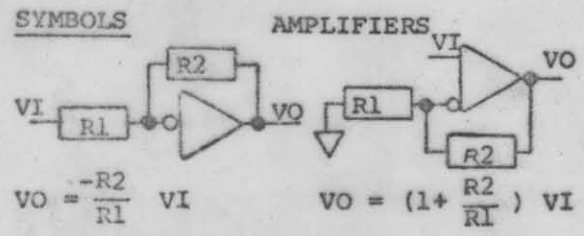
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC MFC	AA-AS, BA-BS, CA-CS ZA-ZB (IF USED)
50HZ	X	IFC IFC IFC MCC	0.0047uF RT1-RT2 0.0047uF RT2-RT3 0.0047uF 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	 X	 MCC	(NONE) JH - COM
LT.3-7sec. 2 - 60sec	X	 MCC	(NONE) 332ΩFROM LT1TOCOM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO AC TACHO	X	 MCC	(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 .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		MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)

CAPACITORS TO BE REMOVED FOR 60HZ

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)
	IL	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.

▲ THESE RESISTORS ARE CRIMPED IN WIRE HARNESS

DR 1 SH 2 CONTD. ELEMENTARY DIAGRAM 902M122BX

TECHN.	ENG.	APPD.	DATE
	NGM		3-7-79
			TECHN.
2		26/8/81	ENG. AP
			APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD
75 HP BDC 3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	SH
921N08	902M122BX	2		1

MCB
L1
L2
L3
K1
K2
K3
MA
T1
T2
T3
CONVERTER
1G
2G
3G
1C
2C
3C
SH
1
2
4Ω
.22mF
IP
IN
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
3MΩ
EA
RT1
RT2
RT3
40Ω-Press-pak SCR
100Ω- Stud SCR
.22mF
TO IFC
NS 03
AIRFLOW UP
MAX
NSO2
4
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
MFC
K1
L1
L1
1FU
F1
XO
XO
XO
2FU
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
+20
COM
-20
TA
SYS
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
TACHO TF
SLIM
ALIGN
FAULT OUTPUT
FIELD LOSS
FLOSS
SFC
FC
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 902M1223X

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						5-7-79

TECHN
ENG. AP
APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION. BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE.
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
921 N08	902M1223X	3		2

DR 3 SH CONTD 4 ELEMENTARY DIAGRAM 902M122BX

OPENED FOR SOME CONTROL OP

INSTRUMENT

LO

H1

[PS13]

(PS16)

2TB7

3 MAX

2TB 6

9 MAX

6

2TB5

2TB2

2TB1

[PS 34]

-30

MAX 2 8 MAX A B

IFC

MAC

RSTOP

+20V COM -20V PRE

PRE COM RN RP

RT1 RT2 RT3 DCP DCN IN IP

ISOLATE & PHASE SHIFT

ISOLATE (+) (-)

ISOLATE (-) (+)

OR AND

(+) ABS

OA7

CMFA

ZSPD

(-)

(-)

APPROX 2.5V AT RATED 1A

REMOVE IF DC TACHO

TACHO V SCALING

2TB 30

TACHO

5 6 5K

150K TKN

TC

NT- NT CEMF 475K

150K TKP TC SEE TABLE1 PT- PT 475K

OA3 (-)

COM CC

OA6-1

2TB 29

IABS

(-) ABS

OA4

5K IMET 7.3V AT TOP SPEED

2TB 22

SABS

(-) ABS

OA5

10K SMET

2TB 23

DM13

OA6-2

TFR

18 PUL/REV

2TB 3

5 FLT

7

2TB 4

[PS 31]

SYS

EST

FAULT TRIP

FALT Ø SEQ

FAULT

2TB9

2TB8

[PS 35]

ILO

IHI I

+20

OSC 6KHZ

RTR FT1 FT2

B FLT A

RESET

RSET

RESET

RTB

CEMF SA SC SB VFB DM11 RTB CFB IPU DM12 OSC

[PS 18]

2TB12

C

MCC

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

PRE

RUN

2TB14

JOG

DP1

DP2

FET CONTROL LOGIC (SEE NOTE)

FEA DFP

TO FETS

READY TO RUN

MAX SPEED

20K

AT2 AT1

(+) OA12

10K

RECTIFY

POLARITY

FB1

POL

0-0-1-1

10V AT TOP SP

20K

27.4K

5.6V FOR RATED ARM VOLTS.

(-) OA8

475K

475K

SPILL OVER

ELR

ELF

ELJ

COMP

SPILL OVER

CLR

CLF

ILA

CUR LIMIT

CLJ

R381

CL1

C70

PO

PCR

NDE DRIVER

SFB

C52

TL

R257

3320 (2-60SEC)

CEMF LIMIT

COM

SRH

2.2K

20K

3.3K

475K

4.0K

TIR

OA10-1

LIN TIME

2.2K

REF SCALE (-) 10K

SR

SMIN

MIN SPEED 1K

0-0-1-1

LT1 4MFD

OA10-2

10V AT TOP SPD

475K

GAIN

RERR RIJ

OA11-2

DRX

OA11-1

DR (+)

RESP

50K 22K

50K

4MFD

RRB

RRA

MSW

1-0-0-0

1-WF-I/O-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

JH

12K

COM

LT2

RJ

1-JOG-1-1 JOG=0

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

[NS03]

[NS03]

[NS09]

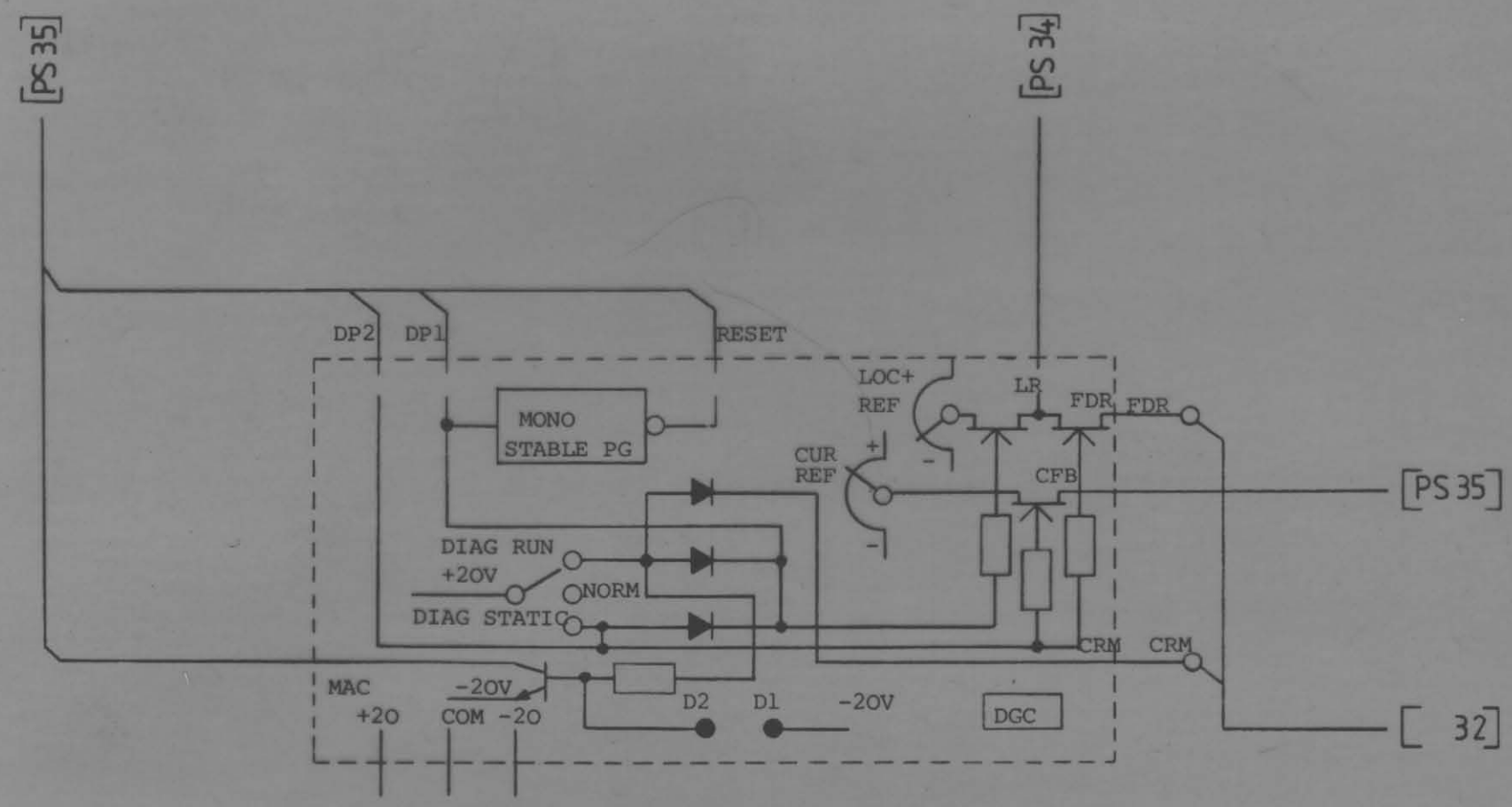
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 3-7-79
						TECHN
						ENG. AP
						APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON ENGLAND

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE, ELEMENTARY DIAGRAM

GO NUMBER	ELEMENTARY DIAGRAM	CONTD
9/21N08	902M122BX	4

IDENT DR 3 SH 3



DR | SH | CONTD. | ELEMENTARY DIAGRAM

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	
						3-7-79	
						TECHN.	
						ENG.	AP
						APPD.	

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER + BENNETT LTD.
75 HP BDC

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
921NC8	902M122BX	5		4

DR 5 SH 6 CONTD. ELEMENTARY DIAGRAM 902M122BX

RA-1T (1T10) (1T12) 1K R1 1Q-2X 1Q-2 -20V

RB-1T (1T19) (1T20) 1K R2 1Q-31X 1Q-31 +20V

SP23 3 13 — SLIDE POSITION POT (IF CSC MOD USED)

RA-1V 5 6 — SP24 3 14 — SP25 3 15

39K R4 1Q5

2 24 (SP7)

MANUAL SPEED POT 1KΩ

2 25 (SP8) 1Q-4 — 39K R3 — 1Q-4X 1Q-5X

2 27

A-1P

17X 10K

18X 10K

19X

20X

20K

0A1

21X — MCC-SR

25X

24X

+20

I LIM+

I LIM-

AMPLIFIER CARD 193W256AAG01

-20V 1K 24 — R8-1V — 1V-24 — 1Q-7 — 10K R5 — 1Q-7X — 1Q-32X

SP1 1K — 1Q-32 — MCC-JOGR

1Q-30X

RB-1V 19 20 — 5K6 R7 — 1Q-29X — 1Q-29 — 1Q-24 — D1 — 1Q-24X — IFC-SYS

+20V

1Q-26 — C1 10μF — 1Q-26X

1Q-28 — R6 10K — 1Q-28X

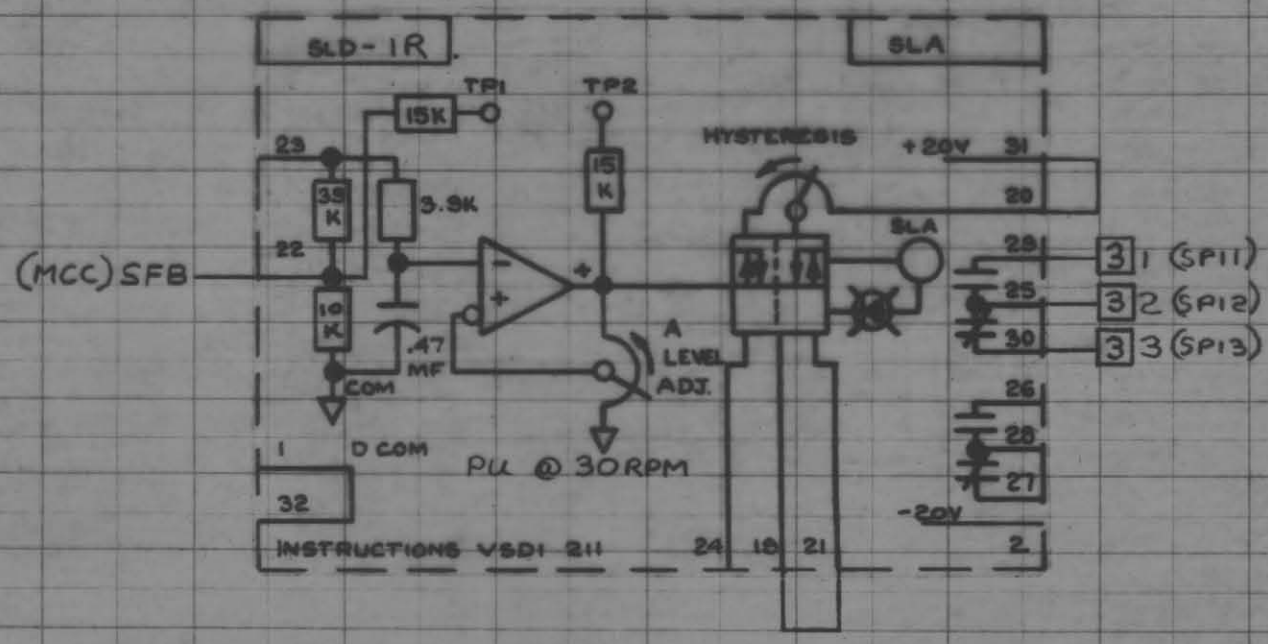
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			2	NGM		3-7-79
						TECH
						ENG. AP
			26/8/81			APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
921N08	902M122BX	6			5



NON-POLARIZED SIGNAL LEVEL DETECTOR 193W277AAG01
(PU AT 30RPM)

DR 6 SH 7 CONTD. ELEMENTARY DIAGRAM 902M122BX

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 3-7-79
						TECHN.
						ENG. AP
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM.

IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
921N08	902M122BX	7		6

DR 7 SH 8 CONTD. ELEMENTARY DIAGRAM 902M122BX

(SP7) 24 [2] — IQ-31X — [R] -30V — (SP3) [2] 16 — IT-25

MCC-RUN — IT-6 — IT-5 — IT-11

10 — 18 — 20 — 18 — 16 — 13 — 17 — 14 — 21 — 28

IQ-2X — 12 — RUN REVERSE — RB — 30

9 — 28

LLR- IT

IT-16 — 6 — 26 — IT-6

IT-26

IT-13 — 5 — 24 — MCC-JOG

8 — 27

(SP4) 17 [2] — 3 — 25 — [2] 15 (SP2)

RUN FORWARD — RA — CREEP HOLD RC

IT-21 — 11 — 25 — [R] X2

INSTRUCTIONS VSDI 213

IV-11 — IT-21

13 [2] — 6 [2] — MAX — 5 [2] — BMC — 10 [2] — PS FX1

IQ-31 — IQ-29X — +20V — (SP1) — IV-11 — IV25

10 — 19 — 20 — 18 — 16 — 13 — 17 — 14 — 21 — 29

12 — 30

9 — RB — BLOWER FAILED RELAY — 28

LLR- IV

14 [3] — 6 — 26 — -20V

IQ-5 — 5 — 24 — IQ-7

15 [3] — 8 — 27

(SP5) 18 [2] — 3 — 23 — [3] 9 (SP19)

CONSTANT SURFACE CUTTING — RA — CREEP — RC

IT-11 — 11 — 25 — IV21

INSTRUCTIONS VSDI 213

IV-21

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3-7-79
			2			TECHN.
						ENG. AP
			26/8/81			APPD.

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

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
921N08	902M122BX	8		7

DR SH 8 CONTD 9 ELEMENTARY DIAGRAM 902M122BX

+20 31 — 1K R2 — 31X

29 — 5K6 R7 — 29X

28 — 10K R6 — 28X

26 — + C1 100μF — 26X

24 — D1 — 24X

23 — 23X

21 — 21X

20 — 20X

18 — 18X

COM 15 — 15X

13 — 13X

12 — 12X

10 — 10X

9 — 9X

7 — 10K R5 — 7X

5 — 39K R4 — 5X

4 — 39K R3 — 4X

-20 2 — 1K R1 — 2X

193W264AAG01

32X / 32 / 30X — CREEP SPEED ADJUST — SP1 1KΩ

27X / 30 / 27 — SP2

25 / 25X / 22 — SP3

19 / 22X / 19X — SP4

16X / 17 / 16 — SP5

14X / 11X / 14 — SP6

11 / 8X / 8 — SP7

6 / 3 / 6X — SP8

CARD PART NO. 909W317AAG02 FIT IN RACK POSITION 1Q

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 3-7-79
						TECHN.
						ENG. AP.
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP. BDC3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM.

IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
92IN08	902M122BX	9		8

P	Q	R	S	T	U	V
A	CC	SLD		LLR		LLR
193W256 AA G01	909W317 AA G02	193W277 AA G01	193W279 AA G03		193W279 AA G03	
AMPLIFIER	SELECT COMP	SIG LEV DET	LOW LEVEL RELAY		LOW LEVEL RELAY	

DR | SH 9 | CONTD. 1.0 | ELEMENTARY DIAGRAM 902M122BX

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.

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.)

SYMBOLS:

● TEST POST ⊘ POT ADJUSTMENT ⌘ INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

1Q·2X — 1T·12	1T·10 — 1T·19	2TB6 - 2TB13	SP1 — 1V·14
1Q·4X — 1Q·5X	1T·11 — 1T·21	1Q·24 — 1Q·26	SP2 — 1T·23
1Q·5X — 1P·19X	1T·21 — 1T·25	1Q·26 — 1Q·28	SP3 — 1T·14
1Q·5 — 1V·5	1T·25 — RTB(X2)	1Q·28 — 1Q·29	SP4 — 1T·3
1Q·7 — 1V24	1T·11 — 1V·11	1Q·28X — 1Q·26X	SP5 — 1V·3
1Q·7X — 1Q·32X	1T·5 — 1T·13	1Q·26X — 1Q·15	
1Q·30X - 1Q·15	1T·13 — [illegible]	1Q·29X - 1V·20	SP7 — 1T·10
1Q·32 — (MCC JOG R)	1T·26 — 1T·6	1Q·24X - (IFC SYS)	SP8 — 1Q·4
1Q·31X — 1T·20	1T·6 — 1T·16		SP11 — 1R·29
1V·26 - 1Q·2	1T·16 — RTB(-30V)		SP12 — 1R·25
1R·22 — MCC (SFB)	1T·24 - MCC (JOG)		SP13 — 1R·30
1R·19 — 1R·21	1V·21 - 1V·25		SP23 — 1P·15
1R·20 — 1R·31			SP24 — 1V·6
1V·8 — 1P·21X			SP25 — 1V·8
1P·21X — MCC (SR)			SP19 - 1V·23
1V·11 — 1V·21			
1V·19 — 1Q·31			
			3TB6 - MA11 } 32|0·2
BUS ALL PINS 2 1P - 1R	1R·2 — RTB (-20V)		3TB7 - MA12 }
BUS ALL PINS 15 1P - 1R	1R·15 — RTB (COM)		
BUS ALL PINS 31 1P - 1R	1R·31 — RTB (+20V)		

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3-7-79
			2			TECHN.
						ENG. AP
			26/8/81			APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONT.	IDENT	DR	SH
921N08	902M122BX	10			9

DR | SH 10 | CONTD. 11 | ELEMENTARY DIAGRAM 902M122BX

ACM-XO K1 K2 K3

CIRCUIT BREAKER

8-8/75/75HP 100/850/2550 REV/MIN

240V ARM

120V FIELD

[04-28]

ATB-F1

ATB-XO

DA1

2TB29

60V/1000 REV/MIN

2TB30

110V FX1

2TB10

CREEP HOLD (5 SEC)

RUN RVSE

RUN FWD

BMC

2TB13

RB-1V

X2

RC-1T

2TB15

RB-1T

2TB16

2TB7

2TB6

MAX

2TB5

RA-1T

2TB17

CREEP

3TB9

RC-1V

RA-1V

2TB18

CONSTANT SURFACE CUTTING

MOTOR THERMOSTAT

OLD

2TB8

2TB9

EXTERNAL STOP (IF REQD)

TO TRIPPED LIGHT CIRCUIT [05-26]

3

7

2TB3

FLT

2TB4

TO BLOWER STARTER CCT. [05-33]

4

3

3TB6

MA

3TB7

3TB13

3TB14

3TB15

SLIDE POSITION POT (IF CSL USED) 2K5Ω

SLOW SPEED RELAY (C/O @ 30 RPM)

3TB1

3TB2

SLA-1R

3TB3

2TB24

2TB25

2TB27

SPEED POT 1KΩ (OR ±8V N.C. REF ON 2TB25)

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE			
	NGM	3-7-79	ALLENWEST Simplex	WEBSTER AND BENNETT LTD. 75HP BDC3034R SPINDLE DRIVE, ELEMENTARY DIAGRAM	IDENT
2		TECHN.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER 921NOB / ELEMENTARY DIAGRAM 902M122BX / CONTD. 11	DR / SH 10
	26/8/81	ENG. AP			
		APPD.			

902HM100ER

DC - 3064R

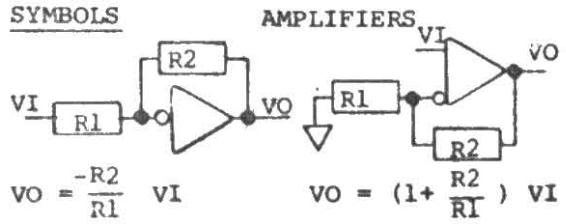
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

VO = SIGN () X ABSOLUTE VALUE OF VI

STAB ON TERMINAL

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

TERMINAL AT T.B.'s

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

▲ THESE RESISTORS ARE CRIMPED IN WIRE HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	HZA - PHA
IOC-400%	X		(NONE)
-500%		IFC	I - IHI
-300%		IFC	I-ILO
SR5 - 9v	X		NONE)
9 - 20v		MCC	SRH - COM
JOGR 10v			(NONE)
20V	X	MCC	JH - COM
LT. 3-7sec	X		(NONE)
2 - 60sec			332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G[redacted] G[redacted]6		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	X	MF	YA - YC
13 25		MF	YA-YC, YB-YD
L/R < .25S		MFC	QA - QB
INH RUN		DGC	D1-D2 (IF USED)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
200% DA	X	MCC	DCX - DCY
FLD CL	X	MCC	ICA DM1
FLD EX DLY	X		FEA - DM3

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.

◆ SUPPLIED BY AW FITTED AND WIRED BY CUSTOMER.

1 2 902M126DF

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 9.2.82	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	BDC 3064R 75 HP FOR WEBSTER + BENNETT LTD	IDENT DR SH 1
		TECHN.		GO NUMBER 150N02	ELEMENTARY DIAGRAM 902M126DF
		ENG.		CONTD. 2	
		APPD.			

902HM100EE

BDC 3064R

NOTES:-

▲ THESE RESISTORS CRIMPED IN WIRE HARNESS

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

1FC 1FG 4RC 4RG 2FC 2FG 5RC 5RG 3FC 3FG 6RC 6RG

SCR (A)

MTBA

SCR (B)

1RC 1RG 4FC 4FG 2RC 2RG 5FC 5FG 3RC 3RG 6FC 6FG

MTBB

.22 40Ω

SH IP IN DA1 DA2

FU1 FU2 FU3

K1 K2 K3 MA

CT PR1: SEC 1:2000

J1 J2 J3 J4 J5 J6

MOV

CFU1 CFU2 CFU3

(BLU/W) 115 VAC (BLU) (R) (Y) (R)

BLK/BLU 440V BLK/W 415V BLK/R 380V BLK/Y 0V BLK 20V

CPT

R1 RT1 RT2 RT3

AIRFLOW UP

R2 DCN DCP

[NS02]

MTBB (LOW) 0 TO 3 FANS DEPENDING ON RATING 1 2

MTBA (HI) 0 TO 3 FANS DEPENDING ON RATING 1 2

50V

PSC AC1 AC2 X1 FX1 1A 2TB 10

RTB X2

MAX 7 4 1 MA B A

FU 1.5A

REG -30 +30 -20 +20

ACC +20 COM -20

J1 J2 1D1 1D2 J3 J4 1D3 1D4 J5 J6 1D5 1D6 FO RO DFP

IL1 IL2 IL3

FIRING LOGIC & PULSE TR'FS

RES

CFX CFY CT CW CY CX CZ

OR

3 PARALLEL FULL WAVE RECTIFIERS

R112 R113

PO ZC TRIP SYS

MFC

L1 1FU L2 2FU L3 3FU F1 F2

FDR CRM CEMF WFR SA SB SC RF ZF SFB

SPILLOVER CROSS FMIN FMAX

CURRENT REGULATOR

50/60 HZ SELECT SEE TABLE 1

L/R<.25S SEE TABLE 1

CURRENT SELECT SEE TABLE 1

SFC FC

TACH TF SLIM ALIGN

FAULT OUTPUT

FIELD LOSS FF FLOSS

IDM21 IDM22 +20 COM -20 TA SYS

-30 Z7 -20 COM +20 +30 Z1 COMX 20

[NS16] [0412] TO CIRCUITS AS SHOWN [NS-05] [NS-35] [NS-13] [NS-34]

TECHN: ENG: APPD:	TECHN: ENG: APPD:	DATE: 9:2:82 TECHN: ENG: APPD:	ALLENWEST VARIABLE SPEED DRIVES OPERATION BRIGHTON. ENGLAND.	BDC 3064R, 75 HP WEBSTER & BENNETT	IDENT. DR SH 02
				G.O. NUMBER 150NO2 ELEMENTARY DIAGRAM. 902M126DF CONTD. 03	

DR SH 01 CONTD. 02 ELEMENTARY DIAGRAM 902M126DF

OPENED FOR SOME CONTROL OP.

INSTRUMENT LO HI

(A) [PS-25]

-30V [PS-16]

IFC

MAC R STOP

+20V COM -20V PRE

PRE COM RN RP

MAX 2 0 A B MAX

OR AND

(+) ABS OA7 CMFA ZSPD

CEMF

RT1 RT2 RT3 DCP DCN IN IP

ISOLATE & PHASE SHIFT

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

ISOLATE ISOLATE

(-) (-)

APPROX 2.5V AT RATED

7 3 MAX 6 9 MAX 6 5

REMOVE IF DC TACH

30 29 56 150K 150K TKN TKP

TACH V SCALING NT NT 47.5K

TC TC SEE TABLE 1 RT- RT 47.5K

OA3 (-)

COM CC OA6

(C) TO ME PS- 9

SYS EST

FAULT TRIP FALT Ø SEQ FAULT

+ 20

ILO IH1 I RSET

RTR FT1 FT2 SMAX TFB CEMF SA SB SC VFB DM11 CFB IPU OSC DM12

RESET RESET

B FLT A

R CFB

3 5 7 4 FLT

12

[PS-36]

[NS09]

(-) ABS OA4 IABS IA 22

5K IMET 7.3V AT TOP SPEED

(-) ABS OA5 SABS 23

10K SMET DM13

OA6-2 TFR 18 PUL/REV

OSC 6KHZ

IHCC

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

PRE RUN JOG DP1 DP2 FEA DFP

FET CONTROL LOGIC (SEE NOTE)

[0525] [0529]

14

TO FETS 10V AT TOP SP

READY TO RUN MAX SPEED

20K

(+) OA12

AT2AT1 10K RECTIFY POLARITY

FBJ POL 0-0-1-I

20K 27.4K CEMF LIMIT RJ

(C52 R257 332 (2-60SEC)

(TS-28) SFB TL

5.6V FOR RATED ARM. VOLTS

(-) OA8 47.5K 47.5K

SPILL OVER ELR ELF ELJ

COMP

SPILL OVER CLR CLF ILA CUR LIMIT

CLJ R381 C70 CIJ

COM SRH 2.2K 20K 3.3K 4.75K 4.0K REF SCALE (-) 10K

TIR OA10-1 LIN TIME 2.2K

4MFD LT1 OA10-2 47.5K 10V AT TOP SP

GAIN 47.5K

RERR RIJ OA11-2

DRX OA11-1 DR (+) 4MFD

RESP 50K 2.2K 50K RRB RRA MSW

1-RUN-1-1 RUN=0 0-0-1-0 1-0-0-0

1-WF-1/0-1 WEAK FIELD=0 FULL FIELD=1

1-0-1-1

+10V FOR RATED ARMATURE VOLTS

NDE PHASE CONTROL PCR DFP (TS-26)

1D1 1D2 1D3 1D4 LINE Z 1D5 1D6 50HZ - 60HZ FO CL-INH SEE TABLE TRIP ZC PO

28 SR 26 SMIN MIN SPEED 1K

[0520] (-) 20K JOGR 27K 12K 1-JOG-1-1 JOG=0 TH COM

LR DM1 DM2 TR DM3 DM4 DM5 EAO DM6 DM7 DM8 DR

+30 +20 COM -20

[NS03] [0526] [0527] [NS20] [PS35] [PS35]

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 9/2/82

ALLENWEST Amplidyne VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND

BDC 3064R, HP

WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD
150N02	902M126DF	04

IDENT DR 03 SH

UR 03 CONTD 04 ELEMENTARY DIAGRAM 902M126DF

[PS35]

[PS34]

DP2 DP1 RESET

MONO STABLE PG

LOC+ REF

LR FDR EDR

CUR REF

CFR

[PS18]

DIAG RUN

+20V

NORM

DIAG STATIC

CRM CRM

MAC +20

-20V COM -20

D2 D1 -20V

DGC

[0232]

SLD-1R

SLA

TP1 TP2

15K

HYSTERESIS

+20V 31

20

23

39K

3.9K

22

[PS19] MCC(SFB)

SLA

29 SP11 3 1

25 SP12 3 2

30 SP13 3 3

.47 MF

COM

A L VEL ADJ.

26

MCC(DM3) [PS34]

(FEA)

28 10 10X

27 D2-1Q

[0624]

1 D COM

32

INSTRUCTIONS VSDI 211

24 18 21

SLOW SPEED RELAY

(P.U - 30RPM)

[0203] DA1

[0213] DA2

OLD

DB DBR

ARM

FROM CUSTOMER's 110V AC SUPPLY

3 6

13 [02] MA

14

3 7

SUPPRESSOR

DB

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 9.2.82
			2			TECHN.
						ENG.
						APPD.

Siemplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

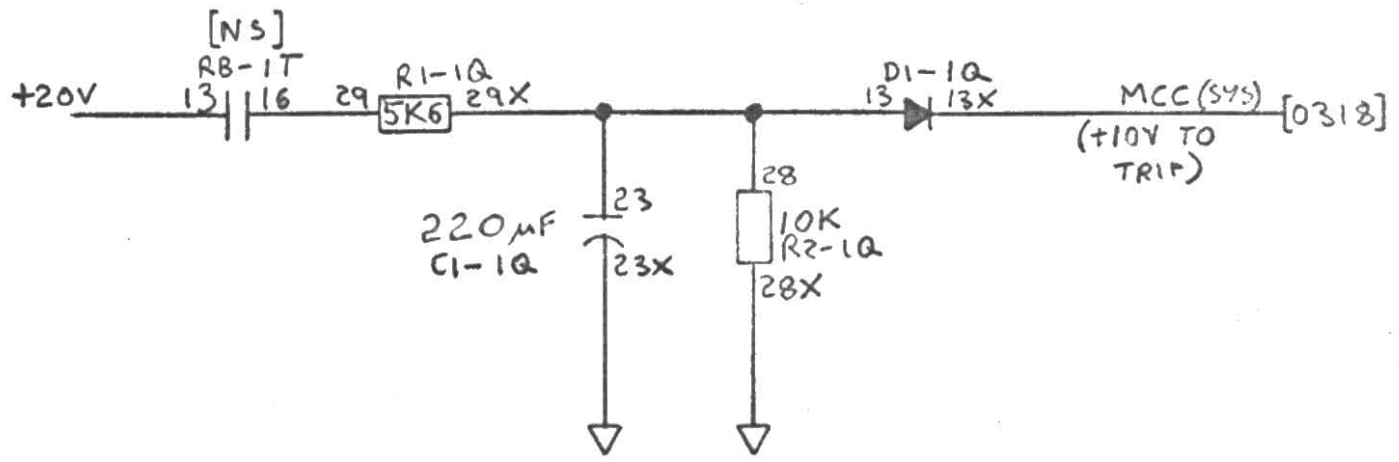
BDC 306AR, 75 HP

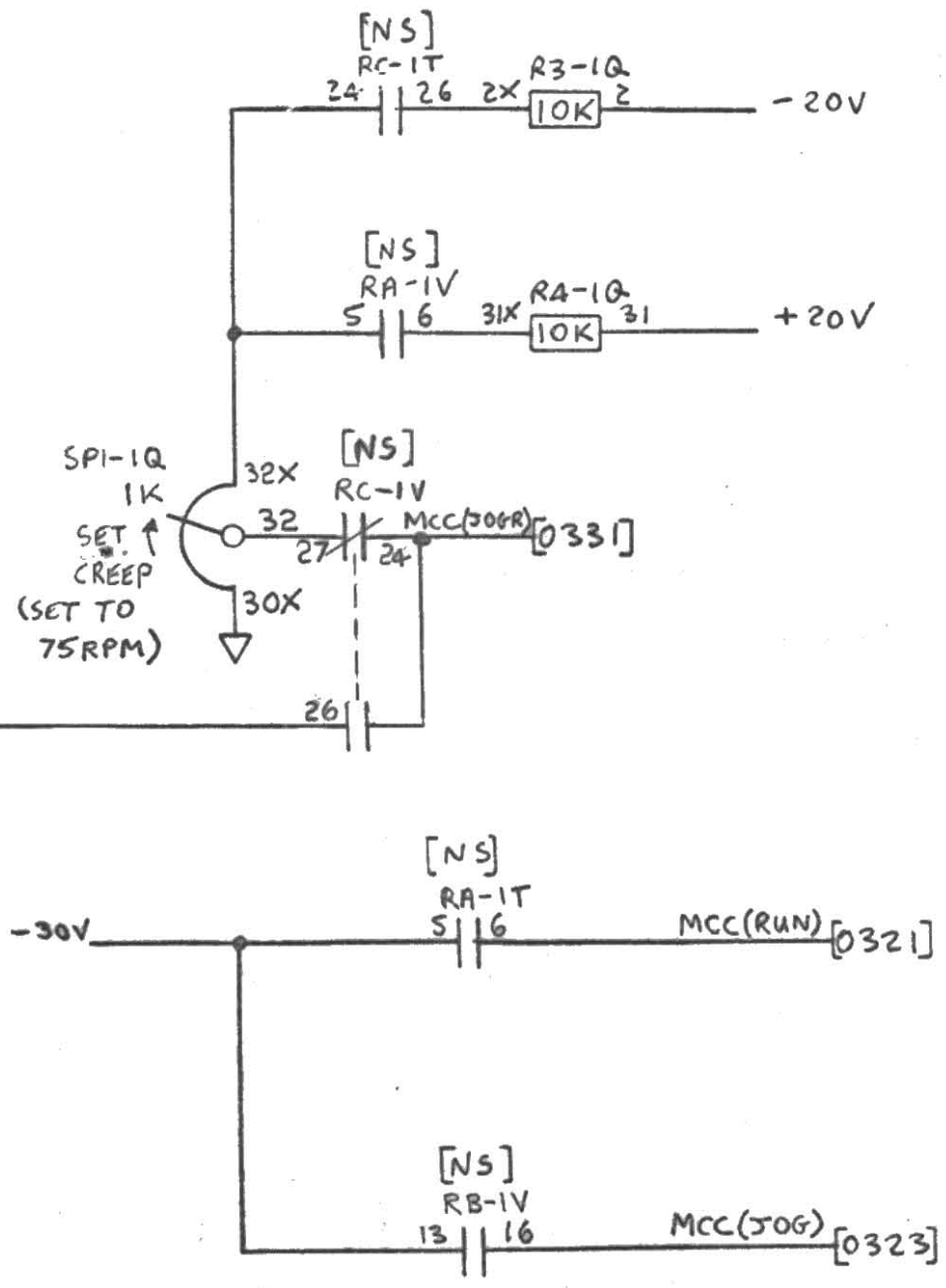
WEBSTER & BENNETT

GO NUMBER 150N02

ELEMENTARY DIAGRAM 902M126DF 05

IDENT 04





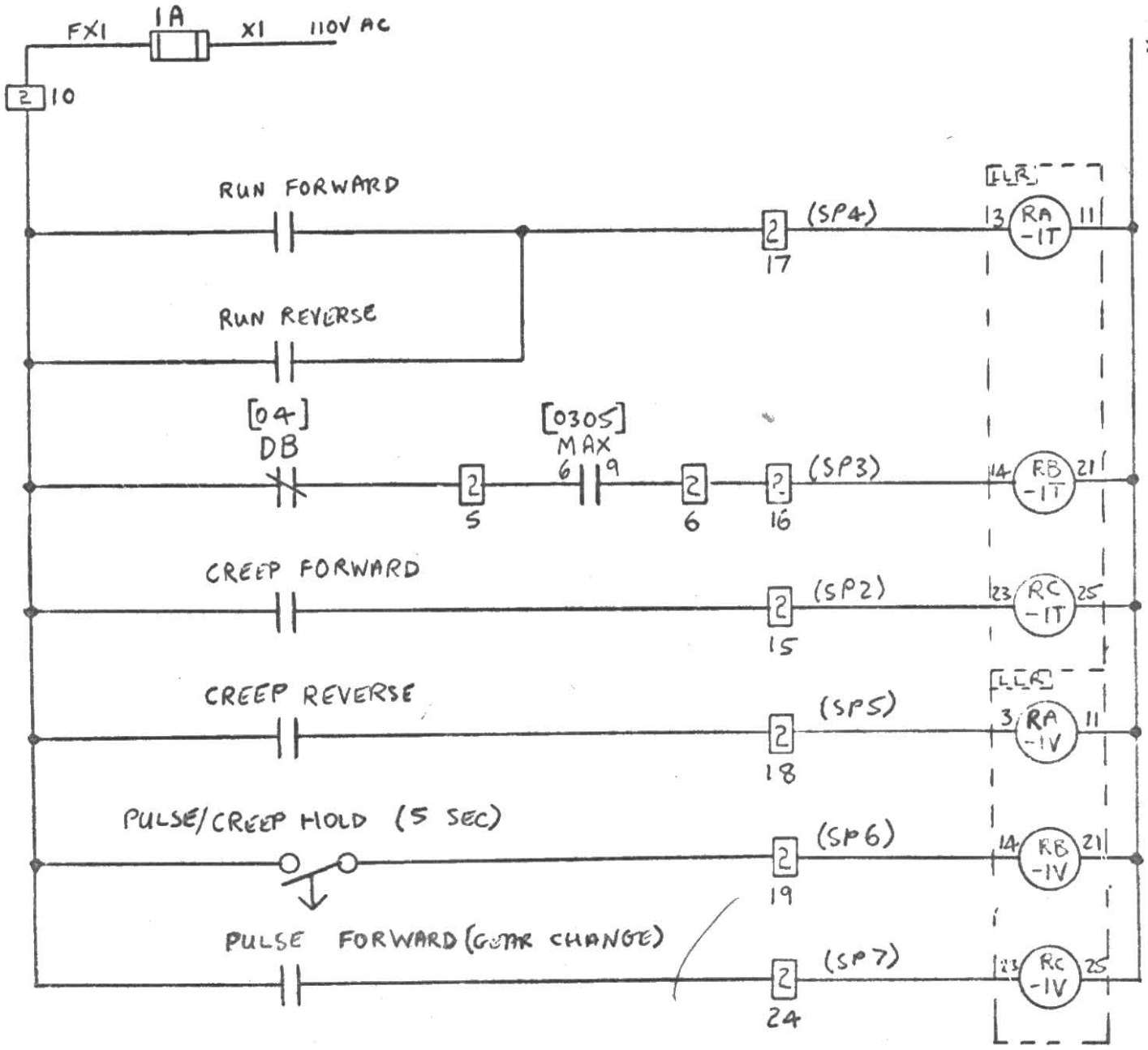
DR 05 SH 06 CONTD. 902M1126DF ELEMENTARY DIAGRAM

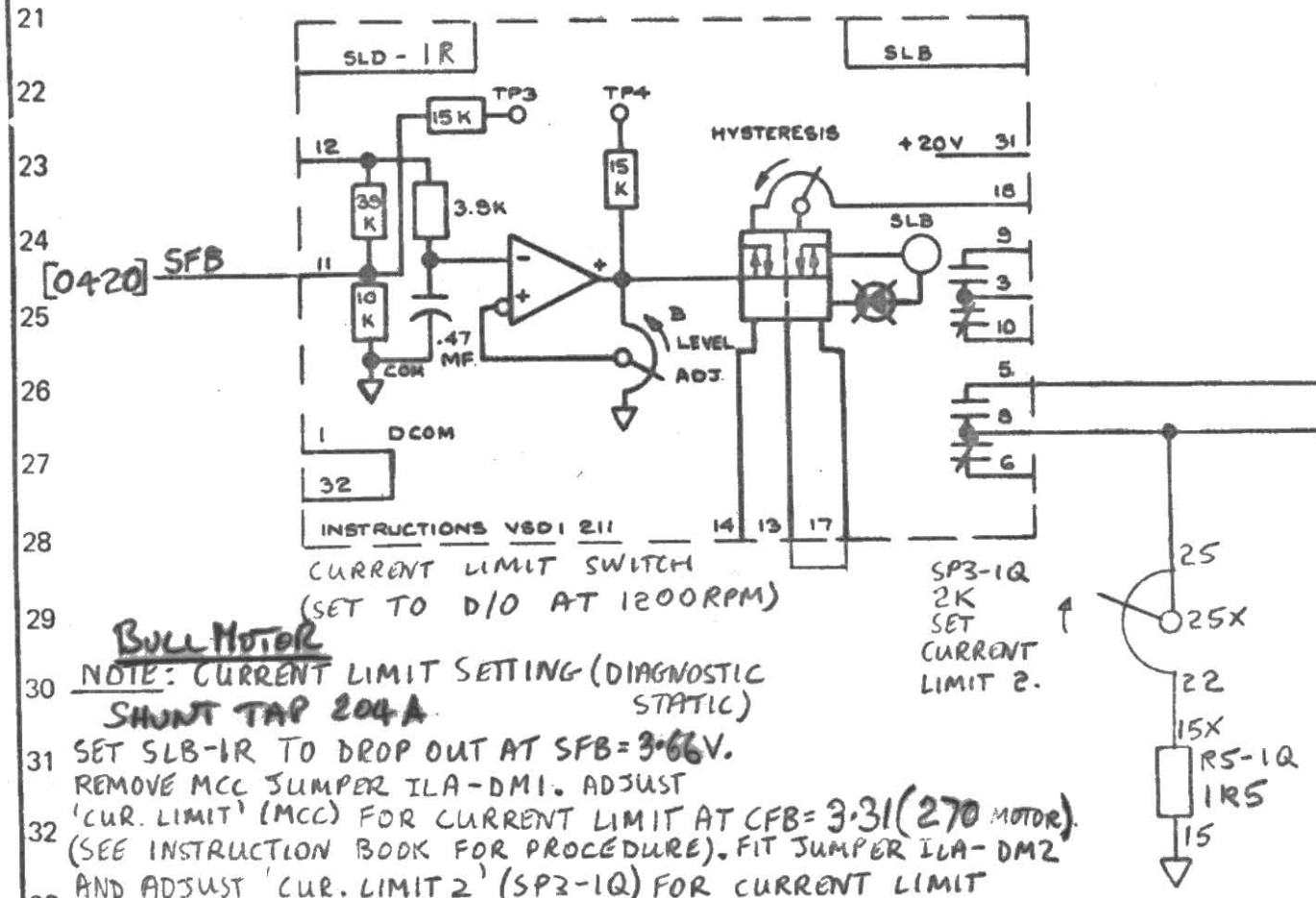
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 9/2/82
						TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 75HP
WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
150N02	902M1126DF	06		05





BULL MOTOR

NOTE: CURRENT LIMIT SETTING (DIAGNOSTIC STATIC)
SHUNT TAP 204A

SET SLB-1R TO DROP OUT AT SFB = 3·66V.
REMOVE MCC JUMPER ILA-DM1. ADJUST 'CUR. LIMIT' (MCC) FOR CURRENT LIMIT AT CFB = 3·31 (270 MOTOR). (SEE INSTRUCTION BOOK FOR PROCEDURE). FIT JUMPER ILA-DM2 AND ADJUST 'CUR. LIMIT 2' (SP3-1Q) FOR CURRENT LIMIT AT CFB = 2·64 (240 AMP MOTOR).
REMOVE JUMPER ILA-DM2.
REFIT JUMPER ILA-DM1

SCOTT MOTOR

NOTE:-
CURRENT LIMIT SETTING.
DIAGNOSTIC STATIC
SHUNT TAP 204A
SET SLB 1R 1/0 DROP OUT AT SFB 4·5 VOLTS. REMOVE MCC JUMPER ILA-DM1 — ADJ C LIM FOR CFB 3·68V (300A MOTOR)
FIT JUMPER ILA-DM2 ADJ CLIM 2 (SP3-1Q) FOR CFB 2·96V (260A MOTOR) REMOVE JUMPER ILA-DM2 REFIT JUMPER ILA DM1

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			2			9·2·82

TECHN.
ENG.
APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 75 HP
WEBSTER + BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD	IDENT DR	IDENT SH
150N02	902M126DF	07		06

902M126DA

A	B	C	D	E	F	G	H	J	K	L	M	N	P	IQ	IR	IS	IT	IU	IV
														CC	SLD		LLR		LLR
														909W	193W		193W		193W
														317	277		279		279
														AAG48	AAG01		AAG03		AAG03

GR 07 SH 08 CONTD. ELEMENTARY DIAGRAM 902M126DF

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.

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.)

SYMBOLS:

● TEST POST ⊘ POT ADJUSTMENT ⌘ INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

RTB(-20V)-1Q02	MCC(SFB)-1R22	1R22-1R11	
1Q02-1R02	1R19-1R21	1V25-1V21	SP2-1T23
RTB(COM)-1Q15	MCC(DM3)-1R26	1V21-1V11	SP3-1T14
1Q15-1R15	1R28-1Q10	1V11-1T11	SP4-1T03
RTB(+20V)-1Q31	1R31-1T13	1T11-1T21	SP5-1V03
1Q31-1R31	1T16-1Q29	1T21-1T25	SP6-1V14
RTB(-30V)-1T05	1Q29X-1Q28	1Q02-1Q12	SP7-1V23
1T05-1V13	1Q28-1Q23	1Q12X-1Q27X	2TB6-2TB16
RTB(X2)-1T25	1Q23-1Q13	1Q30-1V26	SP11-1R29
	1Q29X-1Q23X	1Q27-1Q23X	SP12-1R25
	1Q23X-1Q15	1V24-MCC(50GR)	SP13-1R30
	1Q13X-MCC(SYS)	1R08-1Q25	
	1Q2X-1T26	1Q25-1Q25X	
	1Q31X-1V06	1Q22-1Q15X	
	1V05-1T24	1R13-1R17	MA13-3TB6 (30/0.25 PVC RED)
	1T24-1Q32X	1Q25X-MCC(DM2)	MA14-3TB7 (30/0.25 PVC RED)
	1Q30X-1Q28X	1Q10X-1Q27	
	1Q32-1V27		
	1T06-MCC(RUN)		
	1V16-MCC(50G)		
	MCC(DM1)-1R05		

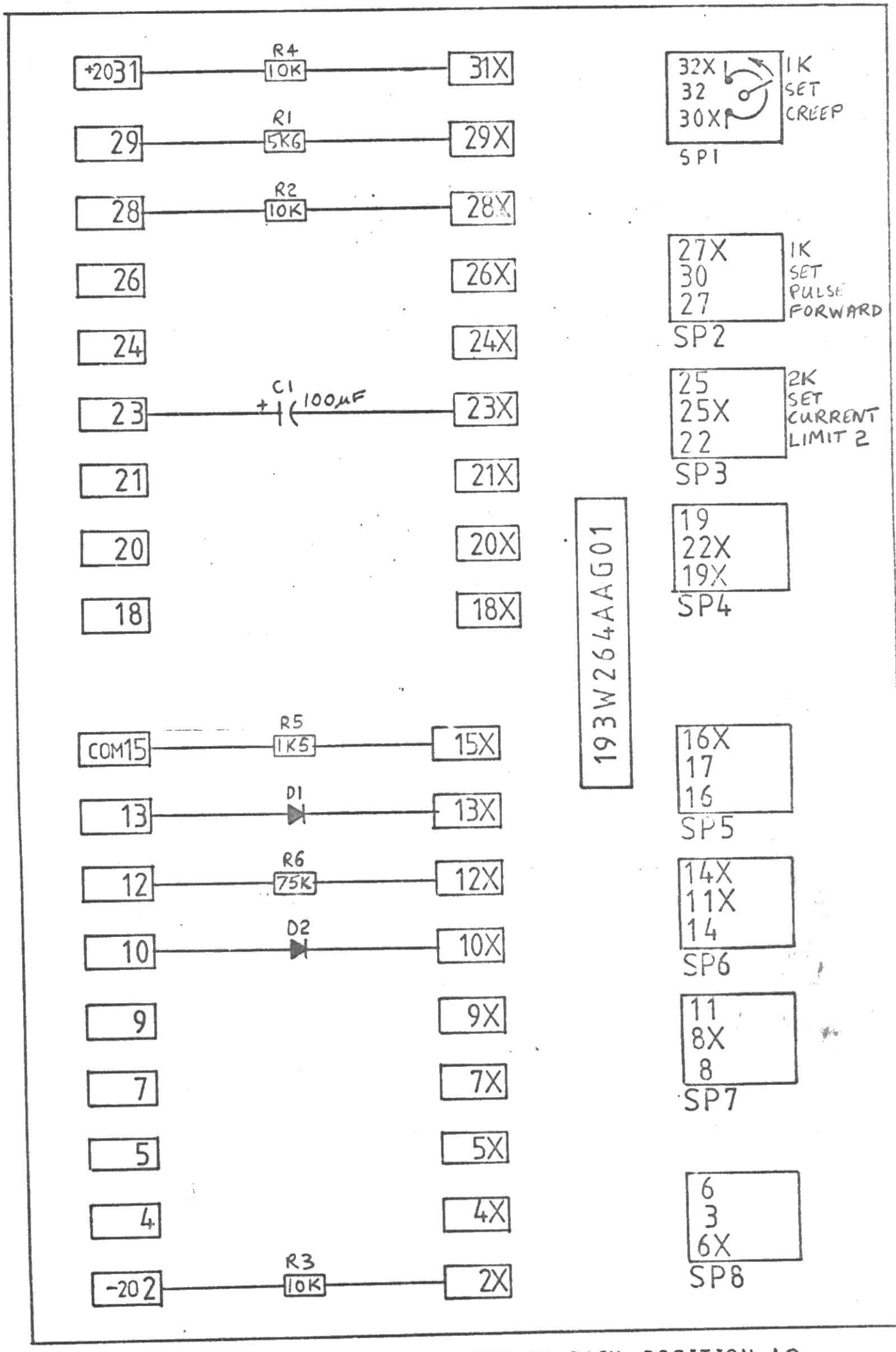
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 9.2.82
			2			TECHN.
						ENG.
						APPD.

SIMPLEX VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 75HP

WEBSTER & BENNETT

150N02 | ELEMENTARY DIAGRAM 902M126DF | 08 | 07



CARD PART NO. 909W317AAG48 FIT IN RACK POSITION 1Q

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 9.2.82
			2			TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 75HP

WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
150N02	902M126DF	09			08

SUPPLY
380/440V, 50/60Hz

L1 L2 L3

NOTE
CONNECT DRIVE CONTROL TRANSFORMER (CPT, SHEET 02) FOR CORRECT VOLTAGE.

OLD

DA1

ATB-F1

SHUNT FIELD

ATB-F2

DA2

DBR

ARM

2TB29

TG

2TB30

3TB6

DB

SUPPRESSOR

3TB7

TO CUSTOMER'S 110V AC SUPPLY (INRUSH 675VA, SEALED 65VA)

2TB10

DB

2TB5

2TB6

2TB16

RUN FORWARD

RUN REVERSE

2TB17

CREEP FORWARD

2TB15

CREEP REVERSE

2TB18

PULSE/CREEP HOLD (5 sec)

2TB19

PULSE FORWARD (GEAR CHANGE)

2TB24

2TB12

TRIP RESET (IF REQUIRED)

2TB8

OLD

2TB9

EMERGENCY STOP (IF REQD.)

(D.B. STOP)

MOTOR THERMOSTAT

P1 P2

2TB28

NC SPEED REF (0 TO ± 8.5V)

2TB27

2TB3

CLOSED UNDER NORMAL CONDITIONS

FLT

2TB4

FAULT SIGNAL

3TB1

SLOW SPEED RELAY (P.U. - 30RPM)

SLA-1R

3TB2

3TB3

TO CUSTOMER'S CIRCUIT

MOTOR DATA

	BULL	HIS
HP.	75 (57Kw)	75/75/75
RPM.	0/850/930/2550	850/1100/2550
VA	373/400/400	310/400/400
I_A	181/181/161	200/154/174
VF	240	240
I_F	6.2/6.2/1.75	7.22/7.22/2.0

TACHO 60V 1000 RPM.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 9/2/82
						TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 75HP
CUSTOMER'S CONNECTIONS
WEBSTER & BLUNT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
150N02	902M126DF	10

IDENT

DR	SH
	09

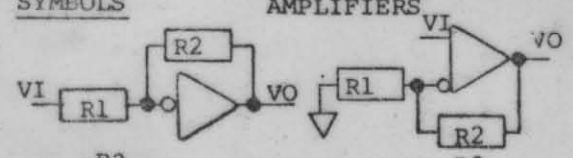
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

HARDWARE ABBREVIATIONS

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

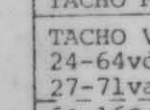
SYMBOLS

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		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.			(NONE)
2 - 60sec	X		332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
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)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
175/200 DCL		MCC	DCX DCY

SEE NOTE SH 9

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 (3 08)
	FEA	FIELD ECONOMY ADJUST (3 25)
	FF	FIELD FAULT (3 28)
	IABS	MOTOR CURRENT ABSOLUTE (3 09)
	ILA	CURRENT LIMIT ADJUST (3 23)
	IMET	CURRENT SIGNAL FOR METER (3 10)
*	IPU	INITIAL PULSE (3 20)
*	LR	LOCAL REF. FROM DGC (3 33)
*	JOG	JOG SWITCH INPUT (3 23)
*	JOGR	JOG REFERENCE INPUT (3 31)
*	MAC	MAX/MA CONTROL SIGNAL (3 20)
	MSW	MODE SWITCH (3 30)
*	OSC	OSCILLATOR (3 17)
*	PCR	PHASE CONTROL REF. (3 26)
*	PRE	DRIVE PRECONDITION (3 21)
	ØSEQ	PHASE SEQUENCE (3 14)
	RERR	REGULATOR ERROR (3 27)
	RIJ	INTEGRATOR SUMMING JUNCTION (3 27)
	RJ	REGULATOR SUMMING JUNCTION (3 31)
	RRA	REGULATOR RESPONSE ADJUST (3 30)
	RSET	RESET (3 16)
*	RTR	READY TO RUN (3 16)
*	RUN	RUN SWITCH INPUT (3 21)
*	SA-C	PHASE SYN OUTPUT (3 16)
*	SFB	SPEED FEEDBACK (3 20)
	SMET	SPEED SIGNAL FOR METER (3 12)
*	SR	SYSTEM REFERENCE INPUT (3 29)
*	SYS	SYSTEM FAULT TRIP (3 13)
*	TA	OUTPUT FOR TACHO TRIP ADJUST (2 20)
	TF	TACHO FAULT (NS28)
*	TFB	TACHOMETER FEEDBACK (3 20)
	TFR	AC TACHO FREQUENCY OUTPUT (3 13)
*	TR	TIMED REFERENCE (3 33)
*	VFB	VOLTAGE FEEDBACK (3 19)
*	WFR	WEAK FIELD REFERENCE (3 20)

(* - TEST POINT ON DOOR FRONT)

MAPPING SYSTEM

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

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

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

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 12.1.83
						TECHN.
						ENG.
						APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 100HP
WEBSTER + BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
248N01	902M126XA	2		1

NOTES:-

▲ THESE RESISTORS CRIMPED IN WIRE HARNESS

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

1FC 1FG 4RC 4RG 2FC 2FG 5RC 5RG 3FC 3FG 6RC 6RG

.22 40Ω SCR (A) MTBA

1RC 1RG 4FC 4FG 2RC 2RG 5FC 5FG 3RC 3RG 6FC 6FG

40Ω .22 SCR (B) MTBB

239A TAP SH DA1 IP IN

300A FU1 FU2 FU3

280A CT PR1:SEC 1:2000

K1 K2 K3 MA MA MA

J1 J2 J3 J4 J5 J6

MOV 1 2 3

CFU1 CFU2 CFU3

115 VAC (BLU/W) (BLU) (R) (R|Y) (R) CPT

BLK/BLU 440V 415V 380V 0V 20V

R1 R1 R1 RT1 RT2 RT3

AIRFLOW UP

300A DA2

R2 R2 DCN DCP

50V

MTBB (LOW) 0 TO 3 FANS DEPENDING ON RATING 1 2

MTBA (HI) 0 TO 3 FANS DEPENDING ON RATING 1 2

PSC AC1 FU102 AC2 X1 1A FX1 2TB 10

RTB X2

MAX 7 4 1 MA B A

FU101 1.5A FU100 REG -30 +30 -20 +20

MFC L1 L2 L3 1FU 2FU 3FU F1 F2

FDR CRM CEMF WFR SA SB SC RF ZF SFB DM21 DM22

SPILLOVER CROSS FMIN FMAX CURRENT REGULATOR

50/60 HZ SELECT SEE TABLE 1

L/R<.25S SEE TABLE 1

CURRENT SELECT SEE TABLE 1

TACH TF SLIM ALIGN FAULT OUTPUT FIELD LOSS FF FLOSS

SFC FC +20 COM -20 TA SYS

-30 27Ω -20 COM +20 +30 21Ω COMX 20Ω

ACC +20 COM -20

J1 J2 1D1 1D2 J3 J4 1D3 1D4 J5 J6 1D5 1D6 FO RO DFP

IL1 IL2 IL3 FIRING LOGIC & PULSE TR'FS RES

1FC 1FG 2FC 2FG 3FC 3FG 4FC 4FG 5FC 5FG 6FC 6FG 1RC 1RG 2RC 2RG 3RC 3RG 4RC 4RG 5RC 5RG 6RC 6RG

CFX CFY CT CW CY CX CZ R112 R113 3 PARALLEL FULL WAVE RECTIFIERS

OR PO ZC TRIP SYS

[NS16] [04 12] TO CIRCUITS AS SHOWN [NS-05] [NS-35] [NS-34] [NS-13]

DR 2 SH 3 CONTD: ELEMENTARY DIAGRAM 902M126XA

TECHN: ENG: APPD:	TECHN: ENG: APPD:	DATE: 8.12.82 TECHN: ENG: APPD:	ALLENWEST VARIABLE SPEED DRIVES OPERATION BRIGHTON. ENGLAND.	BDC 3064R 100 HP	IDENT. DR SH
				G.O. NUMBER 248N01 / ELEMENTARY DIAGRAM. 902M126XA / CONTD: 3	2

OPENED FOR SOME CONTROL OP.

INSTRUMENT LO HI

(A) [PS-17]

-30V [PS-16]

IFC MAC R STOP + +20V COM -20V PRE

OR AND

(+) ABS OA7 CMFA ZSPD

PRE COM RN RP

MAX MAX

RT1 RT2 RT3 ISOLATE & PHASE SHIFT

DCP DCN IN IP (+) (-X-) (+)

ISOLATE ISOLATE (-) (-)

APPROX 2.5V AT RATED

REMOVE IF DC TACH

30 29 150K 150K 56K TKN TKP TC TC SEE TABLE 1

TACH V SCALING NT NT PT- PT 47.5K

CEMF

OA3 (-)

COM CC

OA6

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

(-) ABS OA5 SABS 10K SMET DM13 23

OA6-2 TFR 18 PUL/REV

(C) TO ME PS-34 9 8

SYS EST

FAULT TRIP FALT Ø SEQ FAULT

+ 20

ILO IH1 I RSET

RESET RESET

B FLT A

RTR FT1 FT2 SMAX TFB CEMF SA SB SC VFB DM11 CFB IPU OSC DM12

R CFB

OSC 6KHZ

3 5 7 4 FLT

12

[PS-35]

[NS-09]

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

PRE RUN JOG DP1 DP2 14

FET CONTROI LOGIC (SEE NOTE)

TO FETS READY TO RUN MAX SPEED

5.6V FOR RATED ARM. VOLTS

20K

AT2AT1 10K RECTIFY POLARITY

OA12 OA8 47.5K

SPILL OVER CLR CLF ILA CUR LIMIT

FBI POL O-O-1-1 27.4K CEMF LIMIT

10V AT TOP SP

FFA DFP (TS-28) SFB C52 TL R257 20K

SPILL OVER ELR ELF ELJ

COMP

CLJ R381 CL1 C70

COM SRH 2.2K 20K 3.3K 4.75K 4.0K REF SCALE (-) 10K SR SMIN MIN SPEED 1K 1-RUN-1-1 RUN=0

TIR OA10-1 LIN TIME 2.2K

332 (2-60SEC) 4MFD LT1 LT2 RJ

OA10-2 47.5K OA11-2 GAIN RERR RIJ

NDE PHASE CONTROL PCR DFP (TS-26)

1D1 1D2 1D3 1D4 LINE 1D5 1D6 50HZ - 60HZ FO CL-INH RO SEE TABLE TRIP ZC PO

DRX OA11-1 DR (+) 4MFD +10V FOR RATED ARMATURE VOLTS

RESP 50K 2.2K 50K RRB RRA MSW

1-WF-1/0-1 WEAK FIELD=0 FULL FIELD=1

0-0-1-1 27K 1-0-0-0 1-0-1-0 1-0-1-1

(-) 20K JOGR 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

[NS-02] [NS-02] [PS-35] [PS-35]

DR 3 SH CONTD. 4 ELEMENTARY DIAGRAM 902M126XA

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 8 12 82
						TECHN.
						ENG.
						APPD.

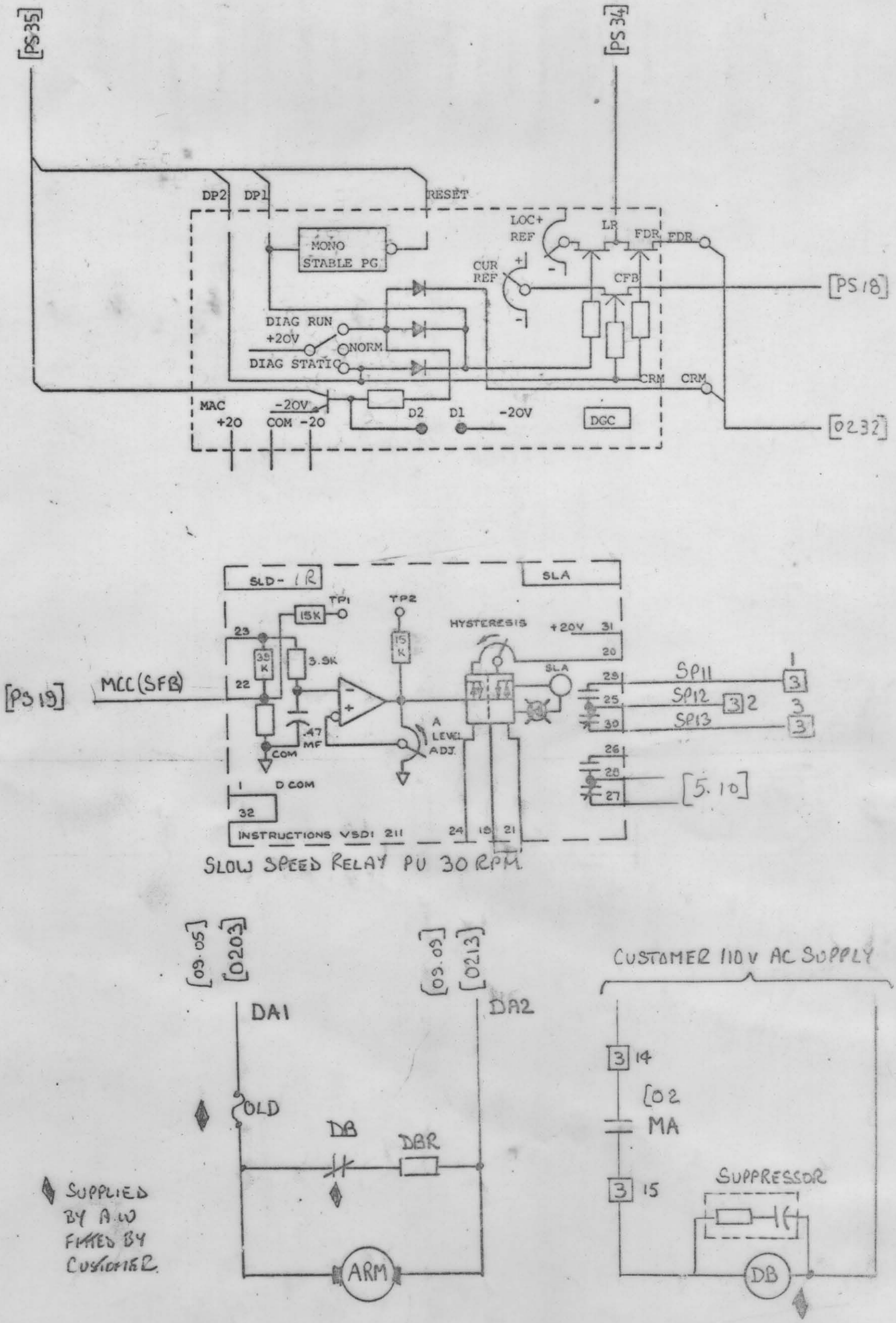
ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND

BDC 3064R 100 HP

IDENT

CO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
248N01	902M126XA	4		3

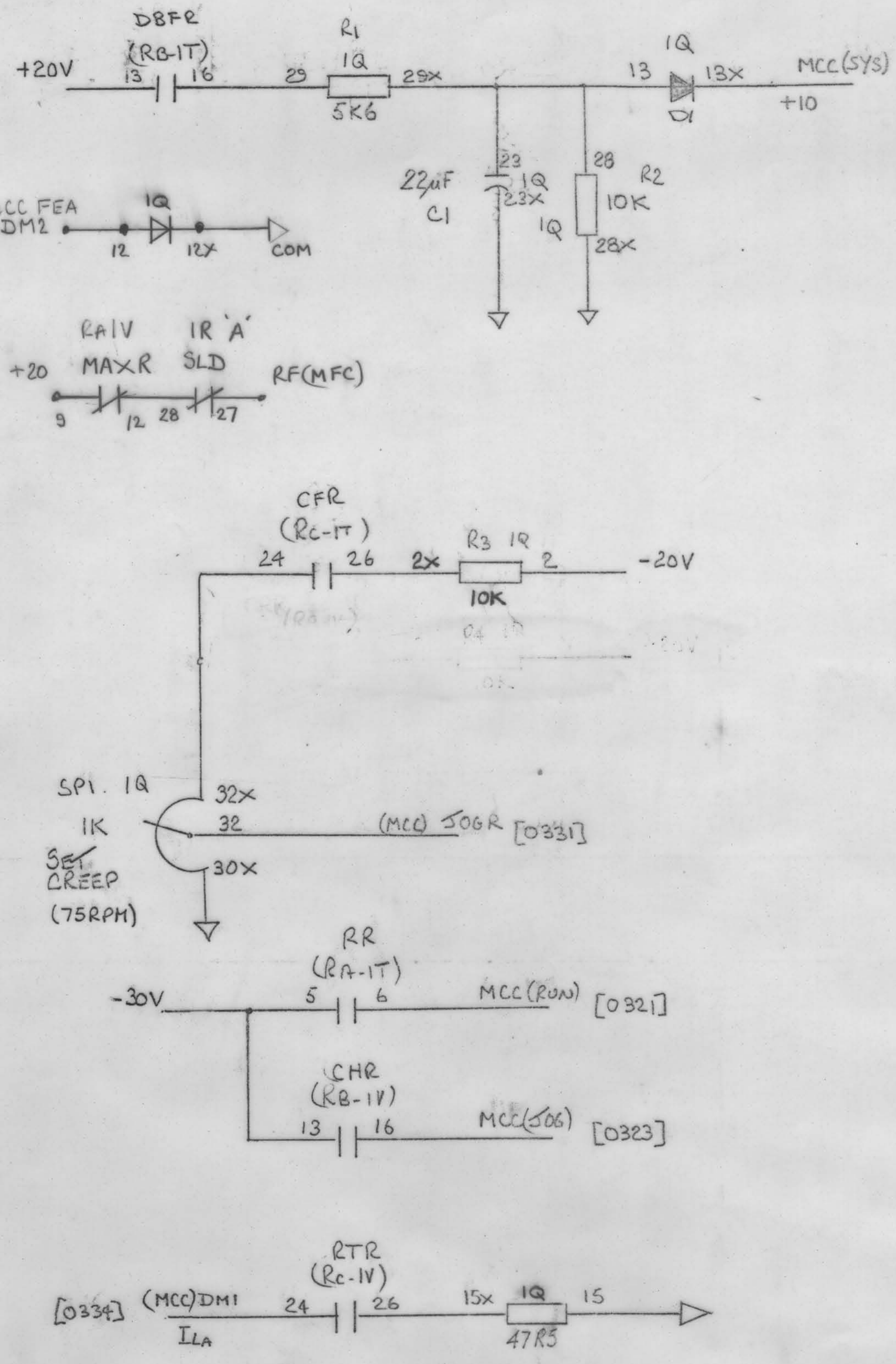


TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 8 12 82
						TECHN.
						ENG.
						APPD.

ALLEN-WEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 100HP

CO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
248N01	902M126XA	5		4



REDUCED CURRENT LIMIT
APPROX 10% WHEN NORMAL CURRENT
LIMIT SET TO 150%

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 6 12.82	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	BDC 3064R 100 HP	IDENT
						TECHN. / ENG. / APPD.		GO NUMBER 248N01 / ELEMENTARY DIAGRAM 902M126XA / CONTD. 6	DR / SH 5

DR | SH 5 | CONTD. 6 | ELEMENTARY DIAGRAM 902M126XA

DR 6 | SH 7 | CONTD. | ELEMENTARY DIAGRAM 902M126XA

110V AC

X1

1A MOUNTED ON P.S.C.

FX1

2 10

RUN FORWARD

RUN REVERSE

6 2 MAX

5 2

DB

8 3 SP18 — LLR IT — RR — 14 RB 21 — D.B FAULT RELAY 0503

CREEP FORWARD

9 3 SP19 — CFR — 23 RC 25 — CREEP FORWARD RELAY 0514

CREEP HOLD 5SEC

11 3 SP21 — CHR — 14 RB 21 — CREEP HOLD RELAY 05 27

REDUCED TORQUE (GEARCHANGE

12 3 SP22 — RTR — 23 RC 25 — REDUCE TORQUE RELAY 05.31

LLR 1V

10 3 SP12 — 3 RA 11 — 05.10

RUN RELAY 0524

X2

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 8.12.82
						TECHN.
						ENG.
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 100 HP.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
248N01	902M126XA	7

IDENT DR 6 SH

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	
														CC	SLD		LLR		LLR	
														909W317ABG11	193W277AAG01		193W279AAG03		193W279AAG03	RACK 909W317ABG11

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

RTB-20 - 1Q02	MCC(SFB) - 1R22	1V26 - 1Q15X	
1Q02 - 1R02	1R19 - 1R21	1V25 - 1V21	SP11 - 1R29
	MCC(DM2)-1Q12	1V21 - 1V11	SP12 - 1R25
RTB COM - 1Q15	1Q12X-1Q23X	1V11 - 1T11	SP13 1R30
1Q15 - 1R15	1R31 - 1T13	1T11 - 1T21	SP14
	1T16 - 1Q29	1T21 - 1T25	SP15
RTB+20 - 1Q31	1Q29X - 1Q28		SP16
1Q31 - 1R31	1Q28 - 1Q23		SP17 - 1T 3
	1Q23 - 1Q13		SP18 - 1T 14
RTB-30- 1T05	1Q28X - 1Q23X		SP19 - 1T 23
1T05 - 1V13	1Q23X - 1Q15		SP20 - 1V 3
RTBX2 - 1T25	1Q13X - MCC SYS		SP21 - 1V 14
	1Q2X - 1T26		SP22 - 1V 23
	[illegible] - 1V05		SP23
	[illegible] 24		2TB5 - 3TB10
1R27- RF(MFC)	1T24 - 1Q32X		2TB10 - 2TB6
1R28 - 1V12	1Q30X-1Q28X		
1V9 - 1R31	1Q32 -MCC(JOG)		
ILA DM1 MCC	1T06- MCC(RUN)		
FEA - DM2(MCC)	1V16 - MCC(JOG)		MA13 - 3TB14
	MCCDM1- 1V24		MA14 3TB15

RED 24/02

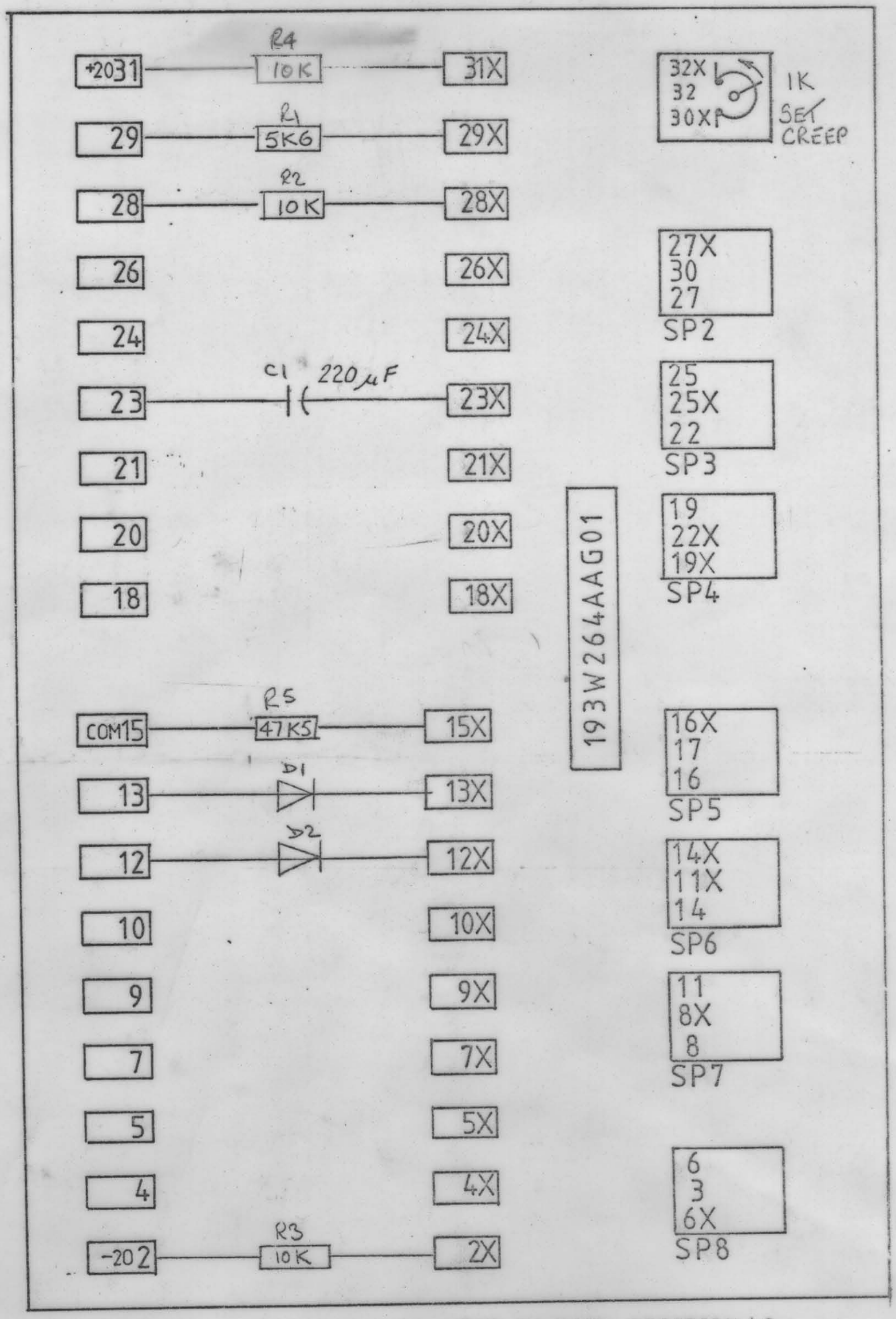
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 12.1.83
			2	1R27- RF (MFC) 1R28 -1V12 1V9 -1R31 ADDED. "AS SHIPPED" 26-1-83		TECHN. / ENG. / APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 110 HP.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
248N01	902M126XA	8			7

ELEMENTARY DIAGRAM 902M126XA — DR — SH 8 — CONTD. 9



CARD PART NO. 909W317ABG10 FIT IN RACK POSITION 1Q

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 8.12.82
						TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
248N01	902M126XA	9

IDENT

DR	SH
	8

NOTE SEE SH1 FOR 50/60HZ LINKS

SUPPLY 420/460V 50/60HZ

CONNECT CONTROL VT PRIMARY FOR CORRECT VOLTAGE

L1 L2 L3

DA1 [04.27]

AYB- F1

SHUNT FIELD

AYB- F2

(MOTOR CIRCUIT) SEE SH 04

DA2 [04.27]

STOP PB OLD 2TB8

MOTOR THERMOSTAT 2TB9

KEEP WIRING SEPARATE FROM AC/DC MAINS AND CONTROLS

2TB29 TG 2TB30 60V/1000 RPM (DC)

2TB10

DB 2TB6 MAX 2TB5 3TB8

RUN FWD 3TB7

RUN REV

CREEP FWD 3TB9

3TB10

CREEP HOLD 3TB11

REDUCE TORQUE (GEAR CHANGE) 3TB12

± 7.5V N.C REF 2TB27 2TB28

FLT 2TB3 2TB4 FAULT SIGNAL

3TB1 SLA-1R 3TB2 3TB3 SLOW SPEED CIRCUIT

PU 30RPM.

3TB14 MA 3TB15 DB (SEE SH 4) CUSTOMER 110V. AC

AMMETER (IF REQD)

2TB22 2TB8 2TB23 INSTRUMENTS 1mA MOVEMENT.

SPEED INDICATOR (IF REQD)

MOTOR DATA HP VA IA RPM VF IF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 2.12.82
						TECHN.
						ENG.
						APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 100 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
248N01	902M126XA	10

IDENT DR SH 9

ELEMENTARY DIAGRAM 902M126XA

DR SH CONTD.

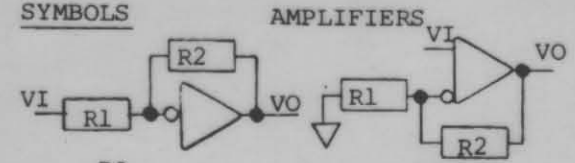
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

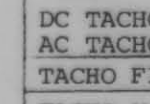
SYMBOLS

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	X		NONE)
9 - 20v		MCC	SRH - COM
JOGR 10v			(NONE)
20V	X	MCC	JH - COM
LT.3-7sec.			(NONE)
2 - 60sec	X		332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
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	X	MF	YA - YC
13 25		MF	YA-YC, YB-YD
L/R<.25S		MFC	QA - QB
INH RUN		DGC	D1-D2 (IF USED)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
200% D.CL	X	MCC	DCX - DCY
REC CL	X	MCC	ILA DM1
FLD EC DLY	X		FEA DM3

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.

DR 1 SH 1 CONTD. 2 ELEMENTARY DIAGRAM 902M128DA

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE
	2 AS SHIPPED 1.7.86	15.5.86 TECHN. ENG. APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 75HP (KEILON WICKMAN BENNETT)

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
613N01	902M128DA	2	1	1

902HM100EE

BDC 3064R

NOTES:-

▲ THESE RESISTORS CRIMPED IN WIRE HARNESS

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

1FC 1FG 4RC 4RG 2FC 2FG 5RC 5RG 3FC 3FG 6RC 6RG

SCR (A)

MTBA

SCR (B)

1RC 1RG 4FC 4FG 2RC 2RG 5FC 5FG 3RC 3RG 6FC 6FG

MTBB

SH IP IN DA1 DA2

DCN DCP

AIRFLOW UP

FU1 FU2 FU3 K1 K2 K3 MA

CT PR1: SEC 1:2000 J1 J2 J3 J4 J5 J6

MOV 1 2 3

CF U1 CF U2 CF U3

115 VAC (BLU/W) (BLU) (R) (R|Y) (R) BLK/BLU 440V BLK/W 415V BLK/W 380V BLK/W 0V BLK 20V

CPT

RT1 RT2 RT3 R1

MTBB (LOW) 0 TO 3 FANS DEPENDING ON RATING 1 2

MTBA (HI) 0 TO 3 FANS DEPENDING ON RATING 1 2

50V

PSC AC1 FU1 FU2 AC2 X1 1A FX1

2TB 10

RTB X2

MAX 7 4 1 B MA A

FU 1.5A

REG -30 +30 -20 +20

L1 L2 L3 1FU 2FU 3FU MFC F1 F2

FDR CRM CEMF WFR SA SB SC RF ZF SFB DM21 DM22

SPILLOVER CROSS FMIN FMAX

CURRENT REGULATOR

50/60 HZ SELECT SEE TABLE 1

L/R<.25S SEE TABLE 1

CURRENT SELECT SEE TABLE 1

TACH TF SLIM ALIGN

FAULT OUTPUT

FIELD LOSS FF FLOSS

+20 COM -20 TA SYS

SFC FC

-30 27 -20 COM +20 +30 21 COMX 20

TO CIRCUITS AS SHOWN [NS-05]

[12]

[NS16]

ACC +20 COM -20

J1 J2 1D1 1D2 J3 J4 1D3 1D4 J5 J6 1D5 1D6 FO RO DFP

IL1 IL2 IL3

FIRING LOGIC & PULSE TR'FS

RES

3 PARALLEL FULL WAVE RECTIFIERS R112 R113

CFX CFY CT CW CY CX CZ

OR

PO ZC TRIP SYS

1FC 1FG 2FC 2FG 3FC 3FG 4FC 4FG 5FC 5FG 6FC 6FG

1RC 1RG 2RC 2RG 3RC 3RG 4RC 4RG 5RC 5RG 6RC 6RG

[NS-13] [NS-34] [NS-35]

TECHN: ENG: APPD:	TECHN: ENG: APPD:	DATE: 15.5.86	ALLENWEST VARIABLE SPEED DRIVES OPERATION BRIGHTON. ENGLAND.		IDENT.
		TECHN:			DR SH
		ENG:			
		APPD:			

G.O. NUMBER	ELEMENTARY DIAGRAM.	CONTD:	DR	SH
613N01	902M128DA	3		2

2 | 3 | 902M128DA

OPENED FOR SOME CONTROL OP.

INSTRUMENT LO HI

(A) [PS-17]

-30V [PS-16]

IFC

+20V COM -20V PRE PRE COM RN RP

MAC R STOP +

OR AND

(+) ABS OA7 CMFA ZSPD

2 MAX 8 A B MAX

RT1 RT2 RT3 DCP DCN IN IP

ISOLATE & PHASE SHIFT

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

ISOLATE (-) (-)

APPROX 2.5V AT RATED

7 3 MAX 6 9 MAX 6 5

REMOVE IF DC TACH

30 29 150K 150K 56K

TKN TKP TC TC SEE TABLE 1

TACH V SCALING NT NT 47.5K PT- PT 47.5K

CEMF

OA3 (-)

COM CC

OA6

IABS IA 22

(-) ABS OA4 5K IMET 7.3V AT TOP SPEED

SABS 23

(-) ABS OA5 10K SMET DM13

OA6-2 TFR 18 PUL/REV

(C) TO ME PS-34 9

SYS EST

FAULT TRIP FALT Ø SEQ FAULT

+ 20

OSC 6KHZ

ILO IH1 I RSET RTR FT1 FT2 SMAX TFB CEMF SA SB SC VFB DM11 CFB IPU OSC DM12

3 5 7 4 FLT

[PS-35] 8

RESET RESET R

B FLT A R CFB

12

[NS-09]

MCC

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

[0520] PRE 21

[0524] RUN 14

JOG 22

DP1 23

DP2 24

FET CONTROL LOGIC (SEE NOTE)

FEA DFP

TO FETS

READY TO RUN 20K

MAX SPEED

5.6V FOR RATED ARM. VOLTS

AT2AT1 10K RECTIFY POLARITY

OA12 OA8 47.5K 47.5K

FBJ POL O-O-1-1

10V AT TOP SP

20K 27,4K CEMF LIMIT RJ

SPILL OVER ELR ELF ELJ

SPILL OVER CLR CLF ILA CUR LIMIT

COMP

CLJ R381 CLI C70

(TS-28) SFB TL C52 R257 332 (2-60SEC)

COM SRH 2.2K 20K 3.3K 4.75K 4.0K REF SCALE (-) 10K

TIR OA10-1 LIN TIME 2.2K

4MFD LT1 OA10-2 47.5K OA11-2 RERR RLJ

GAIN

NDE PHASE CONTROL PCR DFP (TS-26)

DRX OA11-1 DR (+) 4MFD

RESP 50K 2.2K 50K RRB RRA MSW

1D1 1D2 1D3 1D4 LINE Z 1D5 1D6 50HZ - 60HZ FO CL-INH RO SEE TABLE TRIP ZC PO

+10V FOR RATED ARMATURE VOLTS

28 SR 29 SMIN 26 MIN SPEED 1K

1-RUN-1-1 RUN=0

0-0-1-0 1-0-0-0 0-0-1-1

50K 2.2K 1-WF-1/0-1 WEAK FIELD=0 FULL FIELD=1

1-0-1-1

[0514] (-) JOGR 20K 27K 12K JH COM 1-JOG-1-1 JOG=0 LT2 RJ

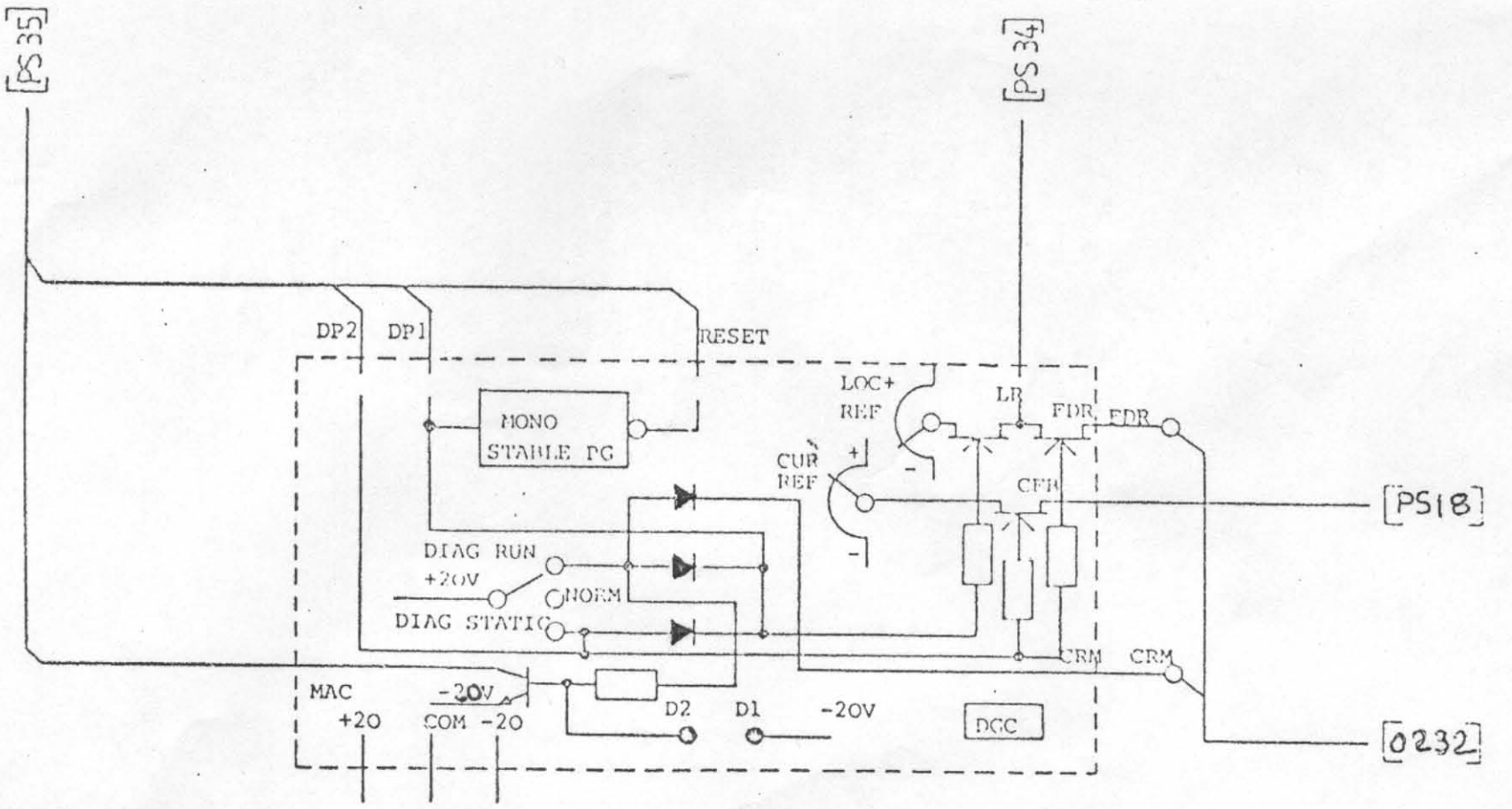
+30 +20 COM -20 LR DM1 DM2 TR DM3 DM4 DM5 EAO DM6 DM7 DM8 DR

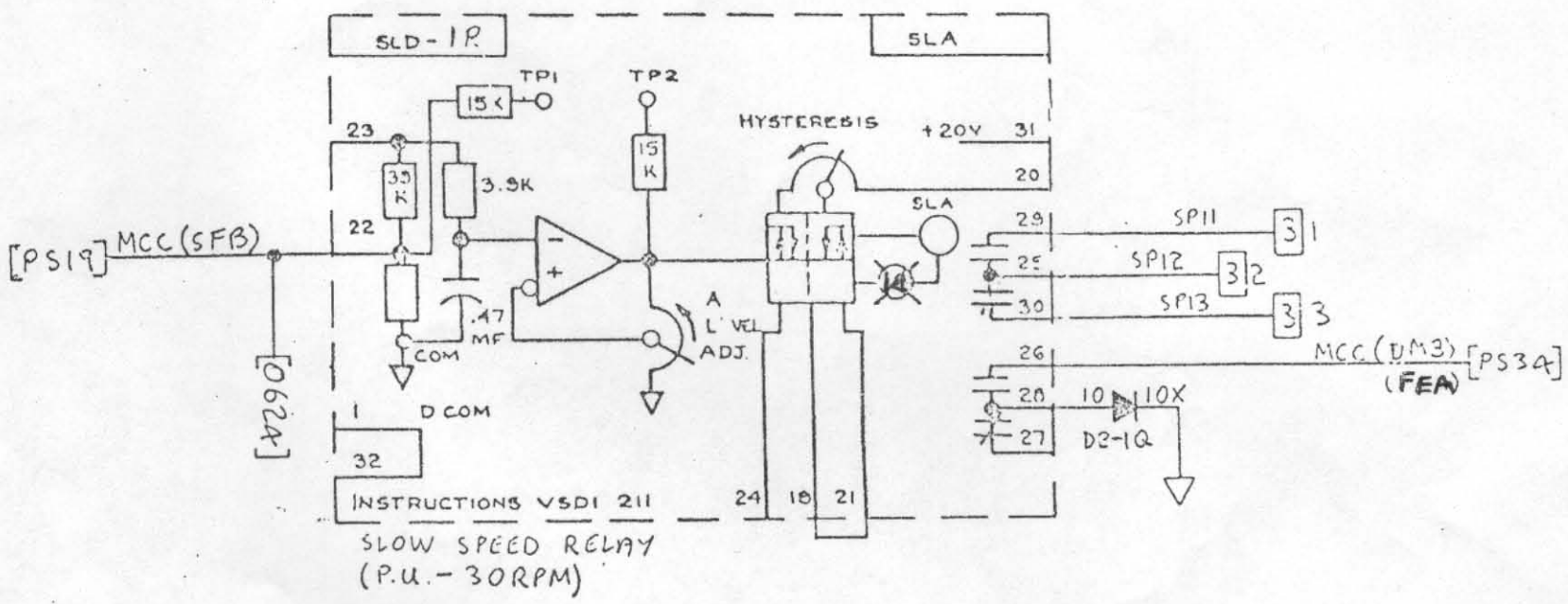
[NS-02] [NS-02]

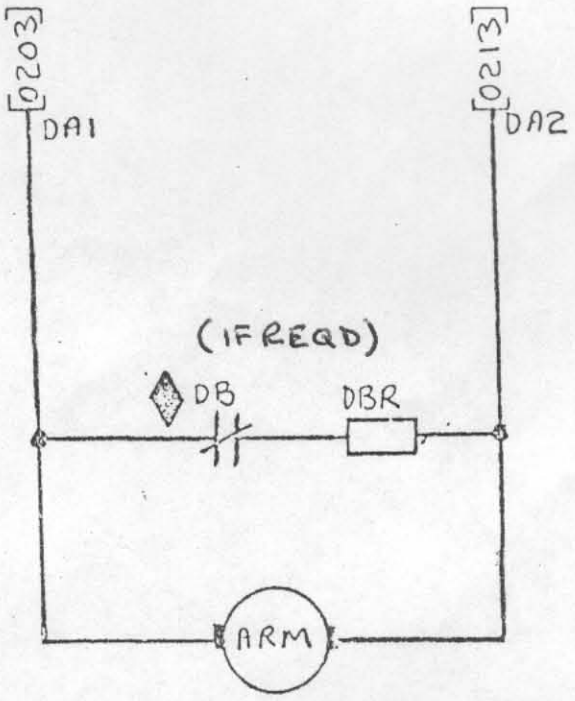
[PS-35] [PS-35]

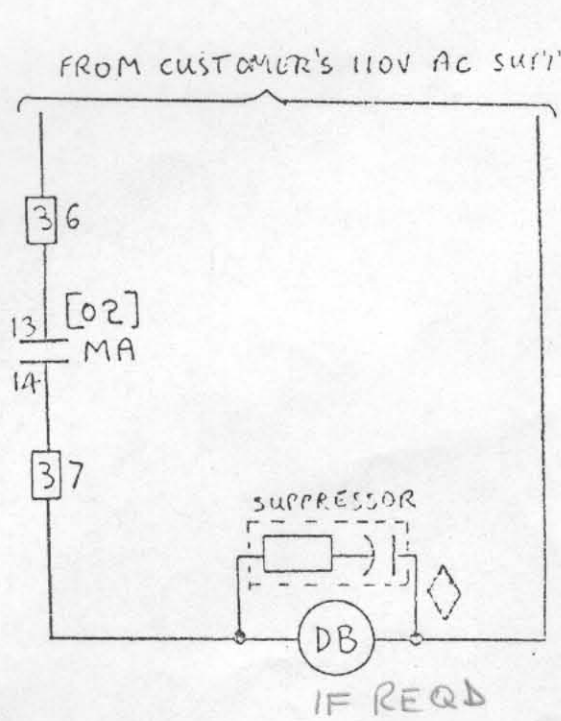
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 15.5.86	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		IDENT
						TECHN.			DR SH
						ENG.			
						APPD.	GO NUMBER 613N01	ELEMENTARY DIAGRAM 902M128DA	CONTD. 4	3

DR 3 SH CONTD. 4 ELEMENTARY DIAGRAM 902M128DA





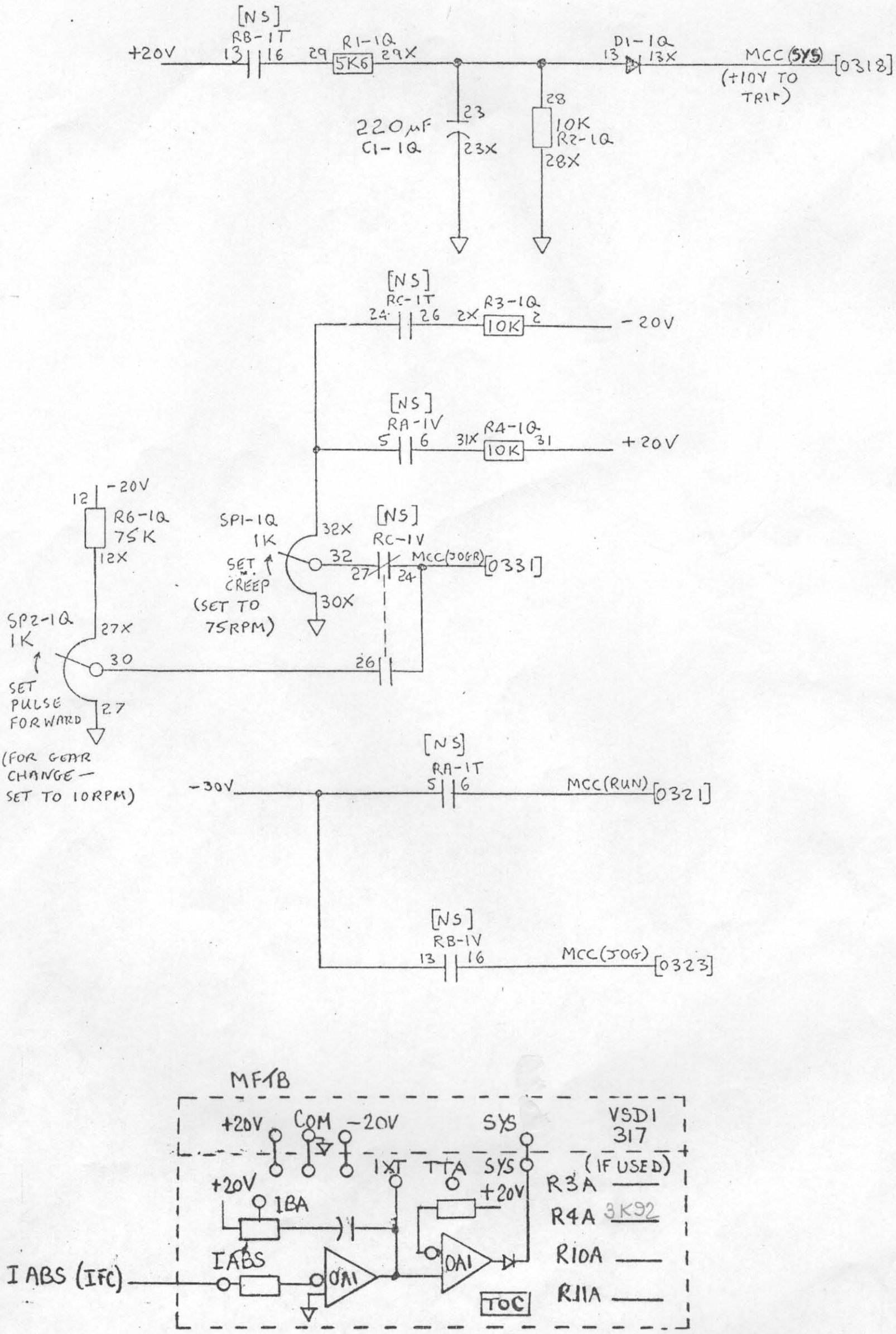




TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	15.5.86
						TECHN.	
						ENG.	
						APPD.	

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
613N01	902M128DA	5		4

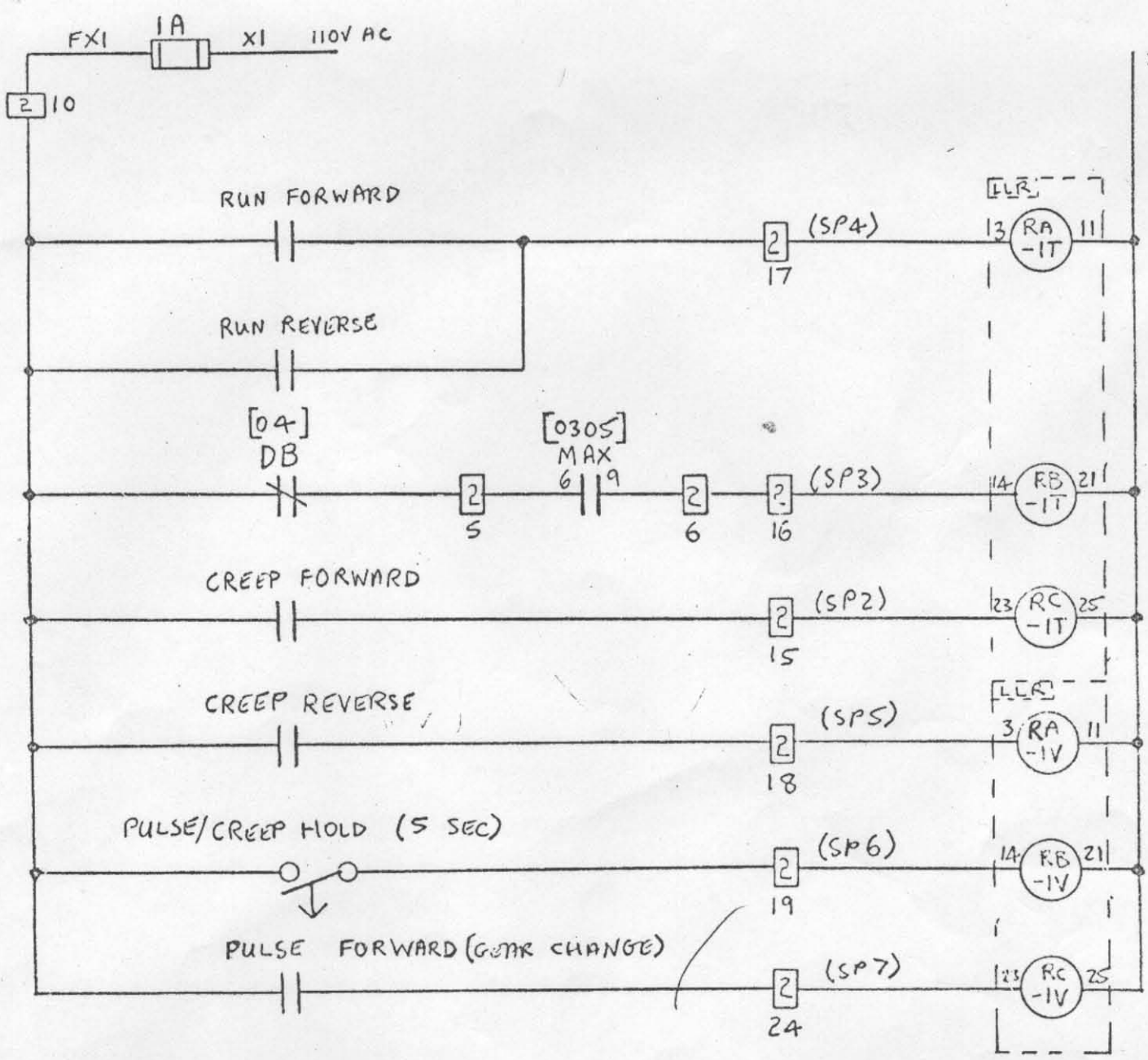


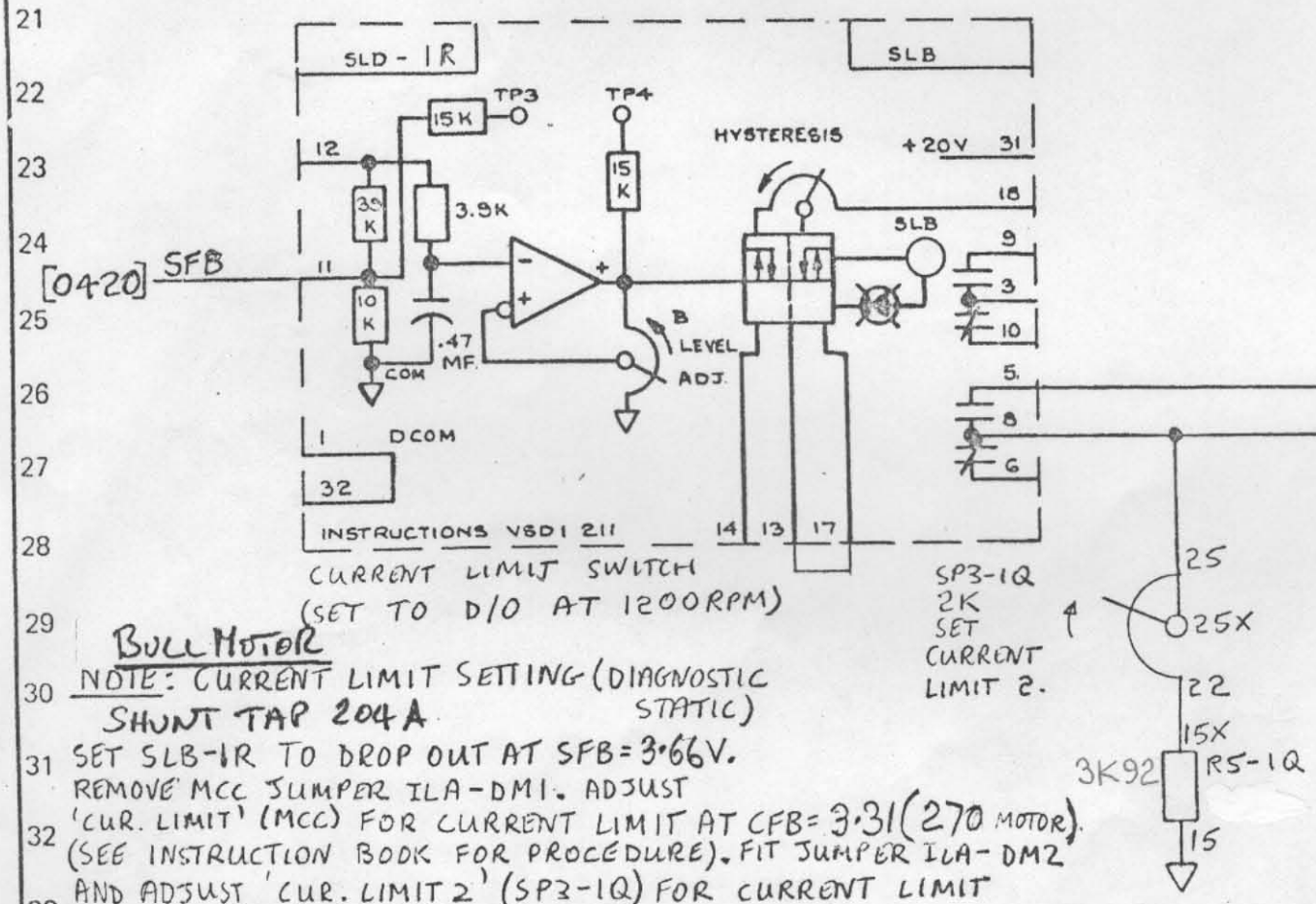
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	
			2	R4A ADDED 1.7.86		15.5.86	TECHN. ENG. APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
G13N01	902M128 DA	6		5

5 | 6 | 902M128DA





BULL MOTOR

NOTE: CURRENT LIMIT SETTING (DIAGNOSTIC STATIC)
SHUNT TAP 204A

SET SLB-1R TO DROP OUT AT SFB = 3·66V.
REMOVE MCC JUMPER ILA-DM1. ADJUST 'CUR. LIMIT' (MCC) FOR CURRENT LIMIT AT CFB = 3·31 (270 MOTOR). (SEE INSTRUCTION BOOK FOR PROCEDURE). FIT JUMPER ILA-DM2 AND ADJUST 'CUR. LIMIT 2' (SP3-1Q) FOR CURRENT LIMIT AT CFB = 2·94 (240 AMP MOTOR).
REMOVE JUMPER ILA-DM2.
REFIT JUMPER ILA-DM1

SCOTT MOTOR

NOTE:-
CURRENT LIMIT SETTING.
DIAGNOSTIC STATIC
SHUNT TAP 204A.
SET SLB 1R 1/O DROP OUT AT SFB 4·5 VOLTS. REMOVE MCC JUMPER ILA-DM1- ADJ C LIM FOR CFB 3·68V (300A MOTOR)
FIT JUMPER ILA-DM2 ADJ C LIM 2 (SP3-1Q) FOR CFB 2·96V (260A MOTOR) REMOVE JUMPER ILA-DM2 REFIT JUMPER ILA DM1

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE		
			2	R5/1Q CHANGED J.W. 1.7.86		15·5·86	TECHN.	
							ENG.	
							APPD.	

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 75 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD	IDENT DR	IDENT SH
613N01	902M128DA	07		06

106 | 07 | 902M128DA

IQ	IR	IS	IT	IU	IV
CC	SLD		LLR		LLR
109W	193W		193W		193W
317	277		279		279
AA648	AAG01		AAG03		AAG03

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.

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.)

SYMBOLS:

TEST POST — POT ADJUSTMENT — INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

RTB(-20V)-1Q02	MCC(SFB)-1R22	1R22-1R11	
1Q02-1R02	1R19-1R21	1V25-1V21	SP2-1T23
RTB(COM)-1Q15	MCC(DM3)-1R26	1V21-1V11	SP3-1T14
1Q15-1R15	1R28-1Q10	1V11-1T11	SP4-1T03
RTB(+20V)-1Q31	1R31-1T13	1T11-1T21	SP5-1V03
1Q31-1R31	1T16-1Q29	1T21-1T25	SP6-1V14
RTB(-30V)-1T05	1Q29X-1Q28	1Q02-1Q12	SP7-1V23
1T05-1V13	1Q28-1Q23	1Q12X-1Q27X	2TB6-2TB16
RTB(X2)-1T25	1Q23-1Q13	1Q30-1V26	SP11-1R29
	1Q29X-1Q23X	1Q27-1Q23X	SP12-1R25
	1Q23X-1Q15	1V24-MCC(SOGR)	SP13-1R30
	1Q13X-MCC(SYS)	1R08-1Q25	
	1Q2X-1T26	1Q25-1Q25X	
	1Q31X-1V06	1Q22-1Q15X	
	1V05-1T24	1R13-1R17	MA13-3TB6 (30/025 RED)
	1T24-1Q32X	1Q25X-MCC(DM2)	MA14-3TB7 (30/025 RED)
	1Q30X-1Q28X	1Q10X-1Q27	
	1Q32-1V27		
	1T06-MCC(RUN)		
	1V16-MCC(SOG)		
	MCC(DM1)-1R05		

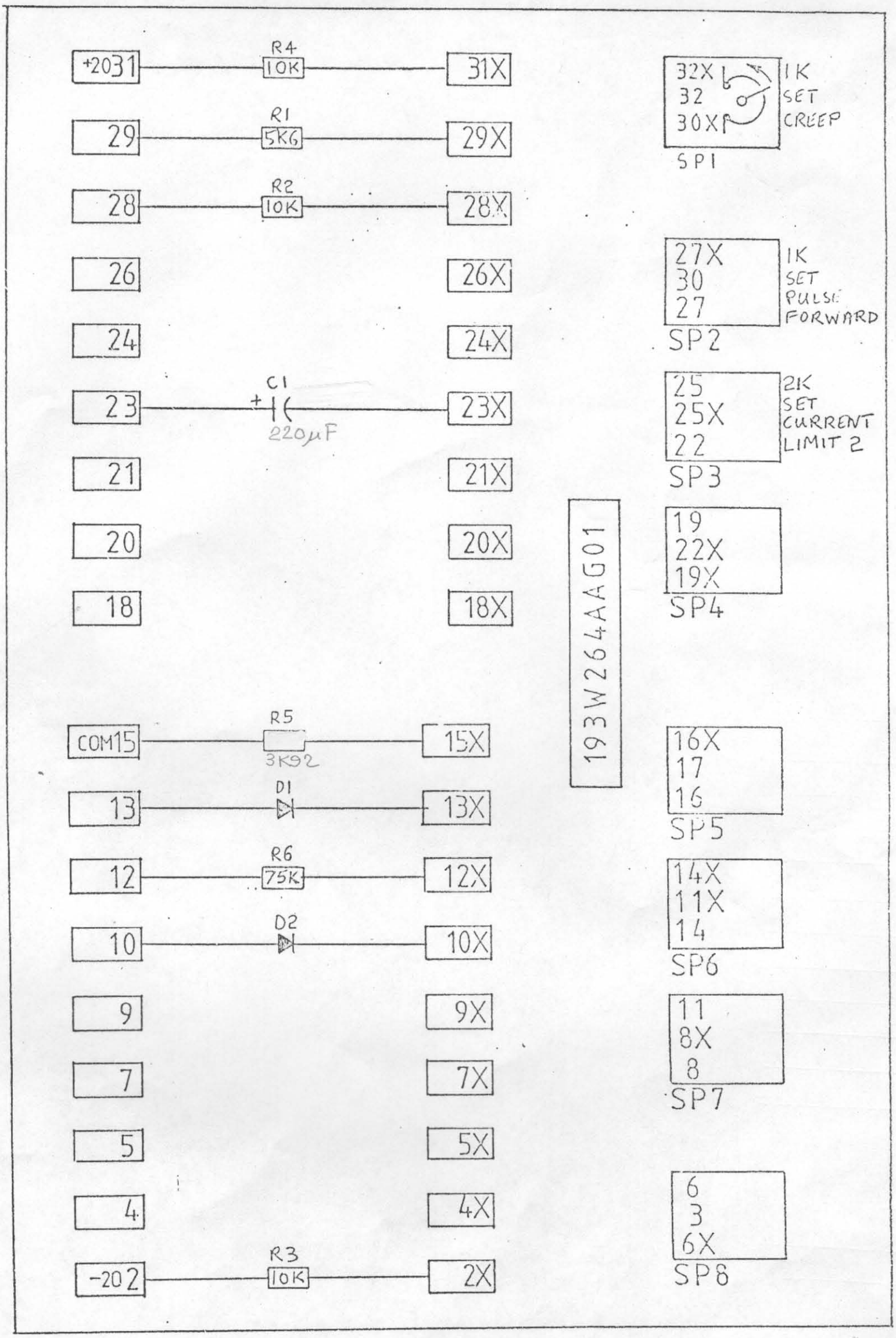
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	15.5.86
						TECHN.	
						ENG.	
						APPD.	

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
613N01	902M128DA	8

IDENT | DR | SH | 7

7 8 902M128DA



CARD PART NO. 909W317AAG48 FIT IN RACK POSITION 1Q

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE					
			2	RS CHANGED 1.7.86		15.5.86	TECHN.	ENG.	APPD.		

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
613N01	902M128DA	9			8

902M128DA 8 9

SUPPLY
380/440V, 50/60Hz

L1 L2 L3

NOTE CONNECT DRIVE CONTROL TRANSFORMER (CPT 3H2) FOR CORRECT SUPPLY VOLTAGE

DA1

ATB-F1

SHUNT FIELD

ATB-F2

DA2

2TB29

2TB30

3TB6

3TB7

CUSTOMER'S 110V AC SUPPLY (INRUSH 675VA, SEALED 65VA)

2TB10

2TB5

2TB6

2TB16

RUN FORWARD

RUN REVERSE

2TB17

CREEP FORWARD

2TB15

CREEP REVERSE

2TB18

PULSE/CREEP HOLD (5 SEC)

2TB19

PULSE FORWARD (GEAR CHANGE)

2TB24

DBR *

ARM

TG

DB *

DB *

SUPPRESSOR

2TB12

TRIP RESET (IF RC

2TB8

2TB9

EMERGENCY STOP (IF REQD)

(D.B. STOP)

MOTOR THERMOSTAT

P1

P2

2TB28

NC SPEED REF (0 TO ± 8·5V)

2TB27

2TB3

2TB4

CLOSED UNDER NORMAL CONDITIONS

FLT

FAULT SIGNAL

3TB1

3TB2

3TB3

SLOW SPEED RELAY (P.U.-30RPM)

SLA-1R

TO CUSTOMER'S CIRCUIT

MOTOR DATA.

	BULL.	HIS
HP.	75 (57Kw)	75/75/75
RPM.	0/850/930/2550	850/1100/2550
VA	373/400/400	310/400/400
I_A	181/181/161	200/154/174
V_F	240	240
I_F	6·2/6·2/1·75	7·22/7·24/2·0

TACHO 60V 1000 RPM

* IF REQD.

9 - 902M/128DA

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	15.5.86
						TECHN.	
						ENG.	
						APPD.	

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
613N01	902M/128DA	-		9

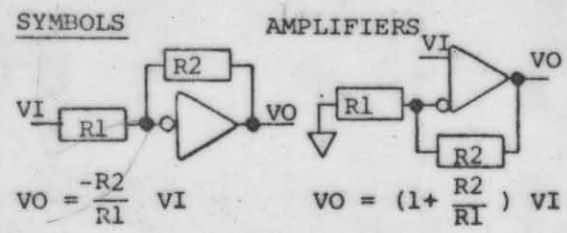
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

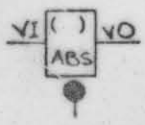
SYMBOLS

AMPLIFIERS



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

CASE GROUND

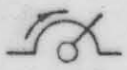


VO = SIGN () X ABSOLUTE VALUE OF VI

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	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	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
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	X	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
200% DR.CL	X	MCC	DCX-DCY
REG. C.L.	X	MCC	ILA-DM1
FLD ECON DLY	X	MCC	FEA-DM3

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. APPD.	DATE 23-2-82
		TECHN.
		ENG.
		APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

40 HP 3064R
WEBSTER & BENNETT LTD.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
145N02	902M126CF	02		01

01 02 902M126CF

[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

[0232]

SLD-1R

SLA

TP1 TP2

15K

HYSTERESIS

+20V 31

20

23

35 K

3.9K

15 K

SLA

22

[PS19] MCC(SFB)

SP11 3 1

SP12 3 2

SP13 3 3

.47 MF

COM

A LEVEL ADJ.

MCC(DM3) [PS34]

(FEA)

[0624]

1 D COM

26

28 10 10X

27 D2-1Q

32

INSTRUCTIONS VSD1 211

24 18 21

SLOW SPEED RELAY

(P.U.-30RPM)

[0203] DA1

[0213] DA2

OLD

DB DBR

ARM

FROM CUSTOMER'S 110V AC SUPPLY

3 6

13 [02] MA

14

3 7

SUPPRESSOR

DB

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 23-2-82
						TECHN
						ENG.
						APPD.

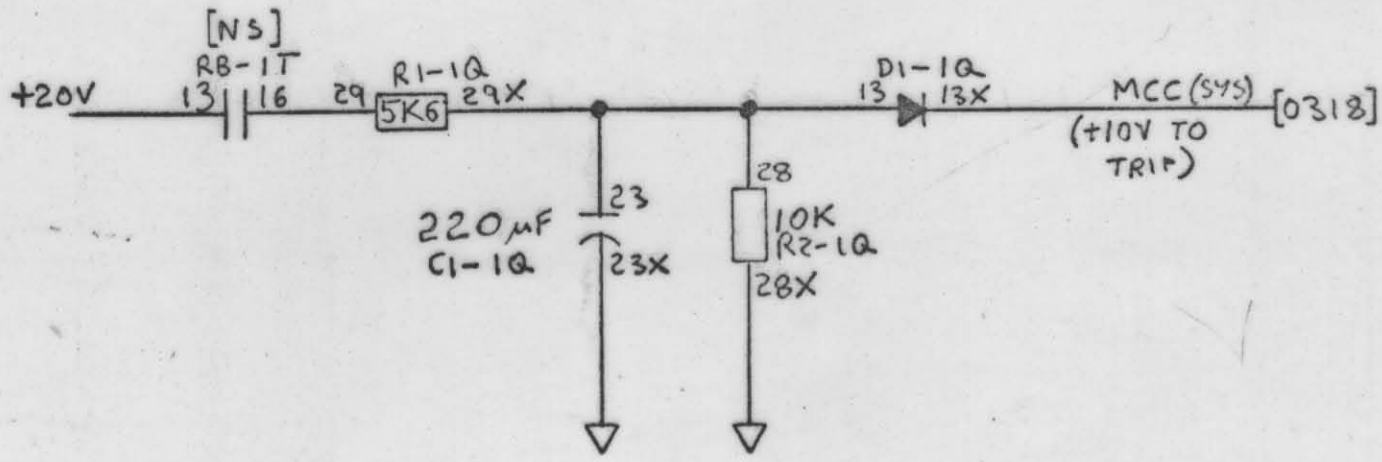
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

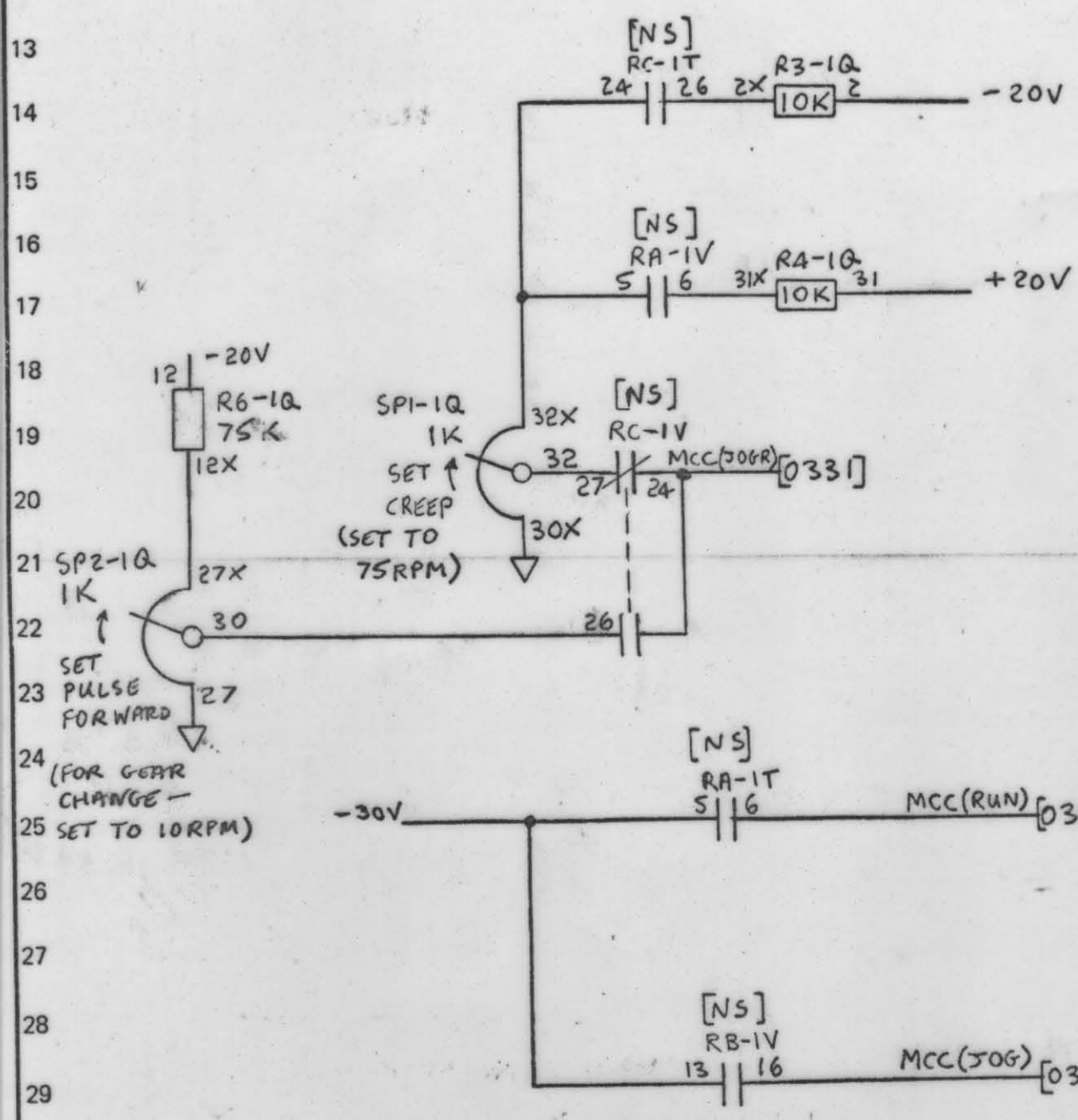
BDC 306AR, 40HP

WEBSTER & BENNETT

CO NUMBER	ELEMENTARY DIAGRAM	CONTD.
145N02	902M126CF	05

IDENT DR SH 04





DR 05 | SH 06 | CONTD. | ELEMENTARY DIAGRAM 902M126CF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 24-2-82
						TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

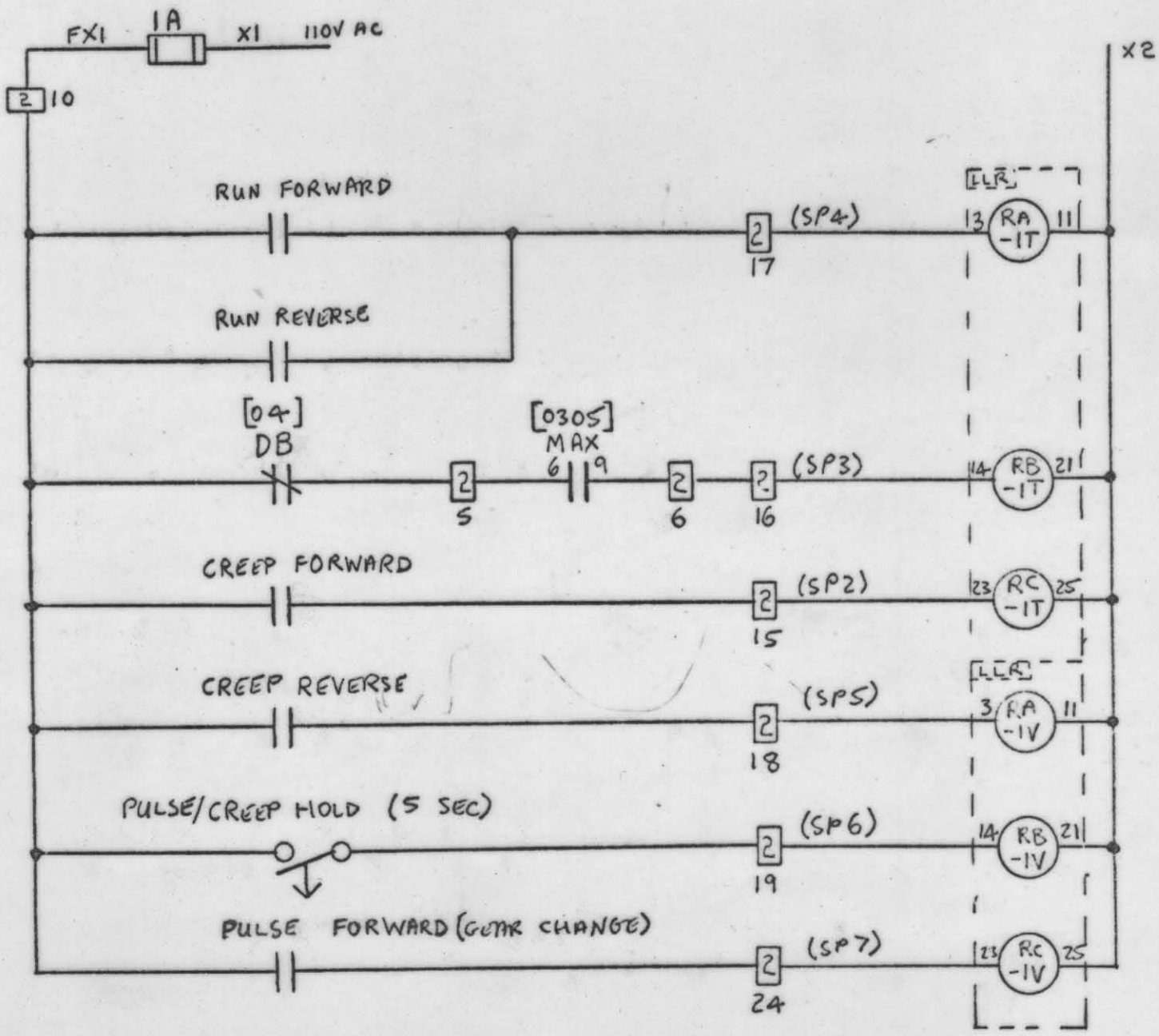
BDC 3064R, 40HP

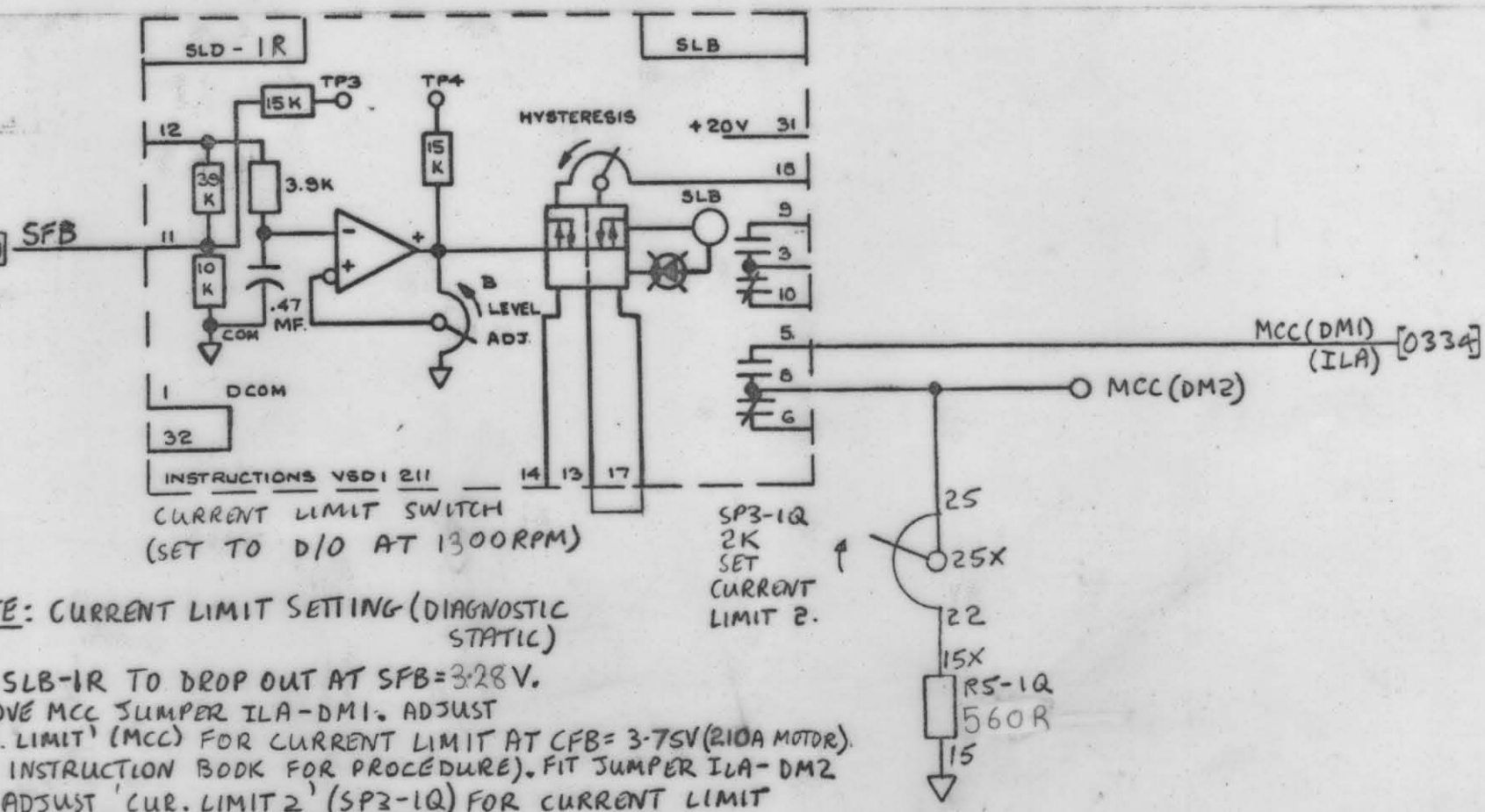
WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
145N02	902M126CF	06

IDENT

DR 05 | SH





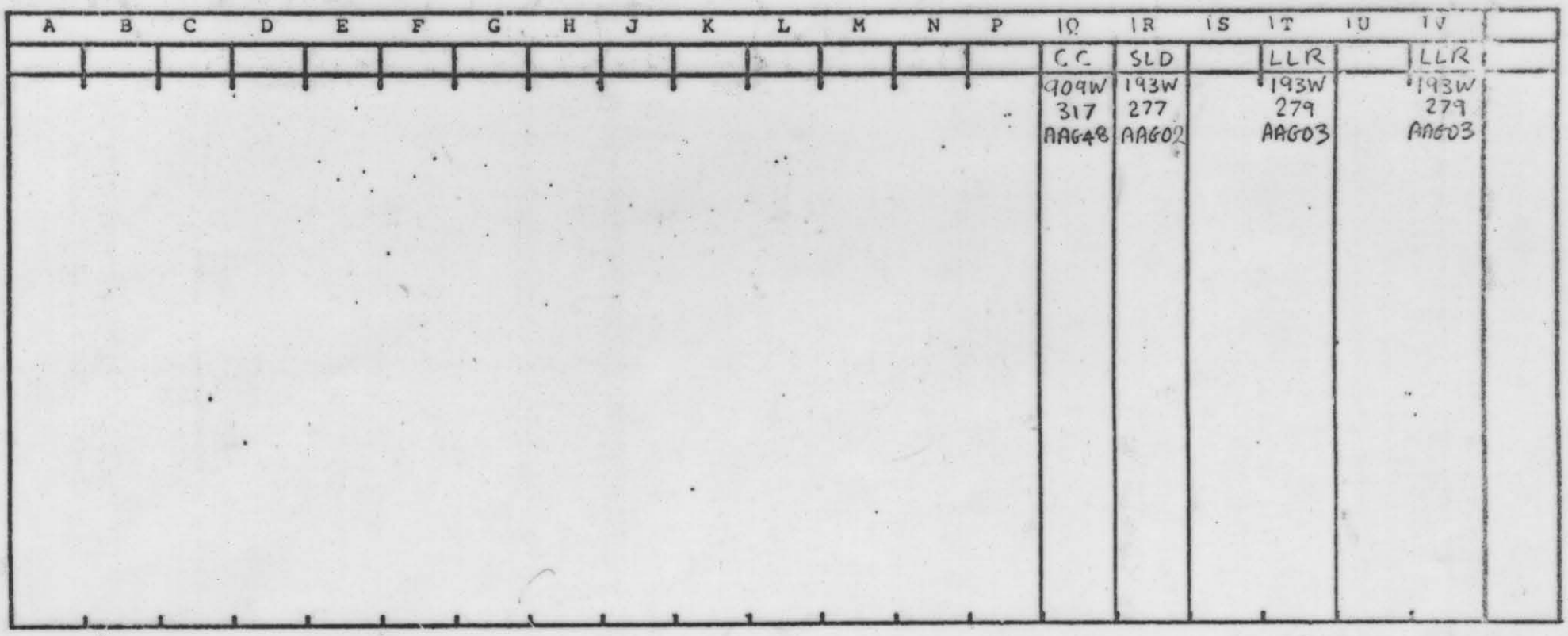
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD	DATE
			KMM			24-2-82
			2 AS SHIPPED. DATE: 1-4-82			TECHN. KMM ENG. APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 40HP
WEBSTER + BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
145N02	902M126CF	07		06

902HM100EA



SH 07 CONTD. 08 ELEMENTARY DIAGRAM 902M126CF

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

RTB(-20V)-1Q02	MCC(SFB)-1R22	1R22-1R11	
1Q02-1R02	1R19-1R21	1V25-1V21	SP2-1T23
RTB(COM)-1Q15	MCC(DM3)-1R26	1V21-1V11	SP3-1T14
1Q15-1R15	1R28-1Q10	1V11-1T11	SP4-1T03
RTB(+20V)-1Q31	1R31-1T13	1T11-1T21	SP5-1V03
1Q31-1R31	1T16-1Q29	1T21-1T25	SP6-1V14
RTB(-30V)-1T05	1Q29X-1Q28	1Q02-1Q12	SP7-1V23
1T05-1V13	1Q28-1Q23	1Q12X-1Q27X	2TB6-2TB16
RTB(X2)-1T25	1Q23-1Q13	1Q30-1V26	SP11-1R29
	1Q28X-1Q23X	1Q27-1Q23X	SP12-1R25
	1Q23X-1Q15	1V24-MCC(30GR)	SP13-1R30
	1Q13X-MCC(SYS)	1R08-1Q25	
	1Q2X-1T26	1Q25-1Q25X	
	1Q31X-1V06	1Q22-1Q15X	
	1V05-1T24	1R13-1R17	MA13-3TB6
	1T24-1Q32X	1Q25X-MCC(DM2)	MA14-3TB7
	1Q30X-1Q28X	1Q10X-1Q27	
	1Q32-1V27		
	1T06-MCC(RUN)		
	1V16-MCC(30G)		
	MCC(DM1)-1R05		

30/0.25 PVC RED

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						24-2-82

2 AS SHIPPED DATE: 1-4-82

TECHN.

ENG.

APPD.

ALLEN-WEST

Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 40HP

WEBSTER & BENNETT

GENERAL ARR	ELEMENTARY DIAGRAM	CONTD	DR	SH
145N02	902M126CF	08		07

SUPPLY
380/440V, 50/60Hz

L1 L2 L3

NOTE
CONNECT DRIVE CONTROL TRANSFORMER (CPT, SHEET 02) FOR CORRECT VOLTAGE.

OLD

DA1

DBR

ARM

SHUNT FIELD

ATB-F1

ATB-F2.

DA2

2TB29

TG

2TB30

DB

3TB6

SUPPRESSOR

3TB7

TO CUSTOMER'S 110V AC SUPPLY (INRUSH 675VA, SEALED 65VA)

2TB10

DB

2TB5

2TB6

2TB16

RUN FORWARD

RUN REVERSE

2TB17

CREEP FORWARD

2TB15

CREEP REVERSE

2TB18

PULSE/CREEP HOLD (5 SEC)

2TB19

PULSE FORWARD (GEAR CHANGE)

2TB24

2TB12

TRIP RESET (IF REQUIRED)

2TB8

OLD

2TB9

EMERGENCY STOP (IF REQD.)

(D.B. STOP)

MOTOR THERMOSTAT

P1

P2

2TB28

NC SPEED REF (0 TO ± 8·5V)

2TB27

2TB3

CLOSED UNDER NORMAL CONDITIONS

FLT

2TB4

FAULT SIGNAL

3TB1

SLOW SPEED RELAY (P.U.-30RPM)

SLA-1R

3TB2

3TB3

TO CUSTOMER'S CIRCUIT

MOTOR DATA:-

KW - 40/40/40/30
RPM - 900/1150/3000/3850
V_A - 328/400/400/400
I_A - 145/111/111/85
V_F - 240
I_F - 4·86/4·86/1·43/1·0

TACHO DATA:-

60V D.C./1000RPM
231 VOLT MAX

DR 09 | SH | CONTD. 10 | ELEMENTARY DIAGRAM 902M126CF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			2 AS SHIPPED DATE: 1-4-82			24-2-82

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 40HP
CUSTOMER'S CONNECTIONS
WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
145N02	902M126CF	10

IDENT

DR 09 | SH

DR | SH 1 | CONTD. 2 | ELEMENTARY DIAGRAM 902M128CY

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
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SYMBOLS

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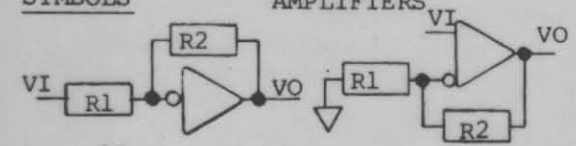

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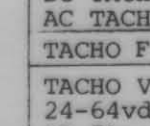

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STAB ON TERMINAL

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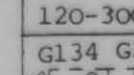
EX: 9 [2] - 2TB9; X2 [R] - RTBX2

TERMINAL AT T.B.'s



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-300%		IFC	I-ILO
SR5 - 9v	X		NONE)
9 - 20v		MCC	SRH - COM
JOGR 10v			(NONE)
20V	X	MCC	JH - COM
LT.3-7sec.			(NONE)
2 - 60sec	X		332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
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)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
175%/100 DCL		MCC	DCX - DCY.

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 (3 08)
	FEA	FIELD ECONOMY ADJUST (3 25)
	FF	FIELD FAULT (3 28)
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	ILA	CURRENT LIMIT ADJUST (3 23)
	IMET	CURRENT SIGNAL FOR METER (3 10)
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*	LR	LOCAL REF. FROM DGC (3 33)
*	JOG	JOG SWITCH INPUT (3 23)
*	JOGR	JOG REFERENCE INPUT (3 31)
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	RERR	REGULATOR ERROR (3 27)
	RIJ	INTEGRATOR SUMMING JUNCTION (3 27)
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	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)

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

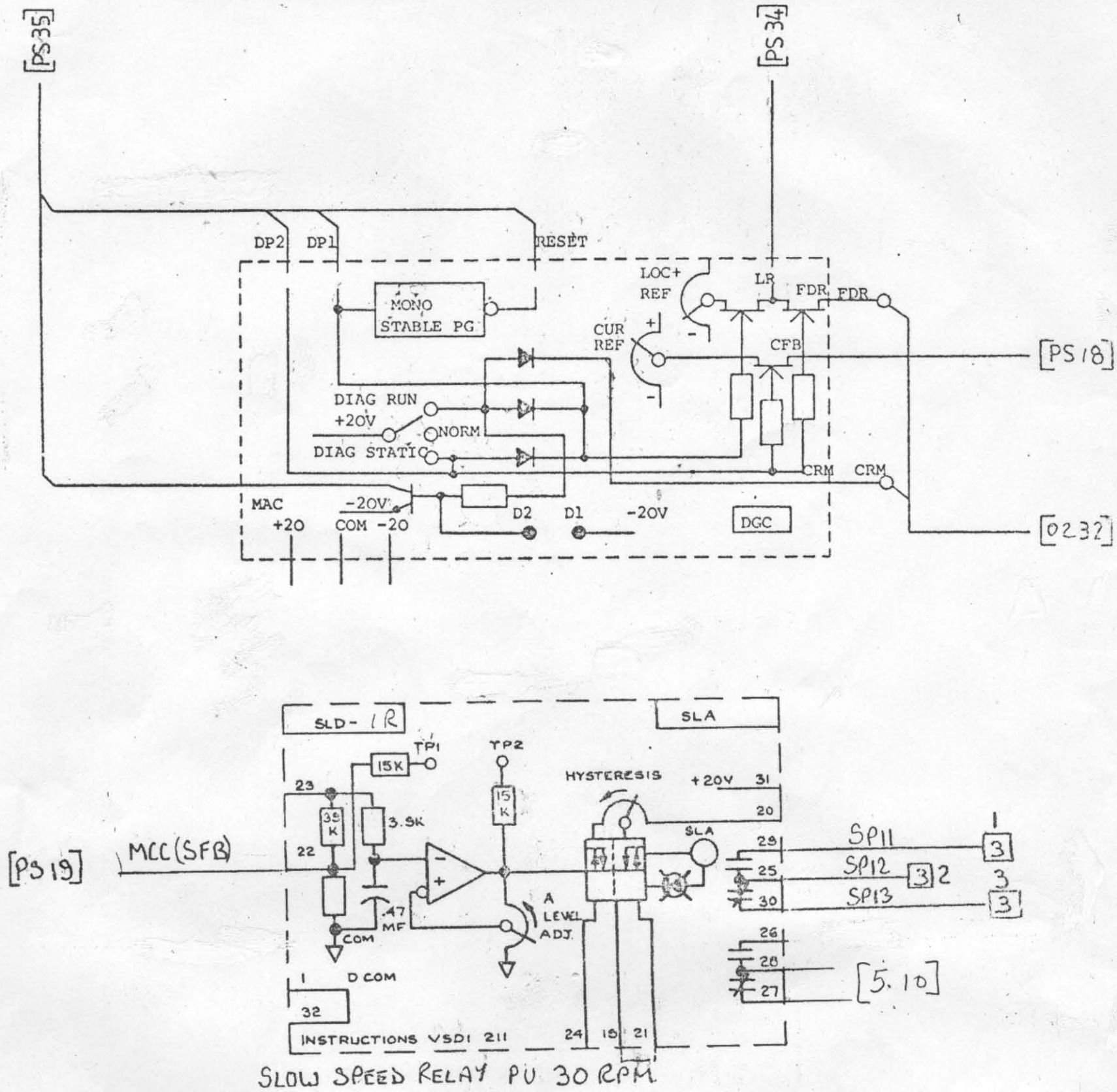
NOTE: ⊤⊥⊤ FIELD EFFECT TRANSISTOR: THE CLOSED/OPEN (I/O) STATE OF THESE SWITCHED FOR "PRECONDITION" - "RUN" OR JOG" - "DIAGNOSTIC STATIC" - "DIAGNOSTIC RUN" IS SHOWN BY A FOUR DIGIT WORD WITH STATE SEQUENCE.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 14.5.86
						TECHN.
						ENG.
						APPD. REL.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 100 HP
KETLON (WICKMAN BENNETT)

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
617N00	902M128CY	2	△		1



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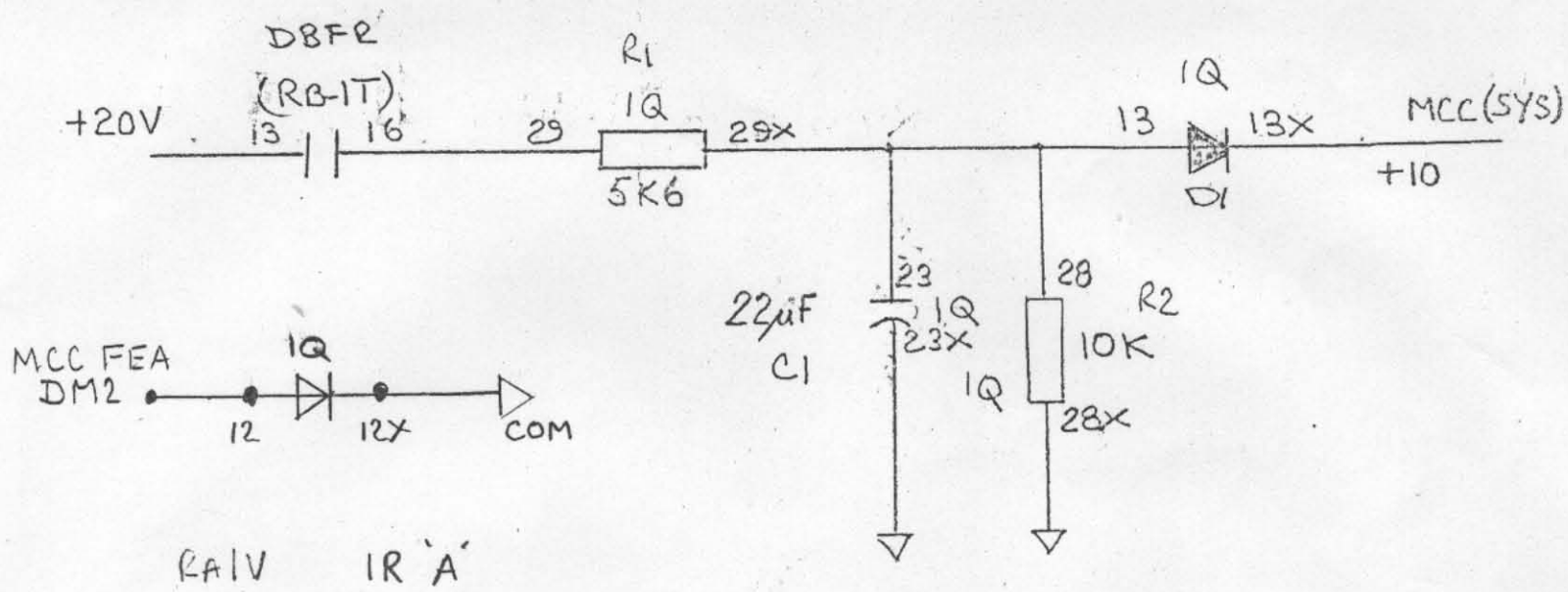
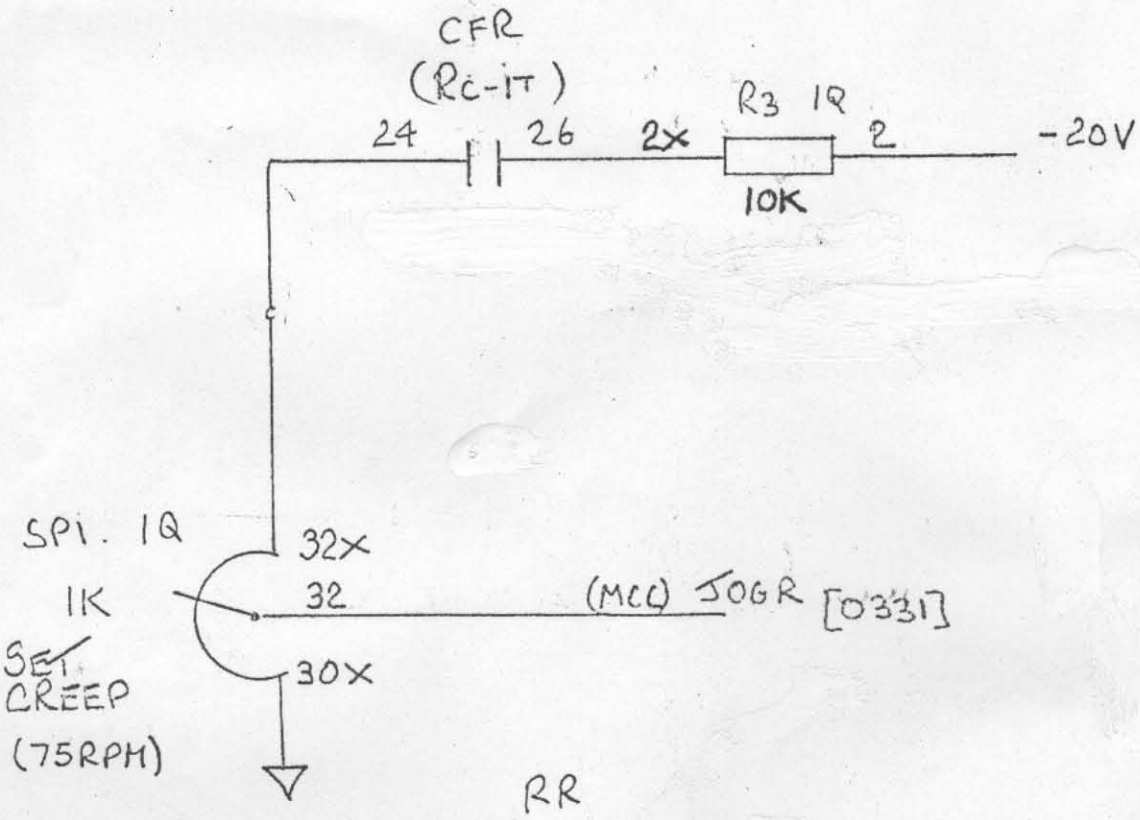
						TECHN.
						ENG.
						APPD.

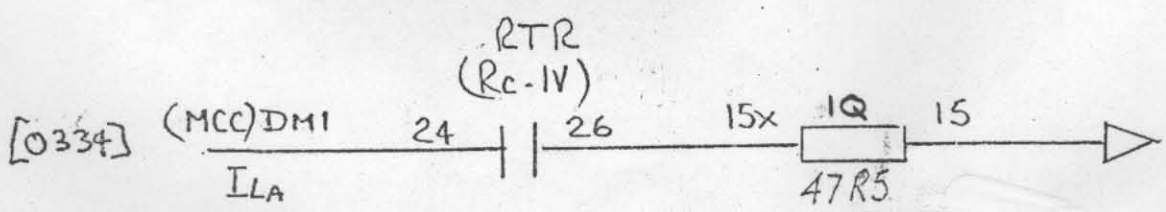
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 100HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
617N00	902M128CY	5	4	4







REDUCED CURRENT LIMIT

APPROX 10% WHEN NORMAL CURRENT LIMIT SET TO 150%

DR 5 SH 6 CONTD. ELEMENTARY DIAGRAM 902M128CY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 14-5-86
						TECHN.
						ENG.
						APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 100 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
617N00	902M128CY	6	5	

110V AC

X1

1A MOUNTED ON P.S.C.

FX1

2 | 10

RUN FORWARD

RUN REVERSE

6 - MAX

2 | 2

5

DB

8

3 | SP18

LLR 1T

RR

3 | 17 | 3 | RA | 11

RUN RELAY
0524

DBFR

14 | RB | 21

D.B FAULT RELAY
0503

CREEP FORWARD

3 | SP19 | 23 | RC | 25

CFR

CREEP FORWARD RELAY
0514

CREEP HOLD - 5SEC

11 | 3 | SP21 | 14 | RB | 21

CHR

CREEP HOLD RELAY
05 27

REDUCED TORQUE (GEARCHANGE

12 | 3 | SP22 | 23 | RC | 25

RTR

REDUCE TORQUE RELAY
05.31

LLR 1V

10 | 3 | SP12 | 3 | RA | 11

05.10

X2

MF1B

+20V COM -20V SYS

VSD1
317

1XT TTA SYS

(IF USED)

+20V 1BA

+20V

R3A

R4A

R10A

R11A

IABS

IBS (IFC)

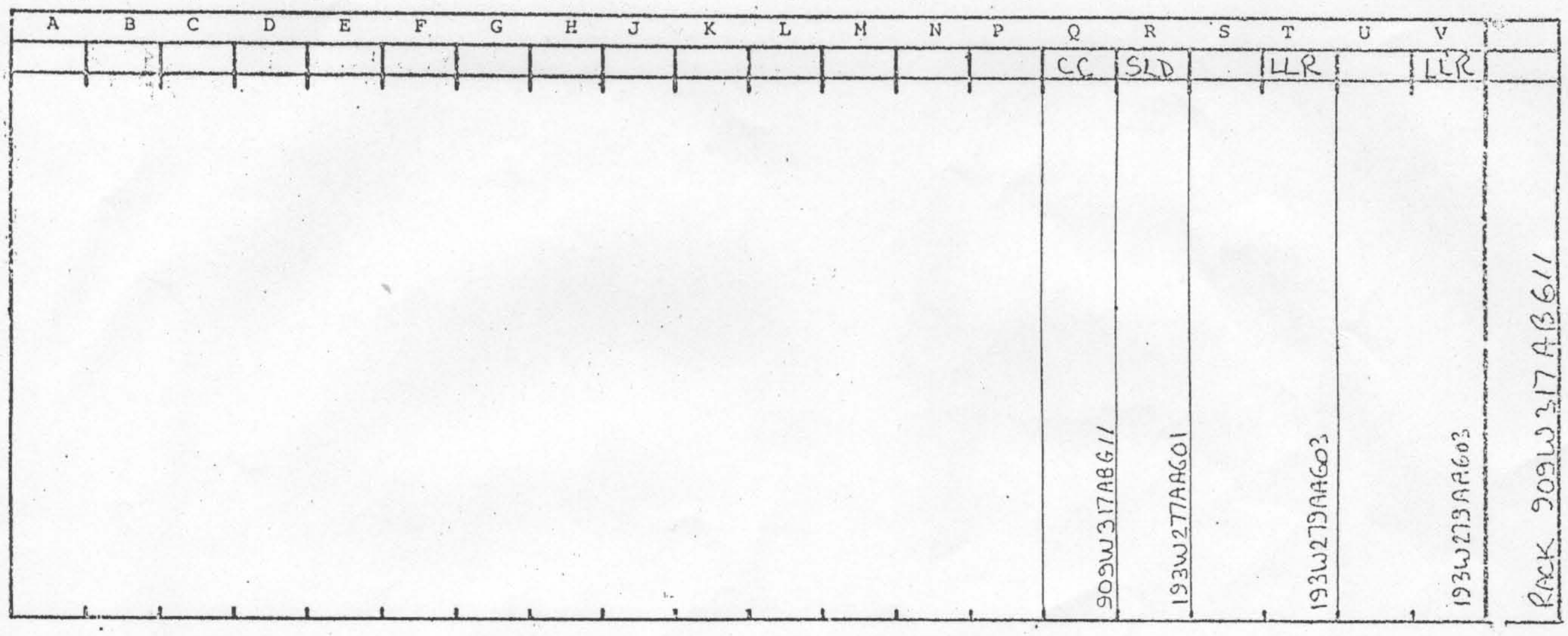
OA1

OA1

TOC

TIMED OVERCURRENT CARD

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 14.5.86	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	BDC 3064R 100 HP.	IDENT DR 6 SH 7
		TECHN.		GO NUMBER 617N00	ELEMENTARY DIAGRAM 902M128CY
		ENG.		CONTD.	
		APPD.			



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

RTB-20 - 1Q02	MCC(SFB) - 1R22	1V26 - 1Q15X	
1Q02 - 1R02	1R19 - 1R21	1V25 - 1V21	SP11 - 1R29
	MCC (DM2)- 1Q12	1V21 - 1V11	SP12 - 1R25
RTB COM - 1Q15	1Q12X-1Q23X	1V11 - 1T11	SP13 1R30
1Q15 - 1R15	1R31 - 1T13	1T11- 1T21	SP14
	1T16 - 1Q29	1T21 - 1T25	SP15
RTB+20 - 1Q31	1Q29X - 1Q28		SP16
1Q31 - 1R31	1Q28 - 1Q23		SP17 - 1T 3
	1Q23 - 1Q13		SP18 - 1T 14
RTB-30- 1T05	1Q28X - 1Q23X		SP19 - 1T 23
1T05 - 1V13	1Q23X - 1Q15		SP20 - 1V 3
RTBX2 - 1T25	1Q13X - MCC SYS		SP21 - 1V 14
	1Q2X - 1T26.		SP22 - 1V 23
			2TB5 - 3TB10
1R27- RF(MFC)	1T24 - 1Q32X		2TB10 - 2TB6
1R28- 1V12	1Q30X- 1Q28X		
1V9 - 1R31	1Q32 -MCC(JOGR)		
ILA DM1 MCC	1T06- MCC(RUN)		
FEA - DM2(MCC)	1V16 - MCC(JOG)		MA13 - 3TB14
	MCC DM1- 1V24		MA14 3TB15

} RED 24/02

7 | 8 | 902M128CY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 14.5.86
						TECHN.
						ENG. [signature]
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	SH
617N00	902M128CY	8		7

NOTE SEE SH1 FOR 50/60HZ LINKS

SUPPLY 420/460V 50/60HZ

CONNECT CONTROL VT PRIMARY FOR CORRECT VOLTAGE

L1 L2 L3

DA1 [04.27]

A1B- F1

SHUNT FIELD

A1B- F2

(MOTOR CIRCUIT) SEE SH 04

DA2 [04.27]

STOP

PB

2TB8

MOTOR THERMOSTAT

2TB9

KEEP WIRING SEPARATE FROM AC/DC MAINS AND CONTROLS

2TB29

TG

60V/1000 RPM (DC)

2TB30

2TB10

2TB6

MAX

FLT 2TB3

2TB4

FAULT SIGNAL

DB

2TB5

3TB8

RUN FWD

3TB7

3TB1

SLA-1R 3TB2

SLOW SPEED CIRCUIT

RUN REV

3TB3

PU 30RPM.

CREEP FWD

3TB9

3TB14

DB

(SEE SH 4)

MA

CUSTOMER 110V. AC.

3TB10

3TB15

CREEP HOLD

3TB11

AMMETER (IF REQD)

2TB22

2TB8

2TB23

INSTRUMENTS (1mA MOVEMENT)

REDUCE TORQUE (GEAR CHANGE)

3TB12

SPEED INDICATOR (IF REQD)

2TB27

± 7.5V N.C REF.

2TB28

MOTOR DATA

HP.

VA

IA

RPM

VF

IF

TECHN.	ENG.	APPD.	DATE	14.5.86
			TECHN.	
			ENG.	
			APPD.	

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 100 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
617N00	902M128CY	

IDENT

DR SH 9

CONTD. —

ELEMENTARY DIAGRAM 902M128CY

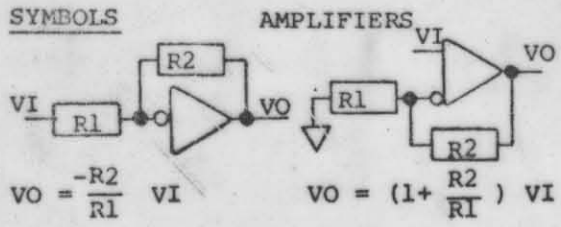
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

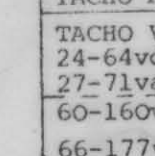
SYMBOLS

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 [P] - 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) SEE NOTE *
50HZ		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			(NONE)
2 - 60sec	X		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	X	IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc		IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		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	X	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)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
200% DR CL	X		DCX - DCY
CL ADJ	X		ILA - DM1
FLD ECC DLY	X	MCC	FEA - DM2

SIGNAL DEFINITIONS AND LOCATIONS

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

* FIT LINKS FOR 50 HZ FOR U.K. OPERATION
FIT LINKS FOR 60 HZ ON FINAL INSTALLATION.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						20 10 82
			2	FIELD JUMPER CHANGED. "AS SHIPPED"		

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 110 H.P.
WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD	IDENT DR	IDENT SH
240N01	902M126RR	2		1

DR 4 SH CONTD. 5 ELEMENTARY DIAGRAM 902M126RR

[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

[0232]

SLD-1R SLA

TP1 TP2

15K 15K

HYSTERESIS +20V 31 20

23 22 39K 3.9K .47 MF COM

SLA

[PS19] MCC(SFB)

A LEVEL ADJ.

SP11 SP12 SP13

29 25 30

1 3 2 3 3

26 28 27

MCC FEA DM.2 [PS34]

12 1Q 12X

1 D COM 32

INSTRUCTIONS VSD1 211 24 18 21

SLOW SPEED RELAY PU 30 RPM

[09.05] [0203] DA1

[09.09] [0213] DA2

OLD

DB DBR

ARM

SUPPLIED BY A.W FITTED BY CUSTOMER

CUSTOMER 110V AC SUPPLY

3 14 [02

MA

3 15

SUPPRESSOR

DB

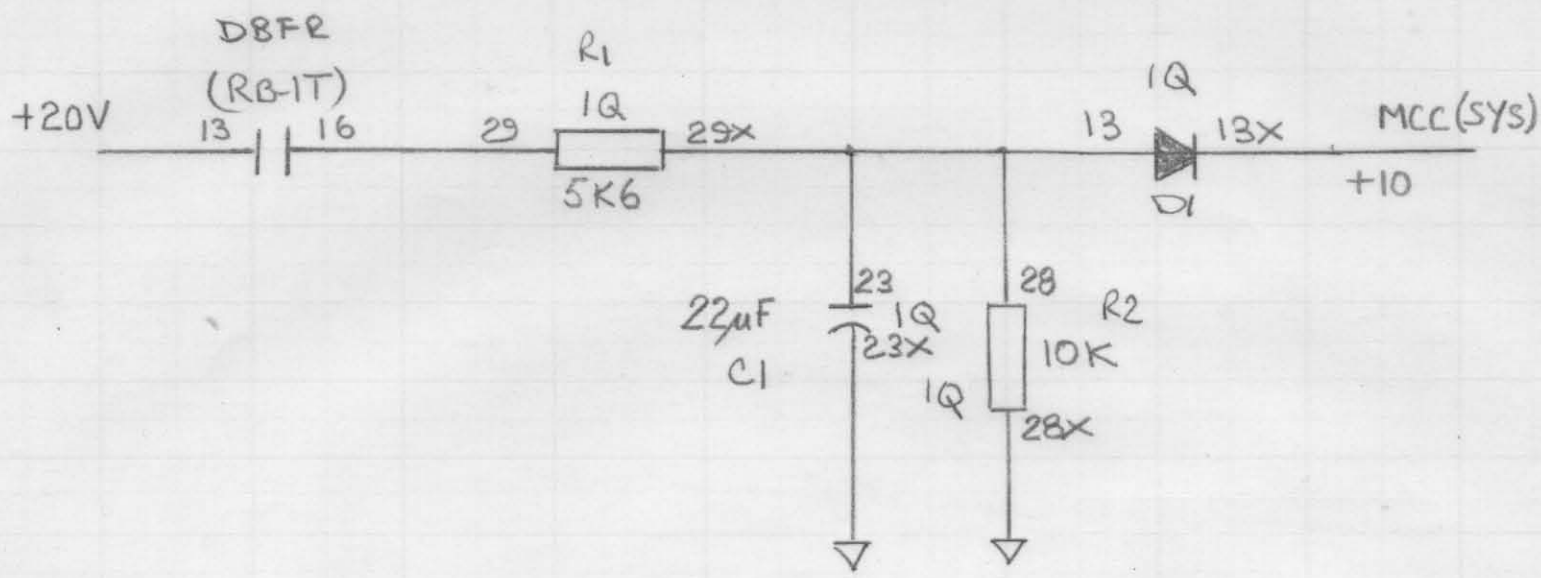
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 20.10.82
						TECHN.
						ENG.
						APPD.

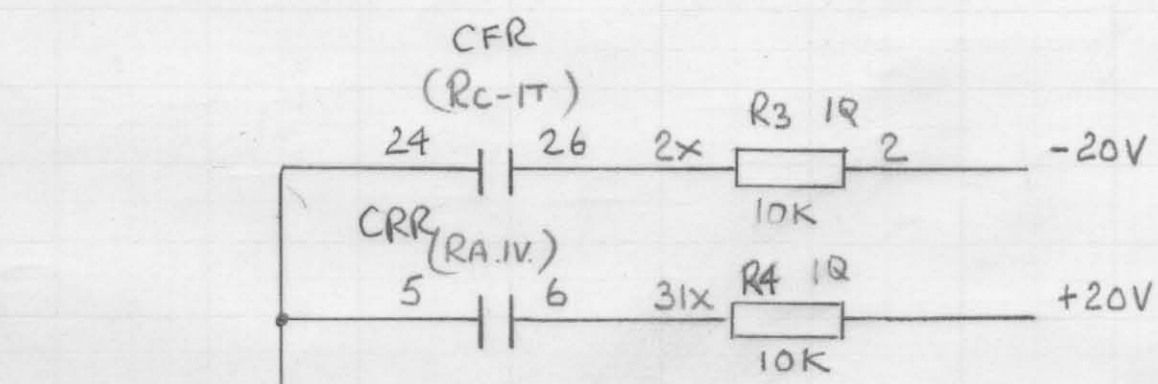
ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

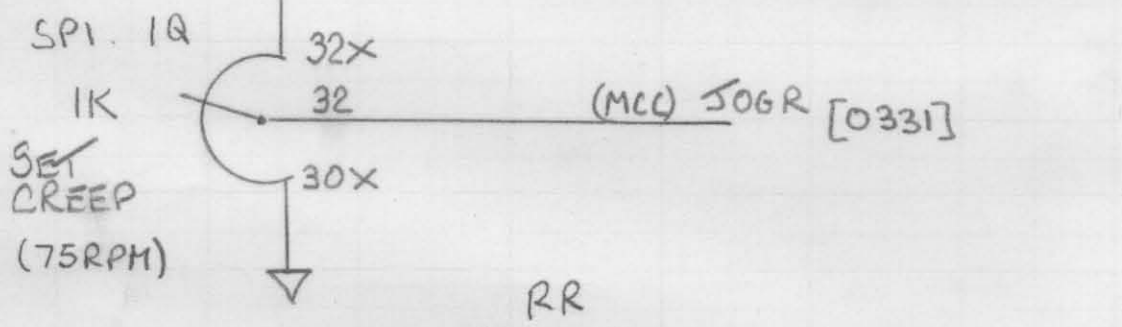
BDC 3064R 110HP

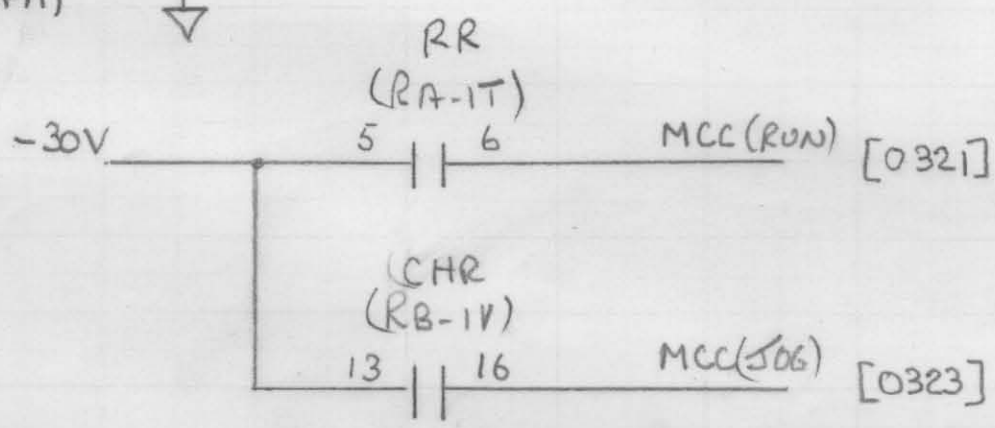
IDENT

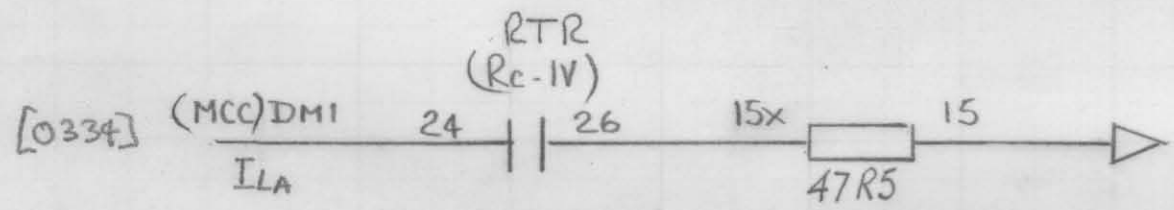
GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
240N01	902M126RR	5		4











REDUCED CURRENT LIMIT

APPROX 10% WHEN NORMAL CURRENT LIMIT SET TO 150%

DR 5 | SH 6 | CONTD. | ELEMENTARY DIAGRAM 902M126RR

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 20·10·82
						TECHN.
						ENG.
						APPD.

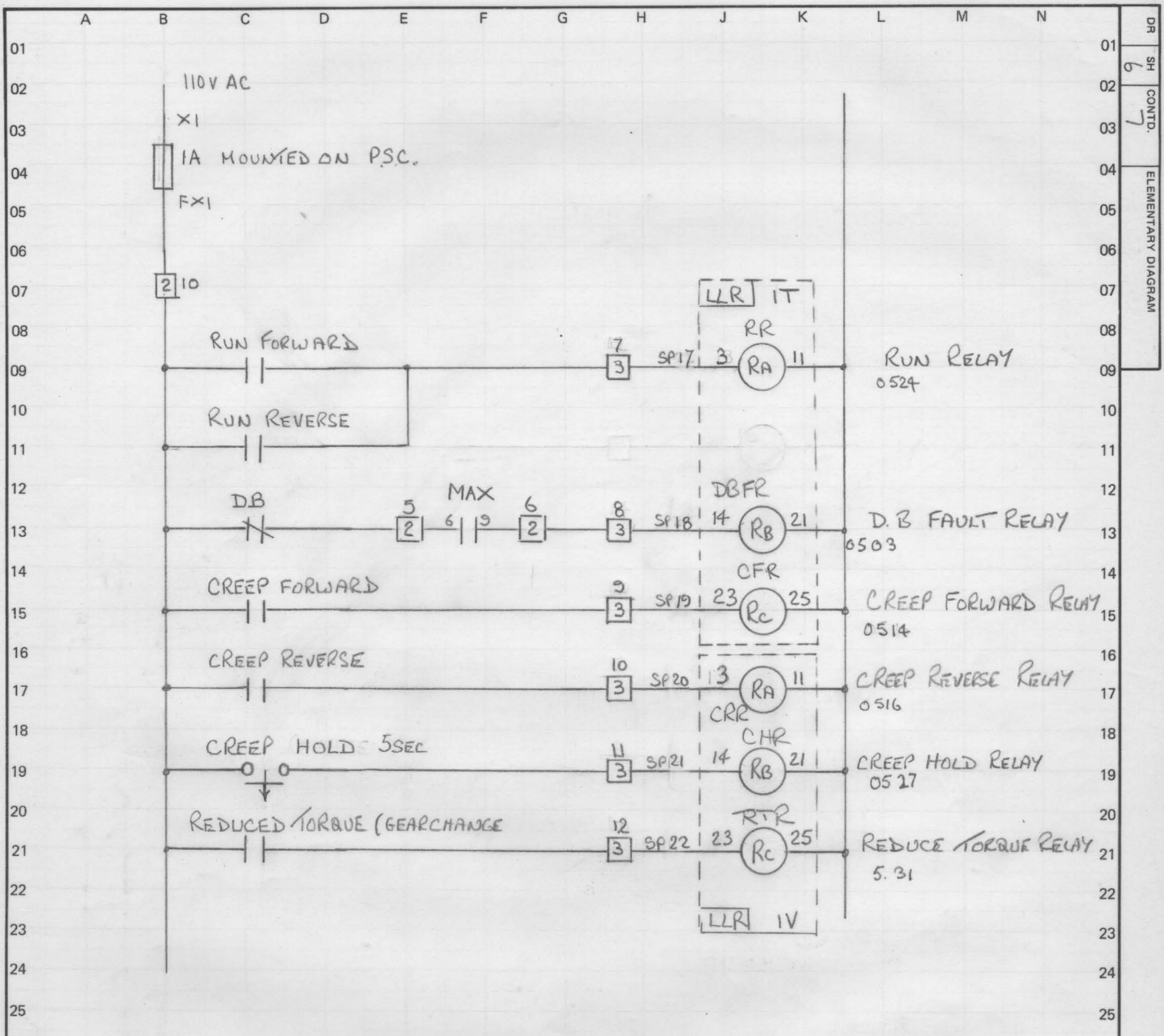
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 110 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
240N01	902M126RR	6

IDENT

DR 5 | SH

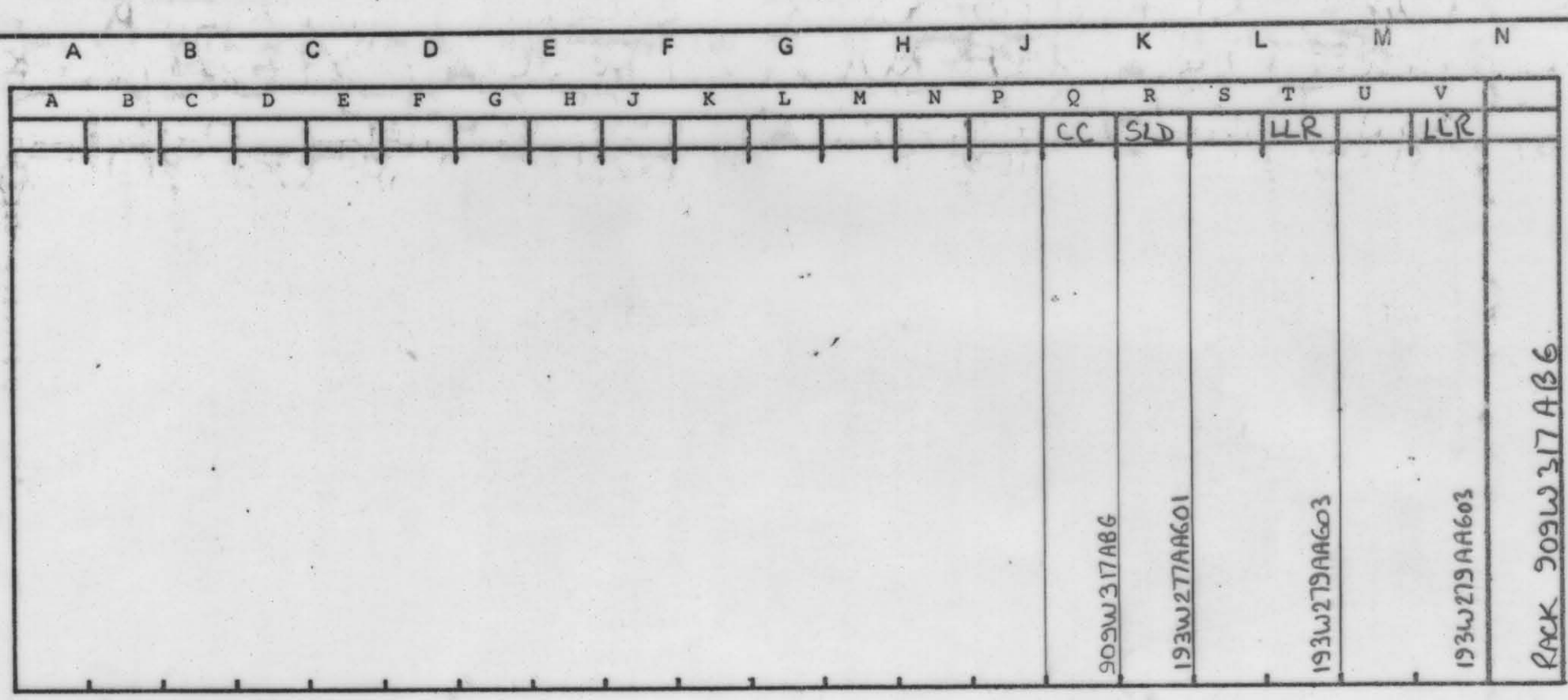


TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 20·10·82
						TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 110 HP.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
240N01	902M126RR	7		6



DR 8 SH 9 CONTD. ELEMENTARY DIAGRAM 902M126RR

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.

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SYMBOLS:

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32	64
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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

R/B-20 - 1Q02	MCC(SFB) - 1R22	1V26 - 1Q15X		
1Q02 - 1R02	1R19 - 1R21	1V25 - 1V21	SP11 - 1R29	
	MCC(DM2) - 1R26	1V21 - 1V11	SP12 - 1R25	
R/B COM - 1Q15	1R28 - 1Q12	1V11 - 1T11	SP13 1R30	
1Q15 - 1R15	1R31 - 1T13	1T11 - 1T21	SP14	
	1T16 - 1Q29	1T21 - 1T25	SP15	
R/B+20 - 1Q31	1Q29X - 1Q28	1Q12X - 1Q23X	SP16	
1Q31 - 1R31	1Q28 - 1Q23		SP17 - 1T 3	
	1Q23 - 1Q13		SP18 - 1T 14	
R/B-30 - 1T05	1Q28X - 1Q23X		SP19 - 1T 23	
1T05 - 1V13	1Q23X - 1Q15		SP20 - 1V 3	
R/BX2 - 1T25	1Q13X - MCC SYS		SP21 - 1V 14	
	1Q2X - 1T26		SP22 - 1V 23	
	1Q31X - 1V06		SP23	
	1V05 - 1T24			
	1T24 - 1Q32X			
	1Q30X - 1Q28X			
	1Q32 - MCC(JOG R)		2TB6 - 3TB8	LINK
	1T06 - MCC(RUN)			
	1V16 - MCC(JOG)		MA13 - 3TB14	RED 24/02
	MCC DM1 - 1V24		MA14 3TB15	

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

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			HM			20.10.82
		2	1Q12X-1Q23X ADDED			TECHN.
						ENG.
			15-12-82			APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 110 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
240N01	902M126RR.	8	△		7

NOTE SEE SH1 FOR 50/60HZ LINKS

SUPPLY 420/460V 50/60HZ

CONNECT CONTROL VT PRIMARY FOR CORRECT VOLTAGE

L1 L2 L3

DA1 [04.27]

A1B- F1

SHUNT FIELD

A1B- F2

(MOTOR CIRCUIT) SEE SH 04

DA2 [04.27]

STOP PB OLD 2TB8

MOTOR THERMOSTAT 2TB9

KEEP WIRING SEPARATE FROM AC/DC MAINS AND CONTROLS

2TB29

TG

60V/1000 RPM. (DC)

2TB30

2TB10

DB 2TB5 MAX

2TB6

3TB8

FLT 2TB3

2TB4

FAULT SIGNAL

RUN FWD 3TB7

RUN REV

3TB1

SLA-1R 3TB2

3TB3

SLOW SPEED CIRCUIT

P.U 30RPM.

CREEP FWD 3TB9

3TB14

DB

CREEP REV 3TB10

MA

(SEE SH 4)

3TB15

CUSTOMER 110V. AC

CREEP HOLD 3TB11

AMMETER (IF REQD)

2TB22

REDUCE TORQUE (GEAR CHANGE) 3TB12

2TB8

INSTRUMENTS 1mA MOVEMENT

2TB23

SPEED INDICATOR (IF REQD)

2TB 28

±8.5V NC REF

2TB 27

MOTOR DATA HP 110

VA 460 VF

IA 203 IF

RPM 0/750/1500

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE				
			2	NC REF ADDED		20.10.82				
						TECHN.				
						ENG.				
				15-12-82		APPD.				

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 110 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
240N01	902M126RR	10

IDENT DR SH 9

DR SH CONTD. ELEMENTARY DIAGRAM

DR | SH 1 | CONTD. 2 | ELEMENTARY DIAGRAM 902M126YE

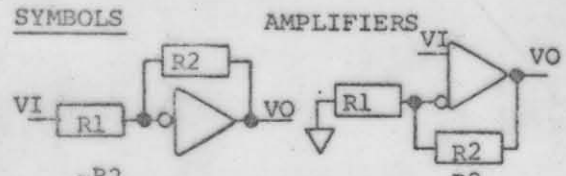
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

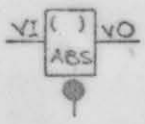
SYMBOLS

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		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.			(NONE)
2 - 60sec	X		332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
.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
175/200% DCL	X	MCC	DCX - DCY
	X	MFC	LPD - LPI

SEE NOTE SH 10

Max AMPS

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.

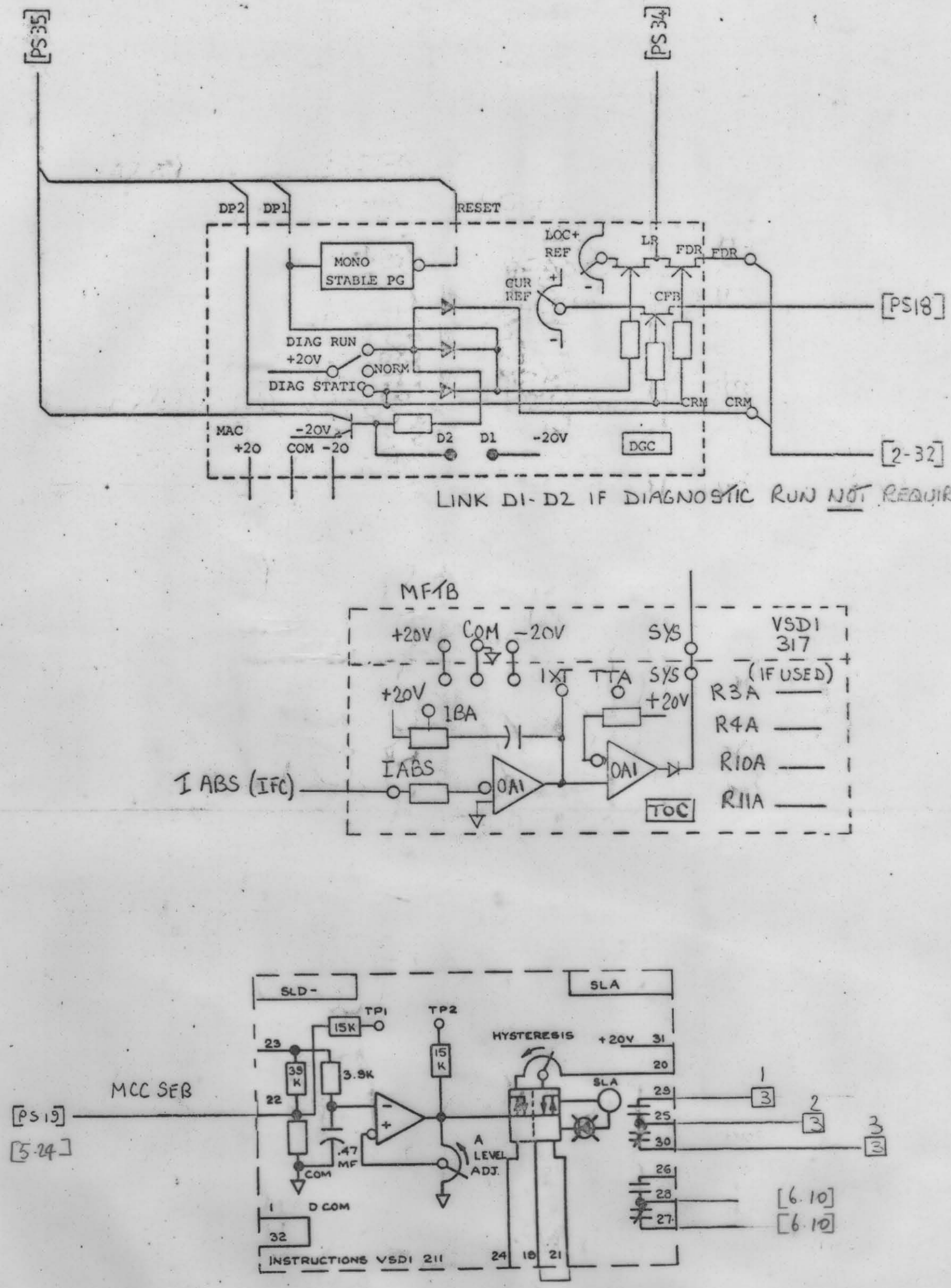
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						25.8.83
						TECHN.
			2 AS SHIPPED 25.10.83			ENG.
						APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 50HP (37KW) (WICKMAN LTD)

GO NUMBER	ELEMENTARY DIAGRAM	CONTD
329N00	902M126YE	2

IDENT | DR | SH 1



SLOW SPEED RELAY PICK UP
AT 30 RPM

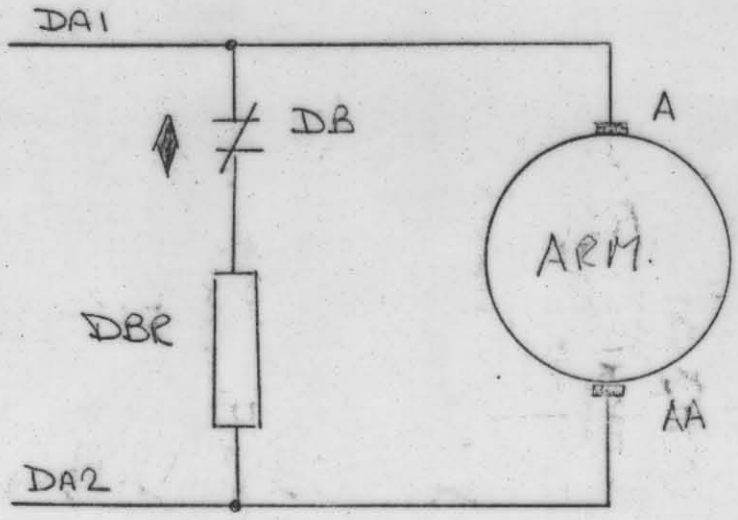
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 25.8.83
						TECHN.
						ENG.
						APPD.

Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

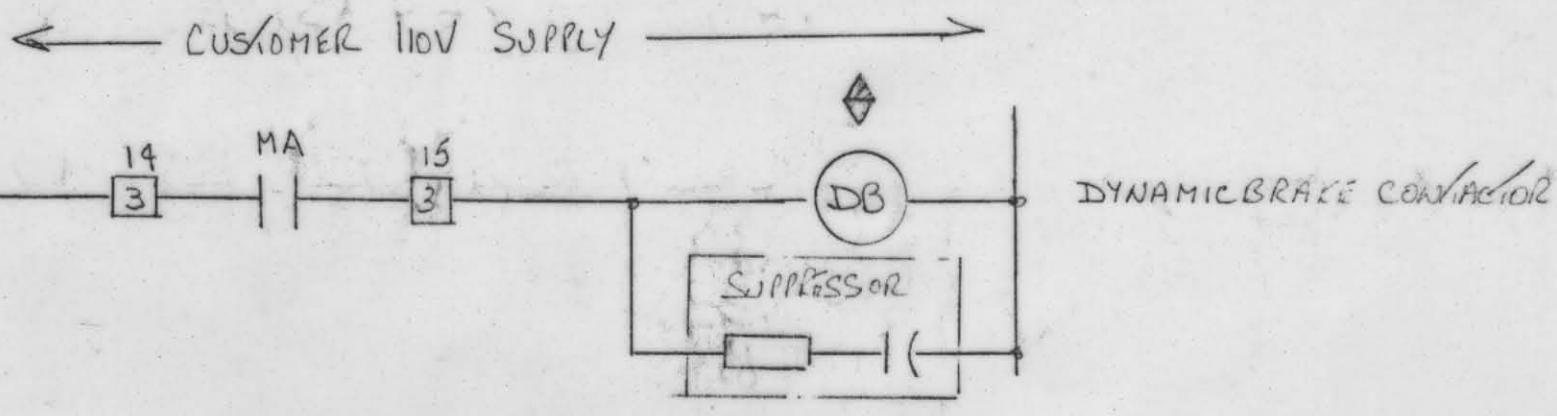
BDC 3064R 50HP

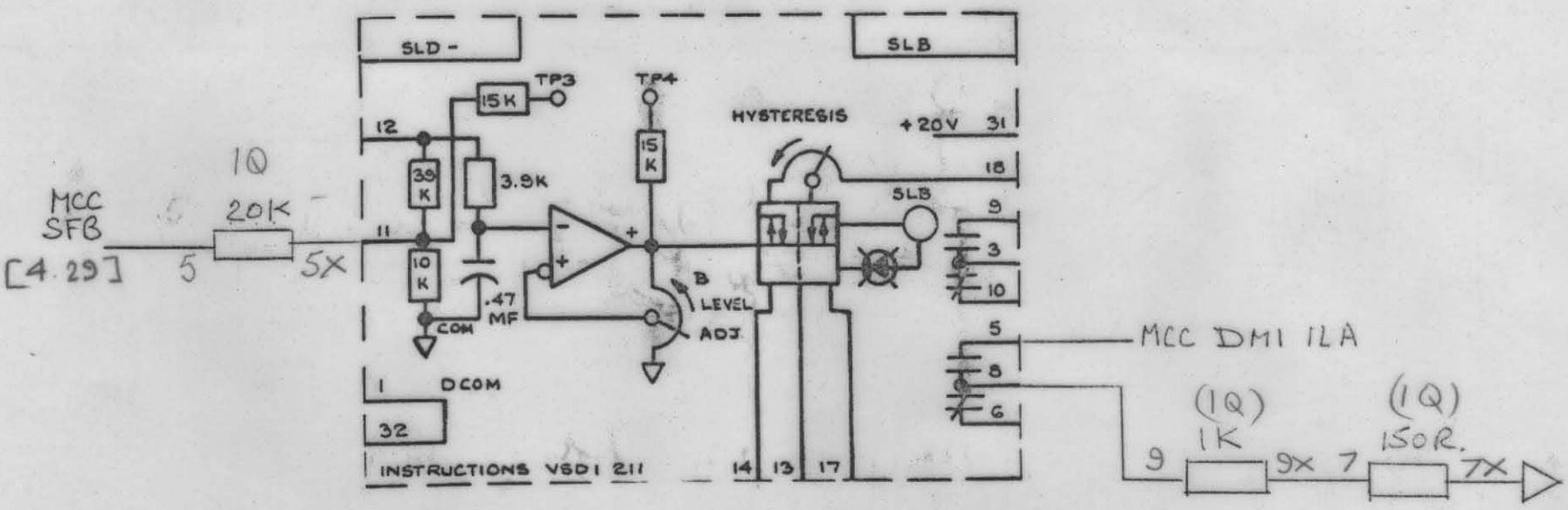
GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
329N00	902M126YE	5		4

IDENT



◆ SUPPLIED BY AW
FITTED BY CUSTOMER





REDUCES CURRENT LIMIT TO 96AMPS WITH NORMAL C/LIMIT SET TO 150% (150AMPS)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 25 8 83
						TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

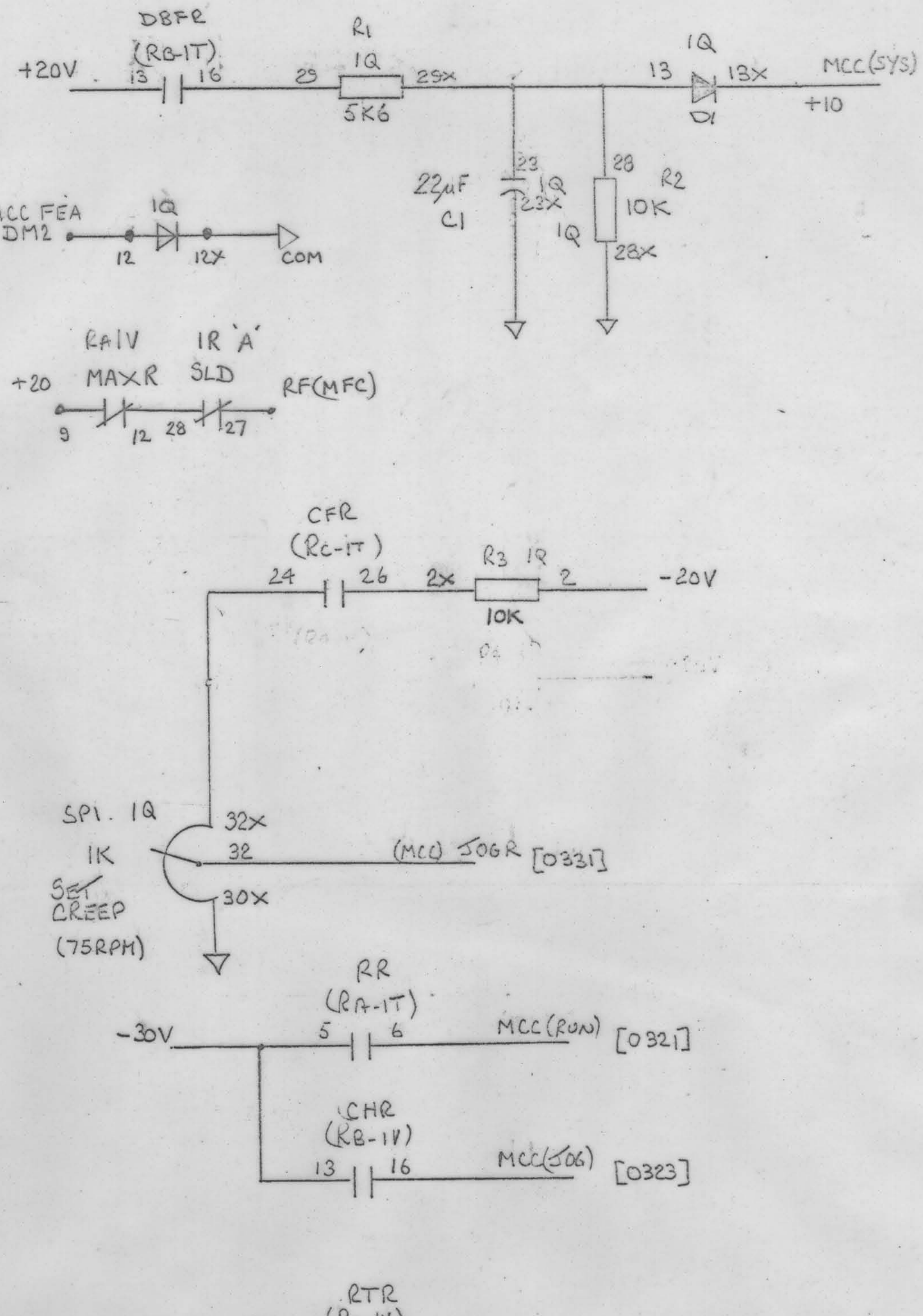
BDC 3064R 50 HP

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
329N00	902M1264E	6

IDENT

DR	SH
	5

DR 5 SH CONTD. 6 ELEMENTARY DIAGRAM 902M1264E



REDUCED CURRENT LIMIT TO
APPROX 10% WHEN NORMAL CURRENT
LIMIT SET TO 150%

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 25.8.83
						TECHN.
						ENG.
						APPD.

ALLEN WEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 50HP

GO NUMBER 329N00
ELEMENTARY DIAGRAM 902M126YE
CONTD. 7
IDENT
DR
SH 6

110V AC

X1

1A MOUNTED ON P.S.C.

FX1

2 10

RUN FORWARD

RUN REVERSE

6 - MAX 2

5 2

DB

8 3 SP 18

7 3 SP 17

LLR 1T

RR 3 RA 11

RUN RELAY 0524

DBFR 14 RB 21

D.B FAULT RELAY 0503

9 3 SP 19

CFR 23 RC 25

CREEP FORWARD

CREEP FORWARD RELAY 0514

CREEP HOLD · 5SEC

11 3 SP 21

CHR 14 RB 21

CREEP HOLD RELAY 05 27

REDUCED TORQUE (GEARCHANGE

12 3 SP 22

RTR 23 RC 25

REDUCE TORQUE RELAY 05.31

LLR 1V

10 3 SP 12

3 RA 11

05.10

X2

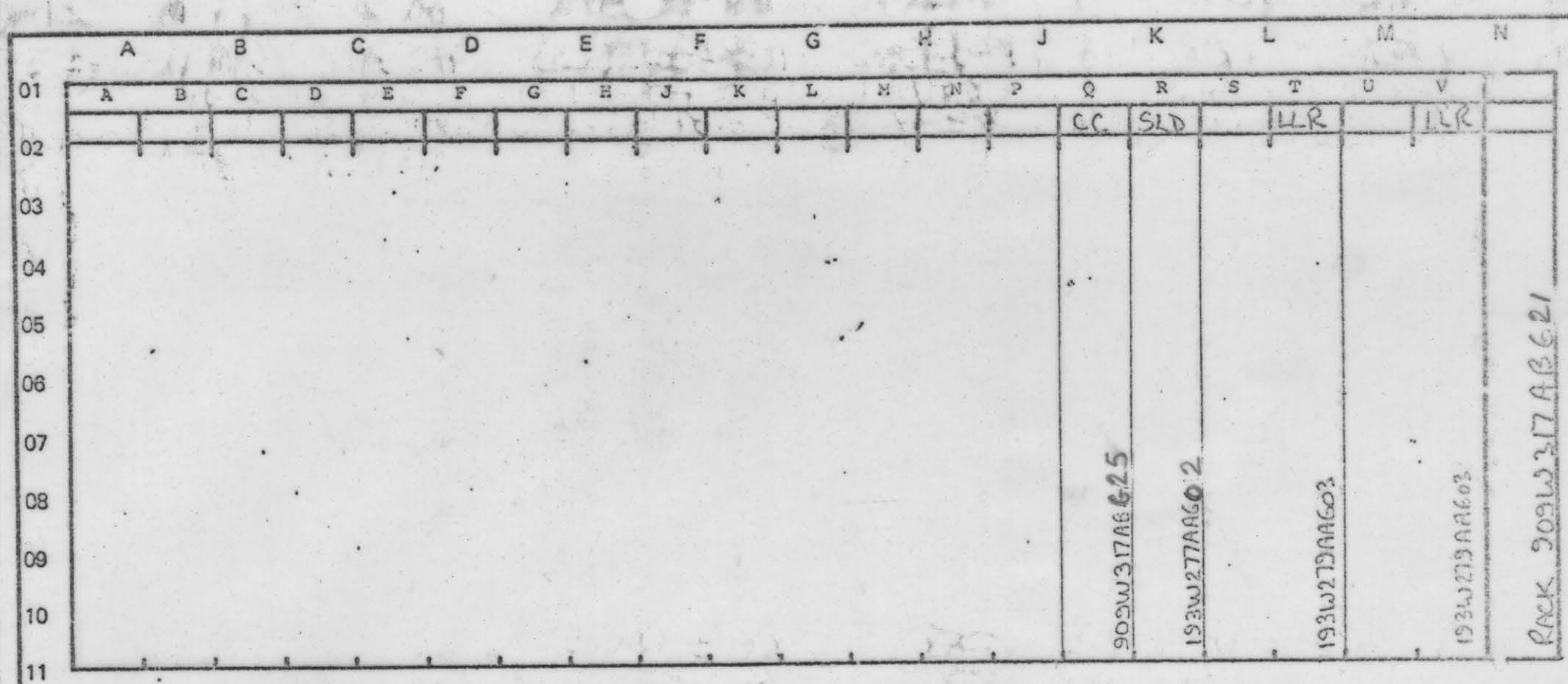
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 25.8.83
						TECHN.
						ENG.
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 50 HP.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	SH
329N00	902M126YE	8		7



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

R/B-20 - 1Q02	MCC(STS) - 1R22	1V26 - 1Q15X	
1Q02 - 1R02	1R19 - 1R21	1V25 - 1V21	SP11 - 1R29
	MCC(DM2) - 1Q12	1V21 - 1V11	SP12 - 1R25
R/B COM - 1Q15	1Q12X - 1Q23X	1V11 - 1T11	SP13 1R30
1Q15 - 1R15	1R31 - 1T13	1T11 - 1T21	SP14
	1T16 - 1Q29	1T21 - 1T25	SP15
R/B+20 - 1Q31	1Q29X - 1Q28		SP16
1Q31 - 1R31	1Q28 - 1Q23		SP17 - 1T 3
	1Q23 - 1Q13		SP18 - 1T 14
R/B-30 - 1T05	1Q28X - 1Q23X		SP19 - 1T 23
1T05 - 1V13	1Q23X - 1Q15		SP20 - 1V 3
R/BX2 - 1T25	1Q13X - MCC(SYC)		SP21 - 1V 14
	1Q2X - 1T26		SP22 - 1V 23
		1R22 - 1Q5	
		1Q5X - 1R11	2TB5 - 3TB10
		1R5 - 1V24	2TB10 - 2TB6
1R27 - RF(MFC)	1T24 - 1Q32X	1R8 - 1Q9	
1R28 - 1V12	1Q30X - 1Q28X	1Q9X - 1Q7	
1V9 - 1R31	1Q32 - MCC(SCR)	1Q7X - 1Q15	
1LA DM1 MCC	1T06 - MCC(RUN)	1R13 - 1R17	MA13 - 3TB14 } RED 24/02
FEA - DM2(MCC)	1V16 - MCC(JOG)		MA14 3TB15 }
	MCC DM1 - 1V24		

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

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 25 8 83
						TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 50 HP.

IDENT

CO NUMBER	ELEMENTARY DIAGRAM	CONTD.	CR	SH
329N0D	902M126YE	10		9

NOTE SEE SH1 FOR 50/60HZ LINKS

SUPPLY 420/460V 50/60HZ

CONNECT CONTROL VT PRIMARY FOR CORRECT VOLTAGE

L1 L2 L3

DA1 [04.27]

A1B- F1

SHUNT FIELD

A1B- F2

(MOTOR CIRCUIT) SEE SH 04

DA2 [04.27]

STOP

PB

2TB8

MOTOR THERMOSTAT

2TB9

KEEP WIRING SEPARATE FROM AC/DC MAINS AND CONTROLS

2TB29

TG

60V/1000 RPM (DC)

2TB30

2TB10

2TB6

MAX

DB

2TB5

3TB8

RUN FWD

3TB7

RUN REV

FLT 2TB3

2TB4

FAULT SIGNAL

3TB1

SLA-1R 3TB2

3TB3

SLOW SPEED CIRCUIT

PU 30RPM.

CREEP FWD

3TB9

3TB14

DB

(SEE SH 4)

MA

3TB15

CUSTOMER 110V. AC.

3TB10

CREEP HOLD

3TB11

AMMETER (IF REQD)

2TB22

2TB8

2TB23

INSTRUMENTS (1mA MOVEMENT)

REDUCE TORQUE (GEAR CHANGE)

3TB12

SPEED INDICATOR (IF REQD)

2TB27

± 7.5V

2TB28

N.C REF.

MOTOR DATA

HP 50/50/50

VA 400/500/500

IA 107/82/82

RPM 850/1100/2550

VF 300V

IF 3.75/3.75/1.2A.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 25.8.82
						TECHN.
						ENG.
						APPD.

ALLENWEST

Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R 50 HP

CO NUMBER 329N00

ELEMENTARY DIAGRAM 902M126YE

CONTD.

IDENT

DR SH 10

DR | SH 1 | CONTD. 2 | ELEMENTARY DIAGRAM 902M128CX

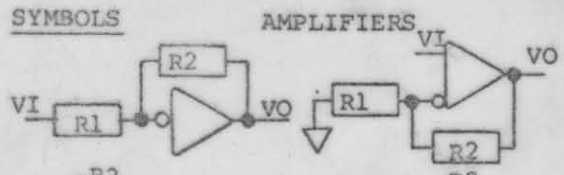
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

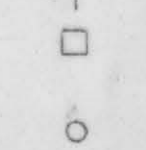
SYMBOLS

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	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	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V.			
24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
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)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
200% DCL	X	MCC	DCX-DCY
REG CL	X	MCC	ILA-DM1
FLD FDBY	X		FEA DM3

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

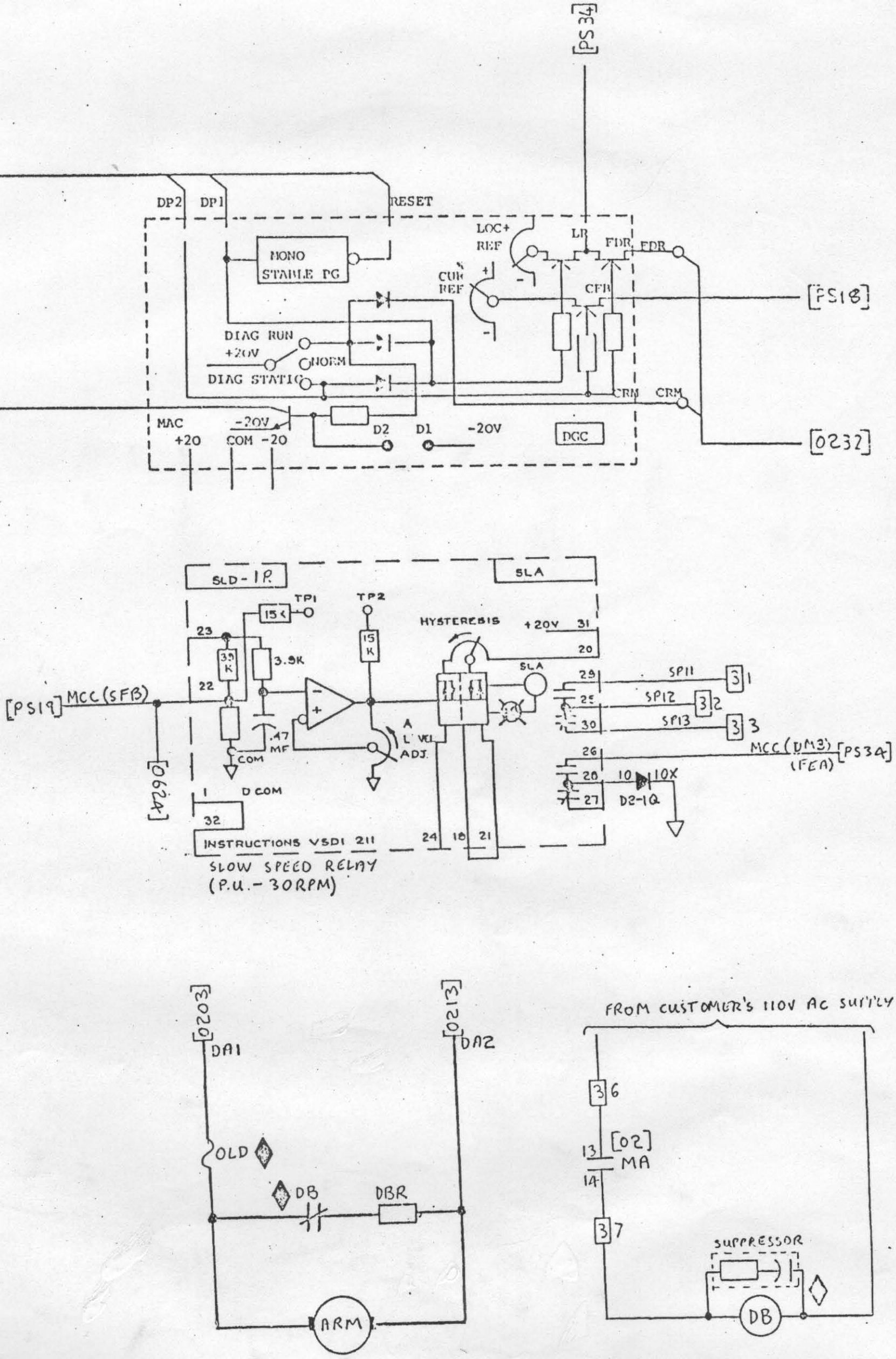
HENCE (PS - 12) DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE DENOTED BY SHEET NUMBER AND LINE? E.G. (1A16) SIGNIFIES LOCATION ON SHEET 1A, LINE 16 ETC.

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.

SEE ALSO 906P118CD

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 23.4.86	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	BDC 3064R 50HP FOR KETLON UK LTD (WICKMAN BENNETT)	IDENT DR 1 SH 1
		TECHN.			
		ENG.			
		APPD.			

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
6042075	902M128CX	



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 24.4.86
						TECHN.
						ENG.
						APPD.

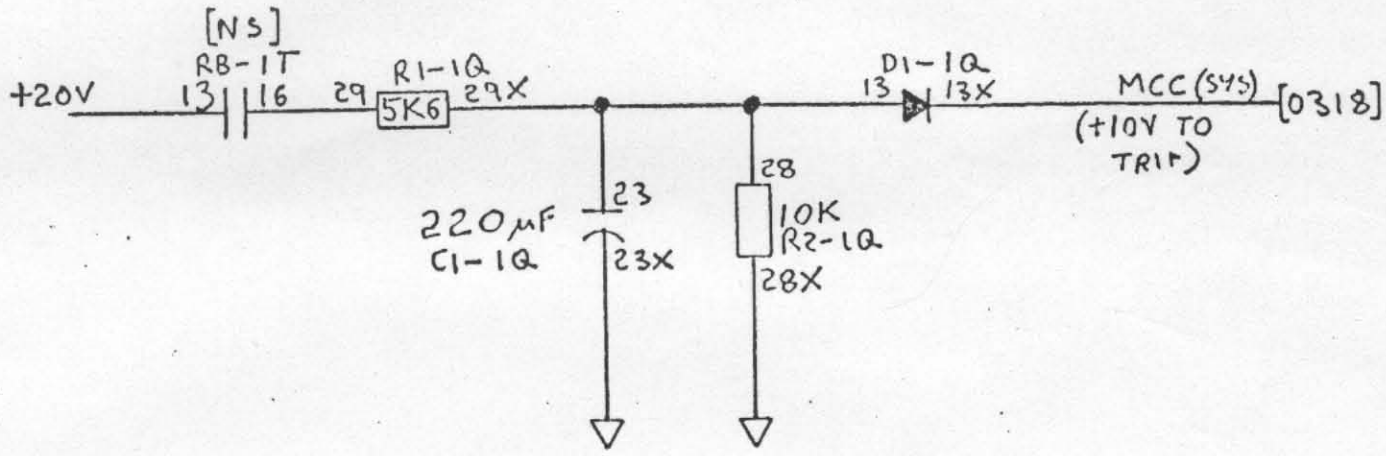
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

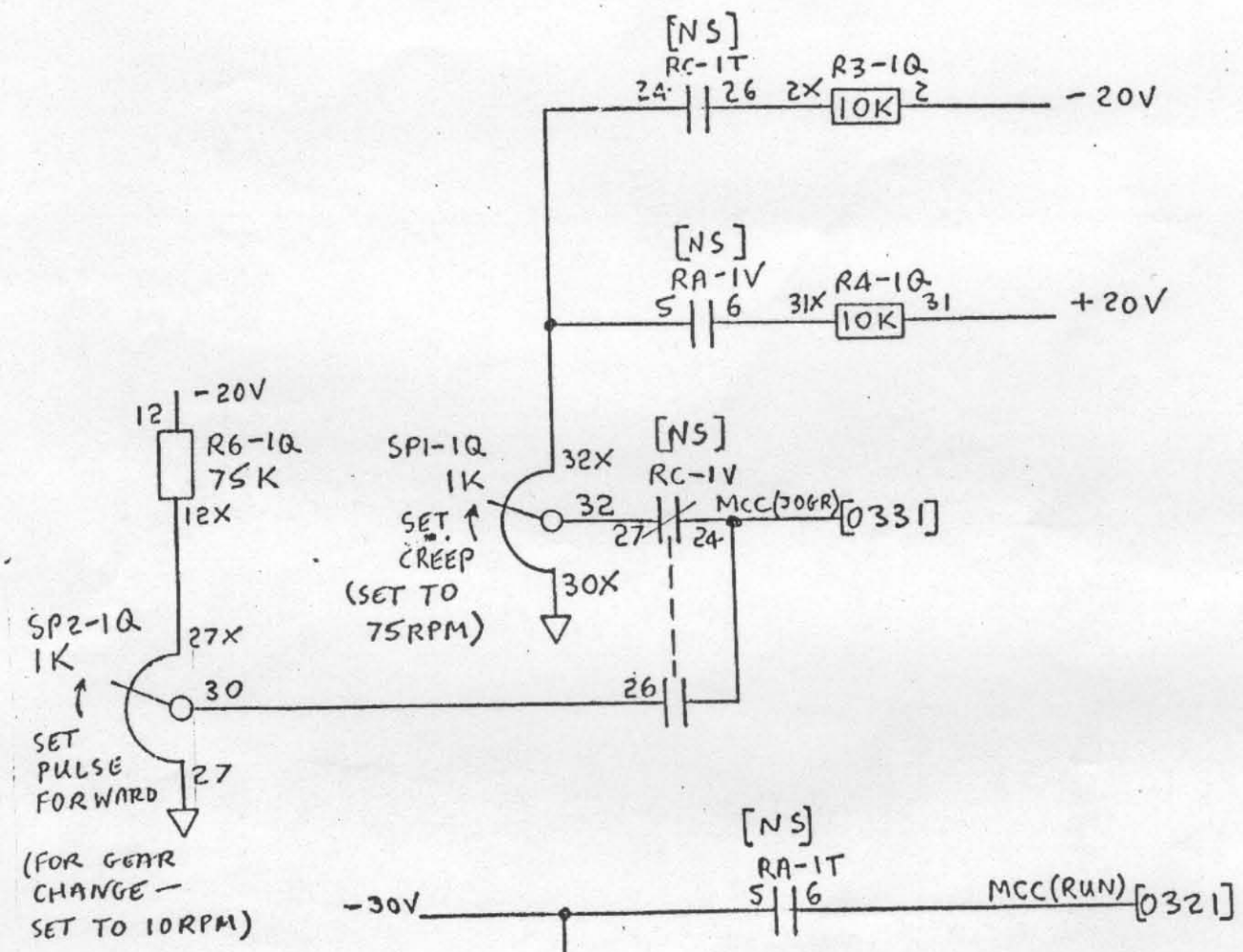
50 HP. 3064R
KETZON (W. BENNETT)

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
6042075	902M128CX	5

IDENT DR SH 4

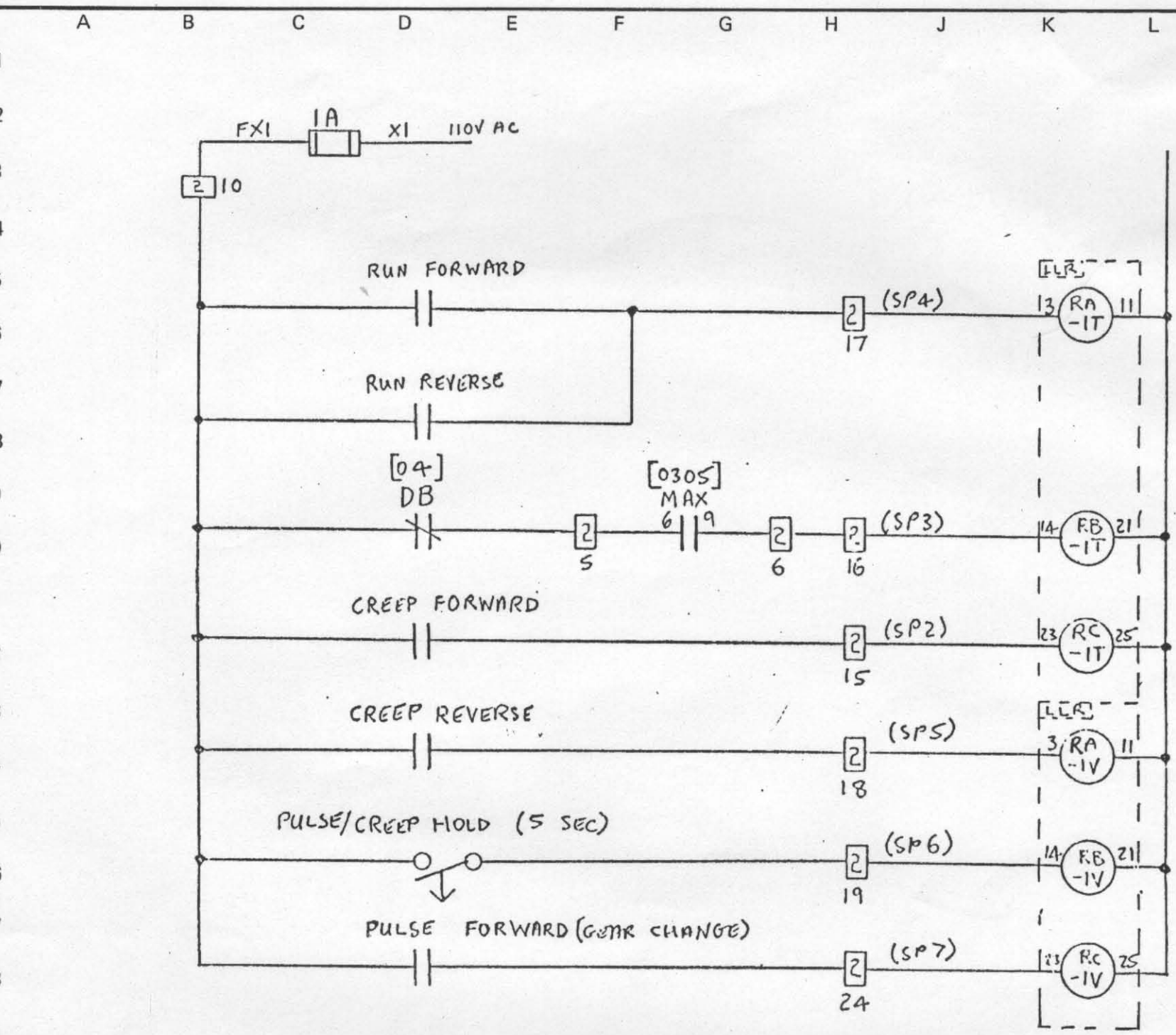
SH 4 CONTD 5 ELEMENTARY DIAGRAM 902M128CX

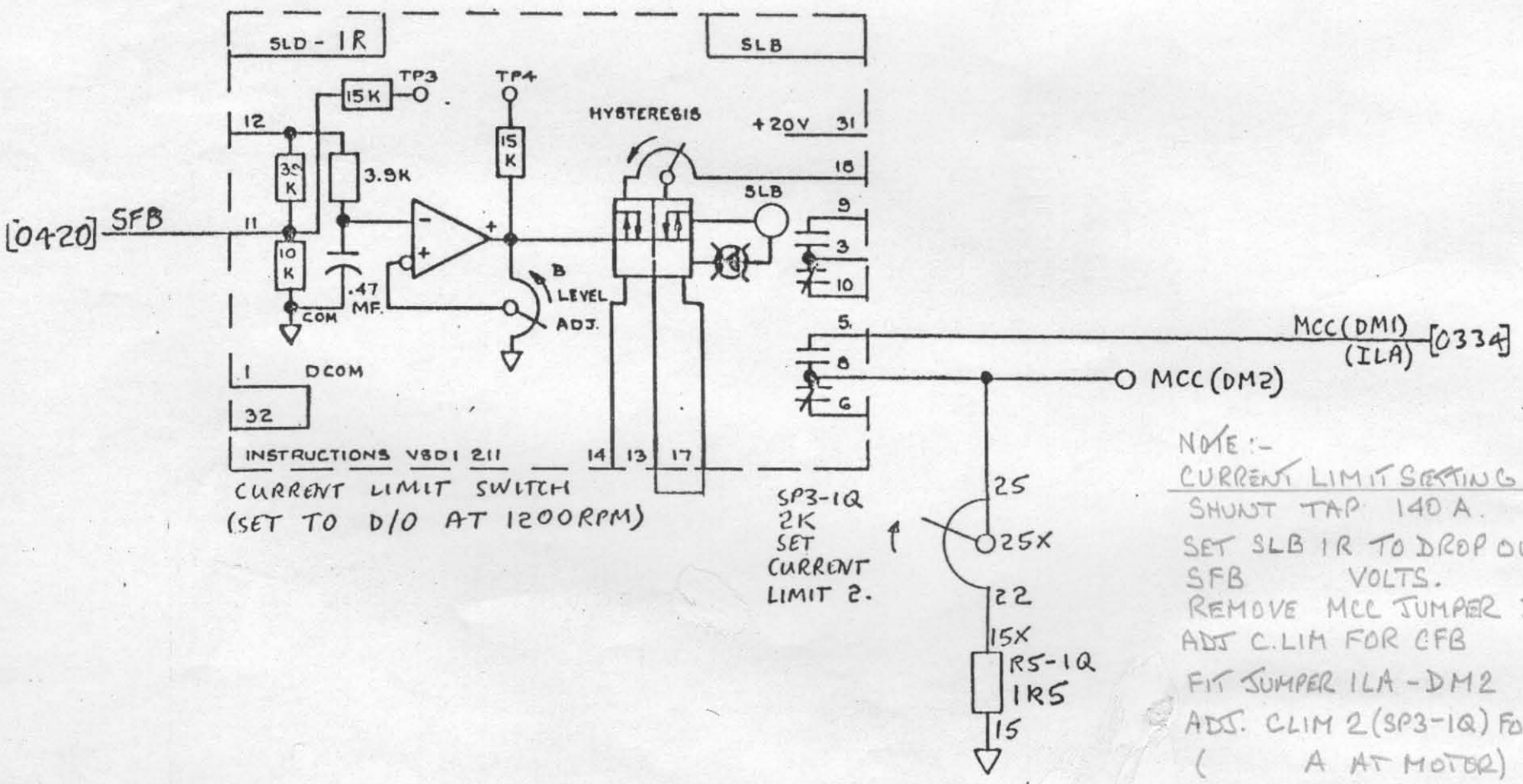




A	B	C	D	E	F	G	H	J	K	L	M	N

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 24.4.86	TECHN.	ENG.	APPD.	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER 6042075	ELEMENTARY DIAGRAM 902M128CX	CONTD. 6	IDENT DR	SH 5





NOTE :-
CURRENT LIMIT SETTING
SHUNT TAP 140 A.
SET SLB 1R TO DROP OUT AT
SFB VOLTS.
REMOVE MCC JUMPER 1LA -DM1
ADJ C.LIM FOR CFB V(A MOTOR)
FIT JUMPER 1LA -DM2
ADJ. CLIM 2 (SP3-1Q) FOR CFB V
(A AT MOTOR)
REMOVE JUMPER 1LA -DM2
REFIT JUMPER 1LA -DM1

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 24.4.86	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			IDENT	
						TECHN.				DR	SH
						ENG.					6
						APPD.	GO NUMBER 6042075	ELEMENTARY DIAGRAM 902M128CX	CONTD. 7		

A	B	C	D	E	F	G	H	J	K	L	M	N
A B C D E F G H J K L M N P									1Q	1R	1S	1T	1U	1V	
									C.C.	SLD		LLR		LLR	
									109W	193W		193W		193W	
									317	277		279		279	
									NAG48	AAG01		AAG03		AAG03	

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.

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.)

SYMBOLS:

● TEST POST ⊘ POT ADJUSTMENT ⌘ INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

RTB(-20V)-1Q02	MCC(SFB)-1R22	1R22-1R11	
1Q02-1R02	1R19-1R21	1V25-1V21	SP2-1T23
RTB(COM)-1Q15	MCC(DM3)-1R26	1V21-1V11	SP3-1T14
1Q15-1R15	1R28-1Q10	1V11-1T11	SP4-1T03
RTB(+20V)-1Q31	1R31-1T13	1T11-1T21	SP5-1V03
1Q31-1R31	1T16-1Q29	1T21-1T25	SP6-1V14
RTB(-30V)-1T05	1Q29X-1Q28	1Q02-1Q12	SP7-1V23
1T05-1V13	1Q28-1Q23	1Q12X-1Q27X	2TB6-2TB16
RTB(X2)-1T25	1Q23-1Q13	1Q30-1V26	SP11-1R29
	1Q29X-1Q23X	1Q27-1Q23X	SP12-1R25
	1Q23X-1Q15	1V24-MCC(SOGR)	SP13-1R30
	1Q13X-MCC(SYS)	1R08-1Q25	
	1Q2X-1T26	1Q25-1Q25X	
	1Q31X-1V06	1Q22-1Q15X	
	1V05-1T24	1R13-1R17	MA13-3TB6
	1T24-1Q32X	1Q25X-MCC(DM2)	MA14-3TB7
	1Q30X-1Q28X	1Q10X-1Q27	30/025 RED
	1Q32-1V27		
	1T06-MCC(RUN)		
	1V16-MCC(SOG)		
	MCC(DM1)-1R05		

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 24.4.86	TECHN.	ENG.	APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
6042075	902M128CX	8			7

7 8 902M128CX

SUPPLY
380/440V, 50/60Hz

L1 L2 L3

NOTE
CONNECT DRIVE CONTROL TRANSFORMER (CPT, SHEET 02) FOR CORRECT VOLTAGE.

OLP

DA1

DBR

ARM

SHUNT FIELD

ATB-F1

ATB-F2

DA2

2TB29

TG

2TB30

DB

3TB6

SUPPRESSOR

3TB7

CUSTOMER'S 110V AC SUPPLY
(INRUSH 675VA, SEALED 65VA)

2TB10

DB

2TB5

2TB6

2TB16

RUN FORWARD

RUN REVERSE

2TB17

CREEP FORWARD

2TB15

CREEP REVERSE

2TB18

PULSE/CREEP HOLD (5 SEC)

2TB19

PULSE FORWARD (GEAR CHANGE)

2TB24

2TB12

TRIP RESET (IF REQD)

2TB8

OLD

2TB9

EMERGENCY STOP (IF REQD)

(D.B. STOP)

MOTOR THERMOSTAT

P1

P2

2TB28

NC SPEED REF (0 TO ± 8.5V)

2TB27

2TB3

CLOSED UNDER NORMAL CONDITIONS

FLT

2TB4

FAULT SIGNAL

3TB1

SLOW SPEED RELAY (P.U.-30RPM)

SLA-1R

3TB2

3TB3

TO CUSTOMER'S CIRCUIT

MOTOR DATA.

HP	50	50	50
RPM	1000	1350	3000
VA	300	400	400
IA	140	104	104
VF	240		
IF			

DR S SH — CONTD. — ELEMENTARY DIAGRAM 902M128CX

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	
						24.4.86	
						TECHN.	
						ENG.	
						APPD.	

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
6042075	902M128CX	—

IDENT

DR | SH 9

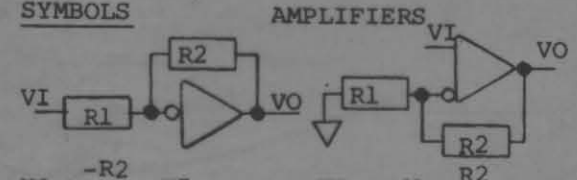
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

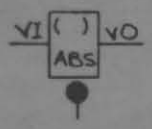
SYMBOLS

AMPLIFIERS



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

CASE GROUND

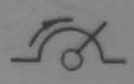


VO = SIGN () X ABSOLUTE VALUE OF VI

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	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	X	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
.8 1.7		MF	NONE
1.3 2.8		MF	YB - YD
2.4 5.0		MF	YA - YB
4.0 8.0	X	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)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
200% DR CL	X	MCC	DCX - DCY
REG. CL	X	MCC	ILA - DM1
FIELD ECON D'UTY	X	MCC	FEA - DM2

SIGNAL DEFINITIONS AND LOCATIONS

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*	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)
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	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

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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.

◈ SUPPLIED BY AW - FITTED & WIRED BY CUSTOMER

DR | SH 01 | CONTD. 02 | ELEMENTARY DIAGRAM 902M122XE

TECHN. ENG. APPD.	TECHN. ENG. APPD	DATE
	NGM	28/1/81
2	AS SHIPPED - SEE SHEET 10	TECHN.
	5/6/81	ENG. NGM
		APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 110HP
WEBSTER & BENNETT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
050N07	902M122XE	02	△		01

902HM100DX

DR | SH 04 | CONTD. 05 | ELEMENTARY DIAGRAM 902M122XE

[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

[0232]

SLD-1R SLA

TP1 TP2

15K

HYSTERESIS

+20V 31

20

23 39K 3.9K 15K

SLA

22

[PS19] MCC(SFB)

29 SP11 3 1

25 SP12 3 2

30 SP13 3 3

.47 MF

COM

A LEVEL ADJ.

26 MCC(DM2) [PS34]

(FEA)

28 12 12X

27 D2-1R

1 D COM

32

INSTRUCTIONS VSD1 211

24 19 21

SLOW SPEED RELAY (P.U.-30RPM)

[0203] DA1

[0213] DA2

OLD

DB DBR

ARM

FROM CUSTOMER'S 110V AC SUPPLY

36

13 [02] MA

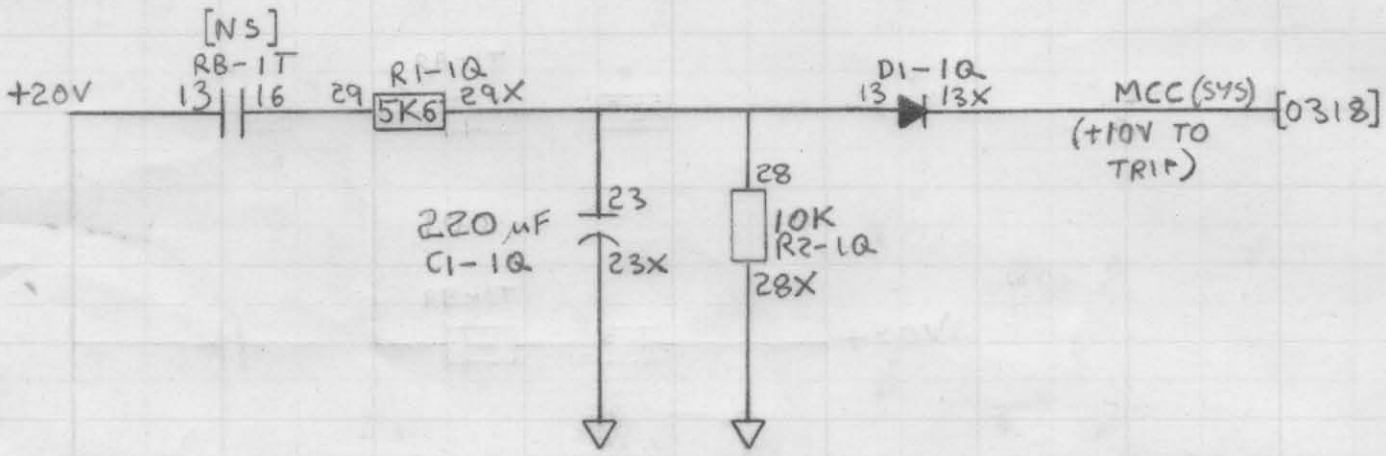
14

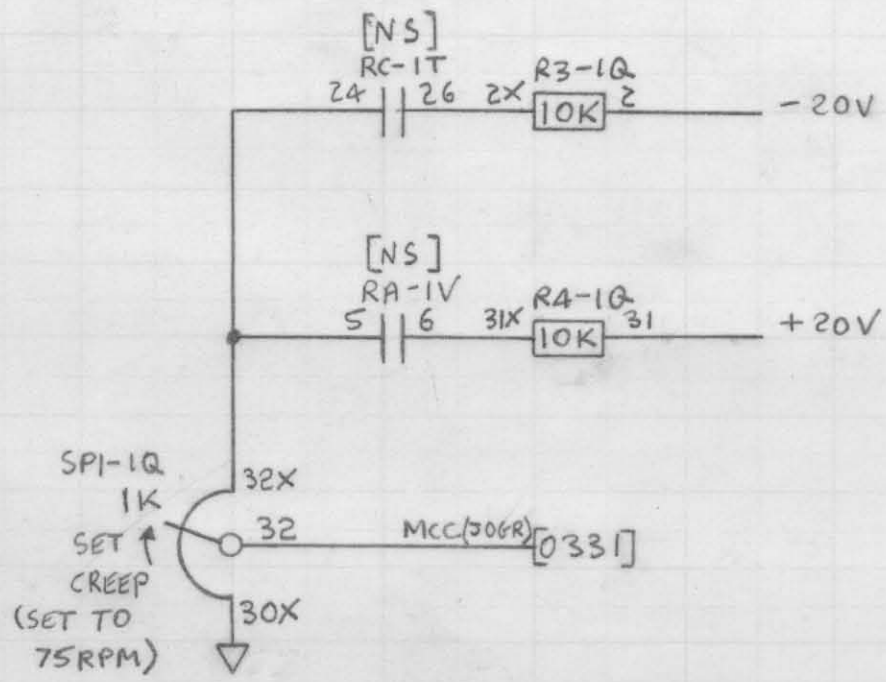
37

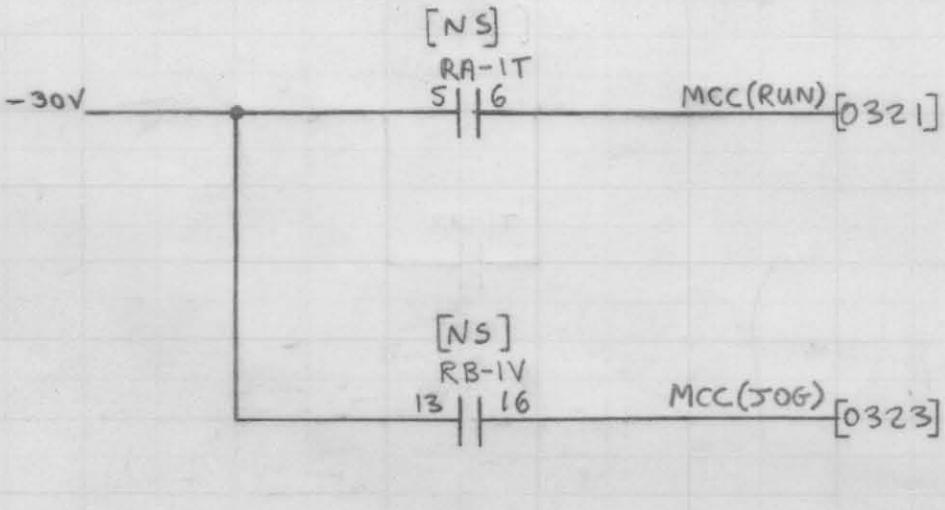
SUPPRESSOR

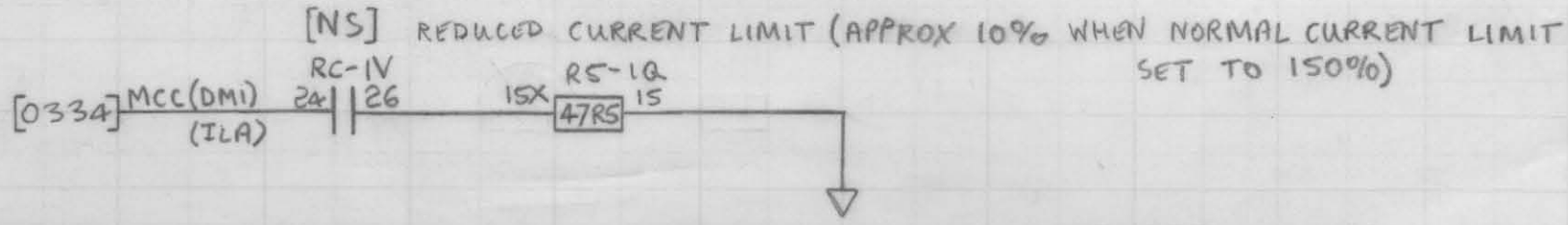
DB

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE		IDENT
	2 5/6/81	TECHN.		DR SH
		ENG. NGM	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	04
		APPD.	BDC 3064R, 110HP WEBSTER & BENNETT	
		2/2/81	GO NUMBER 050N07 / ELEMENTARY DIAGRAM 902M122XE / CONTD. 05	









DR 05 CONTD. 06 ELEMENTARY DIAGRAM 902M122XE

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		10/2/81
			2			TECHN.
					5/6/81	ENG. NGM
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

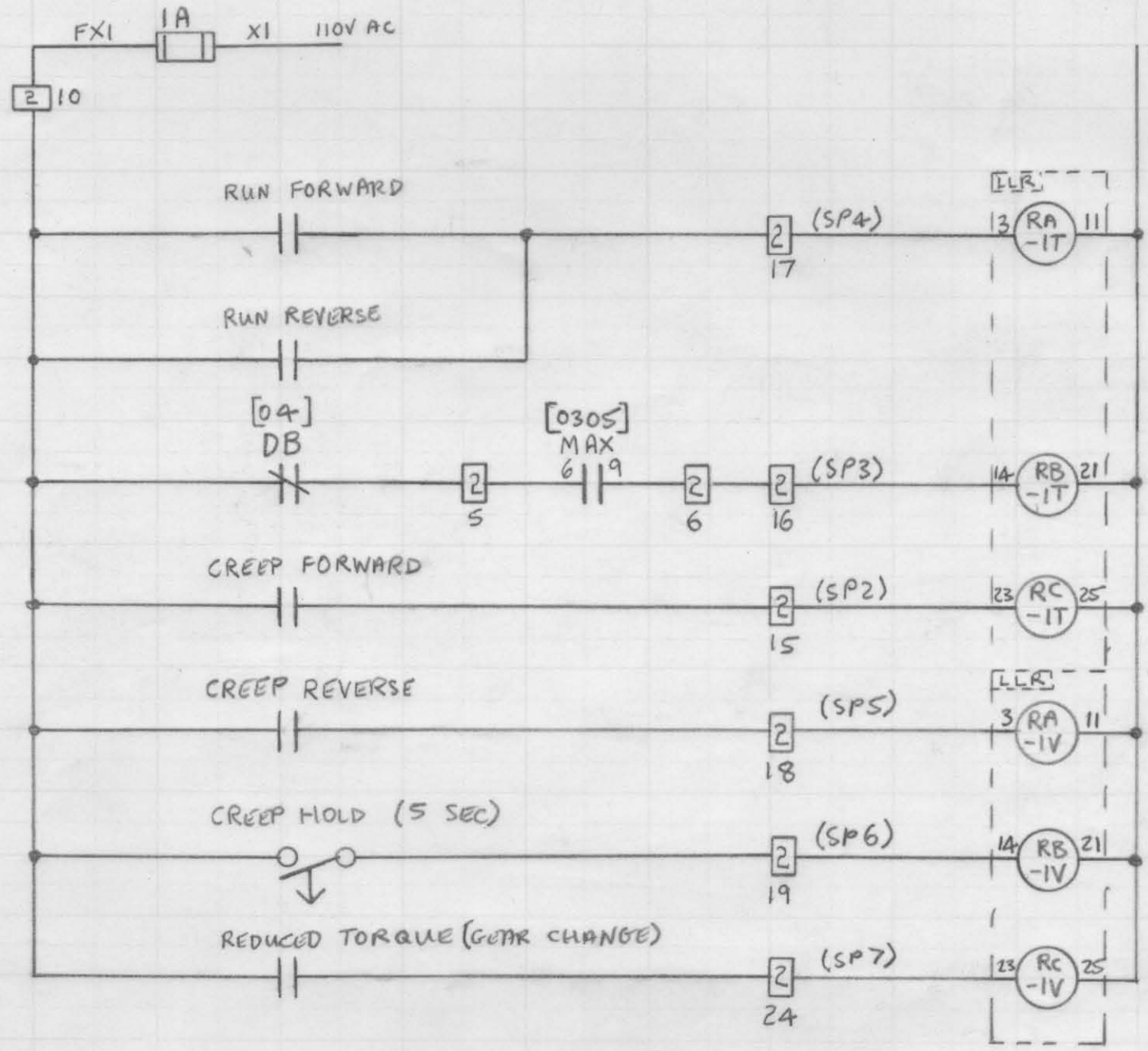
BDC 3064R, 110HP

WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
050N07	902M122XE	06

IDENT

DR 05 SH



DR | SH 06 | CONTD. 07 | ELEMENTARY DIAGRAM 902M122XE

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 11/2/81
						TECHN.
						ENG. NGM
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R , 110HP

WEBSTER + BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
050N07	902M122XE	07

IDENT

DR	SH
	06

902HM100EA

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

A	B	C	D	E	F	G	H	J	K	L	M	N	P	1Q	1R	1S	1T	1U	1V
														CC	SLD		LLR		LLR
														909W 317 AAG45	193W 277 AAG01		193W 279 AAG03		193W 279 AAG03
														SELECT COMP	SIG. LEVEL DET.		LOW LEVEL RELAY		LOW LEVEL RELAY

DR 07 SH 08 CONTD. ELEMENTARY DIAGRAM 902M122XE

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.

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.)

SYMBOLS:

● TEST POST ⊘ POT ADJUSTMENT ⌘ INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

RTB(-20V)-1Q02	MCC(SFB)-1R22	1V26-1Q15X	
1Q02-1R02	1R19-1R21	1V25-1V21	SP2-1T23
RTB(COM)-1Q15	MCC(DM2)-1R26	1V21-1V11	SP3-1T14
1Q15-1R15	1R28-1Q12	1V11-1T11	SP4-1T13
RTB(+20V)-1Q31	1R31-1T13	1T11-1T21	SP5-1V03
1Q31-1R31	1T16-1Q29	1T21-1T25	SP6-1T14
RTB(-30V)-1T05	1Q29X-1Q28	1Q12X-1Q15	SP7-1T23
1T05-1V13	1Q28-1Q23		2TB6-2TB16
RTB(X2)-1T25	1Q23-1Q13		SP11-1R29
	1Q28X-1Q23X		SP12-1R25
	1Q23X-1Q15		SP13-1R30
	1Q13X-MCC(SYS)		
	1Q2X-1T26		
	1Q31X-1V06		
	1V05-1T24		MA13-3TB6
	1T24-1Q32X		MA14-3TB7
	1Q30X-1Q28X		
	1Q32-MCC(JOGR)		
	1T06-MCC(RUN)		
	1V16-MCC(JOG)		
	MCC(DM1)-1V24		

30/0.25 PVC RED

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		11/2/81

2 — 5/6/81

TECHN.

ENG. NGM

APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 110HP

WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
050N07	902M122XE	08

IDENT DR 07 SH

SUPPLY *
380/440V, 50/60HZ

NOTE *
CONNECT DRIVE CONTROL TRANSFORMER (CPT, SHEET 02) FOR CORRECT VOLTAGE.

L1 L2 L3

OLD

DA1

ATB-F1

SHUNT FIELD

ATB-F2

DA2

DBR

ARM

2TB29

TG

2TB30

DB

3TB6

SUPPRESSOR

3TB7

TO CUSTOMER'S 110V AC SUPPLY (INRUSH 675VA, SEALED 65VA)

2TB10

DB

2TB5

2TB6

2TB16

RUN FORWARD

RUN REVERSE

2TB17

CREEP FORWARD

2TB15

CREEP REVERSE

2TB18

CREEP HOLD (5 SEC)

2TB19

REDUCED TORQUE (GEAR CHANGE)

2TB24

2TB12

TRIP RESET (IF REQUIRED)

2TB8

OLD

2TB9

EMERGENCY STOP (IF REQD.)

(D.B. STOP)

MOTOR THERMOSTAT

P1

P2

2TB28

NC SPEED REF (0 TO ± 8-5V)

2TB27

2TB3

CLOSED UNDER NORMAL CONDITIONS

FLT

2TB4

FAULT SIGNAL

3TB1

SLOW SPEED RELAY (P.U.-30RPM)

SLA-1R

3TB2

3TB3

MOTOR DATA

HP — 110/110/110
RPM — 750/850/1500
V_A — 355/400/400
I_A — 246/217/217
V_F — 120
I_F — 7·76/7·76/3·07

TACHO. DATA

45V A.C./1000 RPM
67·5 VOLT MAX

DR 2 SH 09 CONTD. 10 ELEMENTARY DIAGRAM 902M122XE

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3/3/81
			2			TECHN.
					5/6/81	ENG. NGM
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 110HP
CUSTOMER'S CONNECTIONS
WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
050N07	902M122XE	10

IDENT DR 2 SH 09

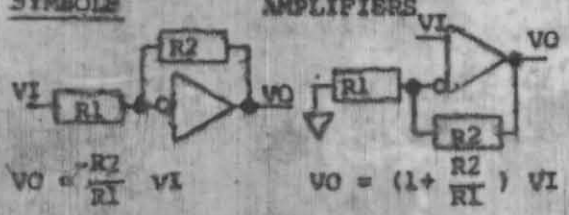
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

HARDWARE ABBREVIATIONS

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

SYMBOLS

AMPLIFIERS



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

CASE GROUND.

VO = SIGN () X ABSOLUTE VALUE OF VI

STAB ON TERMINAL

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

TERMINAL AT T.B.'s

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

▲ THESE RESISTORS ARE CRIMPED IN WIRE HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	HZA - PHA
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	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-66vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
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	X	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
200% DR CL	X	MCC	DCX - DCY
REG. CL.	X	MCC	ILA - DM1
FIELD ECON DLAY	X	MCC	FEA - DM3

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.

◆ SUPPLIED BY AW- FITTED & WIRED BY CUSTOMER

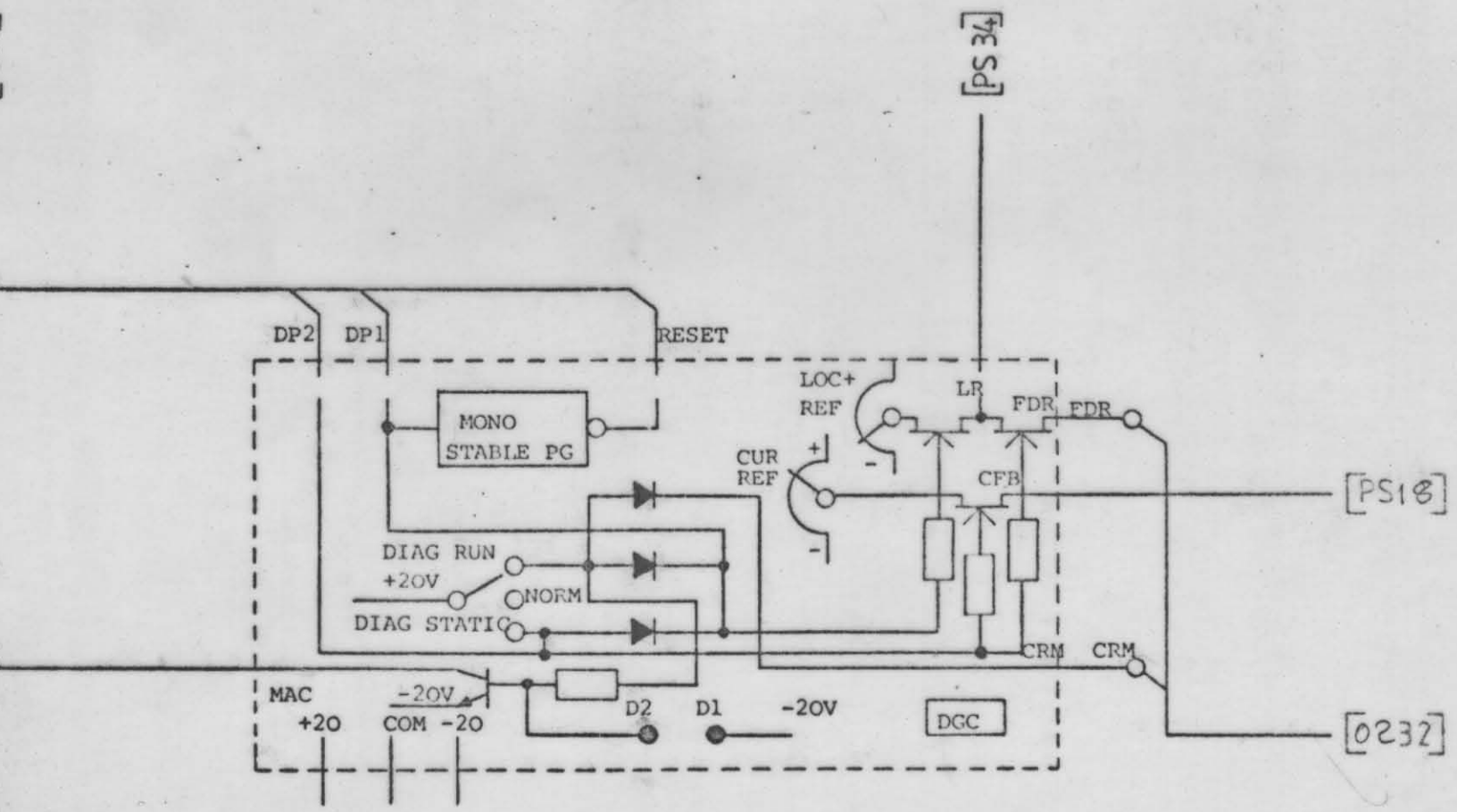
TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE
	NGM	3/4/81
2	AS SHIPPED- SEE SHEET 10	TECHN.
		ENG. NGM
	24/6/81	APPD.

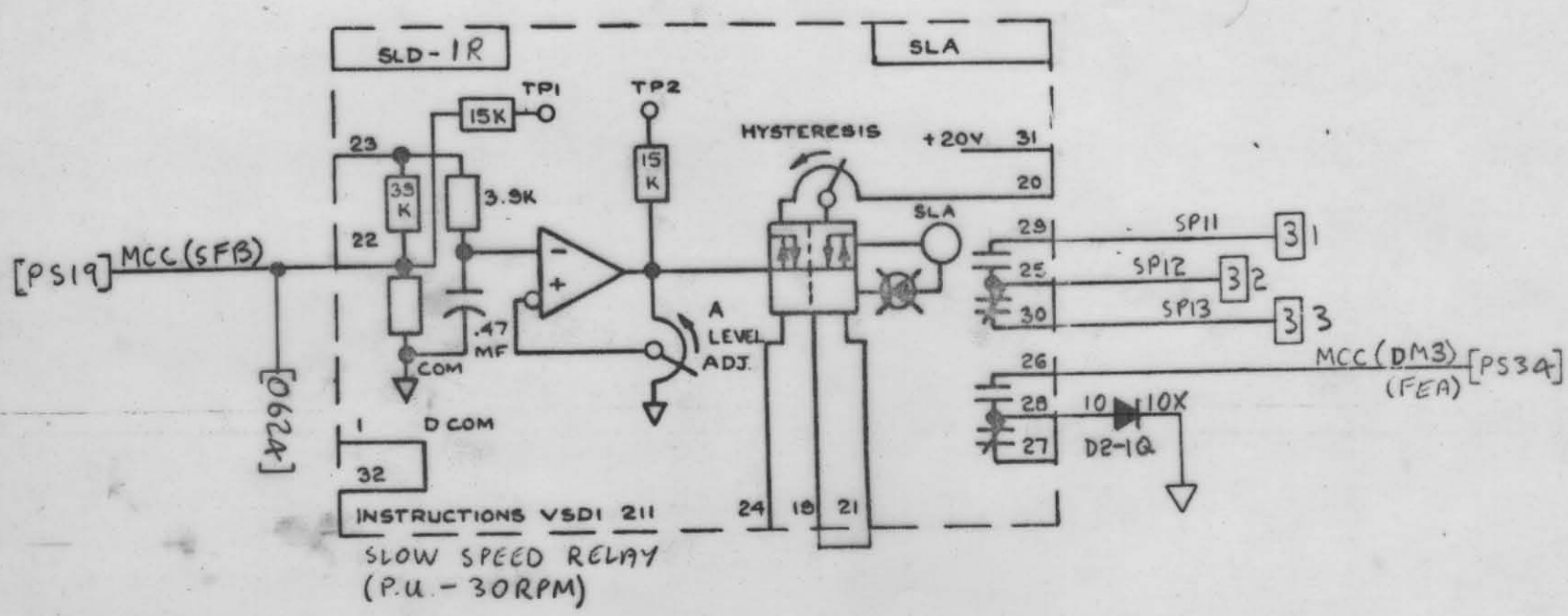
Simplex — VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

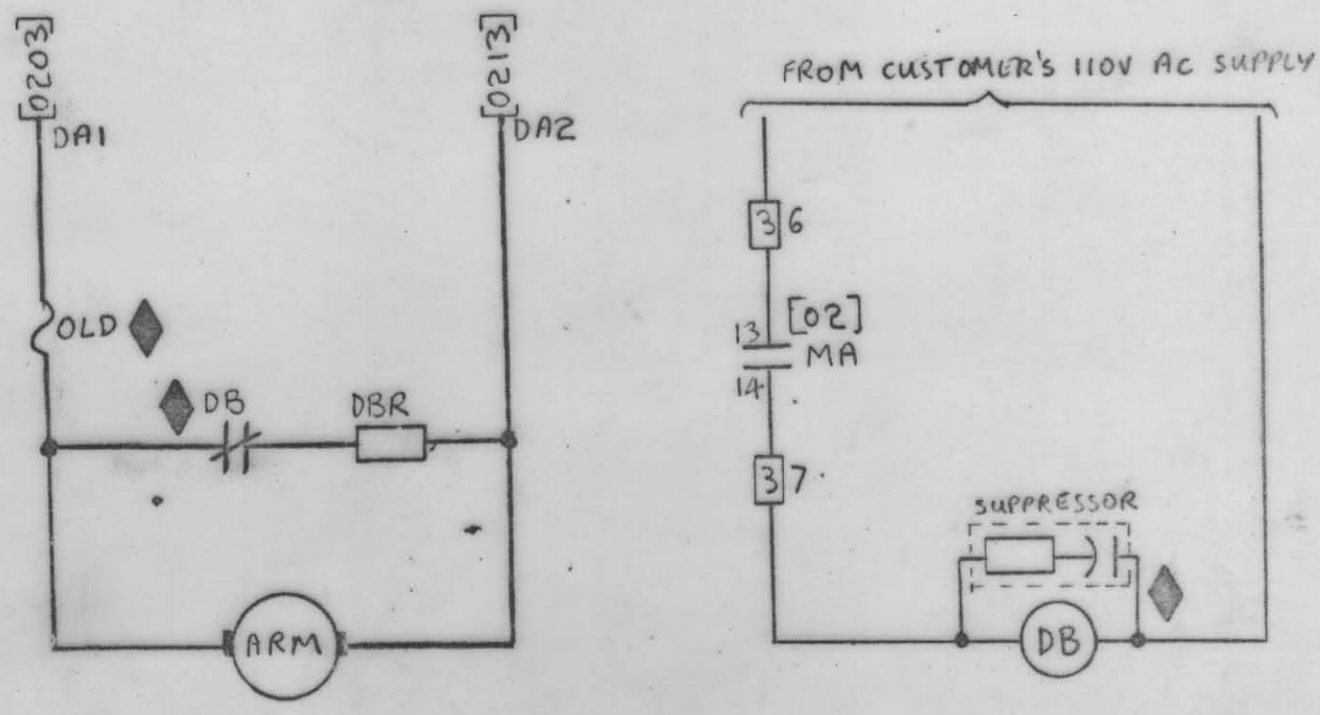
BDC 3064R, 40HP

WEBSTER & BENNETT LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
112N01	902M122XY	02			01







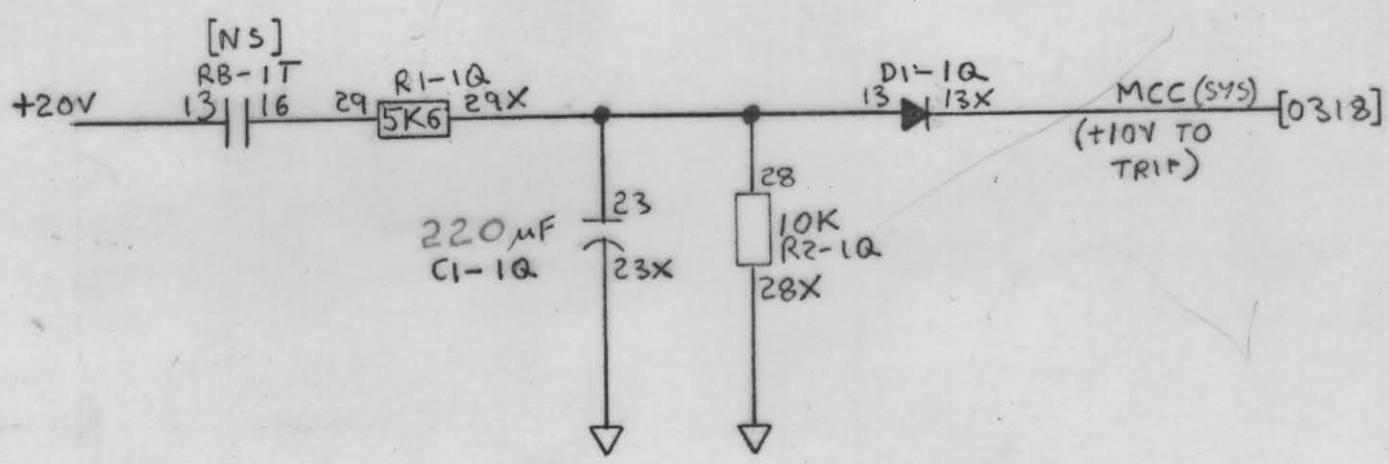
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3/4/81
			2			TECHN.
						ENG. NGM
			24/6/81			APPD.

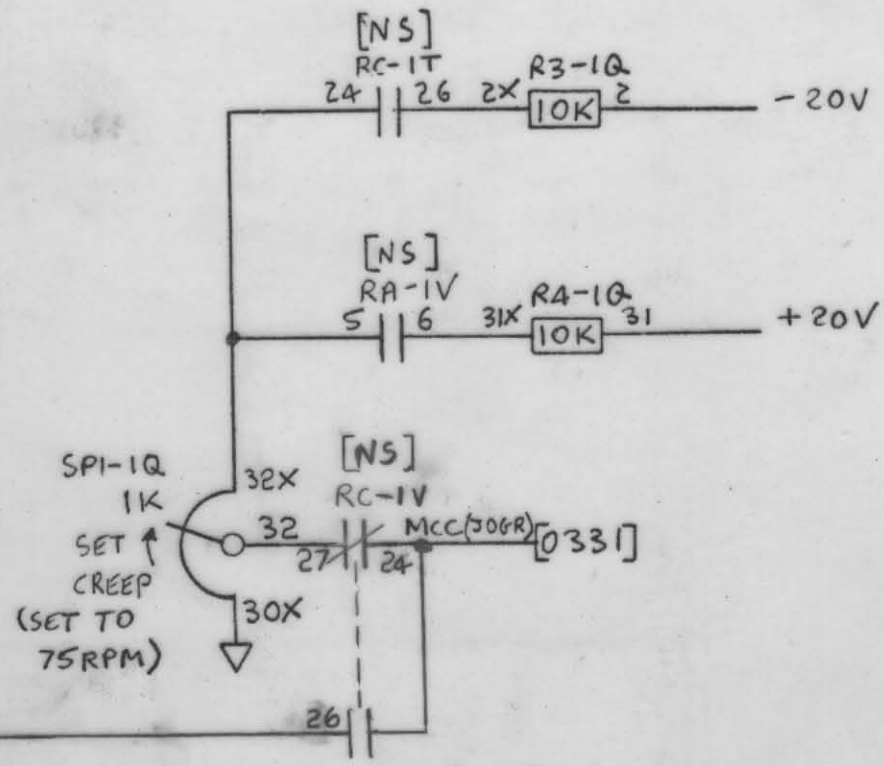
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 306AR, 40HP

WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
112N01	902M122xY	05		04





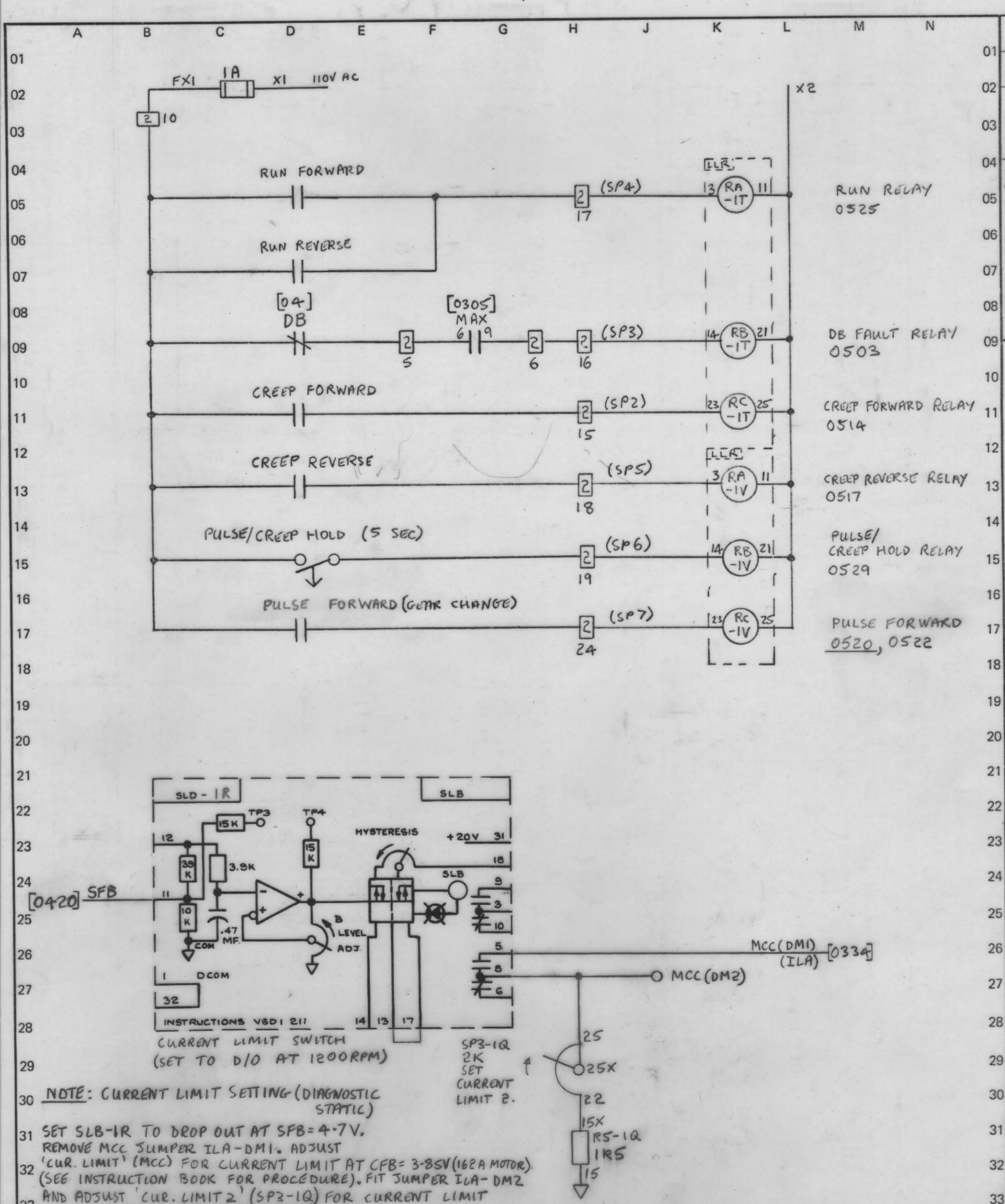
DR 05 | SH 06 | CONTD. 902M122XY | ELEMENTARY DIAGRAM

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			NGM			3/4/81
						TECHN.
			2			ENG. NGM
			24/6/81			APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 40HP
WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
112N01	902M122XY	06		05



NOTE: CURRENT LIMIT SETTING (DIAGNOSTIC STATIC)

SET SLB-1R TO DROP OUT AT SFB = 4·7V.
REMOVE MCC JUMPER ILA-DM1. ADJUST 'CUR. LIMIT' (MCC) FOR CURRENT LIMIT AT CFB = 3·85V (162A MOTOR). (SEE INSTRUCTION BOOK FOR PROCEDURE). FIT JUMPER ILA-DM2 AND ADJUST 'CUR. LIMIT 2' (SP3-1Q) FOR CURRENT LIMIT AT CFB = 2·96V (125 AMP MOTOR).
REMOVE JUMPER ILA-DM2.
REFIT JUMPER ILA-DM1

DR	SH	CONTD.	ELEMENTARY DIAGRAM
	06	07	902M122XY

TECHN.	ENG.	APPD.	DATE
	NGM		3/4/81
2			24/6/81

TECHN.
ENG. NGM
APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

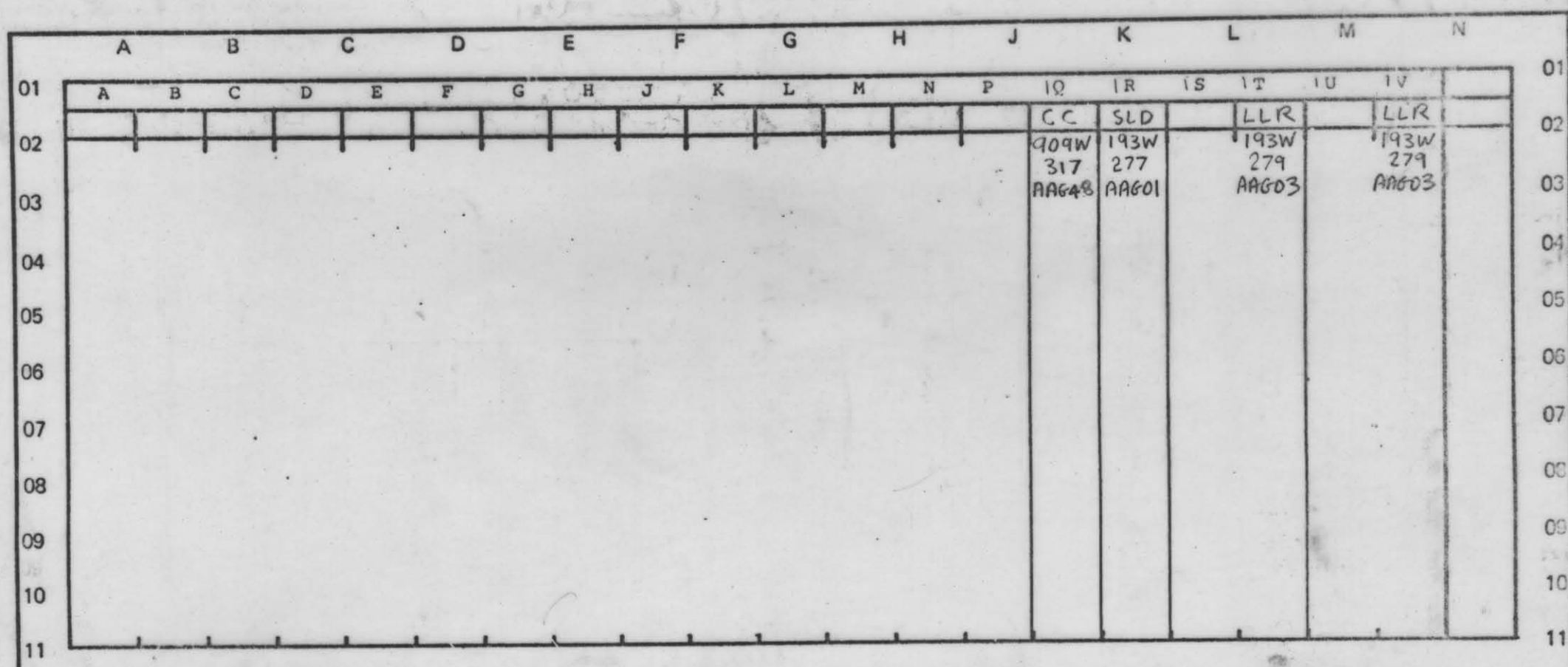
BDC 3064R, 40HP
WEBSTER + BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
112N01	902M122XY	07

IDENT

DR	SH
	06

902HM100EA



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

RTB(-20V)-1Q02	MCC(SFB)-1R22	1R22-1R11	
1Q02-1R02	1R19-1R21	1V25-1V21	SP2-1T23
RTB(COM)-1Q15	MCC(DM3)-1R26	1V21-1V11	SP3-1T14
1Q15-1R15	1R28-1Q10	1V11-1T11	SP4-1T03
RTB(+20V)-1Q31	1R31-1T13	1T11-1T21	SP5-1V03
1Q31-1R31	1T16-1Q29	1T21-1T25	SP6-1V14
RTB(-30V)-1T05	1Q29X-1Q28	1Q02-1Q12	SP7-1V23
1T05-1V13	1Q28-1Q23	1Q12X-1Q27X	2TB6-2TB16
RTB(X2)-1T25	1Q23-1Q13	1Q30-1V26	SP11-1R29
	1Q28X-1Q23X	1Q27-1Q23X	SP12-1R25
	1Q23X-1Q15	1V24-MCC(506R)	SP13-1R30
	1Q13X-MCC(SYS)	1R08-1Q25	
	1Q2X-1T26	1Q25-1Q25X	
	1Q31X-1V06	1Q22-1Q15X	
	1V05-1T24	1R13-1R17	MA13-3TB6 (30/0.25 PVC RED)
	1T24-1Q32X	1Q25X-MCC(DM2)	MA14-3TB7 (30/0.25 PVC RED)
	1Q30X-1Q28X	1Q10X-1Q27	
	1Q32-1V27		
	1T06-MCC(RUN)		
	1V16-MCC(506)		
	MCC(DM1)-1R05		

DR 07 SH | CONTD. 08 | ELEMENTARY DIAGRAM 902M122XY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3/4/81
			2			24/6/81

TECHN.
ENG. NGM
APPD.

Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 40HP

WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
112N01	902M122XY	08

ISSUE | CH | SH 07

SUPPLY
380/440V, 50/60Hz

L1 L2 L3

NOTE
CONNECT DRIVE CONTROL TRANSFORMER (CPT, SHEET 02) FOR CORRECT VOLTAGE.

OLD

DA1

ATB-F1

SHUNT FIELD

ATB-F2

DA2

DBR

ARM

2TB29

TG

2TB30

DB

3TB6

SUPPRESSOR

3TB7

TO CUSTOMER'S 110V AC SUPPLY (INRUSH 675VA, SEALED 65VA)

2TB10

DB

2TB5

2TB6

2TB16

RUN FORWARD

RUN REVERSE

2TB17

CREEP FORWARD

2TB15

CREEP REVERSE

2TB18

PULSE/CREEP HOLD (5 SEC)

2TB19

PULSE FORWARD (GEAR CHANGE)

2TB24

2TB12

TRIP RESET (IF REQUIRED)

2TB8

OLD

EMERGENCY STOP (IF REQD)

(D.B. STOP)

MOTOR THERMOSTAT

P1

P2

2TB9

2TB28

NC SPEED REF (0 TO ±8·5V)

2TB27

2TB3

CLOSED UNDER NORMAL CONDITIONS

FLT

2TB4

FAULT SIGNAL

3TB1

SLOW SPEED RELAY (P.U.-30RPM)

SLA-1R

3TB2

3TB3

TO CUSTOMER'S CIRCUIT

MOTOR DATA:-
HP - 40/40/40
RPM - 850/1110/2550
V_A — 320/400/400
I_A — 115/92/92
V_F - 240
I_F - 4·27/1·55

TACHO DATA:-
60V A.C./1000RPM
153 VOLT MAX

DR 09 SH
CONTD. 10
ELEMENTARY DIAGRAM 902M122XY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3/4/81
			2			24/6/81

TECHN.
ENG. NGM
APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3064R, 40HP
CUSTOMER'S CONNECTIONS
WEBSTER & BENNETT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
112N01	902M122XY	10

IDENT
DR 09 SH

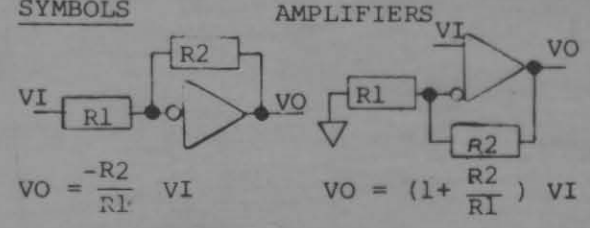
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

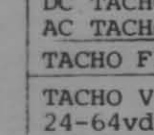
SYMBOLS

AMPLIFIERS



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

CASE GROUND

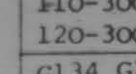


VO = SIGN () X ABSOLUTE VALUE OF VI

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.

♦ MTD. ON PANEL

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 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
MAX AMPS G134 .8 1.3 2.4 4.0 7.0 13 G256 1.7 2.8 5.0 8.0 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		MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)

SIGNAL DEFINITIONS AND LOCATIONS

*	CEMF	COUNTER EMF (3·16)
*	CFB	CURRENT FEEDBACK (3·16)
	CMFA	ABSOLUTE VALUE CEMF (3·08)
	CRM	CROSSOVER MODIFY (4·11)
	DFP	DELAYED FIRING POWER (3·25)
*	DR	DRIVER REFERENCE (3·33)
*	EAO	ERROR AMP OUTPUT (3·33)
	EST	EXTERNAL FLT STOP INPUT (3·14)
	FALT	FAULT (3·14)
*	FC	FIELD CURRENT (NS26)
	FDR	FIELD DIAGNOSTIC REFERENCE (4·08)
	FEA	FIELD ECONOMY ADJUST (3·25)
	FF	FIELD FAULT (2·28)
	IABS	MOTOR CURRENT ABSOLUTE (3·09)
	ILA	CURRENT LIMIT ADJUST (3·23)
	IMET	CURRENT SIGNAL FOR METER (3·10)
*	IPU	INITIAL PULSE (3·20)
*	LR	LOCAL REF. FROM DGC (3·33)
*	JOG	JOG SWITCH INPUT (3·23)
*	JOGR	JOG REFERENCE INPUT (3·31)
*	MAC	MAX/MA CONTROL SIGNAL (3·20)
	MSW	MODE SWITCH (3·30)
*	OSC	OSCILLATOR (3·17)
*	PCR	PHASE CONTROL REF. (3·26)
*	PRE	DRIVE PRECONDITION (3·21)
	ØSEQ	PHASE SEQUENCE (3·14)
	RERR	REGULATOR ERROR (3·27)
	RIJ	INTEGRATOR SUMMING JUNCTION (3·27)
	RJ	REGULATOR SUMMING JUNCTION (3·31)
	RRA	REGULATOR RESPONSE ADJUST (3·30)
	RSET	RESET (3·16)
*	RTR	READY TO RUN (3·16)
*	RUN	RUN SWITCH INPUT (3·21)
*	SA-C	PHASE SYN OUTPUT (3·16)
*	SFB	SPEED FEEDBACK (3·20)
	SMET	SPEED SIGNAL FOR METER (3·12)
*	SR	SYSTEM REFERENCE INPUT (3·29)
*	SYS	SYSTEM FAULT TRIP (3·13)
*	TA	OUTPUT FOR TACHO TRIP ADJUST (3·20)
	TF	TACHO FAULT (NS28)
*	TFB	TACHOMETER FEEDBACK (3·20)
	TFR	AC TACHO FREQUENCY OUTPUT (3·13)
*	TR	TIMED REFERENCE (3·33)
*	VFB	VOLTAGE FEEDBACK (3·19)
*	WFR	WEAK FIELD REFERENCE (3·20)

(* - TEST POINT ON DOOR FRONT)

MAPPING SYSTEM

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

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

DR 1 SH 2 CONTD
ELEMENTARY DIAGRAM 902M122BR

TECHN.	ENG.	APPD.
	NGM	

3	SEE SHEET 13	G-8-80
2	SEE SHEET 13	25/11/80

TECHN.	ENG.	APPD.	DATE
	NGM		3-7-79

TECHN
ENG AP
APPD

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION BRIGHTON, ENGLAND

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE.
ELEMENTARY DIAGRAM.

CO NUMBER	ELEMENTARY DIAGRAM	CONTD
921N07	902M122BR	2

IDENT DR 1 SH 1

DR 5 SH CONTD. 6 ELEMENTARY DIAGRAM 902M122BR

SUPPLY
L1 L2 L3
CB
L4
L5
L6
H3 H2 H1
ISOLATION T'FORMER
X0 X3 X2 X1
AFS1 AFS2 AFS3
BFS1 BFS2 BFS3
K0 K3 K2 K1
20
L10 L11 L12
BMC
460V
CVT
110V
L3 L4 L5
BOL
LK
BFS4
2TB 3
FLT
2TB 4
7
'DRIVE TRIPPED'
LP1
5
3
FAN 1
FAN 2
FAN 3
FAN 4
3TB 7
L7 L8 L9
BA1 BA2 BA3
AUX SUPPLY
(18 KVA MAX)
A B C
BLOWER MOTOR
3TB 6
DB
a b
BMC 6
BOL 4
MA

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE
	NGM	3-1-79
	3 SEE SHEET 13	TECHN.
		ENG. AP
	6-8-80	APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
921N07	902M122BR	6

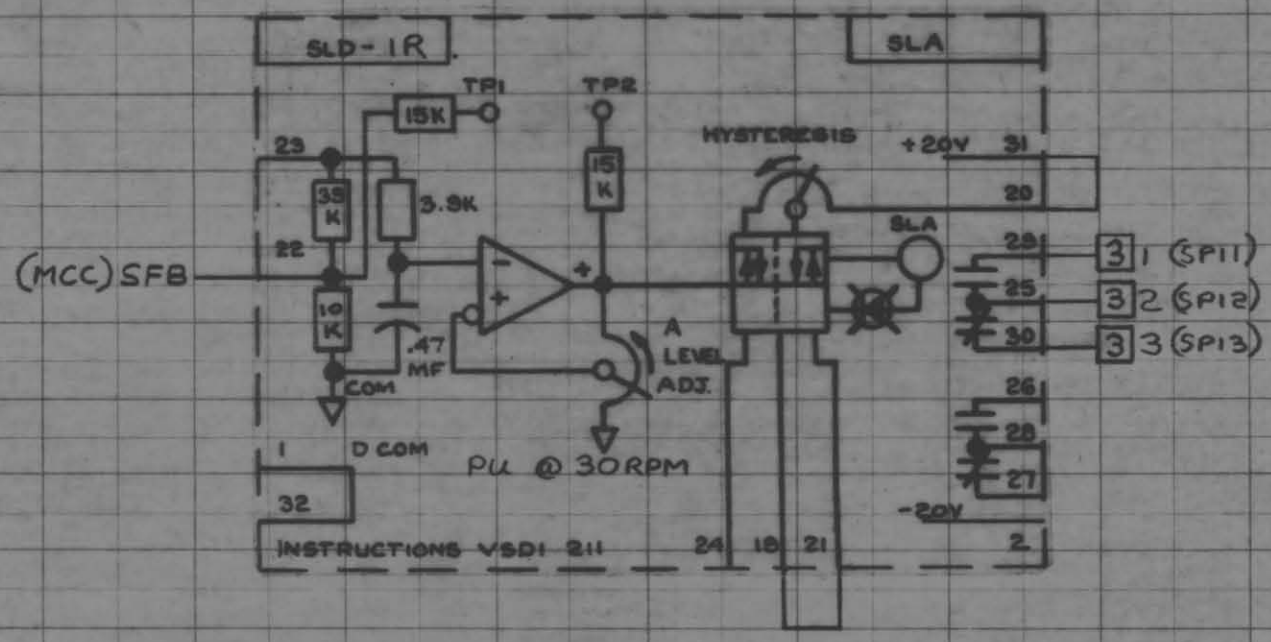
IDENT

DR	SH
	5

RA-1T
1K
R1
1Q-2X
1Q-2
-20V
RB-1T
1K
R2
1Q-31X
1Q-31
+20V
39K
R4
1Q-5
RA-1V
5
6
8
SP23
3
13
SP24
3
14
SP25
3
15
SLIDE POSITION POT (IF CSC MOD USED)
2
24
(SP7)
MANUAL SPEED POT 1KΩ
2
25
(SP8)
1Q-4
39K
R3
1Q-4X
1Q-5X
2
27
A-1P
17K
10K
18K
18K
20K
DA1
21K
MCC-SR
25K
24K
+20
I LIM+
I LIM-
AMPLIFIER CARD 193W256AAG01
1Q-7
R5
10K
1Q7X
1N26
RC-1V
1N24
1Q-32X
SET CREEP SP1 1K
1Q32X
MCC-JOGR
1Q30X
RB-1V
19
20
+20V
5K6
R7
1Q-29X
1Q-29
1Q-24
D1
1Q-24X
IFC-SYS
1Q-26
1Q-28
C1
10μF
R6
10K
1Q-26X
1Q-28X

DR 6 SH 7 CONTD. ELEMENTARY DIAGRAM 902M122BR

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	WEBSTER & BENNETT LTD. 75HP BDC 3034R SPINDLE DRIVE, ELEMENTARY DIAGRAM.	IDENT
	NGM	3-7-79			DR SH
3	SEE SHEET 13	TECH.		GO NUMBER 92NW07 / ELEMENTARY DIAGRAM 902M122BR / CONTD. 7	6
	6-8-80	ENG. AP / APPD.			



NON-POLARIZED SIGNAL LEVEL DETECTOR 193W277AAG01
(PU AT 30RPM)

DR 7 SH CONTD. 8 ELEMENTARY DIAGRAM 902M122BR

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 3-7-79
		TECH
		ENG. AP
		APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
921N07	902M122BR	8

IDENT

DR SH 7

DR 8 SH 9 CONTD. ELEMENTARY DIAGRAM 902M122BR

(SP7) 24 [2]
IQ-31X
[R] -30V
MCC-RUN
(SP3) [2] 16
IT-25
IT-6
IT-5
IT-11
10
18
20
18
16
13
17
14
21
28
30
28
IQ-2X
12
9
RUN REVERSE
RB
LLR- IT
IT-16
IT-26
6
26
IT-6
IT-13
5
24
MCC-JOG
8
27
(SP4) 17 [2]
3
23
[2] 15 (SP2)
RUN FORWARD
RA
CREEP
RC
IT-21
11
INSTRUCTIONS VSDI 213
25
[R] X2
IV-11
IT-21
13 [2]
6 [2]
MAX
5 [2]
BMC
10 [2]
PS FX1
IQ-31
IQ-29X
+20V
CP 1
IV-11
IV23
10
19
20
18
16
13
17
14
21
29
12
30
9
RB
BLOWER FAILED RELAY
28
14 [3]
6
LLR- IV
26
IQ-7X
IQ-5
5
24
IQ-32X
15 [3]
8
27
(SP5) 18 [2]
3
23
IV11
CONSTANT SURFACE CUTTING
RA
CREEP REF
RC
8
IT-11
11
INSTRUCTIONS VSDI 213
25
SP18
[3]
IV-21

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE			
	NGM MH	3-7-79			
	3 SEE SHEET 13	TECHN.			
		ENG. AP			
	6-8-80	APPD. MH			

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
92NO7	902M122BR	9			8

902HM100EA

P	Q	R	S	T	U	V
A	CC	SLD		LLR		LLR
193W256 AA G01	909W317 AA G02	193W277 AA G01	193W279 AA G03		193W279 AA G03	
AMPL-IFIER	SELECT COMP	SIG LEV DET	LOW LEVEL RELAY		LOW LEVEL RELAY	

DR | SH 10 | CONTD. 11 | ELEMENTARY DIAGRAM 902M122 BR

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.

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.)

SYMBOLS:

● TEST POST ⊘ POT ADJUSTMENT ⌘ INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

1Q·2X — 1T·12	1T·10 — 1T·19	2TB6 - 2TB13	SP1 — 1V·14
1Q4X — 1Q·5X	1T·11 — 1T·21	1Q·24 — 1Q·26	SP2 — 1T·23
1Q·5X — 1P·19X	1T·21 — 1T·25	1Q·26 — 1Q·28	SP3 — 1T·14
1Q·5 — 1V·5	1T·25 — RTB(X2)	1Q·28 — 1Q·29	SP4 — 1T·3
1Q·7 — 1Q·2	1T·11 — 1V·11	1Q·28X — 1Q·26X	SP5 — 1V·3
1Q·7X — 1V.26	1T·5 — 1T·13	1Q·26X — 1Q·15	
1Q·30X — 1Q·15	1T·13 — MCC(RUN)	1Q·29X — 1V·20	SP7 — 1T·10
1Q·32 — (MCC JOG R)	1T·26 — 1T·6	1Q·24X — (IFC SYS)	SP8 — 1Q·4
1Q·31X — 1T·20	1T·6 — 1T·16	REMOVE SP14 — 3TB4	SP11 — 1R·29
1V24 — 1Q32X	1T·16 — RTB(-30V)	REMOVE SP15 — 3TB5	SP12 — 1R·25
1R·22 — MCC(SFB)	1T·24 — MCC(JOG)		SP13 — 1R·30
1R·19 — 1R·21	1V. 11 — 1V23	FLT9 — 3TB4	SP23 — 1P·15
1R·20 — 1R·31		FLT6 — 3TB5	SP24 — 1V·6
1V·8 — 1P·21X			SP25 — 1V·8
1P·21X — MCC(SR)			SP18 — 1V.25
1V·11 — 1V·21			
1V·19 — 1Q·31			
			3TB6 — MA11 (30|0.2)
BUS ALL PINS 2 1P — 1R	1R·2 — RTB (-20V)	CHANGE TO STD WIRING —	3TB7 — MA12 (30|0.2)
BUS ALL PINS 15 1P — 1R	1R·15 — RTB (COM)	ALTER 2TB3 — FLT5	
BUS ALL PINS 31 1P — 1R	1R·31 — RTB (+20V)	TO 2TB3 — FLT4	

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3/7/79

3 SEE SHEET 13 — 6-8-80

TECHN. | ENG. AP | APPD.

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

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
921N07	902M122BR	11

IDENT | DR | SH 10

DR | SH 11 | CONTD. 12 | ELEMENTARY DIAGRAM 902M122BR

[5·21] [5·21] [5·21] [5·21]

ACM-XO K1 K2 K3

CIRCUIT BREAKER

8·8/75/75HP 100/850/2550 REV/MIN

240V ARM

120V FIELD

[04-28]

ATB-FI

ATB-XO

DA1

2TB29

60V/1000 REV/MIN

2TB30

12

13

DB

BMC

110V FX1

2TB13

RB-1V

X2

RC-1T

2TB10

2TB15

CREEP

RUN RVSE

RUN FWD

RB-1T

2TB16

2TB7

2TB6

2TB5

MAX

RA-1T

2TB17

3TB4

3TB5

EXTERNAL FAULT CIRCUIT

FLT

RA-1V

2TB18

3TB8

CONSTANT SURFACE CUTTING

CREEP

RC-1V

MOTOR THERMOSTAT

OLD

2TB8

2TB9

8 9 10 11 12

EXTERNAL STOP (IF REQD)

2TB3

3

7

TO TRIPPED LIGHT CIRCUIT [05-26]

FLT

2TB4

3TB6

4

3

TO BLOWER STARTER CCT. [05-33]

MA

3TB7

3TB13

3TB14

3TB15

SLIDE POSITION POT (IF CSL 2K5Ω USED)

3TB1

SLOW SPEED RELAY (c/o @ 30 RPM)

3TB2

3TB3

SLA-1R

2TB24

2TB25

2TB27

SPEED POT 1KΩ (OR ±10V N.C. REF ON 2TB25)

CONTROLLER CONNECTIONS ONLY

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3/7/79

3 SEE SHEET 13 6-8-80

TECHN

ENG. AP

APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER AND BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
921N07	902M122BR	12			11

380V INPUT H1 H2 H3 — 415V — 380V — 460V

415V INPUT H1 H2 H3 — 415V — 380V — 460V

460V INPUT H1 H2 H3 — 415V — 380V — 460V

MAIN ISOLATING TRANSFORMER INPUT CONNECTIONS.

3TB (LOCATED IN DRIVE ABOVE 2TB)

SLA-1R — 1 2 3 — SLOW SPEED RELAY (30 RPM)

FLT — 4 5 — EXTERNAL FAULT CIRCUIT.

B — 13 14 15 — 2K5 — SLIDE POSITION POT

2TB (LOCATED IN BOTTOM OF DRIVE)

8 10 15 16 17 18 22 23 24 25 27 29 30

2 SEC CREEP

RUN REVERSE

RUN FORWARD

CREEP

CONSTANT SURFACE CUTTING.

% LOAD METER 1mA FSD — A

MOTOR SPEED 1mA FSD

1KΩ — MANUAL SPEED POT

TACHO-GENERATOR (CHECK POLARITY)

TB (LOCATED ON PANEL)

F1 F2 — DRIVE MOTOR FIELD

A1 A2 — DRIVE MOTOR ARMATURE

BA 1 BA 2 BA 3 — DRIVE BLOWER MOTOR (CHECK FOR CORRECT ROTATION)

9 11 — MOTOR THERMOSTAT — 10 — E. STOP (DYNAMIC BRAKE ONLY, NEEDS TO BE RESET AT DRIVE)

L7 L8 L9 — AUXILIARY SUPPLY (18 KVA MAX)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
				NGM		3/7/79
		3	SEE SHEET 13			TECHN.
						ENG. AP
			6-8-80			APPD.

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

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE.
CUSTOMERS CONNECTIONS.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
921N07	902M122BR	13			12

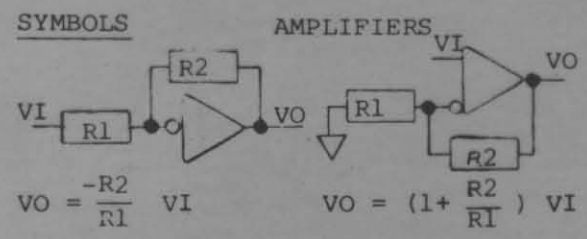
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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.

MTD. ON PANEL

FUNCTION	USE	LOC	JUMPERS
60HZ	X	MCC	AA-AS, BA-BS, CA-CS
	X	MFC	ZA-ZB (IF USED)
50HZ		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	X	MCC	JH - COM
LT. 3-7sec.	X		(NONE)
2 - 60sec		MCC	332Ω FROM LT1 TO COM
VREG -		IFC	NT-CEMF, CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V. 24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT1, PT-PT1
60-160vdc		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 (3·16)
*	CFB	CURRENT FEEDBACK (3·16)
	CMFA	ABSOLUTE VALUE CEMF (3·08)
	CRM	CROSSOVER MODIFY (4·11)
	DFP	DELAYED FIRING POWER (3·25)
*	DR	DRIVER REFERENCE (3·33)
*	EAO	ERROR AMP OUTPUT (3·33)
	EST	EXTERNAL FLT STOP INPUT (3·14)
	FALT	FAULT (3·14)
*	FC	FIELD CURRENT (NS26)
	FDR	FIELD DIAGNOSTIC REFERENCE (4·08)
	FEA	FIELD ECONOMY ADJUST (3·25)
	FF	FIELD FAULT (2·28)
	IABS	MOTOR CURRENT ABSOLUTE (3·09)
	ILA	CURRENT LIMIT ADJUST (3·23)
	IMET	CURRENT SIGNAL FOR METER (3·10)
*	IPU	INITIAL PULSE (3·20)
*	LR	LOCAL REF. FROM DGC (3·33)
*	JOG	JOG SWITCH INPUT (3·23)
*	JOGR	JOG REFERENCE INPUT (3·31)
*	MAC	MAX/MA CONTROL SIGNAL (3·20)
	MSW	MODE SWITCH (3·30)
*	OSC	OSCILLATOR (3·17)
*	PCR	PHASE CONTROL REF. (3·26)
*	PRE	DRIVE PRECONDITION (3·21)
	ØSEQ	PHASE SEQUENCE (3·14)
	RERR	REGULATOR ERROR (3·27)
	RIJ	INTEGRATOR SUMMING JUNCTION (3·27)
	RJ	REGULATOR SUMMING JUNCTION (3·31)
	RRA	REGULATOR RESPONSE ADJUST (3·30)
	RSET	RESET (3·16)
*	RTR	READY TO RUN (3·16)
*	RUN	RUN SWITCH INPUT (3·21)
*	SA-C	PHASE SYN OUTPUT (3·16)
*	SFB	SPEED FEEDBACK (3·20)
	SMET	SPEED SIGNAL FOR METER (3·12)
*	SR	SYSTEM REFERENCE INPUT (3·29)
*	SYS	SYSTEM FAULT TRIP (3·13)
*	TA	OUTPUT FOR TACHO TRIP ADJUST (3·20)
	TF	TACHO FAULT (NS28)
*	TFB	TACHOMETER FEEDBACK (3·20)
	TFR	AC TACHO FREQUENCY OUTPUT (3·13)
*	TR	TIMED REFERENCE (3·33)
*	VFB	VOLTAGE FEEDBACK (3·19)
*	WFR	WEAK FIELD REFERENCE (3·20)

(* - TEST POINT ON DOOR FRONT)

MAPPING SYSTEM

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

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

DR 1 SH 2 CONTD ELEMENTARY DIAGRAM 902M122BY

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 3-7-79
		TECHN.
		ENG. AP
		APPD.

ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION BRIGHTON, ENGLAND

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE.
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD
921N09	902M122BY	2

IDENT DR 1 SH 1

DR | SH 4 | CONTD. 5 | ELEMENTARY DIAGRAM 902M122BY

[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]

[2·02]

DA1

OLD

[2·08]

XO

DB

5 6

P4

DBR

MOTOR

A1 A2

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 3-7-79
						TECHN.
						ENG. AP
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
921 NO9	902M122BY	5

IDENT | DR | SH 4

SUPPLY

L1 L2 L3

CB

L4

L5

L6

AFS1 AFS2 AFS3

BFS1 BFS2 BFS3

H3 H2 H1

ISOLATION T'FORMER

X0 X3 X2 X1

K0 K3 K2 K1

.02

460V

CVT

110V

1 2

LK

BFS4

4A

3

'DRIVE TRIPPED'

LP1

2TB 3

FLT

2TB 4

7

5

FAN 1

FAN 2

FAN 3

FAN 4

3TB 7

4

L10 L11 L12

BMC

L13 L14 L15

BOL

L7 L8 L9

AUX SUPPLY
(18 KVA MAX)

BA1 BA2 BA3

A B C

BLOWER MOTOR

DR 5 SH CONTD. 6

ELEMENTARY DIAGRAM 902M122 BY

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 3-7-79
		TECHN.
		ENG. AP
		APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
921N09	902M122 BY	6

IDENT

DR SH 5

DR | SH 6 | CONTD. 7 | ELEMENTARY DIAGRAM 902M122 BY

RA-1T
1K
R1
1Q-2X
1Q-2
-20V
RB-1T
1K
R2
1Q-31X
1Q-31
+20V
39K
R4
1Q-5
RA-1V
5
6
8
SP23
3
13
SP24
3
14
SP25
3
15
SLIDE POSITION POT (IF CSC. MOD USED)
A-1P
17X
10K
18X
10K
19X
20X
OA1
21X
20K
25X
24X
+20
1LIM+
1LIM-
MCC-SR
2
24
(SP7)
MANUAL SPEED POT
1KΩ
2
25
(SP8)
1Q-4
39K
R3
1Q-4X
1Q-5X
2
27
AMPLIFIER CARD 193W256AAG01
-20V
1Q-7
10K
R5
1Q-7X
1Q-32X
SP1
1K
1Q-32
MCC-JOGR
1Q-30X
RB-1V
+20V
19
20
1Q-29X
5K6
R7
1Q-29
1Q-24
D1
1Q-24X
IFC-SYS
1Q-26
1Q-28
C1
10μF
R6
10K
1Q-26X
1Q-28X

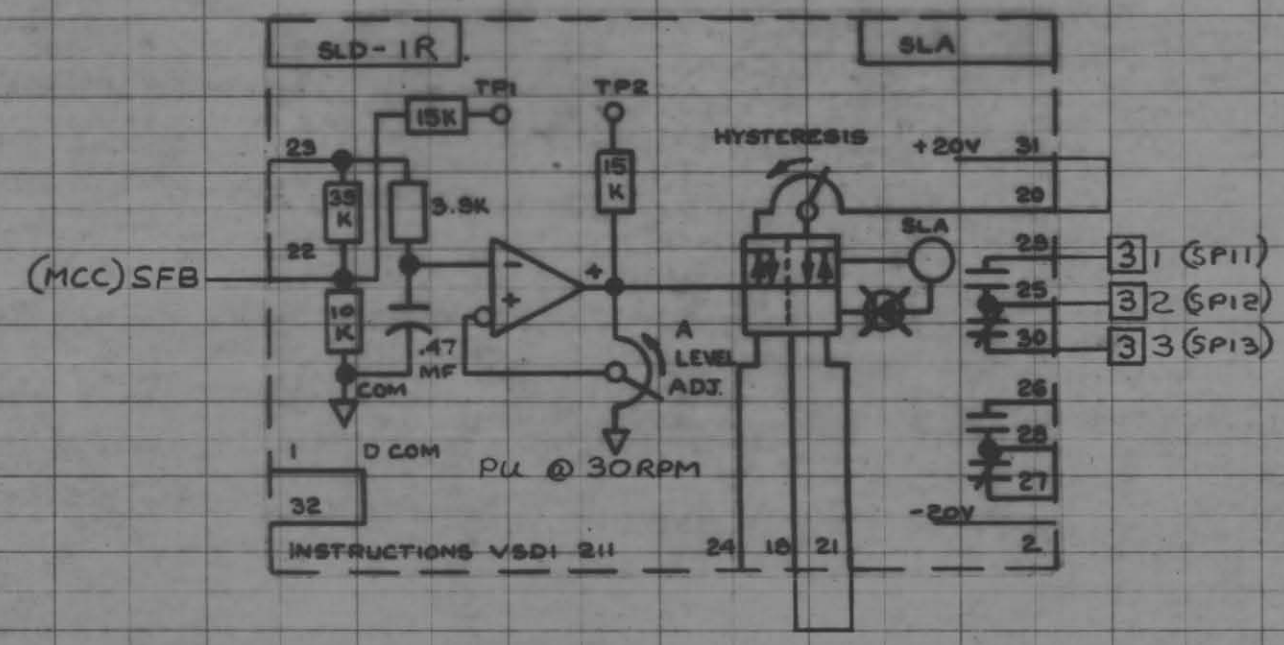
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 3-7-79
						TECHN.
						ENG. AP
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

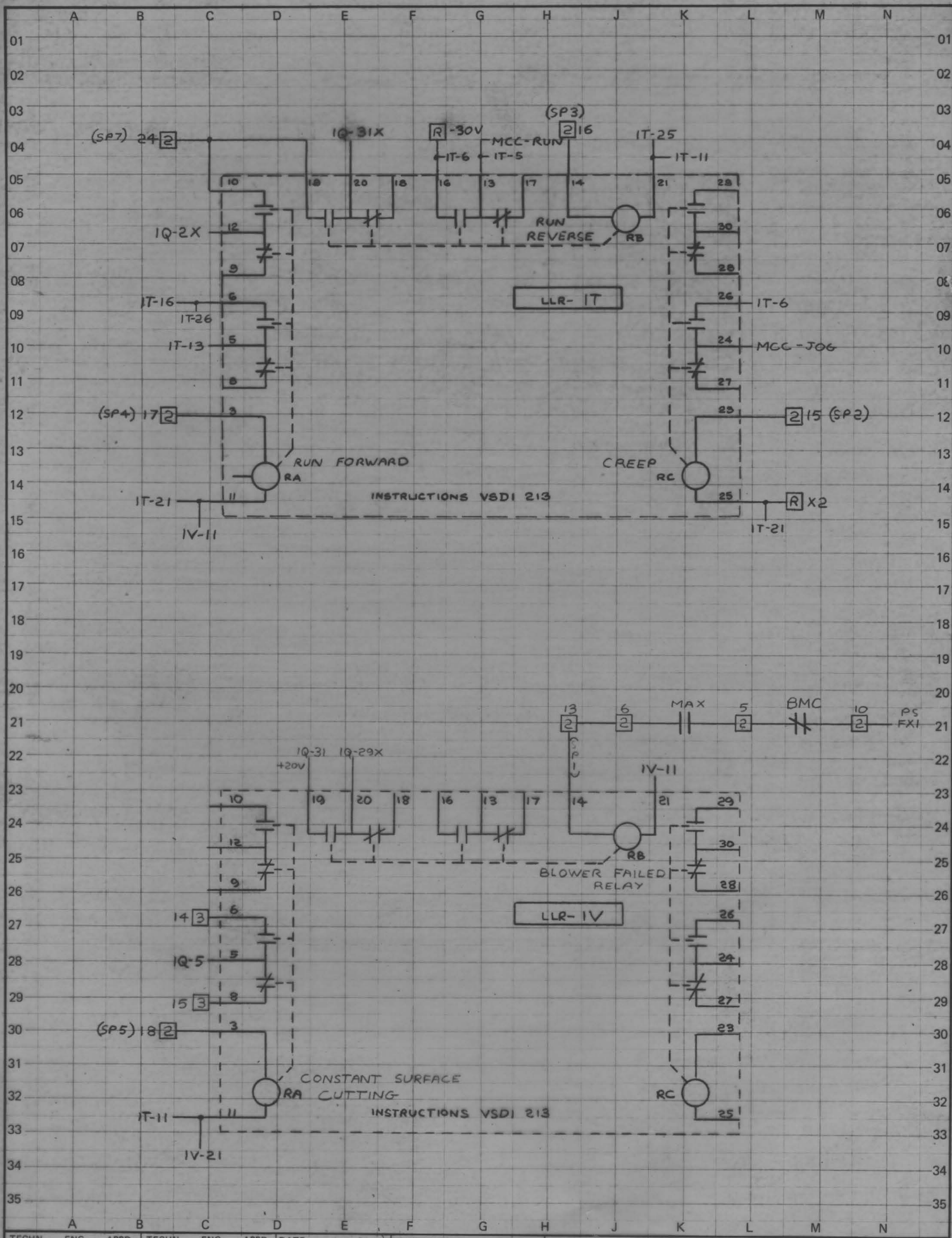
IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
921N09	902M122 BY	7		6



NON-POLARIZED SIGNAL LEVEL DETECTOR 193W277AAG01
(PU AT 30RPM)

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 3-7-79 / TECHN. / ENG. AP / APPD.	ALLENWEST Simplex VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	WEBSTER & BENNETT LTD. 75HP BDC3034R SPINDLE DRIVE ELEMENTARY DIAGRAM.	IDENT DR 7 SH
				GO NUMBER 921ND9 / ELEMENTARY DIAGRAM 902M122BY / CONTD. 8	



DR 8 SH 9 CONTD. ELEMENTARY DIAGRAM 902M122 BY

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE 3/7/79
		TECHN.
		ENG. AP
		APPD.

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

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
921N09	902M122BY	9

IDENT DR 8 SH

902HM100EA

P	Q	R	S T	U V
A	CC	SLD	LLR	LLR
193W256 AA G01	909W317 AA G02	193W277 AA G01	193W279 AA G03	193W279 AA G03
AMPLIFIER	SELECT COMP	SIG LEV DET	LOW LEVEL RELAY	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

1Q·2X — 1T·12	1T·10 — 1T·19	2TB6 - 2TB13	SP1 — 1V·14
1Q4X — 1Q·5X	1T·11 — 1T·21	1Q·24 — 1Q·26	SP2 — 1T·23
1Q·5X — 1P·19X	1T·21 — 1T·25	1Q·26 — 1Q·28	SP3 — 1T·14
1Q·5 — 1V·5	1T·25 — RTB(X2)	1Q·28 — 1Q·29	SP4 — 1T·3
1Q·7 — 1Q·2	1T·11 — 1V·11	1Q·28X - 1Q·26X	SP5 — 1V·3
1Q·7X — 1Q·32X	1T·5 — 1T·13	1Q·26X - 1Q·15	
1Q·30X - 1Q·15	1T·13 — MCC(RUN)	1Q·29X - 1V·20	SP7 — 1T·10
1Q·32 — (MCC JOG R)	1T·26 — 1T·6	1Q·24X - (IFC SYS)	SP8 — 1Q·4
1Q·31X - 1T·20	1T·6 — 1T·16		SP11 — 1R·29
	1T·16 - RTB(-30V)		SP12 — 1R·25
1R·22 - MCC(SFB)	1T·24 - MCC(JOG)		SP13 — 1R·30
1R·19 — 1R·21			SP23 — 1P·15
1R·20 — 1R·31			SP24 - 1V·6
1V·8 — 1P·21X			SP25 - 1V·8
1P·21X — MCC(SR)			
1V·11 — 1V·21			
1V·19 — 1Q·31			
			3TB6 - MA11 (30/0:2)
BUS ALL PINS 2 1P - 1R	1R·2 — RTB (-20V)		3TB7 - MA12
BUS ALL PINS 15 1P - 1R	1R·15 — RTB (COM)		
BUS ALL PINS 31 1P - 1R	1R·31 — RTB (+20V)		

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 3/7/79
						TECHN.
						ENG. AP
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
1921N09	902M122BY	11

IDENT △ DR SH 10

DR | SH 10 | CONTD. 11 | ELEMENTARY DIAGRAM 902M122BY

DR	SH	CONTD.	ELEMENTARY DIAGRAM
	11	12	9.02M122BY

[5·21] [5·21] [5·21] [5·21]

ACM-XO K1 K2 K3

CIRCUIT BREAKER

8·8/75/75HP 100/850/2550 REV/MIN

240V ARM

120V FIELD

[04-28]

ATB-F1

ATB-XO

DA1

2TB29

60V/1000 REV/MIN

2TB30

MAX

110V FX1

2TB10

CREEP

RUN RVSE

RUN FWD

12

DB BMC

13

RB-1V

2TB13

X2

RC-1T

2TB15

RB-1T

2TB16

2TB7

2TB6

2TB5

MAX

RA-1T

2TB17

RA-1V

2TB18

CONSTANT SURFACE CUTTING

TO TRIPPED LIGHT CIRCUIT [05-26]

3

7

2TB3

FLT

2TB4

OLD

MOTOR THERMOSTAT

2TB8

2TB9

8

11

12

9

10

EXTERNAL STOP (IF REQD)

TO BLOWER STARTER CCT. [05-33]

4

3

3TB6

MA

3TB7

3TB13

3TB14

3TB15

SLIDE POSITION POT (IF CSL 2K5Ω USED)

SLOW SPEED RELAY (C/O @ 30 RPM)

3TB1

3TB2

3TB3

SLA-1R

2TB24

2TB25

2TB27

SPEED POT 1KΩ (OR ±10V N.C. REF ON 2TB25)

CONTROLLER CONNECTIONS ONLY

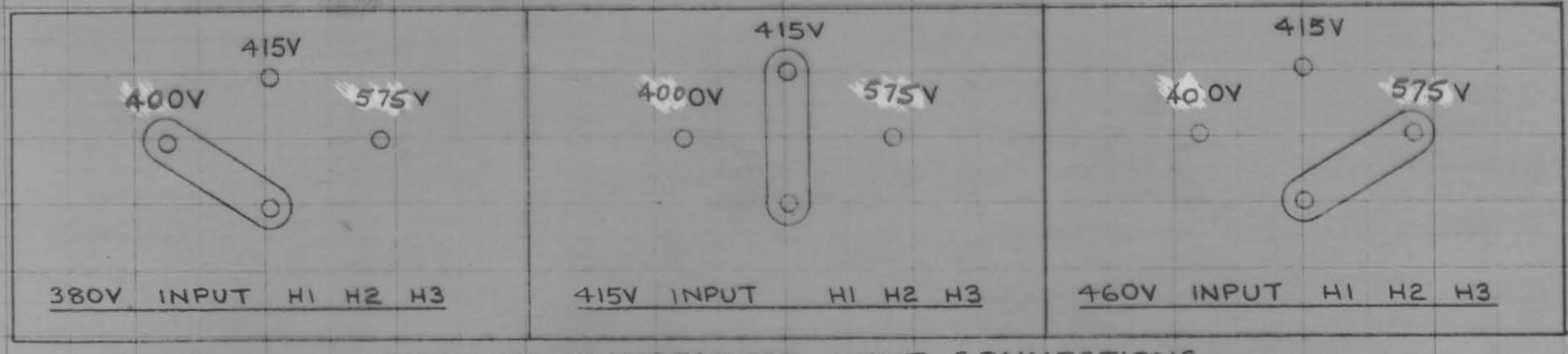
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 3/7/79
						TECHN.
						ENG. AP
						APPD.

ALLENWEST Simplex

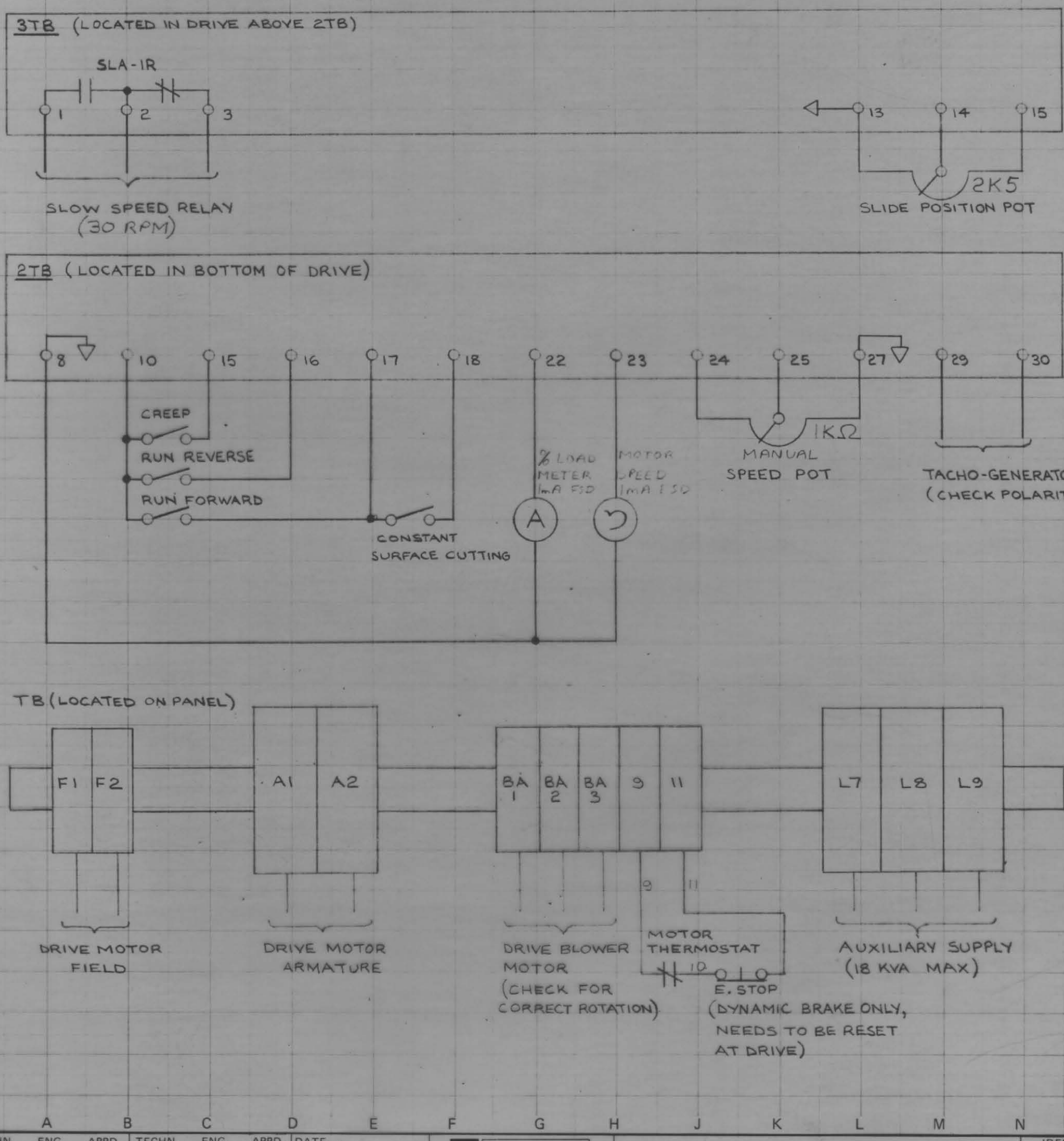
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER AND BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
921N67	902M122BY	12	△		11



MAIN ISOLATING TRANSFORMER INPUT CONNECTIONS.



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 3/7/79
						TECHN
						ENG. AP
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED
DRIVES OPERATION,
BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE.
CUSTOMERS CONNECTIONS.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
921N07	902M122BY	13

IDENT | DR | SH 12

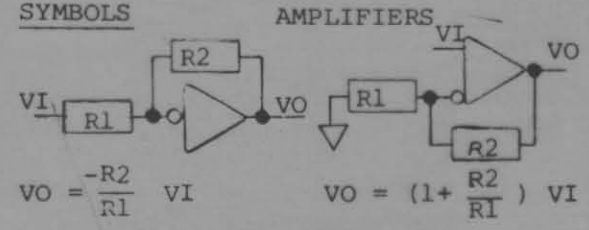
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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.

MTD. ON PANEL

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BS, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	AA-AF, BA-BF, CA-CF
IOC-400%	X		NONE
-500%		IFC	I-IHI
-300%		IFC	I-ILO
SR5 - 9v			(NONE)
9 - 20v	X	MCC	SRH-COM
JOGR 10v			(NONE)
20V	X	MCC	JH - COM
LT. 3-7sec.	X		(NONE)
2 - 60sec		MCC	332Ω FROM LT1 TO COM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V.			
24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT1, PT-PT1
60-160vdc		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		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 (3·16)
*	CFB	CURRENT FEEDBACK (3·16)
	CMFA	ABSOLUTE VALUE CEMF (3·08)
	CRM	CROSSOVER MODIFY (4·11)
	DFP	DELAYED FIRING POWER (3·25)
*	DR	DRIVER REFERENCE (3·33)
*	EAO	ERROR AMP OUTPUT (3·33)
	EST	EXTERNAL FLT STOP INPUT (3·14)
	FALT	FAULT (3·14)
*	FC	FIELD CURRENT (NS26)
	FDR	FIELD DIAGNOSTIC REFERENCE (4·08)
	FEA	FIELD ECONOMY ADJUST (3·25)
	FF	FIELD FAULT (2·28)
	IABS	MOTOR CURRENT ABSOLUTE (3·09)
	ILA	CURRENT LIMIT ADJUST (3·23)
	IMET	CURRENT SIGNAL FOR METER (3·10)
*	IPU	INITIAL PULSE (3·20)
*	LR	LOCAL REF. FROM DGC (3·33)
*	JOG	JOG SWITCH INPUT (3·23)
*	JOGR	JOG REFERENCE INPUT (3·31)
*	MAC	MAX/MA CONTROL SIGNAL (3·20)
	MSW	MODE SWITCH (3·30)
*	OSC	OSCILLATOR (3·17)
*	PCR	PHASE CONTROL REF. (3·26)
*	PRE	DRIVE PRECONDITION (3·21)
	ØSEQ	PHASE SEQUENCE (3·14)
	RERR	REGULATOR ERROR (3·27)
	RIJ	INTEGRATOR SUMMING JUNCTION (3·27)
	RJ	REGULATOR SUMMING JUNCTION (3·31)
	RRA	REGULATOR RESPONSE ADJUST (3·30)
	RSET	RESET (3·16)
*	RTR	READY TO RUN (3·16)
*	RUN	RUN SWITCH INPUT (3·21)
*	SA-C	PHASE SYN OUTPUT (3·16)
*	SFB	SPEED FEEDBACK (3·20)
	SMET	SPEED SIGNAL FOR METER (3·12)
*	SR	SYSTEM REFERENCE INPUT (3·29)
*	SYS	SYSTEM FAULT TRIP (3·13)
*	TA	OUTPUT FOR TACHO TRIP ADJUST (3·20)
	TF	TACHO FAULT (NS28)
*	TFB	TACHOMETER FEEDBACK (3·20)
	TFR	AC TACHO FREQUENCY OUTPUT (3·13)
*	TR	TIMED REFERENCE (3·33)
*	VFB	VOLTAGE FEEDBACK (3·19)
*	WFR	WEAK FIELD REFERENCE (3·20)

(* - TEST POINT ON DOOR FRONT)

MAPPING SYSTEM

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

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

DR 1 SH 2 CONTD. ELEMENTARY DIAGRAM 902M122AX

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 26-2-79
						TECHN. DM
						ENG. RJV
						APPD.

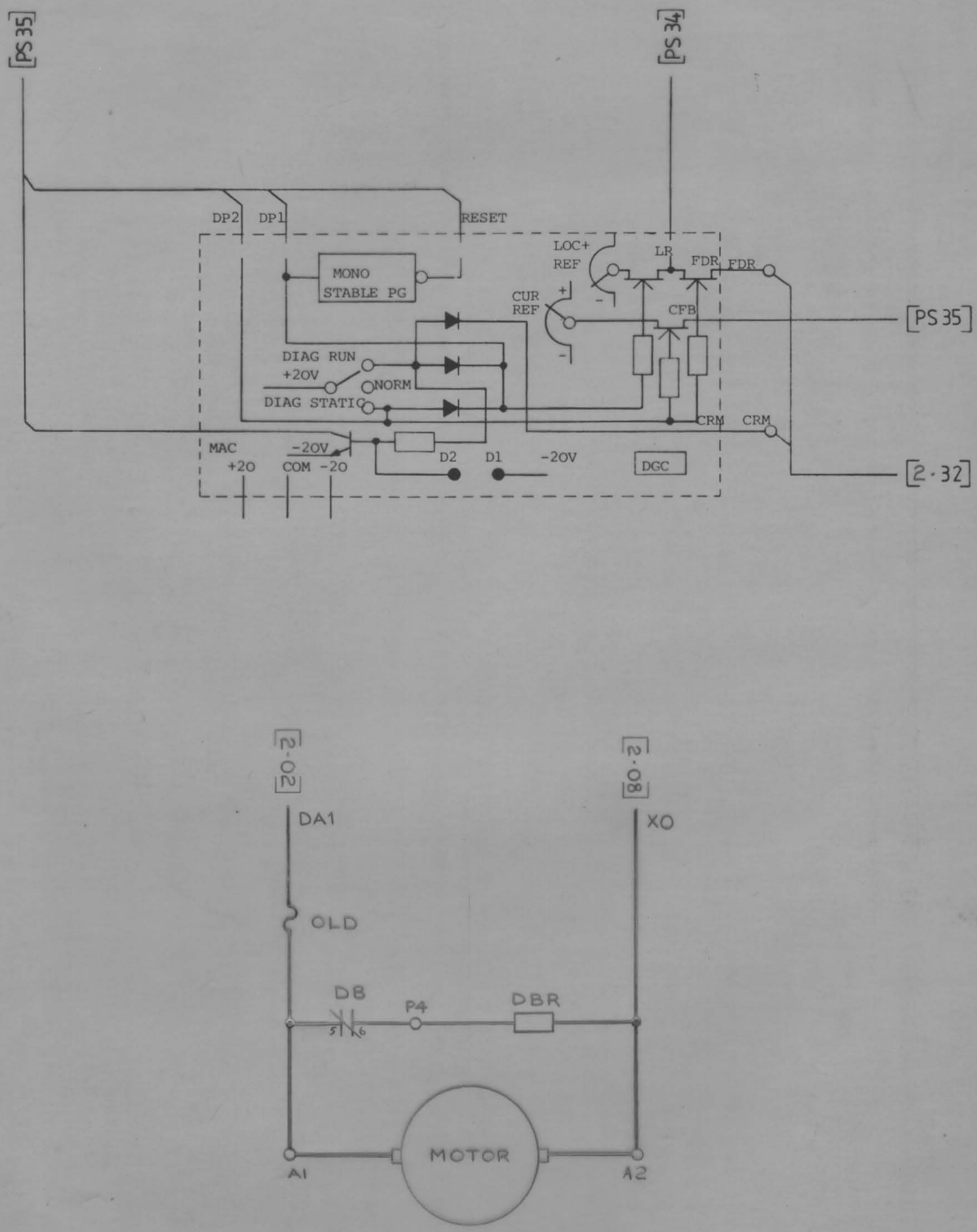
ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE.
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
903N00	902M122AX	2

IDENT DR SH 1

DR | SH 4 | CONTD. 5 | ELEMENTARY DIAGRAM 902M122AX



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

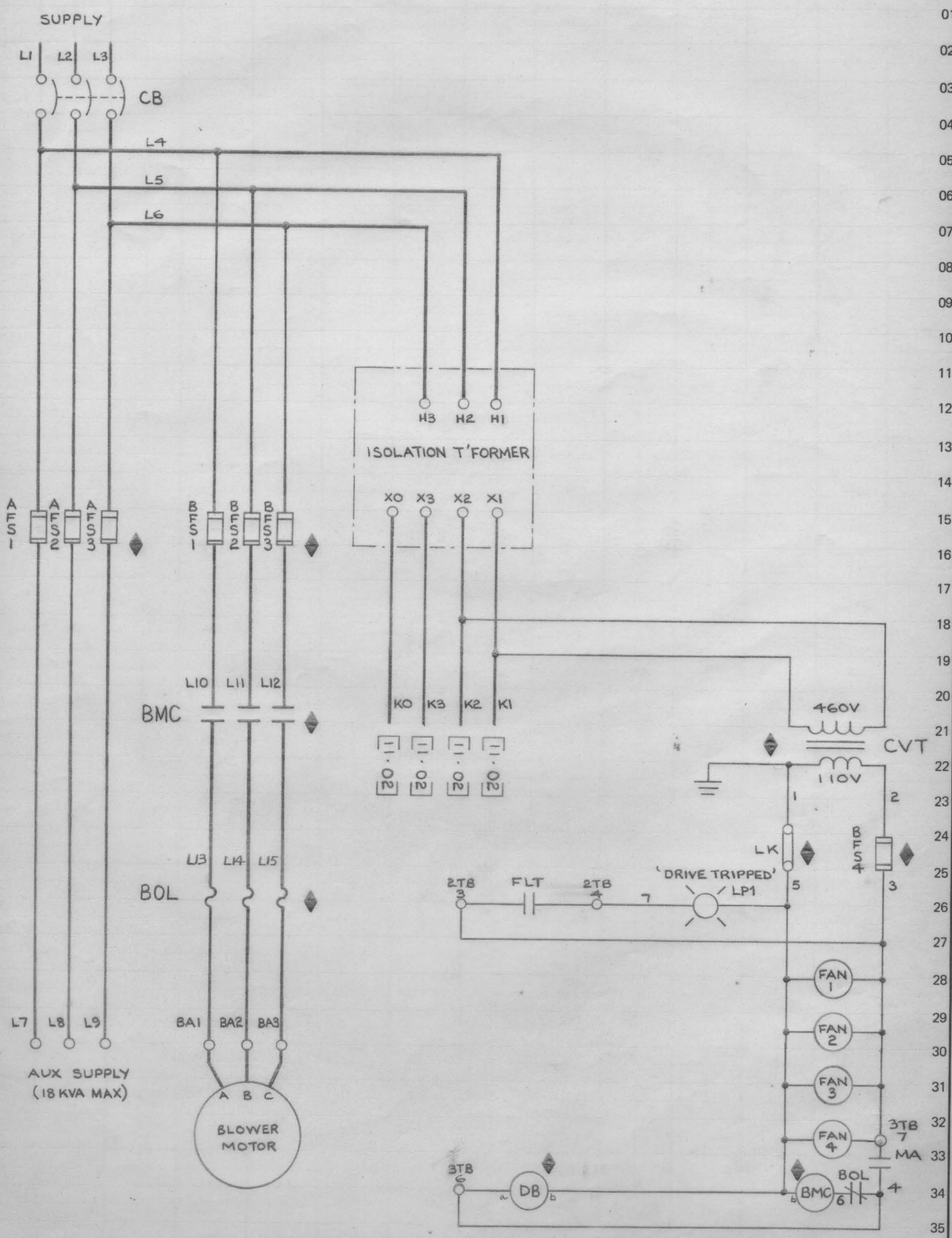
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 26-2-79
						TECHN. DM
						ENG. RJV
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE, ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
903N00	902M122AX	5

IDENT | DR | SH 4



DR	SH	CONTD.	ELEMENTARY DIAGRAM
	5	6	902M122AX

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						14-3-79
						TECHN.
						ENG. RJV
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
903N00	902M122AX	6

IDENT

DR	SH
	5

DR 6 | SH 7 | CONTD. | ELEMENTARY DIAGRAM 902M122AX

RA-1T
1K
R1
1Q-2X
1Q-2
-20V

RB-1T
1K
R2
1Q-31X
1Q-31
+20V

SP23 3 13
SLIDE POSITION POT (IF CSC MOD USED)
RA-1V
5 6
SP24 3 14
SP25 3 15
39K
R4
1Q5

2 24 (SP7)
MANUAL SPEED POT 1KΩ
2 25 (SP8) 1Q-4
39K
R3
1Q-4X 1Q-5X

A-1P
17X 10K
18X 10K
19X
20X
0A1
21X
MCC-SR
20K
25X
24X
+20
I LIM+
I LIM-

2 27

AMPLIFIER CARD 193W256AAG01

-20V
1Q-7
10K R5
1Q-7X
1Q-32X
SP1 1K
1Q-32
MCC-JOG R
1Q-30X

RB-1V
+20V
19 20
1Q-29X
5K6 R7
1Q-29
1Q-24
D1
1Q-24X
IFC-SYS
1Q-26
1Q-28
C1 100μF
R6 10K
1Q-26X
1Q-28X

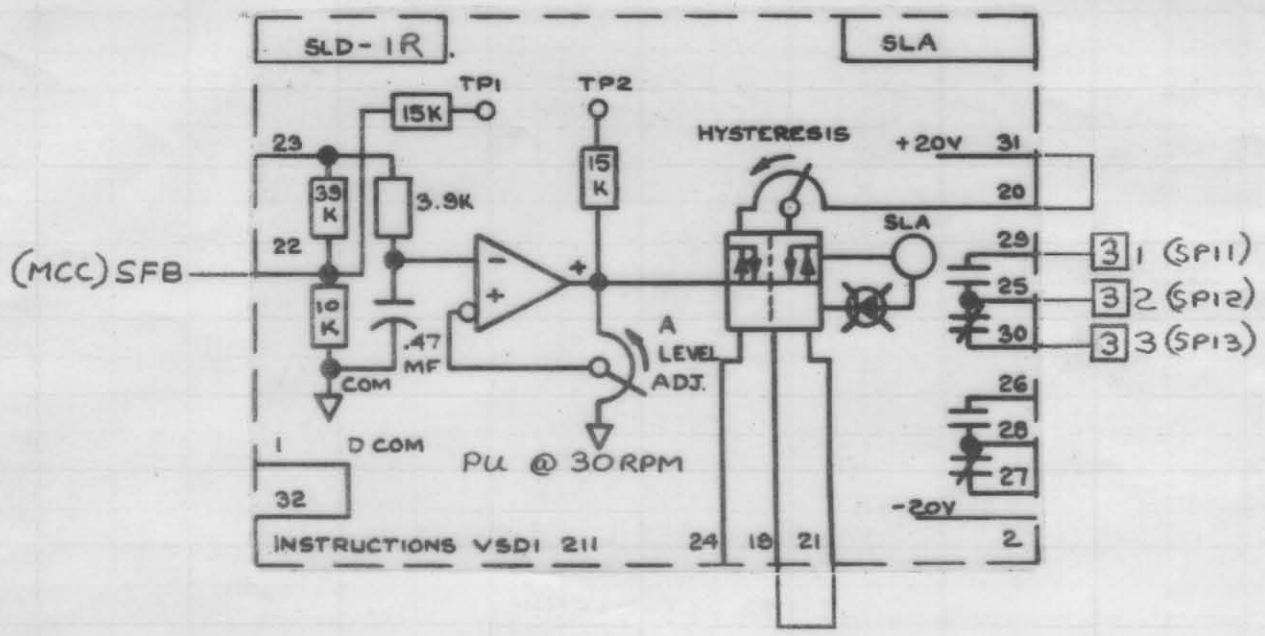
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 26-2-79
						TECHN. DM
						ENG. RJV
						APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
903N00	902M122AX	7

IDENT DR 6 SH



NON-POLARIZED SIGNAL LEVEL DETECTOR 193W277AAG01
(PU AT 30RPM)

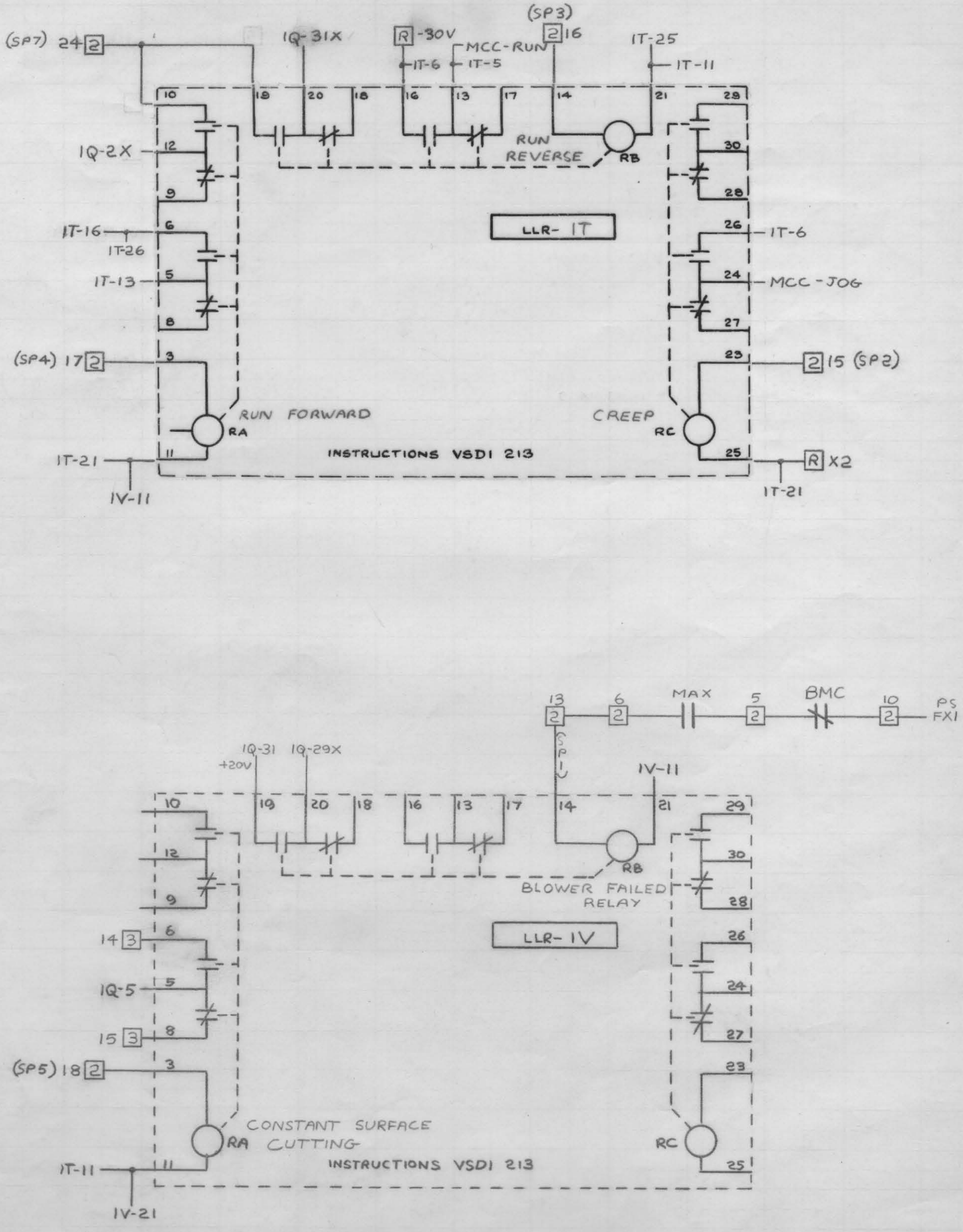
DR | SH 7 | CONTD. 8 | ELEMENTARY DIAGRAM 902M122AX

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 26-2-79
						TECHN.
						ENG. RJV
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
903N00	902M122AX	8			7



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						26-2-79
						TECHN.
						ENG. RJV
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
903N00	902M122AX	9

IDENT

DR	SH
	8

DR 8 SH CONTD. 9 ELEMENTARY DIAGRAM 902M122AX

902MM100EA

DR	SH	CONTD.	ELEMENTARY DIAGRAM
	10	11	902M122AX

A	B	C	D	E	F	G	H	J	K	L	M	N
								A	CC	SLD	LLR	LLR
								193W256 AA G01	909W317 AA G02	193W277 AA G01	193W279 AA G03	193W279 AA G03
								AMPLIFIER	SELECT COMP	SIG LEV DET	LOW LEVEL RELAY	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
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

1Q·2X — 1T·12	1T·10 — 1T·19	2TB6 - 2TB13	SP1 — 1V·14
1Q·4X — 1Q·5X	1T·11 — 1T·21	1Q·24 — 1Q·26	SP2 — 1T·23
1Q·5X — 1P·19X	1T·21 — 1T·25	1Q·26 — 1Q·28	SP3 — 1T·14
1Q·5 — 1V·5	1T·25 — RTB(X2)	1Q·28 — 1Q·29	SP4 — 1T·3
1Q·7 — 1Q·2	1T·11 — 1V·11	1Q·28X — 1Q·26X	SP5 — 1V·3
1Q·7X — 1Q·32X	1T·5 — 1T·13	1Q·26X — 1Q·15	
1Q·30X — 1Q·15	1T·13 — MCC(RUN)	1Q·29X — 1V·20	SP7 — 1T·10
1Q·32 — (MCC JOGR)	1T·26 — 1T·6	1Q·24X — (1FC SYS)	SP8 — 1Q·4
1Q·31X — 1T·20	1T·6 — 1T·16		SP11 — 1R·29
	1T·16 — RTB(-30V)		SP12 — 1R·25
1R·22 — MCC(SFB)	1T·24 - MCC(JOG)		SP13 — 1R·30
1R·19 — 1R·21			SP23 — 1P·15
1R·20 — 1R·31			SP24 — 1V·6
1V·8 — 1P·21X			SP25 — 1V·8
1P·21X — MCC(SR)			
1V·11 — 1V·21			
1V·19 — 1Q·31			
BUS ALL PINS 2 1P - 1R	1R·2 — RTB (-20V)		
BUS ALL PINS 15 1P - 1R	1R·15 — RTB (COM)		
BUS ALL PINS 31 1P - 1R	1R·31 — RTB (+20V)		

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 26-2-79
						TECHN.
						ENG. RJV
						APPD.

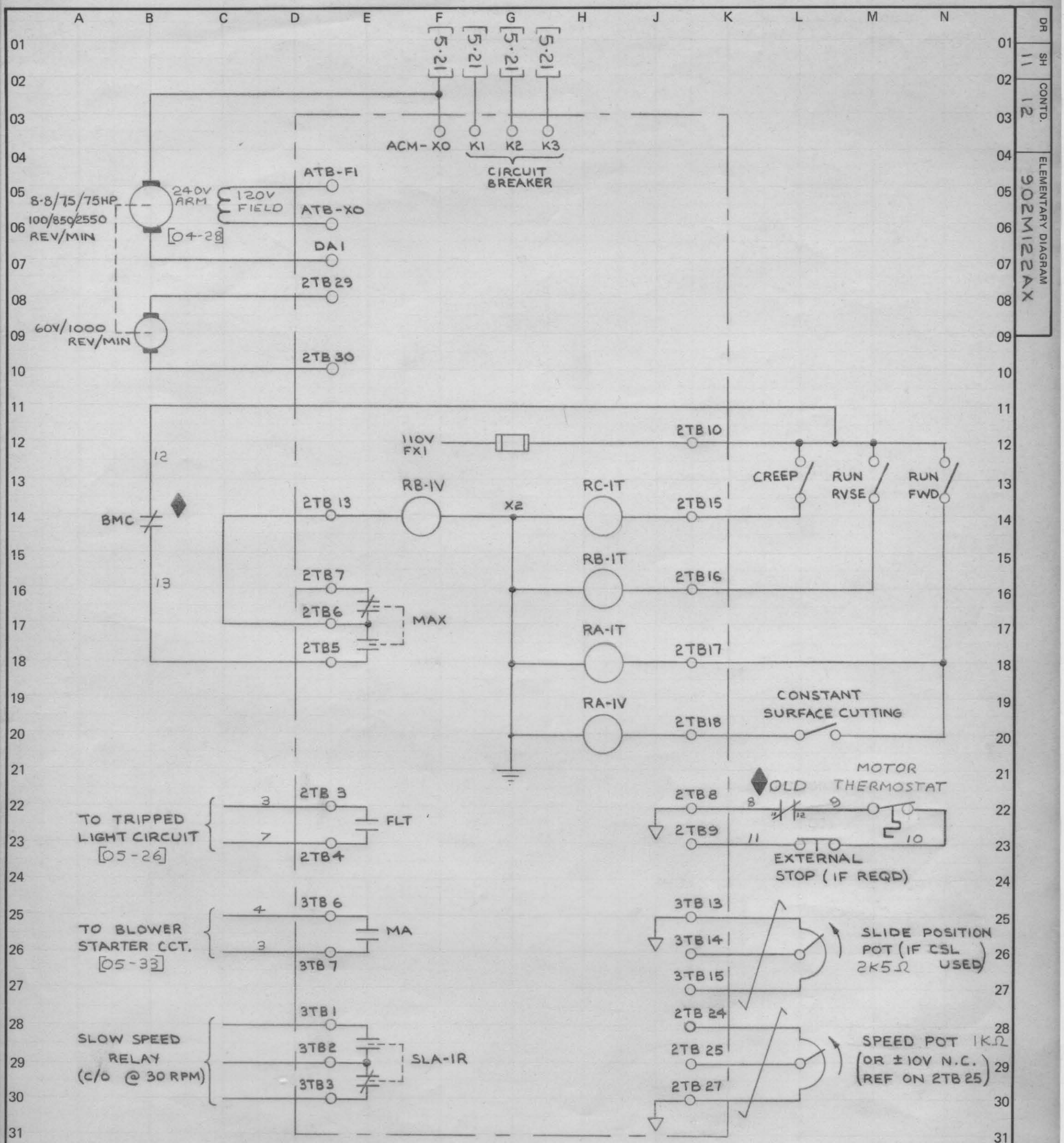
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC 3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
903N00	902M122AX	11

IDENT

DR	SH
	10



CONTROLLER CONNECTIONS ONLY

DR 11 | SH 12 | CONTD. | ELEMENTARY DIAGRAM 902M122AX

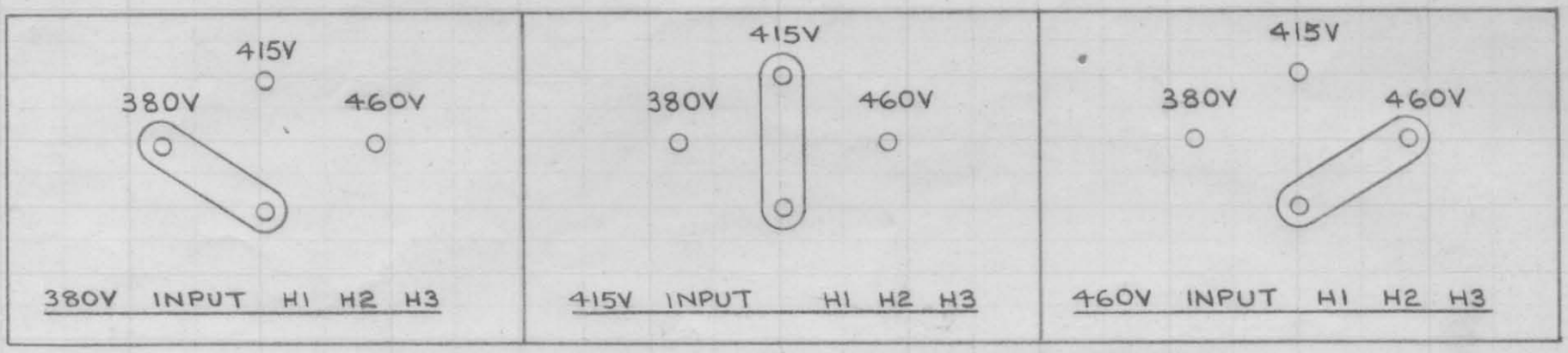
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 14-3-79
						TECHN. DM
						ENG. RJV
						APPD.

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

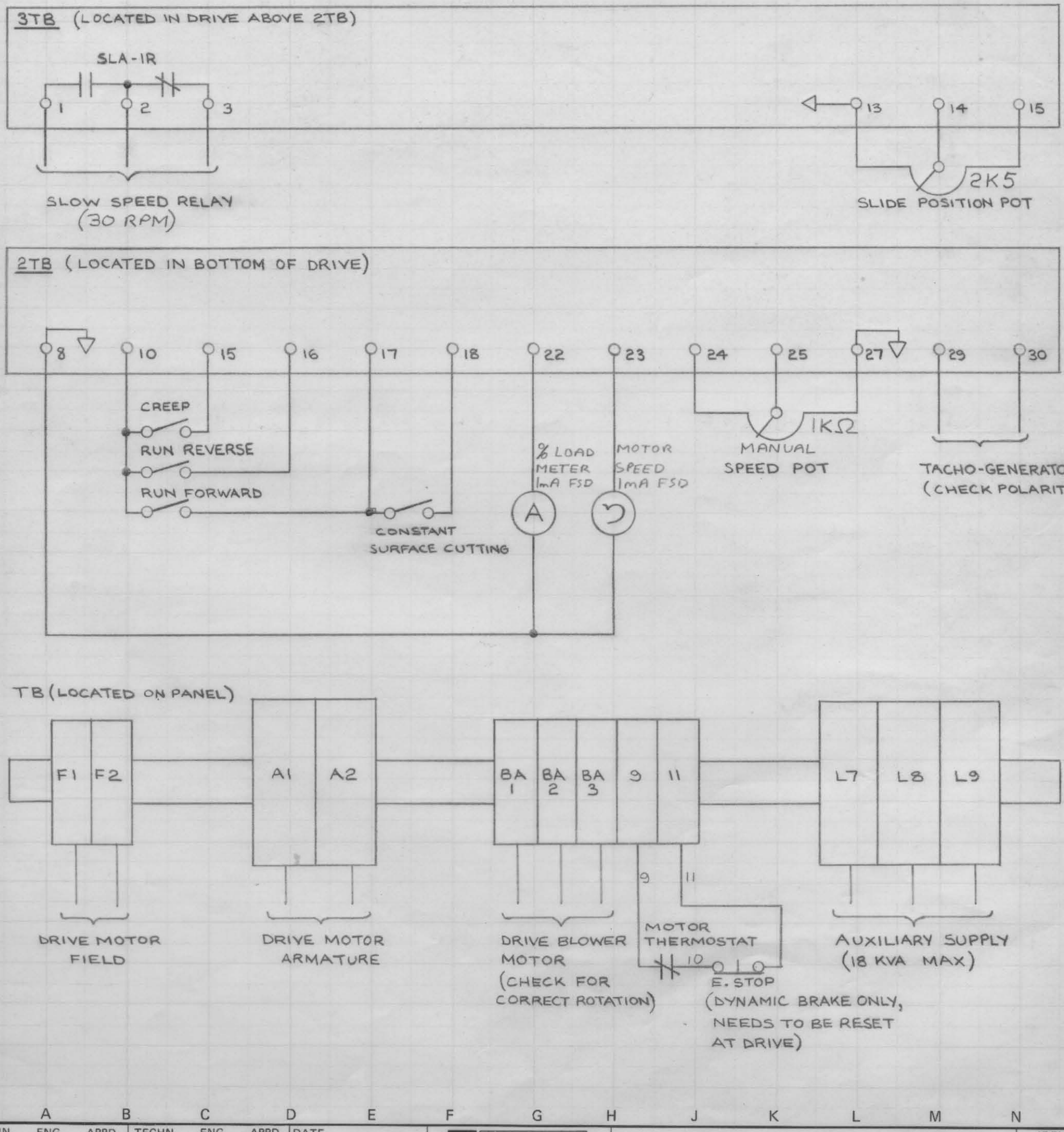
WEBSTER AND BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE,
ELEMENTARY DIAGRAM

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
903N00	902M122AX	12

IDENT | DR | SH 11



MAIN ISOLATING TRANSFORMER INPUT CONNECTIONS.



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 16-3-79
						TECHN. DM
						ENG. RJV
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED
DRIVES OPERATION,
BRIGHTON, ENGLAND.

WEBSTER & BENNETT LTD.
75HP BDC3034R SPINDLE DRIVE.
CUSTOMERS CONNECTIONS.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
903N90	902M122AX	13

IDENT

DR | SH 12