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DR 01  
SH 1  
CONTD. 02  
ELEMENTARY DIAGRAM 902M122DC

# VALUTROL - AW 3064R

## FOR FREIGHTLINER 2-6-3 GOLIATH CRANES HOIST/TRAVEL & CROSS TRAVERSE RE-DRIVE PROGRAMME

BRITISH RAIL BOARD  
SUPPLIES DEPARTMENT  
RAILWAY TECHNICAL CENTRE  
LONDON ROAD  
DERBY  
DE2 8UP

ORDER No. 3B/48075/E/C.6-2-1

TECHN. <i>CWH</i> ENG. <i>NGM</i> APPD. <i>WBM</i>		TECHN. <i>CWH</i> ENG. <i>WBM</i> APPD. <i>WBM</i>		DATE 1-4-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	TITLE PAGE		IDENT 		
SEE SHEET OSA 058		SEE SHEET OS.		TECHN. <i>CWH</i>		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 02	DR 01	SH 1
77-8-82		DATE. 8-5-80.		ENG. <i>WBM</i>						
				APPD. <i>WBM</i>						

Disclaimer Statement The trade mark is the trade mark of General Electric Company which is not connected with the English Company of...

DR 0  
SH 2  
CONTD. 03  
ELEMENTARY DIAGRAM 902M122DC

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 HOIST & LONG TRAVEL AC SUPPLIES, BRAKE SUPPLIES & LONG TRAVEL FIELDS 2A  
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 HOIST FIELD SUPPLY 2D  
 HOIST & LONG TRAVEL VALUTROL 2B, 2E - 2R  
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 HOIST & LONG TRAVEL TEST SWITCH 2W  
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 CROSS TRAVERSE AC & DC MAINS 3B  
 CROSS TRAVERSE VALUTROL 3C - 3M  
 CROSS TRAVERSE AC CONTROL 3N  
 CROSS TRAVERSE TEST SWITCH 3P  
 PHOTO ELECTRIC RELAY CIRCUITRY 3Q

WIRING DIAGRAMS                      GUSHET FAULTS                      ALL OTHER SITES

CRANE PROTECTIVE PANEL	102976C	102944C
VALUTROL PANEL	102977C	102945C
MAIN CUBICLE (LHS)	102978C	102971C
MAIN CUBICLE (RHS)	102979C	102972C
SIMPLIFIED EXTERNAL CONNECTIONS	102980C	102975C
BLOCK DIAGRAM	102981C	102959C

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	ALLENWEST			INDEX			IDENT	
C.W.H.			C.W.H.			1-4-80	Simplex						DR	SH
3	SEE SHEET 05.		2	SEE SHEET 05			VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	02	
									948901	902M122DC	03			



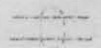
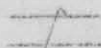
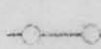







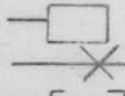


VARIABLE SPEED DRIVES OPERATION  
SILCON DRIVE SYSTEM

GENERAL NOMENCLATURE

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

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

SYMBOLS :-

-  - SCREENED LEADS
-  - TWISTED LEADS
-  - TERMINAL BOARD JUMPERS
-  - MOUNTED IN CRANE PANEL
-  - MOUNTED IN FIELD RESISTANCE SECTION
-  - MOUNTED IN REMOTE FIELD RESISTANCE SECTION
-  - MOUNTED IN MAIN PANEL
-  - MOUNTED IN SEATED UNIT
-  - MOUNTED IN BALLAST RESISTANCE UNIT
-  - MOUNTED IN MACHINERY ROOM
-  - TERMINALS FOR EXTERNAL CONNECTION
-  - NO CONNECTION
-  - EQUIPMENT SUPPLIED BY OTHERS

SEE SHEET 05 FOR DIAGRAM  
REVISION DETAILS

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GENERAL NOMENCLATURE			IDENT	
			SEE SHEET 05			1-4-80		TECHN.	948901		ELEMENTARY DIAGRAM	CONTD.
								ENG.	902M1220C			
							APPD.			04		
			DATE 2-6-80.							03		



DR 0  
SH 4  
CONTD. 05  
ELEMENTARY DIAGRAM 902M122DC

DRIVE NUMBERING SYSTEM

1. TO BREAK THE ELEMENTARY DIAGRAM INTO EASY-TO-USE SECTIONS, A SERIES OF ARBITRARY "DRIVES" HAS BEEN ESTABLISHED, WITH THE ELEMENTARY SHEETS ALPHABETICALLY NUMBERED IN EACH DRIVE. FOR EXAMPLE:- SHEETS 3A, 3B AND 3C ARE THE FIRST THREE ELEMENTARY SHEETS IN DRIVE No.3.
2. THE DRIVE CONCEPT IS ESTABLISHED TO CONVENIENTLY SECTIONALIZE THE ELEMENTARY DIAGRAM, AND NOT NECESSARILY TO DENOTE SEPARATE PHYSICAL EQUIPMENTS. HOWEVER, ALL THE SYSTEM ELEMENTS INCLUDED IN A DRIVE WILL BEAR AN OBVIOUS FUNCTIONAL RELATIONSHIP; FOR EXAMPLE A NUMBER OF AUXILIARY MOTOR STARTERS MAY BE GROUPED TOGETHER AND REFERRED TO AS "DRIVE 1". THIS SHEET IS "OB", THE SECOND SHEET OF DRIVE "O", I.E. THE INTRODUCTORY MATERIAL.

WIRE NUMBERING SYSTEM

WIRE NUMBERS ARE SHOWN ON EACH SHEET AS TWO-DIGIT NUMBERS (E.G. 01, 02, 10, 42 ETC.) EXCEPT FOR WIRES ORIGINATING ON ANOTHER SHEET, WHICH ARE SHOWN AS 4-DIGIT OR 5-DIGIT NUMBERS. IN ALL CASES, THE COMPLETE WIRE NUMBER (WHICH APPEARS ON THE ACTUAL WIRES IN THE EQUIPMENT AND ON THE TERMINAL BOARDS) IS A 4-DIGIT OR 5-DIGIT NUMBER. THE FIRST TWO OR THREE DIGITS INDICATE THE NUMBER OF THE ELEMENTARY DIAGRAM SHEET ON WHICH THE WIRE ORIGINATES AND THE LAST TWO DIGITS INDICATE THE WIRE ON THAT SHEET. THUS 2A04 INDICATES WIRE NUMBER 04 ORIGINATING ON SHEET 2A OF THE DIAGRAM; AND 15C34 INDICATES WIRE NUMBER 34 ORIGINATING ON SHEET 15C.

LOCATING MAPPING SYSTEM

4 OR 5 DIGIT NUMBERS WITHIN BRACKETS, SUCH AS (15C35), ALWAYS INDICATE A LOCATION WITHIN THE ELEMENTARY DIAGRAMS. THE LAST TWO DIGITS OF THE BRACKETED NUMBER INDICATES THE LINE NUMBER ON A SHEET AND THE FIRST TWO OR THREE DIGITS INDICATE WHICH SHEET; THUS (15C35) INDICATES LINE 35 ON SHEET 15C.

RELAY MAPPING SYSTEM

1. UNDER EACH CONTACT (EXCEPT MAIN CONTACTS OF CONTACTORS AND STARTERS) A LOCATION MAPPING NUMBER INDICATES WHERE THE OPERATING COIL IS TO BE FOUND IN THE ELEMENTARY DIAGRAMS.
2. IN THE DIAGRAM MARGIN BESIDE EACH OPERATING COIL, LOCATION NUMBERS GIVE THE LOCATION OF DEVICE CONTACTS THAT ARE USED. LOCATION NUMBERS AT OPERATING COILS DIFFER FROM THE USUAL LOCATION NUMBERING SYSTEM IN THAT:-
  - A) THE BRACKETS ARE ELIMINATED, AND
  - B) UNDERSCORING INDICATES A NORMALLY CLOSED CONTACT AND LACK OF UNDERSCORING INDICATES A NORMALLY OPEN CONTACT.

THUS 3B56 INDICATES A NORMALLY OPEN CONTACT LOCATED ON LINE 56 OF SHEET 3B OF THE ELEMENTARY DIAGRAM, AND 13B48 INDICATES A NORMALLY CLOSED CONTACT LOCATED ON SHEET 13B, LINE 48.

AGAIN MAIN CONTACTS OF CONTACTORS AND STARTERS ARE NOT "MAPPED".

CONTACTS FOR PURCHASER'S USE

CONTACTS FOR PURCHASER'S USE WILL BE SHOWN ISOLATED, IN THE BODY OF THE DIAGRAM, AS NEAR AS CONVENIENT TO THE ASSOCIATED OPERATING COIL.

WIRE NUMBERS WILL BE SHOWN ON THE WIRES COMING OUT OF THE CONTACT WITH THE LABEL "FOR PURCHASER'S USE" OR SIMILAR WORDING; THE SYMBOL FOR TERMINALS FOR CUSTOMER'S USE IS SHOWN ON SHEET OA.

THESE CONTACTS WILL ALSO BE "MAPPED" AT THE COIL LOCATION.

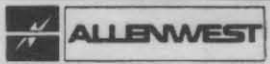

IN THE ACTUAL EQUIPMENT, THESE WIRES WILL BE RUN TO THE TERMINAL BOARD, WHICH WILL BE MARKED WITH THE WIRE NUMBERS.

WHEN KNOWN, PURCHASERS WIRE NUMBERS WILL BE USED.

CONTINUATION OF WIRES ON OTHER SHEETS

WHERE A WIRE IS CONTINUED FROM ONE SHEET TO ANOTHER, THE POINT OF ITS CONTINUATION IS INDICATED BY A BRACKETED LOCATION MAPPING NUMBER. THE FULL WIRE NUMBER MAY ALSO BE SHOWN E.G.

1A27 [1805]

TECHN. ENG. APPD.			TECHN. ENG. APPD.			DATE	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GENERAL NOTES			IDENT	
						31-3-80					DR SH	
						CWH					0 4	
						WBM		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.		
						WBM	948901	902M122DC	05			




DR 0  
SH 5  
CONTD. 05A  
ELEMENTARY DIAGRAM 902M122DC

RECORD OF ELEMENTARY DIAGRAM CHANGES

SHEET NO.	ISSUE	DATE	LOCATION AND DESCRIPTION OF CHANGE	CHANGED BY
1B	2	8-5-80	GRAPPLE COUNTER CIRCUIT REVISED. 5VT WAS 1KVA. 11CFS WERE 16AMP.	C.W.H.
2G	2	8-5-80	INVR CONTACT ADDED IN LINE 03. TR & HR CONTACTS ADDED IN LINE 21.	C.W.H.
2J	2	8-5-80	BPR CONTACT RE-ROUTED FROM LINE 2V07 TO 2T15	C.W.H.
2L	2	8-5-80	1BR CONTACT ADDED IN LINE 32. TRN/C REPLACES HRN/O CONTACT IN LINE 26.	C.W.H.
2M	2	8-5-80	12BCIR & HCIR CONTACTS ADDED IN LINES 05 & 08. HOPR & TOPR CONTACTS DELETED FROM LINES 10 & 12.	C.W.H.
2N	2	8-5-80	WIRE NO'S A62 & A64 WERE SHOWN AS A61 & A62 RESPECTIVELY.	C.W.H.
2Q	2	8-5-80	LOW LEVEL RELAYS SHOWN. MINOR REVISIONS TO JUMPERS.	C.W.H.
2R	2	8-5-80	MINOR REVISIONS TO JUMPERS.	C.W.H.
2S	2	8-5-80	11NVR ADDED IN LINE 18.	C.W.H.
2T	2	8-5-80	BPRR & 12BCIR ADDED IN LINES 15 & 18 RESPECTIVELY.	C.W.H.
2U	2	8-5-80	1R CONTACT ADDED IN LINE REF. 2V04	C.W.H.
2V	2	8-5-80	HCIR & 1R ADDED IN LINE 04. 11NVR ADDED IN LINE 07. BPR REPLACED BY BPRR IN LINE 07	C.W.H.
3D	2	8-5-80	MA CONTACTOR ADDED IN LINES 07, 08, 09 & 22	C.W.H.
3E	2	8-5-80	XTNVR CONTACT ADDED IN LINE 03.	C.W.H.
3M	2	8-5-80	LOW LEVEL RELAYS SHOWN.	C.W.H.
3N	2	8-5-80	XTNVR & MA CONTACTS ADDED IN LINE 30.	C.W.H.
2B	2	9-5-80	1CT COMMON RETURN CONNECTED TO TERMINAL A2 ON METER SWITCH.	C.W.H.
3B	2	9-5-80	2CT COMMON RETURN CONNECTED TO TERMINAL A2 ON METER SWITCH.	C.W.H.
1C	2	16-5-80	50V CIRCUITS ITEMS 4 & 5 DELETED. ELCB'S ADDED. NOTES REVISED.	C.W.H.
1B	3	29-5-80	GUSHETFAULDS WIRE NUMBERS ADDED.	C.W.H.
2A	2	29-5-80	" " " " . TRANSFORMER TERMINALS CORRECTED.	C.W.H.
2M	3	29-5-80	" " " " .	C.W.H.
2N	3	29-5-80	" " " " .	C.W.H.
2S	3	29-5-80	" " " " . LINKS ADDED FOR GUSHETFAULDS.	C.W.H.
2T	3	29-5-80	NOTE ADDED.	C.W.H.
2W	2	29-5-80	NOTE ADDED.	C.W.H.
3A	2	29-5-80	TRANSFORMER TERMINATIONS CORRECTED. NOTE ADDED.	C.W.H.
3K	2	29-5-80	GUSHETFAULDS WIRE NUMBERS ADDED. NOTES REVISED.	C.W.H.
3N	3	29-5-80	" " " " . LINK ADDED FOR GUSHETFAULDS.	C.W.H.
3P	2	29-5-80	NOTE ADDED	C.W.H.
02	2	29-5-80	WIRING DIAGRAM NUMBERS ADDED.	C.W.H.
03	2	29-5-80	BR & MR ADDED TO INDEX.	C.W.H.
2R	3	2-6-80	1R13-1R21 ADDED; 1V14, 1V18, 1V22, 1V19X FORMERLY TO 1V15; 1V23-1H5 WAS TO 1H6	DM
2K	2	2-6-80	SLB CIRCUIT ADDED	DM
3N	4	6-6-80	WILLES DEN PHOTO ELECTRIC CIRCUITRY REMOVED. REDRAWN ON SHEET 3Q.	C.W.H.
2K	3	9-6-80	DM3(MCC) & 1V5 WERE CONNECTED TO 1B20 & 1B18 RESPECTIVELY	C.W.H.
2L	3	9-6-80	1V-R1 WAS 100R. 1V-R2 WAS 100R. SP3-1V WAS 200R. SP2-1V WAS 200R	C.W.H.
2Q	3	9-6-80	DM3(MCC) & 1V5 WERE CONNECTED TO 1B20 & 1B18 RESPECTIVELY	C.W.H.
3J	2	9-6-80	DM3(MCC) & 1V13 WERE CONNECTED TO 1H20 & 1H18 RESPECTIVELY	C.W.H.
3M	3	9-6-90	" " " " " " " " " " " "	C.W.H.
02	3	9-6-80	SHEET 3Q ADDED. WIRING DIAGRAMS WERE UNDER WRONG SITE.	C.W.H.
2F	2	11-6-80	1DA1 & SHUNT WAS TO SCR(B). 1DA2 & DC FUSE WAS TO SCR(A).	C.W.H.
3D	3	11-6-80	2DA1 & SHUNT WAS TO SCR(B). 2DA2 & DC FUSE WAS TO SCR(A)	C.W.H.
1A	2	12-6-80	ESCTR WAS CONNECTED BETWEEN 1A09 & 1A12. 1A09 & 1A12 UNKED IN CPP.	C.W.H.
2T	4	13-6-80	THVRR WAS HVRR. FLTIR ADDED.	C.W.H.
2S	4	13-6-80	FLTIR ADDED IN LINE 16 IN PLACE OF DIR & FLT.	C.W.H.
2U	3	13-6-80	FLTIR CONTACTS ADDED IN LINES 13 & 17	C.W.H.
3N	5	16-6-80	WILLES DEN WIRE NO ON UELS FORMERLY 115E. MINOR REVISIONS.	C.W.H.
3Q	2	16-6-80	WIRE NO 336G FORMERLY 336C. 115C FORMERLY 115E. MINOR REVISIONS.	C.W.H.

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

TECHN. C.W.H.	ENG. W.B.M.	APPD. W.B.M.	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	RECORD OF ELEMENTARY DIAGRAM CHANGES.			IDENT	
GENERAL REVISIONS 4			TECHN. C.W.H.		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 05A	DR 0	SH 5
DATE 6-6-80			ENG. W.B.M.						



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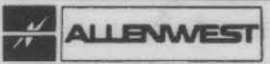


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ELEMENTARY DIAGRAM  
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RECORD OF ELEMENTARY DIAGRAM CHANGES

SHEET No.	REVISION	DATE	LOCATION AND DESCRIPTION OF CHANGE	CHANGED BY
3N	6	20-6-80	WILLEDEN ULTIMATE LIMIT CIRCUIT SHOWN SEPARATELY	C.W.H.
1A	3	28-10-80	CHANGE TO 'R' RELAY CIRCUIT	R.A.A.
2D	2	28-10-80	'HFDR' DISCONNECTED	R.A.A.
2G	3	28-10-80	FLT NUMBERS CORRECTED	R.A.A.
2H	2	28-10-80	DIR CONTACT NUMBERS CORRECTED	R.A.A.
2K	4	28-10-80	SLDIR CONTACT 5-8 CONNECTED IN CIRCUIT	R.A.A.
2L	4	28-10-80	RES. VALUES MODIFIED	R.A.A.
2M	4	28-10-80	HR LINE REF. CORRECTED	R.A.A.
2P	2	28-10-80	RES VALUES MODIFIED	R.A.A.
2R	4	29-10-80	SR(MCC)-1R5 ADDED & DCX(MCC)-DCY(MCC)	R.A.A.
2S	5	29-10-80	TEST SWITCH CONNECTION 2W14 ADDED	R.A.A.
2T	5	29-10-80	TCIR-HCIR ADDED TO LINES 10+12. LINE 20 WAS DIR(2H) $\frac{1}{2}$ $\frac{1}{2}$	R.A.A.
2U	4	29-10-80	LINE 13 INVR WAS FLTIR	R.A.A.
2V	3	29-10-80	LINE 08. 2HBC WAS CONNECTED TO 2V05	R.A.A.
2W	3	29-10-80	POSITION 14 NOW USED	R.A.A.
3N	7	29-10-80	TEST SWITCH CONNECTION 3P12 ADDED	R.A.A.
3P	3	29-10-80	POSITION 12 NOW USED	R.A.A.
1C	3	4-11-80	AC1 & AC2 WITH SHEET REF. CHANGED OVER	R.A.A.
1D	2	4-11-80	AS ABOVE	R.A.A.
2E	2	4-11-80	JUMPERS ADDED	R.A.A.
2Q	4	4-11-80	RACK RELAYS WERE SHOWN RA-RB-RC. NOW RC-RB-RA.	R.A.A.
3C	2	4-11-80	JUMPER ADDED	R.A.A.
3M	4	4-11-80	JUMPER ADDED - RACK RELAYS WERE SHOWN RA-RB-RC. NOW RC-RB-RA.	R.A.A.
2C	1	3-12-80	C.LIM VALUES ADDED	FRS
2J	3	3-12-80	10 K RESISTOR CONNECTED ON REF CARD	FRS
2K	5	3-12-80	NOTE ADDED	FRS
3F	2	3-12-80	" "	FRS
3H	2	3-12-80	" "	FRS
3J	3	3-12-80	" "	FRS
2X	-	3-12-80	NEW SHEET	FRS
2R	-	3-12-80	NEW SHEET	FRS
3B	3	3-12-80	C.LIM VALUES ADDED	FRS
1B	4	8-1-81	1FMOL AND 2FMOL CONTACTS ADDED, LINE 15	CWH
2B	3		1FMOL ADDED, LINE 17	
3B	3		2FMOL ADDED, LINE 15	
2H	3	3-2-81	100K RESISTOR R13-IV ADDED. JUMPER CHART REVISED TO SUIT	C.W.H.
2P	3			
2Q	5			
3F	3	3-2-81	100K RESISTOR R6-IV ADDED. JUMPER CHART REVISED TO SUIT	C.W.H.
3L	2			
3M	5			
2K	6	3-2-81	MAX CONTACT REPLACED BY MSR CONTACT. LINE 23.	C.W.H.
2M	5	3-2-81	RELAY MSR ADDED. LINE 28.	C.W.H.
2R	5	4-3-81	JUMPER TABLE CORRECTED	NGM
3M	6	4-3-81	" " "	NGM
1A	8	19-3-81	RELAY 'R' CONTACT LOCATIONS REVISED	C.W.H.
1B	8	19-3-81	ESC CONTACT LOCATIONS REVISED	C.W.H.
1D	8	19-3-81	FUSE RATINGS ADDED	C.W.H.
2B	8	19-3-81	FUSE RATINGS ADDED	C.W.H.
2F	8	19-3-81	FUSE RATINGS ADDED	C.W.H.
2T	8	19-3-81	FLTIR & THVRR CONTACT LOCATIONS REVISED	C.W.H.
3B	8	19-3-81	FUSE RATINGS ADDED	C.W.H.
3N	8	19-3-81	XTVRR CONTACT LOCATIONS REVISED	C.W.H.
2Q	9	14-5-81	2TB6 New To 2TB10. 2TB5-5TB5 & 1B14-5TB5 ADDED	C.W.H.

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

TECHN. C.W.H.	ENG. NGM	APPD. [Signature]	TECHN. R.A.A.	ENG. [Signature]	APPD. [Signature]	DATE 20-6-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	RECORD OF ELEMENTARY DIAGRAM CHANGES			IDENT 	
9 FURTHER CHANGES		2 ADDITIONAL CHANGES 28-10-80 & 29-10-80		TECHN. C.W.H.		ENG. [Signature]		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 05B	DR 0	SH 5A
DATE: 14-5-81		DATE 29-10-80		APPD. [Signature]								




DR 0  
SH 5B  
CONTD. 6  
ELEMENTARY DIAGRAM  
902M122DC

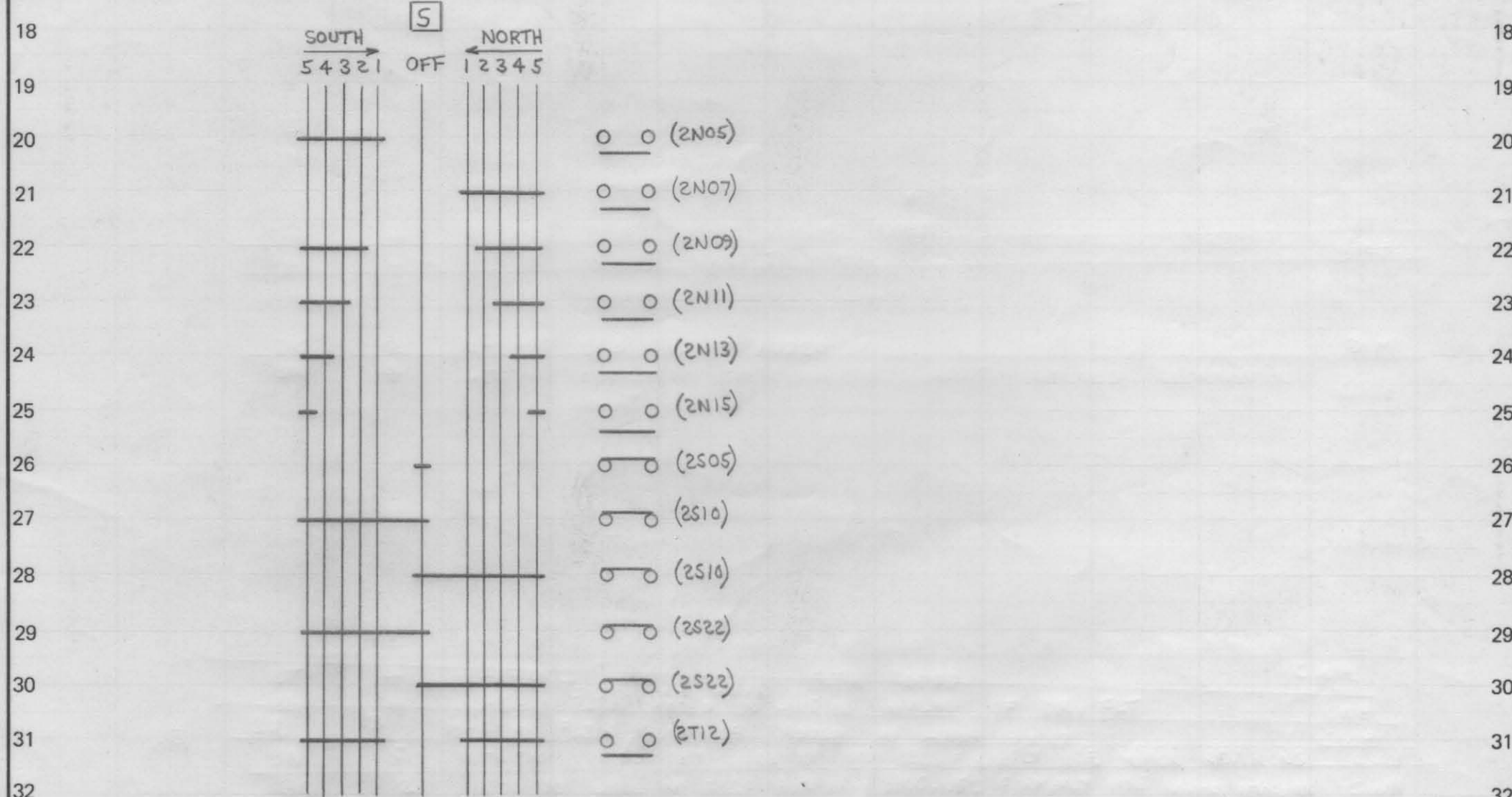
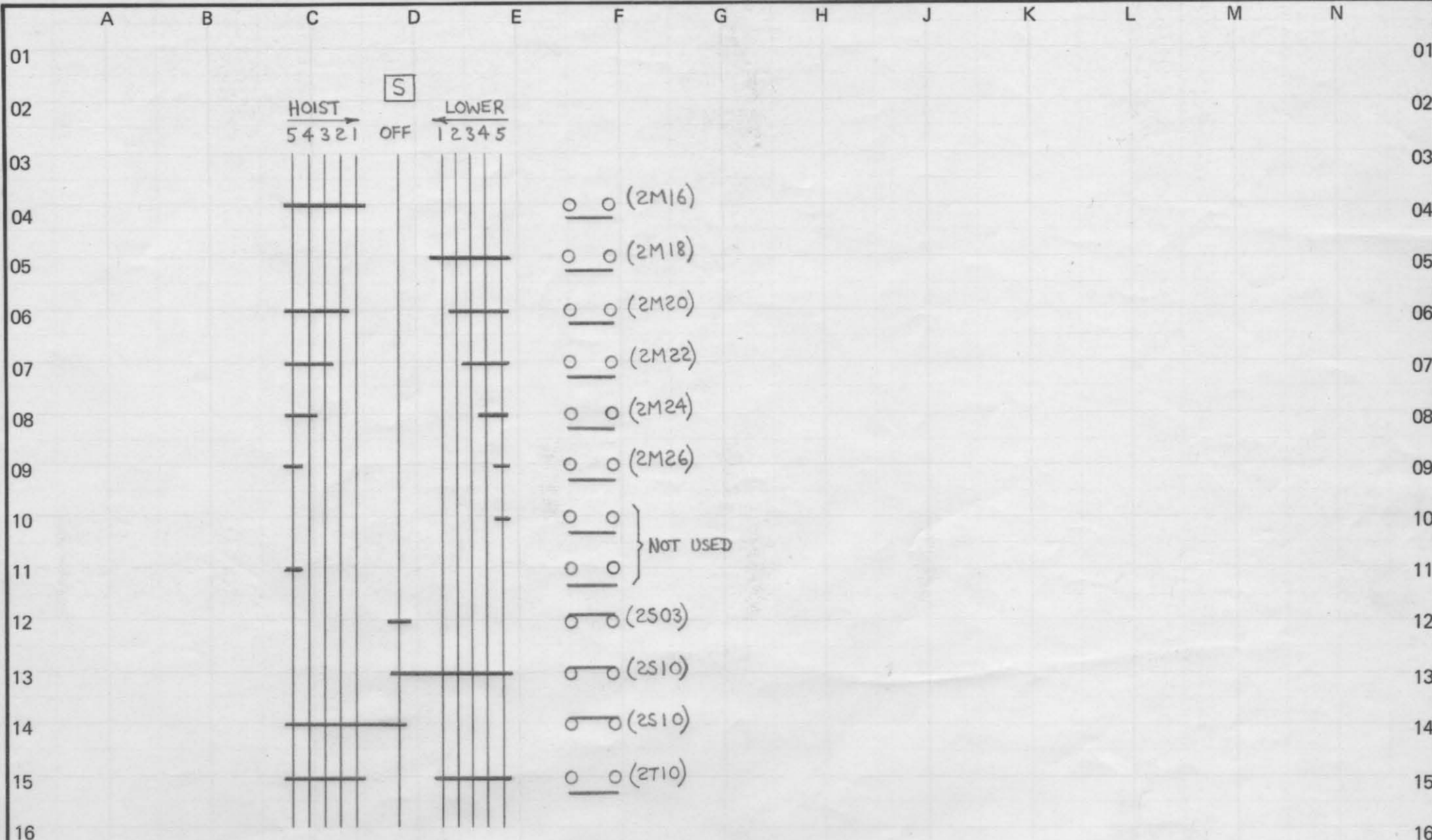
RECORD OF ELEMENTARY DIAGRAM CHANGES

SHEET No.	ISSUE	DATE	LOCATION AND DESCRIPTION OF CHANGE	ISSUED BY
2C	2	7.12.81	C. LIMIT NOTE ADDED - RESISTOR ADDED TO EL TEST PB	FBS
2G	4	7.12.81	11 NVR NOW 11 NVSR	FBS
2H	4	7.12.81	NOTES ADDED TO SLD'S	
2L	5	7.12.81	1 BR CONTACT SIGN CHANGE (18-19) INTERCHANGED	
2K	6	7.12.81	1 BR CONTACT SIGN CHANGE (16-17 CHANGE) NOTES ADDED TO SLD'S	
2M	6	7.12.81	RELAY (RC 18) 11 NVSR L 02 + L 33 ADDED. LINE 08 TNVSR NOW IN SERIES WITH TBC BOTH CHANGED TO N.C.	
3E	3	7.12.81	LINE 03 XTNVSR WAS XTNVR	
3F	4	7.12.81	SLD NOTE ADDED	
3K	3	7.12.81	LINE 03+LINE 30 XTNVSR ADDED	
3H	3	7.12.81	NOTE ADDED TO SLD.	
3B	9	7.12.81	RESISTOR ADDED TO TEST PB	
2K	8	7.8.82	NOTE ADDED FOR 40ms DELAY 1K RESISTOR ADDED SLD IR INPUT 1V4-1V5	RGM.
2P	4	7.8.82	1K " " TO COMPONENT CARD 4-15	
3L	3	7.8.82	1K " " TO " " 4-15	
3H	4	7.8.82	1K " " SLD 15 INPUT 1V4-1V5	
2K	9	26-4-84	LOSS OF SUPPLY CCT. REMOVED. REDUCED C.LIM CCT. REMOVED. SLB-IR CIRCUIT REMOVED.	
2L	6	26-4-84	SLB-IR CONTACT LINKED OUT. 1BR CONTACT REMOVED. 1RR CONTACT ADDED.	
2M	7	26-4-84	1UV & 1BR RELAYS REMOVED. MSR CONTACT ADDED.	
3J	4	26-4-84	LOSS OF SUPPLY CCT. REMOVED. REDUCED C.LIM CCT. REMOVED.	
3K	4	26-4-84	2UV & 2BR RELAYS REMOVED.	
2M.	8	22-2-91	MSR1 ADDED.	
2T	9	22-2-91	ELECTRONIC TIMER FITTED.	RGM.
2U	5	22-2-91	MSR1 CONTACT ADDED.	
2V	4	22-2-91	BRAKE MOTOR LINES 07, 10, 29, 32.	

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

TECHN. <i>RGM.</i>	APPD.	TECHN. <i>FBS</i>	APPD.	DATE <i>7.12.81</i>	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	RECORD OF CHANGES			IDENT
<i>4</i>	<i>2</i>					GO NUMBER <i>948901</i>	ELEMENTARY DIAGRAM <i>902M122DC</i>	CONTD. <i>6</i>	DR SH <i>0 5B</i>
<i>22-2-91</i>	<i>7.8.82</i>								

DR 06 SH CONTD. 07 ELEMENTARY DIAGRAM 902M122DC

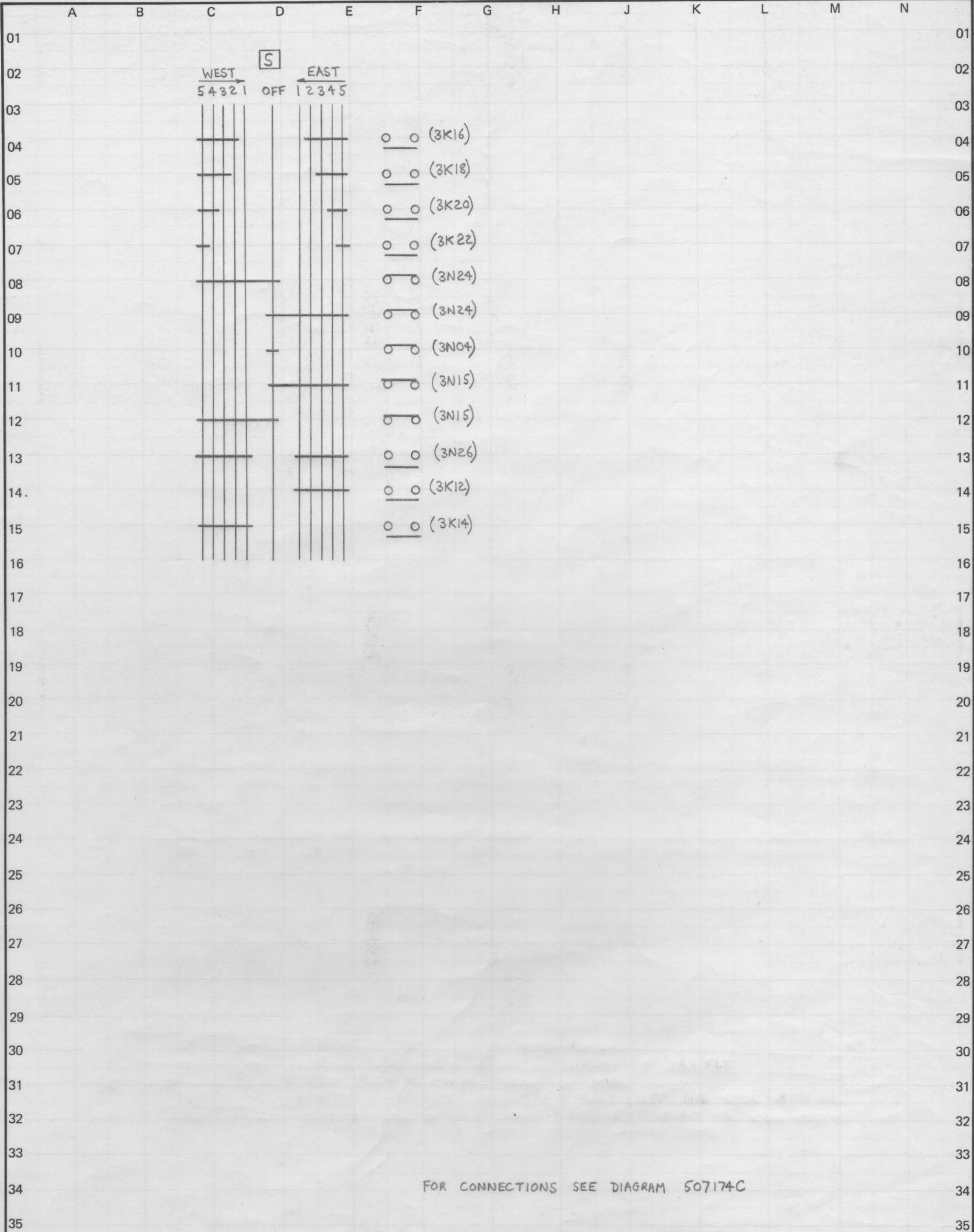


FOR CONNECTIONS SEE DIAGRAM 507387C

TECHN. ENG. APPD.		TECHN. ENG. APPD.		DATE	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST/TRAVEL MASTER CONTROLLER TYPE "PUMC"			IDENT	
				26-3-80					 DR SH	
				TECHN. C.W.H.					06	
				ENG. W.B.M.		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.		
				APPD. W.B.M.	948901	902M122DC	07			

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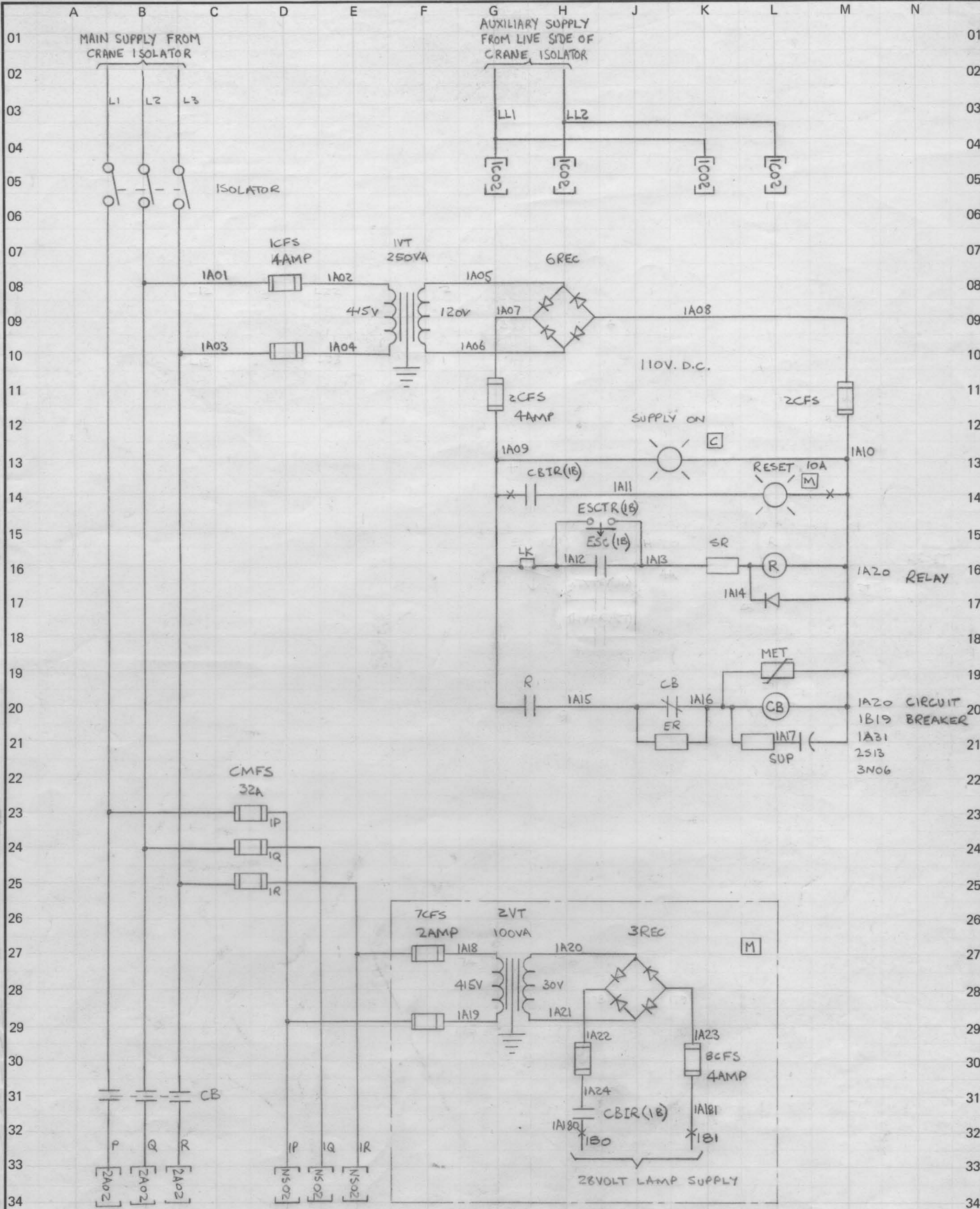


DR 07 SH CONTD. 1A ELEMENTARY DIAGRAM 902M122DC

FOR CONNECTIONS SEE DIAGRAM 507174C

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	 <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE MASTER CONTROLLER TYPE "PUMC"			IDENT	
						26-3-80		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
						TECHN. C.W.H.		948901	902M122DC	1A	0	7
						ENG. W.B.M.						
						APPD. W.B.M.						

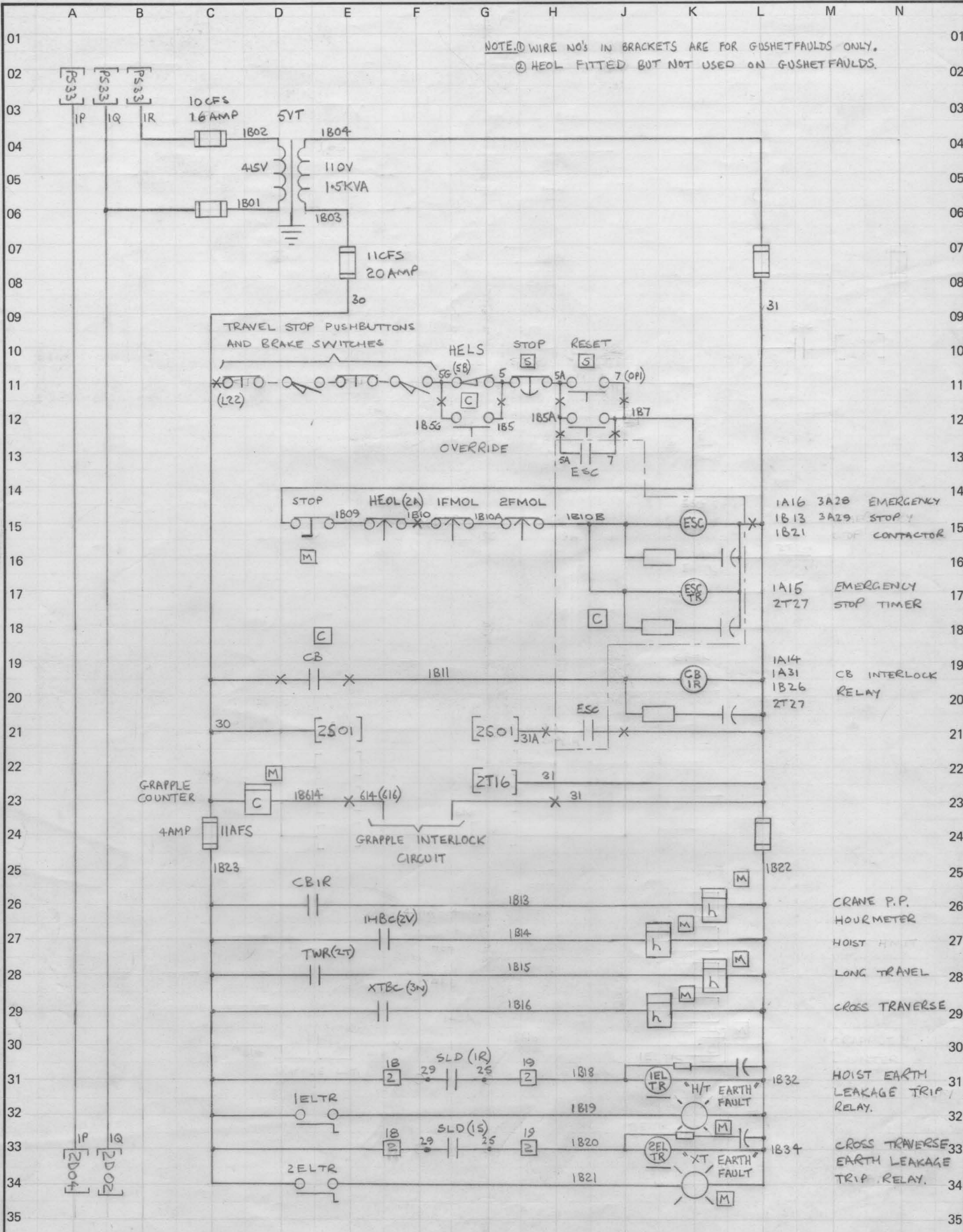
Disclaimer Statement The trade mark is the trade mark of General Electric Company of U.S.A. which is not connected with the English Company of U.S.A.



NOTE: ALL ITEMS IN CRANE PANEL EXCEPT WHERE MARKED

TECHN. CWH	ENG. [Signature]	APPD. [Signature]	TECHN. CWH	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	MAIN CONTACTOR CONTROL + 28VOLT LAMP SUPPLY CIRCUITS.			IDENT
8	SEE SHEET 05A	2	SEE SHEET 05	TECHN. DM	ENG. AP/WBm	APPD. WBm		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 1B	DR SH 1 A
DATE 19-3-81	DATE 12-6-80										



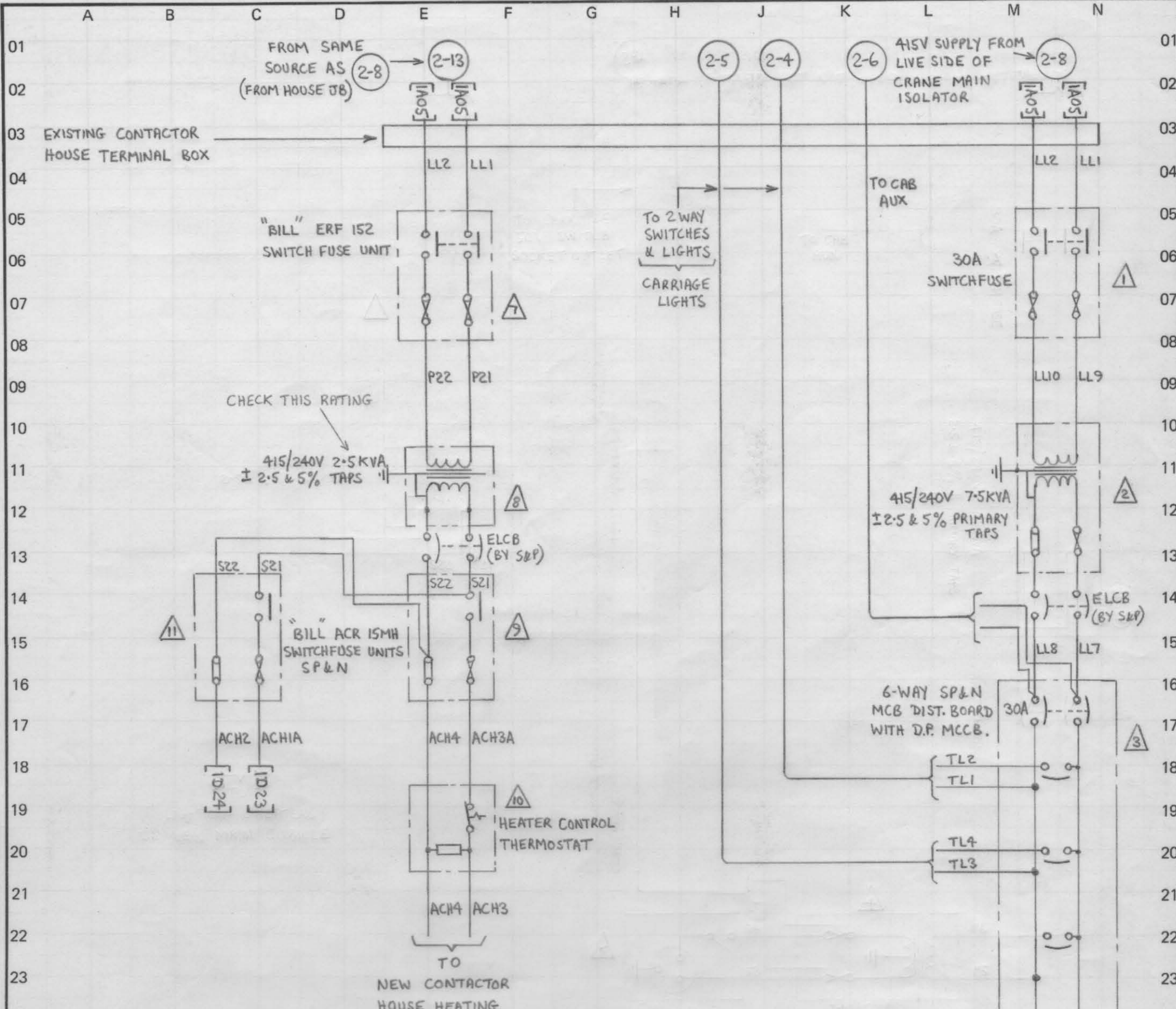


NOTE: ① WIRE NO'S IN BRACKETS ARE FOR GUSHETFAULDS ONLY.  
② HEOL FITTED BUT NOT USED ON GUSHETFAULDS.

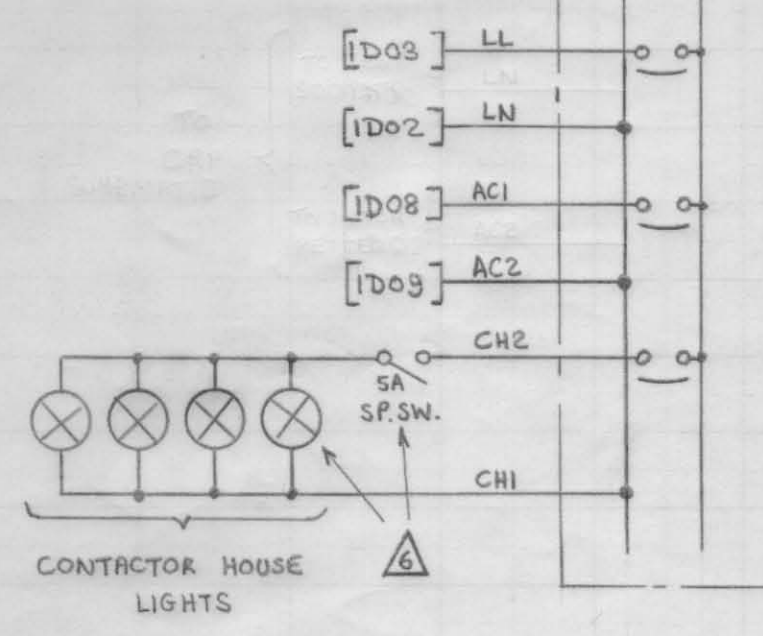
- 1A16 3A28 EMERGENCY STOP CONTACTOR
- 1B13 3A29 STOP CONTACTOR
- 1B21
- 1A15 2T27 EMERGENCY STOP TIMER
- 1A14 1A31 1B26 2T27 CB INTERLOCK RELAY
- 1813 CRANE P.P. HOURMETER
- 1814 HOIST HOURMETER
- 1815 LONG TRAVEL
- 1816 CROSS TRAVERSE
- 1832 HOIST EARTH LEAKAGE TRIP RELAY
- 1834 CROSS TRAVERSE EARTH LEAKAGE TRIP RELAY

TECHN. <b>CWH</b>	ENG. <b>[Signature]</b>	APPD. <b>[Signature]</b>	TECHN. <b>CWH</b>	ENG. <b>[Signature]</b>	APPD. <b>[Signature]</b>	DATE <b>31-3-80</b>	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	EMERGENCY STOP CIRCUIT.			IDENT	
SEE SHEET 05A.		GRAPPLE COUNTER CIRCUIT REVISED. MINOR REVISIONS.		TECHN. <b>DM</b>	ENG. <b>AP/WB</b>	GO NUMBER <b>948901</b>		ELEMENTARY DIAGRAM		DR SH		
DATE <b>19-3-81</b>		DATE <b>8-5-80</b>		APPD. <b>[Signature]</b>		<b>948901</b>		<b>902M122DC</b>		<b>1C 1B</b>		

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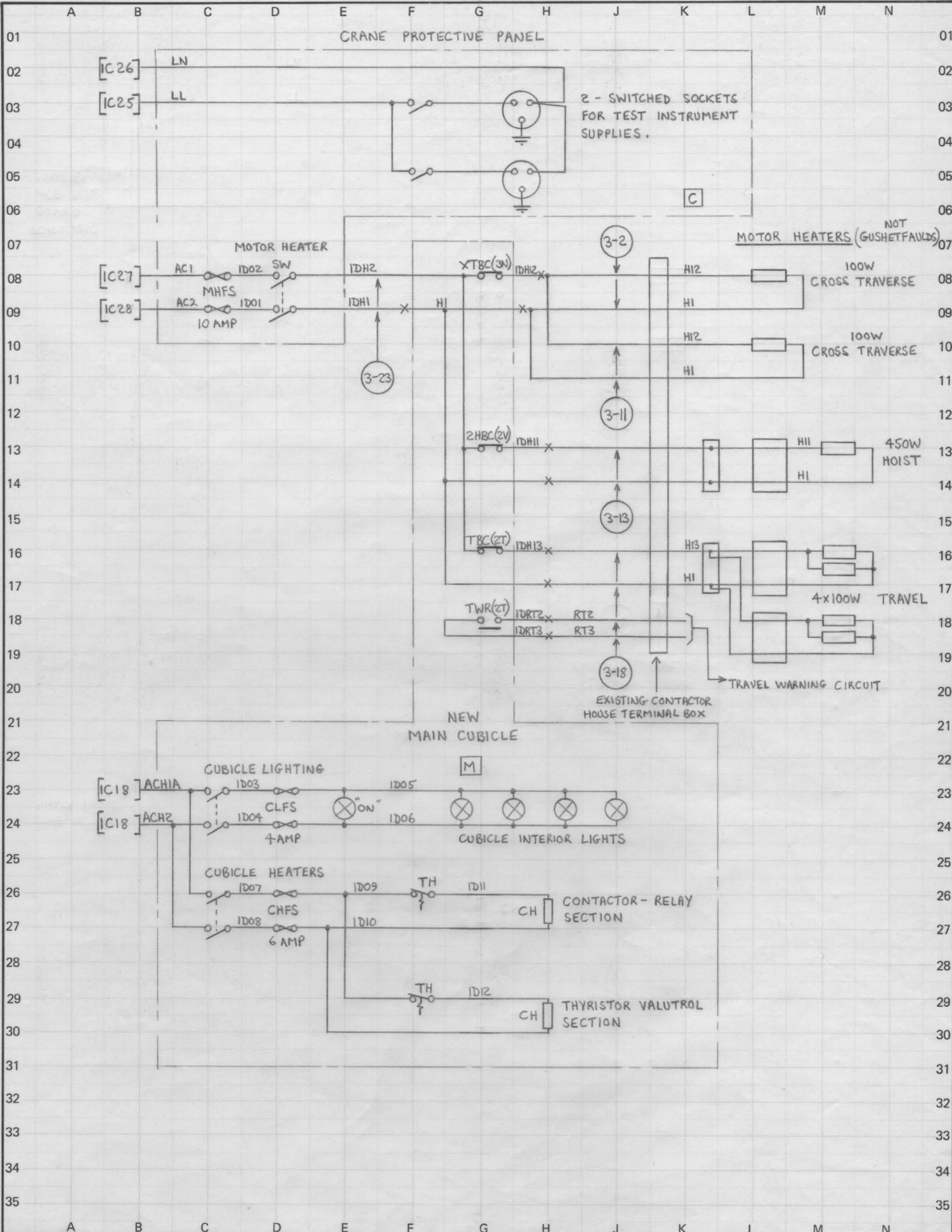
- EQUIPMENT NOTES :**
- ① ITEMS 1-11 MARKED THUS  $\Delta$  TO BE SUPPLIED AND FITTED BY S&P FOR THE WILLESDEN NO1 CONTACTOR HOUSE
  - ② ITEMS 1,2,3 & 6 (SW) ARE MOUNTED AT DOOR END OF HOUSE.
  - ③ ITEMS 7,8,9,10 & 11 ARE MOUNTED AT INCOMING TERMINAL END OF HOUSE.
  - ④ G. FAULDS HOUSES AUX. CIRCUITS AS ABOVE, BUT MOUNTING TO SUIT LAYOUT, IF DIFFERENT FROM WILLESDEN ETC. FREE ISSUE VT3 ITEMS 2 & 8 FROM FREIGHTLINERS.
  - ⑤ FOR THE 8 HOUSES BEING RECONDITIONED ETC. AT S&P, EXISTING EQUIPMENT TO BE USED WHERE POSSIBLE FOR ITEMS 1-11, EXCEPT ITEM 3 WHERE FUSE BOARD IS TO BE REPLACED WITH MCB BOARD.



TECHN. R.A.A	ENG. <i>Bing</i>	APPD. <i>WBM</i>	TECHN. C.W.H	ENG.	APPD.	DATE 13-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	SCHEMATIC DIAGRAM FOR CONTACTOR HOUSE AUXILIARY LIGHTING/HEATING SUPPLIES ETC. (FREIGHTLINER REPLACEMENT).			IDENT $\Delta$
3	SEE SHEET 05A	2	SEE SHEET 05.	TECHN. C.W.H.	ENG. WBM.	APPD. WBM		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. ID	DR SH 1 C
	DATE 4-11-80		DATE 16-5-80								



DR 1  
SH D  
CONTD. 2A  
ELEMENTARY DIAGRAM  
902M122DC



TECHN. CWH	ENG.	APPD. <i>[Signature]</i>	TECHN. R.A.A	ENG. <i>[Signature]</i>	APPD. <i>[Signature]</i>	DATE 13-3-80
8	SEE SHEET OSA		2	SEE SHEET OSA		TECHN. CWH
	19-3-81			DATE 4-11-80		ENG. Wbm
						APPD. Wbm

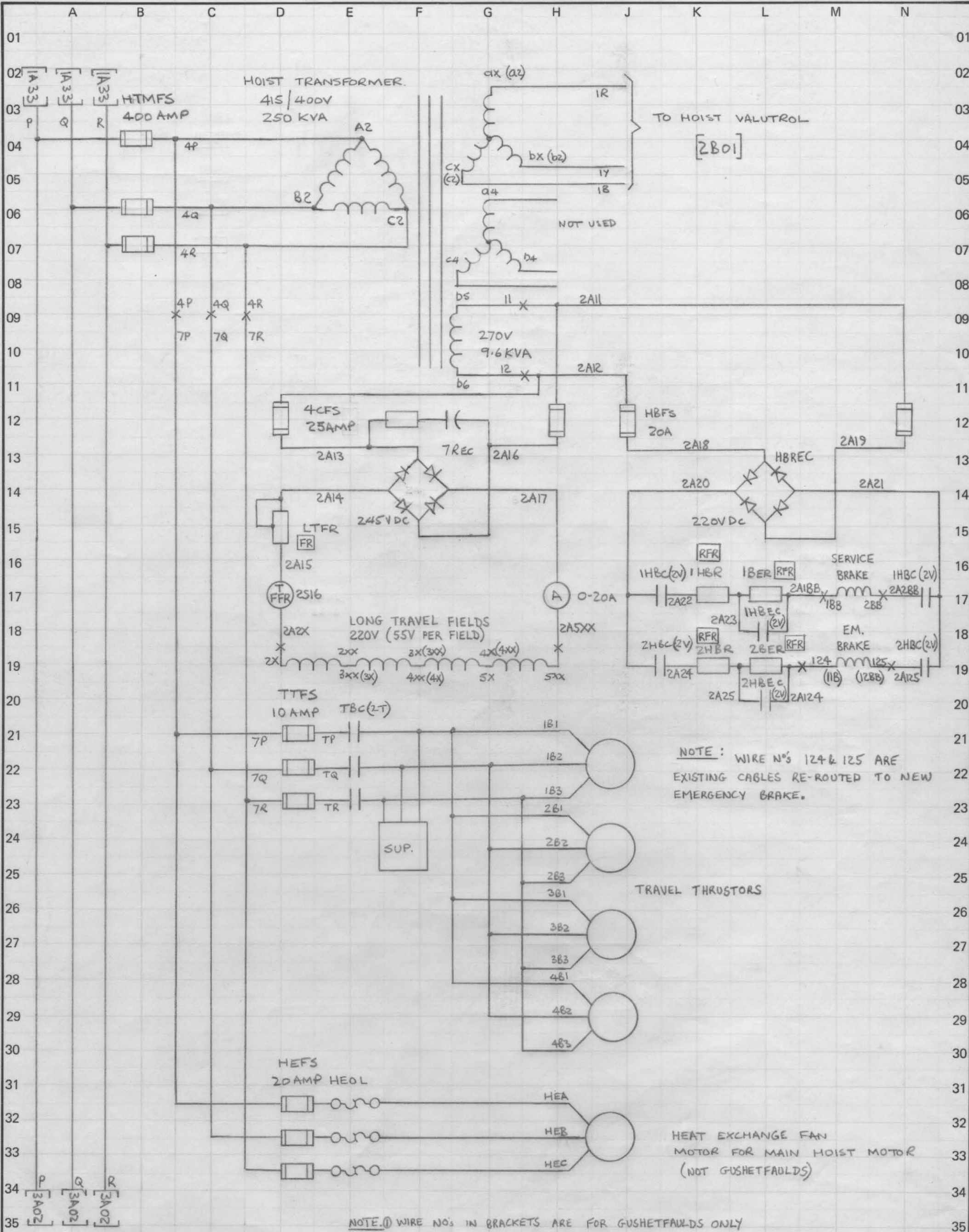
**ALLENWEST**  
**Simplex**

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

SCHMATIC DIAGRAM FOR CUBICLE LIGHTING & MOTOR AND CUBICLE HEATERS. (FREIGHTLINER REPLACEMENT).

GO NUMBER 948901  
ELEMENTARY DIAGRAM 902M122DC  
CONTD. 2A

IDENT	
DR	SH
1	D

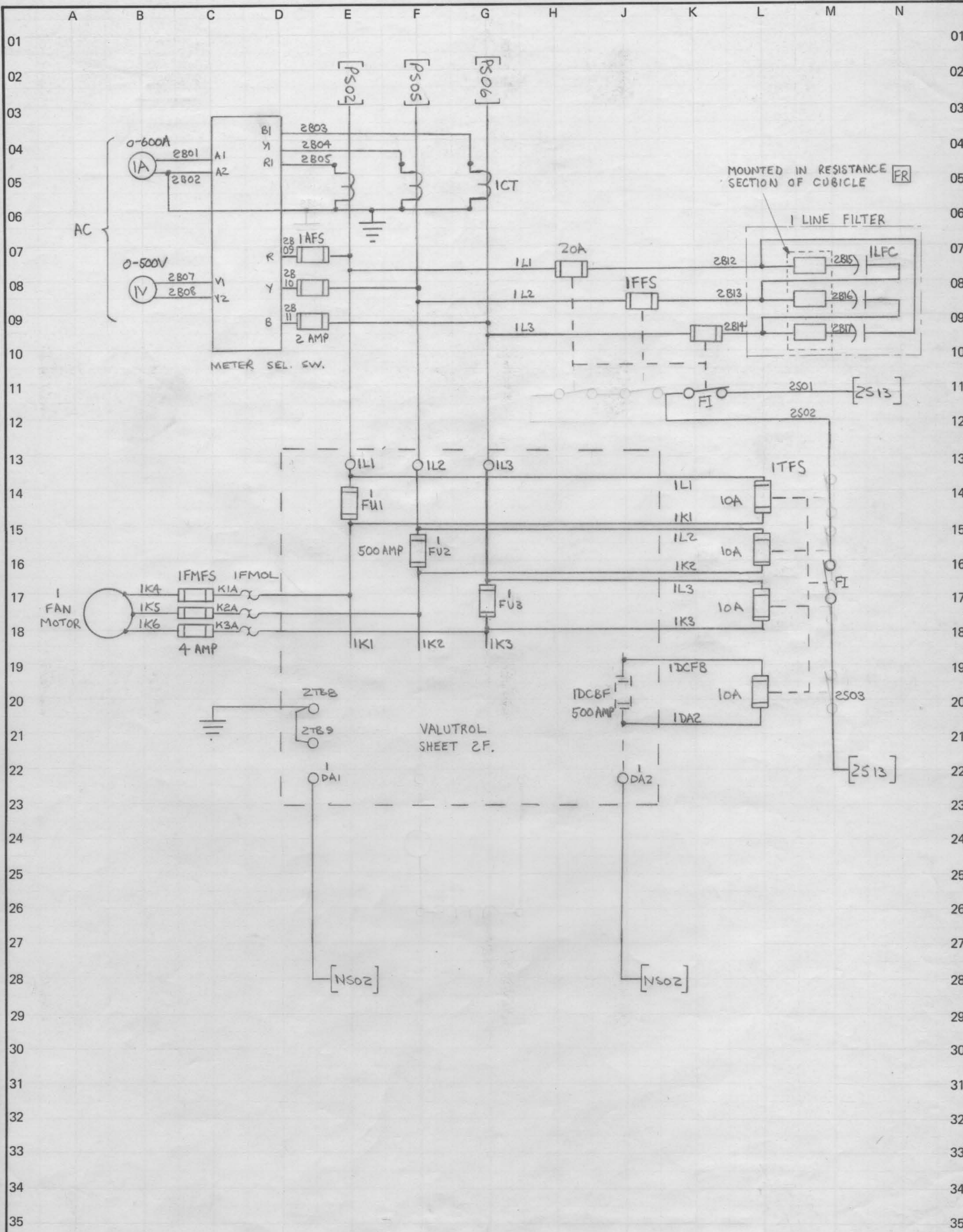


NOTE: WIRE NO'S 124 & 125 ARE EXISTING CABLES RE-ROUTED TO NEW EMERGENCY BRAKE.

NOTE: (1) WIRE NO'S IN BRACKETS ARE FOR GUSHER FAULTS ONLY  
 (2) HEFS & HEOL FITTED BUT NOT USED ON GUSHER FAULTS

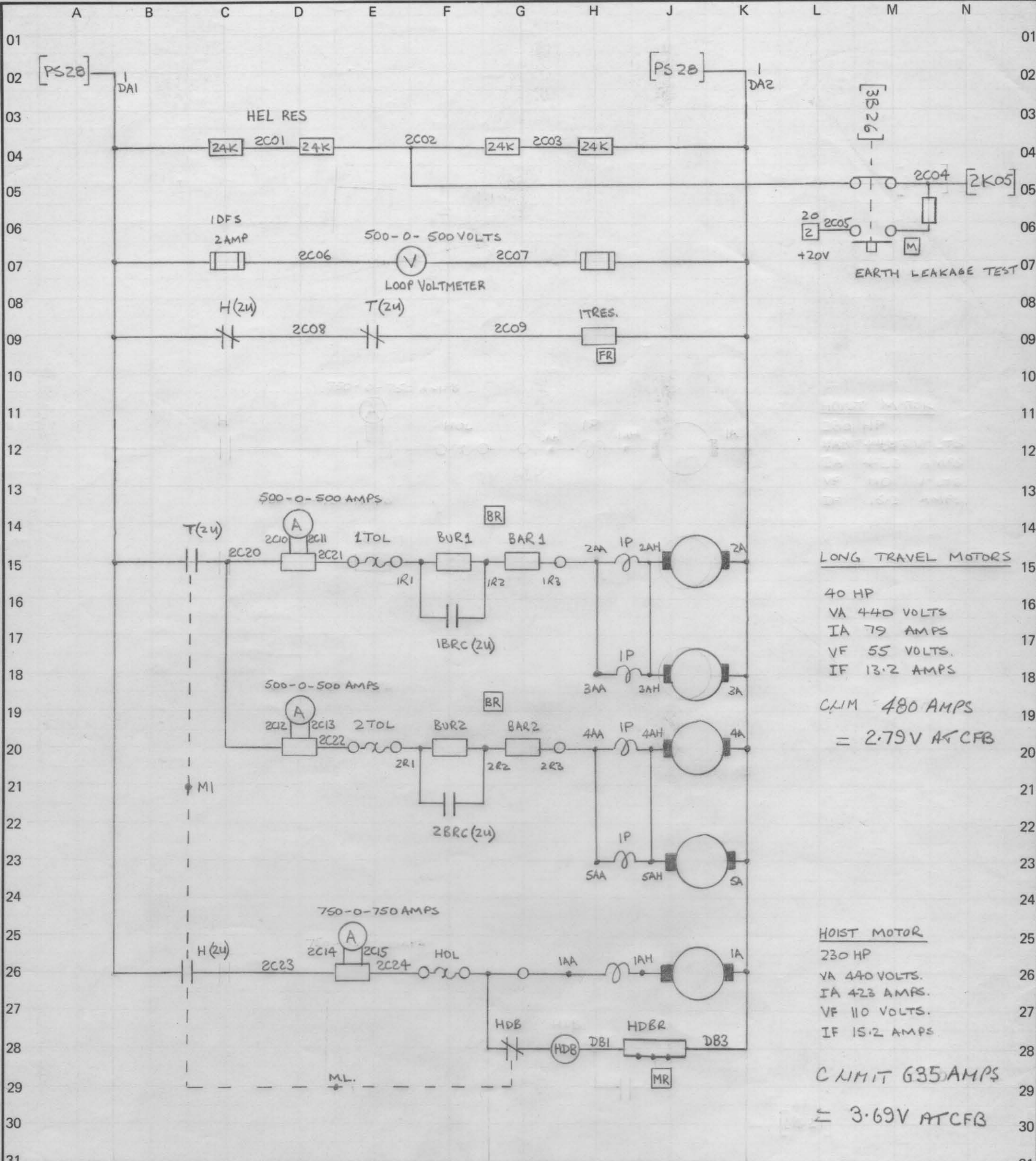
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST / LONG TRAVEL A.C. SUPPLIES, BRAKE SUPPLIES + LONG TRAVEL FIELDS.			IDENT	
						31-3-80		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
								948901	902M122DC	2B	2	A





TECHN. APPD. DATE	TECHN. ENG. APPD. DATE	31-3-80	 <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST VALUTROL.			IDENT	
8 SEE SHEET 05A	2 ICT COMMON RETURN CONNECTED TO TERMINAL A2 ON METER SWITCH	TECHN. DM		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 2C	DR SH 2 B	
DATE: 19-3-81	DATE: 9-5-80.	ENG. AP WBM						

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LONG TRAVEL MOTORS

40 HP  
VA 440 VOLTS  
IA 79 AMPS  
VF 55 VOLTS.  
IF 13.2 AMPS

CLIM 480 AMPS  
= 2.79V AT CFB

HOIST MOTOR

230 HP  
VA 440 VOLTS.  
IA 423 AMPS.  
VF 110 VOLTS.  
IF 15.2 AMPS

CLIM 635 AMPS  
= 3.69V AT CFB

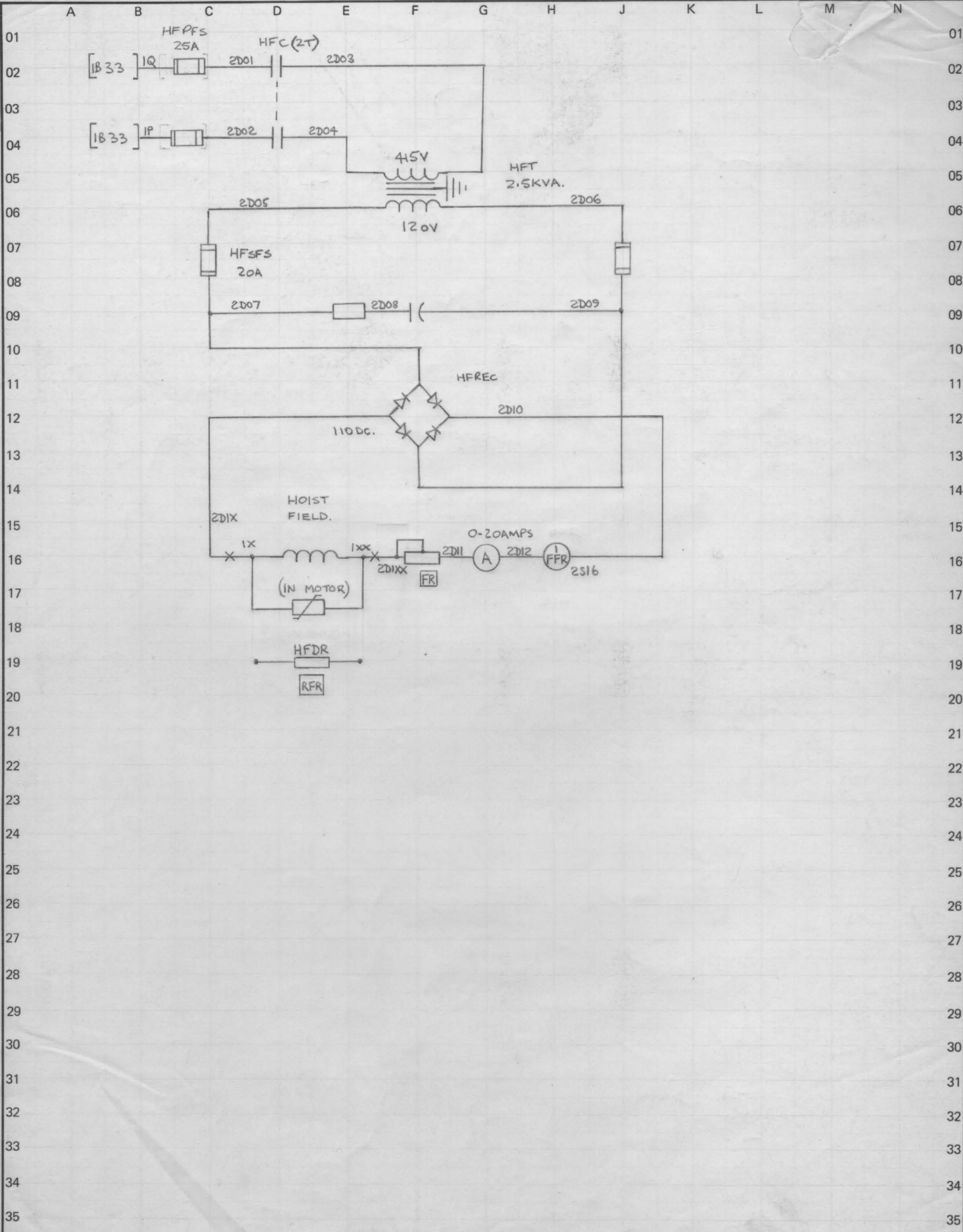
NOTE SET HOIST CURRENT LIMIT BEFORE LONG TRAVEL

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST + LONG TRAVEL ARMATURE CCTS.			IDENT	
2			1			31-3-80		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
						TECHN. DM		948901	902M122DC	2D	2	C
						ENG. AP/WBm						
						APPD. WBm						
						7-12-81						
						3-12-80						

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DR 2  
SH D  
CONTD. ZE  
ELEMENTARY DIAGRAM  
902M122 DC



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	31-3-80	 <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST FIELD SUPPLY.			IDENT	
			R.A.A.			TECHN.	DM		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
			2	SEE SHEET 05A.		ENG.	AP/wbm		948901	902M122 DC	ZE	2	D
				DATE 28-10-80		APPD.	wbm						

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	A	B	C	D	E	F	G	H	J	K	L	M	N	DR	SH	CONTD.	ELEMENTARY DIAGRAM																																																																																																																																												
01	VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1(+)													01	2	E																																																																																																																																													
02	HARDWARE ABBREVIATIONS													02																																																																																																																																															
03	<p>MCC MAIN CONTROL CARD</p> <p>IFC INTERFACE CARD</p> <p>PSC POWER SUPPLY CARD</p> <p>SCR THYRISTOR ASSEMBLY</p> <p>DGC DIAGNOSTIC CARD</p> <p>MFC MOTOR FIELD CONTROL</p> <p>MFE MOTOR FIELD EXCITER</p> <p>MDR MODIFICATION RACK</p> <p>ACC AUXILIARY CONTROL CARD</p>													03																																																																																																																																															
04	<p>SYMBOLS</p> <p>AMPLIFIERS</p> <p><math>VO = \frac{-R2}{R1} VI</math></p> <p><math>VO = (1 + \frac{R2}{R1}) VI</math></p>													04																																																																																																																																															
05	<p>CASE GROUND</p> <p><math>VO = SIGN () \times ABSOLUTE \text{ VALUE OF } VI</math></p> <p>STAB ON TERMINAL</p> <p>TERMINAL AT 2TB, 3TB, 4TB, RTB. EX: 9 [2] - 2TB9; X2 [R] - RTBx2</p> <p>TERMINAL AT T.B.'s</p> <p>POTENTIOMETER ARROWS ON THE CARD ELEMENTARY DIAGRAMS INDICATE THE WIPER DIRECTION AS THE POTENTIOMETER SHAFT IS ROTATED CLOCKWISE TO INCREASE FUNCTION.</p> <p>▲ THESE RESISTORS ARE CRIMPED IN WIRE HARNES.</p>													05																																																																																																																																															
06	<table border="1"> <thead> <tr> <th>FUNCTION</th> <th>USE</th> <th>LOC</th> <th>JUMPERS</th> </tr> </thead> <tbody> <tr> <td>60HZ</td> <td></td> <td>MFC</td> <td>ZA-ZB (IF USED)</td> </tr> <tr> <td>50HZ</td> <td>X</td> <td>MCC</td> <td>HZA - PHA</td> </tr> <tr> <td>I/O-400%</td> <td>X</td> <td></td> <td>(NONE)</td> </tr> <tr> <td>-500%</td> <td></td> <td>IFC</td> <td>I - IHI</td> </tr> <tr> <td>-300%</td> <td></td> <td>IFC</td> <td>I-ILO</td> </tr> <tr> <td>SR5 - 9v</td> <td></td> <td></td> <td>(NONE)</td> </tr> <tr> <td>9 - 20v</td> <td>X</td> <td>MCC</td> <td>SRH - COM</td> </tr> <tr> <td>JOGR 10v</td> <td></td> <td></td> <td>(NONE)</td> </tr> <tr> <td>20v</td> <td></td> <td>MCC</td> <td>JH - COM</td> </tr> <tr> <td>LT. 3-7sec.</td> <td>X</td> <td></td> <td>(NONE)</td> </tr> <tr> <td>2 - 60sec</td> <td></td> <td></td> <td>332Ω FROM LTI TO COM</td> </tr> <tr> <td>VREG</td> <td>X</td> <td></td> <td>NT-CEMF CC-COM</td> </tr> <tr> <td>DC TACHO</td> <td></td> <td></td> <td>(NONE)</td> </tr> <tr> <td>AC TACHO</td> <td></td> <td>MCC</td> <td>AT1 - AT2</td> </tr> <tr> <td>TACHO FILT</td> <td></td> <td>IFC</td> <td>TC - TC</td> </tr> <tr> <td>TACHO V.</td> <td></td> <td>IFC</td> <td>NT-NT1 PT - PT1</td> </tr> <tr> <td>24-64vdc</td> <td></td> <td>IFC</td> <td>NT-NT1 PT - PT1</td> </tr> <tr> <td>27-71vac</td> <td></td> <td>IFC</td> <td>NT-NT2 PT - PT2</td> </tr> <tr> <td>60-160vdc</td> <td></td> <td>IFC</td> <td>NT-NT2 PT - PT2</td> </tr> <tr> <td>66-177vac</td> <td></td> <td>IFC</td> <td>NT-NT2 PT - PT2</td> </tr> <tr> <td>110-300vdc</td> <td></td> <td>IFC</td> <td>NT-NT3 PT - PT3</td> </tr> <tr> <td>120-300vac</td> <td></td> <td>IFC</td> <td>NT-NT3 PT - PT3</td> </tr> <tr> <td>G134 G256</td> <td></td> <td>IFC</td> <td>MFC OR MFE</td> </tr> <tr> <td>1.3   1.7</td> <td></td> <td>MF</td> <td>NONE</td> </tr> <tr> <td>2.4   2.8</td> <td></td> <td>MF</td> <td>YB - YD</td> </tr> <tr> <td>4.0   5.0</td> <td></td> <td>MF</td> <td>YA - YB</td> </tr> <tr> <td>7.0   8.0</td> <td></td> <td>MF</td> <td>YA-YB, YC-YD</td> </tr> <tr> <td>13   13</td> <td></td> <td>MF</td> <td>YA - YC</td> </tr> <tr> <td>25   25</td> <td></td> <td>MF</td> <td>YA-VC, YB-YD</td> </tr> <tr> <td>L/R &lt; .25S</td> <td></td> <td>MFC</td> <td>QA - QB</td> </tr> <tr> <td>INH RUN</td> <td></td> <td>DGC</td> <td>D1-D2 (IF USED)</td> </tr> <tr> <td>INH DRV CL</td> <td></td> <td>MCC</td> <td>DC1 - COM</td> </tr> <tr> <td>FUSELESS</td> <td></td> <td>ACC</td> <td>CFY - CFX</td> </tr> <tr> <td></td> <td>X</td> <td>IFC</td> <td>CMFA - DM12</td> </tr> </tbody> </table>													FUNCTION	USE	LOC	JUMPERS	60HZ		MFC	ZA-ZB (IF USED)	50HZ	X	MCC	HZA - PHA	I/O-400%	X		(NONE)	-500%		IFC	I - IHI	-300%		IFC	I-ILO	SR5 - 9v			(NONE)	9 - 20v	X	MCC	SRH - COM	JOGR 10v			(NONE)	20v		MCC	JH - COM	LT. 3-7sec.	X		(NONE)	2 - 60sec			332Ω FROM LTI TO COM	VREG	X		NT-CEMF CC-COM	DC TACHO			(NONE)	AC TACHO		MCC	AT1 - AT2	TACHO FILT		IFC	TC - TC	TACHO V.		IFC	NT-NT1 PT - PT1	24-64vdc		IFC	NT-NT1 PT - PT1	27-71vac		IFC	NT-NT2 PT - PT2	60-160vdc		IFC	NT-NT2 PT - PT2	66-177vac		IFC	NT-NT2 PT - PT2	110-300vdc		IFC	NT-NT3 PT - PT3	120-300vac		IFC	NT-NT3 PT - PT3	G134 G256		IFC	MFC OR MFE	1.3   1.7		MF	NONE	2.4   2.8		MF	YB - YD	4.0   5.0		MF	YA - YB	7.0   8.0		MF	YA-YB, YC-YD	13   13		MF	YA - YC	25   25		MF	YA-VC, 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		X	IFC	CMFA - DM12	06			
FUNCTION	USE	LOC	JUMPERS																																																																																																																																																										
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07	<p>SIGNAL DEFINITIONS AND LOCATIONS</p> <p>* CEMF COUNTER EMF (26.16)</p> <p>* CFB CURRENT FEEDBACK (26.16)</p> <p>CMFA ABSOLUTE VALUE CEMF (26.08)</p> <p>CRM CROSSEVER MODIFY (11)</p> <p>DFP DELAYED FIRING POWER (26.25)</p> <p>* DR DRIVER REFERENCE (26.33)</p> <p>* EAO ERROR AMP OUTPUT (26.33)</p> <p>EST EXTERNAL FLT STOP INPUT (26.14)</p> <p>FALT FAULT (26.14)</p> <p>* FC FIELD CURRENT (NS26)</p> <p>FDR FIELD DIAGNOSTIC REFERENCE (08)</p> <p>FEA FIELD ECONOMY ADJUST (25)</p> <p>FF FIELD FAULT (29)</p> <p>IABS MOTOR CURRENT ABSOLUTE (26.09)</p> <p>ILA CURRENT LIMIT ADJUST (26.23)</p> <p>IMET CURRENT SIGNAL FOR METER (26.10)</p> <p>* IPU INITIAL PULSE (20)</p> <p>* LR LOCAL REF. FROM DGC (26.33)</p> <p>* JOG JOG SWITCH INPUT (23)</p> <p>* JOGR JOG REFERENCE INPUT (31)</p> <p>* MAC MAX/MA CONTROL SIGNAL (26.20)</p> <p>MSW MODE SWITCH (30)</p> <p>* OSC OSCILLATOR (26.17)</p> <p>* PCR PHASE CONTROL REF. (26.26)</p> <p>* PRE DRIVE PRECONDITION (26.21)</p> <p>ØSEQ PHASE SEQUENCE (26.14)</p> <p>RERR REGULATOR ERROR (26.27)</p> <p>RIJ INTEGRATOR SUMMING JUNCTION (26.27)</p> <p>RJ REGULATOR SUMMING JUNCTION (26.31)</p> <p>RRA REGULATOR RESPONSE ADJUST (26.30)</p> <p>RSET RESET (26.16)</p> <p>* RTR READY TO RUN (26.16)</p> <p>* RUN RUN SWITCH INPUT (26.21)</p> <p>* SA-C PHASE SYN OUTPUT (26.16)</p> <p>* SFB SPEED FEEDBACK (26.20)</p> <p>SMET SPEED SIGNAL FOR METER (26.12)</p> <p>* SR SYSTEM REFERENCE INPUT (26.29)</p> <p>* SYS SYSTEM FAULT TRIP (26.13)</p> <p>* TA OUTPUT FOR TACHO TRIP ADJUST (20)</p> <p>TF TACHO FAULT (NS28)</p> <p>* TFB TACHOMETER FEEDBACK (20)</p> <p>TFR AC TACHO FREQUENCY OUTPUT (13)</p> <p>* TR TIMED REFERENCE (26.33)</p> <p>* VFB VOLTAGE FEEDBACK (26.19)</p> <p>* WFR WEAK FIELD REFERENCE (20)</p> <p>( * - TEST POINT ON DOOR FRONT)</p>													07																																																																																																																																															
08	<p>MAPPING SYSTEM</p> <p>(NS/PS/TS) PS - PAST SHEET</p> <p>NS - NEXT SHEET</p> <p>TS - THIS SHEET</p>													08																																																																																																																																															
09	<p>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.</p>													09																																																																																																																																															
10	<p>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.</p>													10																																																																																																																																															
11	<p>ADDITIONAL JUMPERS (MCC)</p> <p>LT2 - DM1</p> <p>DFP - DM3</p> <p>ILA - DM4</p> <p>LT1 - DM6</p> <p>RJ - DM8</p> <p>DCX - DCY</p> <p>33K - VFB - DJ (MCC)</p>													11																																																																																																																																															

DR 2  
 SH E  
 CONTD. 2F  
 ELEMENTARY DIAGRAM 902M122DC

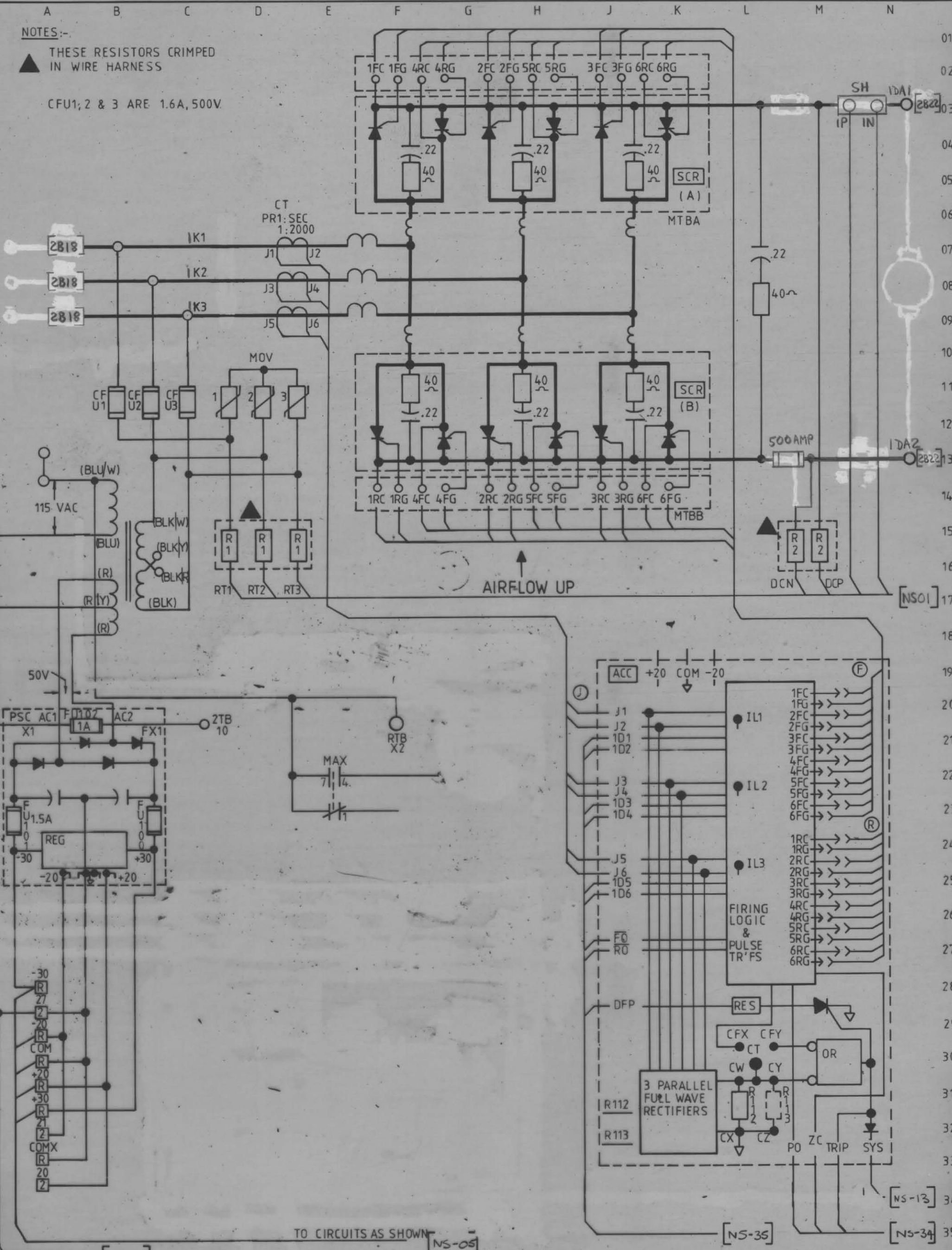
TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE	31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST/LONG TRAVEL VALUTROL	IDENT	 DR SH 2 E
	SEE SHEET 05A	TECHN.	DM		JUMPER TABLE + SIGNAL LOCATIONS.		
	DATE 4-11-80	ENG.	AP		GO NUMBER	ELEMENTARY DIAGRAM	
		APPD.	WB	948901	902M122DC	2F	



NOTES:-

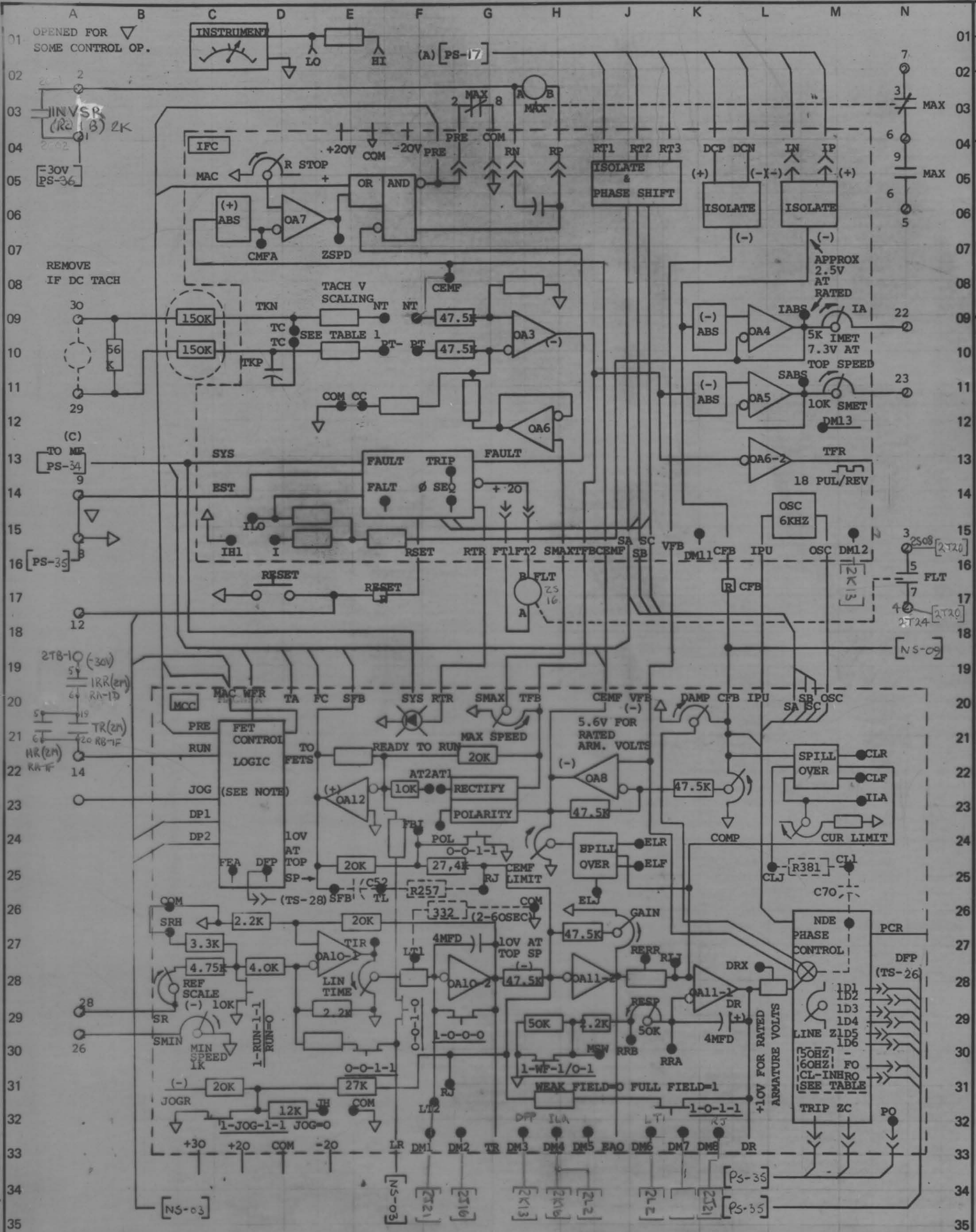
▲ THESE RESISTORS CRIMPED IN WIRE HARNESS

CFU1, 2 & 3 ARE 1.6A, 500V



DR 2 F  
 SH CONTD: 2 G  
 ELEMENTARY DIAGRAM  
 902M122 DC

TECHN: ENG: APPD: CWH	TECHN: ENG: APPD: CWH	DATE: 31-3-80	ALLENWEST	HOIST / LONG TRAVEL VALUTROL.	IDENT: DR SH
SEE SHEET 05A	SEE SHEET 05	TECHN: DM	VARIABLE SPEED DRIVES OPERATION	POWER CONVERSION CIRCUIT.	DR SH
19-3-81	DATE 11-6-80	ENG: AP/WB	BRIGHTON. ENGLAND.	GO. NUMBER 948901	2 F
		APPD: WB		ELEMENTARY DIAGRAM. 902M122DC	
				CONTD: 2G	

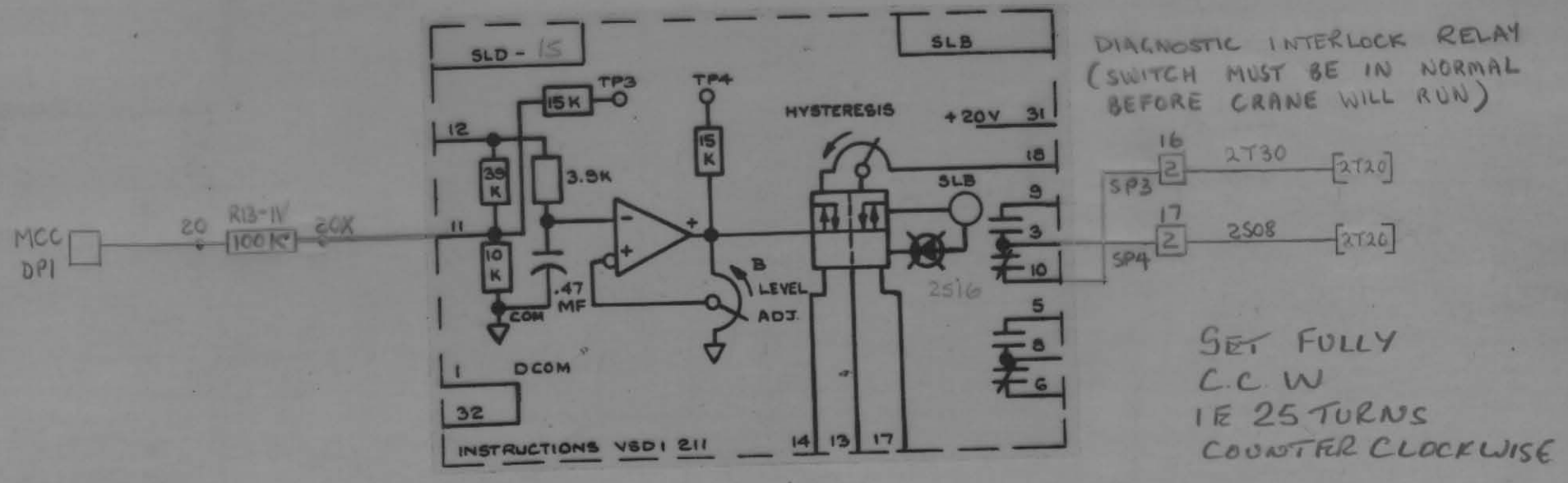
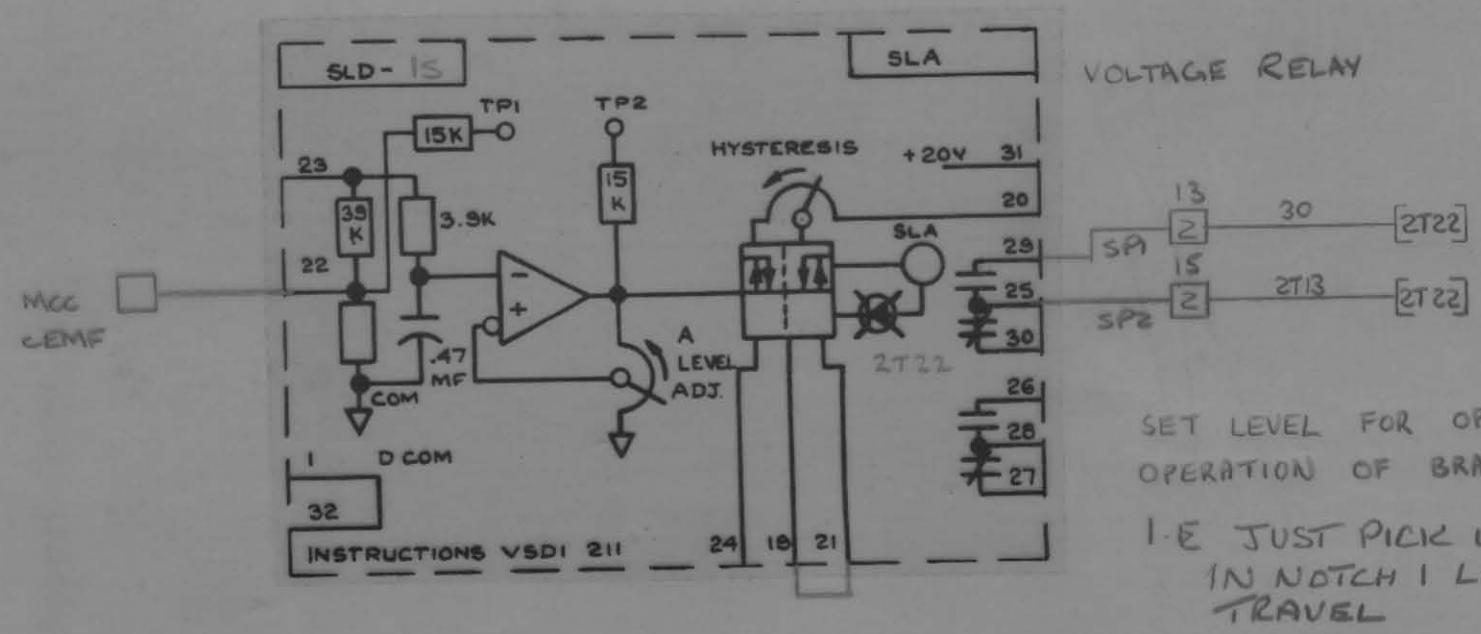
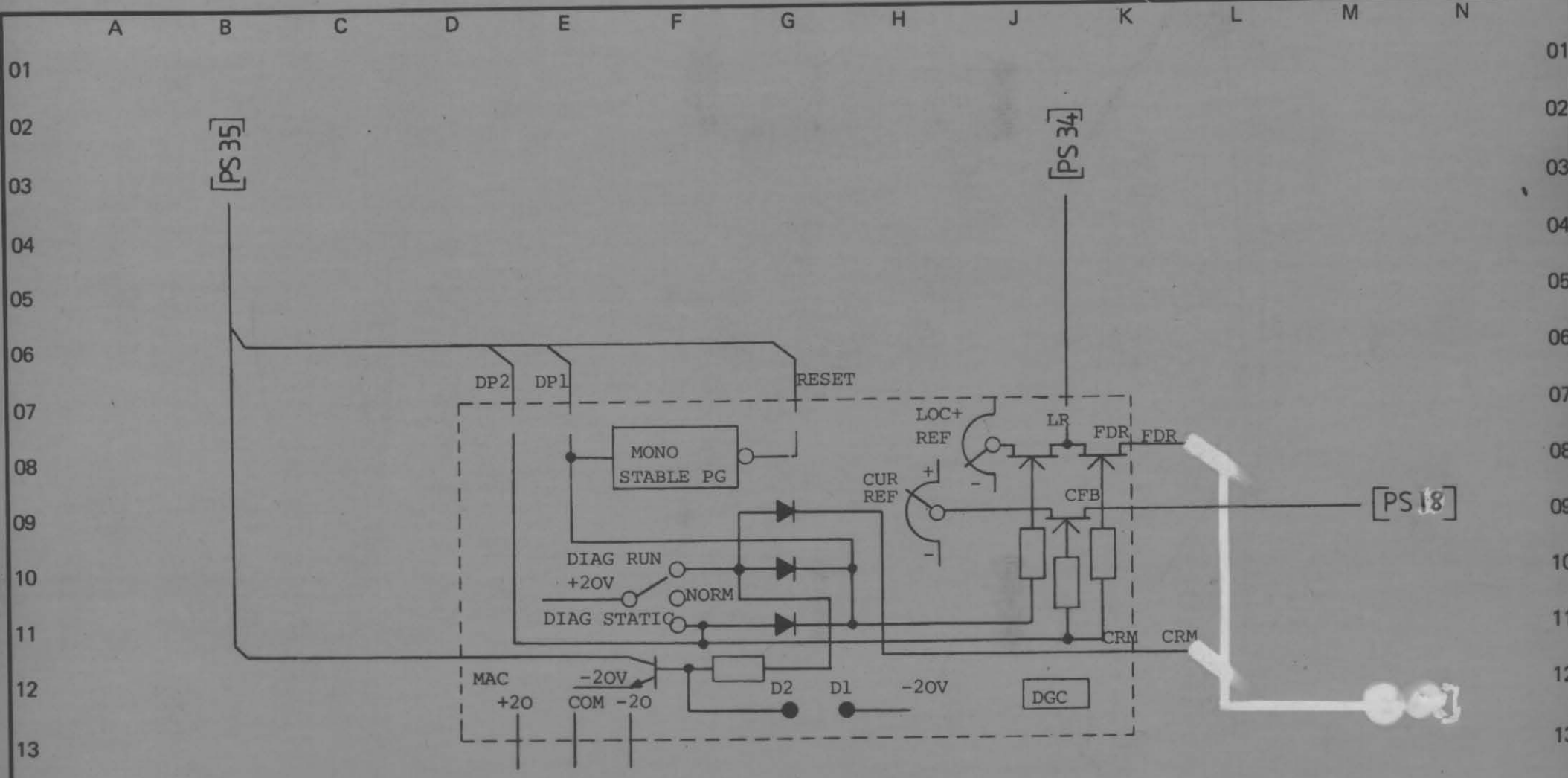


DR 2  
 SH G  
 CONTD. 2H  
 ELEMENTARY DIAGRAM 902M122DC

TECHN. R.A.A.	ENG. [Signature]	APPD. [Signature]	TECHN. CWH	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	<p>VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.</p>	HOIST/LONG TRAVEL VALUTROL INTERFACE + MAIN CONTROL CARD.			IDENT
4	SEE SHEET 05A, 05B, DATE 7-1281	2	INVR CONTACT ADDED IN LINE 03 TR & RR CONTACTS ADDED IN LINE 21. DATE 8-5-80	TECHN. DM	ENG. AP/WBM	APPD. WBM		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 2H	DR SH 2 G
<p>Disclaimer Statement The  trade mark is the trade mark of General Electric Company of U.S.A., which is not connected with the English Company of a similar name.</p>											

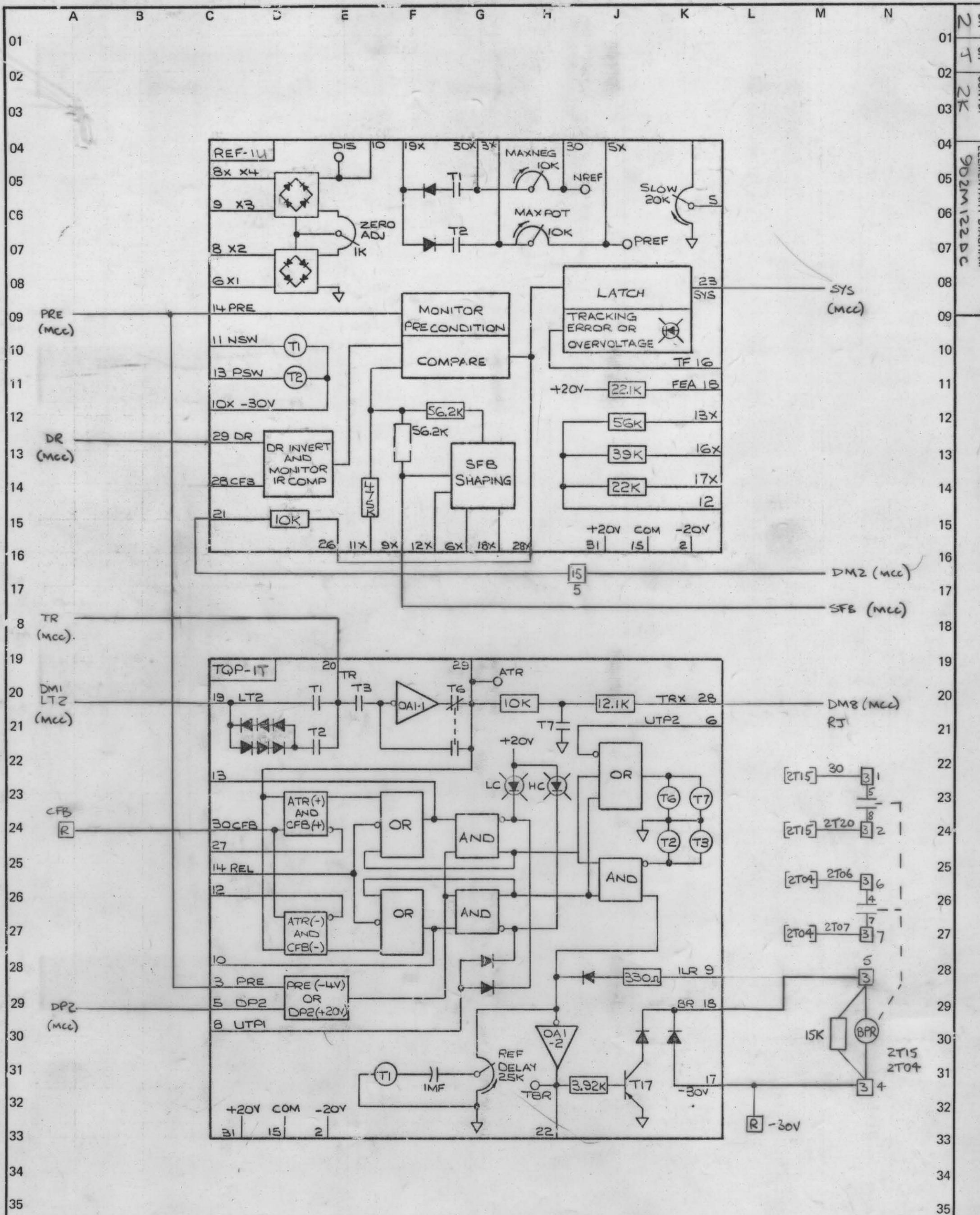


DR 2  
SH H  
CONTD. 2H  
ELEMENTARY DIAGRAM  
902M122DC



TECHN. CWH	ENG. APPD. [Signature]	TECHN. R.A.A.	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	 <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST / LONG TRAVEL VALUTROL.			IDENT		
4	R12-111 ADDED SRE SH 05B 7.1.80	2	SEE SHEET 05A DATE 28-10-80	TECHN. DM	ENG. AP/Wbm		APPD. Wbm	DIAGNOSTIC + SIGNAL LEVEL DETECTORS			DR	SH
GO NUMBER 948901		ELEMENTARY DIAGRAM 902M122DC		CONTD. 2J			2	H				

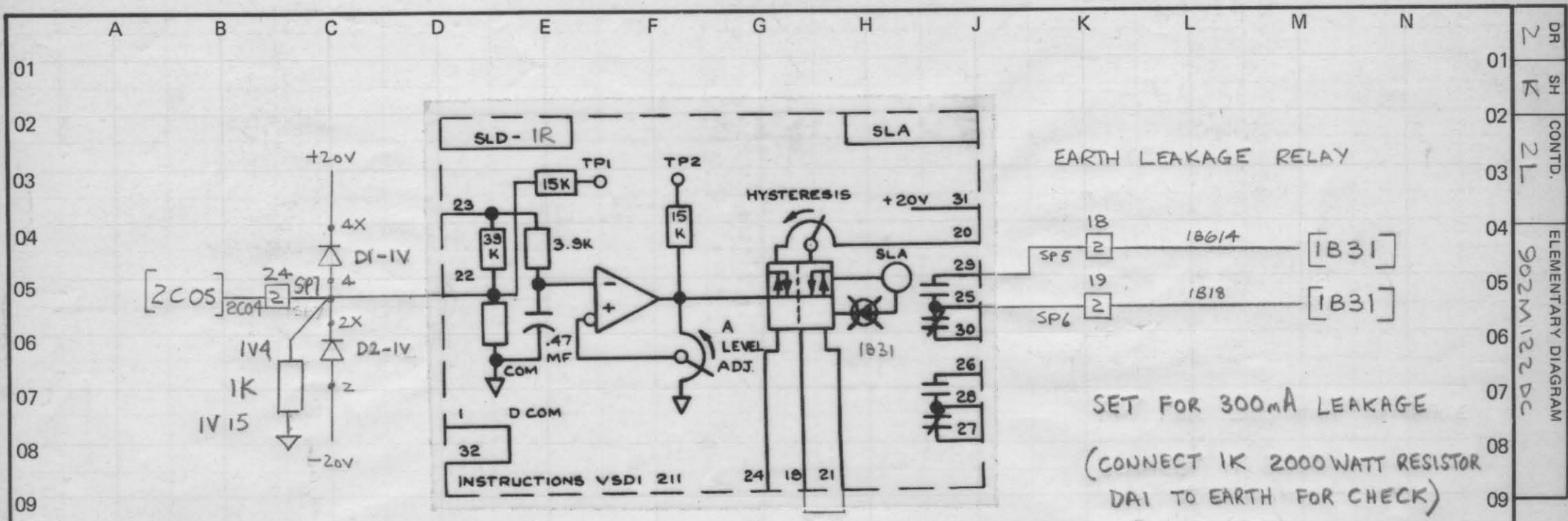
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DR 2  
SH 4  
CONTD. 2K  
ELEMENTARY DIAGRAM  
902M122DC

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST / LONG TRAVEL VALUTROL, REFERENCE + TORQUE PROVING CARD.			IDENT	
3			2			TECHN.	DM		GJ NUMBER	948901	ELEMENTARY DIAGRAM	902M122DC	CONTD.
						ENG.	AP/						
						APPD.	W/						
						DATE	8-5-80						





PREVENTS REGENERATION ON LOSS OF SUPPLY

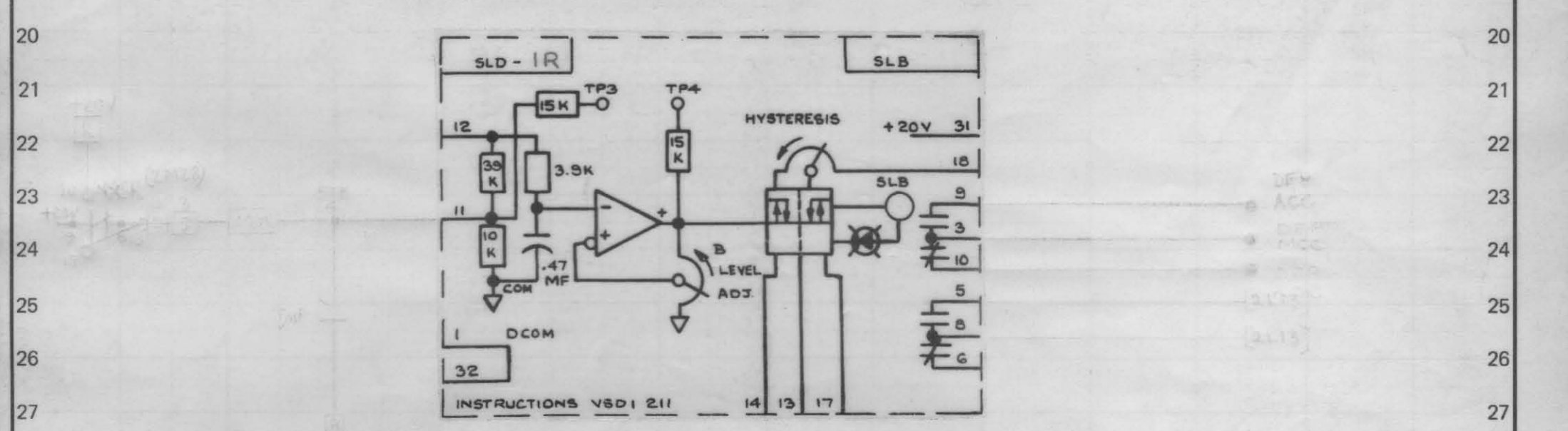
TO TEST OPERATION DEPRESS TEST P.B (SEE SH. 2C) ADJUST SLD LEVEL UNTIL INDICATOR LED ILLUMINATES

IFC - CMFA

IFC - DM12

CI-IV

C.L.M. MODIFIED FOR TORQUE FEEDING



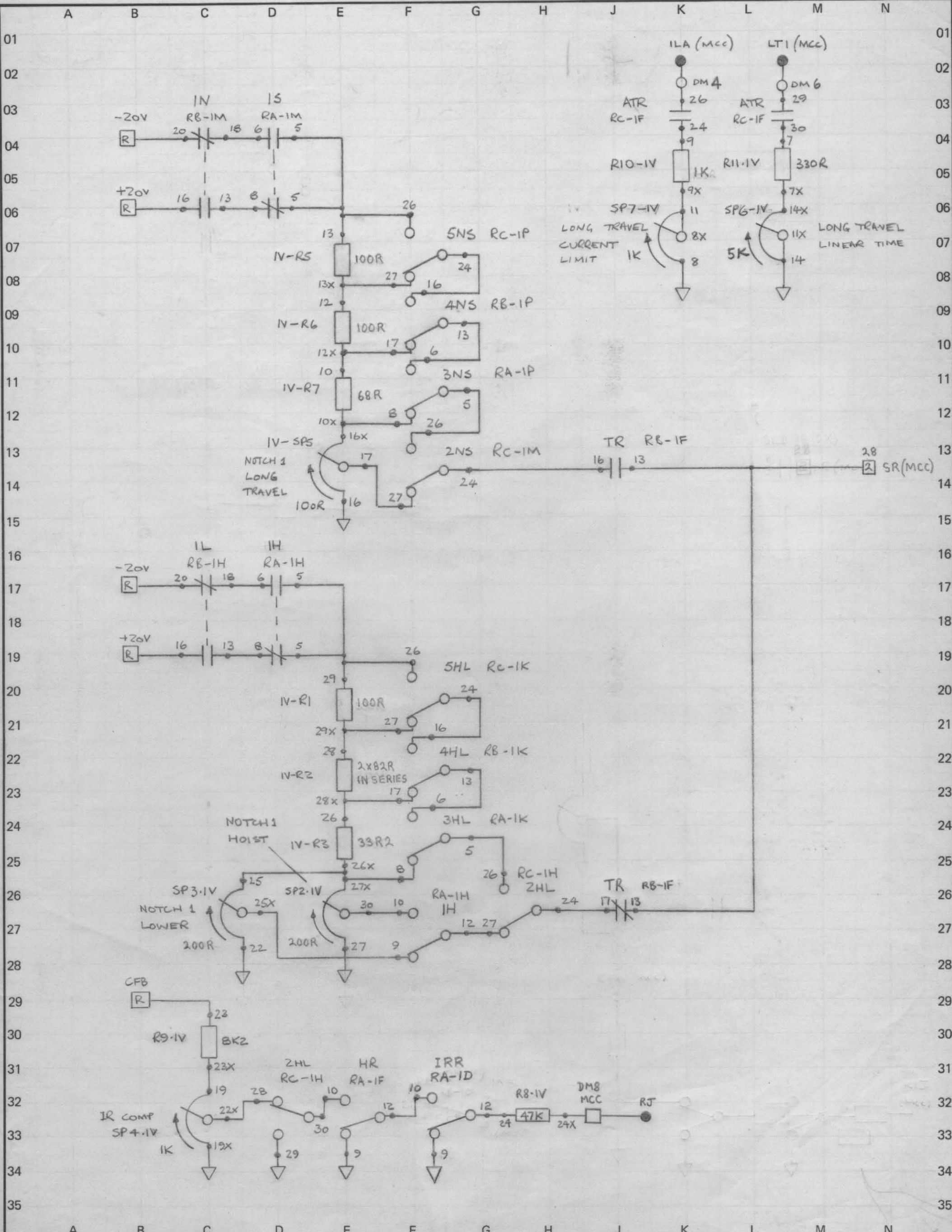
ADJUST LEVEL SETTING

CONNECT 1K 2000WATT RESISTOR DAI TO EARTH FOR CHECK

ADJUST LEVEL UNTIL INDICATOR LED ILLUMINATES

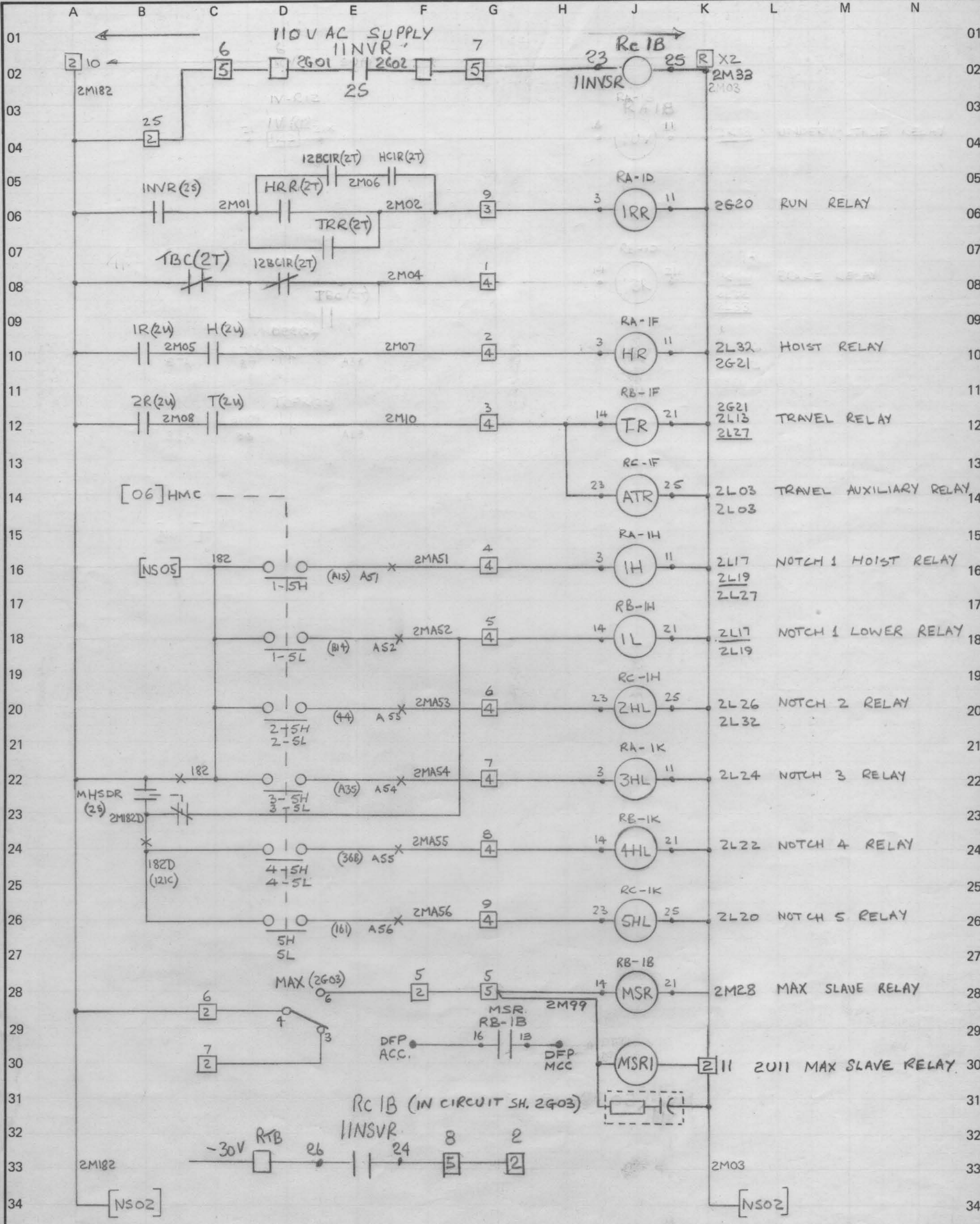
REMOVE CHECK RESISTOR AT END OF TEST

TECHN. CWH	ENG. APPD. [Signature]	TECHN. DM	ENG. FRS	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST / LONG TRAVEL VALUTROL.	IDENT	
SEE SHEET OSA 05B	SLB CIRCUIT ADDED.	TECHN. DM	ENG. AP/wbm	DATE 26-4-84		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	DR SH 2 K
DATE 26-4-84	DATE: 2-6-80	APPD. wbm				CONTD. 2L		



TECHN. APPD. DATE	TECHN. ENG. APPD. DATE	DATE	31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST/LONG TRAVEL VALUTROL, REFERENCE CIRCUIT.	IDENT	DR	SH	
SEE SHEET 05A 05B DATE 26-4-84	18R CONTACT ADDED IN LINE 32, TRN/C REPLACES HR N/O IN LINE 26. DATE 8-5-80	TECHN. APPD.	DM AP WBM		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	2	L
948901	902M122DC	2M	2						

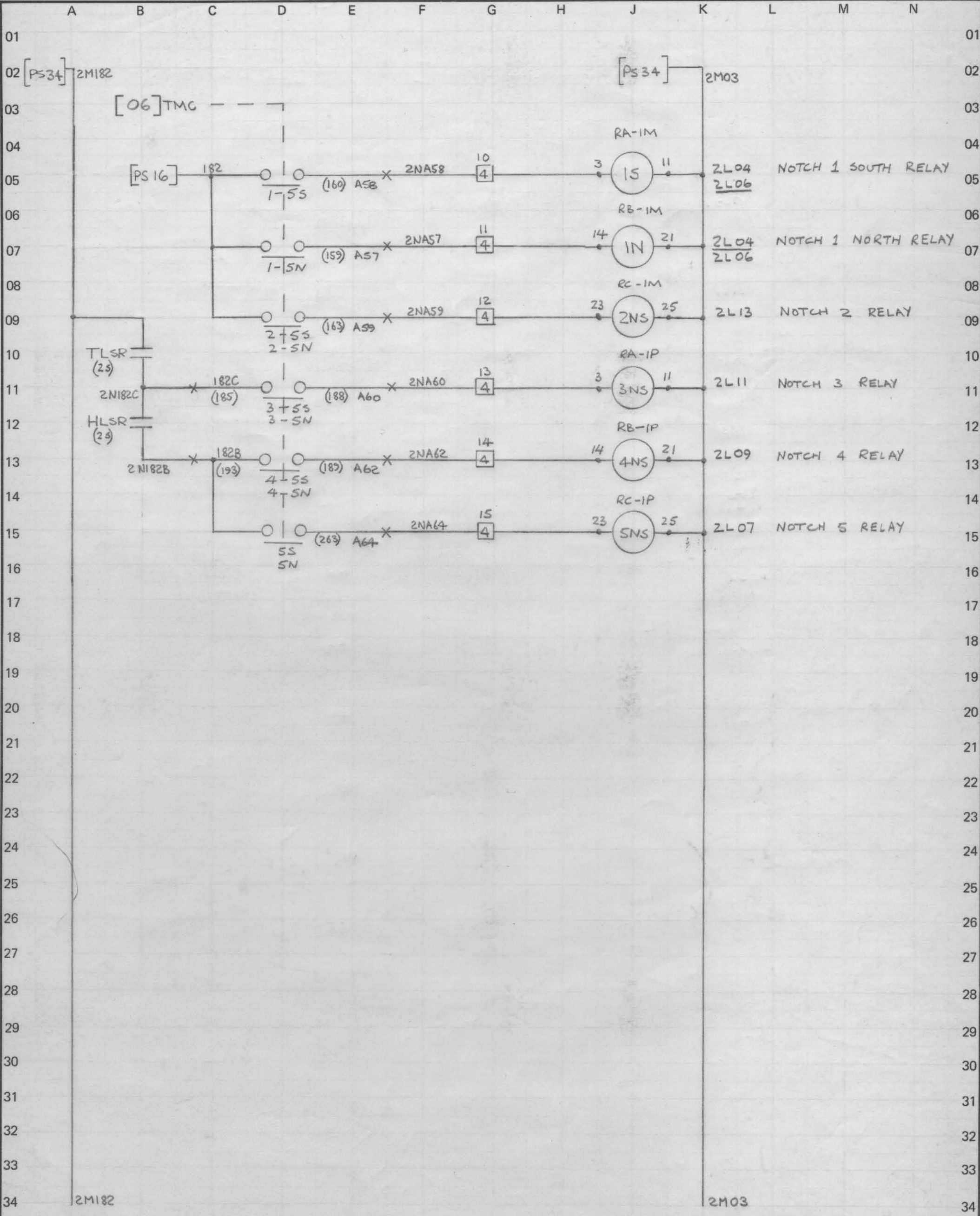




NOTE. WIRE NUMBERS IN BRACKETS ARE FOR GUSHETFAULDS ONLY.

TECHN. <i>RGM</i>	ENG. <i>CWH</i>	APPD. <i>WB</i>	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST   LONG TRAVEL VALUTROL.		IDENT		
8 MSRI ADDED.		2 12BCIR & HCIR CONTACTS ADDED LINES 05 & 08. HOPR & TOPR CONTACTS DELETED LINES 10 & 12. DATE 22-2-91			TECHN. <i>DM</i>	LOW LEVEL RELAYS.		DR SH	
DATE 22-2-91		DATE 9-5-80			APPD. <i>WB</i>	GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122 DC	CONTD. 2N	2M

DR 2  
SH N  
CONTD. 2P  
ELEMENTARY DIAGRAM  
902M122DC

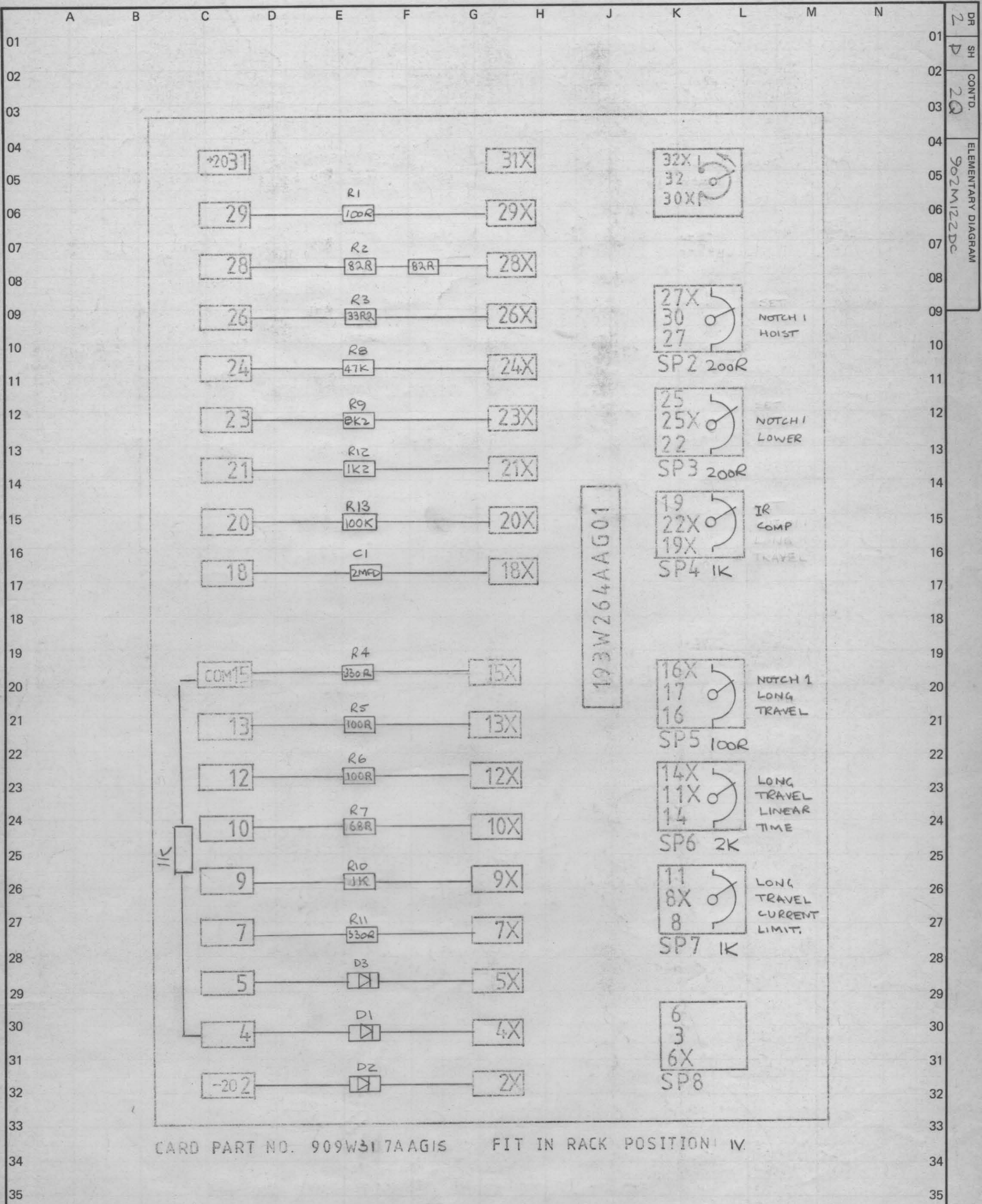


NOTE. WIRE NUMBERS IN BRACKETS ARE FOR GUSHETFAOLDS ONLY

TECHN. CWH	ENG. [Signature]	APPD. [Signature]	TECHN. CWH	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	 <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST / LONG TRAVEL VALUTROL. LOW LEVEL RELAYS.			 IDENT		
3	SEE SHEET 05.		2		WIRE N°s A62 & A64 WERE SHOWN AS A61 & A62.			TECHN. DM	GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 2P	DR 2	SH N
DATE 29-5-80		DATE 8-5-80		APPD. WBM		ENG. AP/WBM							



902M1000751206



CARD PART NO. 909W317AAGIS FIT IN RACK POSITION IV.

DR 2  
SH P  
CONTD. 2Q  
ELEMENTARY DIAGRAM  
902M122DC

TECHN. CWH	ENG. [Signature]	APPD. [Signature]	TECHN. R.A.A.	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST/LONG TRAVEL VALUTROL COMPONENT CARD LAYOUT.			IDENT	
R13 ADDED		SEE SHEET 05A		TECHN. DM	ENG. AP/W	APPD. WB		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 2Q	DR	SH
7-8-82		DATE 28-10-80								2 P		

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	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	
01																					
02	LLR		LLR		LLR		LLR		LLR		LLR		LLR		SLD	SLD	TQP	REF	CC		
03	193W 279 AAG03		193W 279 AAG03		193W 279 AAG03		193W 279 AAG03		193W 279 AAG03		193W 279 AAG03		193W 279 AAG03		193W 277 AAG02	193W 277 AAG02	193W 545 AAG01	193W 546 AAG01	909W 317 AAG15		
04	RC-1B (11/32)	RC-1D	RC-1F (ATR) (2M14)	RC-1H (2HL) (2M20)	RC-1K (5HL) (2M26)	RC-1M (2NS) (2N03)	RC-1P (5NS) (2N15)														
05																					NOTCH 1 HOIST
06																					NOTCH 2 LOWER
07	RB-1B (MSR)	RB-1D (1BR) (2M05)	RB-1F (TR) (2M12)	RB-1H (IL) (2M18)	RB-1K (4HL) (2M24)	RB-1M (IN) (2N07)	RB-1P (4NS) (2N13)														IR COMP
08																					NOTCH 2 LT
09	RA-1B (IUV) (2M04)	RA-1D (IRR) (2M06)	RA-1F (HR) (2M10)	RA-1H (IH) (2M16)	RA-1K (3HL) (2M22)	RA-1M (IS) (2N05)	RA-1P (3NS) (2N11)														LT LIN TIME CURRENT LIMIT
10																					

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

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

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

**SYMBOLS:**

● TEST POST      ⊗ POT ADJUSTMENT      ⊗ INDICATING LIGHT

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

BUS 1V2 - 1B2	CENF(MCC) - 1S22	1B12 - 1V5	SP1 - 1S29
BUS 1V15 - 1B15	1S19 - 1S21	TRIP(ACC) - 1V5X	SP2 - 1S25
BUS 1V31 - 1B31	DPI(MCC) - 1V20	DM12(IFC) - 1V18	SP3 - 1S10
BUS 1V22 - 1B31	PRE(MCC) - 1M14	1V18X - 1V15	SP4 - 1S3
BUS 1P11 - 1B11	DR(MCC) - 1U29	1M20 - 1M2	SP5 - 1R29
BUS 1P21 - 1B21	SYS(MCC) - 1U23	1M18 - 1M6	SP6 - 1R25
BUS 1P25 - 1B25	DM2(MCC) - 5TB15	1M5 - 1V13	SP7 - 1V4
RTB(120) - 1B16	SFB(MCC) - 1U9X	1V13 - 1P26	SP8 - 1V21
RTB(-20) - 1V2	TR(MCC) - 1T20	1M16 - 1M31	1D5 - 2TB1
RTB(COM) - 1S15	DM1(MCC) - 1T19	1M13 - 1M8	1D6 - 1F5
RTB(+20) - 1V31	DM8(MCC) - 1T28	1V13X - 1V12	1F5 - 1F19
RTB(X2) - 1P11	CFB(RTB) - 1T30	1V12 - 1P27	1F6 - 1F20
1P11 - 1P21	1U14 - 1T3	1V12X - 1V10	1F20 - 2TB14
1P21 - 1P25	DP2(MCC) - 1T5	1V10 - 1P17	1T17 - 3TB4
1R11 - 5TB4	-30(RTB) - 1T17	1V10X - 1V16X	BPR5 - 3TB1
1B13 - 5TB3	3TB4 - 2TB1	1V16X - 1P8	BPR8 - 3TB2
2TB6 - 2TB10	3TB5 - 1T18	1V16 - 1V15	BPR4 - 3TB6
DFF(ACC) - 1R9	1V4 - 1V2X	1V17 - 1M27	BPR7 - 3TB7
DFF(MCC) - 1R3	1V2X - 1R22	1P24 - 1P16	BPR4 - 3TB4
2TB5 - 5TB5	1V4X - 1V31	1P13 - 1P6	BPR8 - 3TB5
1B14 - 5TB5	DM3(MCC) - 1B9	1P5 - 1M26	1V20X - 1S11

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

TECHN. CWH	ENG. [Signature]	APPD. [Signature]	TECHN. CWH	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST   LONG TRAVEL VALUTR DL. RACK LAY OUT. + JUMPER TABLE			IDENT
SEE SHEET OSA	LOW LEVEL RELAYS SHOWN. MINOR REVISIONS TO JUMPERS. DATE 8-5-80		TECHN. DM	ENG. AP/WBm	APPD. WBm	GO NUMBER 948901		ELEMENTARY DIAGRAM 902M122DC	CONTD. 2R	DR 2	SH Q



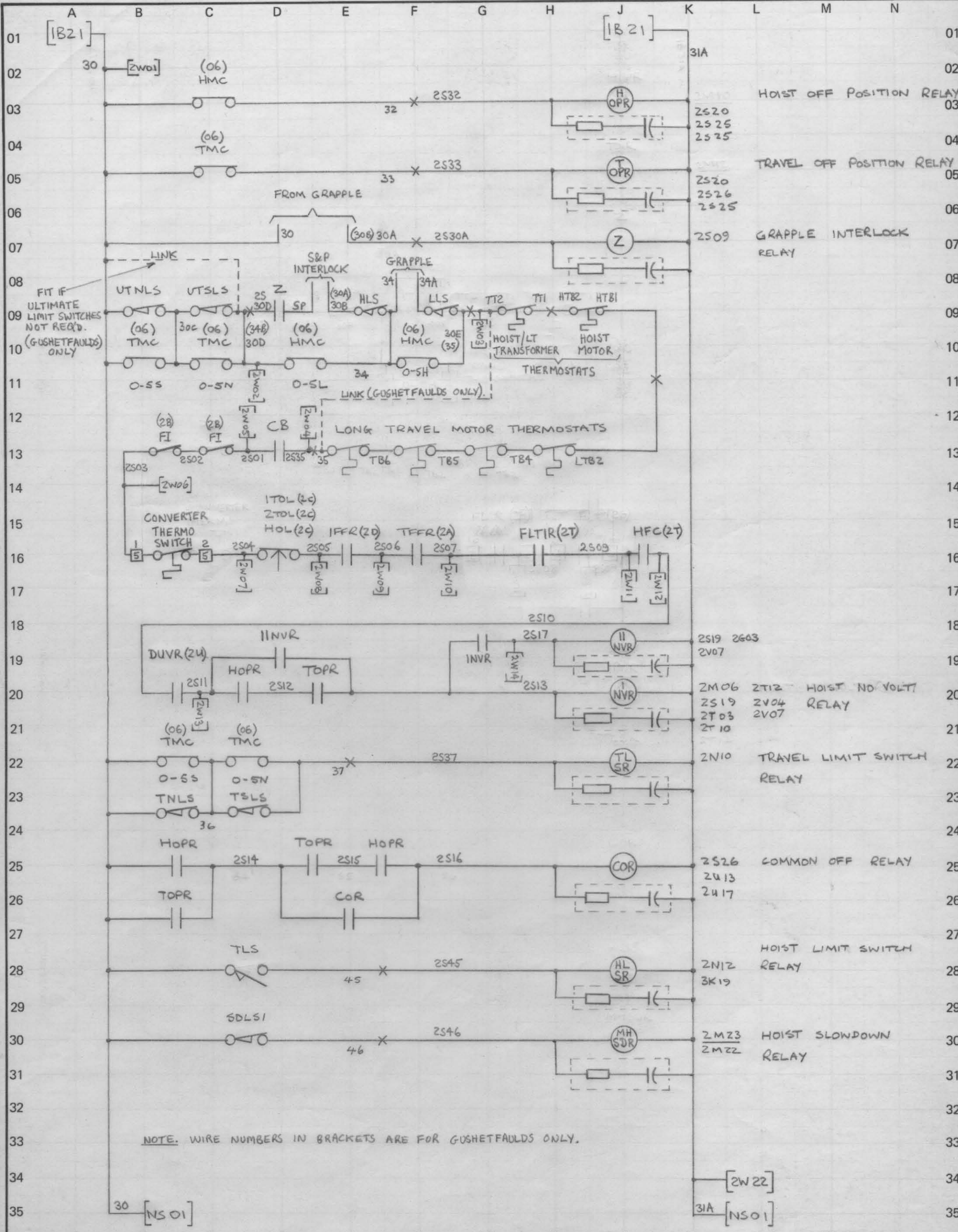
	A	B	C	D	E	F	G	H	J	K	L	M	N
01													
02													
03													
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35													

CARD RACK WIRE JUMPER TABLE

IM24 - IF16	SR(MCC) - IR5	3TB9 - ID3
DM4(MCC) - IF26	IR8 - IF13	4TB1 - ID14
IF24 - IV9	CFB(RTB) - IV23	4TB2 - IF3
IV9X - IV11	IV23X - IV19	4TB3 - IF14
IV11 - IV8X	IV19X - IS15	4TB4 - IH3
IV8 - IU15	IV22X - IH28	4TB5 - IH14
DM6(MCC) - IF29	IH29 - IH15	SP36 - IH23
IF30 - IV7	IH30 - IF10	SP37 - IK3
IV7X - IV14X	IF9 - IF15	SP38 - IK14
IV11X - IV14	IR19 - IR21	SP39 - IK23
IV14 - IU15	IV24X - DM(MCC)	SP40 - IM3
IH20 - IH2	IV21X - IB3	SP41 - IM14
IH18 - IH6	IF14 - IF23	SP42 - IM23
IH5 - IV29	DM4(MCC) - ID13	SP43 - IP3
IV29 - IK26	ID17 - IV15X	SP44 - IP14
IH16 - IH31	IF12 - ID19	SP45 - IP23
IH13 - IH8	ID20 - IV24	
IV29X - IV28	ID18 - ID15	
IV28 - IK27		
IV28X - IV26		
IV26 - IK17		
IV26X - IV25		
IV25 - IV27X		
IV27X - IK8		
IV22 - IT15		
IV25X - IH9		
IV27 - IT15		
IV30 - IH10		
IK24 - IK16		
IK13 - IK6		
IK5 - IH26		
IH12 - IH27		
IH24 - IF17		

TECHN. R.A.A	ENG. NGM	APPD. [Signature]	TECHN. CLOH	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST / LONG TRAVEL VALUTROL JUMPER TABLE.			IDENT 	
5	SEE SHEET OSA	2	MINOR REVISIONS TO JUMPERS.		TECHN. DM	ENG. AP [Signature]		GO NUMBER 009N01	ELEMENTARY DIAGRAM 9.02M122DC.	CONTD. 25	DR 2	SH R
DATE 4-3-81		DATE 8-5-80		APPD. WBM								

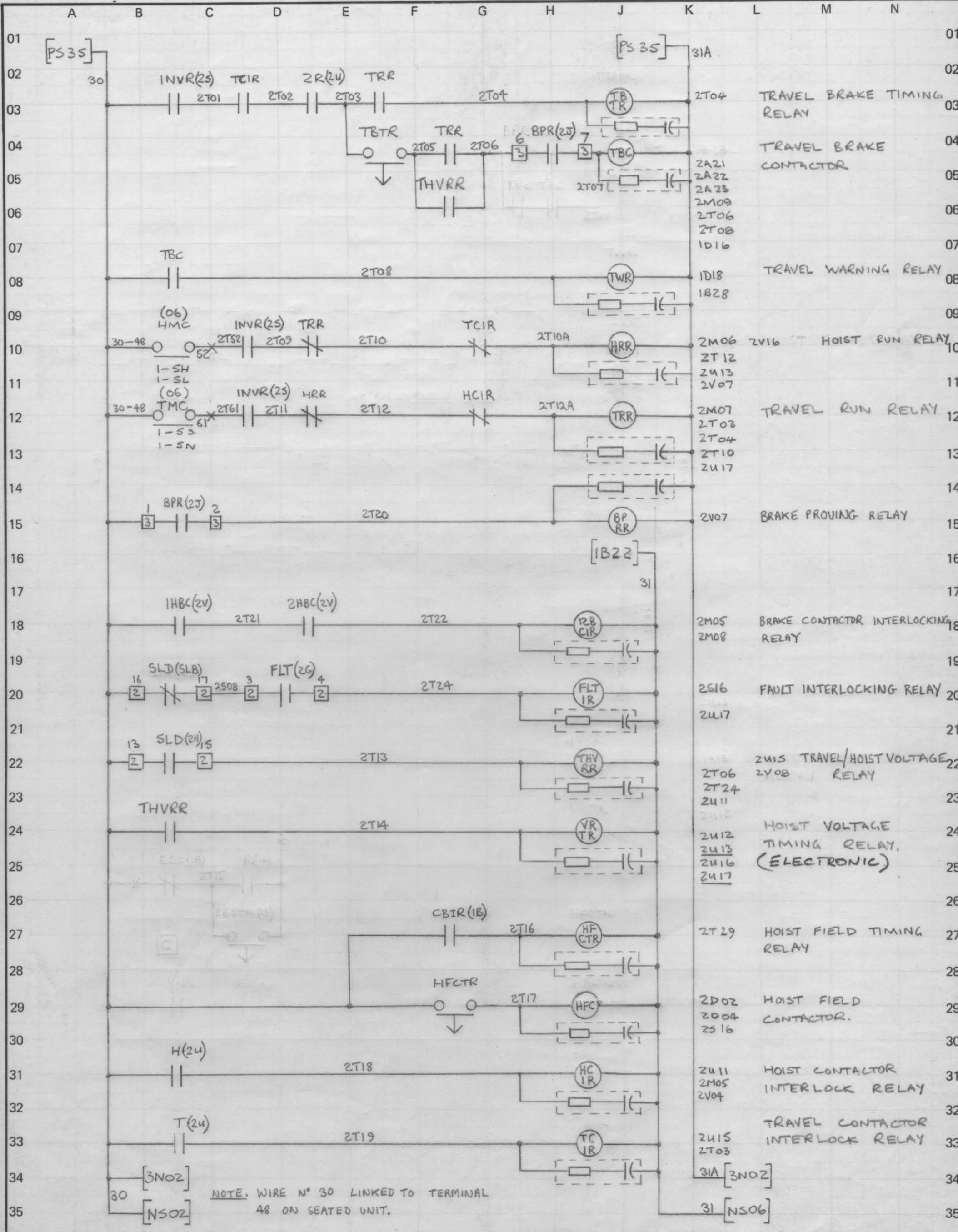




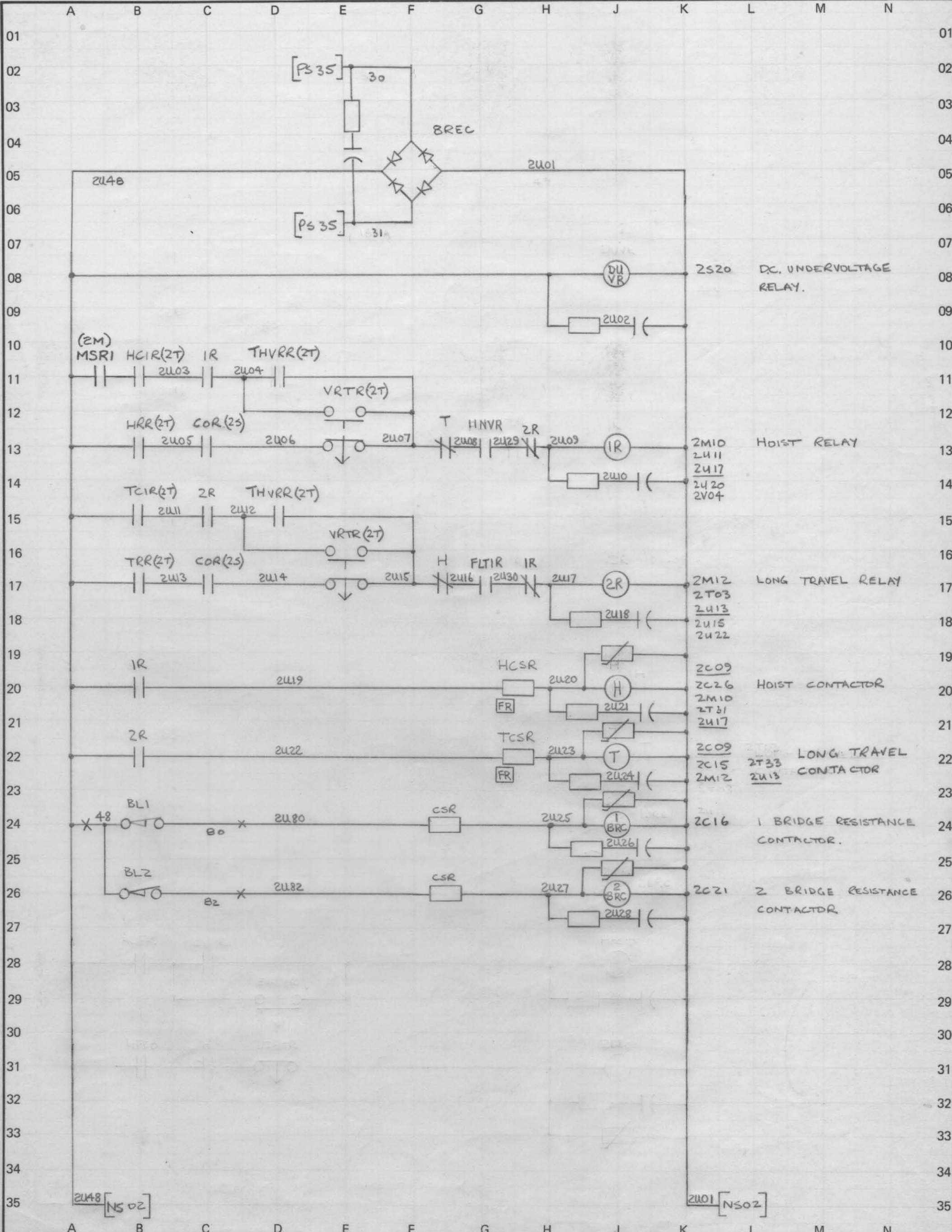
NOTE: WIRE NUMBERS IN BRACKETS ARE FOR GUSHETFAULDS ONLY.

TECHN. R.A.A.	ENG. <i>W.B.</i>	APPD. <i>W.B.</i>	TECHN. C.W.H.	ENG. <i>W.B.</i>	APPD. <i>W.B.</i>	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST / LONG TRAVEL A.C. CONTROL			IDENT
SEE SHEET 05A	11NVR ADDED IN LINE 18.		TECHN. DM	ENG. AP/WB	APPD. WB	GO NUMBER 948901		ELEMENTARY DIAGRAM 902M122DC	CONTD. 2T	DR 2	SH 5
DATE 23-10-80	DAE 8-5-80									25	





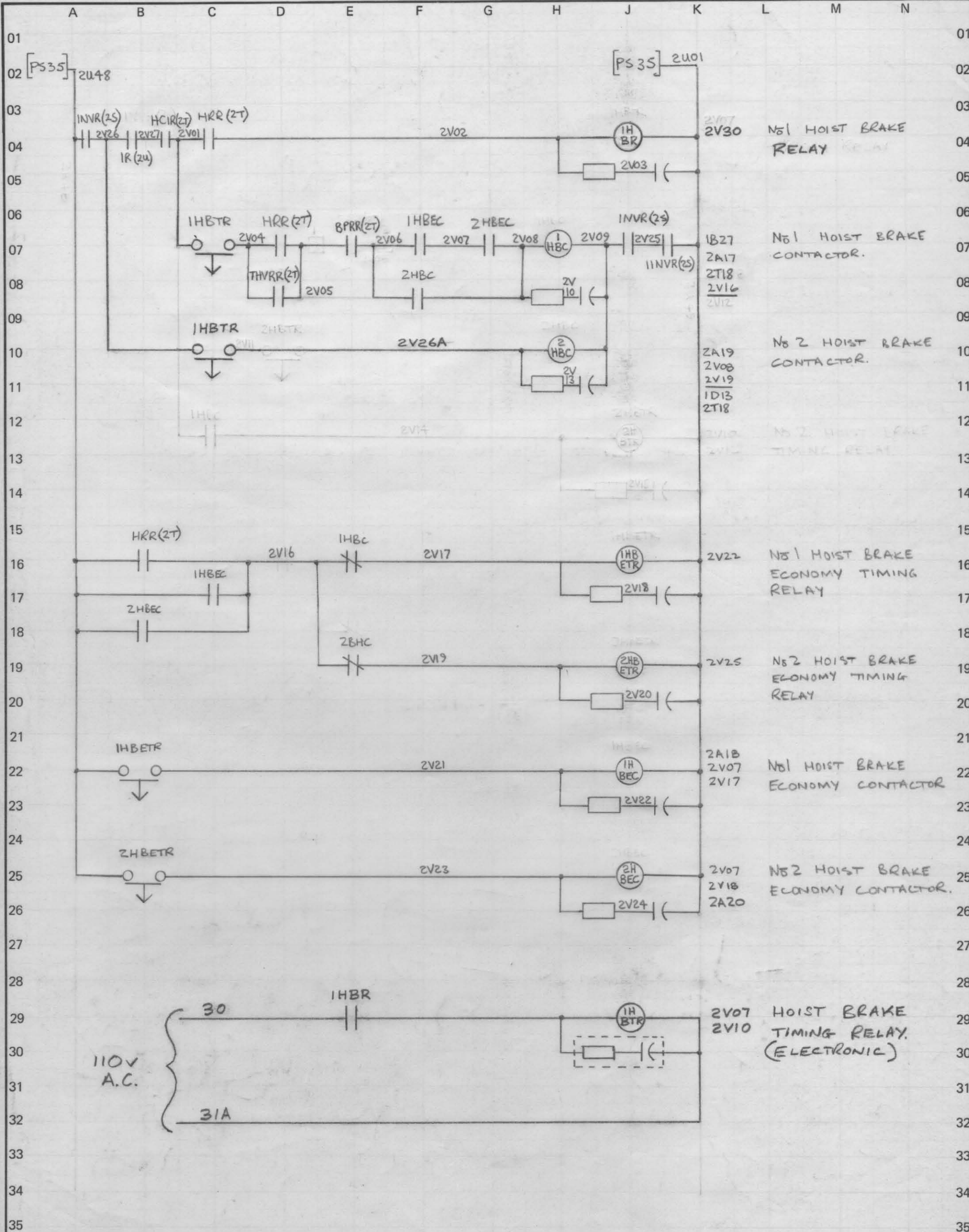
TECHN. <i>R.6M</i>	ENG. <i>C.W.H</i>	APPD. <i>by</i>	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST   LONG TRAVEL A.C. CONTROL.		IDENT	
SEC SHEET 05B	BPRR & 12BCIR ADDED.		TECHN. DM		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 2U	DR SH
DATE 22-2-91	DATE 8-5-80		APPD. <i>WBM</i>				2U	2T



TECHN. <i>DM</i>	ENG. <i>AP/Wbm</i>	APPD. <i>Wbm</i>	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST/LONG TRAVEL D.C. CONTROL.			IDENT	
5 SEE SHEET 05B MSRI CONTACT ADDED LINE 11	IR CONTACT ADDED IN LINE REF 2V04	TECHN. DM	ENG. AP/Wbm		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 2V	DR 24	SH
DATE 23-1-80	DATE 8-5-80	APPD. Wbm							

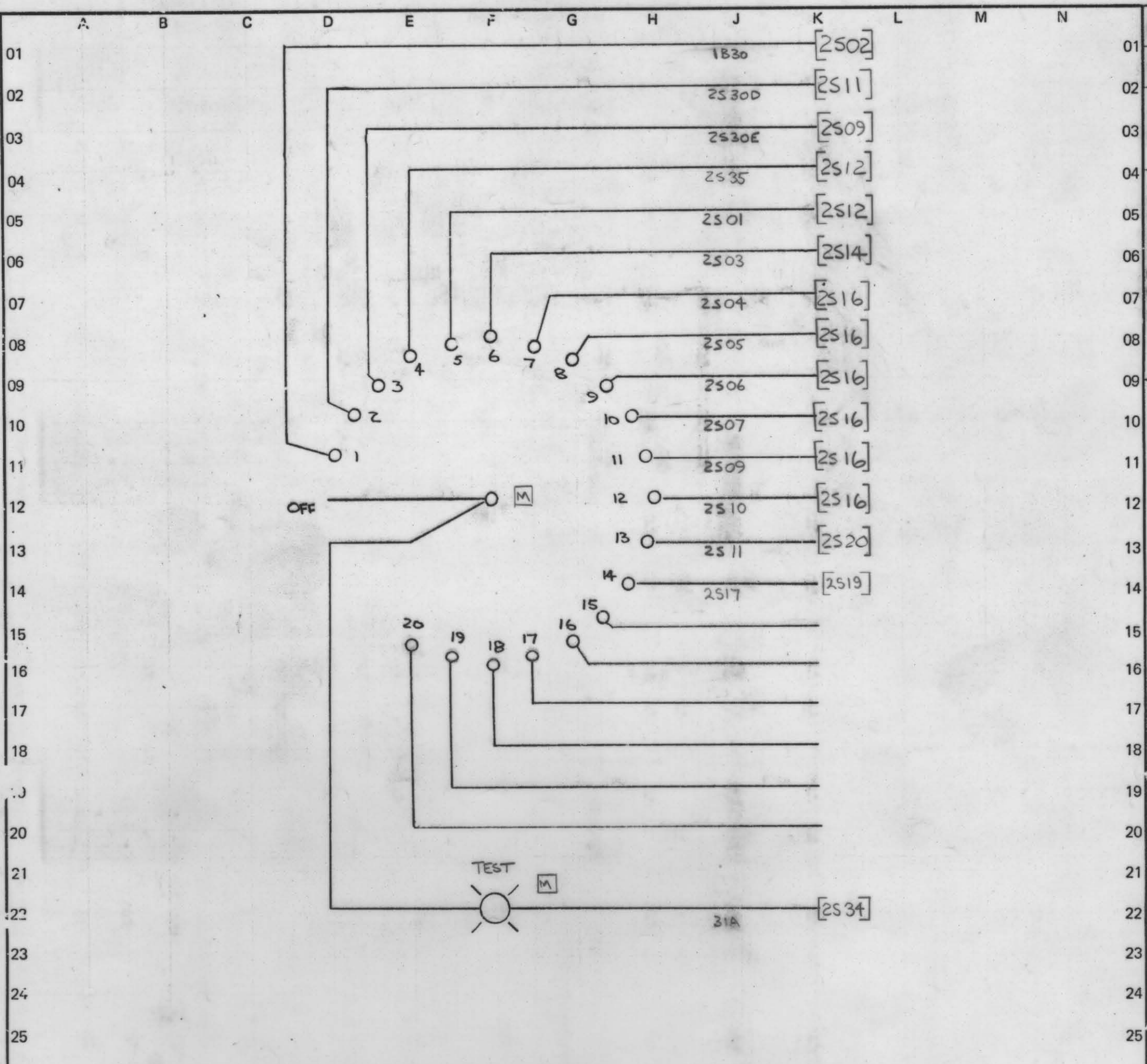
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TECHN. APPD. DATE	TECHN. APPD. DATE	ALLENWEST	HOIST   LONG TRAVEL D.C. CONTROL.	IDENT
ENG. APPD. DATE	ENG. APPD. DATE	Simplex	GO NUMBER	DR SH
4 SEE SHEET 05B BRAKE MODS DATE 22-2-91	2 HCR & IR ADDED IN LINE 04. IINVR ADDED IN LINE 07. BPRR REPLACED BY BPRR IN LINE 07. DATE. 8-5-80	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	948901	2 V
			ELEMENTARY DIAGRAM	CONTD. ZW
			902M122DC	

DR 2 W SH CONTD. 3A ELEMENTARY DIAGRAM 902M122DC

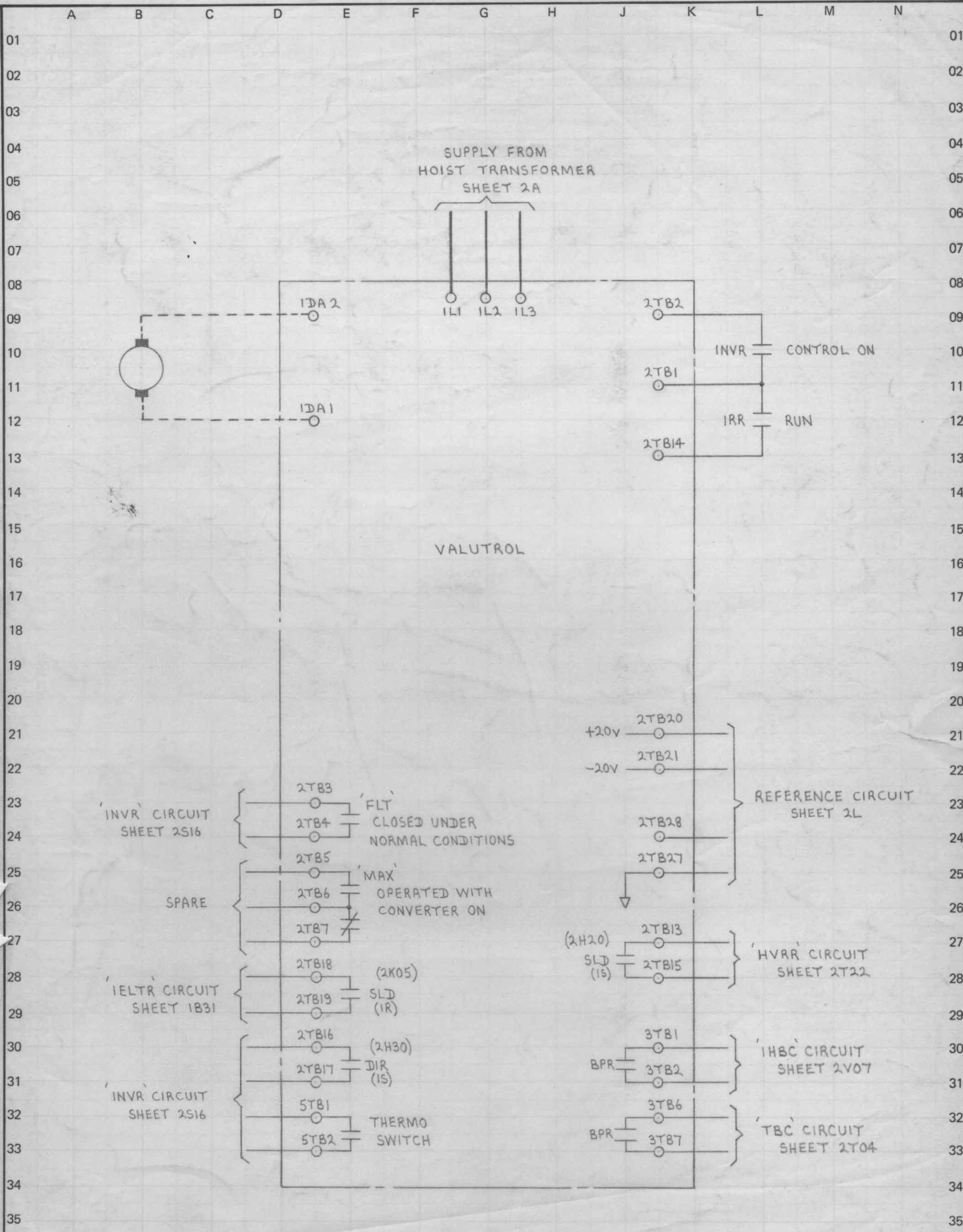


Pos.	TEST FUNCTION	Pos	TEST FUNCTION
0	OFF.	11	VALUTROL FAULT RELAY DIAGNOSTIC SWITCH
1	TEST LAMP.	12	HOIST FIELD CONTACTOR.
2	LONG TRAVEL LIMIT SWITCHES.	13	DC NO VOLT RELAY.
3	HOIST LIMIT SWITCHES + GRAPPLE INTERLOCKS	14	NVR COIL
4	MOTOR + TRANSFORMER THERMOSTATS.	15	
5	CB	16	
6	FUSE TRIP INDICATORS.	17	
7	CONVERTOR THERMAL SWITCHES.	18	
8	HOIST + TRAVEL OVERLOADS.	19	
9	HOIST FIELD FAILURE RELAY.	20	
10	TRAVEL FIELD FAILURE RELAY.		

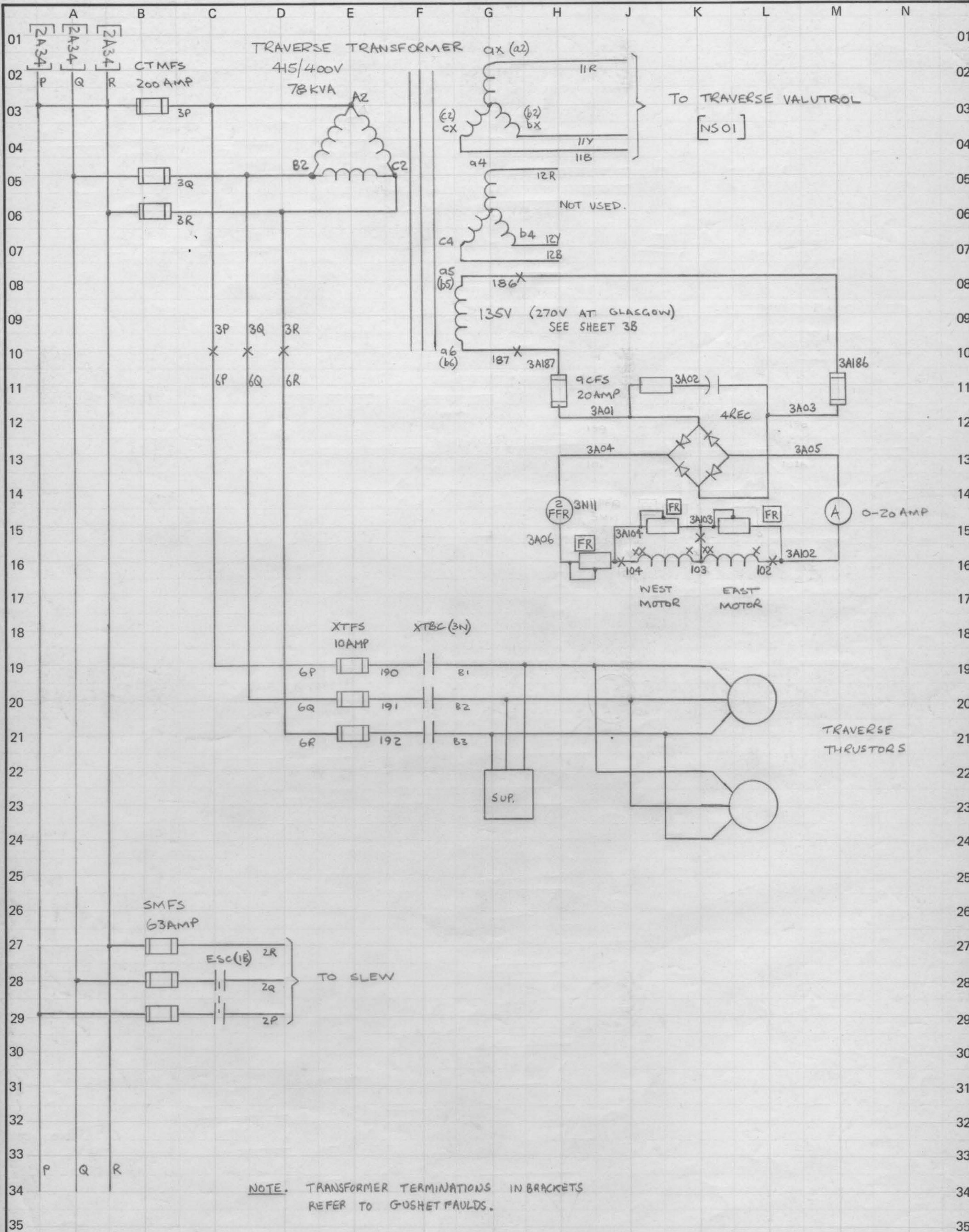
NOTE. POSITIONS 2 & 4 NOT USED ON GUSHET FAULDS

TECHN. R.A.A. <i>Long</i>	APPD. <i>W</i>	TECHN. CWH	APPD. <i>W</i>	DATE 31-3-80	ALLENWEST	HOIST   LONG TRAVEL TEST SWITCH.	IDENT
3 SEE SHEET 05A	2 SEE SHEET 05.	TECHN. DM	APPD. <i>wbm</i>		Simplex	GO NUMBER 948901	DR 2
DATE 29-10-80	DATE 29-5-80	ENG. AP/W			VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	ELEMENTARY DIAGRAM 902M122DC	SH W
						CONTD. 2X	





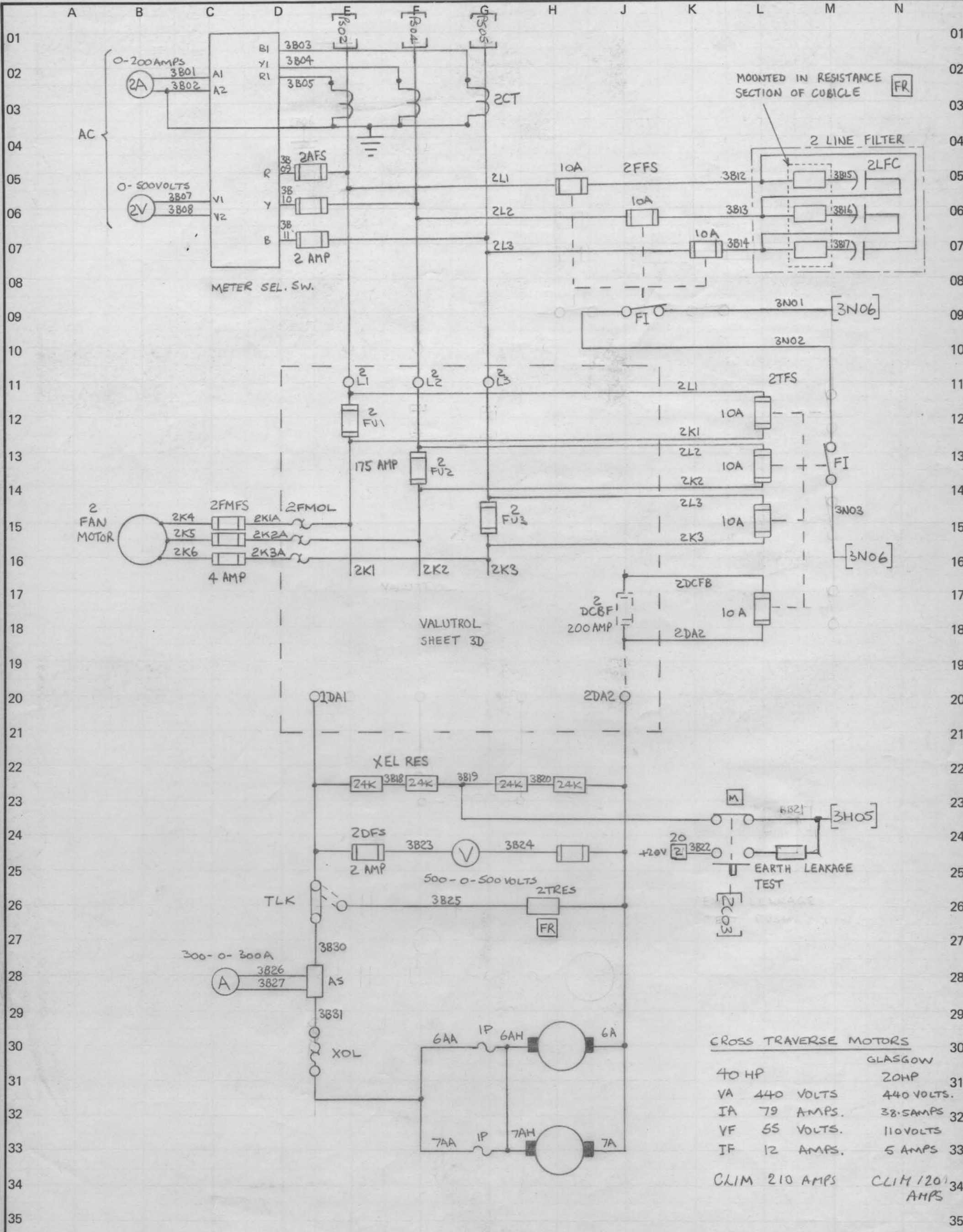
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	2-12-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	HOIST / LONG TRAVEL VALUTROL SIGNAL INPUTS & OUTPUTS.			IDENT		
						TECHN.	R.A.A.		GO NUMBER	948901	ELEMENTARY DIAGRAM	902M122DC	CONTD.	3A
						ENG.	<i>[Signature]</i>							
						APPD.	<i>[Signature]</i>							



NOTE. TRANSFORMER TERMINATIONS IN BRACKETS REFER TO GUSHET FAULTS.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE A.C. SUPPLIES AND FIELD CIRCUIT.		IDENT		
			2			31-3-80		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
			SEE SHEET 05.					948901	902M122DC	3B	3	A





CROSS TRAVERSE MOTORS	
40 HP	GLASGOW 20HP
VA 440 VOLTS	440 VOLTS.
IA 79 AMPS.	38.5 AMPS
VF 55 VOLTS.	110 VOLTS
IF 12 AMPS.	5 AMPS
CLIM 210 AMPS	CLIM 120 AMPS

TECHN. CWH	APPD. [Signature]	TECHN. CWH	APPD. [Signature]	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE A.C. + D.C. MAINS.			IDENT	
SEE SHEET 05A 05B		2CT COMMON RETURN CONNECTED TO TERMINAL A2 ON METER SWITCH.		TECHN. DM		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 3C	DR 3	SH B
7-12-81		DATE 9-5-80		ENG. AP/WBm						

DR 3  
SH C  
CONTD. 3D  
ELEMENTARY DIAGRAM 902M122DC

VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI(+)

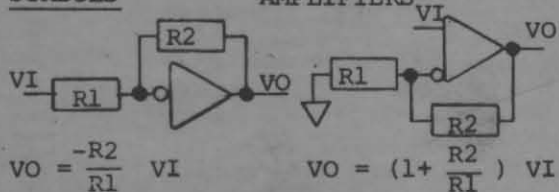
SIGNAL DEFINITIONS AND LOCATIONS

HARDWARE ABBREVIATIONS

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

SYMBOLS

AMPLIFIERS



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

VO = SIGN ( ) X ABSOLUTE VALUE OF VI

- ⊥ CASE GROUND
- 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
I/O - 400%	X		(NONE)
-500%		IFC	I - IHI
-300%		IFC	I - ILO
SR5 - 9v			(NONE)
9 - 20v	X	MCC	SRH - COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec.	X		(NONE)
2 - 60sec			332Ω FROM LTI TO COM
VREG	X		NT-CEMF CC-COM
DC TACHO			(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V.		IFC	NT-NT1 PT - PT1
24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT2 PT - PT2
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc		IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
1.7		MF	NONE
1.3		MF	YB - YD
2.8		MF	YA - YB
2.4		MF	YA - YB, YC - YD
5.0		MF	YA - YC
4.0		MF	YA - YC, YB - YD
8.0		MF	YA - YC, YB - YD
7.0		MF	YA - YC, YB - YD
13		MF	YA - YC, YB - YD
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
	X	MCC	DFP - DM3
	X	MCC	ILA - DM4
	X	IFC	CMFA - DM12

- \* CEMF COUNTER EMF (3E16)
- \* CFB CURRENT FEEDBACK (3E16)
- CMFA ABSOLUTE VALUE CEMF (3E08)
- GRM GROSSOVER MODIFY ( 11)
- DFP DELAYED FIRING POWER (3E25)
- \* DR DRIVER REFERENCE (3E33)
- \* EAO ERROR AMP OUTPUT (3E33)
- EST EXTERNAL FLT STOP INPUT (3E14)
- FALT FAULT (3E14)
- \* FC FIELD CURRENT (NS26)
- FDR FIELD DIAGNOSTIC REFERENCE ( 08)
- FEA FIELD ECONOMY ADJUST ( 25)
- FF FIELD FAULT ( 28)
- IABS MOTOR CURRENT ABSOLUTE (3E09)
- ILA CURRENT LIMIT ADJUST (3E23)
- IMET CURRENT SIGNAL FOR METER (3E10)
- \* IPU INITIAL PULSE (3E20)
- \* LR LOCAL REF. FROM DGC (3E33)
- \* JOG JOG SWITCH INPUT ( 23)
- \* JOGR JOG REFERENCE INPUT ( 31)
- \* MAC MAX/MA CONTROL SIGNAL (3E20)
- MSW MODE SWITCH ( 30)
- \* OSC OSCILLATOR (3E17)
- \* PCR PHASE CONTROL REF. (3E26)
- \* PRE DRIVE PRECONDITION (3E21)
- ØSEQ PHASE SEQUENCE (3E14)
- RERR REGULATOR ERROR (3E27)
- RIJ INTEGRATOR SUMMING JUNCTION (3E27)
- RJ REGULATOR SUMMING JUNCTION (3E31)
- RRA REGULATOR RESPONSE ADJUST (3E30)
- RSET RESET (3E16)
- \* RTR READY TO RUN (3E16)
- \* RUN RUN SWITCH INPUT (3E21)
- \* SA-C PHASE SYN OUTPUT (3E16)
- \* SFB SPEED FEEDBACK (3E20)
- SMET SPEED SIGNAL FOR METER (3E12)
- \* SR SYSTEM REFERENCE INPUT (3E29)
- \* SYS SYSTEM FAULT TRIP (3E13)
- \* TA OUTPUT FOR TACHO TRIP ADJUST ( 20)
- TF TACHO FAULT (NS28)
- \* TPB TACHOMETER FEEDBACK ( 20)
- TPR AC TACHO FREQUENCY OUTPUT ( 13)
- \* TR TIMED REFERENCE (3E33)
- \* VFB VOLTAGE FEEDBACK (3E19)
- \* 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.

ADDITIONAL JUMPER  
33K - VFB - DJ (MCC)

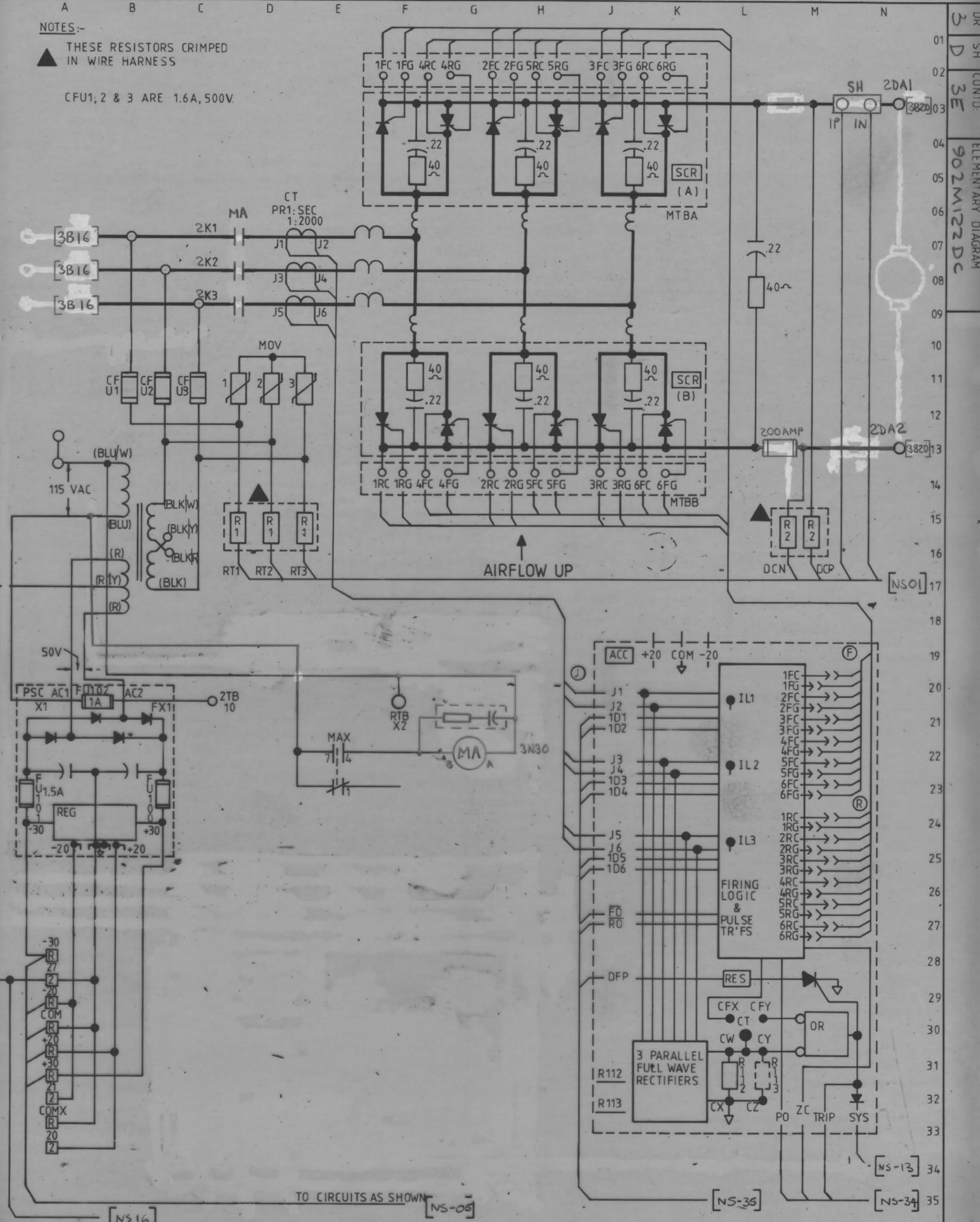
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			R.A.A			TECHN.	DM		JUMPER TABLE + SIGNAL LOCATIONS			DR	SH
			2	SEE SHEET 05A		ENG.	AP/wbm		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	3D	3 C
				DATE 4-11-80		APPD.	wbm	948901	902M122DC				



NOTES:-

▲ THESE RESISTORS CRIMPED IN WIRE HARNESS

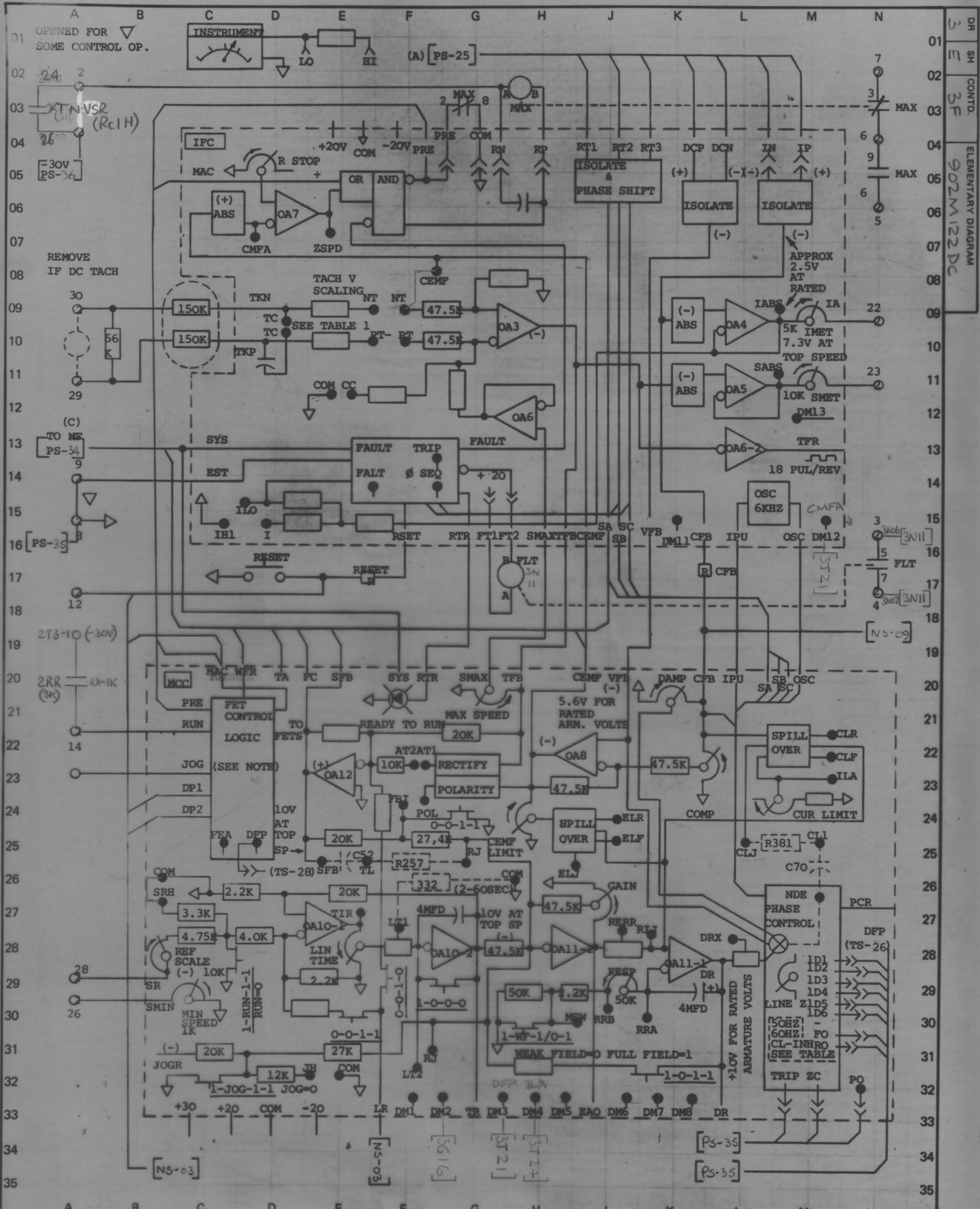
CFU1, 2 & 3 ARE 1.6A, 500V.



DR SH CONTD: 3 D 3E  
 ELEMENTARY DIAGRAM  
 902M122DC

TO CIRCUITS AS SHOWN [NS-05]

TECHN. ENG. APPD. CWH	TECHN. ENG. APPD. CWH	DATE: 31-3-80	ALLENWEST VARIABLE SPEED DRIVES OPERATION BRIGHTON, ENGLAND.	CROSS TRAVERSE VALUTROL. POWER CONVERSION CIRCUIT.		IDENT. DR SH	
SEE SHEET 05	MA CONTACTOR ADDED.	TECHN: DM		G.O. NUMBER 948901	ELEMENTARY DIAGRAM. 902M122DC	CONTD: 3E	3 D
DATE: 11-6-80.	DATE: 8-5-80	ENG: AP/W		APPD: WBM			

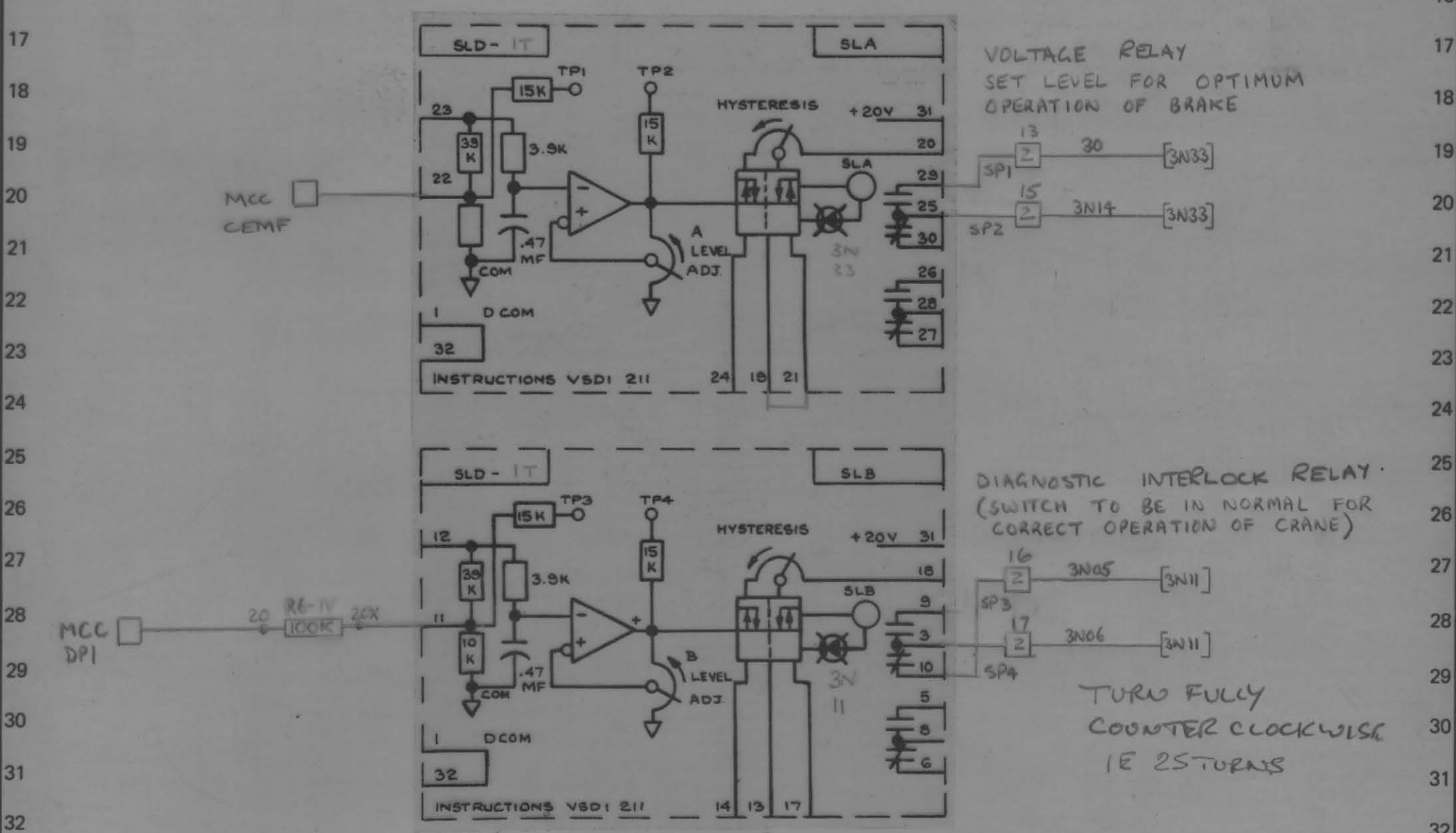
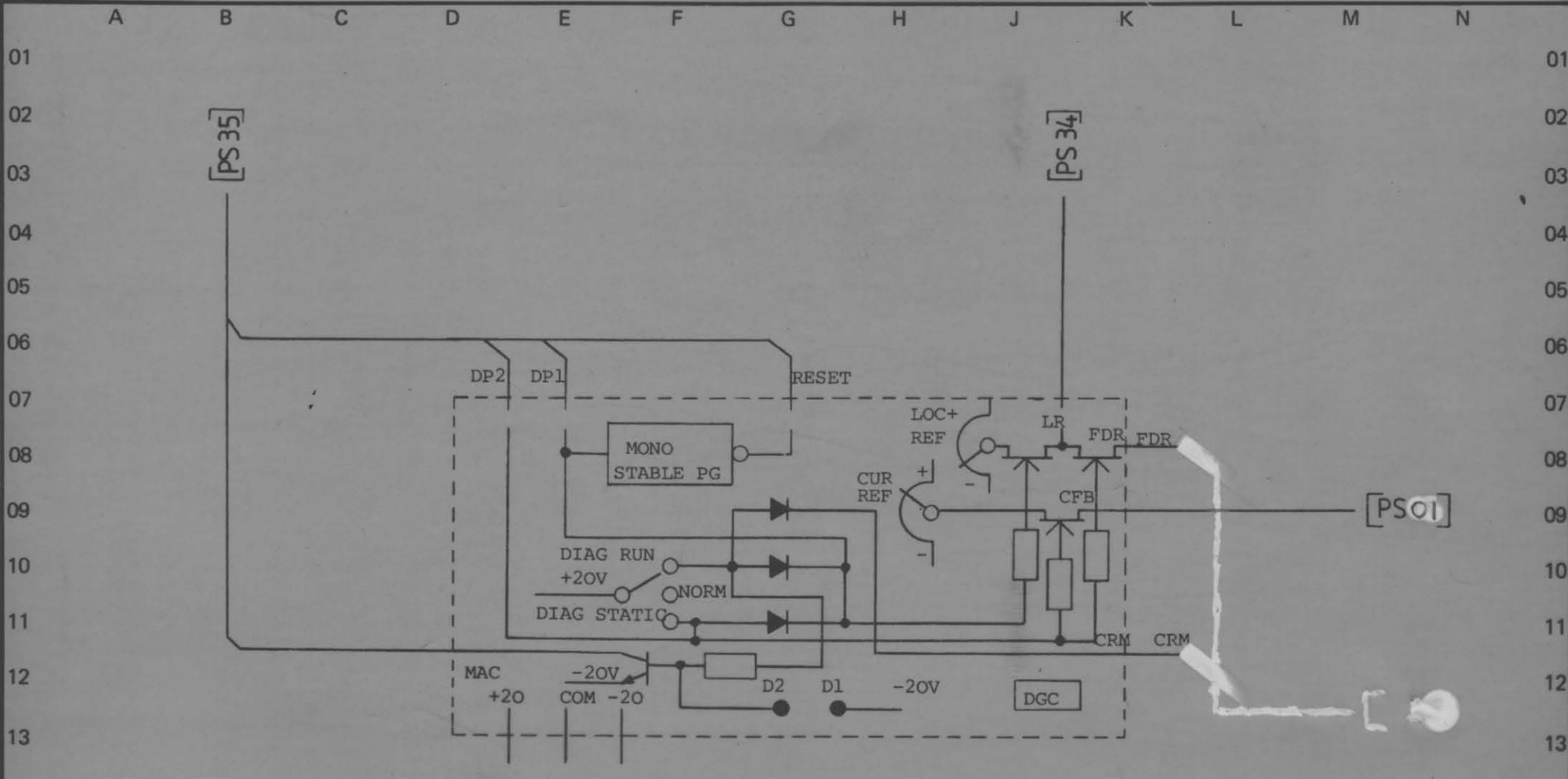


DR SH CONTD. ELEMENTARY DIAGRAM  
 902M122DC

TECHN. ENG. APPD.	TECHN. ENG. APPD.	DATE	 <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE VALVE CONTROL.		IDENT	
3 SEP 05B	CWA	31-3-80		TECHN. DM	INTERFACE + MAIN CONTROL CARDS		DR SH
7-12-81			APPD. WBM	GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 3F	3 E

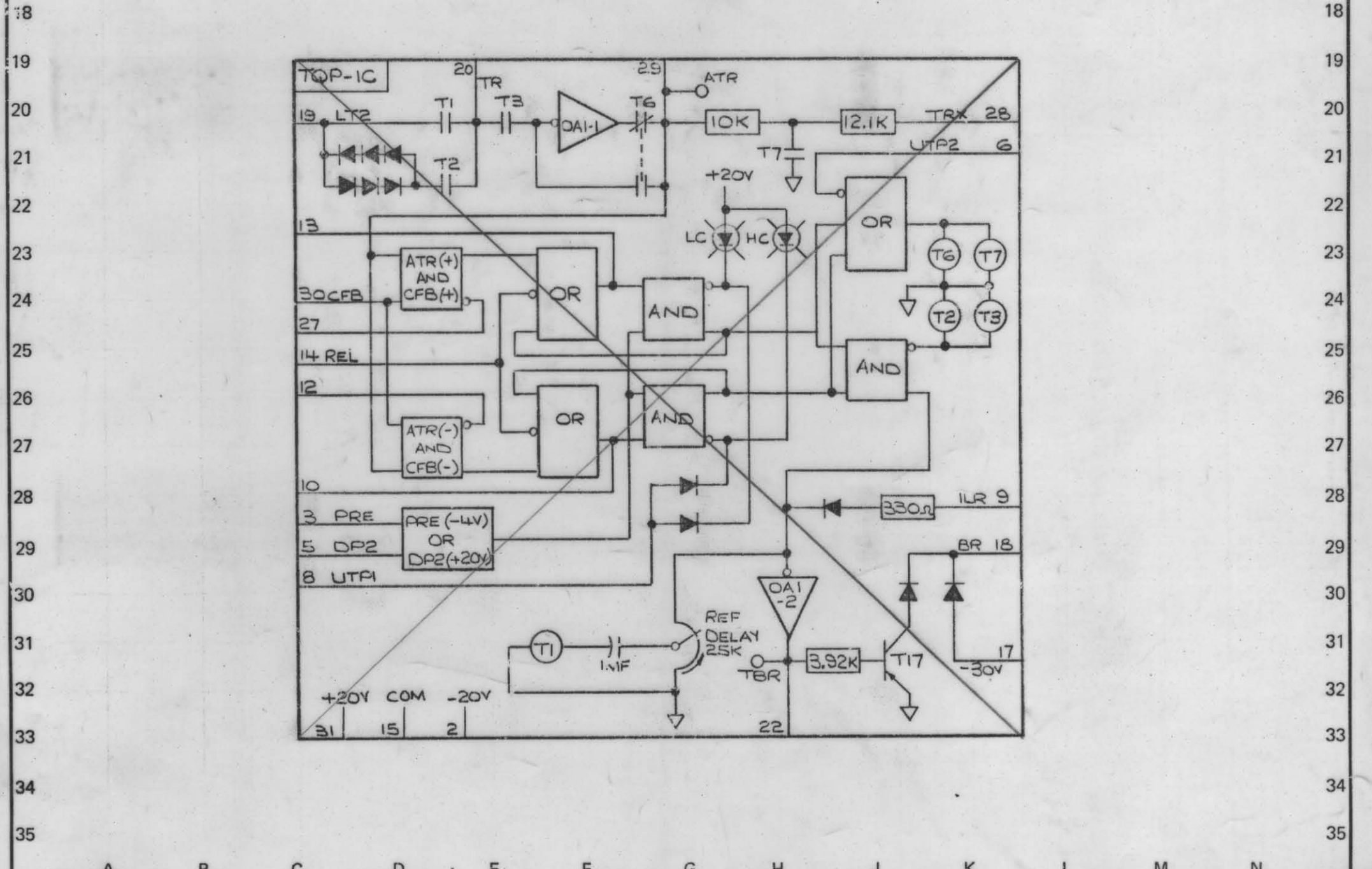
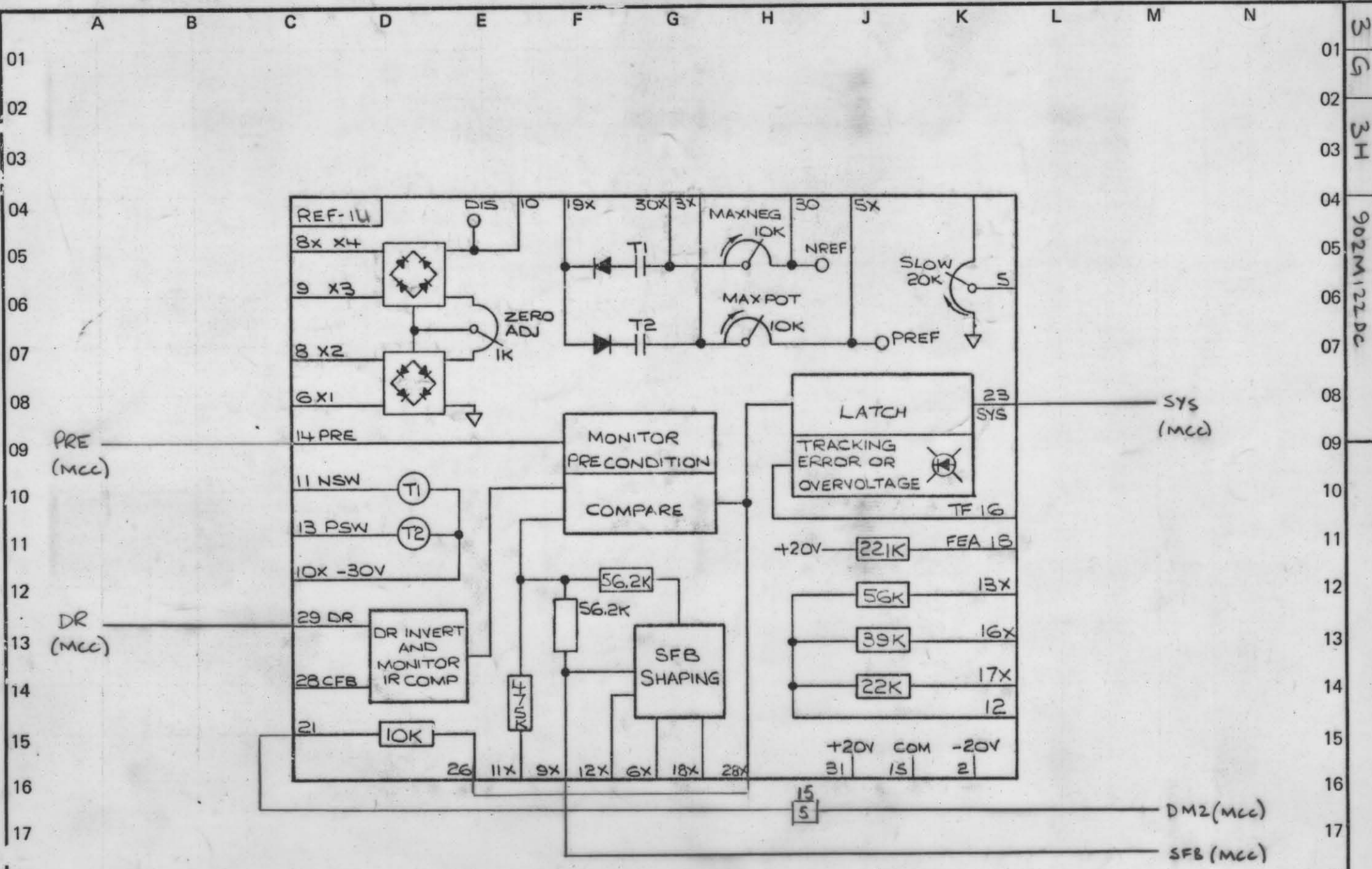
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TECHN. CWH	ENG. WJS	APPD. WJS	TECHN. FM	ENG. FM	APPD. FM	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE VALUTROL.			IDENT	
RESISTOR R6-IV ADDED. SEE OSB						TECHN. DM		DIAGNOSTIC + SIGNAL LEVEL DETECTOR			DR	SH
7-16-81						APPD. WBM		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 3G	3 F	
3 12 80												

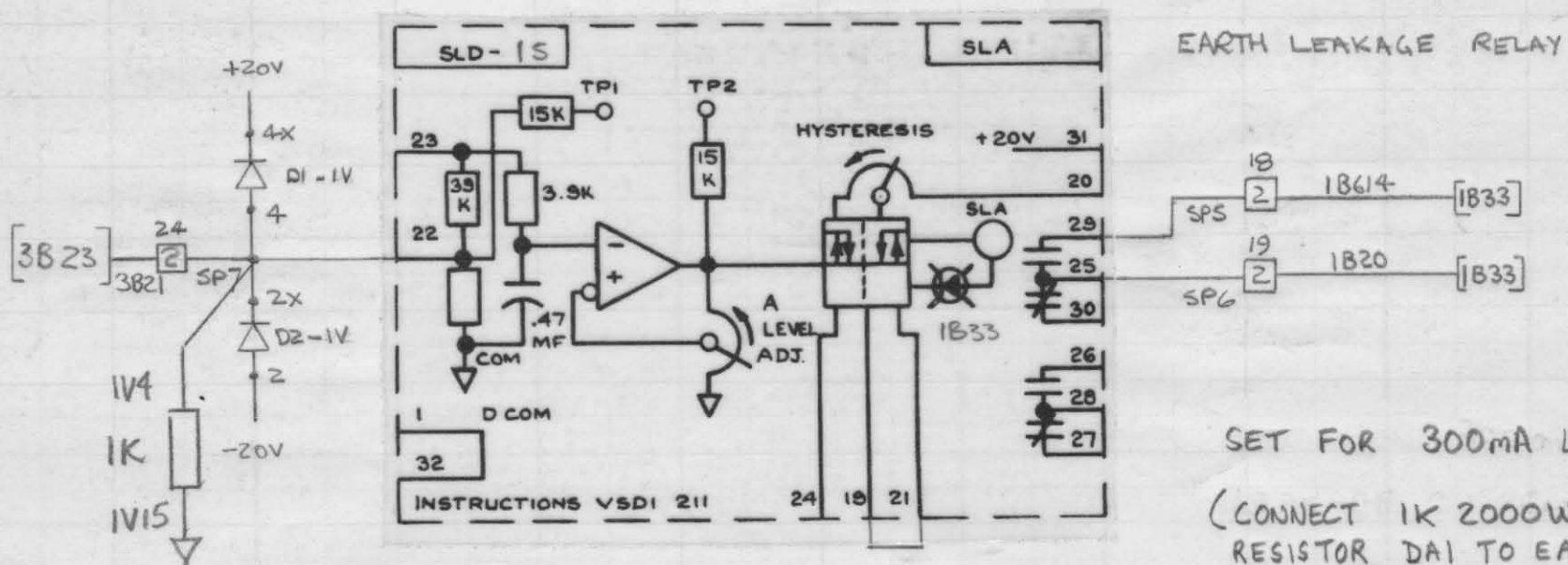
DR 3 G SH CONTD. 3 H ELEMENTARY DIAGRAM 902M122DC



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	31-3-80		 <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE VALUTROL. REFERENCE CARD.			IDENT DR SH	
						TECHN.	DM			GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	3	G
						ENG.	WBM/TP			948901	902M122DC	3H		
						APPD.	WBM							

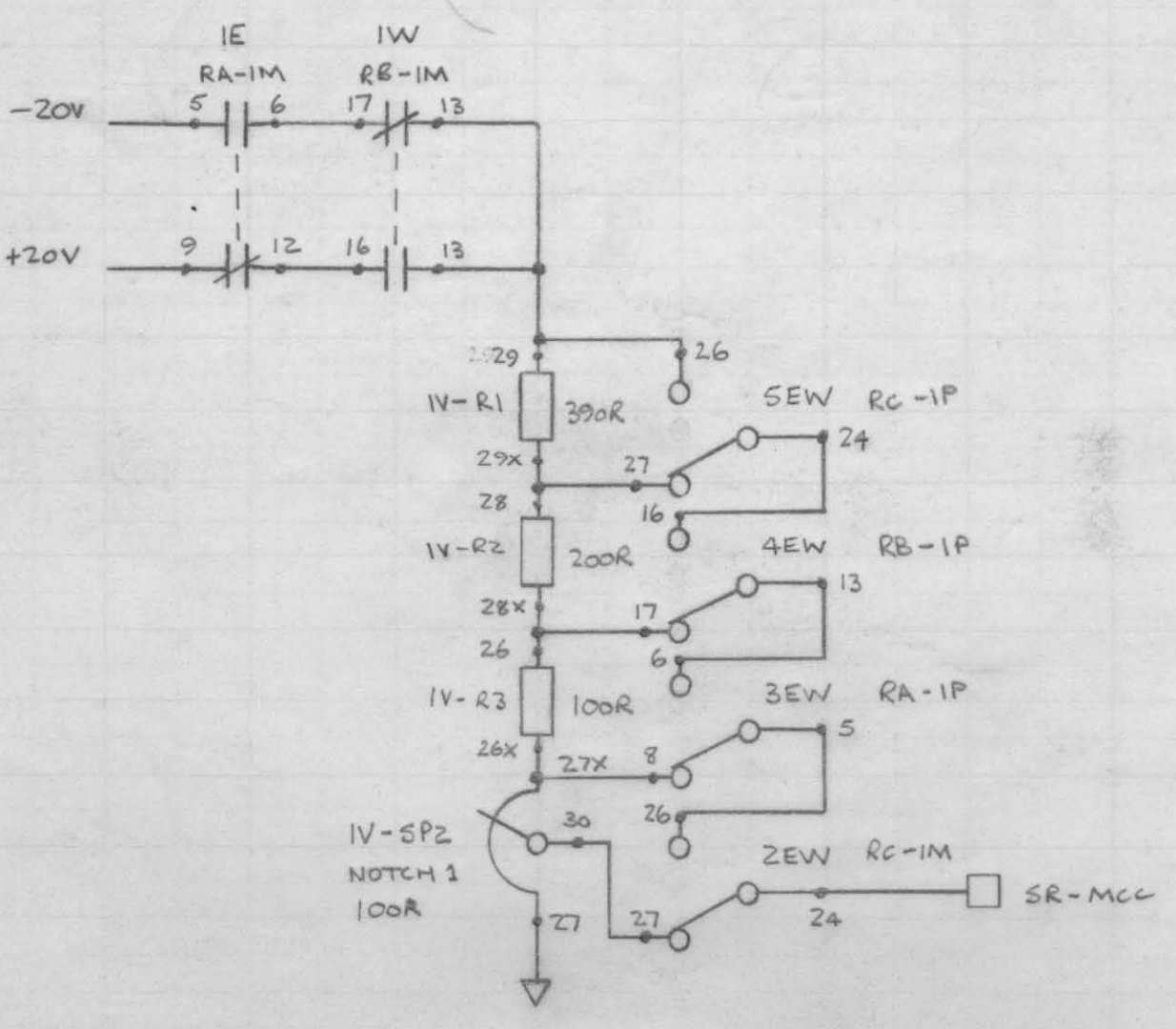
Disclaimer Statement The trade mark is the trade mark of General Electric Company of U.S.A., which is not connected with the English Company of a similar name.





TO CHECK DEPRESS TEST PB (SEE SH 38)  
ADJUST LEVEL UNTIL SLD 'A'  
LED ILLUMINATES

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE			CROSS TRAVERSE VALUTROL.		IDENT	
4	SEB	05B	2	WBM	AP	31-3-80			EARTH LEAKAGE DETECTOR.			
							VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR
									948901	902M122DC	3J	SH
												3
												H



PREVENTS RE-START FROM LOW VOLT SUPPLY

RESISTOR 390R

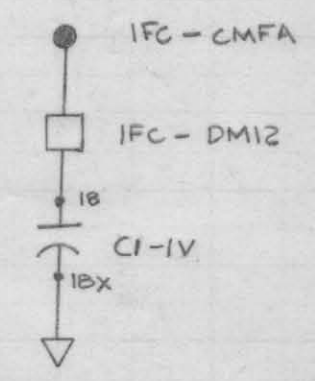
RESISTOR 200R

RESISTOR 100R

RESISTOR 100R

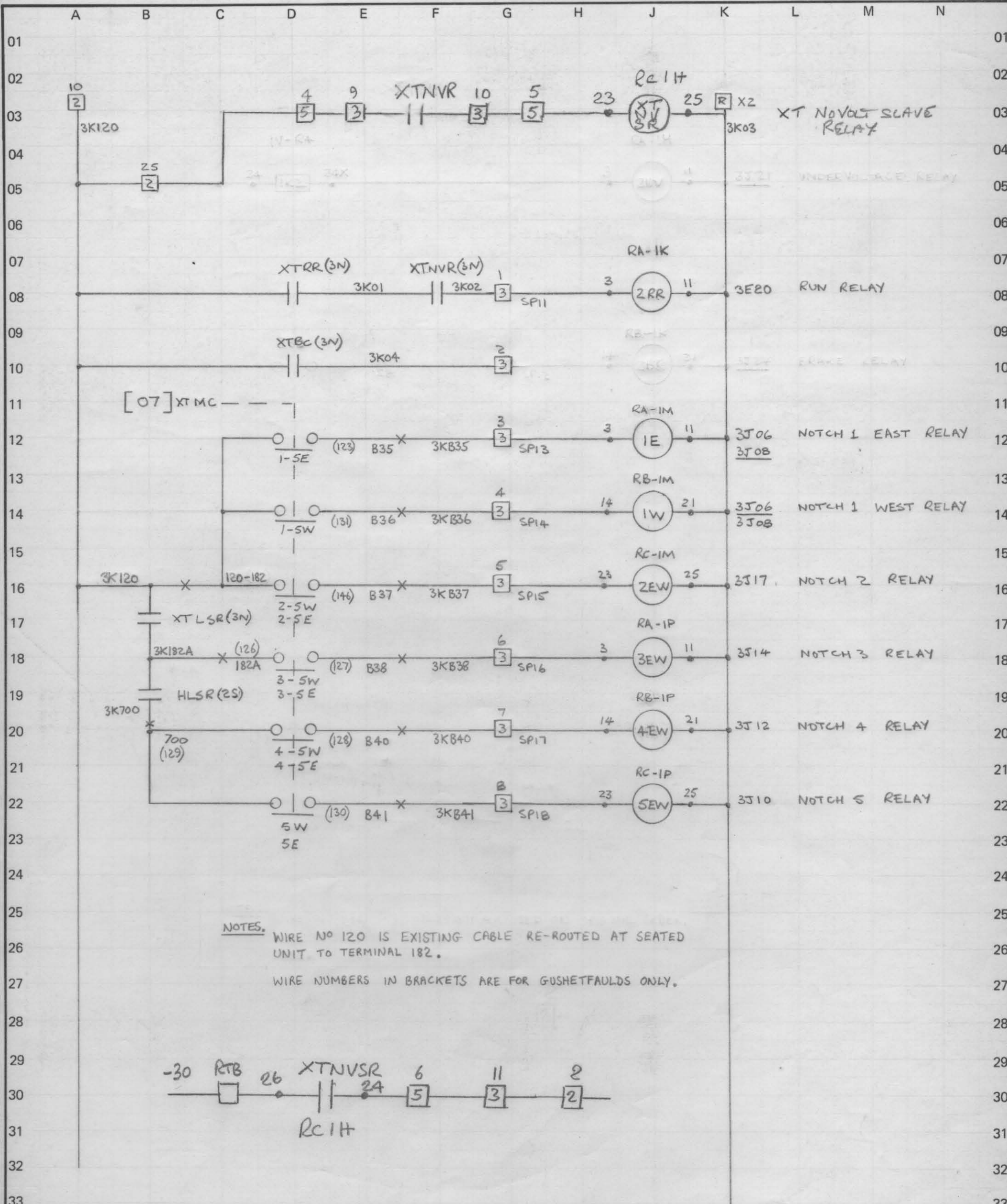
RE-START

UNTIL BRKES LIFTED



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	 <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE VALVTROL. REFERENCE CIRCUIT.			IDENT	
4			SEE SHEET 05			31-3-80		TECHN. DM	GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR SH
								ENG. Wbm/AP	948901	902M122DC	3K	3 J
							APPD. Wbm					





NOTES.  
 WIRE NO 120 IS EXISTING CABLE RE-ROUTED AT SEATED UNIT TO TERMINAL 182.  
 WIRE NUMBERS IN BRACKETS ARE FOR GUSHETFAULDS ONLY.

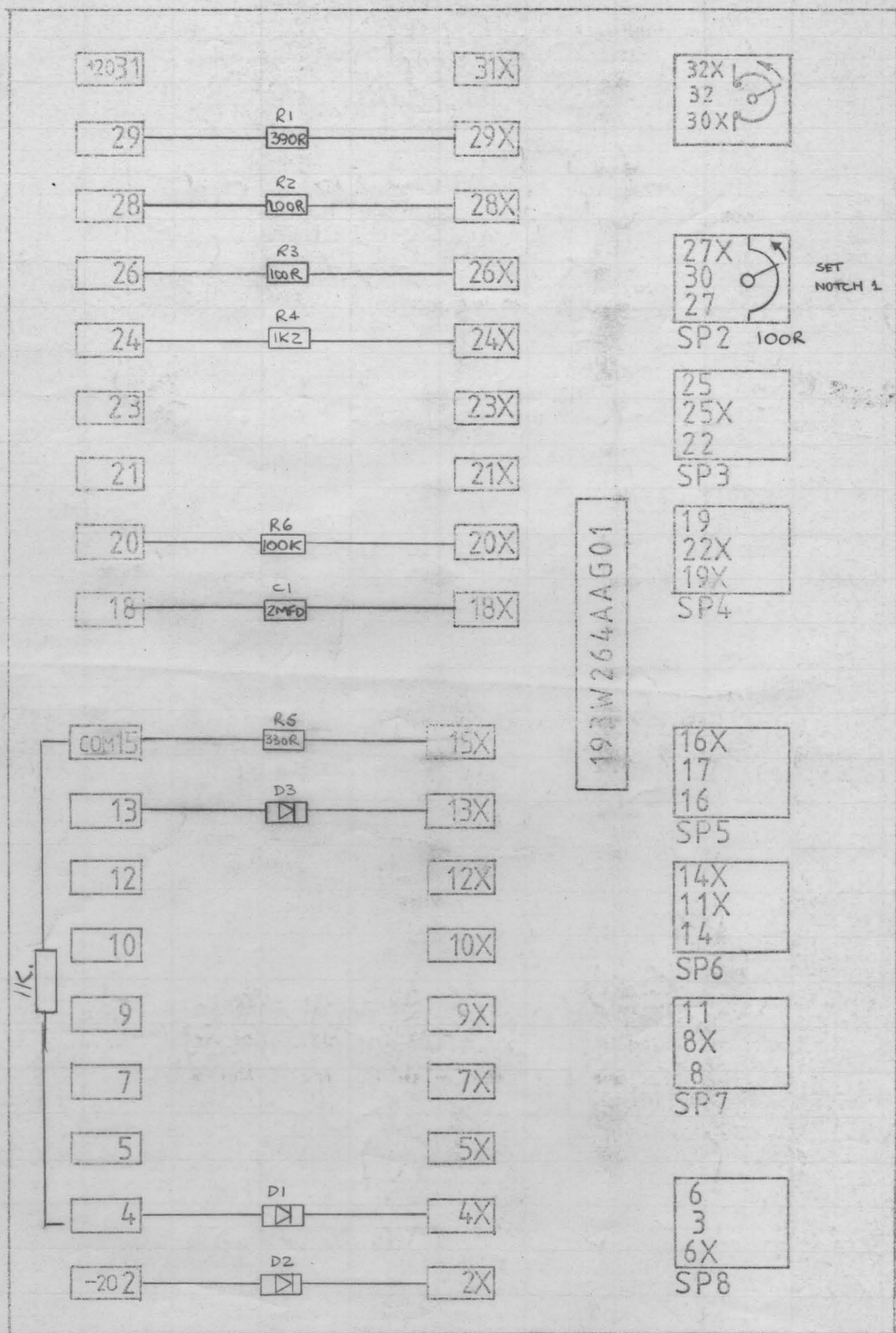
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	ALLENWEST				CROSS TRAVERSE VALUTROL.			IDENT	
			CWH			31-3-80	Simplex				LOW LEVEL RELAYS.			DR SH	
4	SER 05B	2	SEE SHEET 05.				VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.				GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	3	K
	26-4-84		DATE 29-5-80								948901	902M122 DC	3L		

502410025 31013

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DR 3  
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CONTD. 3M  
ELEMENTARY DIAGRAM 902M122DC

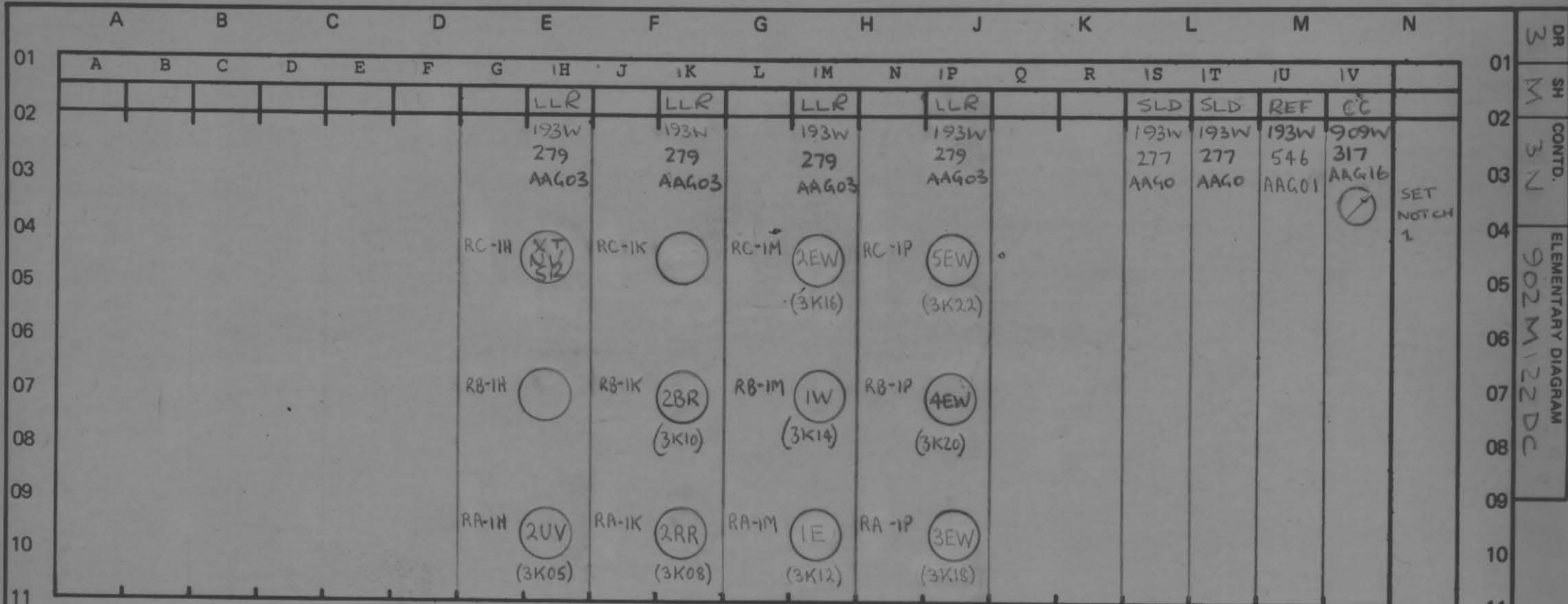


CARD PART NO. 909W317AAG16 FIT IN RACK POSITION IV

TECHN. <i>SEP</i>	APPD. <i>OSB</i>	TECHN. <i>C.W.H.</i>	APPD. <i>WBM</i>	DATE <i>31-3-80</i>	 <b>Simplex</b> <small>VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.</small>	CROSS TRAVERSE VALUTROL. COMPONENT CARD LAYOUT.			IDENT	
<i>3</i>	<i>1.6.82</i>	<i>2</i>	<i>3-2-81</i>	TECHN. <i>DM</i>		GO NUMBER <i>948901</i>	ELEMENTARY DIAGRAM <i>902M122DC</i>	CONTD. <i>3M</i>	DR <i>3</i>	SH <i>L</i>
				ENG. <i>WBM/AP</i>						
				APPD. <i>WBM</i>						

Disclaimer Statement The trade mark is the trade mark of General Electric





DR 3  
SH M  
CONTO. 3N  
ELEMENTARY DIAGRAM 902M122DC

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

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

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

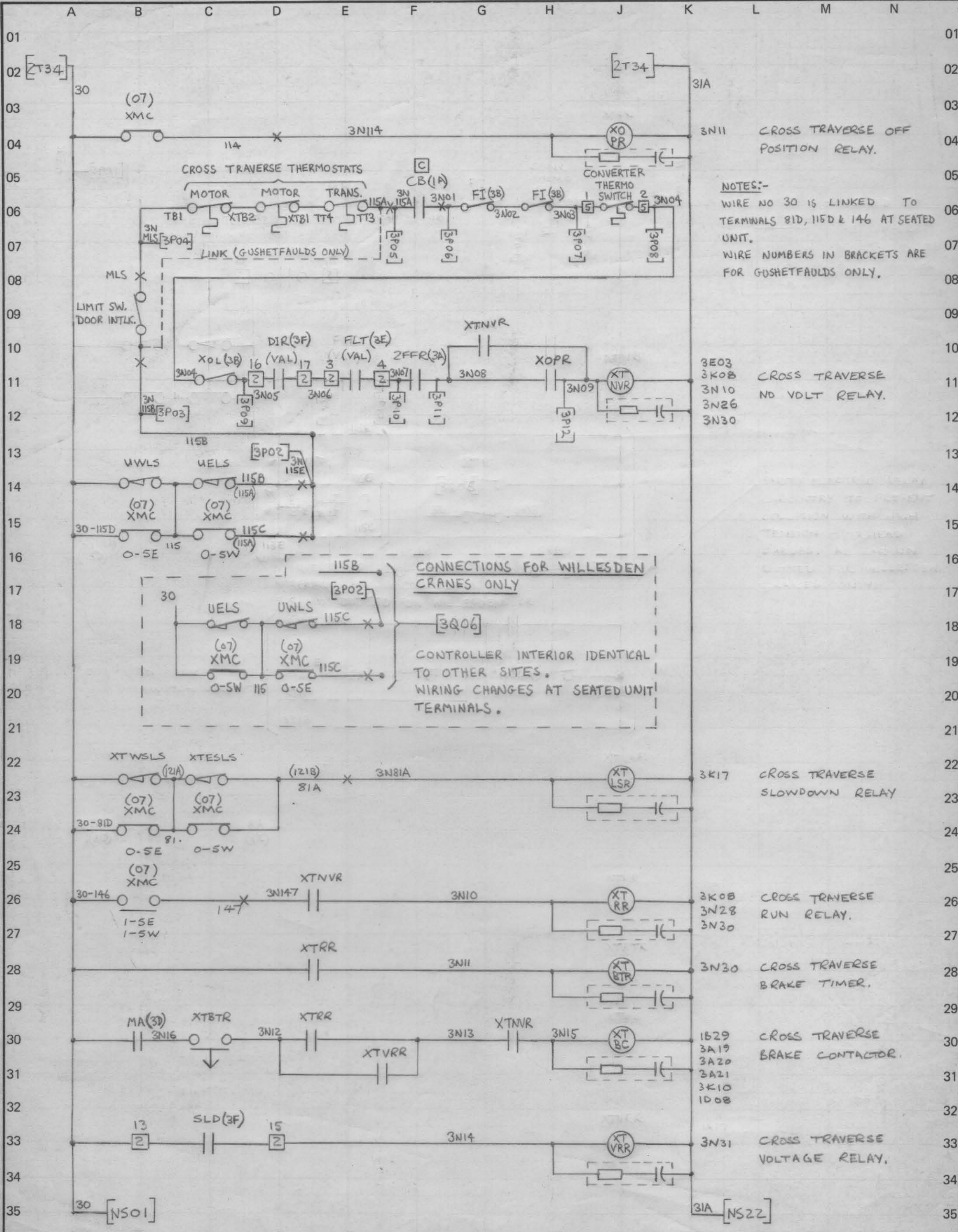
SYMBOLS:  
 ● TEST POST      ⊗ POT ADJUSTMENT      ⊗ INDICATING LIGHT

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

BUS IV2 - IH2	CENF(MCC) - IT22	IV26 - IP17	SP1 - IT29
BUS IV15 - IH15	DPI(MCC) - IV20	IV26X - IV27X	SP2 - IT25
BUS IV31 - IH31	IT19 - IT21	IV27X - IP8	SP3 - IT10
BUS IV32 - IH32	PRE(MCC) - IU14	IV27 - IV15	SP4 - IT3
BUS IP11 - IH11	DR(MCC) - IU29	IV30 - IM27	SP5 - IS29
BUS IP21 - IH21	SYS(MCC) - IU23	IP24 - IP16	SP6 - IS25
BUS IP25 - IH25	SFB(MCC) - IU9X	IP13 - IP6	SP7 - IV4
	DM2(MCC) - IU28X	IP5 - IM26	SP8 - IV24
RTB(-20) - IV2	IV4 - IV2X	SR(MCC) - IM24	SP11 - IK3
RTB(COM) - IV15	IV2X - IS22	DM3(MCC) - IH9	SP12 - IK14
RTB(+20) - IV31	IV4X - IV31	IH12 - IV13	SP13 - IM3
RTB(X2) - IP11	IS19 - IS21	IV13X - TRIP(ACC)	SP14 - IM14
IP11 - IP21	IM2 - IM5	DM12(IFC) - IV18	SP15 - IM23
IP21 - IP25	IM6 - IM17	IV18X - IV15	SP16 - IP3
	IM13 - IV29	2TB10 - 2TB25	SP17 - IP14
	IV29 - IP26	IV24X - IH3	SP18 - IP23
	IM31 - IM9	DM4(MCC) - IK13	
	IM12 - IM16	IK17 - IV15X	
	IV29X - IV28	IK5 - 2TB1	
	IV28 - IP27	IK6 - 2TB14	
	IV28X - IV26	IV20X - IT11	

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

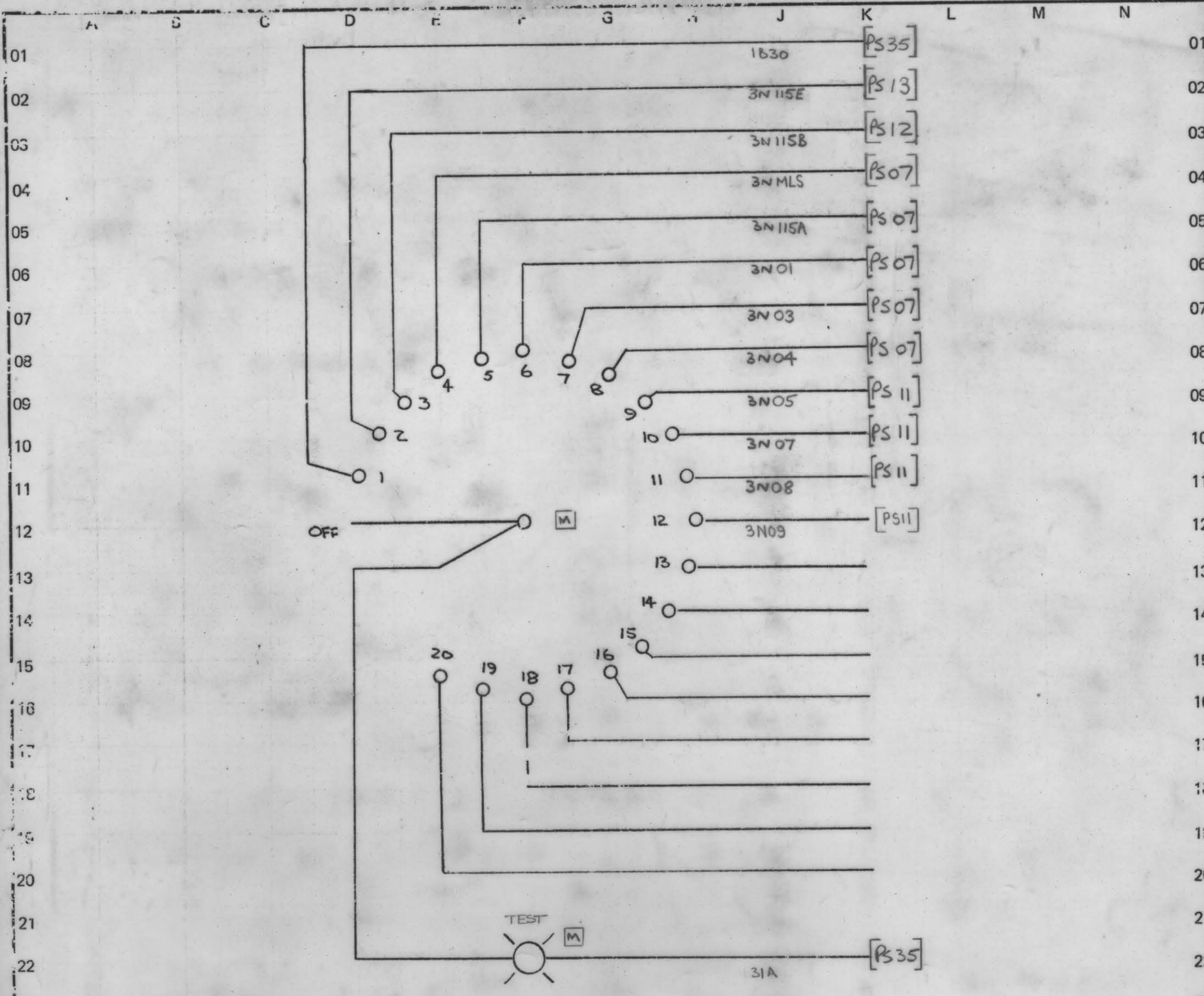
TECHN. <i>NGM</i>	APPD. <i>WBM</i>	TECHN. <i>CWH</i>	ENG. <i>WBM</i>	APPD. <i>WBM</i>	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE VALUTROL RACK LAYOUT + JUMPER TABLE			IDENT	
SEE SHEET OSA		LOW LEVEL RELAYS SHOWN.		TECHN. DM	ENG. <i>WBM/AP</i>		GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTO. 3N	DR 3	SH M
DATE 4-3-81		DATE 8-5-80		APPD. <i>WBM</i>							



TECHN. CWH.	ENG. [Signature]	APPD. [Signature]	TECHN. CWH.	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE A.C. CONTROL.			IDENT		
8	SEE SHEET 05A.		2	XTNRV CONTACT ADDED IN LINE 30.	MA CONTACT ADDED IN LINE 30.	TECHN. DM			GO NUMBER 948901	ELEMENTARY DIAGRAM 902M122DC	CONTD. 3P	DR 3	SH N
	DATE 19-3-81					APPD. Wbm							



DR 3  
SH P  
CONTD. 3Q  
ELEMENTARY DIAGRAM  
902M122DC



Pos.	TEST FUNCTION	Pos	TEST FUNCTION
0	OFF.	11	CROSS TRAVERSE FIELD FAILURE RELAY.
1	TEST LAMP.	12	NVR COIL
2	CROSS TRAVERSE ULTIMATE LIMIT SWITCHES	13	
3	SLEW INTERLOCK (WILLESDEN ONLY).	14	
4	CROSS TRAVERSE LIMIT SW. DOOR INTERLOCK.	15	
5	MOTOR + TRANSFORMER THERMOSTATS.	16	
6	CB	17	
7	FUSE TRIP INDICATORS.	18	
8	CONVERTER THERMAL SWITCHES.	19	
9	MOTOR OVERLOAD.	20	
10	VALUTROL FAULT RELAY DIAGNOSTIC SWITCH		

NOTE. POSITIONS 3,4&5 NOT USED ON GUSHETFAULDS

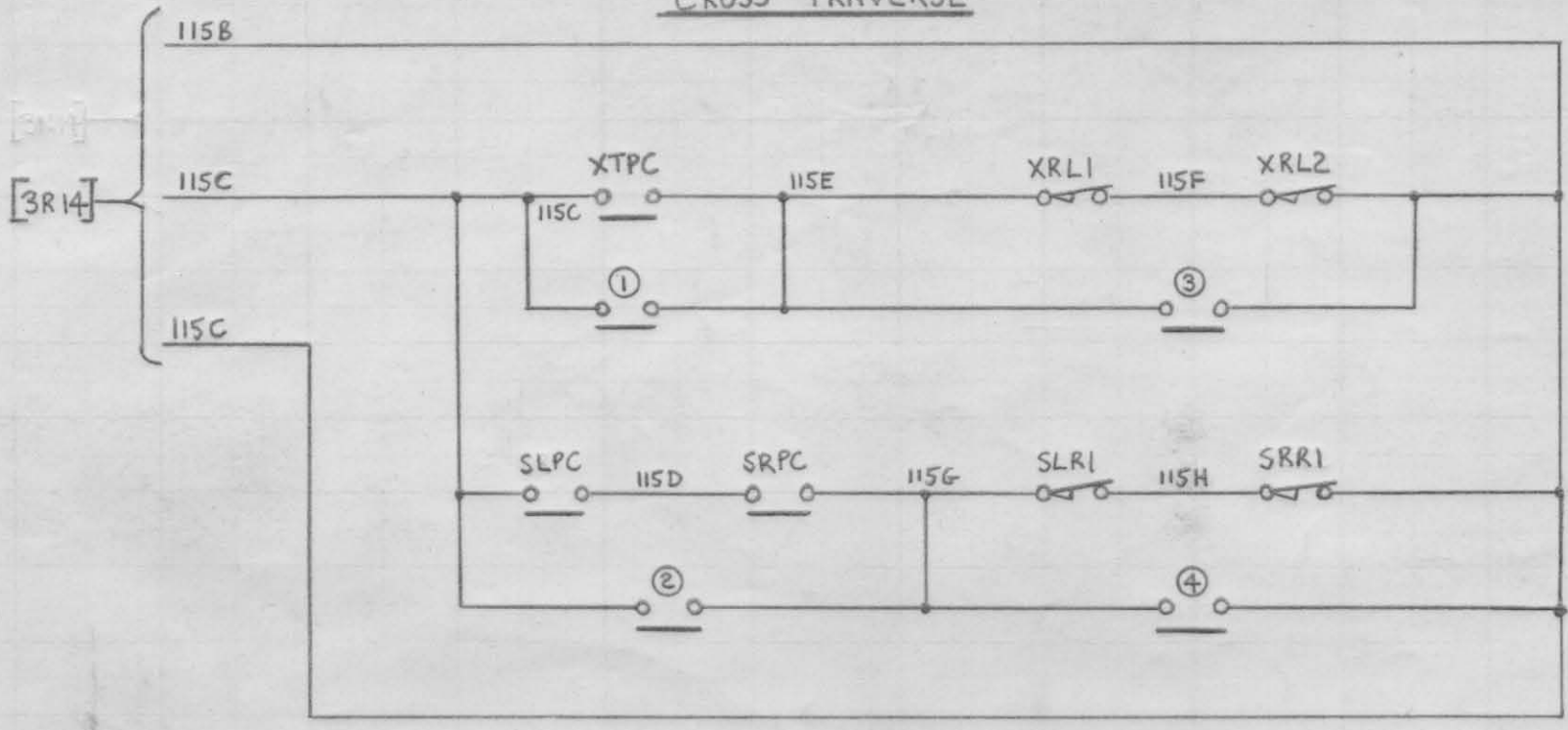
TECHN. R.A.A.	ENG. [Signature]	APPD. [Signature]	TECHN. C.W.H.	ENG. [Signature]	APPD. [Signature]	DATE 31-3-80	 VARIABLE SPEED DRIVES OPER. TIO.J. BRIGHTON, ENGLAND.	CROSS TRAVERSE TEST SWITCH.	IDENT  DR SH 3 P
SEE SHEET 05A	SEE SHEET 05	TECHN. DM	TECHN. DM	ENG. Wbm/AP	APPD. Wbm		GO NUMBER 948901	ELEMENTARY DIAG. 902M122DC	CONTD. 3Q
DATE 29-10-80	DATE 29-5-80								

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

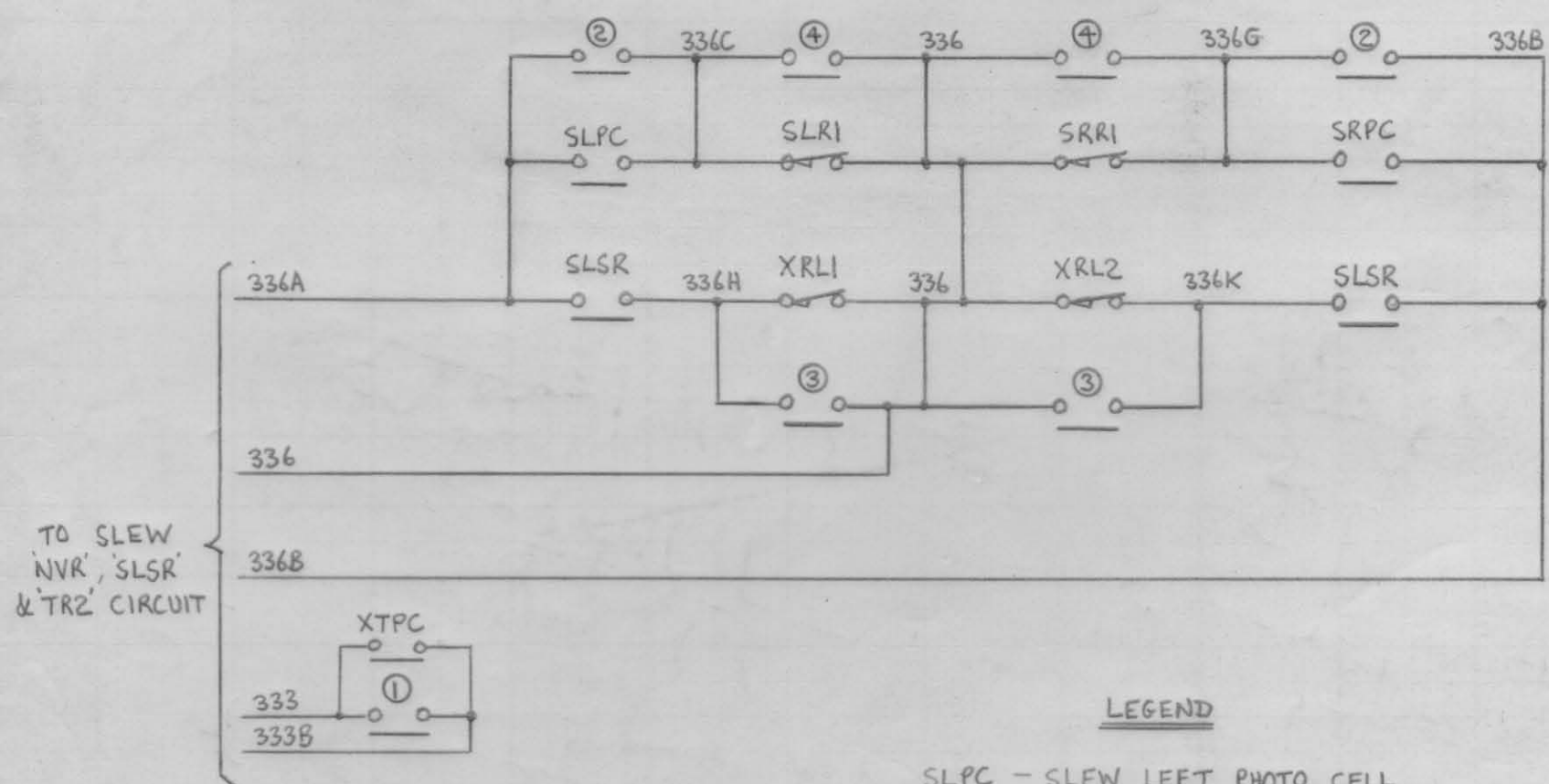
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CROSS TRAVERSE



SLEW



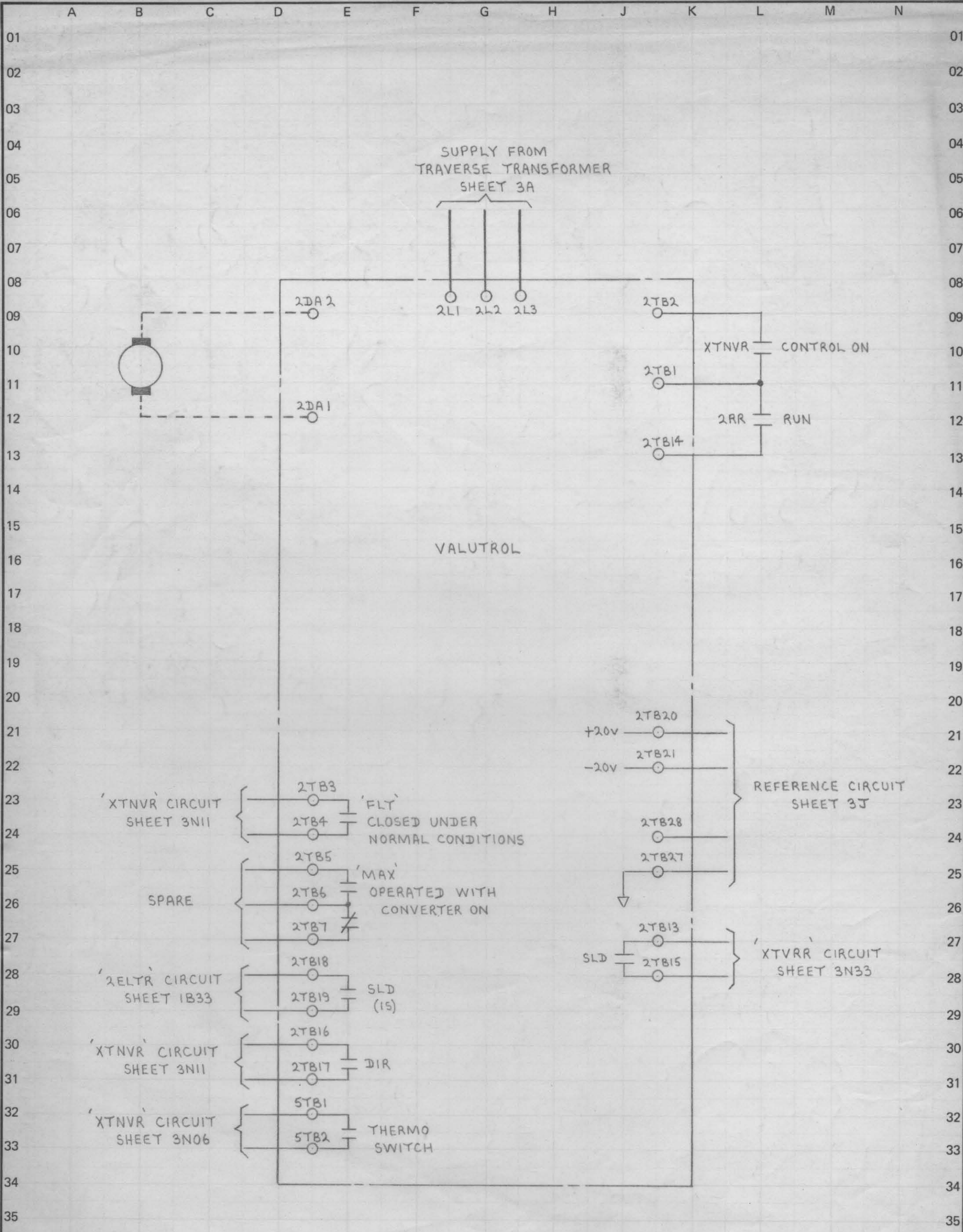
LEGEND

- SLPC - SLEW LEFT PHOTO CELL
- SRPC - " RIGHT " "
- SLR1 - " LEFT RESTRICTION LIMIT SWITCH N°1
- SRR1 - " RIGHT " " " "
- SLSR - " PHOTO ELECTRIC SLAVE RELAY
- XRL1/2 - TRAVERSE RESTRICTION LIMIT SWITCHES.
- XTPC - TRAVERSE PHOTO CELL RELAY

- KEY OPERATED SELECTOR SWITCHES
- ① - TEST XT RESTRICTION LIMIT SWITCHES
  - ② - " SLEW " " " "
  - ③ - TEST XT PHOTO ELECTRIC CELL SYSTEM
  - ④ - " SLEW " " " "

TECHN. APPD.	TECHN. APPD.	DATE	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	PHOTO ELECTRIC RELAY CIRCUITRY TO PREVENT COLLISION WITH HIGH TENSION OVERHEAD CABLES.	IDENT
ENG. CWH.	ENG. WBM	6-6-80		WILLESDEN CRANES ONLY.	DR
2	SEE SHEET 05	TECHN. C.W.H.		GO NUMBER 948901	SH
DATE 16-6-80		APPD. WBM		ELEMENTARY DIAGRAM 902M122DC	3 Q
				CONTD. 3R	





TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	2-12-80	  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	CROSS TRAVERSE VALUTROL SIGNAL INPUTS & OUTPUTS			IDENT		
						TECHN.	R.A.A.		GO NUMBER	948901	ELEMENTARY DIAGRAM	902M122DC	CONTD.	FL
						ENG.	<i>[Signature]</i>						DR	3
						APPD.	<i>[Signature]</i>						SH	R

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