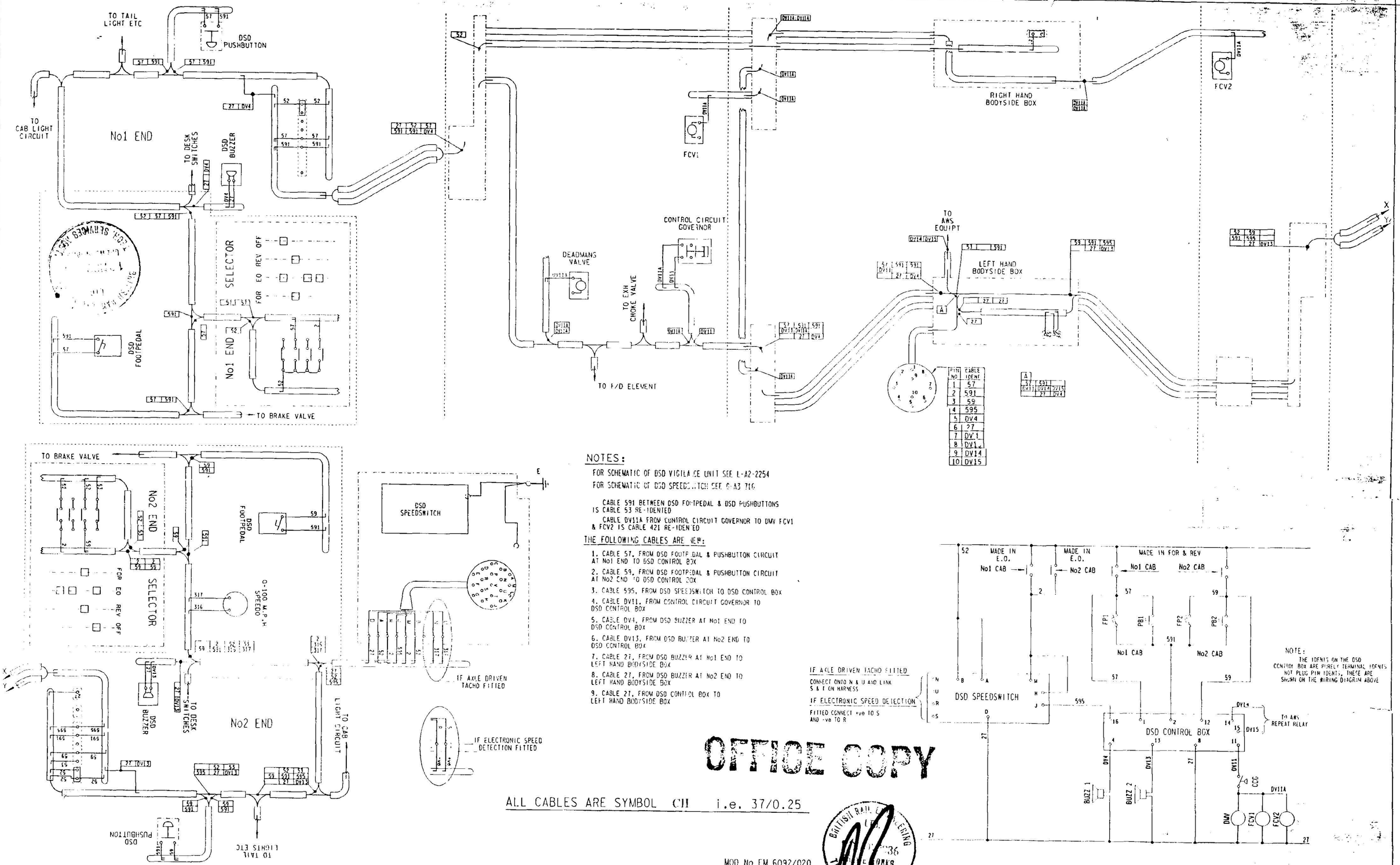

PIN NO	CABLE IDENT
1	57
2	591
3	59
4	595
5	DV4
6	27
7	DV1
8	DV11
9	DV14
10	DV15

NOTES:

FOR SCHEMATIC OF DSD VIGILANCE UNIT SEE L-A2-2254

FOR SCHEMATIC OF DSD SPEEDSWITCH SEE G-A3 716

CABLE 591 BETWEEN DSD FOOTPEDAL & DSD PUSHBUTTONS IS CABLE 53 RE-IDENTED

CABLE DV11A FROM CONTROL CIRCUIT GOVERNOR TO DMV FCV1 & FCV2 IS CABLE 421 RE-IDENTED

THE FOLLOWING CABLES ARE NEW:

1. CABLE 57, FROM DSD FOOTPEDAL & PUSHBUTTON CIRCUIT AT No1 END TO DSD CONTROL BOX
2. CABLE 59, FROM DSD FOOTPEDAL & PUSHBUTTON CIRCUIT AT No2 END TO DSD CONTROL BOX
3. CABLE 595, FROM DSD SPEEDSWITCH TO DSD CONTROL BOX
4. CABLE DV11, FROM CONTROL CIRCUIT GOVERNOR TO DSD CONTROL BOX
5. CABLE DV4, FROM DSD BUZZER AT No1 END TO DSD CONTROL BOX
6. CABLE DV13, FROM DSD BUZZER AT No2 END TO DSD CONTROL BOX
7. CABLE 27, FROM DSD BUZZER AT No1 END TO LEFT HAND BODYSIDE BOX
8. CABLE 27, FROM DSD BUZZER AT No2 END TO LEFT HAND BODYSIDE BOX
9. CABLE 27, FROM DSD CONTROL BOX TO LEFT HAND BODYSIDE BOX

IF AXLE DRIVEN TACHO FITTED
CONNECT ONTO N & U AND LINK S & E ON HARNESS

IF ELECTRONIC SPEED DETECTION FITTED CONNECT +ve TO S AND -ve TO R

NOTE: THE IDENTS ON THE DSD CONTROL BOX ARE PURELY TERMINAL IDENTS NOT PLUG PIN IDENTS, THESE ARE SHOWN ON THE WIRING DIAGRAM ABOVE

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ALL CABLES ARE SYMBOL CH i.e. 37/0.25

MOD No FM 6092/020

ISSUE LETTER	ALTERATION	DRAWN INITIALS	DATE
A	FIRST ISSUE	J.M.	11.7.85
B	MOD No ADDED	J.M.	23.10.85

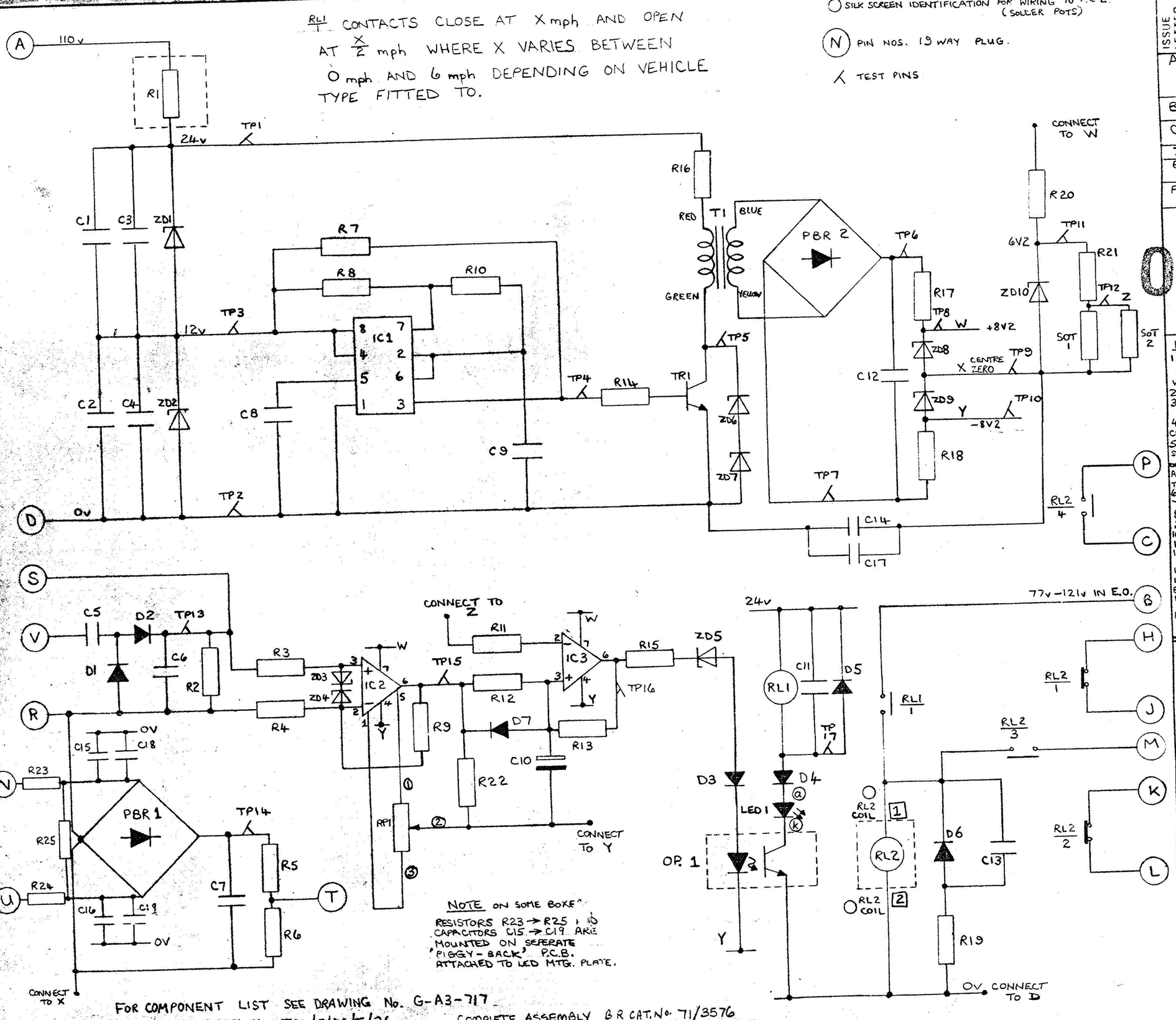
VEHICLE CLASSES: ALL 47'S EXC 47/7's & 47/9

MECHANICAL & ELECTRICAL ENGINEER BRITISH RAILWAYS BOARD

TITLE: VIGILANCE DSD WIRING DIAGRAM CLASS 47

B3-CO-8002019

ISSUE LETTER	A	B						
DRAWN	CHECKED	APPROVED	DATE
J.M.	B.FOGG	K.ELSON	11.7.85



NOTE ON SOME BOXES RESISTORS R23 → R25 AND CAPACITORS C15 → C19 ARE MOUNTED ON SEPERATE 'PIGGY-BACK' P.C.B. ATTACHED TO LED MTG. PLATE.

FOR COMPONENT LIST SEE DRAWING No. G-A3-717

TEST SPECIFICATION TDE/E/78/T/36

COMPLETE ASSEMBLY B.R. CAT. No. 71/3576

ASSEMBLED P.C.B. ONLY B.R. CAT. No. 71/3667

ISSUE LETTER	ALTERATION	DMANS INITIALS	DATE
A	CONTACTS RL2/3 AND RL2/4 ADDED, PINS P, C AND M ADDED NOTE 16 ADDED	GWW	16/8/79
B	RL2 COIL AND RP1 LEADS NUMBERED	GWW	10/10/79
C	RESISTOR R9 WAS CONNECTED TO PINS 3 AND 6 OF IC2	GWW	6/11/79
D	SPEED X WAS 2·7 TO 12mph.	GWW	18/5/81
E	CAPACITOR C14 ADDED mod.1 SPEED X WAS 0mph to 20mph	GWW	29/7/82
F	CAPACITORS C15 → C19, DIODE D7 AND RESISTORS R22 → R25 ADDED. MOD 2 DELETED.	GWW	16/6/83

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NOTES

1. CRIMPED CONNECTIONS ON 19 WAY CONNECTOR AND SOLDERED JOINTS ON SOLDER POTS AND LED 1 TO BE PROTECTED WITH SILICONE RUBBER SLEEVING.
2. ZD1, ZD2, RL2 AND TEST PINS NOT TO BE VARNISHED.
3. IDENTIFICATION PLATE TO BE RIVETED TO TOP OF BOX SEE DRG G-A2-719.
4. CONTACT BLANKING PLUGS TO BE FITTED TO CIRCULAR CONNECTOR WHERE CONTACTS NOT FITTED.
5. THE WIRING FROM THE PCB TO THE 19 WAY CONNECTOR SHALL BE TERMINATED BY SOLDERING TO A SUITABLE AREA ON THE P.C. TRACK AFTER ~~TAKING~~ THE WIRE THROUGH AN ADJACENT STRAIN RELIEVING HOLE. EACH STRAIN RELIEVING HOLE TO BE MARKED WITH APPROPRIATE LETTER ON SILK SCREEN.
6. ZD1, ZD2, SOT1, SOT 2 TO BE MOUNTED ON MTG. POSTS
7. LED1 TO BE MOUNTED ON SCREEN PLATE AND IDENTIFIED.
8. R1 TO BE MOUNTED ON BOX WITH HEATSINK COMPOUND.
9. WIRING FROM LED1 TO BE CLAMPED TO SCREEN PLATE WITH P CLIP.
10. RP1 TO BE ACCESSIBLE ON REMOVAL OF BOX LID.
11. BOX TO BE EARTHED TO B.R. SPEC. TDE/76/R/38.
12. COMPONENTS AND CONSTRUCTION OF PCB SHOULD CONFORM TO SPEC. RIA 13.
13. THE COMPLETED BOX SHOULD BE TESTED TO SPEC. TDE/78/T/36
14. THE FIRST COMPLETED BOX SHALL BE INSPECTED AND TESTED BY THE TRACTION ENGINEER CM/EE (ERS) OR HIS REPRESENTATIVE.
15. THE SOLDERED CONNECTIONS TO RESISTOR R1 SHOULD BE PROTECTED BY A HEATSHRINK SLEEVE
16. CONTACTS ~~RL3~~ AND RL2/4 ARE THE NORMALLY OPEN CONTACTS ADJACENT TO THE COIL OF RL2.

D.S.D. SPEED SWITCH

SCHEMATIC

CHIEF MECHANICAL & ELECTRICAL ENGINEER
BRITISH RAILWAYS BOARD

BRITISH RAIL ENGINEERING LTD. TECH. SERVICES ASSOC.

Scale	A	B	C	D	E
Drawing No. G-A3-716	F				

Drawn	Traced	Checked	Date
GWW		GWW 26-1-79	

BR888/18

ITEM No.	NAME	SYMBOL	VALUE	RATING	TYPE		MANUFACTURER	B.R. CAT. No.	B.S./B.R. SPEC. No.	QUANTITY TYPE A	TYPE B	TYPE 'D'	TYPE 'C'
1	AMPLIFIER	I.C.2 – I.C.3		-55 ⇒ +125°C	LM1T2/LM7HH/CA	4HH/741HM	SGS/N.S./RCA/FAIRCHLD			2	2	2	2
2	TIMER	I.C. 1			LM555H		NATIONAL SEMICONDUCTOR			1	1	1	1
3	CAPACITOR	C17, C18 – C19	0M62 ±20%	160 V D.C.	POLYESTER- TFM	MKT1813 250V 10%	WIMA/ROEDERSTEIN			3	3	3	3
4	POTTED BRIDGE RECTIFIER	PBR1 – PBR2		1A 1000 V	1KAB 100		IR			2	2	2	2
5	CAPACITOR	C1 – C2	2µ2	63V D.C.	BIA 222 05A	MKT1813±10%	ASHCROFT/ROEDERSTEIN			2	2	2	2
6	"	C14-C15-C16	10 000 pF	500v D.C.	811 ±20% K350081		ERIE			3	3	3	3
7	"	C5	2200 pF±20%	160 V.D.C	WIMA FKC3		WIMA			1	1	1	1
8	"	C7	0M47 ±20%	160/250 V.D.C.	POLYESTER TFM	MKT 1813 250V 10%	"/ROEDERSTEIN			1	1	1	1
9	"	C8	0M01 ±20%	400V D.C	" "	MKT1813 ±10%	"/ROEDERSTEIN			1	1	1	1
10	"	C9	0M022±20%	160/400V D.C.	" "	" "	" "			1	1	1	1
11	"	C10	47M +50% -10%	63v D.C.	016 18479 OR	031-38479	MULLARD			1	1	1	1
12	"	C11	0µ1	250/160V D.C.	MKT 1813 ±10%	BIA 101 05A 20%	ROEDERSTEIN/ASHCROFT			1	1	1	1
13	"	C12	10µ ±20%	63v D.C.	POLYESTER TFM / MKT1813 610-06	3/6/B2A 1023 01A	WIMA/STEATITE ROEDERSTEIN/ASHCROFT			1	1	1	1
14	"	C13	0M1 ±20%	1250V D.C.	LD 3101 10A		ASHCROFT			1	1	1	1
15	TRANSISTOR	TR1		1A	ZN3440		FERRANTI			1	1	1	1
16	ZENER DIODE	ZD1 – ZD2	12v ±5%	5w	IN5349B		MOTOROLA			2	2	2	2
17	" "	ZD3 – ZD4	7V5 ±5%	400 mW	BZY88C 7V5	BS9305 NO41	MULLARD			2	2	2	2
18	" "	ZD5	2V7 ±5%	"	BZY88C 2V7	" "	"			1	1	1	1
19	" "	ZD6 – ZD7	22v ±5%	"	BZY88C 22V	" "	"			2	2	2	2
20	" "	ZD8 – ZD9	8V2 ±5%	"	BZY88C 8V2	" "	"			2	2	2	2
21	" "	ZD10	6V2 ±5%	"	BZY88C 6V2	" "	"			1	1	1	1
22	DIODE	D1 ⇒ D4, D7	IN914	250 mW	IN914 TO BS 9300-C	367/368/756/757	TEXAS INSTRUMENTS			5	5	5	5
23	"	D5		100mA PIV	1OD10 OR CV10230		IR			1	1	1	1
24	"	D6	1300V PIV 3A		BY 255		THOMSON CSF	26/117313		1	1	1	1
25	LIGHT EMITTING DIODE	LED 1					BULGIN		TDE/E/77/P/60 ITEM 5	1	1	1	1
26	OPTO-ISOLATOR	OP. 1			TIL113 300%	TRANSFER RATIO MIN	TEXAS INSTRUMENTS			1	1	1	1
27	POTENTIOMETER	RP1	10KΩ	3/8" SQUARE	MODEL 64W/3299W	CERMET 0.5W	SPECTROL / BOURNS			1	1	1	1
28	RELAY	RL1	SEE B R	SPEC. No	TDE/76/P/33	ITEM 1				1	1	1	1
29	"	RL2	96V D.C	CLASS 7001	TYPE DO-42	/W33 COIL	SQUARE D	90/7274		1	1	1	—
30	RESISTOR	R1	1KΩ ±5%	25W	WH25		WELWYN			1	1	1	—
31	"	R2	100K	0.5W	MRS TO BS9111 NO02	STYLE EX ±2%	WELWYN OR ELECTROSIL			1	1	1	1
32	"	R3-R4-R8	1KΩ	0.5W	"	"	" "			3	3	3	3
33	"	R5	200K	0.5W	"	"	" "			1	1	1	1
34	"	R22	2K2	0.5W	"	"	" "			1	1	1	1
35	"	R7	4K7	0.5W	"	"	" "			1	1	1	1
36	"	R9	270K	0.5W	"	"	" "			1	1	1	1
37	"	R10	7K5	0.5W	"	"	" "			1	1	1	1
38	"	R11-R12-R23-R24	20K	0.5W	"	"	" "			4	2	1	2
39	"	R14	620R	0.5W	"	"	" "			1	1	1	1
40	"	R15	3KΩ	0.5W	"	"	" "			1	1	1	1
41	"	R16	180R	0.5W	"	"	" "			1	1	1	1
42	"	R17 – R18	22R	0.5W	"	"	" "			2	2	2	2
43	"	R19	200R	6W	W22 TO BS9114	NO02 ± STYLE K 3%	WELWYN			1	1	1	1
44	"	R20	330R	0.5W	MRS TO BS 9111 NO02	STYLE EX ±2%	WELWYN OR ELECTROSIL			1	1	1	1
45	MOUNTING PADS FOR ITEMS 1 AND 2	SEE E.P. SPEC.	TDE/75/P/63	ITEM 1						3	3	3	3
46	MOUNTING PAD FOR ITEM 15	" " "	TDE/75/P/63	ITEM 3						1	1	1	1
47	MOUNTING POSTS FOR ITEMS 16, 48 AND 49	" " "	TDE/75/P/36	ITEM 3						7	7	7	7
48	SELECT ON TEST RESISTOR	SOT 1	APPROX VALUE 3KΩ	0.5W	MRS TO BS 9111 NO02	STYLE EX ±2%	WELWYN OR ELECTROSIL			1	1	—	1
49	"	SOT 2	—	0.5W	"	"	" "			1	1	1	1
50	RESISTOR	R21	5K1	0.5W	"	"	" "			1	1	1	1
51	TEST PINS	TP1 ⇒ TP17	SEE B.P.	SPEC. TDE/	74/P/68	ITEM 2				17	17	17	17
52	MULTIPOLE CIRCULAR CONNECTOR				FIXED PLUG	SIZE 22-14		64/2089	TDE/75/P/7	1	1	1	1
53	MALE CONTACTS FOR ITEM 52				SIZE 16	HFC 4607		64/2103	"	16	16	18	16
54	FILLER PLUGS FOR ITEM 52				SIZE 16	BLANKING PIN MALE		64/2142	"	3	3	1	3
55	PRINTED CIRCUIT BOARD				220 x 140 x 3.8 mm	SEE DRAWING	G-A3-718			1	1	1	1
56	SILICONE RUBBER SLEEVING				SP 20/05/20 mm		SIEGRIST OREL			6	6	6	6
57	SOLDER POTS FOR ITEMS 25, 29 AND 30		SEE B.R. SP	EC. TDE/76	/P/46	ITEM 1				5	5	5	5
58	WIRE		" " "	TDE/74	/P/174	ITEM 1				AS REQD.	AS REQD.	AS REQD.	AS REQD.
59	CABLE TIES				SERIES MS	TYPE T18R WHITE	INSULOID			14	14	14	14
60	P CLIP				PLASTICLIP NYLON	REF NXO BLACK	VEROSPEED			4	4	4	4
61	SCREW FOR ITEM 60				M3 x 8 mm PAN SLOTTED	ECP TO BS3692/A	PASSIVATED			4	4	4	4
62	NUT FOR ITEM 61				M3	ECP TO BS1706	PASSIVATED			4	4	4	4
63	WASHER FOR ITEM 61				M3 PLAIN	" " "	"			4	4	4	4
64	WASHER FOR ITEM 61				M3 SHAKEPROOF	" " "	"			4	4	4	4

ISSUE LETTER	ALTERATION	D MANS INITIALS	DATE
A	ITEM 95 WAS 2 OFF.	JWW	24/5/77
B	ITEM 68 WAS 5mm ITEM 72 WAS 11mm ITEM 78 WAS 11mm ITEM 27 WAS 11mm ITEM 38 WAS 13mm ITEM 102 WAS M3 CHEESEHEAD ITEM 53, QUANTITY WAS 14 ITEM 54, QUANTITY WAS 5 ITEM 54, CAT. No CHANGED	JWW	12/7/78
C	ITEM 111 WAS 10mm ITEM 91 WAS 8mm ITEM 68 WAS C'SUNK. ITEM 82 QUANTITY WAS 4 ITEM 84 QUANTITY WAS 4 ITEM 87 QUANTITY WAS 4 ITEM 83 WAS A SCREW, QUANTITY WAS 4. ITEM 86 QUANTITY WAS 4.	JWW	26/2/80
D	ITEM 82 WAS TYPE C	JWW	18/4/80
E	ITEM 1, ALTERNATIVES SPECIFIED ITEM 24 WAS BY227 ITEM 27 WAS BECKMAN TYPE 63W ITEM 72, DETAILS CHANGED ITEM 14 WAS DUBILIER TYPE ITEM 82 WAS M5 x 19mm ITEMS 119 ⇒ 123 ADDED ITEM 109 ITEMIZED ITEM 59 QUANTIFIED ITEMS 83 ⇒ 86 WERE M5. ITEM 56 SPECIFIED AND QUANTIFIED ITEM 2 WAS SIGNETICS ITEM 124 ADDED	JWW	11/12/81
F	ITEM 102 WAS 6 OFF ITEM 96 ADDED	JWW	5/5/82
G	ITEM 6, CAPACITOR C14 ADDED R5 WAS 1MΩ R6 WAS 4K7 C7 WAS 0M1. MOD 1	JWW	30/7/82
H	ITEM 82 WAS TYPE B ITEM 83 WAS M4 NUT ITEM 85 WAS FOR ITEM 82 AND QUANTITY WAS 4. ITEM 86 WAS FOR ITEM 82 ITEM 25 WAS TO BR SPEC TDE/E/77/P/60 ITEM 5. ITEM 108 ADDED. ITEM 59 WAS WHITE AND 12 OFF.	JWW	26/8/82
J	C15, C16 (ITEM 6) C17 ⇒ C19 (ITEM 3) ADDED D7 (ITEM 22) ADDED MOD 2. R22 (ITEM 34) R23, R24 (ITEM 38) AND R25 (ITEM 123) ADDED R6 WAS 2K2 (ITEM 34) SHEET 3 ADDED	JWW	6/6/83
K	PAINT TYPES CHANGED – BOX NOW STOVE ENAMELLED. ITEMS 104-106	JWW	23/1/84

SEE SHEET 3

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D.S.D. SPEED SWITCH

SCHEDULE OF COMPONENTS

SERCO RAILDATA
SHEET 1 OF 3 SHEETS
~~DRAWING SUPPLY BUREAU~~
RTC DERBY

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CHIEF MECHANICAL & ELECTRICAL ENGINEER
BRITISH RAILWAYS BOARD
DERBY.

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Scale					
NTS	R	S	T	U	
Drawing No G-A3-717					
Drawn	Traced	Checked	Date		
JWW		JWW 20-1-79			

ITEM No.	NAME	SYMBOL	VALUE	RATING	TYPE		MANUFACTURER	BR CAT No	BS/BR SPEC No	QUANTITY TYPE A	TYPE B	TYPE 'D'	TYPE 'C'
65	SCREEN PLATE				140 x 80 x 1mm	M.S. TO BE PAINTED BLACK	SEE DRAWING G-A2-719			1	1	1	1
66	BOX				9"x6"x4" STANDARD PLAIN	GAUGE SIDES	SEE DRAWING G-A1-801			1	1	1	1
67	PERSPEX PLATE FOR BOX LID				50x50x3mm					1	1	1	1
68	SCREW FOR ITEM 67				M3 x 10mm PAN SLOTTED	ECP TO BS 3382 PASSIVATED				4	4	4	4
69	NUT FOR ITEM 68				M3 ECP TO BS 1706	PASSIVATED				4	4	4	4
70	WASHER FOR ITEM 68				M3 PLAIN " "	"				4	4	4	4
71	WASHER FOR ITEM 68				M3 SHAKEPROOF " "	"				4	4	4	4
72	ANGLE BRACKET FOR MTG. ITEM 66				M.S. TO BE PAINTED B.P. ORANGE	3mm	SEE DRAWING G-A1-801			1	1	1	1
73	SCREW FOR ITEM 72				M5 x 12mm C'SUNK	ECP TO BS 3382 PASSIVATED				8	8	8	8
74	NUT FOR ITEM 73				M5 ECP TO BS 1706	PASSIVATED				8	8	8	8
75	WASHER FOR ITEM 73				M5 PLAIN " "	"				8	8	8	8
76	WASHER FOR ITEM 73				M5 SHAKEPROOF "	"				8	8	8	8
77	NYLON PILLAR FOR ITEM 65				M5 x 60mm LONG	TYPE B	G & B	TDE/74/P/73	ITEM 6	4	4	4	4
78	SCREW FOR ITEM 77				M5 x 12mm PAN SLOTTED	ECP TO BS 3382 PASSIVATED				4	4	4	4
79	NUT FOR ITEM 77				M5 ECP	TO BS 1706 PASS.				4	4	4	4
80	WASHER FOR ITEM 77				M5 PLAIN "	" "				8	8	8	8
81	WASHER FOR ITEM 77				M5 SHAKEPROOF "	" "				8	8	8	8
82	NYLON PILLAR FOR ITEM 55				M4 x 16 mm LONG	TYPE C	G & B	TDE/74/P/73	ITEM 8	6	6	6	6
83	SCREW FOR ITEM 82				M4 x 12mm CHEESE-HEAD	ECP TO BS 1706	PASSIVATED			6	6	6	6
84	SCREW FOR ITEM 82				M4 x 12mm C'SUNK	ECP TO BS 1706	"			6	6	6	6
85	WASHER FOR ITEM 83				M4 PLAIN	" "	"			6	6	6	6
86	WASHER FOR ITEM 83				M4 SHAKEPROOF "	" "	"			6	6	6	6
87	SCREWS FOR ITEM 29				M5 x 12mm PAN SLOTTED	ECP TO BS 3382	"			2	2	2	2
88	NUT FOR ITEM 87				M5	" TO BS 1706	"			4	4	4	4
89	WASHER FOR ITEM 87				M5 PLAIN	" "	"			4	4	4	4
90	WASHER FOR ITEM 87				M5 SHAKEPROOF	" "	"			4	4	4	4
91	SCREWS FOR ITEM 52				M3 x 10mm PAN SLOTTED	ECP TO BS 3382	"			4	4	4	4
92	NUT FOR ITEM 91				M3	" TO BS 1706	"			4	4	4	4
93	WASHER FOR ITEM 91				M3 PLAIN	" "	"			4	4	4	4
94	WASHER FOR ITEM 91				M3 SHAKEPROOF	" "	"			4	4	4	4
95	EARTHING STUD ASSEMBLY				M6			72/2536		1	1	1	1
96	PCB THRU' PIN				T1561-01 STRIP	(NOTE 50/STRIP)	HARWIN			32 PINS	32 PINS	32	32
97	SILK SCREEN IDENTIFICATION PLATE				SEE DRAWING	G-A2-719				1	1	1	1
98	SCREW FOR MTG. BOX ASSEMBLY				M6 x 12mm PAN SLOTTED	ECP TO BS 3382	PASSIVATED			4	4	4	4
99	NUT FOR ITEM 98				M6	" TO BS 1706	"			4	4	4	4
100	WASHER FOR ITEM 98				M6 PLAIN	" "	"			4	4	4	4
101	WASHER FOR ITEM 98				M6 SHAKEPROOF	" "	"			4	4	4	4
102	CRIMP				4mm RED/RED	TYPE 1-320551-3	AMPLIVERSAL	54/119522		11	11	11	11
103	RIVET FOR ITEM 97				POP RIVET					4	4	4	4
104	PAINT				PRIMER	DEGREASE, ETCH AND PRIME, UNDERCOAT AND GLOSS PRIOR TO STOVE ENAMEL.				AS REQD.	AS REQD	AS REQD.	AS REQD.
105	"				UNDERCOAT					" "	" "	" "	AS REQD.
106	"				ORANGE GLOSS					" "	" "	" "	AS REQD.
107													
108	SELF ADHESIVE CABLE TIE MOUNT				ORDER CODE 41-4659A		VEROSPEED			2	2	2	2
109	TRANSFORMER	T1			SEE B.R. SPECIFICATION	TDE/79/E/P/4 ITEM 1				1	1	1	1
110	HEATSINK COMPOUND						DOW CORNING 340			AS REQD. FOR R1	AS REQD FOR R1	As REQD FOR R1	AS REQD FOR R1
111	SCREW FOR ITEM 30				M3 x 15mm C'SUNK	ECP TO BS 3382	PASSIVATED			2	2	2	2
112	NUT FOR ITEM 111				M3	" " BS 1706	"			2	2	2	2
113	WASHER FOR ITEM 111				M3 PLAIN	" "	"			2	2	2	2
114	WASHER FOR ITEM 111				M3 SHAKEPROOF	" "	"			2	2	2	2
* 115	CAPACITOR	C6	0μ33 ±20%	160/250V D.C.	POLYESTER TFM	MKT1813 ±10%	WIMA/FOERDERSTEIN			1	1	1	1
116	RESISTOR	R13	130K	0.5W	MRS TO ECC9111 N002	STYLE EX ±2%	WELWYN OR ELECTROSIL			1	1	—	1
117	WASHER FOR ITEM 83				M5 C'SUNK SHAKEPROOF	ECP TO BS 1706	PASSIVATED			4	4	4	4
118	RUBBER GASKET FOR ITEM 66				LIST No. 3572	9"x6"	APPLEBY			1	1	1	1
119	GROMMET BUSHING RUBBER				22-14			64/2089	TDE/75/P/7	1	1	1	1
120	GROMMET FOLLOWER				22			64/2092	TDE/75/P/7	1	1	1	1
121	NUT BUSHING RETAINER				22			64/2095	TDE/75/P/7	1	1	1	1
122	GROMMET FILLER PLUGS				SIZE 16			64/2105	TDE/75/P/7	3	3	3	3
123	HEATSHRINK SLEEVING FOR ITEM 30									40 mm	40 mm	40 mm	40 mm
124	SOCKET FOR ITEM 26				DUAL IN-LINE SOCKET 14-WAY	J23-8206/D4806-01	JERMYN/HARWIN			1			1
					COMPLETE CONTROL BOX, BR CAT. No.					71/3576			53/3807
					ASSEMBLED P.C.B. ONLY.		BR CAT. No.			71/3667			71/4797

ISSUE LETTER	ALTERATION	D MANS INITIALS	DATE
A	ITEM 95 WAS 2 OFF	JWW	24/5/79
B	ITEM 68 WAS 9mm ITEM 73 WAS 11mm ITEM 78 WAS 11mm ITEM 87 WAS 11mm ITEM 98 WAS 13mm ITEM 103 WAS M3 CHEESEHEAD ITEM 53, QUANTITY WAS 14 ITEM 54, QUANTITY WAS 5 ITEM 54, CAT. No. CHANGED	JWW	13/7/79
C	ITEM 111 WAS 10mm ITEM 91 WAS 8mm ITEM 68 WAS C'SUNK ITEM 82 QUANTITY WAS 4 ITEM 84 QUANTITY WAS 4 ITEM 87 QUANTITY WAS 4 ITEM 83 WAS A SCREW, QUANTITY WAS 4 ITEM 86 QUANTITY WAS 4.	JWW	26/2/80
D	ITEM 82 WAS TYPE C	JWW	18/4/80
E	ITEM 1, ALTERNATIVES SPECIFIED ITEM 24 WAS BY227 ITEM 27 WAS BECKMAN TYPE 63W ITEM 72, DETAILS CHANGED ITEM 14 WAS DUBILIER TYPE ITEM 82 WAS M5 x 19mm ITEMS 119 → 123 ADDED ITEM 109 ITEMIZED ITEM 59 QUANTIFIED ITEMS 83 → 86 WERE M5 ITEM 56 SPECIFIED AND QUANTIFIED ITEM 2 WAS SIGNETICS ITEM 124 ADDED	JWW	11/12/81
F	ITEM 102 WAS 6 OFF ITEM 96 ADDED	JWW	5/5/82
G	ITEM 6 CAPACITOR C14 ADDED R5 WAS 1MΩ R6 WAS 4K7 C7 WAS 0MI. MOD 1	JWW	30/7/82
H	ITEM 82 WAS TYPE B ITEM 83 WAS M4 NUT ITEM 85 WAS FOR ITEM 82 AND QUANTITY WAS 4. ITEM 86 WAS FOR ITEM 82 ITEM 25 WAS TO BR SPEC. TDE/E/77/P/60 ITEM 5. ITEM 108 ADDED. ITEM 59 WAS WHITE AND 12 OFF	JWW	26/8/82
J	C15, C16 (ITEM 6) C17 → C19 (ITEM 3) ADDED D7 (ITEM 22) ADDED R22 (ITEM 34) R23, R24 (ITEM 38) AND R25 (ITEM 125) ADDED R6 WAS 2K2 (ITEM 34) MOD 2 SHEET 3 ADDED	JWW	16/6/83
K	PAINT TYPES CHANGED - BOX NOW STOVE ENAMELLED ITEMS 104-6 SEE SHEET 3	JWW	22/12/83

D.S.D. SPEED SWITCH

SHEDULE OF COMPONENTS

SHEET 2 OF 3 SHEETS

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Scale	R	S	T	U
NTS				
Drawing No G-A3-717				

Drawn	Traced	Checked	Date
JWW		GWT 26-1-79	

ITEM No.	NAME	SYMBOL	VALUE	RATING	TYPE		MANUFACTURER	B.R. CAT. No.	B.S / B.R SPEC No.	QUANTITY TYPE 'A'	TYPE 'B'	TYPE 'D'	TYPE 'C'
125	RESISTOR	R23, R24	12K	0·5W	MRS TO BS9111 N002	STYLE EX ± 2%	WELWYN OR ELECTROSIL			—	2	2	2
126	"	R6	5·1K	"	"	"	"			1	1	1	1
127	CAPACITOR	C3- C4	0M01	100V D.C.	FKC2 ± 10%		WIMA			2	2	2	2
128	TRANSFORMER	T2	-	-	ISOLATION	TRANSFORMER	NOTTS ELECTRICAL LABS	72/7811	TEE-A2-8700165	—	1	1	1
129	RESISTOR	R25	56K	0·5W	MRS TO BS9111 N002	STYLE EX ± 2%	WELWYN OR ELECTROSIL			1	—	—	—
130	"	R26	2·2K	0·5W	"	"	" "			—	1	1	1
131	"	R27	1M	0·5W	"	"	" "			—	1	1	1
132	"	R28	16K	0·5W	"	"	" "			—	1	—	1
133	CAPACITOR	C20	0M047	400V	B2A ±	POLYESTER	ASHCROFT			—	1	1	1
134	"	C21	0M1	160V	B2A ±	"	"			—	1	1	1
135	"	C22	0M47	160V	B1A ± 20%	POLYESTER	Ashcroft	26/111216		—	1	1	1
136	ZENER DIODE	ZD11, ZD12	2V7 ±5%	400 mW	BZY88C 2V7		MULLARD		BS 9305 N041	—	2	2	2
137	ASSEMBLED P.C.B ONLY							71/3667		1	—	—	—
138	ASSEMBLED P.C.B ONLY							71/4797		—	1	1	1
139	ASSEMBLED SECONDARY P.C.B. ONLY (INCLUDING COMPONENTS MARKED *)							71/4799		—	1	1	1
140	RESISTOR	SOT 1		0·5W	MRS TO BS9111 N002	STYLE EX ± 2%	WELWYN OR ELECTROSIL			—	—	1	—
141	RESISTOR	R1	560R	25W			WELWYN	26/154515		—	—	—	1
142	RELAY	RL2	72V DC	CLASS 700	TYPE DO-4R/W32 COIL		SQUARE D			—	—	—	1
143	DSD SPEED SWITCH	COMPLETE BOX					-	71/3576		1	—		
144	DSD SPEED SWITCH	COMPLETE BOX						71/4796		—	1		
145	RESISTOR	R12	10K	0·5W	MRS TO BS9111 N002	STYLE EX ± 2%	WELWYN OR ELECTROSIL	26/152083		—	—	1	—
146	"	R13	100K	"	"	"	"	26/152107		—	—	1	—
147	"	R28	1K	"	"	"	"	26/152059		—	—	1	—

ISSUE LETTER	ALTERATION	DRAWN INITIALS	DATE
J	C15, C16 (ITEM 6) C17 → C17 (ITEM 3) ADDED D7 (ITEM 23) ADDED R22 (ITEM 24) ADDED MOD 2 R23, R24 (ITEM 38) ADDED R25 (ITEM 125) ADDED R6 WAS 2K2 (ITEM 34) SHEET 3 ADDED	JWW	16/6/83
K	PAINT TYPES CHANGED - BOX NOW STOVE ENAMELLED ITEMS 104-6	JWW	22/12/83
L	ITEMS 127 TO 132 DELETED ITEM 25 WAS FC 7014 ITEM 124 HARWIN ALTERNATIVE ADDED. CAPACITORS C3 C4 WERE ERIE TYPE K350061. NOW ITEM 127. ALTERNATIVES C12 ADDED. RELAY RL2 WAS 110V TYPE	JWW	9/5/84
M	ITEM 5 CAPACITORS C1 & C2 ALTERNATIVES ADDED.	JWW	4/2/85
N	ITEMS 3,5,7 → 12 & 115 CAPACITOR TYPE ADDED. ITEM 53 PIN TYPE ADDED.	JWW	4/1/85
P	TYPE B ADDED (MOD 3) components R26 R27 R28 C20 C21 C22, T1, ZD11, ZD12 added for type B only.	JWK	27/3/87
R	TYPE 'D' ADDED. FOR EXPT. DL/973. ITEM 140 ADDED.	AMB	22/6/88
S	TYPE 'C' ADDED FOR ch 419 70V SYSTEM. ITEMS 141 AND 142 ADDED	TMK	8/8/89
T	ITEMS 143, 144, ADDED FOR IDENTIFICATION PURPOSES E.D.S	RB	10/4/89
U	COMPONENTS R12, R13, R28 CHANGED FOR TYPE 'D' ONLY	DW	17/6/91

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SHEET 3 OF 3 SHEETS

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TEST SPECIFICATION

FOR SCHEMATIC DIAGRAM SEE DRG NO NUMBER :-

		TOE/E/78/T/36	TEE/E/87/T/101	TEE/TC/89/T/65	TEE/AU/89/T/110
		G-A3-716	TEE-A3-8700163	G-A3-8700300	TEE-A3-8202396
BR CAT	No COMPLETE BOX	71/3576	71/4796	17/1165	53/3807
BR CAT	No ASSEMBLED PCB ONLY	71/3667	71/4797	71/4797	71/4797

CHIEF MECHANICAL & ELECTRICAL ENGINEER
BRITISH RAILWAYS BOARD
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Scale	R	S	T	U
NTS				
Drawing No G-A3-717				

Drawn	Traced	Checked	Date
JWW			

RB 4/4/89

ITEM No.	NAME	SYMBOL	VALUE	RATING	TYPE		MANUFACTURER	B.R. CAT. No.	B.S./B.R. SPEC. No.	QUANTITY			
1	AMPLIFIER	I.C.2 – I.C.3		-55 → +125°C	LM741T2/LM741H/CA741H/T41HM		SGS/N.S./RCA/FAIRCHILD			2			
2	TIMER	I.C.1			LM555H		NATIONAL SEMICONDUCTOR			1			
3	CAPACITOR	C17-C18-C19	0M68 ±20%	160 V D.C.	POLYESTER TFM		WIMA			3			
4	POTTED BRIDGE RECTIFIER	PBR1 – PBR2		1A 1000 V	1KAB100		IR			2			
5	CAPACITOR	C1 – C2	2M2 ±20%	100V D.C.	POLYESTER TFM		WIMA			2			
6	"	C4, C15-C16	10 000 pF	500V D.C.	811 ±20% K350081		ERIE			3			
7	"	C5	2200 pF ±20%	160 V D.C.	WIMA FKC		WIMA			1			
8	"	C7	0M47 ±20%	160 V D.C.	POLYESTER TFM		"			1			
9	"	C8	0M01 ±20%	400V D.C	" "		"			1			
10	"	C9	0M022 ±20%	160 V D.C.	" "		"			1			
11	"	C10	47M +50% -10%	63V D.C.	016 184T9 ELECTROLYTIC		MULLARD			1			
12	"	C11	0M1 ±20%	160V D.C.	POLYESTER TFM		WIMA			1			
13	"	C12	10M ±20%	63V D.C.	POLYESTER TFM / MKT1813 P10-06	3/82A10301A	WIMA / STEATITE ROEDERSTEIN / ASHCROFT			1			
14	"	C13	0M1 ±20%	1250V D.C.	LD3101 10A		ASHCROFT			1			
15	TRANSISTOR	TR1		1A	2N3440		FERRANTI			1			
16	ZENER DIODE	ZD1 – ZD2	12V ±5%	5W	1N5349B		MOTOROLA			2			
17	" "	ZD3 – ZD4	7V5 ±5%	400 mW	BZY88C 7V5	BS9305 N041	MULLARD			2			
18	" "	ZD5	2V7 ±5%	"	BZY88C 2V7	" "	"			1			
19	" "	ZD6 – ZD7	22V ±5%	"	BZY88C 22V	" "	"			2			
20	" "	ZD8 – ZD9	8V2 ±5%	"	BZY88C 8V2	" "	"			2			
21	" "	ZD10	6V2 ±5%	"	BZY88C 6V2	" "	"			1			
22	DIODE	D1 → D4, D7	IN914	250 mW	IN914 TO BS9300-C	361/368/756/757	TEXAS INSTRUMENTS			5			
23	"	D5		1000V PIV 1A	10D10 OR CV10230		IR			1			
24	"	D6	1300V AV 3A	" "	BY255		THOMSON CSF	26/117313		1			
25	LIGHT EMITTING DIODE	LED 1					BULGIN		TDE/E/77/P/60 ITEM 5	1			
26	OPTO-ISOLATOR	OP. 1			TIL113 300%	TRANSFER RATIO MIN	TEXAS INSTRUMENTS			1			
27	POTENTIOMETER	RP1	10KΩ	3/8" SQUARE	MODEL 64W/3299W	CERMET 0.5W	SPECTROL / BOURNS			1			
28	RELAY	RL1	SEE B.R.	SPEC. No.	TDE/76/P/23	ITEM 1				1			
29	"	RL2	96V D.C.	CLASS 7001	TYPE DO-42	/W33 COIL	SQUARE D	90/7274		1			
30	RESISTOR	R1	1KΩ ±5%	25W	WH25		WELWYN			1			
31	"	R2	100K	0.5W	MRS TO BS9111 NO02	STYLE EX ±2%	WELWYN OR ELECTROSIL			1			
32	"	R3-R4-R8	1KΩ	0.5W	"	"	" "			3			
33	"	R5	200K	0.5W	"	"	" "			1			
34	"	R22	2K2	0.5W	"	"	" "			1			
35	"	R7	4K7	0.5W	"	"	" "			1			
36	"	R9	270K	0.5W	"	"	" "			1			
37	"	R10	7K5	0.5W	"	"	" "			1			
38	"	R11-R12-R23-R24	20K	0.5W	"	"	" "			4			
39	"	R14	620R	0.5W	"	"	" "			1			
40	"	R15	3KΩ	0.5W	"	"	" "			1			
41	"	R16	180R	0.5W	"	"	" "			2			
42	"	R17-R18	22R	0.5W	"	"	" "			1			
43	"	R19	200R	6W	W22 TO BS9114	NO02 ±5% STYLE K	WELWYN			1			
44	"	R20	330R	0.5W	MRS TO BS9111 NO02	STYLE EX ±2%	WELWYN OR ELECTROSIL			3			
45	MOUNTING PADS FOR ITEMS 1 AND 2	SEE B.R. SPEC.	TDE/75/P/63	ITEM 1						1			
46	MOUNTING PAD FOR ITEM 15	" " "	TDE/75/P/63	ITEM 3						7			
47	MOUNTING POSTS FOR ITEMS 16, 48 AND 49	" " "	TDE/75/P/36	ITEM 3						1			
48	SELECTION TEST RESISTOR	SOT 1	APPROX VALUE 3KΩ	0.5W	MRS TO BS9111 NO02	STYLE EX ±2%	WELWYN OR ELECTROSIL			1			
49	"	SOT 2	—	0.5W	"	"	" "			1			
50	RESISTOR	R21	5K1	0.5W	"	"	" "			17			
51	TEST PINS	TP1 → TP17	SEE B.R.	SPEC. TDE/	74/P/68	ITEM 2		64/2080	TDE/77/P/7	1			
52	MULTIPOLE CIRCULAR CONNECTOR				FIXED PLUG	SIZE 22-14		64/2103	"	16			
53	MALE CONTACTS FOR ITEM 52				SIZE 16			64/2142	"	3			
54	FILLER PLUGS FOR ITEM 52				SIZE 16	BLANKING PIN MALE				1			
55	PRINTED CIRCUIT BOARD				220 X 140 X 3.8mm		SEE DRAWING G-A3-718			6			
56	SILICONE RUBBER SLEEVING				SP 20/05/20mm		SIEGRIST OREL			5			
57	SOLDER PUTS FOR ITEMS 25, 28 AND 30		SEE B.R. SP	EC. TDE/76	/P/46	ITEM 1				AS REQD.			
58	WIRE		" " "	TDE/74	/P/174	ITEM 1				14			
59	CABLE TIES				SERIES MS	TYPE T18R WHITE	INSULOID			4			
60	P CLIP				PLASKLIP NYLON	REF NYO BLACK	VEROSPEED			4			
61	SCREW FOR ITEM 60				M3x8mm PAN SLOTTED	ECP TO BS3506	PASSIVATED			4			
62	NUT FOR ITEM 61				M3	ECP TO BS1706	PASSIVATED			4			
63	WASHER FOR ITEM 61				M3 PLAIN	" " "	"			4			
64	WASHER FOR ITEM 61				M3 SHAKEPROOF	" " "	"			4			

ISSUE LETTER	ALTERATION	D MANS INITIALS	DATE
A	ITEM 95 WAS 2 OFF	DWW	24/9/79
B	ITEM 68 WAS 9mm ITEM 72 WAS 11mm ITEM 78 WAS 11mm ITEM 87 WAS 11mm ITEM 98 WAS 13mm ITEM 103 WAS M3 CHEESEHEAD ITEM 53, QUANTITY WAS 14 ITEM 54, QUANTITY WAS 5 ITEM 54, CAT. No. CHANGED	DWW	12/7/79
C	ITEM 111 WAS 10mm ITEM 91 WAS 8mm ITEM 68 WAS C'SUNK. ITEM 82 QUANTITY WAS 4 ITEM 84 QUANTITY WAS 4 ITEM 87 QUANTITY WAS 4 ITEM 83 WAS A SCREW, QUANTITY WAS 4. ITEM 86 QUANTITY WAS 4.	DWW	26/2/80
D	ITEM 82 WAS TYPE C	DWW	18/4/80
E	ITEM 1, ALTERNATIVES SPECIFIED ITEM 24 WAS BY227 ITEM 27 WAS BECKMAN TYPE 63W ITEM 72, DETAILS CHANGED ITEM 14 WAS DUBILIER TYPE ITEM 82 WAS M5 x 19mm ITEMS 119 → 123 ADDED ITEM 109 ITEMIZED ITEM 59 QUANTIFIED ITEMS 83 → 86 WERE M5. ITEM 56 SPECIFIED AND QUANTIFIED ITEM 2 WAS SIGNETICS ITEM 124 ADDED	DWW	11/12/81
F	ITEM 102 WAS 6 OFF ITEM 96 ADDED	DWW	5/5/82
G	ITEM 6 CAPACITOR C14 ADDED R5 WAS 1MΩ R6 WAS 4K7 C7 WAS 0M1 MOD 1	DWW	30/7/82
H	ITEM 82 WAS TYPE B ITEM 83 WAS M4 NUT ITEM 85 WAS FOR ITEM 82 AND QUANTITY WAS 4. ITEM 86 WAS FOR ITEM 82 ITEM 25 WAS TO BR SPEC TDE/E/77/P/60 ITEM 5. ITEM 108 ADDED. ITEM 59 WAS WHITE AND 12 OFF.	DWW	26/8/82
J	C15, C16 (ITEM 6) C17 → C19 (ITEM 3) ADDED D7 (ITEM 22) ADDED MOD 2. R22 (ITEM 34) R23, R24 (ITEM 38) AND R25 (ITEM 123) ADDED R6 WAS 2K2 (ITEM 34) SHEET 3 ADDED	DWW	6/6/83
K	PAINT TYPES CHANGED - BOX NOW STOVE ENAMELLED. ITEMS 104-106 SEE SHEET 3	DWW	29/12/83

D.S.D. SPEED SWITCH

SCHEDULE OF COMPONENTS LTD.

SHEET 1 OF 3 SHEETS

BRITISH RAIL ENGINEERING TECH. SERVICES ASST. 15 AUG 1984 CREWE WORKS 012

CHIEF MECHANICAL & ELECTRICAL ENGINEER
BRITISH RAILWAYS BOARD
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Scale	A	B	C	D	E
	F	G	H	J	K
Drawing No G-A3-717	L				

Drawn	Traced	Checked	Date
DW		20-1-79	

ITEM No.	NAME	SYMBOL	VALUE	RATING	TYPE		MANUFACTURER	BR CAT No	BS/BR SPEC No	QUANTITY
65	SCREEN PLATE				140 x 80 x 1mm	M.S. TO BE PAINTED BLACK	SEE DRAWING G-A2-719			1
66	BOX				9"x6"x4" STANDARD PLAIN	GAUGE SIDES	SEE DRAWING G-A1-801			1
67	PERSPEX PLATE FOR BOX 66				50x50x3mm					1
68	SCREW FOR ITEM 67				M3 x 10mm PAN SLOTTED	ECP TO BS 3382 PASSIVATED				4
69	NUT FOR ITEM 68				M3 ECP TO BS 1706	PASSIVATED				4
70	WASHER FOR ITEM 68				M3 PLAIN " "	"				4
71	WASHER FOR ITEM 68				M3 SHAKEPROOF " "	"				4
72	ANGLE BRACKET FOR MTG. ITEM 66				M.S. TO BE PAINTED C.P. ORANGE	3mm	SEE DRAWING G-A1-801			1
73	SCREW FOR ITEM 72				M5 x 12mm C'SUNK	ECP TO BS 3382 PASSIVATED				8
74	NUT FOR ITEM 73				M5 ECP TO BS 1706	PASSIVATED				8
75	WASHER FOR ITEM 72				M5 PLAIN " "	"				8
76	WASHER FOR ITEM 73				M5 SHAKEPROOF "	"				8
77	NYLON PILLAR FOR ITEM 65				M5 x 60mm LONG	TYPE B	G & B	TDE/74/P/73 ITEM 6		4
78	SCREW FOR ITEM 77				M5 x 12mm PAN SLOTTED	ECP TO BS 3382 PASSIVATED				4
79	NUT FOR ITEM 77				M5 ECP	TO BS 1706 PASS.				4
80	WASHER FOR ITEM 77				M5 PLAIN "	"				8
81	WASHER FOR ITEM 77				M5 SHAKEPROOF "	"				8
82	NYLON PILLAR FOR ITEM 55				M4 x 16mm LONG	TYPE C	G & B	TDE/74/P/73 ITEM 8		6
83	SCREW FOR ITEM 82				M4 x 12mm CHEESE HEAD	ECP TO BS 1706	PASSIVATED			6
84	SCREW FOR ITEM 82				M4 x 12mm C'SUNK	ECP TO BS 1706	"			6
85	WASHER FOR ITEM 83				M4 PLAIN	" "	"			6
86	WASHER FOR ITEM 83				M4 SHAKEPROOF	" "	"			6
87	SCREW FOR ITEM 55				M5 x 12mm PAN SLOTTED	ECP TO BS 3382	"			2
88	NUT FOR ITEM 87				M5	" TO BS 1706	"			4
89	WASHER FOR ITEM 87				M5 PLAIN	" "	"			4
90	WASHER FOR ITEM 87				M5 SHAKEPROOF	" "	"			4
91	SCREWS FOR ITEM 52				M3 x 10mm PAN SLOTTED	ECP TO BS 3382	"			4
92	NUT FOR ITEM 91				M3	" TO BS1706	"			4
93	WASHER FOR ITEM 91				M3 PLAIN	" "	"			4
94	WASHER FOR ITEM 91				M3 SHAKEPROOF	" "	"			4
95	EARTHING STUD ASSEMBLY				M6			72/2596		1
96	PCB THRU PIN				T1561-01 STRIP	(NOTE 50/STRIP)	HARWIN			32 PINS
97	SILK SCREEN IDENTIFICATION PLATE				SEE DRAWING	G-A2-719				1
98	SCREW FOR MTG BOX ASSEMBLY				M6 x 12mm PAN SLOTTED	ECP TO BS 3382 PASSIVATED				4
99	NUT FOR ITEM 95				M6	" TO BS 1706	"			4
100	WASHER FOR ITEM 95				M6 PLAIN	" "	"			4
101	WASHER FOR ITEM 98				M6 SHAKEPROOF	" "	"			4
102	CRIMP				4mm RED/RED POP RIVET	TYPE 1-320551-3	AMPLIVER S.R.L	54/119522		11
103	RIVET FOR ITEM 97									4
104	PAINT				PRIMER	DEGREASE, ETCH AND				AS REQD.
105	"				UNDERCOAT	PRIME, UNDERCOAT AND				" "
106	"				ORANGE GLOSS	GLOSS PRIOR TO STOVE ENAMEL.				" "
107										
108	SELF ADHESIVE CABLE TIE MOUNT				ORDER CODE 41-4659A		VEROSPEED			2
109	TRANSFORMER	T1			SEE B.R. SPECIFICATION	TDE/79/E/P/4 ITEM 1				1
110	HEATSINK COMPOUND						DOW CORNING 340			AS REQD. FOR R1
111	SCREW FOR ITEM 30				M3 x 18mm C'SUNK	ECP TO BS 3382	PASSIVATED			2
112	NUT FOR ITEM 111				M3	" " BS 1706	"			2
113	WASHER FOR ITEM 111				M3 PLAIN	" " "	"			2
114	WASHER FOR ITEM 111				M3 SHAKEPROOF	" " "	"			2
115	CAPACITOR	C6	0M33±2%	160v D.C.	POLYESTER TFM		WIMA			1
116	RESISTOR	R13	130K	0.5W	MRS TO BS 9111 M002	STYLE EX	±2% WELWYN OR ELECTROSIL			1
117	WASHER FOR ITEM 52				M5 C'SUNK SHAKEPROOF	ECP TO BS 1706	PASSIVATED			4
118	RUBBER GASKET FOR ITEM 66				LIST No. 3572	9"x6"	APPLEBY			1
119	GROMMET BUSHING RUBBER				22-1/4			64/2089	TDE/75/P/7	1
120	GROMMET FOLLOWER				22			64/2092	TDE/75/P/7	1
121	NUT BUSHING RETAINER				22			64/2095	TDE/75/P/7	1
122	GROMMET FILLER PLUG				SAE 16			64/2105	TDE/75/P/7	3
123	HEATSHRINK SLEEVING FOR ITEM 30									40 mm
124	SOCKET FOR ITEM 26				DUAL IN-LINE SOCKET 6-WAY	J23-8206/D4806-01	JERMYN / HARWIN			1
	FOR SCHEMATIC DIAGRAM		SEE DRAWING No.		G-A3-716					
					COMPLETE	CONTROL BOX		71/3576		
					ASSEMBLED P.C.B. ONLY.			71/3667		

ISSUE LETTER	ALTERATION	D MANS INITIALS	DATE
A	ITEM 95 WAS 2 OFF	JWW	26/7/79
B	ITEM 68 WAS 8mm. ITEM 72 WAS 1mm ITEM 78 WAS 11mm ITEM 87 WAS 11mm ITEM 88 WAS 13mm ITEM 103 WAS M3 CHEESEHEAD ITEM 53, QUANTITY WAS 14 ITEM 54, QUANTITY WAS 5 ITEM 54 CAT. No. CHANGED	JWW	26/7/79
C	ITEM 111 WAS 10mm ITEM 91 WAS 8mm ITEM 68 WAS C'SUNK ITEM 82 QUANTITY WAS 4 ITEM 84 QUANTITY WAS 4 ITEM 87 QUANTITY WAS 4 ITEM 83 WAS A SCREW QUANTITY WAS 4 ITEM 86 QUANTITY WAS 4.	JWW	26/2/80
D	ITEM 82 WAS TYPE C	JWW	18/4/80
E	ITEM 1, ALTERNATIVES SPECIFIED ITEM 24 WAS BY227 ITEM 27 WAS BECKMAN TYPE 63W ITEM 72, DETAILS CHANGED ITEM 14 WAS DUBILIER TYPE ITEM 82 WAS M5 x 19mm ITEMS 119 → 123 ADDED ITEM 109 ITEMIZED ITEM 59 QUANTIFIED ITEMS 83 → 86 WERE M5 ITEM 56 SPECIFIED AND QUANTIFIED ITEM 2 WAS SIGNETICS ITEM 124 ADDED	JWW	11/12/81
F	ITEM 102 WAS 6 OFF ITEM 96 ADDED	JWW	5/5/82
G	ITEM 6, CAPACITOR C14 ADDED R5 WAS 1M0 R6 WAS 4K7 C7 WAS 0μ1. MOD 1	JWW	30/7/82
H	ITEM 82 WAS TYPE B ITEM 83 WAS M4 NUT ITEM 85 WAS FOR ITEM 82 AND QUANTITY WAS 4. ITEM 86 WAS FOR ITEM 82 ITEM 25 WAS TO BR SPEC. TDE/E/77/P/60 ITEM 5. ITEM 108 ADDED. ITEM 59 WAS WHITE AND 12 OFF	JWW	26/8/82
J	C15, C16 (ITEM 6) C17 → C19 (ITEM 3) ADDED D7 (ITEM 22) ADDED R22 (ITEM 34) R23, R24 (ITEM 38) AND R25 (ITEM 125) ADDED R16 WAS 2K2 (ITEM 34) MOD 2 SHEET 3 ADDED	JWW	14/3/83
K	PAINT TYPES CHANGED - BOX NOW STOVE ENAMELLED ITEMS 104-6	JWW	22/12/83

SEE SHEET 3

D.S.D. SPEED SWITCH

SHEDULE OF COMPONENTS

SHEET 2 OF 3 SHEETS

BRITISH RAIL ENGINEERING LTD. 15 AUG 1984 CREWE WORKS ITCH DRAWINGS ASST.

CHIEF MECHANICAL & ELECTRICAL ENGINEER
BRITISH RAILWAYS BOARD
DERBY.

OFFICE COPY

Scale	A	B	C	D	E
	F	G	H	J	K
Drawing No G-A3-717	L				

Drawn	Traced	Checked	Date
JWW		GWT	26-1-79