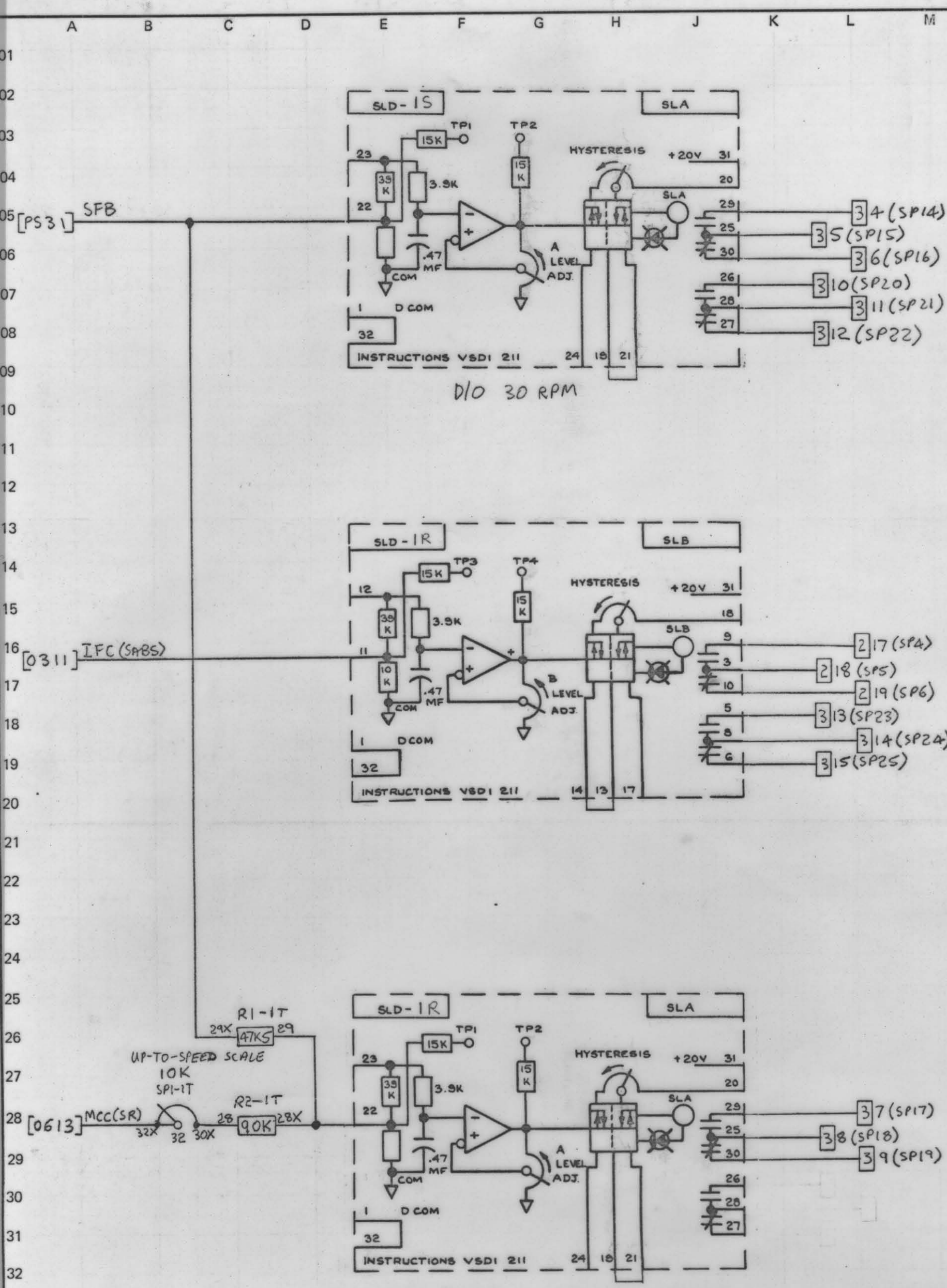
Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 303aR, 50HP

ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
103N07	902M122XC	05			04

DR | SH 05 | CONTD. 06 | ELEMENTARY DIAGRAM 902M122XC



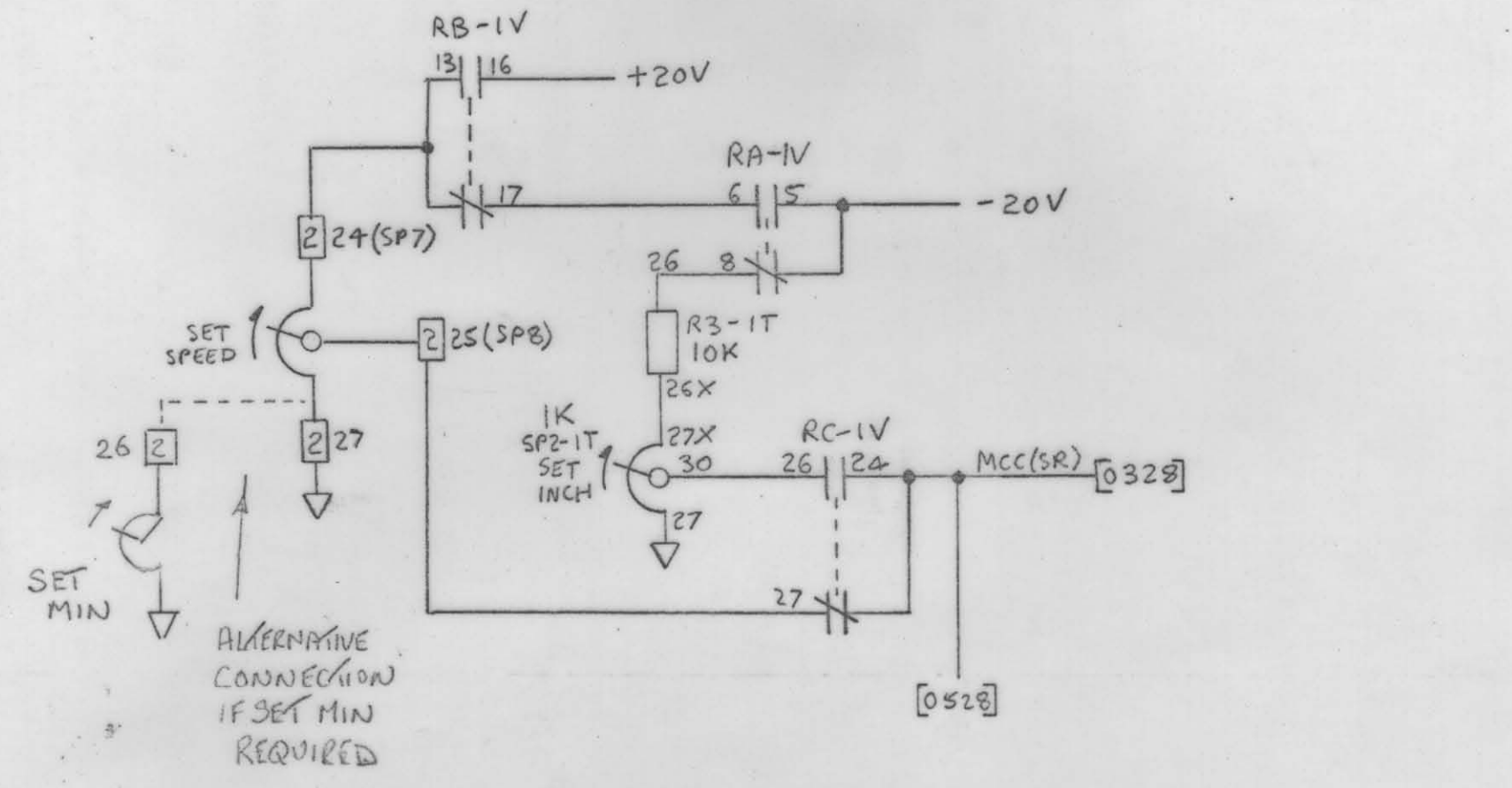
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		23/1/81
			2			TECHN.
						ENG. NGM
				14/5/81		APPD.

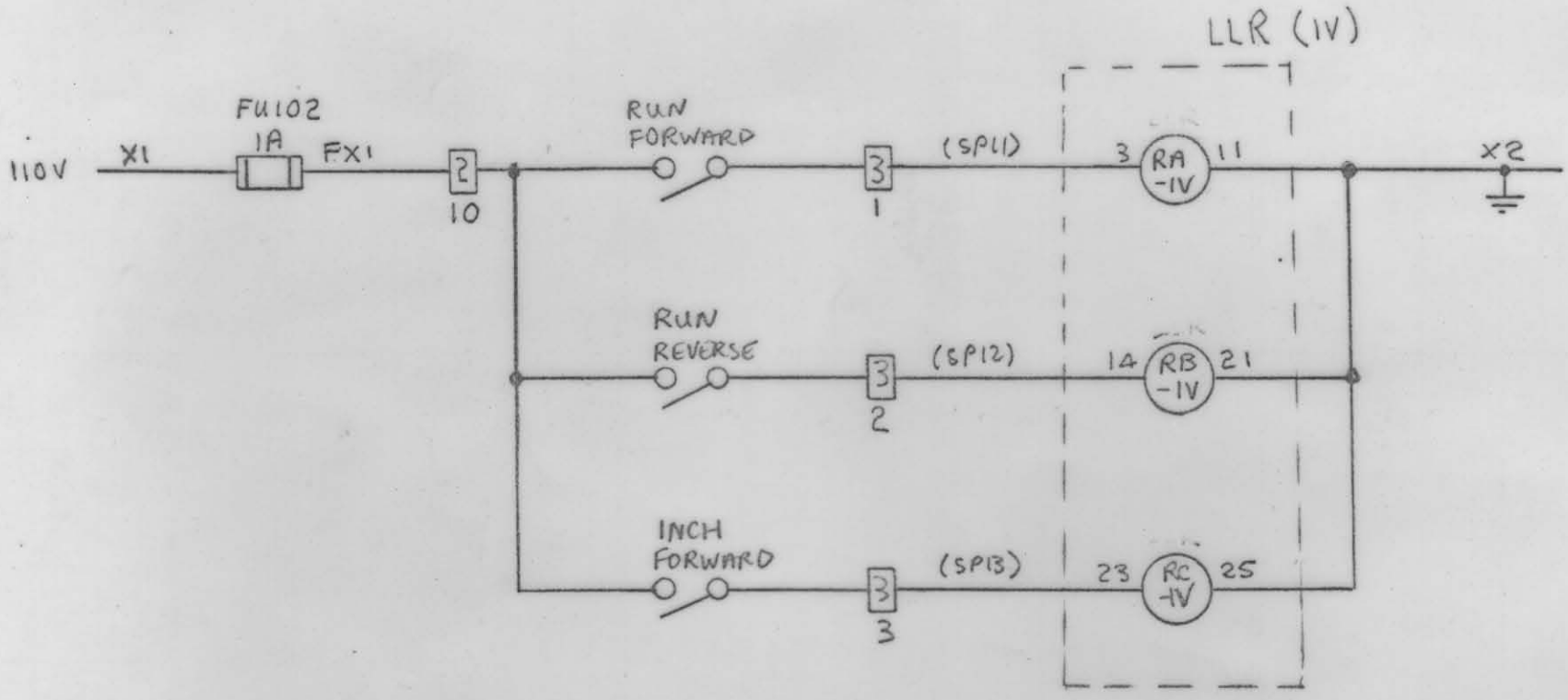
ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R, 50HP

ALFRED HERBERT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
103N07	902M122XC	06			05





TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 23/1/81
						TECHN.
						ENG. NGM
						APPD.

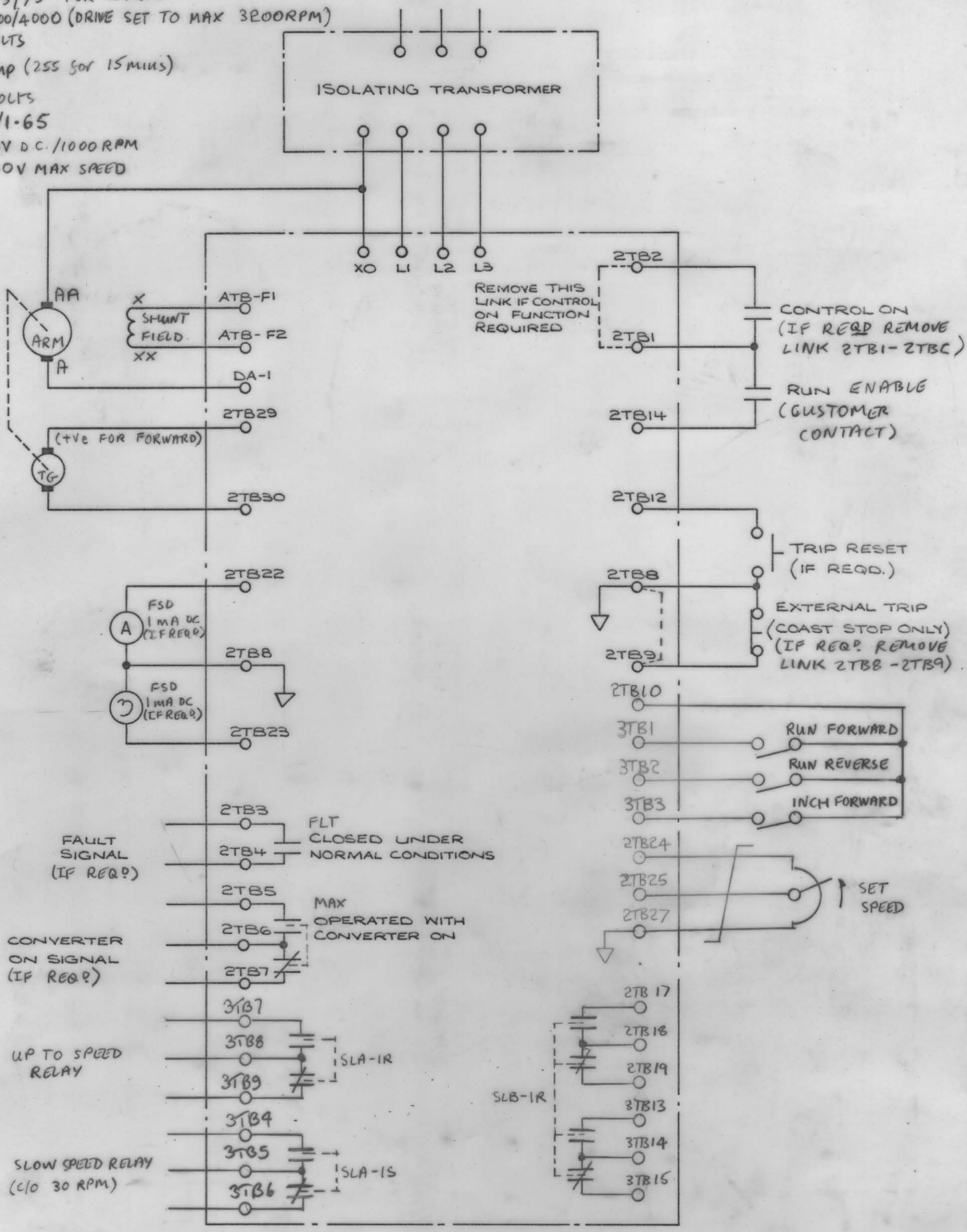
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R, 50HP
ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
103N07	902M122XC	07

IDENT | DR | SH 06

MOTOR DATA (GEC MANUFACTURE).
HP 2·5/50/50 CONTINUOUS
HP 3·75/75/75 FOR 15 MINS.
RPM 50/1000/4000 (DRIVE SET TO MAX 3200RPM)
V_A 240 VOLTS
I_A 173 Amp (255 for 15 mins)
V_F 120 VOLTS
I_f 6·63/1·65
TACHO 20V D.C./1000 RPM
80V MAX SPEED



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		26/1/81
			2			TECHN.
						ENG. NGM
				14/5/81		APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R, 50HP
ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
103N07	902M122XC	10		09

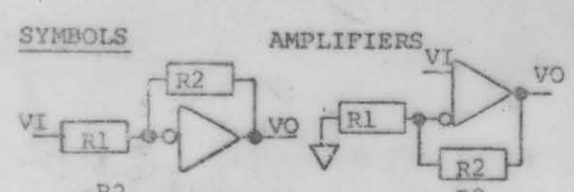
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

HARDWARE ABBREVIATIONS

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

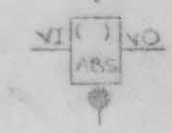
SYMBOLS

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		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	HZA - PHA
IOC-400%	X		(NONE)
-500%		IFC	I - IHI
-300%		IFC	I-ILO
SR5 - 9v			NONE)
9 - 20v	X	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		IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
MAX AMPS .8 1.7		MF	NONE
1.3 2.8		MF	YB - YD
2.4 5.0		MF	YA - YB
4.0 8.0		MF	YA-YB, YC-YD
7.0 13		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
SUPPLY LOSS	X	MCC	DFP - DM1
CURRENT F/B	X	ACC	(R112) CW - CX
CURRENT F/B	X	ACC	(R113) CY - CZ

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 (0228)
	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.

FUNCTION	USE	LOC	JUMPERS
TOC CALIB.	X	TOC	(R4A) IBA - COM
TOC CALIB.	X	TOC	(R11A) TTA - COM

DR 01 SH 02 CONTD. ELEMENTARY DIAGRAM 902M122YR

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 30-6-81
		TECHN.
		ENG. CWH
		APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 38KW

ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	SH
125N01	902M122YR	02		01

DR | SH 04 | CONTD. 05 | ELEMENTARY DIAGRAM 902M122YR

[PS35]

[PS34]

DP2 DP1 RESET

MONO STABLE PG

LOC+ REF

LR FDR FDR

CUR REF

CFB

[PS18]

DIAG RUN +20V

NORM

DIAG STATIC

CRM CRM

MAC +20

-20V COM -20

D2 D1 -20V

DGC

[0235]

SP2 SP3

15 2 2 16

IFC(SYS)

IMFTB +20V COM -20V

SYS

+20V COM -20V

IXT TTA SYS

+20V IBA

+20V

R3A (+20V-IBA)

R4A 1K (IBA-COM)

IABS IABS

OAI OAI

R10A (+20V-TTA)

TOC

R11A 560R (TTA-COM)

STALL DETECTOR

SLD - 1Q

SLB

TP3 TP4

15K 15K

HYSTERESIS

+20V 31

12 18

39K 3.9K

SLB

9

[PS 19] MCC(SFB) 11 3

10K 10

.47 MF

B LEVEL ADJ.

IFC(IABS) [PS 08]

COM 5

[NS05] 1 DCOM 8

32 6

INSTRUCTIONS VSD1 211 14 13 17

P/u 150 RPM

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 30-6-81
						TECHN.
						ENG. CWH
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 38KW

ALFRED HERBERT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
125N01	902M122YR	05			04

DR 05 SH 06 CONTD. 902M122YR ELEMENTARY DIAGRAM

[PS32] SFB

SLD - 1Q

SLA

TP1 15K

TP2 15K

23 39K 22 3.9K .47 MF COM

HYSTERESIS

+20V 31

20

SLA

A LEVEL ADJ.

1 D COM

32

INSTRUCTIONS VSD1 211

24 18 21

29 SP14 → [3] 4

25 SP15 → [3] 5

30 SP16 → [3] 6

26 SP20 → [3] 10

28 SP21 → [3] 11

27 SP22 → [3] 12

D/O 30 RPM

R10-1R 12 47K5 12X

UP TO SPEED ADJUST

MCC (SR) 32X 32 30X 10K SP1-1R

[0702]

R11-1R 10 90K 10X

SLD - 1P

SLA

TP1 15K

TP2 15K

23 39K 22 3.9K .47 MF COM

HYSTERESIS

+20V 31

20

SLA

A LEVEL ADJ.

1 D COM

32

INSTRUCTIONS VSD1 211

24 18 21

29 SP17 → [3] 7

25 SP18 → [3] 8

30 SP19 → [3] 9

26

28

27

D/O WITHIN 10% SPEED

[0310] IFC (SABS)

SLD - 1P

SLB

TP3 15K

TP4 15K

12 39K 11 3.9K 10K .47 MF COM

HYSTERESIS

+20V 31

18

SLB

B LEVEL ADJ.

1 DCOM

32

INSTRUCTIONS VSD1 211

14 13 17

9 SP4 → [2] 17

3 SP5 → [2] 18

10 SP6 → [2] 19

5 SP23 → [3] 13

8 SP24 → [3] 14

6 SP25 → [3] 15

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 30-6-81
						TECHN.
						ENG. CWH
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 38KW

ALFRED HERBERT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
125N01	902M122YR	06

IDENT DR 05 SH

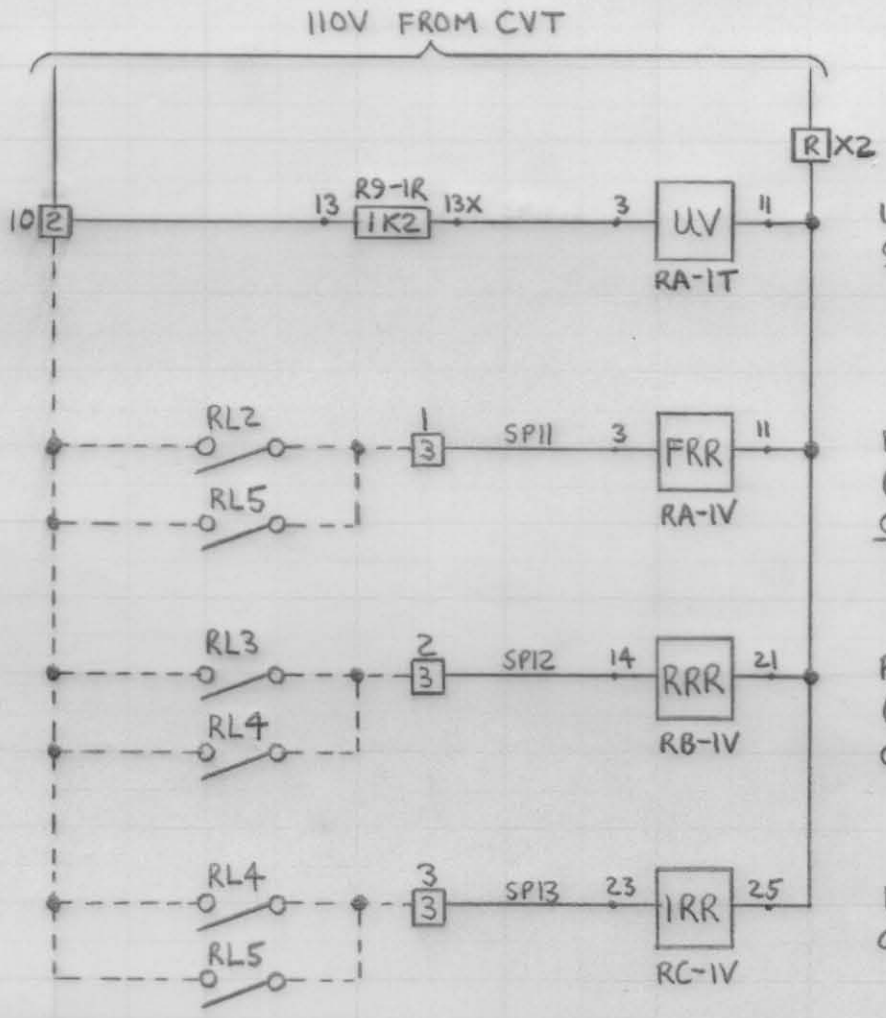
DR | SH 06 | CONTD. 07 | ELEMENTARY DIAGRAM 902M122YR

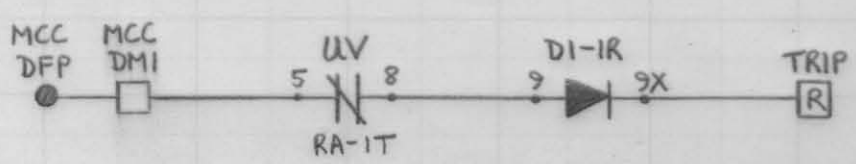
RL2 - FORWARD RELAY

RL3 - REVERSE RELAY

RL4 - INCH FORWARD RELAY

RL5 - INCH REVERSE RELAY





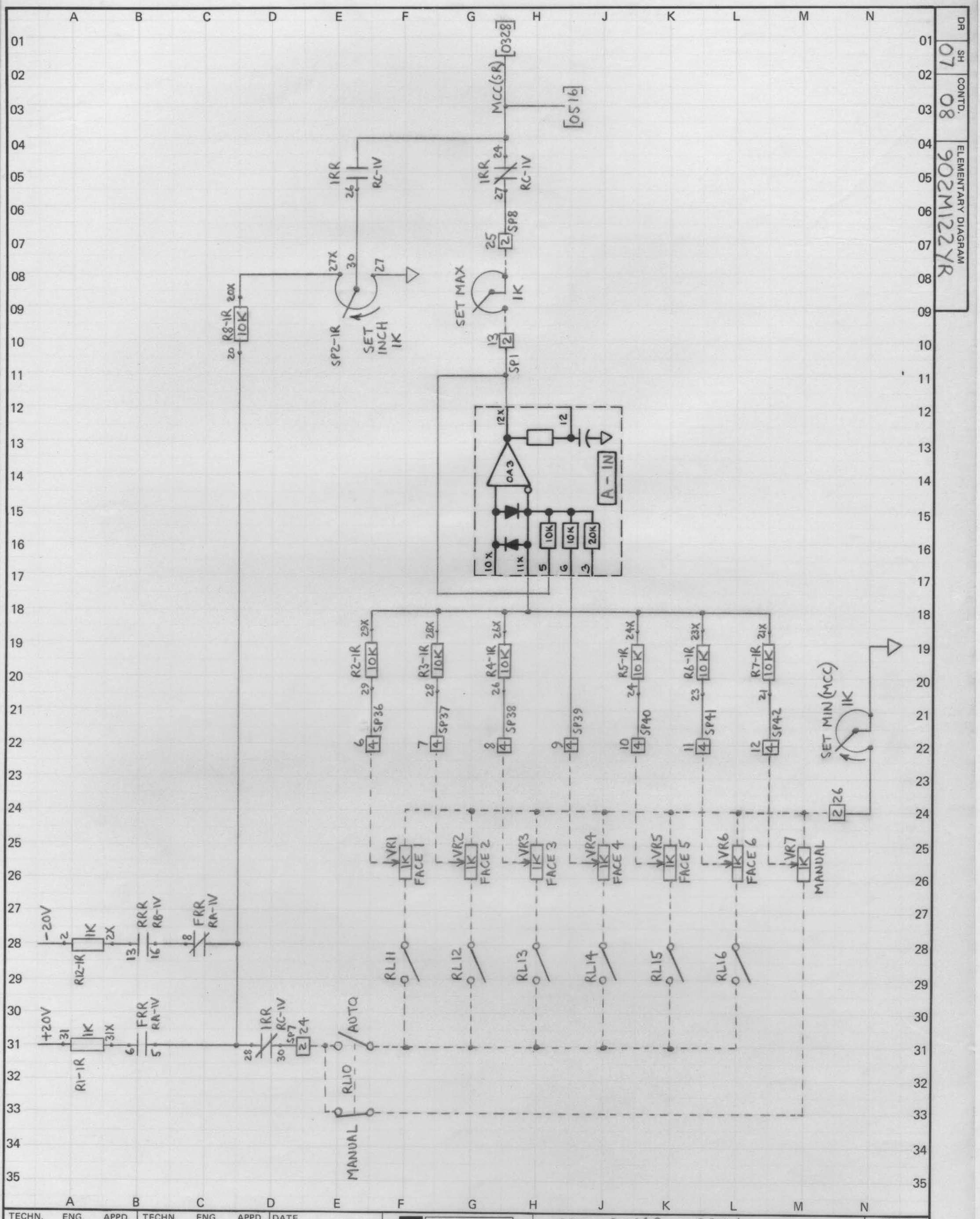
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 30-6-81	TECHN.	ENG. CWH.	APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

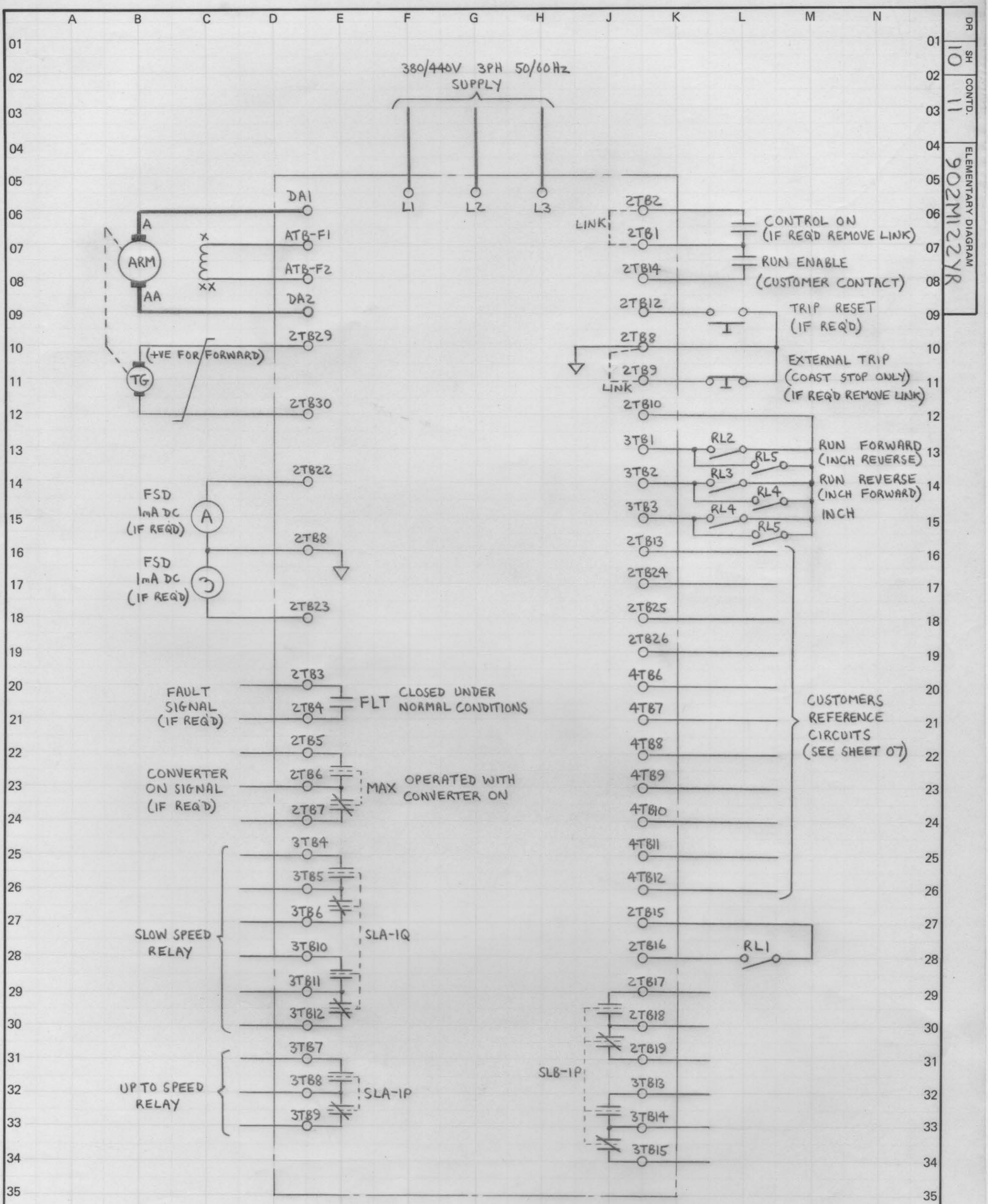
BDC 3064R 38KW

ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
125N01	902M122YR	07			06



TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 30-6-81	ALLENWEST Simplex	BDC 3064R 38KW	IDENT
		TECHN.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	ALFRED HERBERT LTD.	DR SH
		ENG. C.W.H.		GO NUMBER 125N01 / ELEMENTARY DIAGRAM 902M122YR / CONTD. 08	07
		APPD.			



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 30-6-81
						TECHN.
						ENG. C.W.H.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 38KW

ALFRED HERBERT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
125N01	902M122YR	11

IDENT

DR SH 10

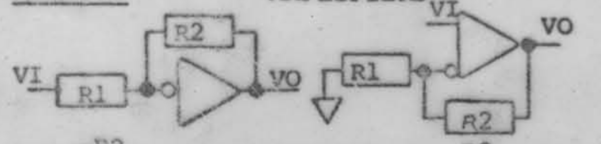
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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



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

CASE GROUND

VI ( ) ABS VO — 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.

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-RT1
		MCC	AA-AF, BA-BF, CA-CF
IOC-400%	X		NONE
-500%		IFC	I-IHI
-300%		IFC	I-ILO
SR5 - 9v			(NONE)
9 - 20v	X	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			(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		IFC	NT-NT2, PT-PT2
110-300vdc		IFC	NT-NT3, PT-PT3
120-300vac	X	IFC	NT-NT3, PT-PT3
MAX AMPS 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	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 (NS 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

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

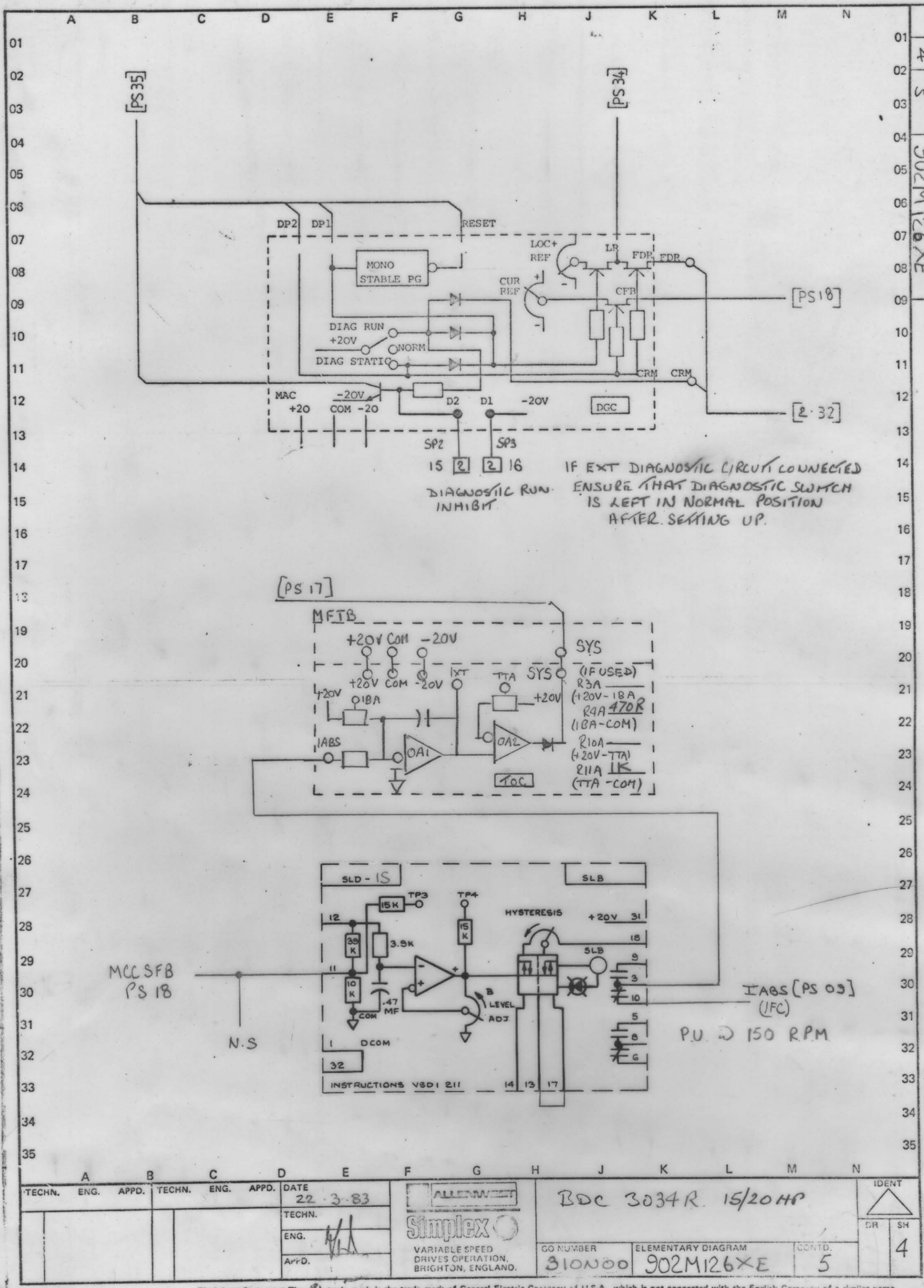
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 22.3.83
						TECHN. [illegible]
						ENG.
						APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R 15/20HP
(ALFRED HERBERT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
310N00	902M126XE	2			1

DR | SH 1 | CONTD. 2 | ELEMENTARY DIAGRAM 902M126XE



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 22·3·83
						TECHN.
						ENG.
						APPD.

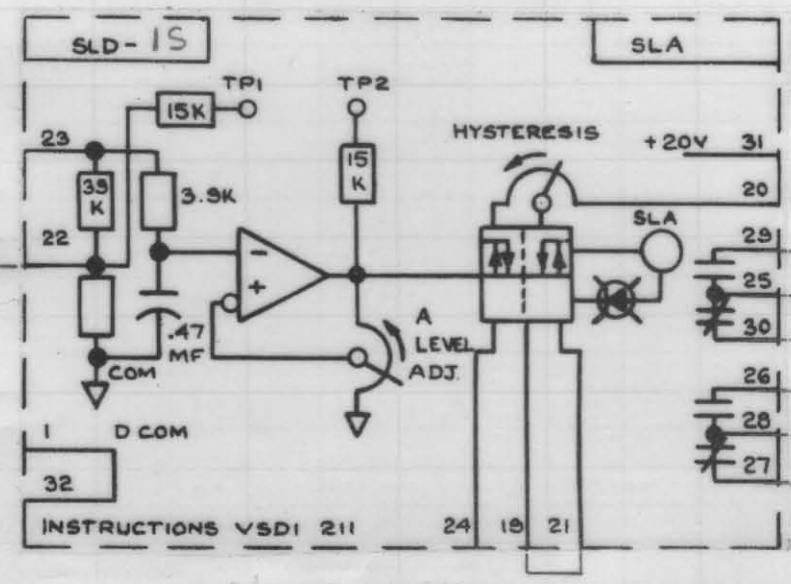
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R 15/20HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
310N00	902M126XE	5			4

DR 05 SH 06 CONTD. 902M126XE ELEMENTARY DIAGRAM

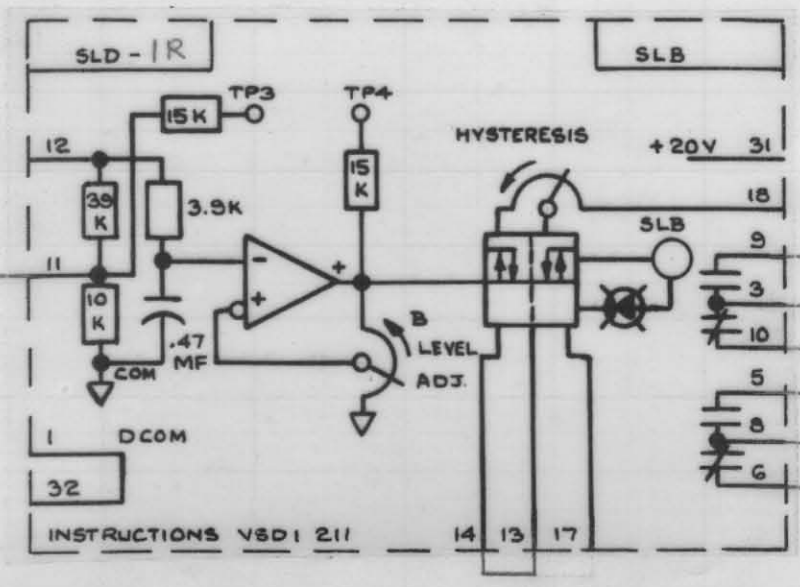
[PS31] SFB



3 4 (SP 14)
3 5 (SP 15)
3 6 (SP 16)
3 10 (SP 20)
3 11 (SP 21)
3 12 (SP 22)

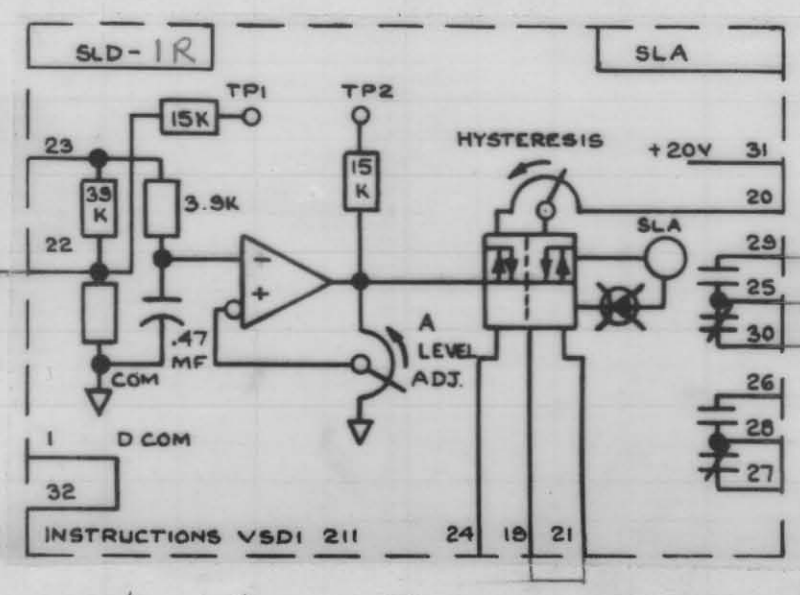
D0. AT 30 RPM

[0311] IFC (SABS)



2 17 (SP4)
2 18 (SP5)
2 19 (SP6)
3 13 (SP23)
3 14 (SP24)
3 15 (SP25)

R1-1T
29X 47KS 29
UP-TO-SPEED SCALE
10K
SP1-1T
R2-1T
[0613] MCC(SR)
32X 32 30X
28 90K 28X



3 7 (SP17)
3 8 (SP18)
3 9 (SP19)

D/O WITHIN 10% OF SET SPEED

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			2		14/5/82	22/3/83

TECHN.
ENG.
APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R 15/20HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
310N00	902M126XE	06		05

DR | SH 06 | CONTD. 07 | ELEMENTARY DIAGRAM 902M126XE

RB-1V
13 16 +20V

RA-1V
6 5 -20V
17
26 8

2 24(SP7)
SET SPEED
2 25(SP8)
R3-1T 10K
26X
1K
SP2-1T SET INCH
27X 30
27
RC-1V
26 24
MCC(SR) [0328]
27
[0528]

26 2
SET MIN
2 27
ALTERNATIVE CONNECTION IF SET MIN REQUIRED

LLR (1V)

110V X1 FU102 1A FX1 2 10
RUN FORWARD 3 1 (SP11) LLR 3 RA -1V 11 X2
RUN REVERSE 3 2 (SP12) LLR 14 RB -1V 21
INCH FORWARD 3 3 (SP13) LLR 23 RC -1V 25

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 22/3/83
						TECHN.
						ENG. NGM
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R 15/20HP
ALFRED HERBERT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
310N007	902M126XE C	07		06

MOTOR
HP 15/20
ARMV 240
ARMA. 54/76
FIELD V 120V
FIELD A 4.5/0.84
SPEED 50/1050/1250 RPM

ISOLATING TRANSFORMER

SEE INSTRUCTION BOOK FOR CONNECTIONS.

XO L1 L2 L3

REMOVE THIS LINK IF CONTROL ON FUNCTION REQUIRED

ATB-F1
ATB-F2
DA-1
2TB29
45V/1000 RPM.
2TB30

2TB22
A
2TB8
3
2TB23

FAULT SIGNAL
2TB3
2TB4
CLOSED UNDER NORMAL CONDITIONS

CONVERTER ON SIGNAL
2TB5
2TB6
OPERATED WITH CONVERTER ON
2TB7

SLD IS
3TB4
3TB5
3TB6
SLOW SPEED 30 R.P.M.
3TB10
3TB11
3TB12
3TB7
3TB8
SLA 1R
UP TO SPEED
3TB9

2TB2
CONTROL ON
2TB1
RUN (ENABLE) CUSTOMER CONTACT
2TB14
2TB12
TRIP RESET (IF REQD.)
2TB8
EXTERNAL TRIP (COAST STOP ONLY) (IF REQD REMOVE LINK 8-9
2TB9

110V 1A 2TB10
3TB1 RUN FWD
3TB2 RUN REV
3TB3 INCH FWD
2TB24
2TB25
SET SPEED
2TB27
SET MIN
2TB26
ALTERNATIVE CONNECTION IF SET MIN REQD

2TB17
2TB18
2TB19
3TB13
3TB14
3TB15
SLB 1R

DR 9 SH CONTD. 10 ELEMENTARY DIAGRAM 902M126XE

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 22.3.83
						TECHN.
						ENG.
						APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R 15/20 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
310N00	902M126XE	10	9	