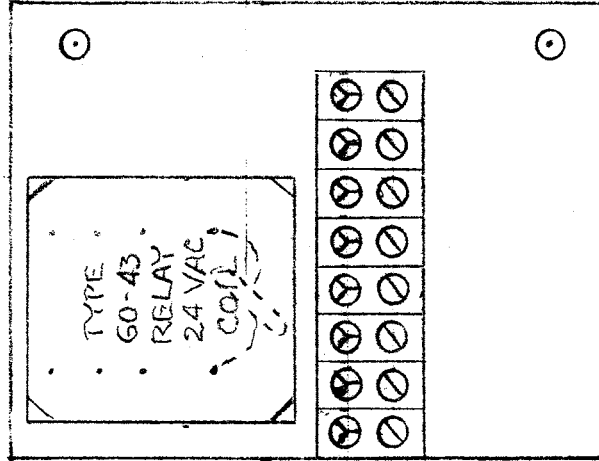
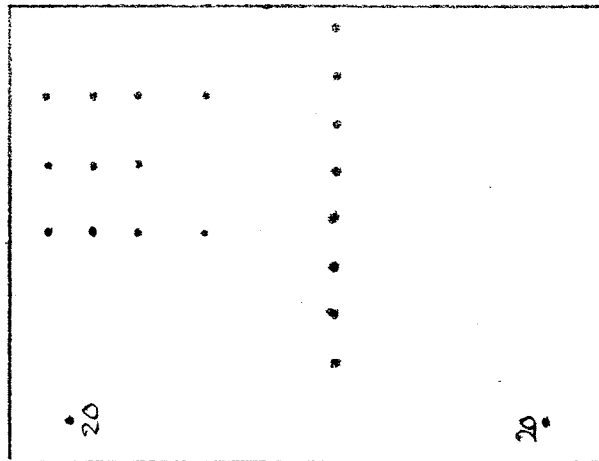


ORAC MK III / ELECTRICAL DRCS.

	DRG. N°	DESCRIPTION	REMARKS.
1	L 1722	MAIN INTERCONNECTIONS — CABLES.	
2	S 1719	POWER SUPPLY UNIT — CIRCUIT DIAG.	
	M 1718	" " " — GEN. ARRGMT.	
	M 1721	" " " — WIRING DIAGRAM.	
	S 1844	EM-STOP UNIT PC 1619 — L/O.	
3	L 1804	CONSOLE V/F PC 1690 — Circ. DIAG.	
	M 1714	" " " — L/O	
4	S 1645	REGULATOR BOARD PC 1601 — Circ. DIAG.	
	S 1610	" " " — L/O	
5	M 1739	GEN. ARRGMT. OF PC'S 1690 & 1601 ABOVE.	
6	S 1698	BLEEDER BOARD PC 1693 — L/O	
7	MAN 1.	MOTOROLA INC — COPY VDU MANUAL	
	MAN 2.	PHILIPS — COPY VDU MANUAL	
	S 1668	MODULATOR PC 1626 — L/O ONLY.	
8	L 1723	RIBBON INTERCONNECTIONS.	
	M 1718	KEYBOARD MEMBRANE CONNECTIONS	
	S 1682	DATA CASSETTE / RACK INTERCONN	
	S 1649	— 12V DC CONNS ON APEZ AC7151 PSU.	
	S 1861	INTERCONNS FROM APEZ B151 PSU TO RACK	
	S 1741	AUDIO CASSETTE — SUPPLY CABLE ETC.	
	S 1632	" " — HEADPHONE JACK WIRING.	
9	M 1670	T10-A BOARD — Circ. DIAG.	
	S 1737	" " — L/O	
	M 1669	T10-B BOARD — Circ. DIAG.	
	S 1738	" " — L/O	
	M 1768	MP09 BOARD — L/O ETC.	
	S 1639	VIM1 BOARD — L/O	
10	M 1612	RACK WIRING DIAGRAM.	
11	S 1853	OPTO-SENSOR PC 1852 — L/O ETC.	
	S 1609	GEN. ARRGMT OF 'PARALYST' CHASSIS.	
12	—	RETRO-FIT INSTRUCTIONS - INDEXING TOOLPOST (ITP)	
	S 1946	— CONN. DIAG.	
	S 1929	COMBINED ESR / ITP BOARD PC 1924 — Circ. DIAG.	
	S 1933	" " " " — L/O	
	S 1930	ITP SENSOR BOARD PC 1928 — Circ. DIAG.	
	S 1934	" " " " — L/O ETC	
	S 1938	ITP. SENSOR DISC ENCODING.	
	S 1944	GUARD SWITCH (PC 1942) — c. L/O	



VDR
ACROSS COIL
ON REAR.

UNMARKED HOLES N°54

DWG. No.

GBM-SYNTEL LTD.

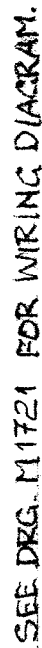
VICTORIA WORKS,
BUEENS MILL ROAD,
HUGGERSFIELD,
W. YORKS. HD1 2PB
Phone: 0484 25101/2

S1844

JOB	CODE	ORN.	CKD.	DATE
		J.S.		G. 2.84

DRILLING DETAILS 8-COMPONENT LAYOUT-PC1619
'ORAC' EMERGENCY STOP RELAY BOARD.

TITLE



CIRCUIT DIAGRAM OF ORAC POWER SUPPLY

GEM ELECTRICAL CONTROLS LTD.

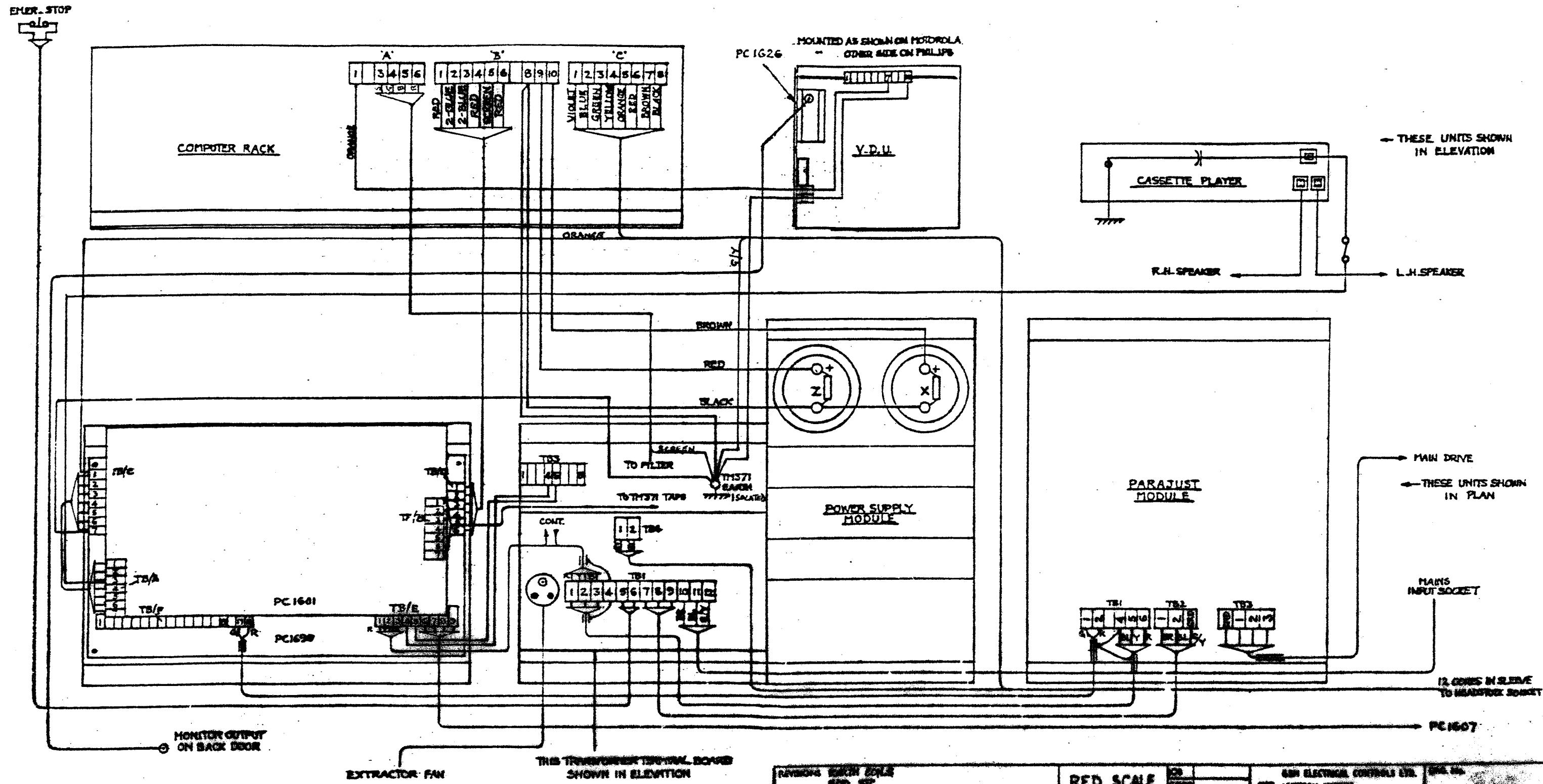
DRG. No.

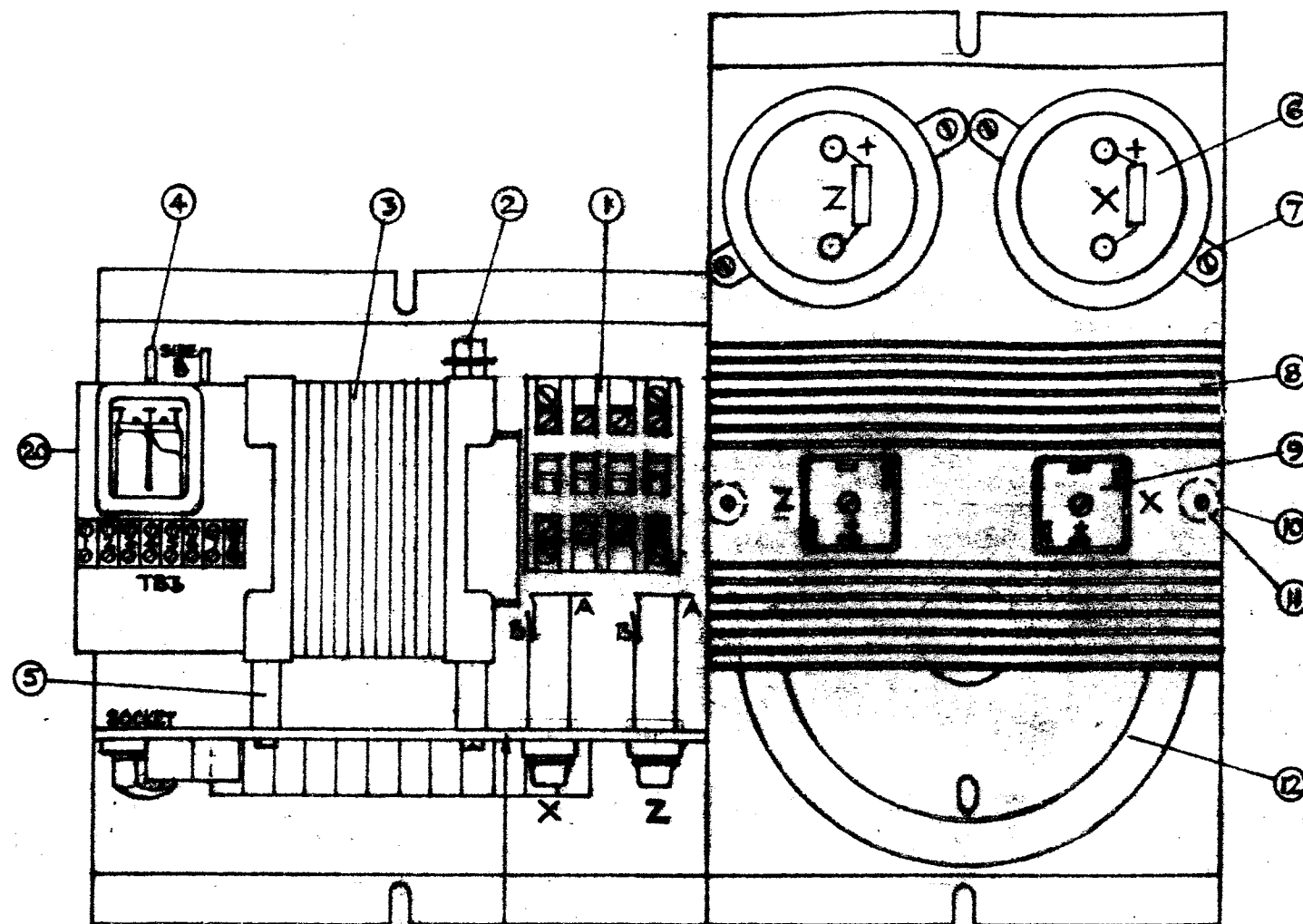
VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 351012

61719

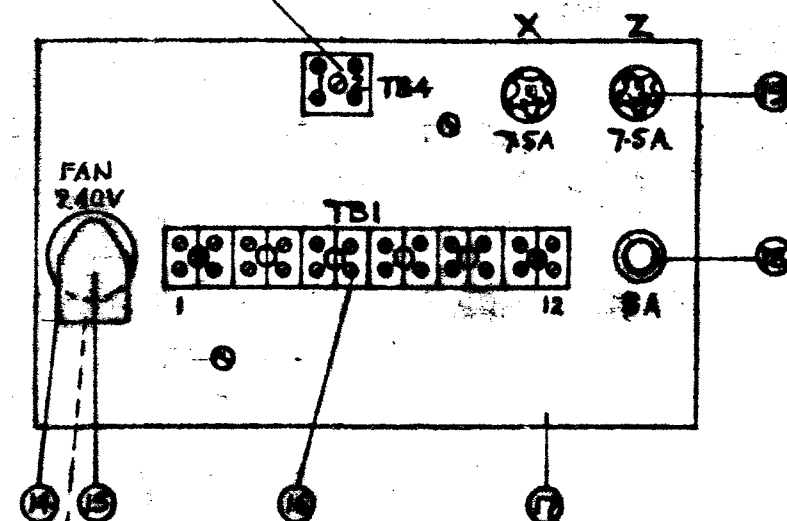
DATE	24.11.82.
------	-----------

RACK 'A'		RACK 'B'		RACK 'C'		PC 1601 BLOCK 'A'		PC 1690 BLOCK 'C'		PC 1601 BLOCK 'B'		PC 1690 BLOCK 'E'		PC 1690 BLOCK 'F'		POWER PACK TB.1	
PIN 1 - V.D.U. PIN 7		PIN 1 - PC 1690 BLOCK 'D' PIN 1	2	PIN 1 - HEADSTOCK SOCKET PIN 10	7	PIN 1 -	PIN 6. BLACK	PIN 1 - YELLOW 1		PIN 1 - YELLOW 1		PIN 1 - 25.0V 0.1A 4.5-RED		PIN 1 - TB1. PIN 4. GREEN		PIN 5 - BROWN	EMERGENCY
- 3 - P/S TM371 EARTH/SCREEN		- 2 -	2	- 2 -	7	- 2 -	- 7. -	- 2 -	- 2	- 2 -	- 2	- 2 -	- 2. YELLOW	- 1 -	- 2. RED	- 6 - BLUE	STOP
- 4 - Filter Stage B. 5	GREEN	- 3 -	3	- 3 -	4	- 3 -	- 1. -	- 3 -	BLACK	- 3 -	BLACK	- 3 -	- 3. BLUE	- 3 -	- 3. BLUE	- 7 - BROWN - TB2. PIN 1	
- 5 - " " N	BLUE	- 4 -	4	- 4 -	1	- 4 -	- 2. -	- 4 -	ORANGE	- 4 -	ORANGE	- 4 -	TB3. PIN 4.	- 4 -	TB3. PIN 4.	- 8 - BLUE -	- 2 - PARAJUST
- 6 - " " L	RED	- 5 -	5	- 5 -	12	- 5 -	- 5. -	- 5 -	BLUE	- 5 -	BLUE	- 5 -	- 5. -	- 5 -	- 5. -	- 9 - G/Y -	- 3 -
4 CORE & SCR. OMIT YELLOW		- 6 -	6	- 6 -	9	- 6 -	- 3. -	- 6 -	GREEN 1	- 6 -	GREEN 1	- 6 -	YELLOW	- 6 -	YELLOW	- 10 - LINE	
		- 8 -	8	- 8 -	6	- 8 -	- 4. -	- 7 -	- 2	- 7 -	- 2	- 7 -	BLUE	- 7 -	BLUE	- 11 - NEUTRAL	MAINS INPUT
		- 9 -	9	- 9 -	3	- 9 -		- 8 -		- 8 -		- 8 -	RED	- 8 -	RED	- 12 - EARTH	SOCKET
		- 10 -	10	- 10 -		- 10 -		- 9 -		- 9 -		- 9 -	GREEN/S	- 9 -	GREEN/S	- 1 - FROM CONT. - SS	
																- 2 - YELLOW. PIN 2	PC 1690
																- 3 - BLUE. PIN 3	BLOCK 'E'
																- 4 - SCREEN. PIN 4	





FOR DETAILS OF TRANSFORMER
MOUNTING PANEL, SEE ON RIGHT



FRONT VIEW OF TRANSFORMER
FUSE & T.B. MOUNTING PANEL



BACK
VIEW

ITEM NO	DESCRIPTION	G.S.M. PART. NO.	NO OFF	REMARKS.
1	BENEDICT & JAGER KSA 315 CONTACTOR	CR126	1	240VAC COIL.
2	2BA x 7/8" EARTH STUD.		1	PLUS NUTS AND CLAMP WASHER
3	CONTROL TRANSFORMER	TM314	1	
4	MAINS FILTER	GH185	1	KS 250-40V SA 301-ASO/T.S.
5	4BA x 5/8" INS. PILLARS	GH174	4	
6	10000F/100VDC CAPACITOR	CI51	2	
7	2 1/2" CAPACITOR CLIP	GH198	2	
8	GM-1 HEATSINK	SA46	1	
9	SKB 25/02 BRIDGE RECTIFIER	DBR13	2	
10	1/2" DIA. INS. TUBE PILLARS		2	85mm LONG.
11	2BA SCREWED ROD		2	95mm LONG.
12	D.C. SUPPLY POWER TRANSFORMER	TM316	1	TYPE 82025 TOROIDAL
13				
14	LI436 B3 SOCKET	TS63	1	BELLING LEE.
15	LI436 4P PLUG	TS62	1	" "
16	MK3/2 WAY T.B.	TS29	1	
17	TRANSFORMER FUSES I.O. MOUNTING PANEL		1	177x105mm 3mm BLACK PLASTIC
18	FUSE HOLDER	PD3	1	SA 20mm FUSE
19	FUSE HOLDER	PD65	2	7.5A 1 1/4" FUSE
20	PC1619 COMPLETE		1	
21	MK3/2 WAY T.B.	TS29	1	CUT TO 2 WAY

REVISIONS PC 1619 ADDED, FUSES
ALTERED, TB4 ADDED. - 12.11.82.

TB2 (ITEM 13) REMOVED
10.8.83

RED. SCALE

TITLE

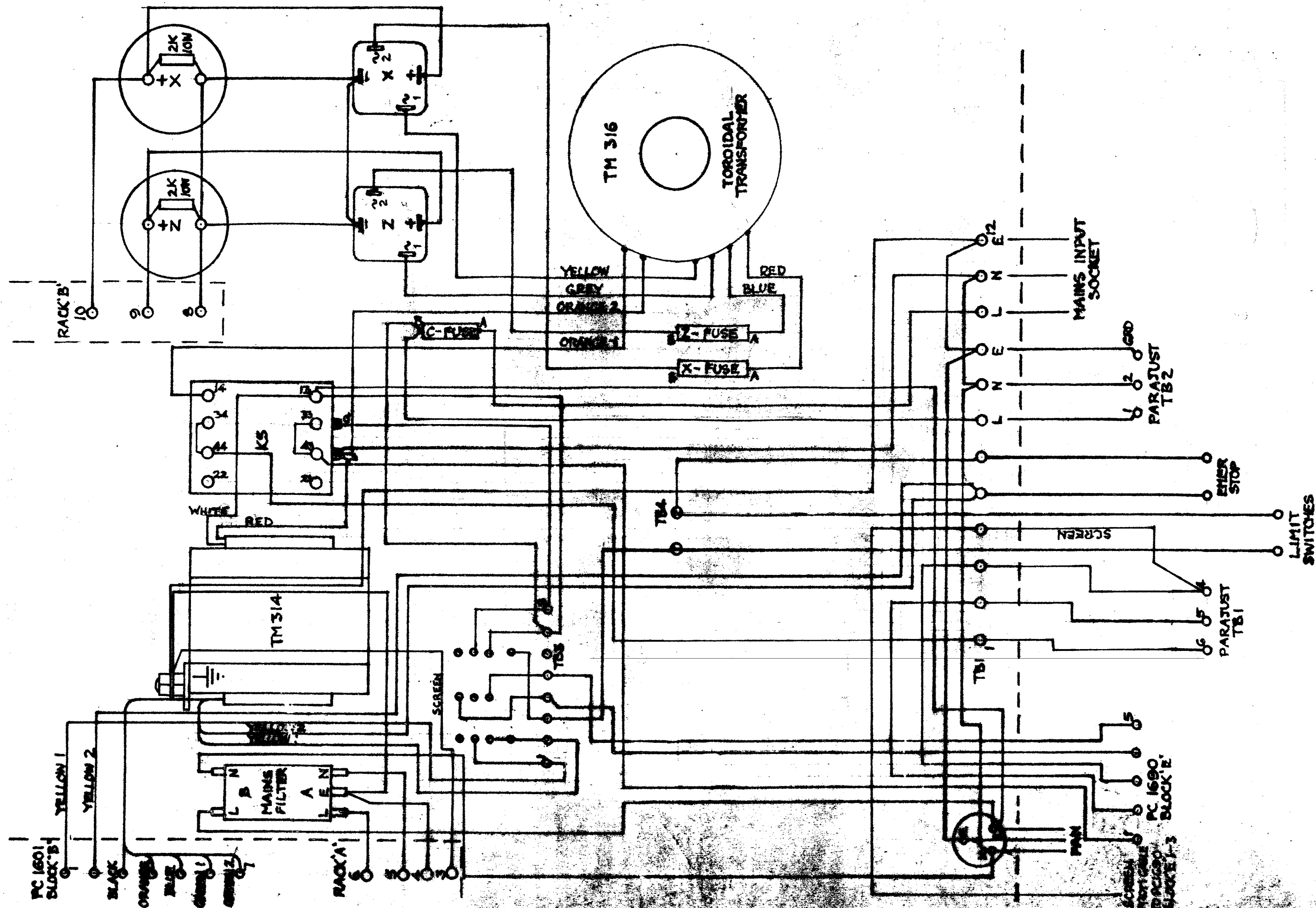
GENERAL ARRANGEMENT OF 'ORAC' POWER SUPPLIES

FOR
CODE
DNL. 3/3
G.D.
DATE 12.7.82

GSM ELECTRICAL CONTROLS LTD.
VICTORIA WORKS,
QUEENS HILL ROAD,
HUDDERSFIELD,
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

DRG. No.

M1718



SEE DRG-S1719 FOR CIRCUIT DIAGRAM.

REVISIONS

TITLE

WIRING DIAGRAM FOR 'ORAC' POWER SUPPLY

DR	
CODE	
DRN	2.5.
CKD	
DATE	14. 12. 62.



ESH ELECTRICAL CONTROLS LTD.
VICTORIA WORKS,
QUEEN'S HILL ROAD,
HADDERSFIELD,
W. YORKS. HD1 3J
PHONE 0484 351012

DRG. NO.

M1721

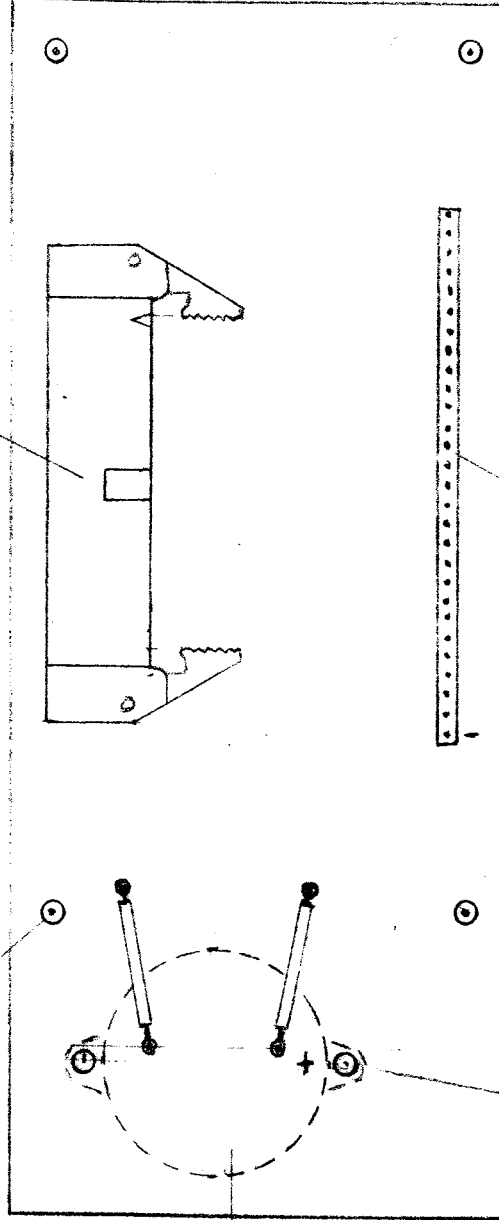
34 WAY MOLEX RIGHT-ANGLE
CONNECTOR - TYPE 5340-24GG1

TERMINAL PINS (2 OFF)

BLEEPER
MOUNTED ON
TRACK SIDE

28 WAY MOLEX SINGLE ROW
CONNECTOR - TYPE 4030-28AG

8BA FIXING SETSCREWS
AND NUTS



DRG. No.

GSM ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

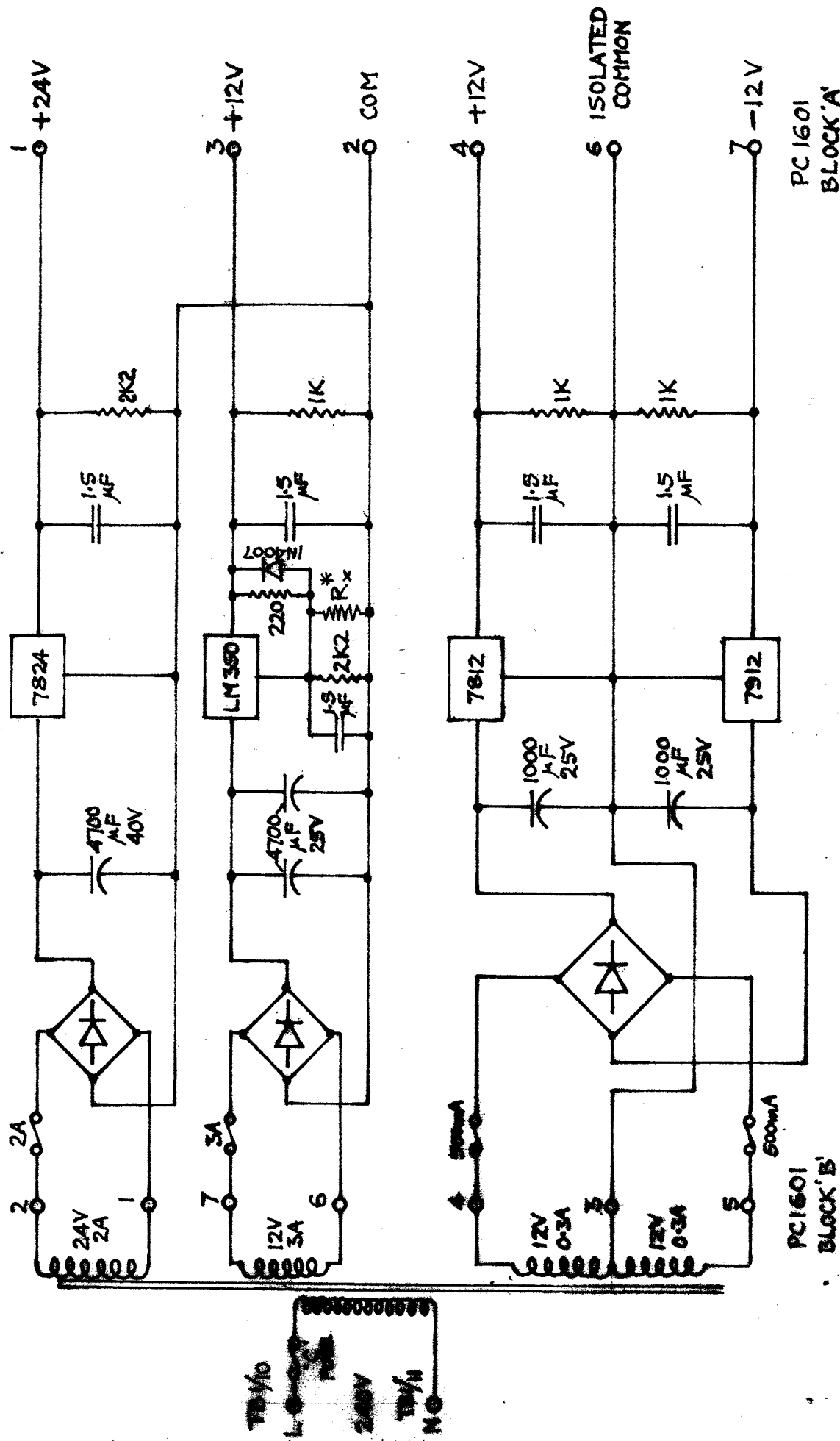
S1698

JOB	CODE	DRAWN	CHKD.	DATE
		4.7.83		4.7.83

COMPONENT LAYOUT FOR PC1693 - SYNSELECT MKIII
KEYBOARD CONNECTOR & BLEEPER

TITLE

DATE



DRG. No.

GSM ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEENS HILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 351012



JOB

CODE

DATE

BY

CHKD.

DATE

CIRCUIT DIAGRAM FOR PC 1601
POWER SUPPLY REGULATOR BOARD

Notes: R_1 IS A TRIMMING RESISTOR - NORMALLY 15K Ω

Notes: R_1 IS A TRIMMING RESISTOR - NORMALLY 15K Ω

Notes: R_1 IS A TRIMMING RESISTOR - NORMALLY 15K Ω

Notes: R_1 IS A TRIMMING RESISTOR - NORMALLY 15K Ω

Notes: R_1 IS A TRIMMING RESISTOR - NORMALLY 15K Ω

Notes: R_1 IS A TRIMMING RESISTOR - NORMALLY 15K Ω

NOTE

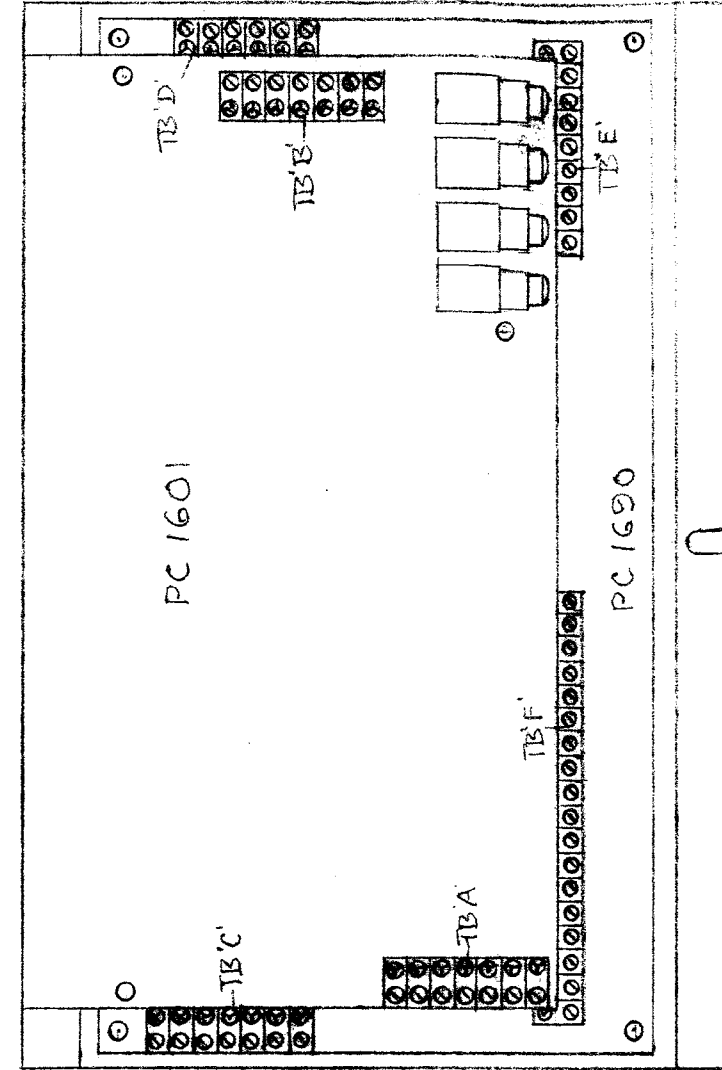
C7 HAS A 15G/Y EARTH LEAD FROM P.S.U.
C1 HAS AN ORANGE LEAD FROM INER LAMP
A3 HAS A RED LEAD FROM CASSETTE

D1 - RED } 2 CORE SCREENED
D2 - BLUE }
D3 - BLUE } 2 CORE SCREENED
D4 - RED }
D5 - BOTH SCREENS FROM ABOVE
D6 - RED 0.75.

D1 - B1 RACK BOTTOM
D2 - B2
D3 - B3
D4 - B4
D5 - B5
D6 - B6

B1 - YELLOW 1
B2 - YELLOW 2
B3 - BLACK
B4 - ORANGE
B5 - BLUE
B6 - GREEN 1
B7 - GREEN 2

WIRING
FROM MAIN
ON POWER
SUPPLY
CHASSIS



BLACK 0.75 - C1
C2
C3
C4
C5
C6
C7
A1 - C6
A2 - C7
A3 - C1
A4 - C2
A5 - C5
A6 - C3
A7 - C4

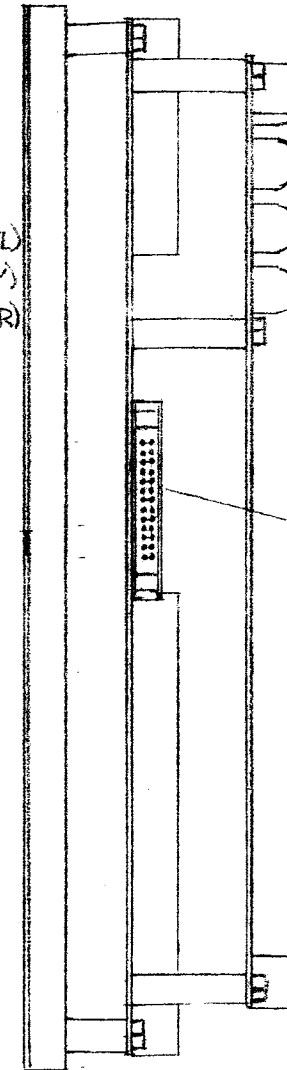
4 CORE SCREENED
TO SENSOR BOARD
PC 1685

9 - PC1685.TB1/1 (G & S)
8 - PC1685.TB1/2 (R)
7 - PC1685.TB1/3 (BL)
6 - PC1685.TB1/4 (Y)
5 - P.S.U.-TB3/5
4 - P.S.U.-TB3/4
3 - P.S.U.-TB1/3 } 4 CORE (BL)
2 - P.S.U.-TB1/2 } SCREENED (Y)
1 - P.S.U.-'C' 43 TO MAIN P.S.U.(R)

18 - P/JUST.TB1/2 (R) } 4 CORE
17 - " TB1/1 (G) } SCREENED

16
15
14
13
12
11
10
9
8
7
6
5
4
3
2

1 - COMMON.



26 WAY RIBBON CABLE TO
P2 CONNECTOR ON T10-A

DRAWING NO. S.1610 - COMPONENT LAYOUT OF PC1601
" " M.1714- " " PC1690

REVISIONS

TITLE

GENERAL ARRANGEMENT AND CONNECTIONS FOR PC1690 & PC1601
'ORAC' COMPUTER P.S.U. & INTERFACE BOARDS

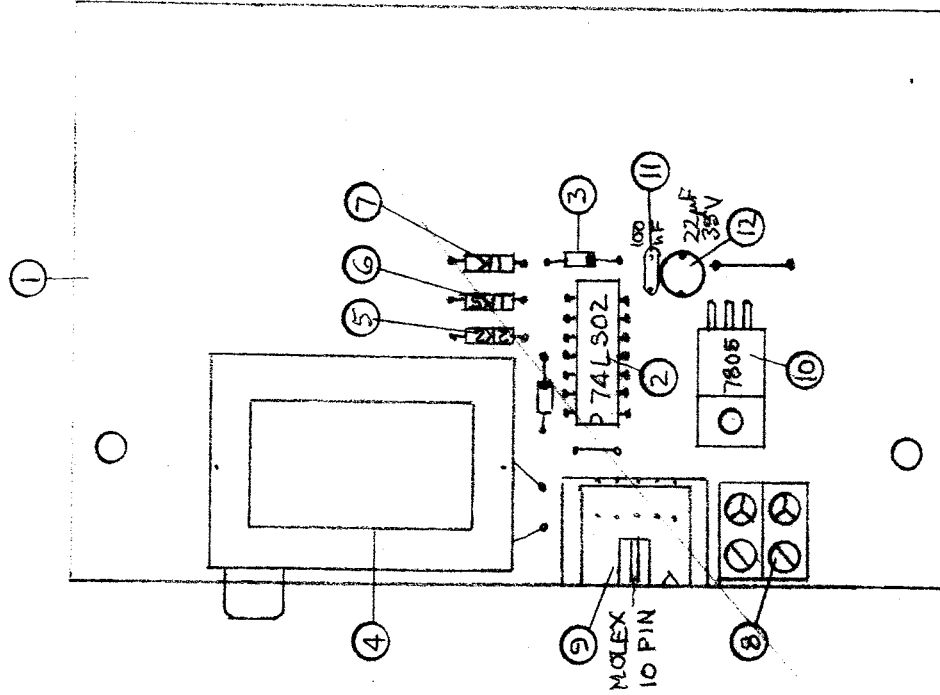
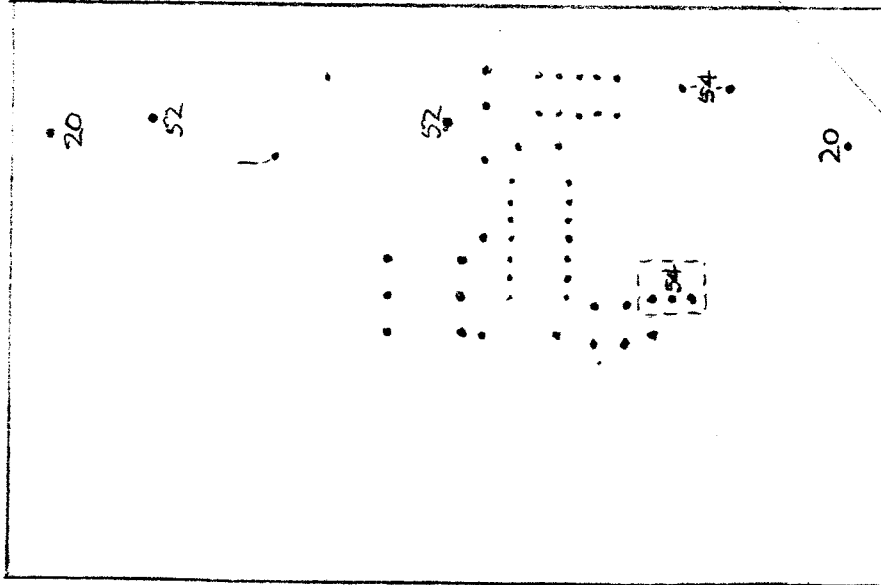
JOB	
CODE	
DRN.	J.B.
CKD.	
DATE	31.8.83



GSM ELECTRICAL CONTROLS LTD.
VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD,
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

DWG. No.

M 1739



ALL UNMARKED HOLES NO 60

ITEM NO	DESCRIPTION	C.S.M. PART NO	NO OFF	REMARKS
1	PC BOARD	PC1626	1	
2	N74LS02N	SIC46	1	
3	BAX1301 DIODE	SDD20	2	
4	UM111E36 MODULATOR	GH197	1	
5	2K2 1/4W RES.	XR222	1	
6	1K5 "	XR152	1	
7	1K "	XR102	1	
8	3WAY TERM BLOCK	TS107	1	CUT TO 2 WAY
9	10 WAY RIBBON CABLE CONNECTOR	TS212	1	
10	7805 REGULATOR	SIC26	1	
11	0.1μF CAPACITOR	C144	1	
12	22μF 35V "	C225	1	

OBVIOUS 10/3/86
see 22076

DRILLING DETAILS
ADDED 6.2.84

DRILLING DETAILS & COMPONENT LAYOUT
FOR MODULATOR BOARD-PC1626

QBM-SYNTEL LTD.

VICTORIA WORKS,
QUEEN'S HILL ROAD,
MUDGERSFIELD,
W. YORKS. M21 3PS
Phone: 0454 38101/2

JOB CODE
DWN. 153
CKD.
DATE 6.2.84

DRG. No.

S1668

CABLE CONNECTIONS CASSETTE END

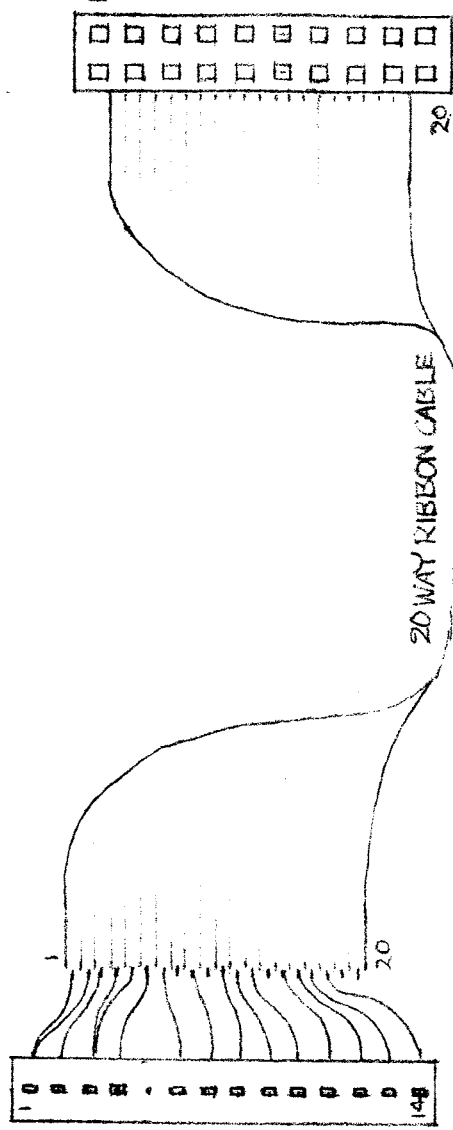
CON. 8, 10, 14, 19 & 20 CUT SHORT

CABLE No. 2

+12V 1 & 2
CON. GND 3
" " 4 & 5
" " 6

KEYWAY.

7 WDA
9 BET
11 WCD
12 REV
13 FWD
15 RDC
16 RDA
17 CTP
18 WEN



20 WAY RIBBON CABLE

LENGTH =

14 WAY IN-LINE PLUG
PIN 5 OMITTED.

20 WAY MOLEX
SOCKET

CABLE CONNECTIONS
TIO 'A' END
NUMBER TO FOLLOW

REVISIONS

TITLE

DATA CASSETTE RIBBON CABLE TO TIO 'A' MODULE
CONNECTION DETAILS

JOB

CODE

DRN.

CKD.

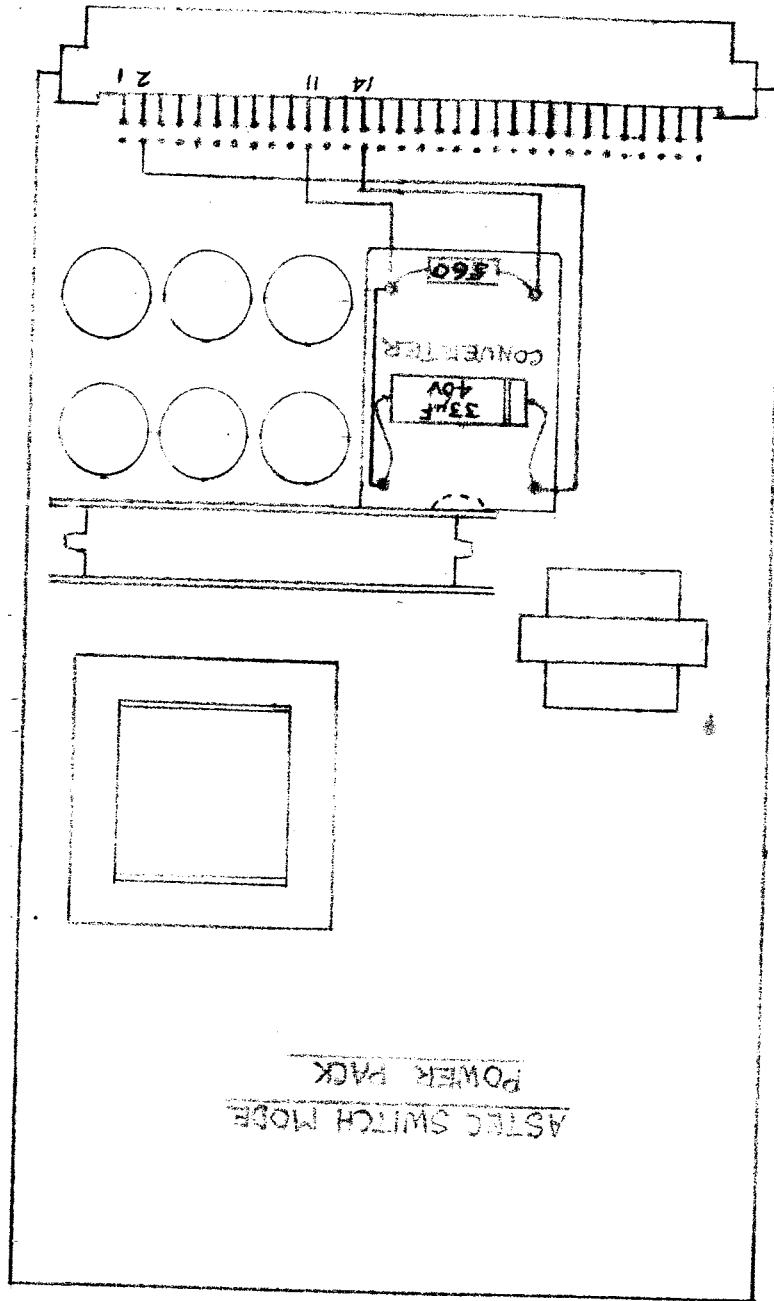
DATE

GSM ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

DRG. No.

S1682



+12V TO -12V CONVERTER
MOUNTED ON HEAT SINK
WITH SUPERGLUE

DRG. No.

GSM ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD,
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

S1649

JOB	CODE	DRN.	CKD.	DATE
		1/13		10. 1. 83

DETAIL OF -12V CONVERTER MOUNTING & CONNECTIONS
TO ASTEC AC7157 P.S.U. FOR 'ORAC' MACHINE

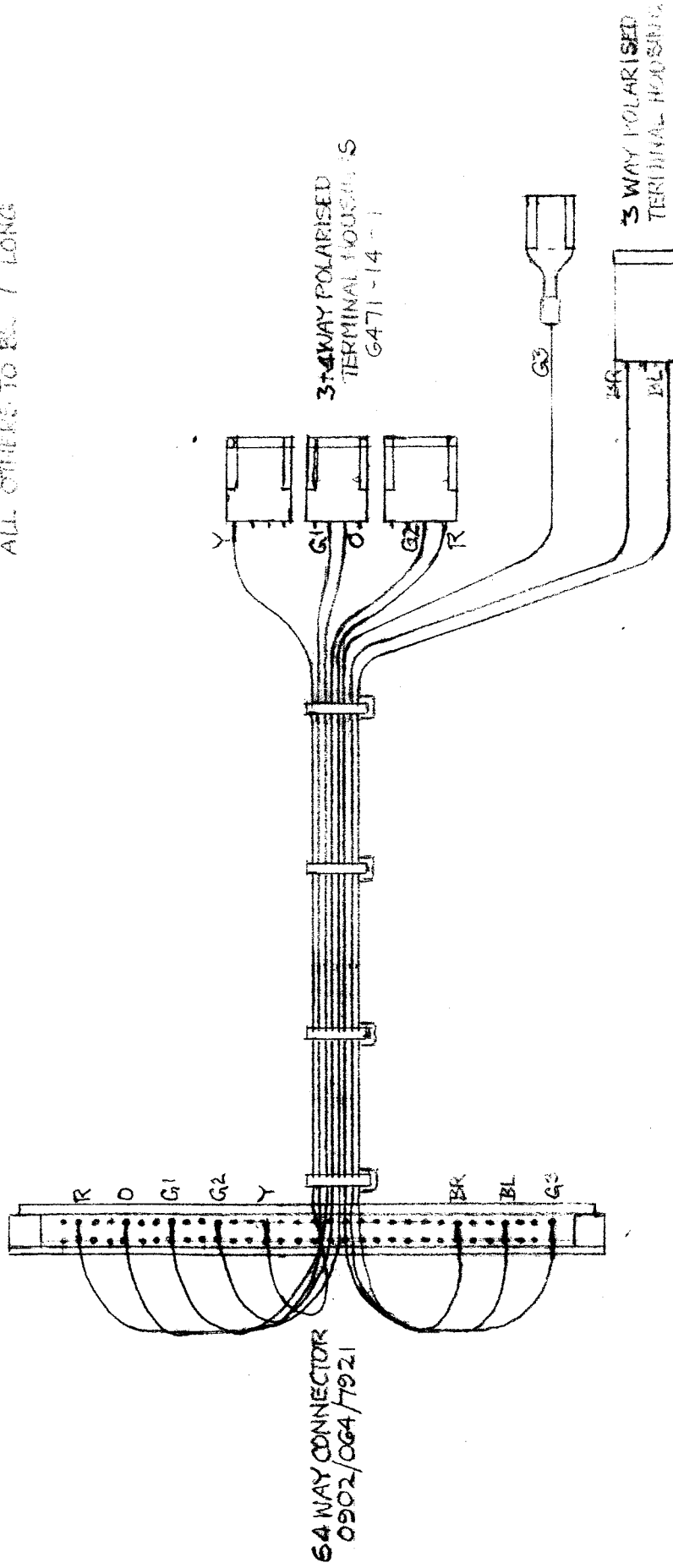
TITLE

REVISIONS

DATE & TIME

NOTE

BLUE, BROWN & G2-9" LONG
ALL OTHERS TO BE 7" LONG



MOD. ARR.
B. A. 84

REF. 8151 ASTEC POWER SUPPLY MODULE
RACK CONNECTOR FOR 'ORAC' - MKIII & '85'

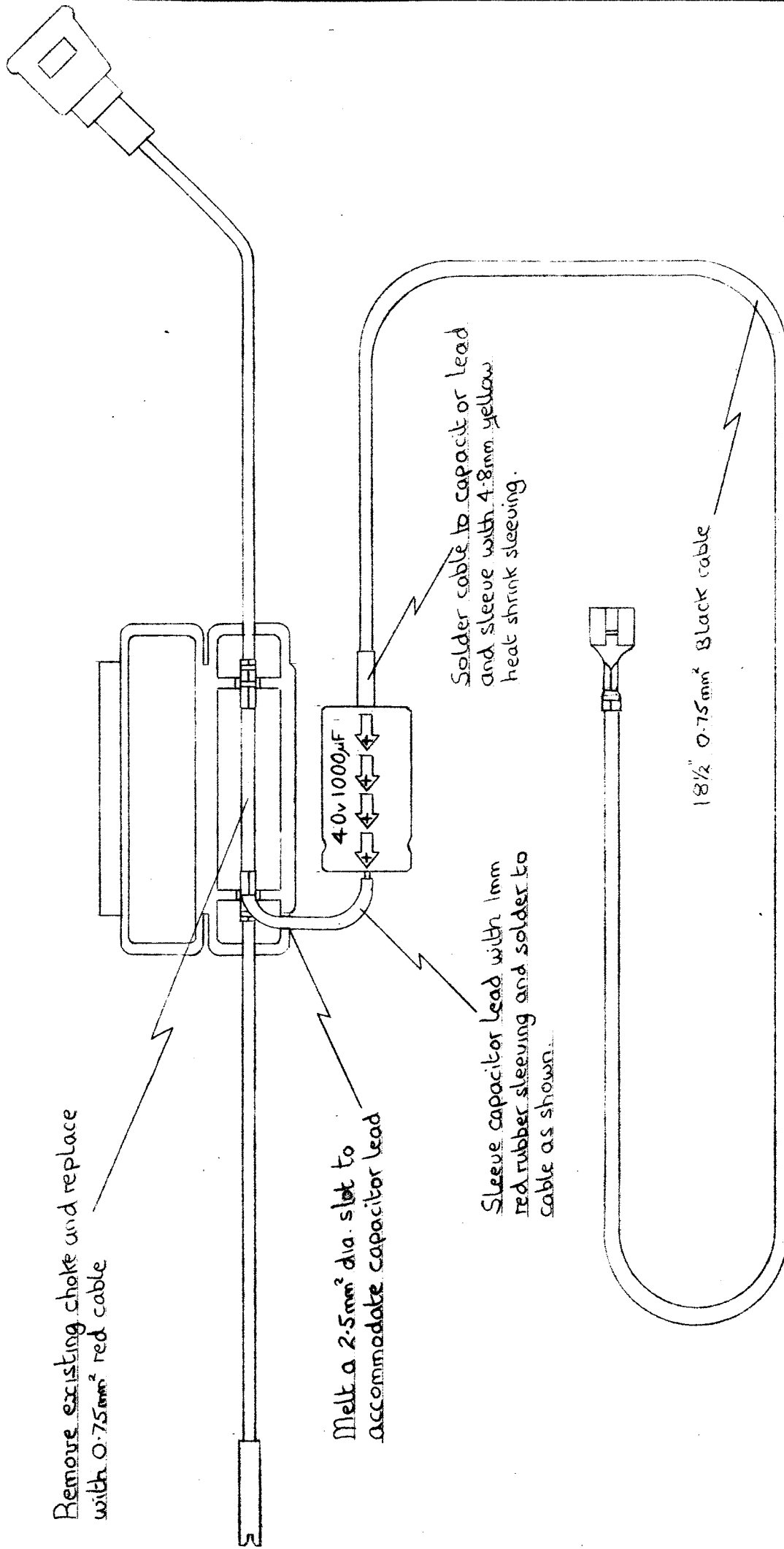
DRG. No.

OSM-SYNTEL LTD.

VICTORIA WORKS,
GLADING MILL ROAD,
HUDDESFIELD,
W. YORKS. HD1 3PG
Phone: 0484 38101/2

S1861

JOB	CODE	DATE
		4.4.84
DRAWN	SP.	
CKD.		



REVISIONS

JOB

CODE

DRAWN. A.C.H.

CKD.

DATE 29.83

GSM ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD,
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

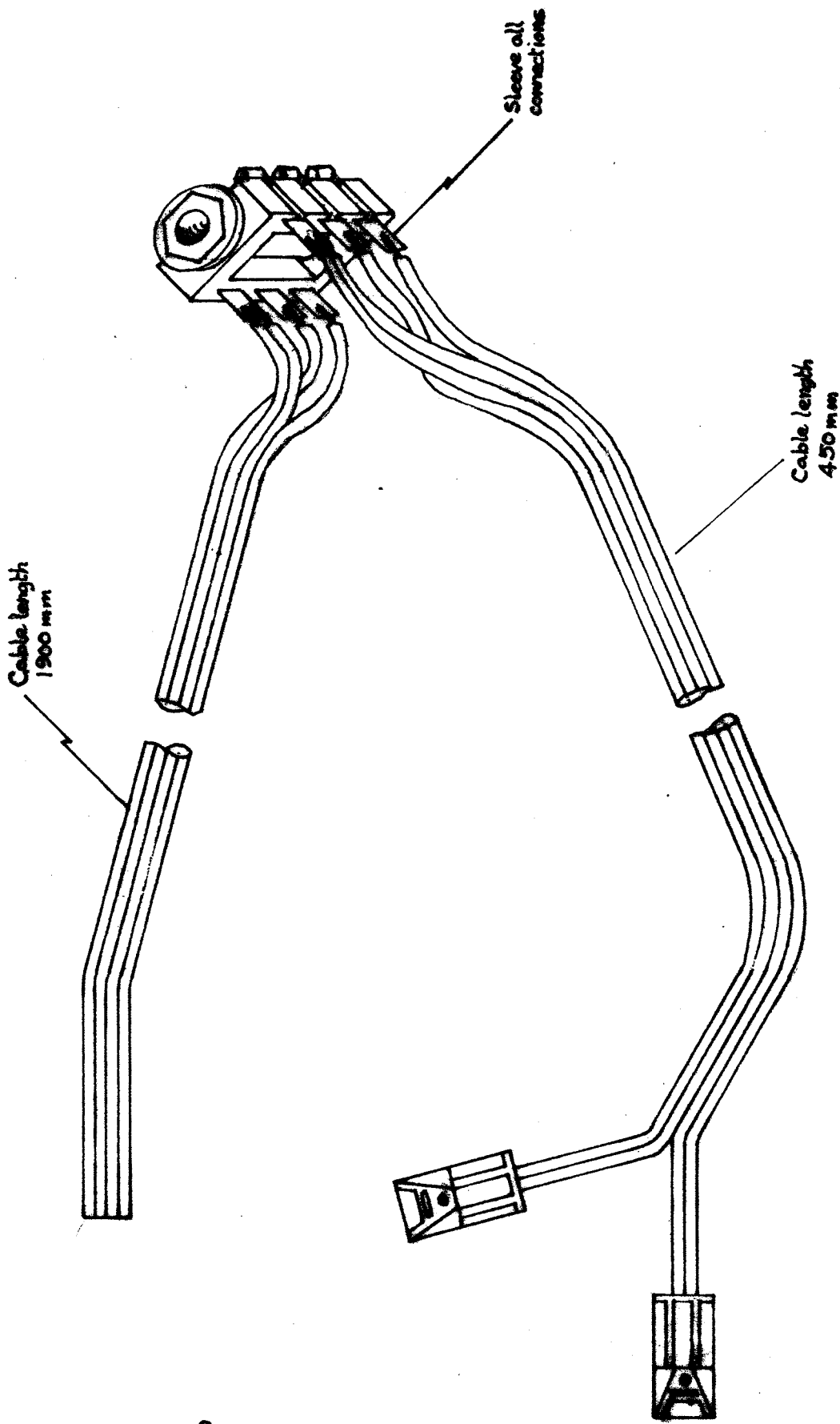
DRG. No.

S1741

TITLE

AUDIO CASSETTE SUPPLY CABLE

10/11/83



CABLE SUPPLIED
WITH SHARP
CASSETTE

DRG. No.

GSM ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

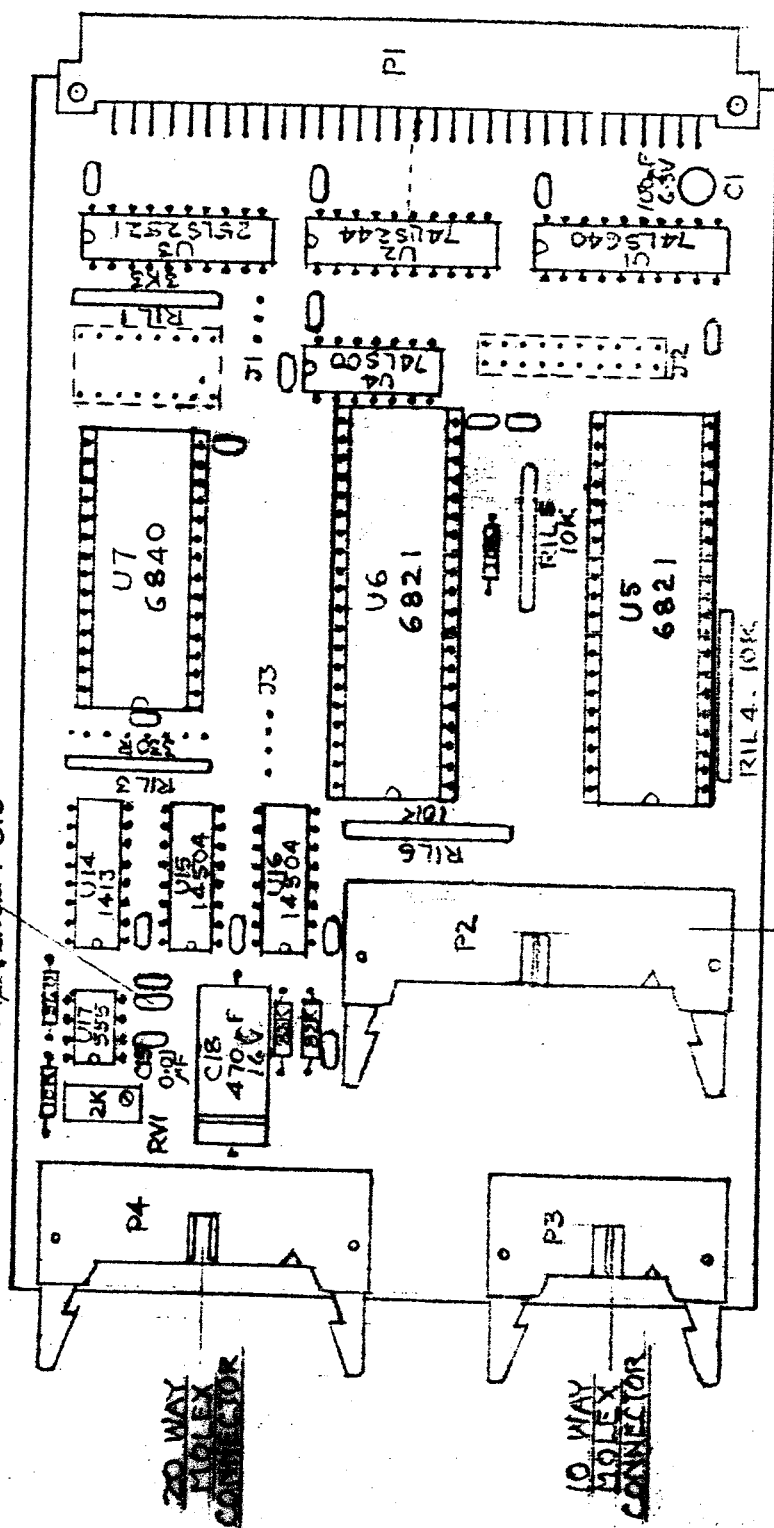


JOB	CODE	DRN.	CKD.	DATE
		A. C. H.		18. 11. 82.

REVISIONS	TITLE
	JACK SOCKET CONNECTION DETAILS GRACS MK III / BS ETC

S1632

SMALL CAPACITORS
0.1µF, EXCEPT C15



DWG. No.

S1737

GSM ELECTRICAL CONTROLS, LTD.

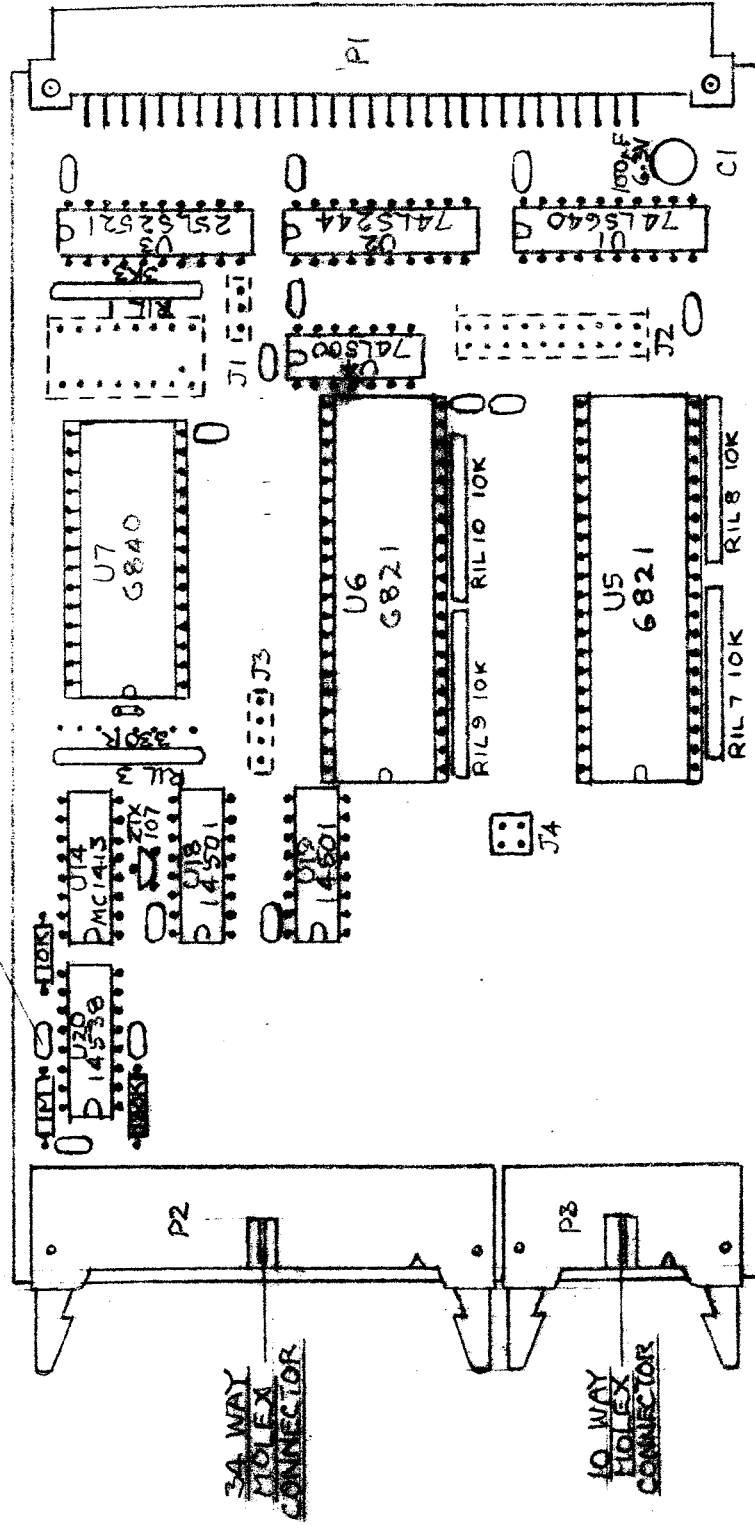
VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 351012



JOB	CODE	DRAWN	CHKD.	DATE
		J.B.		30.9.83

COMPONENT LAYOUT FOR
T10-A TIMER MODULE.

ALL SMALL CAPACITORS 0.1μF



DRG. No.

GSN ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 351012



JOB

CODE

DRN.

CKD.

DATE

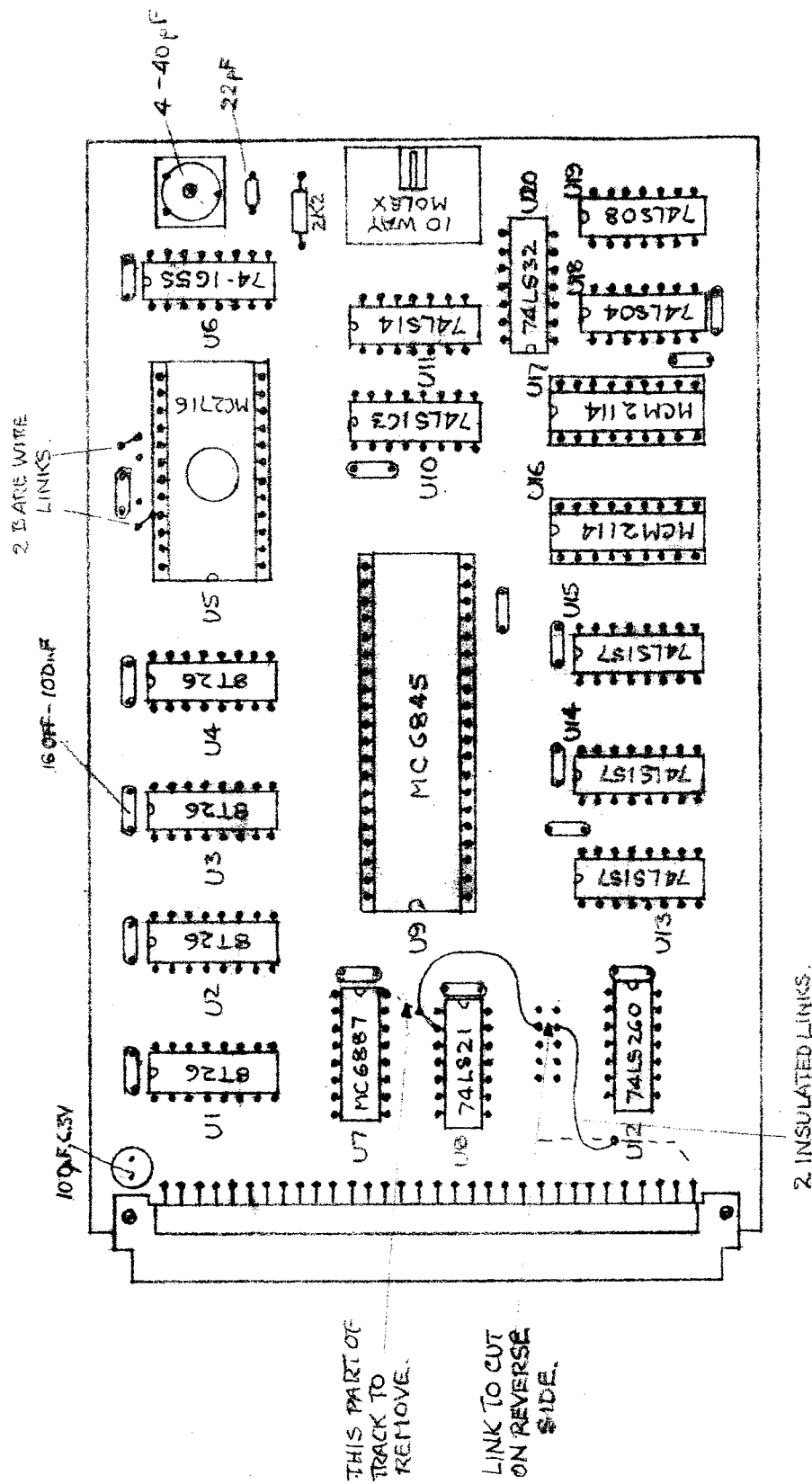
COMPONENT LAYOUT FOR
TIO-B TIMER MODULE

REVISIONS

TITLE

DATE

S1738



DRG. No.

GSM ELECTRICAL CONTROLS LTD.

S1639

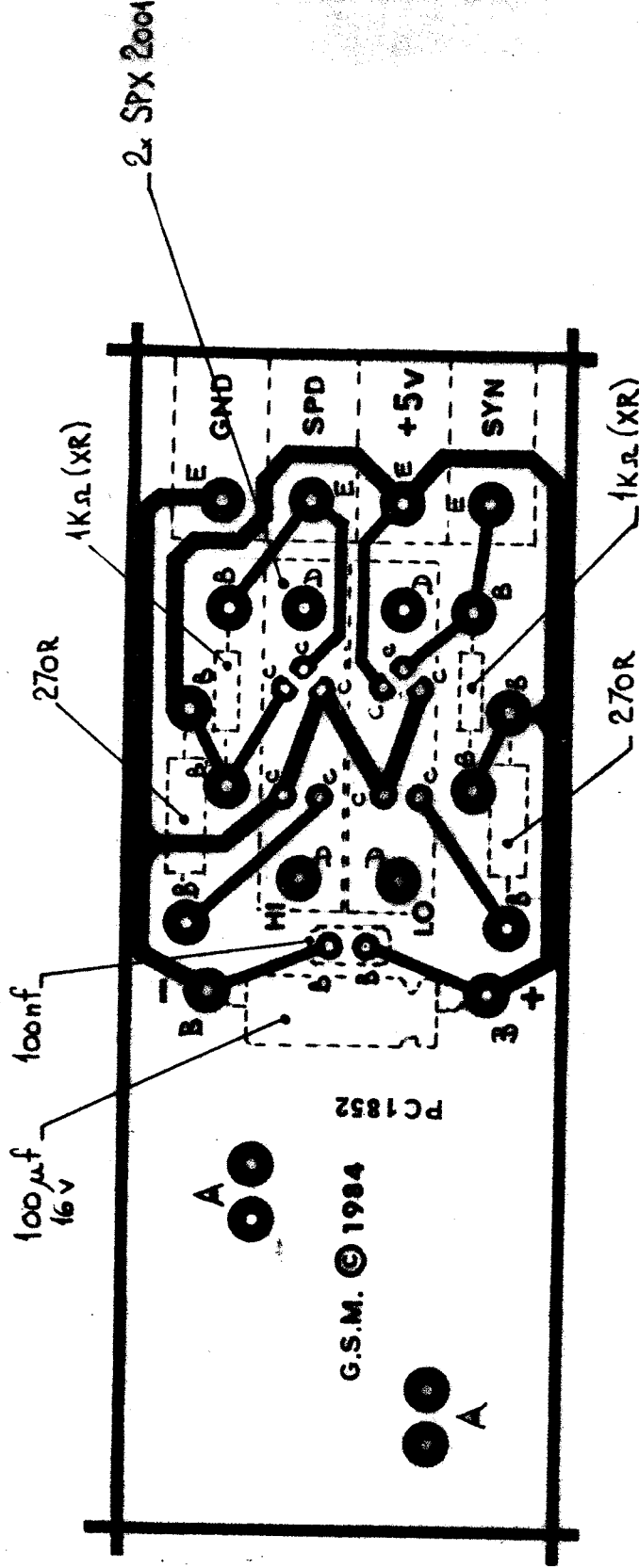
VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 351012



3.23

COMPONENT LAYOUT FOR VMI CARD.

DATE G. 12.82



HOLE REF.	Nº OFF	DRAWING DETAILS.
A	2	DRILL 2xNº26 THEN SLOT.
B	12	DRILL Nº 60
C	10	PILOT Nº 70 THEN Nº 60
D	4	DRILL Nº 30
E	4	DRILL Nº 54

REMARKS FROM SIZE 4 - EXTRA COMPONENTS FITTED.

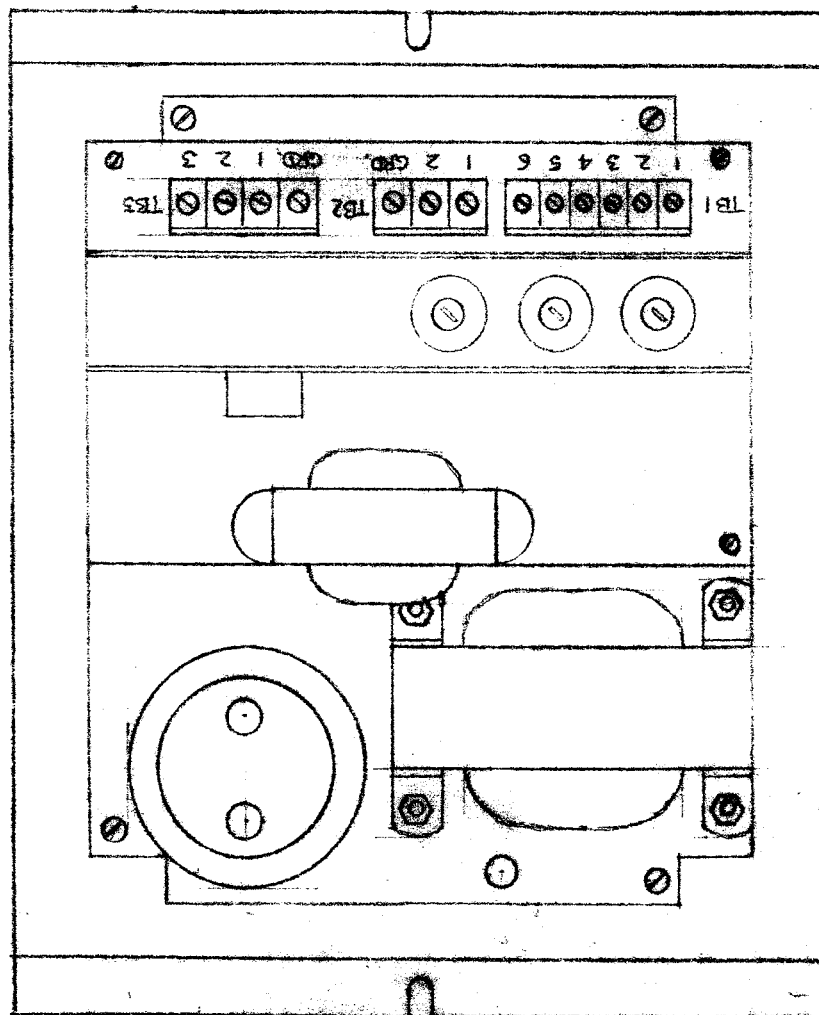
THIS DRAWING DETAILS ETC FOR P.C. 1852 MK III OPTO-SENSOR

P.C.B. FOR SYNTELECT.

FIXING DETAILS.

1. "HIGH" OPTO:- 2-OFF M3 x 12mm C.H. SCREWS WITH 4-BA NUTS AS SPACERS. SECURED WITH PLASTIC NUTS.
2. "LOW" OPTO:- 2-OFF M3 x 10mm C.H. SCREWS & PLASTIC NUTS.
3. P.C.B.:- FIT TO BRACKET WITH 2 OFF 4-BA SCREWS AND SHAKE PROOF WASHERS.

JOB		CODE		DIN.		C/O.		DATE	
				P.R.P.				21.2.84	
G.S.M.-SYNTELECT LTD. VICTORIA WORKS, GLENSIDE MILL ROAD, HUDDERSFIELD, W. YORKS. HD1 3PB Phone: 0484 38101/2									
ORG. No. <div style="float: right; font-size: 2em; font-weight: bold;">S1853</div>									



PARAJUST UNIT TURNED
50° ON CHASSIS-10.8.63

GENERAL ARRANGEMENT OF FHP PARAJUST
'ORAC' CHASSIS.

HALF SCALE

JOB
DATE
END
DATE

1/3

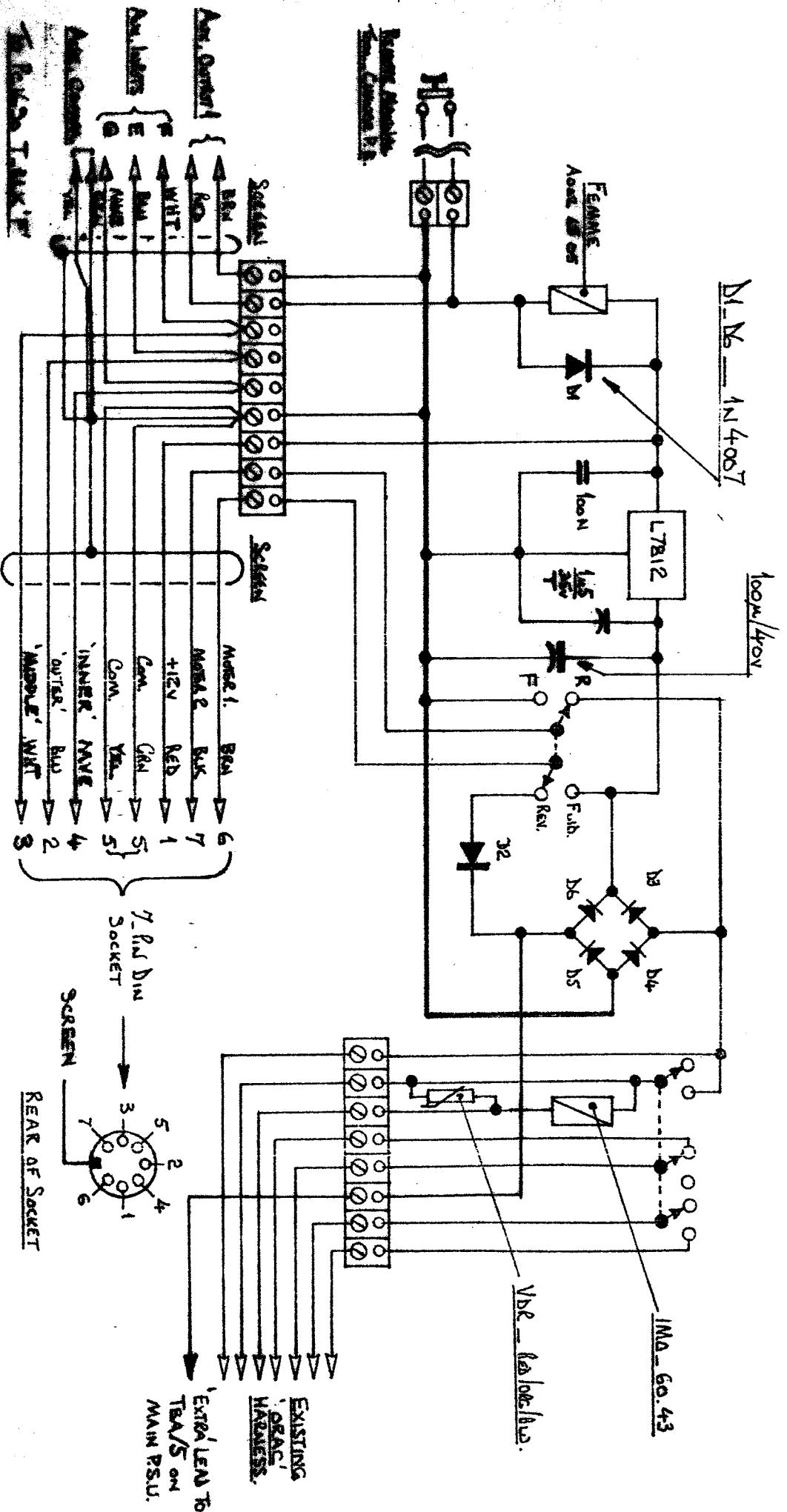
7.9.82

GSH ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEEN'S MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

DRG. No.

S1609



JOB		CODE		OSM-SYNTEL LTD. VICTORIA WORKS, QUEENS MILL ROAD, HUDDESFIELD, W. YORKS. HD1 3PB Phone: 0484 35101/2	Dwg. No. S1929
DATE		CHKD.			
19.9.84		19.9.84			

PROJECT DIAGRAM FOR IC1924 COMBINED ESR/ITP BOARD.

DENFORD INDEXING TOOL-POST — INSTRUCTIONS FOR RETRO-FITTING
TO THE 'ORAC' C.N.C. TRAINING LATHE.

A. THE KIT COMPRISES:

1. INDEXING TOOL-POST ASSEMBLY.
2. REPLACEMENT COMBINED INDEXING TOOL-POST / EMERGENCY-STOP RELAY BOARD
REF. PC 1924.
3. DIN SOCKET / CABLE ASSEMBLY. (CABLES A & B)
4. CONNECTING LINK (REF. 'C')
5. CONNECTION DIAGRAM S1946

BEFORE COMMENCING WORK, ENSURE MAINS SUPPLY IS DISCONNECTED!

B. 'ORAC' UNIT

1. REMOVE THE TWO SCREWS SECURING THE HINGED REAR PANEL AND LOWER.
2. REMOVE THE FOUR SCREWS RETAINING THE PCB CHASSIS, POWER SUPPLY CHASSIS AND 'PARAJUST' CHASSIS.
3. EASE OUT EACH CHASSIS IN TURN UNTIL THE TWO SCREWS SECURING THE EMERGENCY-STOP RELAY BOARD (PC1619) TO THE MAINS TRANSFORMER BECOME ACCESSIBLE.
4. DISCONNECT THE WIRING HARNESS FROM PC1619 AND REMOVE THE BOARD.
5. REPLACE THIS WITH THE COMBINED I.T.P./E.S.R VERSION (PC1924).
IMPORTANT MOUNT P.C.B. ON UNDERSIDE OF TRANSFORMER CLAMPING BRACKET.
6. SOLDER ONE END OF CONNECTING LINK 'C' TO THE BLANK TAG OF THE EXISTING PC1619 HARNESS (SITUATED 6TH FROM THE LEFT) AND RUN SLEEVE OVER TAG.
7. REPLACE HARNESS INTO THE ^{8-WAY} RIGHT-HAND T-BLOCK OF (NEW) PC1924.
8. REMOVE PLASTIC PROTECTIVE COVER FROM THE REAR OF THE MAIN POWER SUPPLY UNIT.
9. CONNECT THE FREE END OF CONNECTING LINK 'C' INTO THE 5TH CONNECTION FROM THE LEFT OF T-BLOCK TBA ON MAIN P.S.U. ALONG WITH THE TWO EXISTING YELLOW WIRES.
10. REPLACE PLASTIC COVER.

C. FITTING THE DIN SOCKET / CABLE ASSEMBLY.

1. UNSCREW THE LOCK-NUT FROM THE DIN SOCKET-BUSH, THEN THREAD THE TWO AND FIVE-WAY TAG STRIPS OF CABLE 'A' THROUGH THE NOT. THIS LATTER CAN THEN BE PASSED OVER THE 9-WAY TAG-STRIP AND REMOVED.

CONT.....

Ctb (2).....

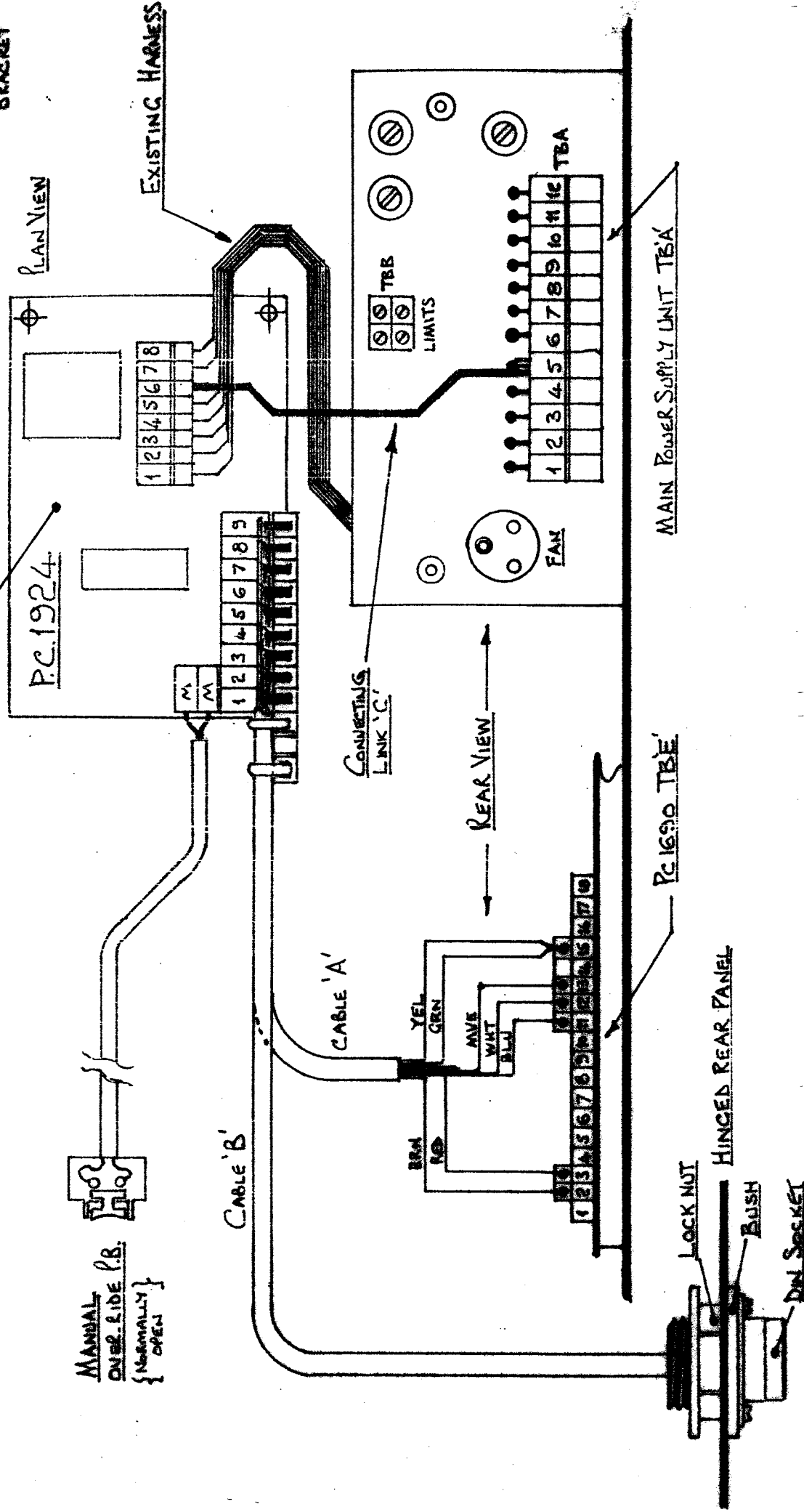
- C2. REMOVE THE RUBBER PLUG FROM THE SELECTED 20MM CONDUIT ENTRY ON THE LEFT-HAND SIDE OF THE HINGED REAR PANEL.
3. THREAD THE CABLE ASSEMBLY THROUGH FROM THE OUTSIDE, 9-WAY TAG-STRIP FIRST.
4. SLIDE THE LOCK NUT BACK OVER THE CABLES ENSURING THAT ITS HEXAGON FACE IS TOWARDS THE DIN SOCKET. THIS PREVENTS THE NUT FROM FOULING THE REAR PANEL PIANO HINGE.
5. STRAIGHTEN THE SPILLS OF THE TAG-STRIPS, THEN CONNECT THESE (PER DRG. S1946) AS FOLLOWS:-
 - 2-WAY _____ TO AUX. OUTPUT 'A' ON PC1690.
 - 5-WAY _____ TO AUX. INPUTS 'E, F & G - SPACE - COMMON' ON PC1690.
 - 9-WAY _____ TO THE LEFT-HAND (9-WAY) T-BLOCK OF PC1924.

D. MANUAL OVER-RIDE CONTROL

A NORMALLY-OPEN PUSH-BUTTON IS USED TO EFFECT MANUAL OPERATION OF THE TOOL-POST. ITS LOCATION IS LEFT TO THE DISCRETION OF THE USER AND CAN EITHER BE MOUNTED REMOTELY, OR IN SOME CONVENIENT POSITION ON THE 'ORAC'. IF REMOTELY MOUNTED, THE CABLING SHOULD BE BROUGHT IN BY WAY OF THE SECOND 20MM CONDUIT ENTRY ON THE REAR PANEL. IN EITHER CASE, THE CABLE IS CONNECTED TO THE 2-WAY T-BLOCK SITUATED ON THE EXTREME LEFT-HAND SIDE OF PC1924.

- E. THIS COMPLETES THE FITTING OPERATION AND THE THREE CHASSIS CAN NOW BE REPLACED TAKING EXTREME CARE TO AVOID TRAPPING ANY WIRING AT THE REAR OF THE CHASSIS CONCERNED. RAISE AND SECURE THE HINGED REAR PANEL, ENSURING THAT THE NEWLY-FITTED CABLES ARE NOT KINKED OR TRAPPED.

NOTE! THIS BOARD TO BE MOUNTED ON UNDERSIDE OF TRANSFORMER CLAMPING BRACKET



DRG. No.

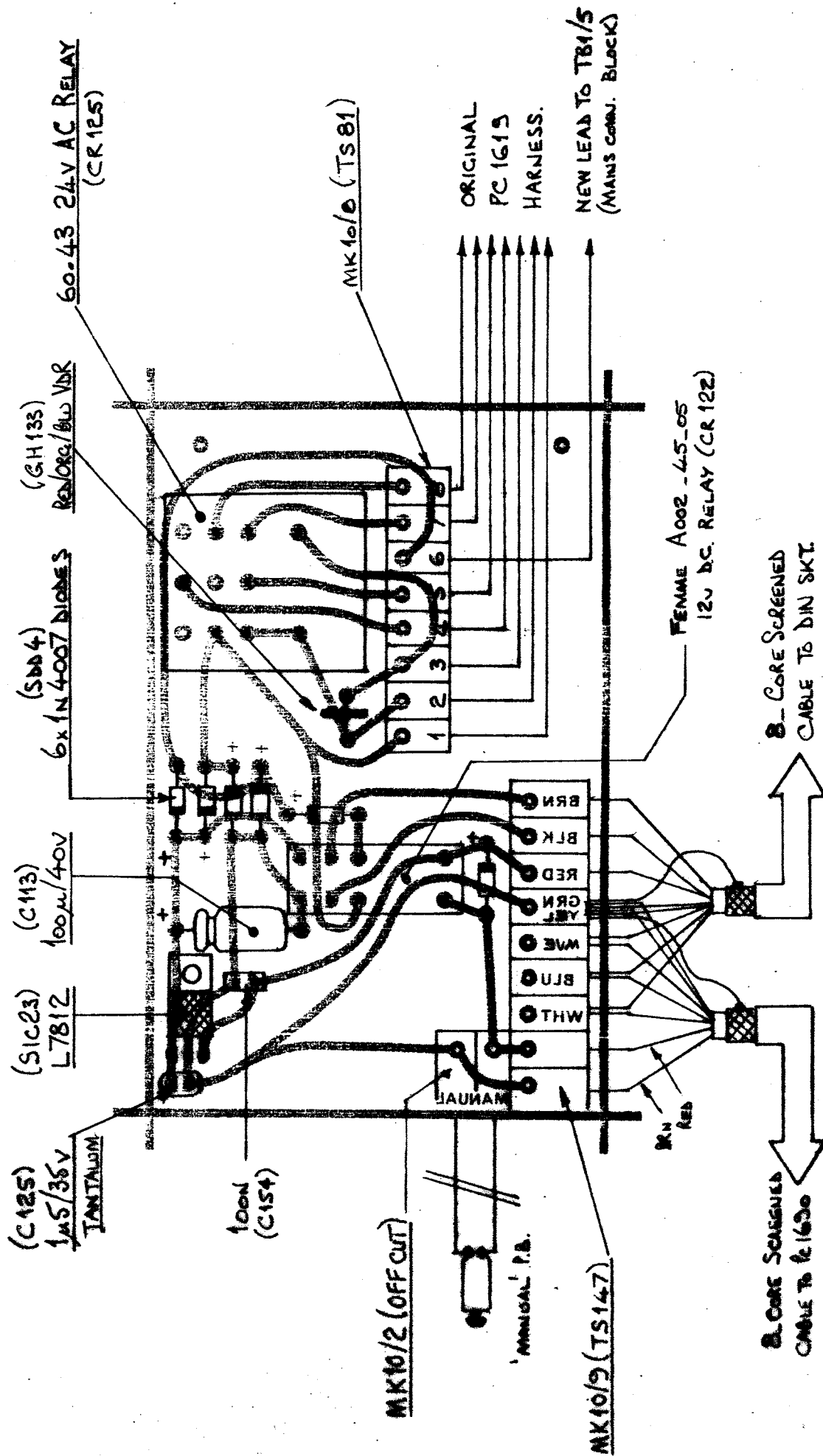
GBM-SYNTEL LTD.

VICTORIA WORKS,
BUSINESS MILL ROAD,
HUDDERSFIELD,
W. YORKS. HD1 3PB
Phone: 0484 36101/2

S1946

JOB	CODE	DRN.	CKD.	DATE
		119		26.10.84

TRU 'ORAC' INDEXING TOOL POST: RETRO-FIT CONNECTION DIAGRAM.



DRG. No.

OSM-SYNTEL LTD.

S1933

VICTORIA WORKS,
BUSSEY MILL ROAD,
HUDDERSFIELD,
W. YORKS. HD1 3PG
Phone: 0484 35101/2

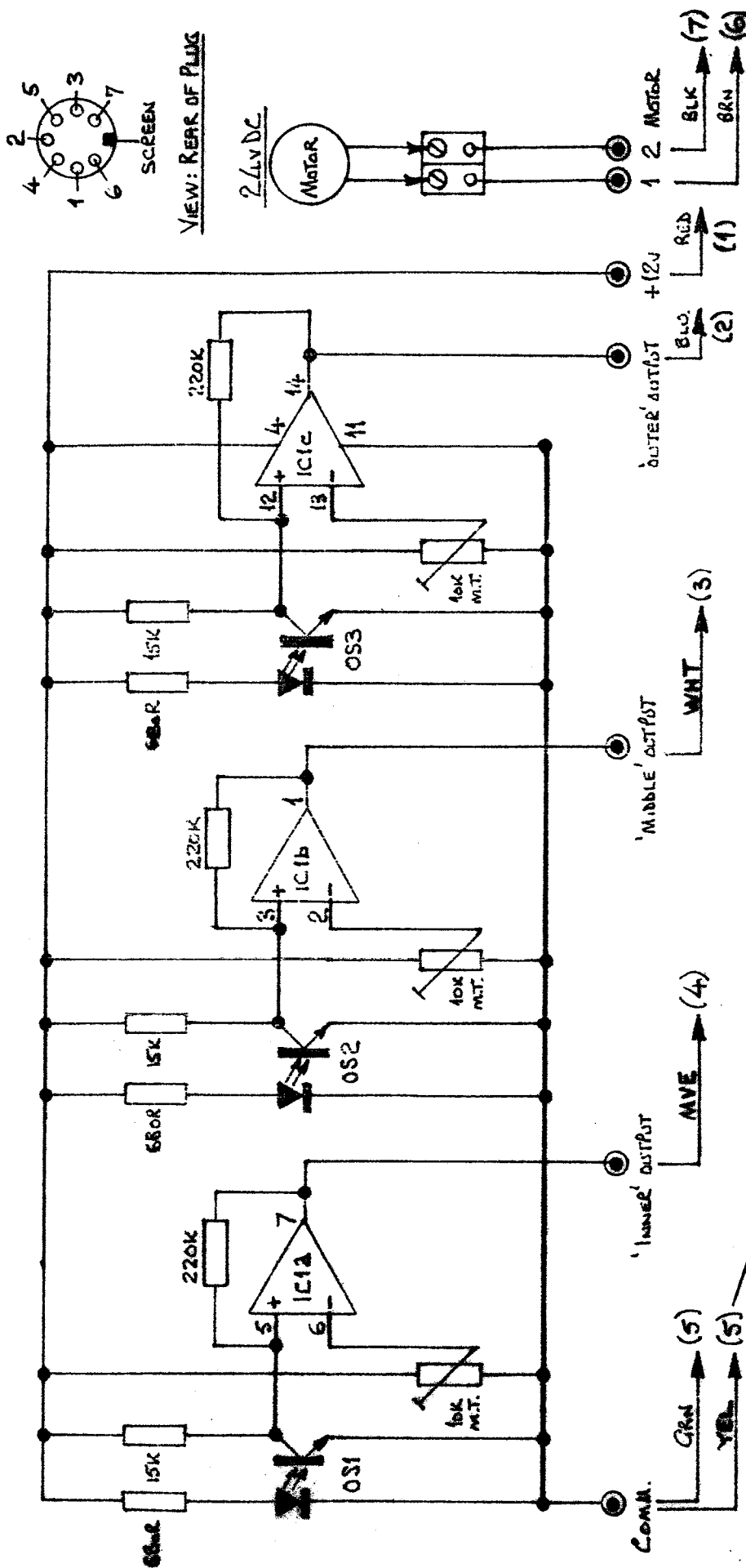
JOB	
CODE	
DRN.	MB
CKD.	
DATE	2.10.84

TITLE: OSM's Command ESR AND INDEXING TOOLPOST RELAY BOARD -

CONFIDENTIAL LATER

ICI - RS Type 348 (Ques 741)

0.51.3 RS. 307-913 REFLECTIVE OPTO SWITCH



NUM IN BRACKETS REFER TO DOW PLUG PIN NOS.

3 ~~600~~Ω RESISTORS ARE $\frac{1}{2}$ WATT — REMAINDER ARE $\frac{1}{4}$ WATT.

SECRET

COM-SYNTEL LTD.

ONG. No.

THE

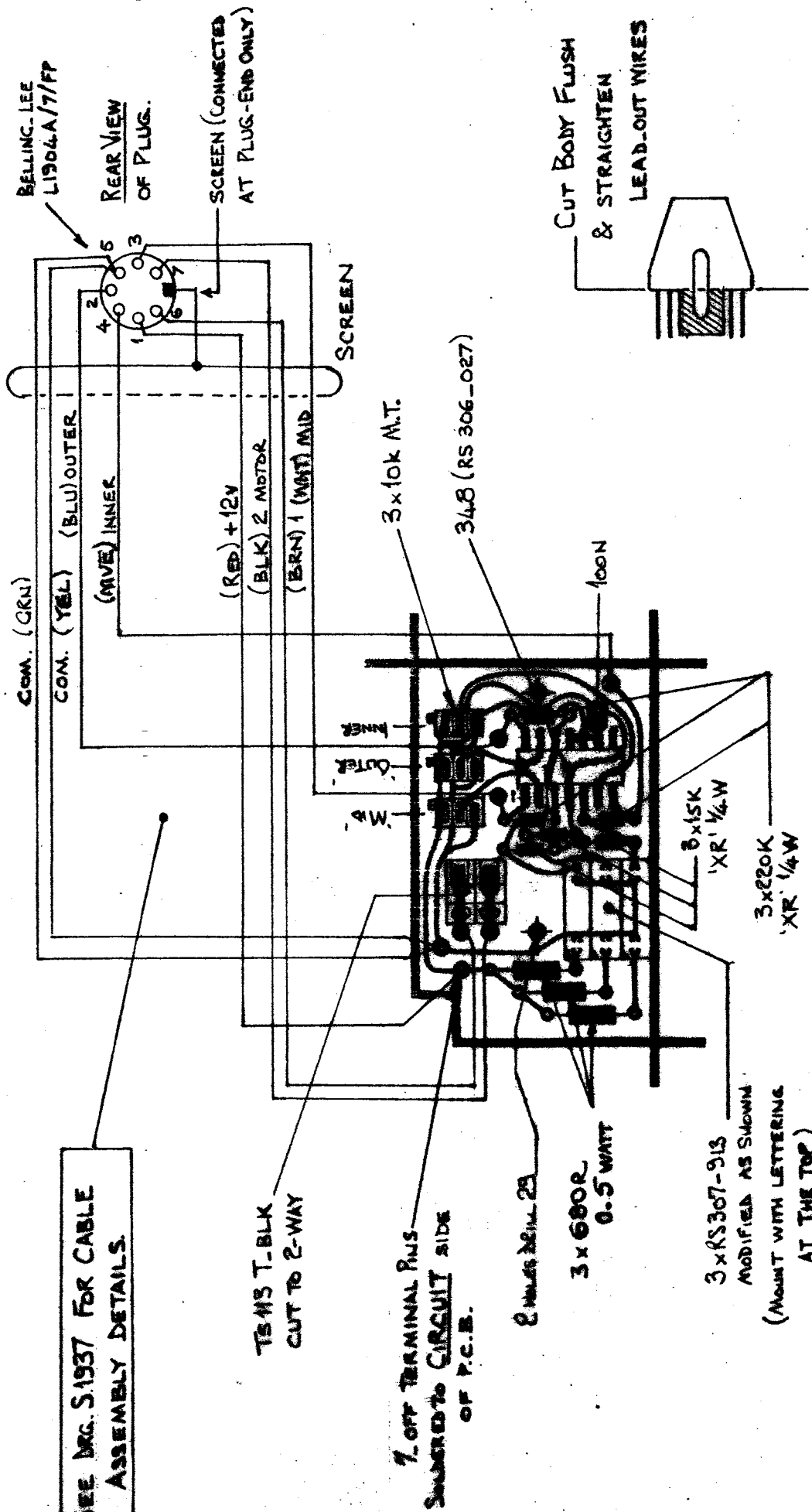
CIRCUIT DIAGRAM FOR P.C. 1928 - SENSOR BOARD FOR I.T.P.

**VICTORIA WORKS,
QUEENS MILL ROAD,
MUDGERSFIELD,
W. YORKS. HD1 3PB**
Phone: 0484 35101/2

\$1930

DATE 19.9.84

SEE DRG. S1937 FOR CABLE
ASSEMBLY DETAILS.



MODIFICATIONS TO SENSORS

VIEW IS OF COMPONENT SIDE

COM-SYNTEL LTD. DRG. No.

S1934

VICTORIA WORKS,
BUSINESS MILL ROAD,
NUDDERSFIELD,
W. YORKS. HD1 3PD
Phone: 0484 35101/2

JOB CODE DRN CKD DATE

THIS 'ORAC': I.T.P. SENSOR BOARD (P.C.1928) - COMPONENT
LAYOUT & CABLE CONNECTIONS

2.10.84

PROGRAM

→ AUX. OUT
A B C D
1 0 0 0
→ DWELL
3 SECS.
→ AUX. IN *
E F G H

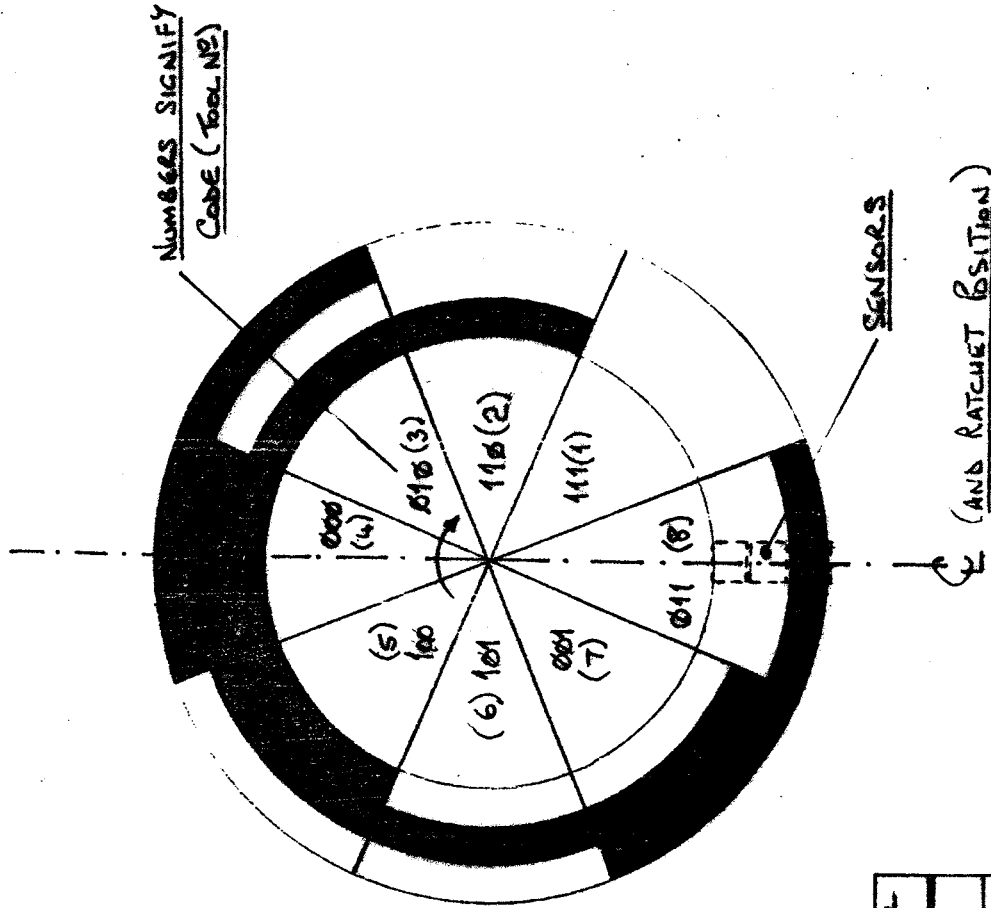
1 1 1 1 — (FOR TOOL NO 1)

→ AUX. OUT

A B C D
0 0 0 0

• NOTE: 'H' INPUT ALWAYS AT '1'

Disc Position For Tool 1 Setting



AUXILIARY INPUT CODES FOR DESIRED TOOL SETTING.

TRACK	LEAD	REF.	TOOL 1	TOOL 2	TOOL 3	TOOL 4	TOOL 5	TOOL 6	TOOL 7	TOOL 8
OUTER	BLUE	E	1	1	0	0	1	1	0	0
MIDDLE	WHITE	F	1	1	1	0	0	0	0	1
INNER	NAVY	G	1	0	0	0	0	1	1	1

DRG. No.

OSM-SYNTEL LTD.

VICTORIA WORKS,
BURNS MILL ROAD,
HUDDESFIELD,
W. YORKS. HD1 3PG
Phone: 0484 58101/2

\$1938

JOB

CODE

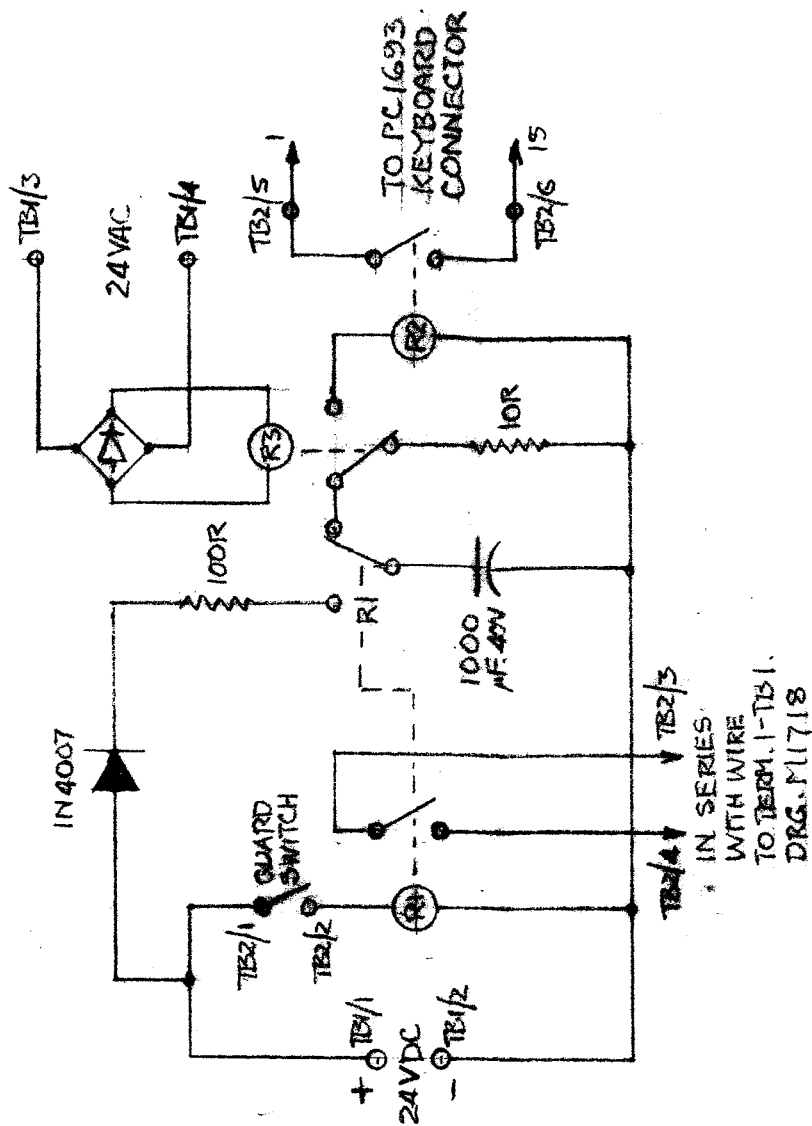
DRN.

CKD.

DATE

Q8AC: INDEXING TOOL POST — SENSOR DISC ENCODING ETC.

4.10.84



7B2/4 ↓ TB2/3
IN SERIES
WITH WIRE
TO TERM. 1-TB1.
DRG. M1718

57

COMPONENT LAYOUT & CIRCUIT DIAGRAM
FOR PC 1942 - ORAC GUARD SWITCH PCB.

COMM-CONTROL LTD.

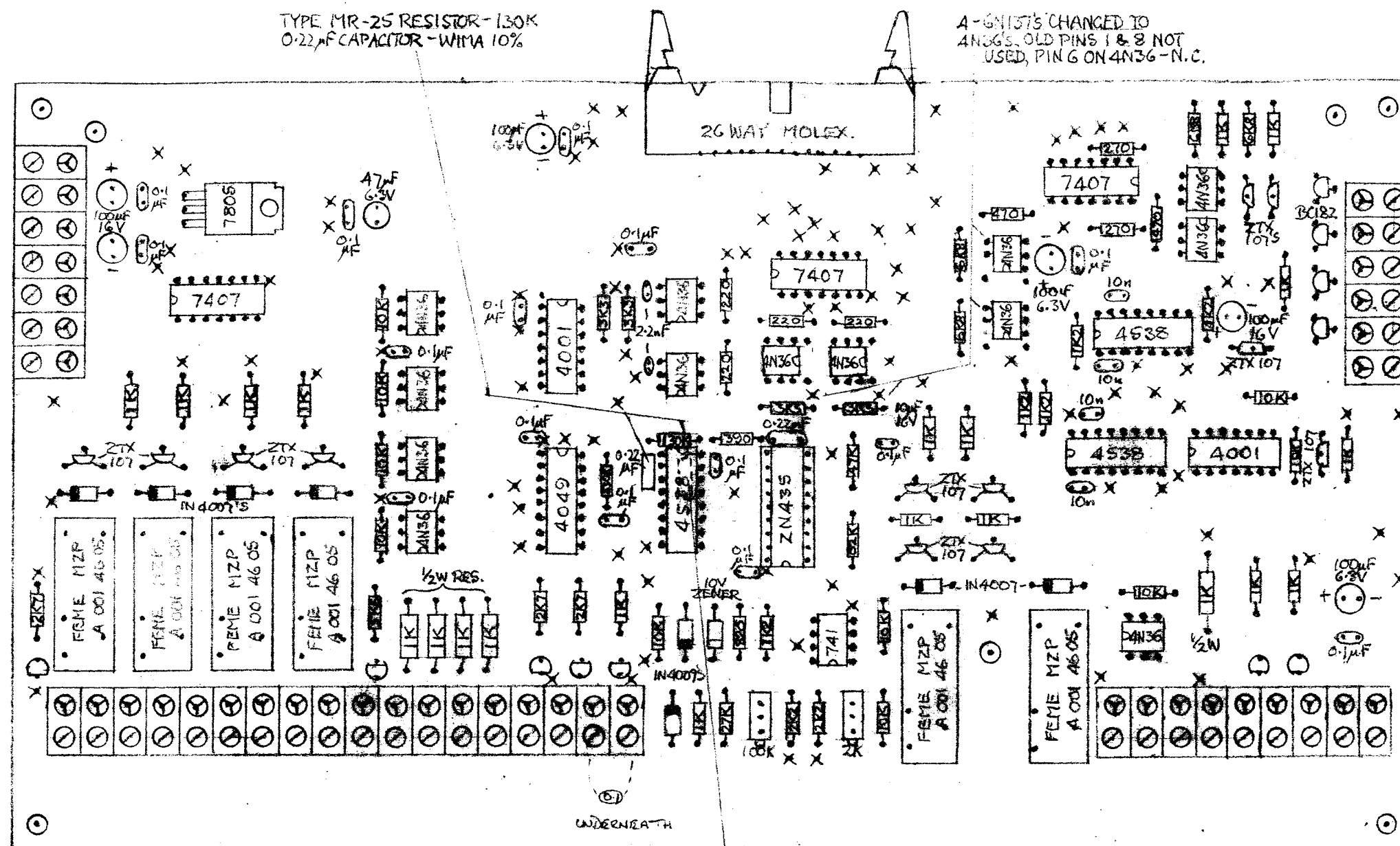
VICTORIA WORKS,
SUNSHINE MILL ROAD,
MIDDELBURG,
N.Y. YORKS. MAP 1 300
Phone: 0424 35101/2

2012

77615

TYPE MR-25 RESISTOR-130K
0.22µF CAPACITOR-WIMA 10%

4-6N1575 CHANGED TO
4N36'S, OLD PINS 1 & 8 NOT
USED, PIN 6 ON 4N36-N.C.



COLOUR CODE			
RESISTOR VALUE	1 ST BAND	2 ND BAND	3 RD BAND
220	R	R	BR
270	R	V	BR
390	O	W	BR
470	Y	V	BR
1K	BR	BR	R
2K2	R	R	R
2K7	R	V	R
3K3	O	O	R
4K7	Y	V	R
5K6	G	BL	R
6K8	BL	GY	R
10K	BR	BR	O
27K	R	V	O
47K	Y	V	O
82K	GY	R	O
330K	O	O	Y
130K	BR	O	Y

10K 1/2W RESISTOR CONNECTED
BETWEEN PINS 14 & 16 ON 4538
BACK OF BOARD

REVISIONS VARIOUS DELETIONS & ALTERATIONS TO BOARD. 30. 8. 83
470K REPLACED BY 3K3 28. 11. 84

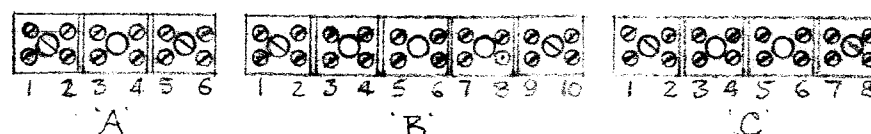
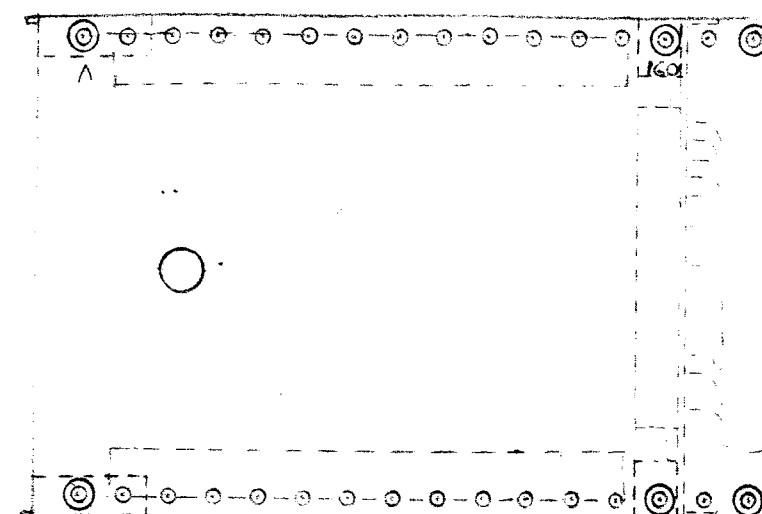
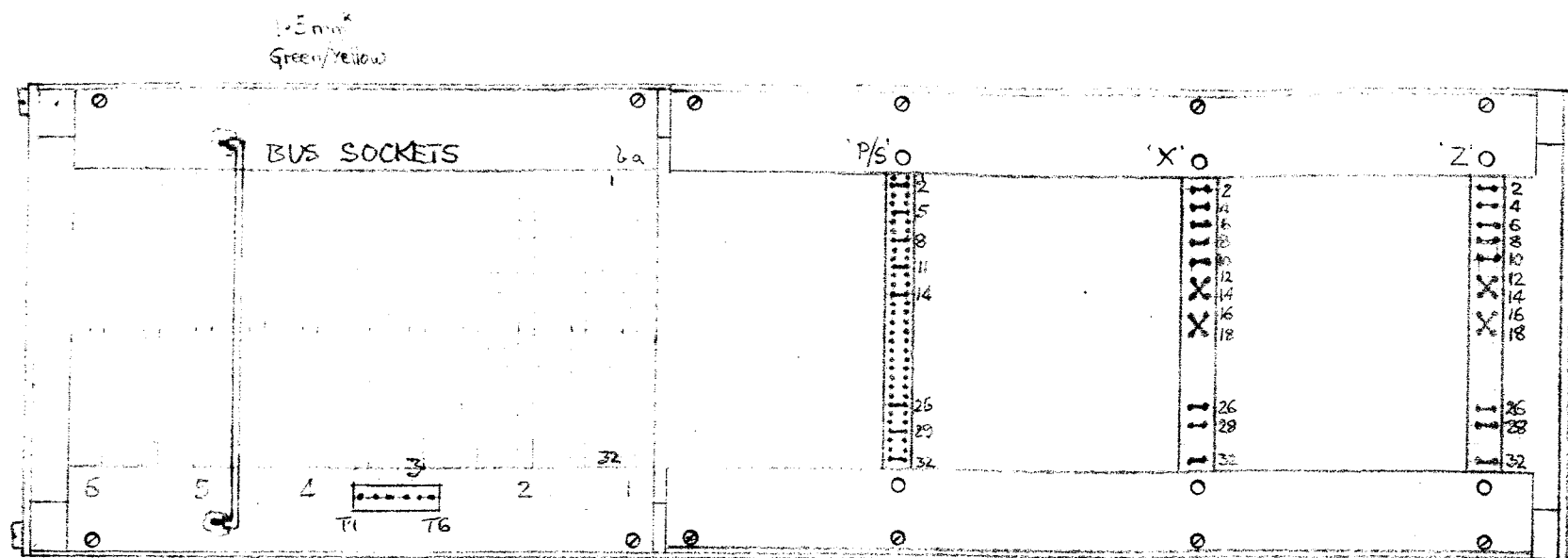
TITLE COMPONENT LAYOUT FOR PC 1690
SYNTELECT MKII COMPUTER INTERFACE BOARD.

JOB CODE
DRN. 1/3
C.D.
DATE 3. 8. 83

GSM ELECTRICAL CONTROLS LTD.
VICTORIA WORKS,
QUEENS HILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

DRG. No.

M17



RACK CONNECTIONS		
A1 - P/S5	(ORANGE 0.75)	B1 - X26 (RED 2 CORE SCREENED)
P/S5-BUS T3	(" ")	B2 - X28 (BLUE " ")
A2 - P/S2	(RED ")	B3 - Z28 (BLUE " ")
P/S2-BUS T6	(" ")	B4 - Z26 (RED " ")
A3 - P/S11	(GREEN/YELLOW ")	B5 - BOTH EARTH SCREENS
P/S11 - P/S8	(" ")	B6 - Z10 (RED 0.75)
A3 - SCREEN FROM 4 CORE BELOW	(" ")	B6 - X10 (" ")
P/S8-BUS T1	(GREEN/YELL 1.5)	B8 - X32 (BLACK 1.5)
P/S14-BUS T4	(YELLOW 0.75)	B8 - Z32 (" ")
P/S32 - A4	(GREEN 4 CORE)	X32 - X16&18 (" ")
A5 - P/S29a&b	(BLUE ")	Z32 - Z16&18 (" ")
A6 - P/S26a&b	(RED ")	X16 - Z16 (" ")
C1 - Z4 (PURPLE 0.75)		B9 - Z12&14 (RED ")
C2 - Z2 (BLUE ")		B10 - X12&14 (BROWN ")
C3 - Z6 (GREEN ")		
C4 - Z8 (YELLOW ")		
C5 - X4 (ORANGE ")		
C6 - X2 (RED ")		
C7 - X6 (BROWN ")		
C8 - X8 (BLACK ")		

BUS EARTH LINK ACROSS MOTHER BOARD AS ABOVE
ON X & Z, CUT OFF PINS 20, 22, 24, 30 (8 PINS).
CUT REMAINING PINS HALF-WAY DOWN.
JOIN TOGETHER BOTH PINS AT 2, 4, 6, 8, 10, 26, 28, 32
JOIN TOGETHER 4 PINS AT 12, 14 & 16, 18
AS SHOWN ABOVE.

REVISIONS 4 WAY CHASSIS PLUG 'T'
ADDED - 10.8.83

HALF SCALE

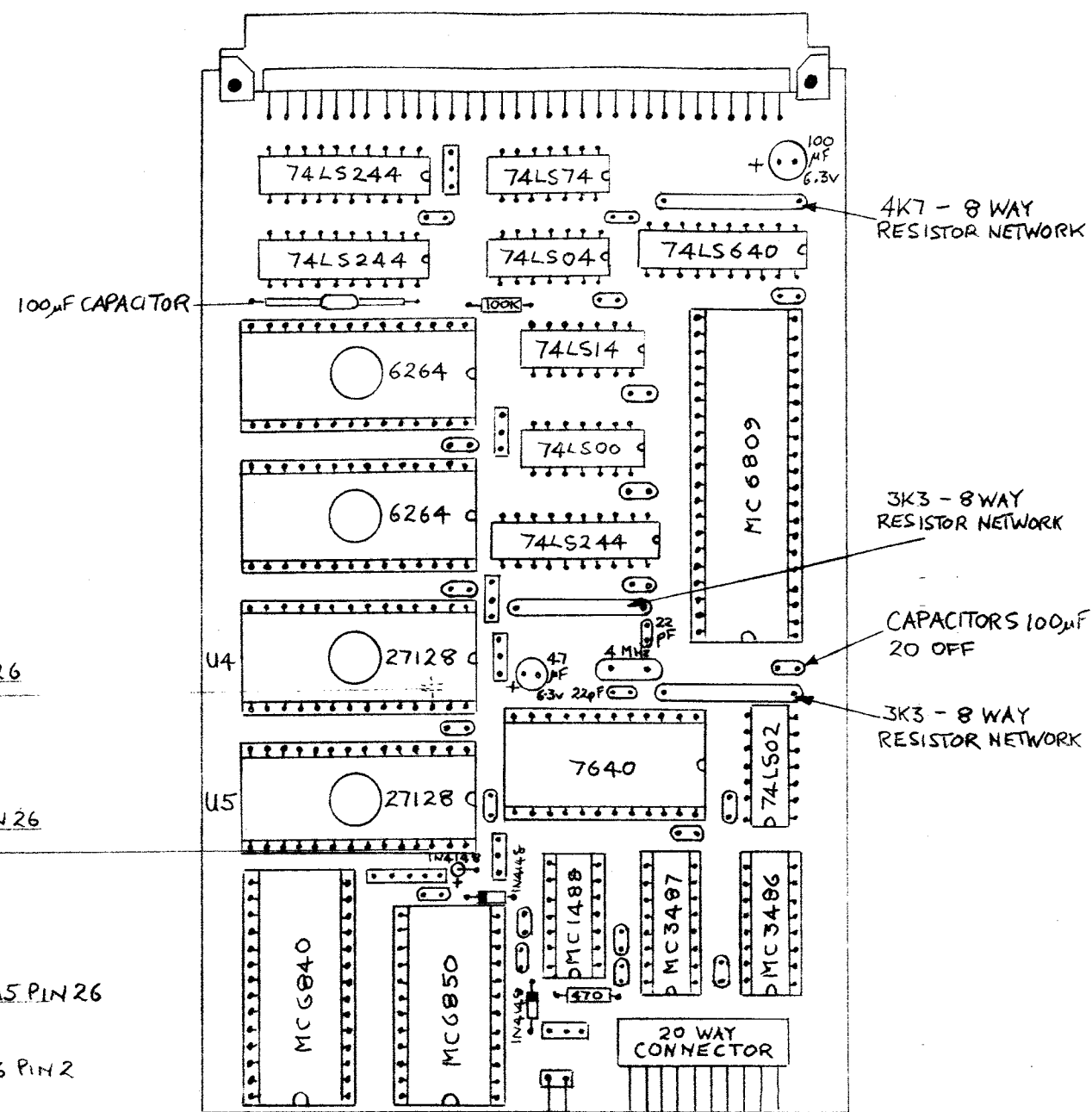
DES.	
CODE	
DRN.	J.B.
CKD.	
DATE	9.9.82

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VICTORIA WORKS,
QUEENS HILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

ENG. No.

M161

ORAC COMPUTER RACK WIRING DIAGRAM

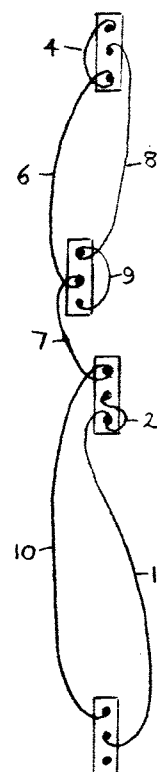


CUT TRACK TO U4 PIN 26
ON REVERSE SIDE

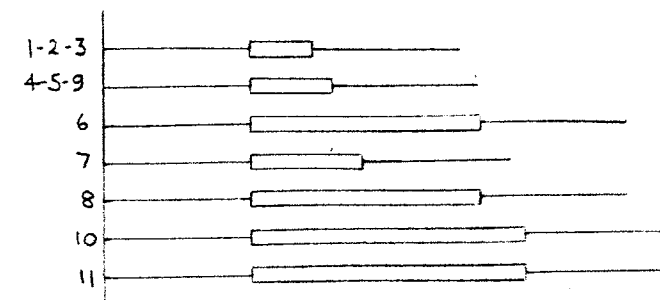
CUT TRACK TO U5 PIN 26
ON COMPONENT SIDE

LINK U4 PIN 26 TO U5 PIN 26
ON REVERSE SIDE

LINK U4 PIN 26 TO U6 PIN 2
ON REVERSE SIDE



DETAILS OF WIRE WRAP LINKS ON
PCB CONNECTION PINS



1,2,3,8,11 ARE BLUE
4,5,6,7,9,10 ARE RED

REVISIONS

TITLE

COMPONENT LAYOUT FOR MP09 CARD FOR ORAC MK II

JOB	
CODE	
DRN.	A.C.H.
CKD.	
DATE	13.10.83



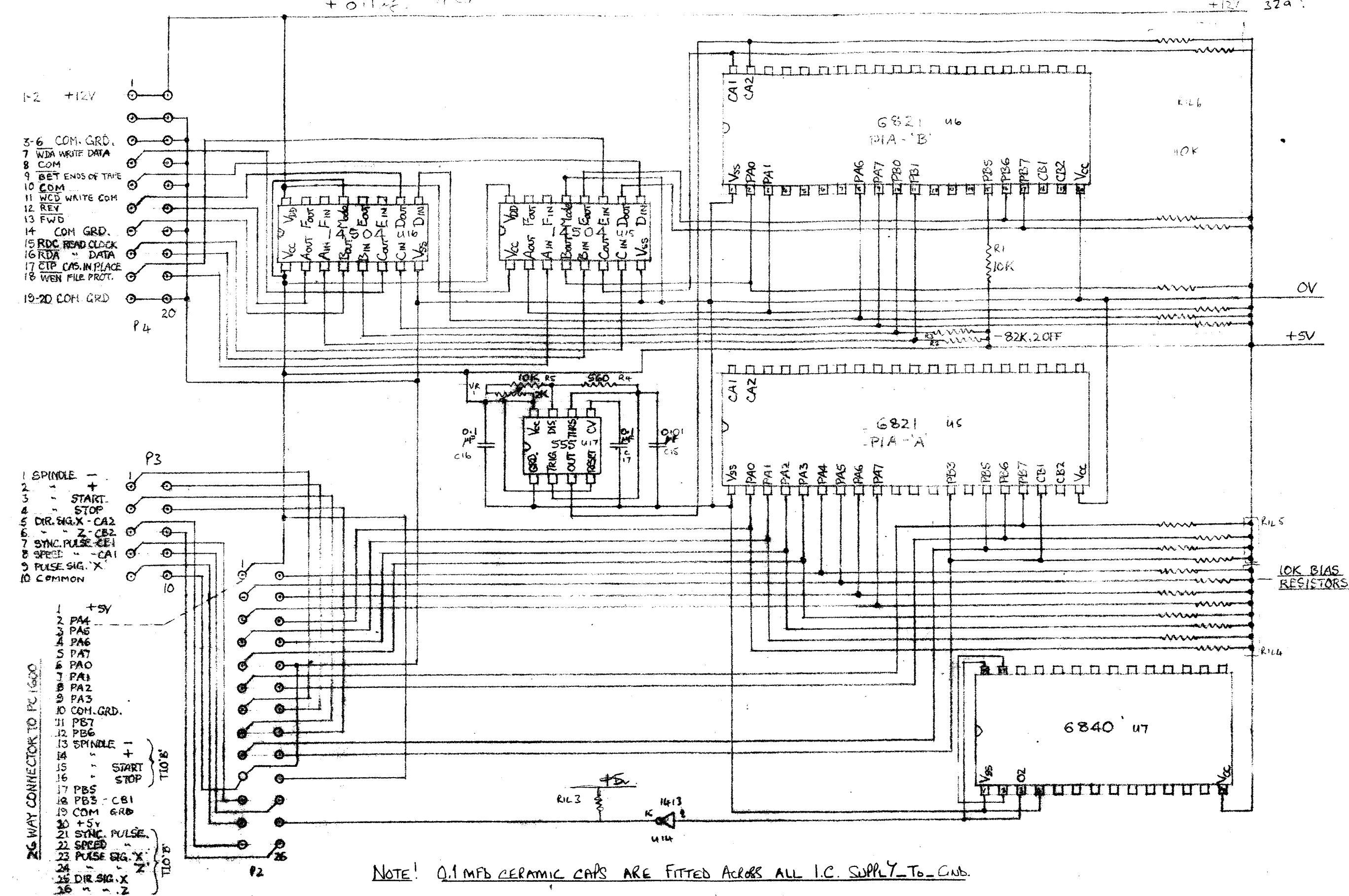
GSM ELECTRICAL CONTROLS LTD.
VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

DRG. No.

M1768

NOTE

C18 (220pF) 16V.
+0.1µF ACROSS +12V 0V GND - CASE



REVISIONS

TITLE

CIRCUIT DIAGRAM FOR MK3-TIO 'A' BOARD WITH
CASSETTE INTERFACE

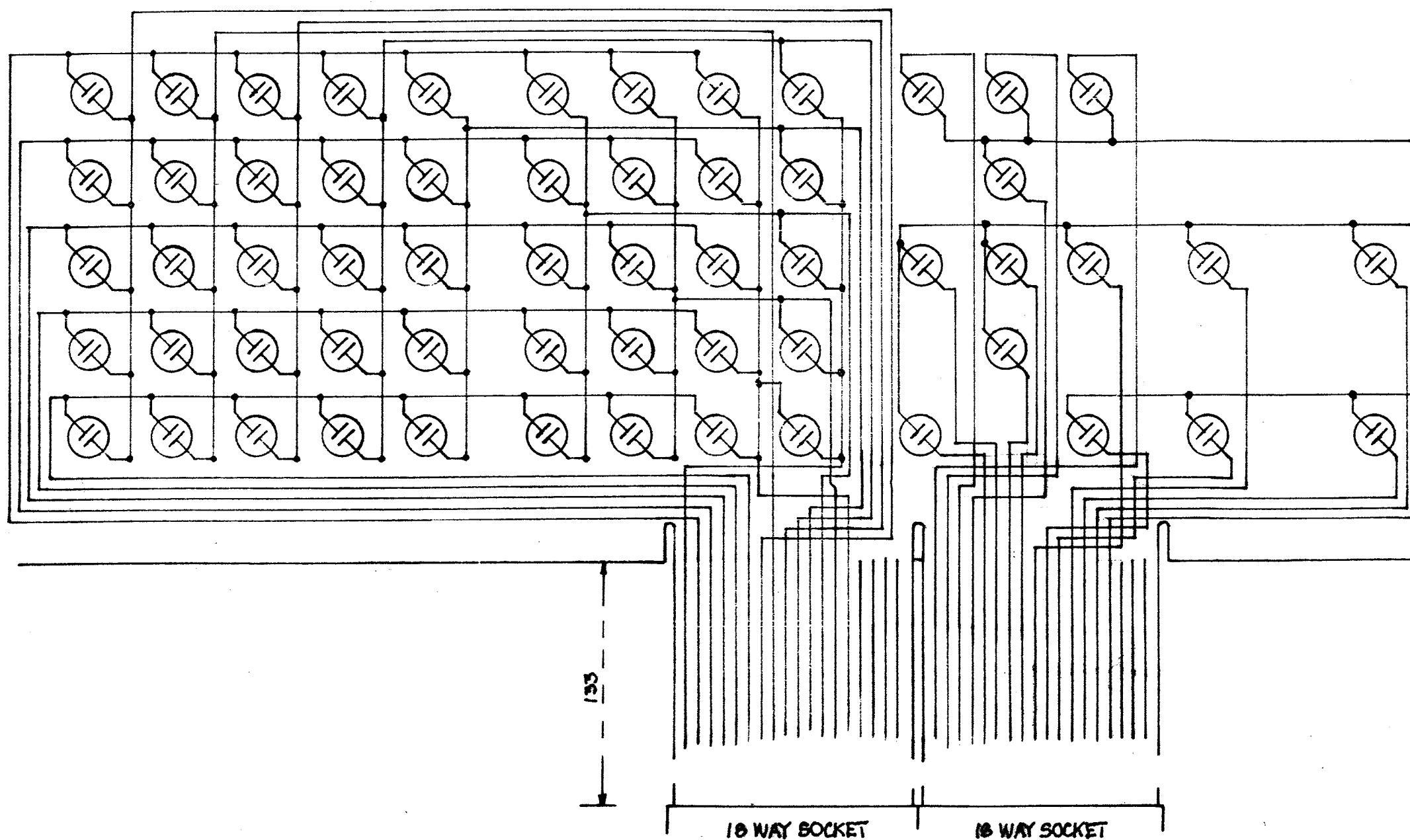
JOB	
CODE	
DRN.	28
DATE	28.3.83



GSM ELECTRICAL CONTROLS LTD.
VICTORIA WORKS,
QUEENS HILL ROAD,
HUDDERSFIELD.
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

DWG. NO.

M1620



REVISIONS

TITLE

KEYBOARD MEMBRANE CONNECTION DIAGRAM FOR MK3 ORAC

JOB	
CODE	
DRN.	J.B.
CKD.	
DATE	22. 8. 84

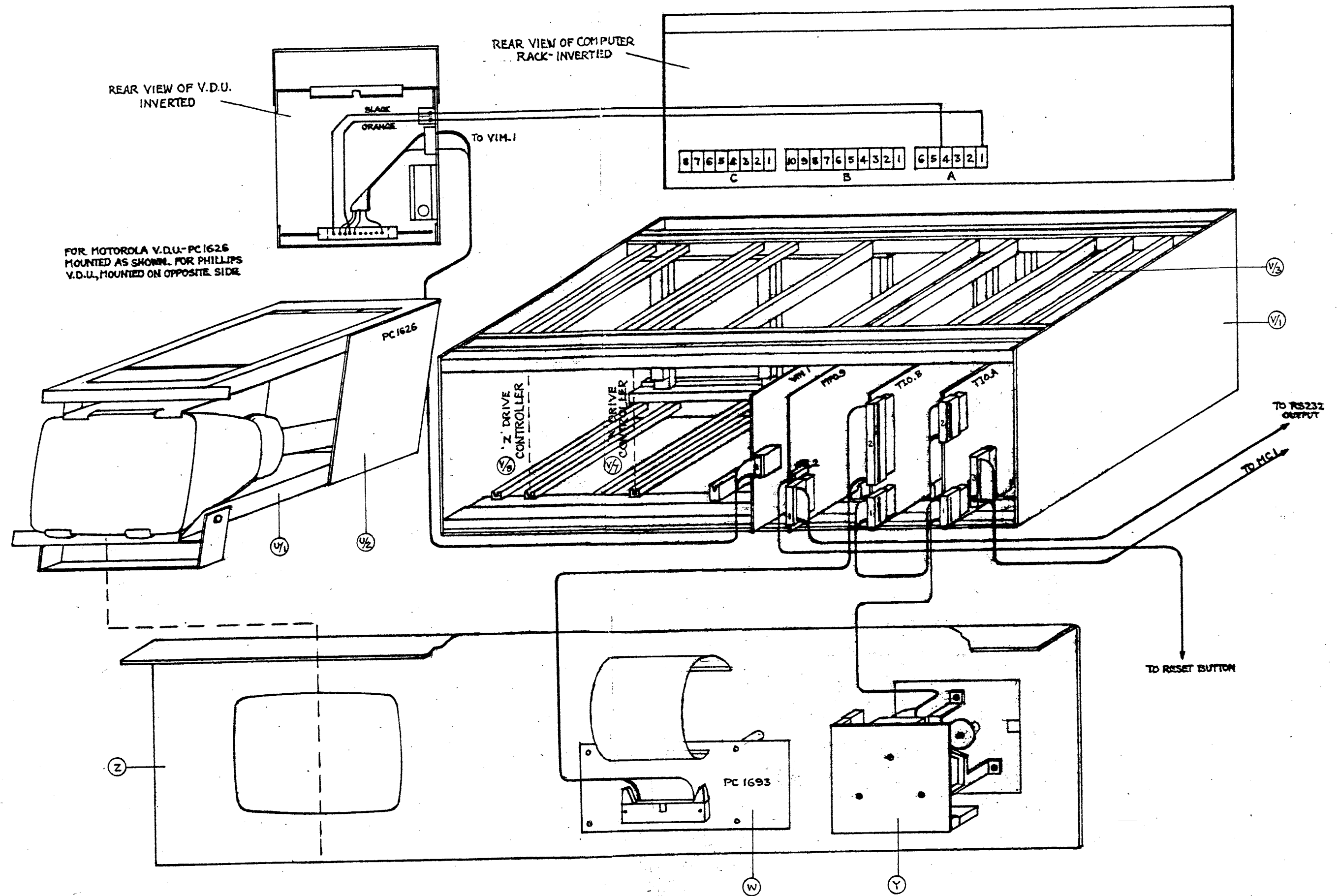


GSM ELECTRICAL CONTROLS LTD.

VICTORIA WORKS,
QUEENS MILL ROAD,
HUDDERSFIELD,
W. YORKS. HD1 3PJ
PHONE 0484 35101/2

DRG. No.

M1918



REVISIONS	RED. SCALE	JOB CODE	6SM ELECTRICAL CONTROLS LTD.	DRG. No.
TITLE	RIBBON CABLE INTERCONNECTIONS ON 'ORAC' CHASSIS. MK.3	DRN. 3.2.	VICTORIA WORKS, QUEENS HILL ROAD, HUDDERSFIELD, W. YORKS. HD12 7P. PHONE 0484 359011.	L1723
		CKD.		
		DATE 16. 8. 83		