COMPACT SERIES
MAINTENANCE HANDBOOK
(DRAWINGS)

RANK STRAND

RANK STRAND ELECTRIC

PO Box 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 27976 Cables Rankaudio Brentford

A DIVISION OF RANK AUDIO VISUAL LIMITED

RANK STRAND MAINTENANCE HANDBOOK	CS/M Contents Page 1 of 2 COMPACT SERIES LIGHTING CONTROL SYSTEM

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A SYSTEM DRAWINGS

DWG. Nº 8A13897 ISSUE B

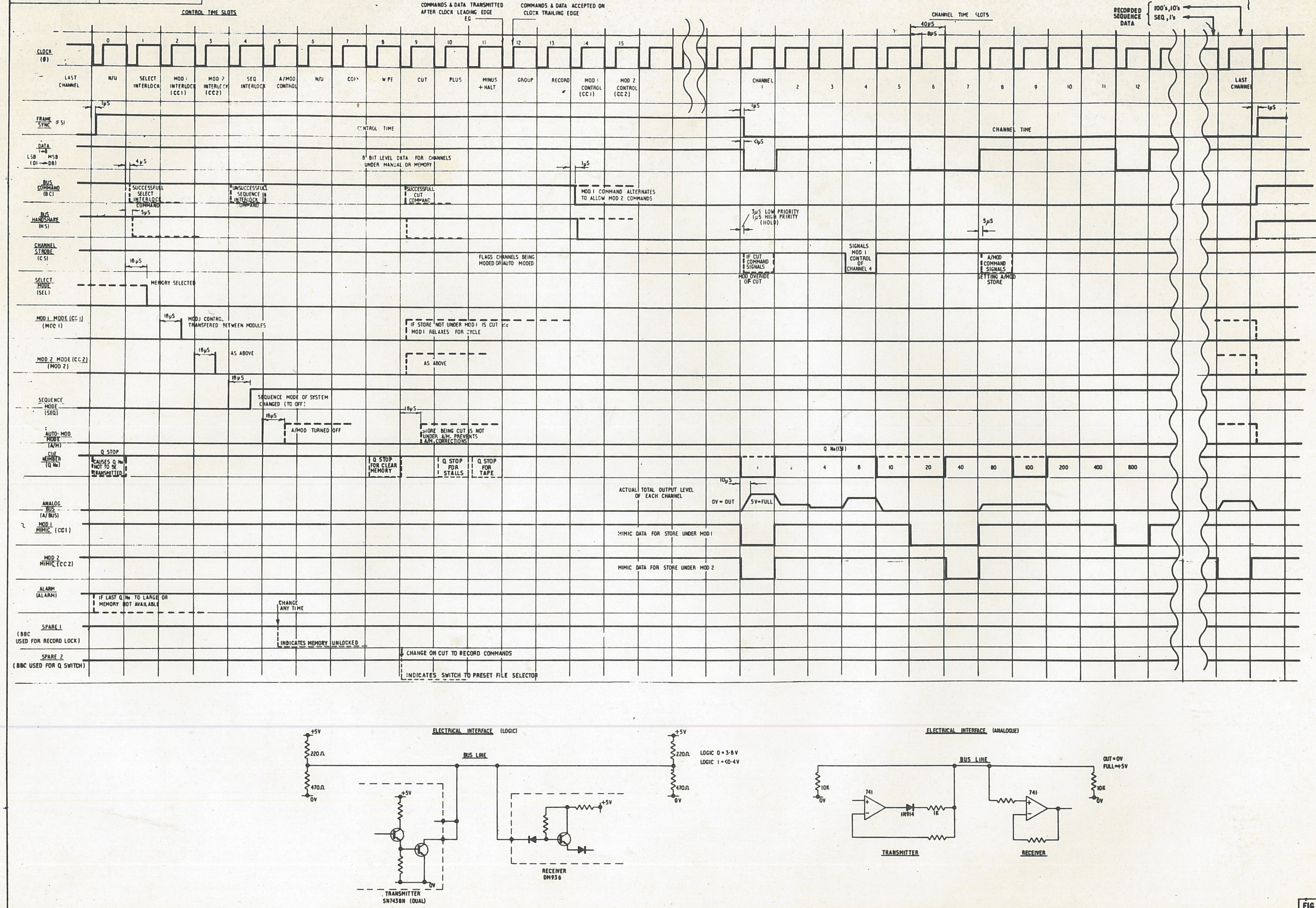

FIG A2

RANK STRAND ELECTRIC PO Box 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408 A DIVISION OF **RANK AUDIO VISUAL LIMITED**	TOLERANCES: IMPERIAL — FRACTION ± 1/64", DECIMAL ± ·005"; METRIC — 1 DEC PLACE ± 0·4mm, 2 DEC PLACE ± 0·1mm; ANGULAR ± 0·25° UNLESS OTHERWISE STATED	SCALE; DRAWN TYC 7-1-74; CHECKED 11/6/74; APPROVED 14/6/74	TITLE:- MMS Q BUS TIMING	
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION	USED ON:-	MATERIAL:- FINISH:-	ISSUE B	DWG. Nº 8A13897

DWG. Nº 6C15338	ISSUE A

20 WAY EDGE CARD CONNECTOR
VIEWED FROM PCB APERTURE

2	Ø ⌐	Ø ¬	1
4	FS ⌐	FS ¬	3
6	-5V	0V	5
8	+5V	0V	7
10	0V LPS	+ LPS	9
12	+ LPS	0V LPS	11
14	0V	+5V	13
16	0V	−5V	15
18	C2	C1	17
20	DATA ⌐	DATA ¬	19

CABLE RED STRIPE THIS END

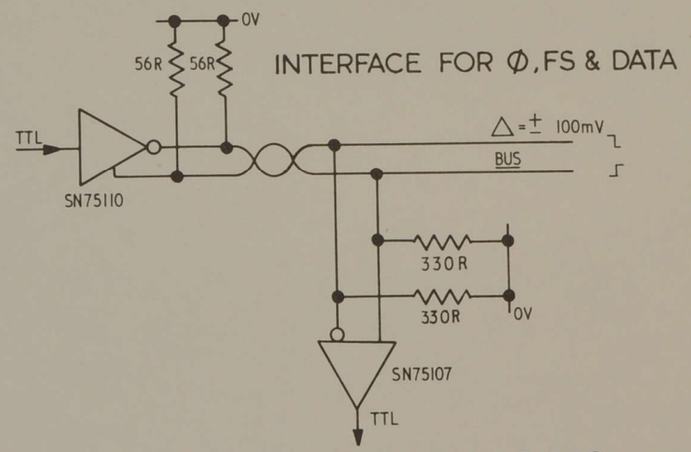

FIG A6

REV.1. C.Nº

RANK STRAND ELECTRIC
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DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64"	1 DEC PLACE ± 0·4 mm
DECIMAL ± ·005"	2 DEC PLACE ± 0·1 mm
ANGULAR ± 0·25°	
UNLESS OTHERWISE STATED	

USED ON :-

		DATE
SCALE	A4	
DRAWN	AH	22.8.75
CHECKED		
APPROVED	DAB	15-7-76

MATERIAL :-

FINISH :-

TITLE :-
COMPACT MIMIC
20 WAY BUS

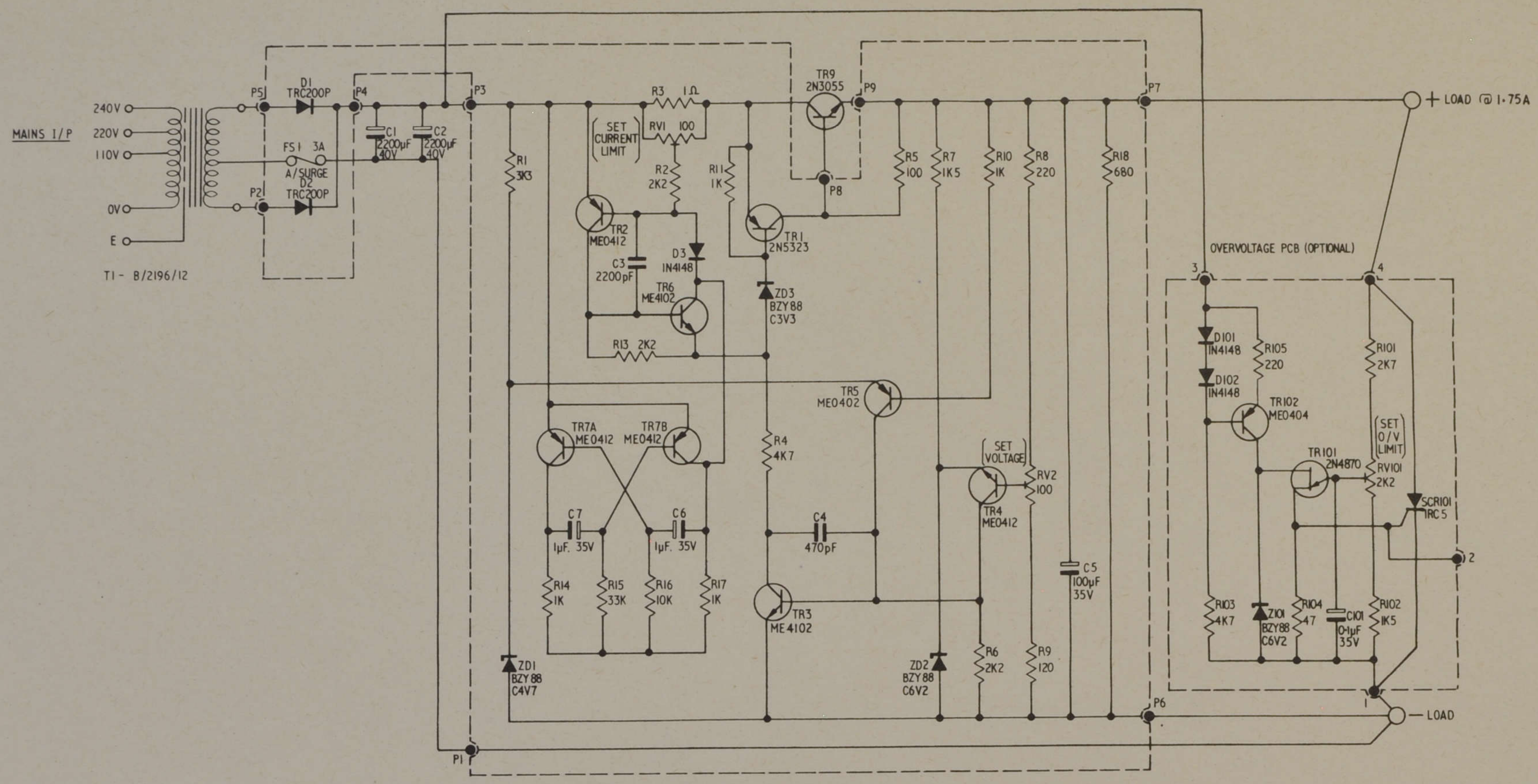
ISSUE A

DWG. Nº 6C15338

CWG 4.5

B POWER SUPPLIES

DWG. Nº H191B | ISSUE ~~A~~ B



NOTE

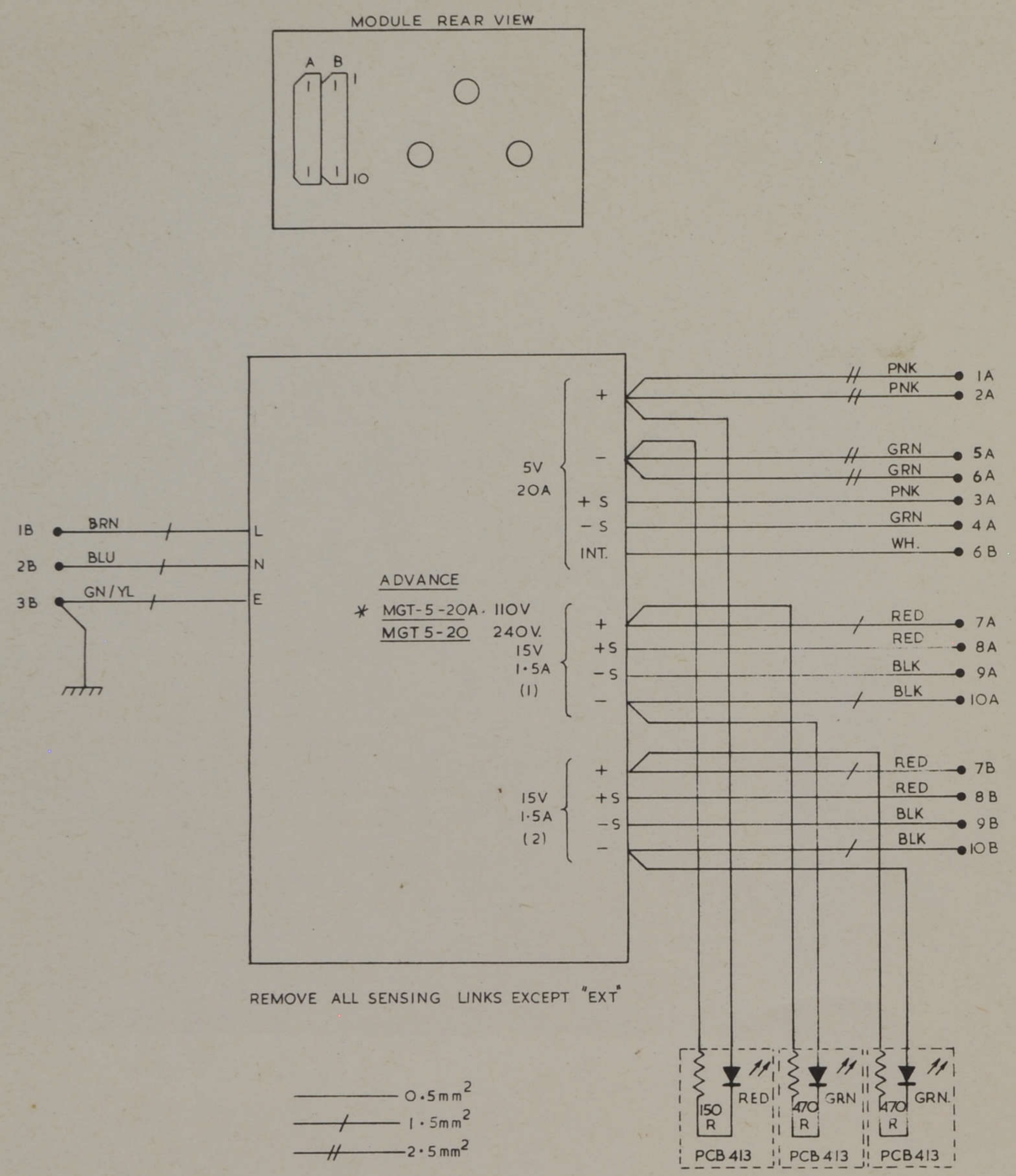
PSU RATING WAS 1·3A

FIG B29

REV. 1. C. Nº E2415!
O/P TERMINAL
+ LOAD @ 1·75A
WAS 1·3A.
NOTE P.S.U RATING
ADDED.
15·11·76

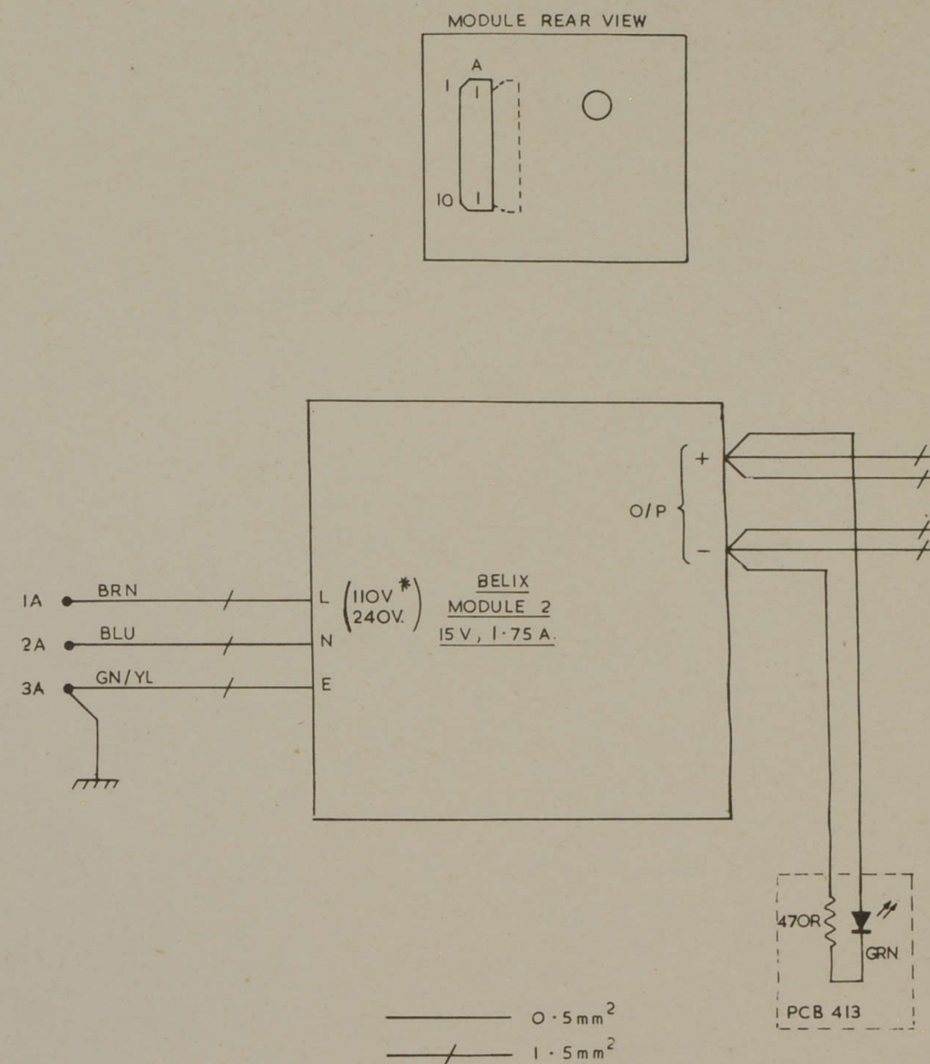
RANK STRAND ELECTRIC PO Box 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408 A DIVISION OF **RANK AUDIO VISUAL LIMITED**	TOLERANCES IMPERIAL: FRACTION ± 1/64" ; DECIMAL ± ·005" METRIC: 1 DEC PLACE ± 0·4 mm ; 2 DEC PLACE ± 0·1 mm ANGULAR ± 0·25° UNLESS OTHERWISE STATED	SCALE DRAWN C. COOPER 27.5.74 CHECKED APPROVED MATERIAL	TITLE BELIX POWER SUPPLY 15V 1·75A. MODULE 2 CIRCUIT DIAGRAM	
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION	USED ON :-	FINISH :-	ISSUE ~~A~~ B	DWG. Nº H191B

DWG. Nº 7B 17717 | ISSUE A B



* NOTE USED ON COMPACT 200/201

TRIPLE P.S.U MODULE.



NOTE USED ON COMPACT 200/201 ONLY.

15V., 1·75A MODULE

FIG. B 31

REV. 1 C. Nº E2453 COMPACT 200 CT. INFORM. ADDED. 20-10-76 22-10-76

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DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64"	1 DEC PLACE ± 0·4mm
DECIMAL ± ·005"	2 DEC PLACE ± 0·1mm
ANGULAR ± 0·25°	
UNLESS OTHERWISE STATED	

USED ON :-

SCALE		DATE
DRAWN		11-7-76.
CHECKED		15-7-76
APPROVED		
MATERIAL :-		
FINISH :-		

TITLE :- COMPACT P.S.U MODULE WIRING

ISSUE A B | DWG. Nº 7B 17717

Guarantee and service facilities

This instrument is guaranteed for a period of five years from its delivery to the purchaser covering the replacement of defective parts other than fuses.
We maintain comprehensive after sales facilities and the instrument can, if necessary, be returned to our factory for servicing. The Type and Serial Number of the instrument should always be quoted, together with full details of any fault and the service required. The Service Department can also provide maintenance and repair information by telephone or letter.
Equipment returned to us for servicing must be adequately packed preferably in the special box supplied, and shipped with the transportation charges prepaid. We can accept no responsibility for instruments arriving damaged. Should the cause of failure during the guarantee period be due to misuse or abuse of the instrument, or if the guarantee has expired, the repair will be assumed authorized and charged unless other instructions are received.
OUR SALES, SERVICE AND ENGINEERING DEPARTMENTS ARE READY TO ASSIST YOU AT ALL TIMES.

Gould Advance GmbH,
Mauerstrasse 3-5,
D-6453 Seligenstadt, Germany.
Tel: 0-61-82-31-07
Telex: 4184556

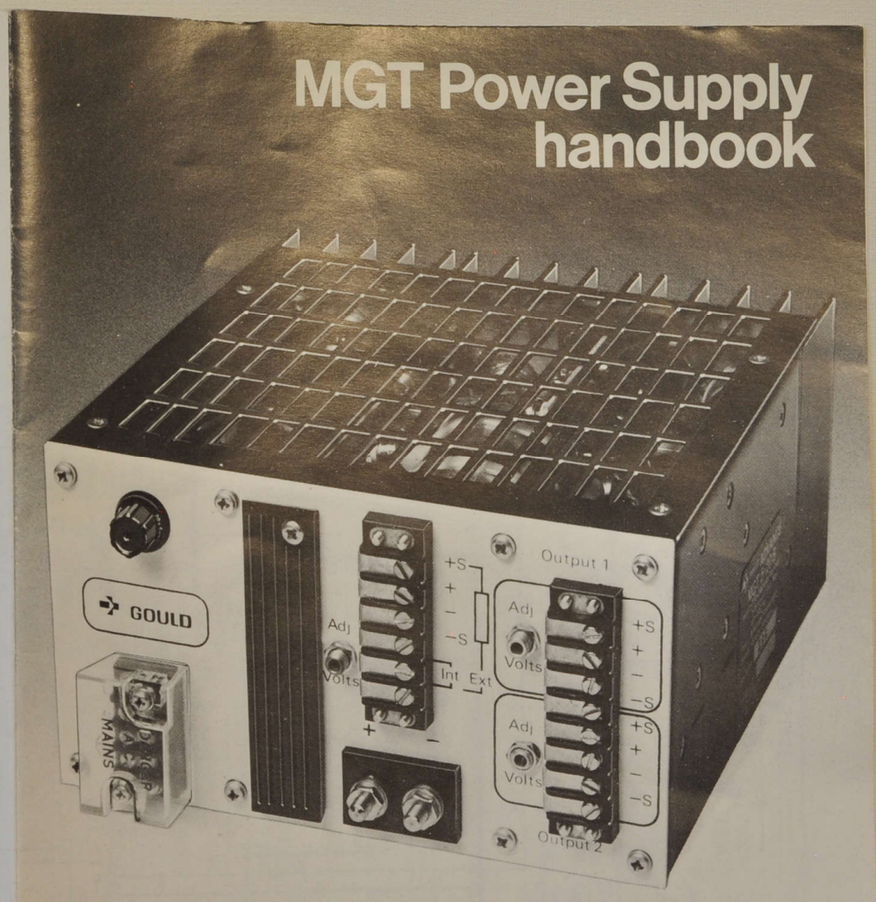
Gould Inc.
Power Supply Division,
4601 North Arden Drive,
El Monte, California 91731
Telephone: (213) 442-7755
TWX: 910-587-4934

Gould Advance Limited
Raynham Road, Bishop's Stortford,
Hertfordshire, England.
Telephone: 0279 55155 Telex: 81510

Pt.No.53553 Issue No.1
Printed in Britain

GOULD

MGT Power Supply handbook



GOULD

The Gould Advance MGT family of power supplies is a range of very compact units employing direct-off-line switching techniques in order to reduce physical dimensions to a minimum.
The range consists of two units, both producing the same three independent output voltages of 5V, 12 or 15V, 12 or 15V.
The output voltages are adjustable by ± 5% or ±0·5V by means of screwdriver adjustments on the front panel. Facilities are provided for local or remote sensing and for a limited amount of voltage programming by means of an externally connected resistor.
Constant current protection is provided against overloads or short circuits on all outputs together with auto-resetting thermostatic protection against prolonged short circuits on the 12 or 15V outputs.
Overvoltage protection by means of automatic control circuit shut-down is provided on all units.
Particular attention has been paid during the design stage to the problems of interference caused by the switching action of the power supply circuits. In this respect sample units have met the requirements of VDE0875, Curve 'N', and BS800 Part 3.
The MGT5-20B is fitted with a soft-start facility to reduce input current surges at switch-on.

Specification

Input

	MGT5-20A	MGT5-20B
Voltage	120V + 10%	240V + 10%
	115V – 20%	220V – 20%

See characteristic curves for limitations.
Frequency 45-440Hz
Current (typical) 3·2A rms 1·75A rms
1·66A mean 0·8A mean
8·5A rep. peak 6A rep. peak

Outputs
Main output 5V, 20A. Voltage adjustable ± 5% by front panel potentiometer.
Auxiliary output 1. 12V or 15V (set by internal taps), 1·75A. Voltage adjustable ± 0·5V by front panel potentiometer. Factory set at 15V.
Auxiliary output 2. Identical to Auxiliary Output 1.

Output Voltage Regulation
Main output 0·1% maximum for worst case combination of 0-100% load change on all outputs and ± 10% line change.
Auxiliary outputs ·01% maximum for worst case combination of 0-100% load change on all outputs and ± 10% line change.

Ripple
Main output 10mV r.m.s., 50mV peak-peak (30MHz Bandwidth)
Auxiliary outputs 3mV r.m.s., 20mV peak-peak (30MHz Bandwidth)

Temperature Coefficient
All outputs less than ± 0·01%/°C.

Output Impedance
Main output 100mΩ @ 100KHz
Auxiliary outputs 250mΩ @ 100KHz

Overload Protection
Constant current on all three outputs, set to 110% ± 5% of full load.
Auto-Reset thermostat shuts down all outputs if a prolonged short circuit occurs on an auxiliary output which gives rise to excessive heatsink temperatures.

Overvoltage Protection
All outputs shut down if voltage of main output exceeds 120%-130%. No protection of auxiliary outputs.

Temperature Range
– 10°C to +70°C derating on all outputs from 50°C at 2½%/°C.

Series and Parallel Operation
Main outputs cannot be connected in parallel. Auxiliary outputs can be connected in parallel without limit. The main output can be connected in series with the outputs of units with a similar current rating (such as other MGT5-20B or MG5-20B units) up to a maximum of 250V.
Auxiliary outputs can be connected in series with each other or similar units up to a maximum of 250V.

Remote Sensing
Available on front panel for all outputs.
Voltage drop should not exceed 0·5V total.
See output characteristic curves for limitation on the main output.

Remote Programming
On main output only with limit on range of 4·75V up.

Output Hold-up
Output maintained for the duration of a missing mains cycle at –10% input voltage when the unit is supplying 5·25V @ 20 Amps and 2 x 15·5V @ 1·75 Amps.

Control Board
The switching regulator control board may be removed through the front panel and is available as an interchangeable replacement part.

Efficiency
In excess of 60%, typically 65%, at full load on all outputs.

Insulation
Between AC input and all output terminals and case connected together, tested to 2·1KV peak for one minute.
Between any two DC outputs and between each DC output and case, ± 250V DC continuous, tested to 500V DC for one minute.
Insulation resistance not less than 50MΩ at 500V DC input to earth and output to earth.

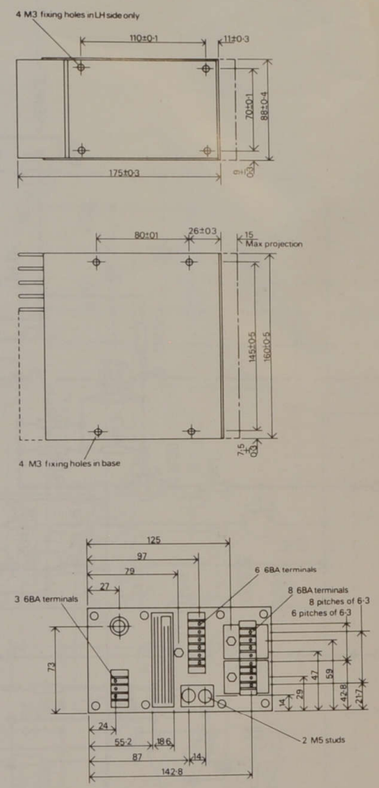
Power Density
Approx. 0·95W/Cu inch (62W/1000cc).

Switch-on Time
MGT5-20A Outputs will reach specification within 5 cycles of 50Hz or 60Hz input.
MGT5-20B Soft start circuit will allow outputs to reach specification within 300mS.
Peak switch on current less than 20 Amps.

Transient Response
Main output. For step load changes of 10-100% or 100-10% voltage deviations are typically 400mV and output voltage returns to within the regulation band in approximately 2·5mS.
Auxiliary outputs. For step load changes of 10-100% or 100-10%, output will recover to within 10mV of the regulation band within 100μS.
Interaction. For a step current reduction on the main output in excess of 50% of the starting current, e.g., 10A to 5A or 20A to 10A, a negative transient deviation from specification may be experienced on the auxiliary outputs under worst case conditions of output setting, input voltage and output loads.

Mechanical Standard
BS4318 preferred metric dimensions and Isometric screws are used.

Dimensions



All dimensions in millimetres

Operation

Input Connections
The AC supply input to the unit is connected to the terminal block on the left of the front panel. The terminals are marked L (line), N (neutral), E (earth). A transparent cover is provided.

Output Characteristics
An inherent advantage in the design concept of switching power supplies is that it is possible to trade off three fundamental aspects of the specification against each other.
The three aspects are:—
(1) Input voltage failure hold up time.
(2) Negative input voltage margin.
(3) Output voltage (including lead voltage drop).
The MGT series has been designed for a 28mS hold-up time at an output voltage of 105% at –10% input **Example:** Referring to the graphs, an MGT-20B operating on 220V nominal mains is required to provide 5V into a load with a 0·5V total lead drop, i.e., 110% voltage at the power supply output terminals. Under these conditions the unit may operate down to – 8% input with 28mS hold-up (whole cycle missing) or down to –16·5% input with 18mS hold-up (half-cycle missing). There may be a trade off between master and auxiliary output powers. For specific cases consult the manufacturer.

Output Connections
The main output is available at the large studs on the front panel, the positive and negative terminals being identified + and – respectively. The auxiliary outputs 1 and 2 are available at the eight-way terminal block situated on the right hand side of the front panel, positive and negative terminals being identified + and – respectively. The wiring to the 5V load should be such as to ensure that the lead voltage drop does not exceed the level determined from Fig. 1. Refer to Fig. 2 for the required cable size.

Remote Sensing
Main output. The remote sensing terminals for the main output are situated on the six-way terminal block in the centre of the front panel.
Auxiliary output. The remote sensing terminals for the auxiliary outputs are situated on the eight-way terminal block on the right hand side of the front panel.
To operate the unit under remote sense conditions, remove the links connecting +S to + and –S to –, and connect +S and –S to the point at which the regulated voltage is required.

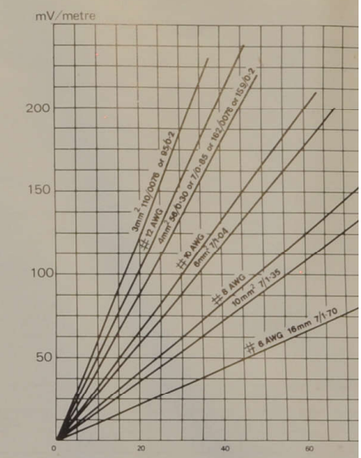


Figure 2

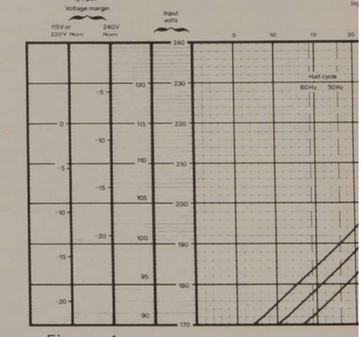


Figure 1

External Voltage Programming
This facility is available on the main ou only.
The output voltage may be programme remotely by removing the link marked on the six-way terminal block and inse programming resistor between the low terminal and +S.
Programming ratio 1000Ω/Volt ± 0·5%

Mounting
Four M3 fixing holes are provided in the b the unit and in one of the side panels. necessary to mount the unit from the oth or from above the unit may be operated inverted position without limitation of ar of the specification.

Operation

Input Connections
The AC supply input to the unit is connected to the terminal block on the left of the front panel. The terminals are marked L (line), N (neutral), E (earth). A transparent cover is provided.

Output Characteristics
An inherent advantage in the design concept of switching power supplies is that it is possible to trade off three fundamental aspects of the specification against each other.
The three aspects are:—
(1) Input voltage failure hold up time.
(2) Negative input voltage margin.
(3) Output voltage (including lead voltage drop).
The MGT series has been designed for a 28mS hold-up time at an output voltage of 105% at –10% input **Example**: Referring to the graphs, an MGT-20B operating on 220V nominal mains is required to provide 5V into a load with a 0·5V total lead drop, i.e., 110% voltage at the power supply output terminals. Under these conditions the unit may operate down to –8% input with 28mS hold-up (whole cycle missing) or down to –16·5% input with 18mS hold-up (half-cycle missing). There may be a trade off between master and auxiliary output powers. For specific cases consult the manufacturer.

Output Connections
The main output is available at the large studs on the front panel, the positive and negative terminals being identified + and – respectively. The auxiliary outputs 1 and 2 are available at the eight-way terminal block situated on the right hand side of the front panel, positive and negative terminals being identified + and – respectively. The wiring to the 5V load should be such as to ensure that the lead voltage drop does not exceed the level determined from Fig. 1. Refer to Fig. 2 for the required cable size.

Remote Sensing
Main output. The remote sensing terminals for the main output are situated on the six-way terminal block in the centre of the front panel.
Auxiliary output. The remote sensing terminals for the auxiliary outputs are situated on the eight-way terminal block on the right hand side of the front panel.
To operate the unit under remote sense conditions, remove the links connecting +S to + and –S to –, and connect +S and –S to the point at which the regulated voltage is required.

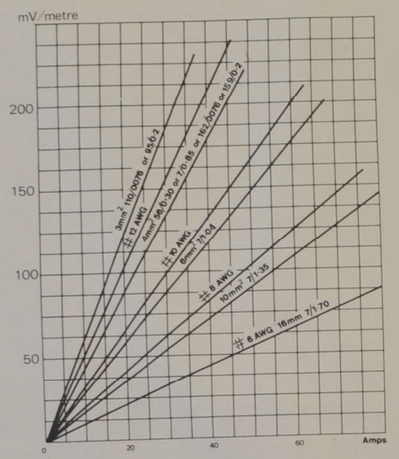


Figure 2

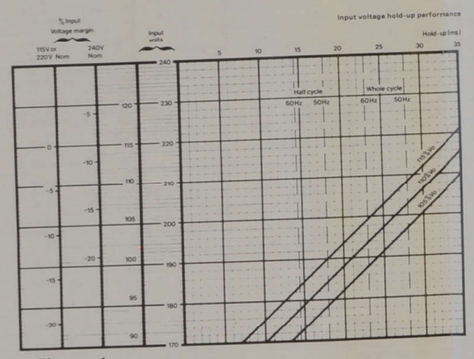


Figure 1

External Voltage Programming
This facility is available on the main output only.
The output voltage may be programmed remotely by removing the link marked "INT" on the six-way terminal block and inserting a programming resistor between the lower terminal and +S.
Programming ratio 1000Ω/Volt ± 0·5%.

Mounting
Four M3 fixing holes are provided in the base of the unit and in one of the side panels. If it is necessary to mount the unit from the other side or from above the unit may be operated in the inverted position without limitation of any area of the specification.

Cooling
The power supply is convection cooled and under normal operating conditions does not require forced air cooling. The unit should be mounted to allow the free passage of air through the unit in a vertical direction. This is of particular importance in the area of the heatsink. Units may be mounted adjacently without limitation.

Circuit description

General
The following is a generalised description of the circuit with reference to the block diagram of Fig. 3 for an MGT5-20B.
Basically, the circuit consists of an input filter MF1 and full-wave rectifier MR101. On 240V this is followed by a silicon controlled rectifier CSR101 feeding the reservoir capacitor C103. (For 115V units the rectifier is connected as a voltage doubler feeding directly into a pair of series connected reservoir capacitors C103 and C121.) The resulting unstabilised DC voltage of approximately 350V is used as the power rail for a regulated DC-DC converter, operating at a frequency of 35KHz. This converter has three outputs. The main output is nominally 5V and the other two, auxiliary, outputs are used to supply two linear regulators to give nominal 12V or 15V regulated outputs.

Main (Master) Output
The following is a description of the main (master) output circuit operation with reference to Fig. 3.
General: The converter (TR101, TR102, C101, C102, T5) is a 'half-bridge', pulse-width modulated type. The output from the converter is rectified by the push-pull rectifier stage D109, D110 and smoothed by the low pass filter L1, C106, to produce the output voltage.
Voltage Control Circuits. The output voltage, as sensed at the terminals +S and –S is fed via the potential divider R113, R49 to the input of the operational amplifier IC1. Here it is compared with the internally generated reference voltage appearing across D21. The amplified error signal is then fed to the modulator. The function of this circuit is to produce two trains of anti-phase current pulses of controlled and equal durations, these durations being controlled by the level of the input to the modulator from the error amplifier. The current pulses are fed to the bases of the inverter transistors TR101, TR102 in such a manner as to cause the transistors to conduct alternately with a period of non-conduction in the intervening periods. The voltage waveform thereby impressed on the primary transformer T5 is stepped down and rectified by D109, D110 to produce a voltage whose DC content is a function of the width of the current pulses produced by the modulator and hence of the output of the voltage error amplifier.
The rectified secondary voltage waveform is filtered by L1, C106.
Current Control Circuit. Overcurrent protection is provided by sensing the alternating current pulses flowing in the primary of T5 inverter transformer (i.e., Master output only). (The amplitude of this current is proportional to the magnitude of the DC output current.) This T5 primary current is transformed by T1 and rectified by the small signal rectifier D12-15. The resulting train of unidirectional current pulses is fed into resistor R35 to produce a voltage waveform. The amplitude of this waveform is compared with the internally generated reference voltage appearing across D18, by the peak detecting amplifier I. When the amplitude of these pulses reaches a predetermined level, the overcurrent amplifier operates so as to feed a signal into the modulator which overrides the voltage control signal and causes the modulator pulse widths to reduce, thus reducing the output voltage and keeping the output current controlled to the maximum safe level.
Overvoltage Circuit. The output voltage of the unit is monitored at the sense terminals +S and –S and fed to the input of the overvoltage detector by means of a potential divider. If a fault occurs such that an output overvoltage appears the overvoltage detector operates and fires the small signal thyristor CSR1. This has the effect of disabling the modulator so that no drive current pulses are available and all output voltages decay to zero. The power supply outputs will remain at zero until the fault is eliminated and the mains supply switched off and re-applied.
Auxiliary Outputs:
The following is a description of No.1 auxiliary output circuit operation with reference to Fig. 3. No. 2 auxiliary output is identical in operation.
General. The converter, controlled by the Master output, consisting of TR101, TR102, C101 and C102, is used to drive the primary of transformer T6. The secondary of T6 is rectified by D111, D112 and smoothed by the low pass filter consisting of L7 and C324. The resulting DC is fed to the output terminals by the series regulating transistor TR303.
A low power internal auxiliary supply rail is

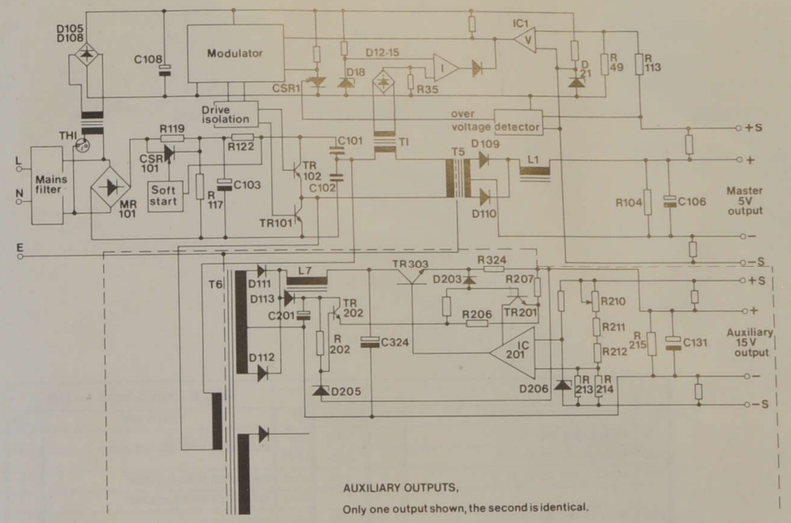
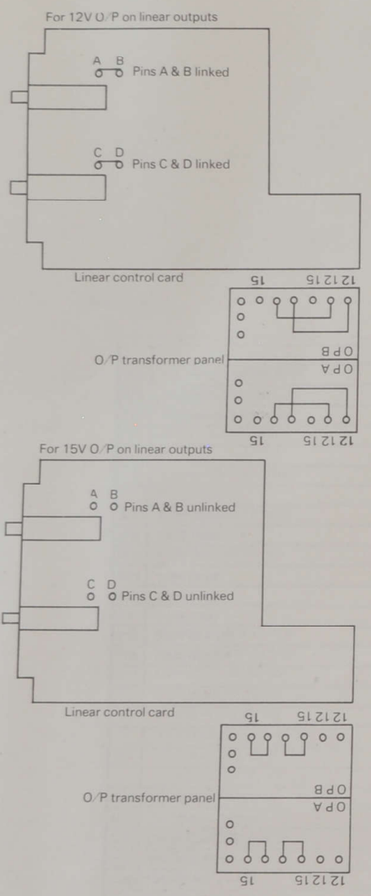


Figure 3

generated by peak rectifying the voltage on T6 by D113 and C201. TR202 acts as a series regulating transistor, whose reference voltage is supplied by D205 and is in turn referenced back to the positive output rail. This auxiliary supply is used for the voltage amplifier IC201 and divided by R206 and R207 to provide the reference voltage for the current control transistor TR201.
Voltage Control Circuit. The output voltage, as sensed at the terminal +S and –S, is fed via the potential divider R210, R211, R212, R213, R214, to the input of the operational amplifier IC201. Here it is compared with the reference voltage across D206. The amplified error signal is then fed to the base of the series regulatihg transistor TR303 and hence controls the voltage on its emitter, which is fed to the output terminal via R324.
Current Control Circuit. Overcurrent protection is provided by sensing the load current drawn via R324 and comparing the voltage developed across this resistor with that across R207 by means of TR201. When the current through R324 is sufficient to make the voltage developed across it exceed the voltage across R207, TR201 will conduct and cause the voltage of the base of TR303 to be reduced, overriding the voltage control error amplifier, and thus control the output current at the maximum safe level. Thermostat (TH1) is provided so that if during prolonged auxiliary overload excessive heatsink temperatures arise the whole unit is shut down. This thermostat is self-resetting.

Soft Start
On the MGT5-20B only a soft start circuit is fitted consisting of CSR101, TR104 and R119. At the instant of switch on CSR101 is non-conducting, the gate being clamped by TR103 and the reservoir capacitor C103 is charged via R119.
After a period of 300mS, determined by the secondary impedance of the auxiliary supply transformer T4 and capacitor C108, the control auxiliary voltage establishes and allows the converter to start up.
When the converter starts up current is drawn via R122 which causes TR104 to conduct and thus release the gate of CSR101. CSR101 then conducts and shorts out R119 allowing the unit to operate at full power.

12V-15V Operation



For access to these assemblies:—
1. Remove upper and lower covers.
2. Remove M3 fixing screws at top front and top rear of right-hand side panel.
3. Loosen M3 fixing screws at bottom front and bottom rear of right-hand side panel.
4. Swivel right-hand side panel down on these lower screws.
5. Output transformer and control card will then be revealed as indicated.

Unit test procedure

1. Fit supply fuse.
2. **Proof Voltage Test**. After the unit has passed the assembly test, it has to be subjected to the full test as laid out below. A voltage of 1100 volts dc to be applied between input and earth (under the conditions detailed below). This voltage to be increased over a period of 20 secs to 2100 volts dc and maintained for 1 minute, after which time the voltage to be reduced to zero and the test probes removed.
   Test Conditions. The voltage to be applied between the inputs — shorted together and earth, with the outputs s/c and connected to earth. The main diodes to be o/c during this test. The edge connector contacts to be s/c together and connected to earth.
   Note 1. It is necessary to isolate the main diodes which can be destroyed.
   Note 2. Ensure that capacitor is discharged.
   Note 3. This particular test to be observed by Q.C. as repeated tests of this nature will stress the insulation and cause damage. If a further check of insulation is required by Q.C. at the date of despatch then this is to be carried out as a normal insulation test.
3. **Insulation Test Input**. The inputs to be short circuited together and the insulation measured at 500 volts dc between input and earth.
   Output. The outputs to be short circuited together and the printed circuit edge connectors to be shorted together and connected to the output terminals. The insulation measured at 500 volts dc between outputs and earth. This test to be carried out after the diodes have been reconnected. Insulation resistance to be greater than 50MΩ for input and all outputs.
4. **Voltage Setting & Function Test**. Set all loads to approximately 50% and turn the 15V control pots to their mid-point. Adjust the AOT resistors R213 and R228 so that the 15V No. 1 and 2 output voltages are approx. 15V. Fit the nearest 5% preferred value resistor. Short out R211 and R226 and check that the output voltages drop to approx. 12V. Turn all potentiometers anti-clockwise and check that the output voltages correspond to the limits in the table then turn the pots fully clockwise and re-check against the specified limits. Remove the shorts on R211 and R226 and re-check the limits on the 15V outputs. Reset o/p voltages to nominal.

Nominal output	Pot fully anti-clockwise	Pot fully clockwise
5	4·6	5·4
12	11·5	12·5
15	14·5	15·5

5. **Voltage Programming Test**. With the load resistors set for 50% load, switch off, remove the programming link and externally programme the main output with a 5KΩ resistor. The 5V output shall be within 1% of nominal.
   Note: The resistor used should be 25ppm 0·1% type.
6. **Current Limit**. Adjust the AOT resistors R112, R208 and R223 so that the 5V, 15V o/p 1 and 15V o/p 2 respectively current limit between 107% and 113%. Current limit is defined as when the output voltage has dropped by 1 volt for all o/p voltages. Short-circuit the 15V outputs, switch on and check that the thermostat TH1 operates. (This may take 5 to 10 minutes to happen.)
7. **Efficiency Test**. Set load current to nominal, output voltage to nominal and measure efficiency. This should exceed 60% and should typically be 65%.
   $$\text{Efficiency} = \frac{\text{Output Watts}}{\text{Input Watts}}$$
8. **Ripple and Noise**. With load set to full output current, the ripple should be within 10mV RMS and the high frequency spikes within 50mV pk to pk on the 5V output and within 3mV rms and 20mV pk to pk on the 15V outputs.
9. **Regulation Test**. Change the loads from 0% to 100% *and* the input from 90% to 110% of nominal. The output voltages shall stay within 0·1% of the set value for the 5V output and 0·01% for the 15V outputs.
10. **Overvoltage Test**. By using the remote programming facility, program the 5V output voltage until the trip fires. The level shall be 6·0 to 6·5V. Check that all outputs are turned off by the trip.
11. **Hold-up Test**. Set the input to 198V on "B" units or 103·5V on "A" units, the outputs to 105% voltage, 100% current, and the drop out tester to 1 cycle missing. The output ripple shall not increase by more than 10mV peak under these conditions.
12. **Soft start Test**.
    (Not applicable to MGT5-20A unit.)
    Equipment required: Storage oscilloscope
    16 volt power supply.
    100mΩ 6W W.W resistor connected in series with the input neutral wire.
    (a) Before connecting input power to the unit, connect the 16V supply to the auxiliary rails for a period of approx. 2 secs to ensure discharge of main reservoir capacitor.
    (b) Set scope to storage mode, one-shot sweep, timebase to 50mS/div. Monitor the waveform appearing across the 100mΩ resistor in the neutral line. Switch the unit on at rated load and observe the stored display. The maximum peak amplitude of the stored waveform shall be 2 Volts.
    (c) Check that all output voltages are within 1% of their set value within 300mS.

Setting up procedure for P.C.B Assy 63397

Equipment Required.
1. Oscilloscope DC 10MHz Bandwidth
   0·5V/cm Sensitivity
2. DC Power Supply —
   Settable to 10V, 16V, 17·5V] ±100mV at 150mA
3. Constant Current Sources —
   (a) 1mA ± 2uA
   (b) 12·4mA ± 100uA
   (c) 2mA ± 5uA
4. 2-off Decade Resistance Boxes to cover range 100R — 150K.
5. 2-off Resistors 270Ω, 1%, 1W, connected from Pins 3 and 4 respectively to Pin 6.
6. Edge Connector, Gould-Advance Pt. No. 53713.
   Suitable connection wires and probes.

Procedure.
1. Apply 16V between Pin 1 (+ve) and Pin 6 (– ve). Set oscilloscope for 2V/cm and 10μS/cm and connect between Pin 14 of IC2 and – ve power line, the waveform of Fig. 1 should be observed.

Fig. 1

   Increase the sensitivity of the oscilloscope to 2V/cm, and display the peaks of the waveform. Adjust the R46 decade box to minimise the voltage difference between alternate peaks, i.e., reduce V1. This adjustment should be done with the scope timebase desynchronized.
2. Connect oscilloscope between Pin 3 and – ve power line. The waveform of Fig. 2 should be observed.

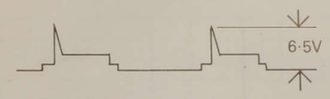


Fig. 2

3. Connect oscilloscope between Pin 4 and – ve power line, and check that the same waveform is observed.
   Apply 1mA constant current between Pins 12 and 13 and select R37 to cause the trailing edge of the pulse to start closing in towards the leading edge. Remove the 1mA source.
4. Apply 12·4mA constant current between Pins 19 and 20, the observed waveform should change to that shown in Fig. 3.

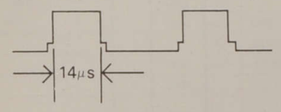
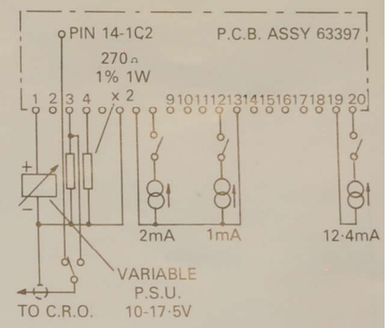
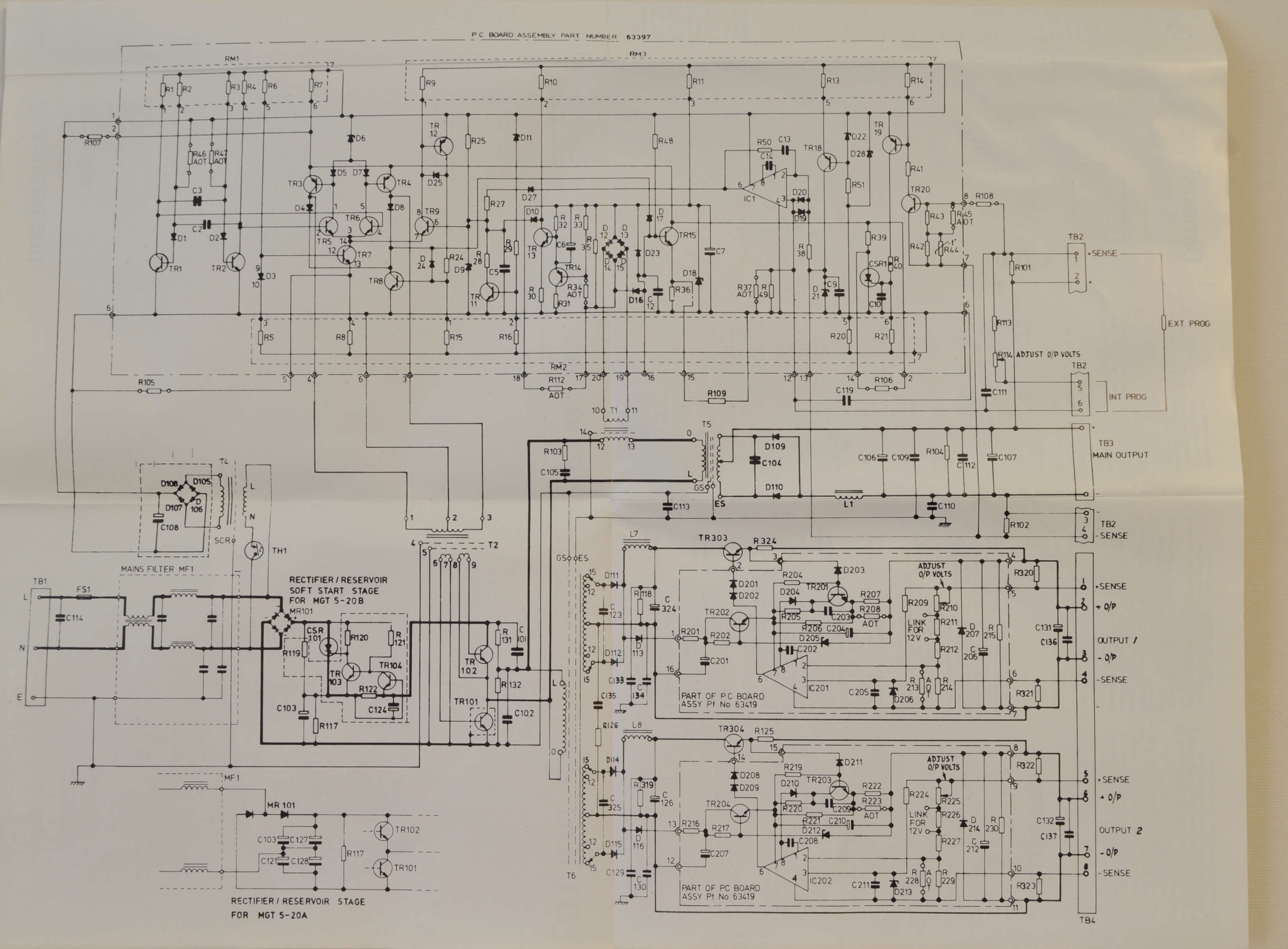


Fig. 3

   Select R34 to reduce pulse width to 7·5μS ± ·2μS. Remove the 12·4mA source.
5. Apply 2mA constant current between Pins 7 and 8, the waveform should now revert to that of Fig. 2.
   Select R45 for the lowest value that causes the waveform to collapse. Remove the 2mA source.
6. Vary the power supply to 10V and then to 17·5V. Check that there is no degradation of waveform.
7. Reduce power supply to 7V. Check that oscillation ceases.



P.C.B. TEST CIRCUIT


P C BOARD ASSEMBLY PART NUMBER 63397
RM1
RM2
RM3
TB1
TB2
TB3
TB4
MAINS FILTER MF1
RECTIFIER / RESERVOIR
SOFT START STAGE
FOR MGT 5-20B
RECTIFIER / RESERVOIR STAGE
FOR MGT 5-20A
MAIN OUTPUT
ADJUST O/P VOLTS
EXT PROG
INT PROG
+SENSE
-SENSE
+ O/P
- O/P
OUTPUT 1
OUTPUT 2
LINK FOR 12V
PART OF P C BOARD
ASSY Pt No 63419

MGT 5 - 20A & MGT 5 - 20B

REF	DESCRIPTION	QTY	PART No
R101	RESISTOR MO 100R 2% ½W	1	26747
R102	RESISTOR MO 100R 2% ½W	1	26747
R104	RESISTOR WW 8R2 5% 6W	1	19795
R103	RESISTOR WW 100R 5% 6W	1	1240
R112	RESISTOR MO AOT	1	AOT
R113	RESISTOR MF 4K5 1% 25ppm	1	52949
R114	POTENTIOMETER 1K	1	52925
R117	RESISTOR CC 560K 5% ½W	1	18583
R118	RESISTOR WW 470R 5% 2·5W	1	53568
R319	RESISTOR WW 470R 5% 2·5W	1	53568
R320	RESISTOR MO 1K0 5% ¼W	1	28593
R321	RESISTOR MO 1K0 5% ¼W	1	28593
R322	RESISTOR MO 1K0 5% ¼W	1	28593
R323	RESISTOR MO 1K0 5% ¼W	1	28593
R324	RESISTOR WW R33 5% 2·5W	1	53708
R125	RESISTOR WW R33 5% 2·5W	1	53708
R126	RESISTOR CC 10R 5% ¼W	1	21793
R131	RESISTOR MO 100K 2% ½W	1	28822
R132	RESISTOR MO 100K 2% ½W	1	28822
C101	CAP 1µ0 250V	1	51121
C102	CAP 1µ0 250V	1	51121
C104	CAP PF 10n 400V	1	781
C106	CAP ELECT 10m 10V	1	53572
C107	CAP TANT 10µ 25V	1	52937
C109	CAP CERAMIC 5n6 500V DC	1	22394
C110	CAP CERAMIC 5n6 500V DC	1	22394
C111	CAP CERAMIC 100n 30V	1	19647
C112	CAP CERAMIC 100n 30V	1	19647
C113	CAP CERAMIC 5n0 3KV	1	1514
C114	CAP RIFA 4n7 250V DC	1	53046
C105	CAP PF 2n2 400V	1	53090
C119	CAP MP 100n 160V	1	31377
C324	CAP ELECT 2m2 40V	1	31844
C325	CAP CERAMIC 150p 500V	1	22378
C126	CAP ELECT 2m2 40V	1	31844
C129	CAP CERAMIC 5n6 500V	1	22394
C130	CAP CERAMIC 5n6 500V	1	22394
C131	CAP TANT 10µ 25V	1	52937
C132	CAP TANT 10µ 25V	1	52937
C133	CAP CERAMIC 5n6 500V	1	22394
C134	CAP CERAMIC 5n6 500V	1	22394
D109	DIODE MBR2530	1	54003
D110	DIODE MBR 2530	1	54003
D111	DIODE SF2M3	1	53804
D112	DIODE SF2M3	1	53804
D113	DIODE IN4148	1	23802
D114	DIODE SF2M3	1	53804
D115	DIODE SF2M3	1	53804
D116	DIODE IN4148	1	23802
C135	CAP CERAMIC 5n6 500V	1	22394
C136	CAP CERAMIC 100n 30V	1	19647
C137	CAP CERAMIC 100n 30V	1	19647

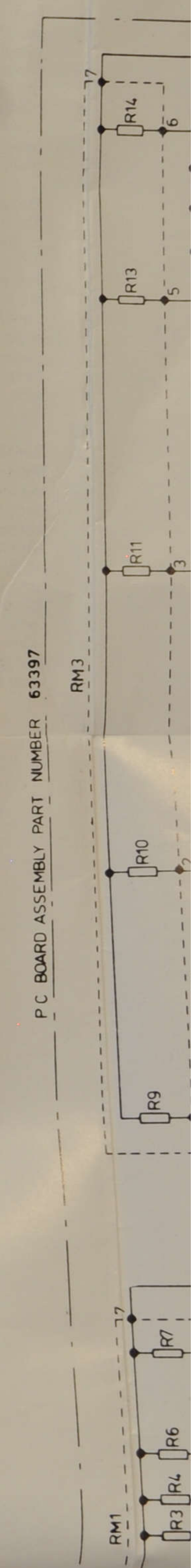
REF	DESCRIPTION	QTY	PART No
TR101 / TR102	TRANSISTOR MATCHED PAIR 2N6251	1	62094 OR 65370
TR303	TRANSISTOR POWER RCA1000	1	53655
TR304	TRANSISTOR POWER RCA1000	1	53655
T1	TRANSFORMER CURRENT SENSE	1	61591
T2	TRANSFORMER DRIVE	1	
T5	TRANSFORMER OUTPUT	1	64210
T6	TRANSFORMER OUTPUT	1	65350
L1	CHOKE OUTPUT	1	63418
L7	CHOKE LINEAR	1	63432
L8	CHOKE LINEAR	1	63432
GS1	GUARD SHIELD-TRANSISTOR	1	61172
TH1	THERMOSTAT 260 F ± 10°F	1	53711
	FOR MGT 5—20A USE:—		
R109	RESISTOR MO 82R ½W	1	28781
C103	CAP ELECT 480µ 180V	1	53805
C121	CAP ELECT 480µ 180V	1	53805
C127	CAP ELECT 480µ 180V	1	53805
C128	CAP ELECT 480µ 180V	1	53805
MR101	DIODE MR 756	2	53098
MF1	MAINS FILTER	1	63772
T4	TRANSFORMER-AUXILIARY	1	64746
FS1	FUSE 6·3A 5 x 20 mm	1	52990
	FOR MGT 5-20B USE:—		
C103	CAP ELECT 470µ 400V	1	52914
CSR101	THYRISTOR 2N 4444	1	54229
MF1	MAINS FILTER	1	52974
T4	TRANSFORMER-AUXILIARY	1	64745
FS1	FUSE 3·15A 5 x 20 mm	1	54341

REF	DESCRIPTION	QTY	PART No
	PC BOARD LINEAR ASSY NO 63419		
R201	RESISTOR MO 100R 2% ½W	1	26747
R202	RESISTOR MO 1K0 2% ½W	1	27346
R204	RESISTOR MO 10K 2% ½W	1	28800
R205	RESISTOR MO 10K 2% ½W	1	28800
R206	RESISTOR MO 620R 2% ½W	1	22485
R207	RESISTOR MO 68R 2% ½W	1	28779
R208	RESISTOR MO AOT 2% ¼W	1	AOT
R209	RESISTOR MO 1K1 2% ½W	1	28791
R210	POTENTIOMETER 2K0	1	54239
R211	RESISTOR MF 3K0 1% 25ppm	1	53405
R212	RESISTOR MF 4K9 1% 25ppm	1	53707
R213	RESISTOR MO AOT 2% ¼W	1	AOT
R214	RESISTOR MF 7K5 1% 25ppm	1	53570
R215	RESISTOR MO 510R 2% ½W	1	26738
R216	RESISTOR MO 100R 2% ½W	1	26747
R217	RESISTOR MO 1K0 2% ½W	1	27346
R219	RESISTOR MO 10K 2% ½W	1	28800
R220	RESISTOR MO 10K 2% ½W	1	28800
R221	RESISTOR MO 620R 2% ½W	1	22485
R222	RESISTOR MO 68R 2% ½W	1	28779
R223	RESISTOR MO AOT 2% ¼W	1	AOT
R224	RESISTOR MO 1K1 2% ½W	1	28791
R225	POTENTIOMETER 2K0	1	54239
R226	RESISTOR MF 3K0 1% 25ppm	1	53405
R227	RESISTOR MF 4K9 1% 25ppm	1	53707
R228	RESISTOR MO AOT 2% ½W	1	AOT
R229	RESISTOR MF 7K5 1% 25ppm	1	53570
R230	RESISTOR MO 510R 2% ½W	1	26738
C201	CAP ELECT 15µ 40V DC	1	32187
C202	CAP POLY 33p 63V DC	1	53710
C203	CAP CERAMIC 10n 250V	1	22395
C204	CAP TANT 10µ 10V	1	52938
C205	CAP CERAMIC 10n 250V	1	22395
C206	CAP ELECT 100µ 40V	1	32189
C207	CAP ELECT 15µ 40V DC	1	32187
C208	CAP POLY 33p 63V DC	1	53710
C209	CAP CERAMIC 10n 250V	1	22395
C210	CAP TANT 10µ 10V	1	52938
C211	CAP CERAMIC 10n 250V	1	22395
C212	CAP ELECT 100µ 40V	1	32189
D201	DIODE IN4148	1	23802
D202	DIODE IN4148	1	23802
D203	DIODE IN4148	1	23802
D204	DIODE IN4148	1	23802
D205	DIODE ZENER 7·5V	1	33932
D206	DIODE ZENER 6·2V	1	29601
D207	DIODE IN4003	1	23462
D208	DIODE IN4148	1	23802
D209	DIODE IN4148	1	23802
D210	DIODE IN4148	1	23802
D211	DIODE IN4148	1	23802
D212	DIODE ZENER 7·5V	1	33932
D213	DIODE ZENER 6·2V	1	29601
D214	DIODE IN4003	1	23462
TR201	TRANSISTOR BC107	1	26790
TR202	TRANSISTOR ZTX 450	1	54227
TR203	TRANSISTOR BC107	1	26790
TR204	TRANSISTOR ZTX 450	1	54227
IC 201	INTEGRATED CIRCUIT 748C	1	53549
IC202	INTEGRATED CIRCUIT 748C	1	53549

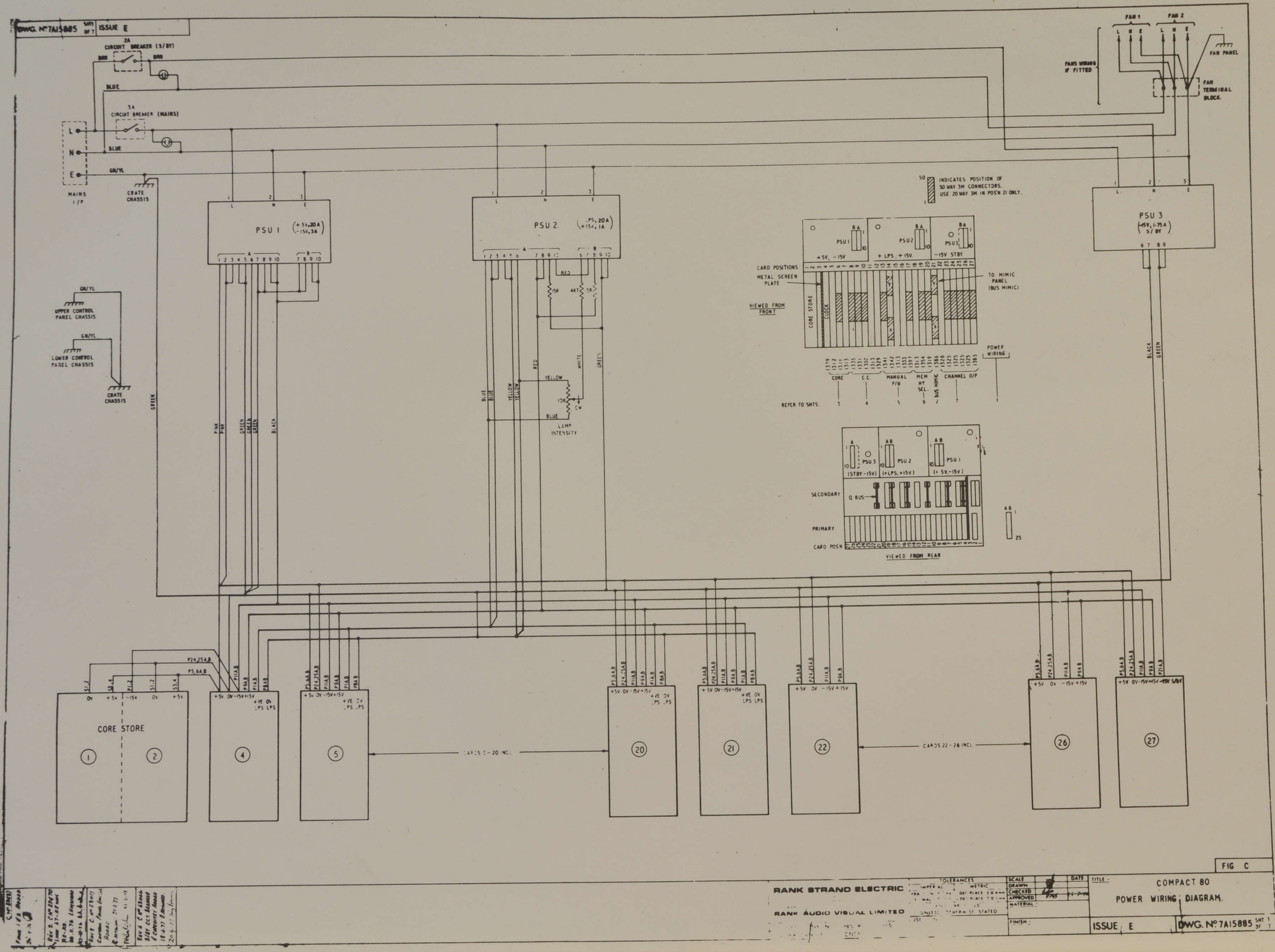
REF	DESCRIPTION	QTY	PART NO.
	PC BOARD AUXILIARY ASSY No. 63430 — MGT 5-20A ONLY		
R105	RESISTOR MO 100R 2% ½W	1	26747
R106	RESISTOR MO 27R 2% ½W	1	28774
R107	RESISTOR MO 33R 2% ½W	1	26749
R108	RESISTOR MF 2K8 1% ¼W	1	54256
R110	RESISTOR MO 5K6 2% ½W	1	22483
C108	CAP ELECT 1m0 25V	1	32186
D105 / D106 / D107 / D108	RECTIFIER BRIDGE W02	1	19725
	PC BOARD SOFT START ASSY No. 65374 MGT 5-20B ONLY		
R119	RESISTOR WW 33R 5% 6W	1	2277
R120	RESISTOR MO 1K0 2% ½W	1	27346
R121	RESISTOR MO 10K 2% ½W	1	28800
R122	RESISTOR MO 10R 2% ½W	1	28771
C124	CAP TANT 22µ 6·3V	1	54230
MR101	DIODE S6M3	4	52889
TR103	TRANSISTOR ZTX 450	1	54227
TR104	TRANSISTOR BSV 64	1	54228
	PC BOARD AUXILIARY ASSY No. 65181 MGT 5-20B ONLY		
R105	RESISTOR MO 100R 2% ½W	1	26747
R106	RESISTOR MO 27R 2% ½W	1	28774
R107	RESISTOR MO 33R 2% ½W	1	26749
R108	RESISTOR MF 2K8 1% ¼W	1	54256
R109	RESISTOR MO 82R 2% ½W	1	28781
R110	RESISTOR MO 5K6 2% ½W	1	22483
C108	CAP ELECT 1m0 25V	2	32186
D105 / D106 / D107 / D108	RECTIFIER BRIDGE W02	1	19725

REF	PC BOARD CONTROL ASSY PART No. 63397		QTY	PART No
R1	RESISTOR 3K9 5%	RESISTOR MODULE RM1	1	63478
R2	RESISTOR 6K8 5%			
R3	RESISTOR 6K8 5%			
R4	RESISTOR 3K9 5%			
R6	RESISTOR 12K 5%			
R7	RESISTOR 100R 5%			
R9	RESISTOR 1K0 5%	RESISTOR MODULE RM3	1	63400
R10	RESISTOR 2K7 5%			
R11	RESISTOR 2K2 5%			
R13	RESISTOR 330R 5%			
R14	RESISTOR 1K0 5%			
R5	RESISTOR 390R 5%	RESISTOR MODULE RM2	1	63399
R8	RESISTOR 100R 5%			
R15	RESISTOR 220R 5%			
R16	RESISTOR 1K0 5%			
R20	RESISTOR 820R 5%			
R21	RESISTOR 220R 5%			
R24	RESISTOR MO 2% 680R		1	22484
R25	RESISTOR MO 5% 47K		1	53624
R27	RESISTOR MO 5% 1K0		1	28593
R28	RESISTOR MO 5% 4K7		1	52122
R29	RESISTOR MO 5% 2K7		1	52121
R30	RESISTOR MO 5% 150R		1	28605
R31	RESISTOR MO 5% 10R		1	28588
R32	RESISTOR MO 5% 5K6		1	28603
R33	RESISTOR MO 5% 5K6		1	28603
R34	RESISTOR MO		1	AOT
R35	RESISTOR MO 5% 620R		1	22485
R36	RESISTOR MO 5% 220R		1	28600
R37	RESISTOR MO		1	AOT
R38	RESISTOR MO 5% 1K5		1	25903
R39	RESISTOR MO 2% 120R		1	26746
R40	RESISTOR MO 5% 2K2		1	28607
R41	RESISTOR MO 5% 3K3		1	53622
R42	RESISTOR MO 5% 150R		1	28605
R43	RESISTOR MO 5% 300R		1	28611
R44	THERMISTOR 220R		1	50786
R45	RESISTOR MO		1	AOT
R46	RESISTOR MO		1	AOT
R4[illegible]	RESISTOR MO 2% 75K		1	28819
R48	RESISTOR MO 5% 5K6		1	28603
R49	RESISTOR MF 1% 25ppm 6K8		1	52950
R5[illegible]	RESISTOR MO 5% 180K		1	53625
R5[illegible]	RESISTOR MO 5% 2K7		1	52121
C2	CAP POLYSTY 6n8 30V		1	52939
C3	CAP POLYSTY 6n8 30V		1	52939
C5	CAP PC 22n 250V or 22n 400V		1	53620
C6	CAP TANT 10µ 10V		1	52938
C7	CAP TANT 33µ 10V		1	52936
C9	CAP CER 100n 10V or 47n 12V		1	51093 / 19657
C10	CAP TANT 220n 35V		1	53784
C12	CAP CER 1n5 500V		1	22388
C13	CAP CER 47n 25V or 47n 16V		1	54397 / 54403
C14	CAP CER 27p 500V		1	22369

REF	DESCRIPTION	QTY	PART No.
D1	DIODE IN4148	1	23802
D2	DIODE IN4148	1	23802
D4	DIODE IN4148	1	23802
D5	DIODE IN4148	1	23802
D6	ZENER DIODE 3V3	1	33923
D7	DIODE IN4148	1	23802
D8	DIODE IN4148	1	23802
D9	ZENER DIODE 9V1	1	33934
D10	DIODE IN4148	1	23802
D11	ZENER DIODE 6V8	1	33931
D12	DIODE IN4148	1	23802
D13	DIODE IN4148	1	23802
D14	DIODE IN4148	1	23802
D15	DIODE IN4148	1	23802
D16	DIODE IN4148	1	23802
D17	DIODE IN4148	1	23802
D18	ZENER DIODE 5V6	1	4109
D19	DIODE IN4148	1	23802
D20	DIODE IN4148	1	23802
D21	ZENER DIODE IN3497	1	29601
D22	ZENER DIODE 3V9	1	33925
D23	DIODE IN4148	1	23802
D24	DIODE AA143	1	52900
D25	DIODE AA143	1	52900
D27	DIODE IN4148	1	23807
D28	ZENER DIODE 6V8	1	33931
TR1	TRANSISTOR 2N2369	1	23307
TR2	TRANSISTOR 2N2369	1	23307
TR3	TRANSISTOR DRIVE BFS 96 or ZTX 551 FERRANTI or BSV 49B or 2N2907 or 2N2907A ITT	1	53626
TR4	TRANSISTOR DRIVE BFS 96 or ZTX 551 FERRANTI or BSV 49B or 2N2907 or 2N2907A ITT	1	53626
TR8	TRANSISTOR 2N2369	1	23307
TR11	TRANSISTOR BC108	1	26110
TR12	TRANSISTOR BCY70	1	23354
TR13	TRANSISTOR BC108	1	26110
TR14	TRANSISTOR BCY70	1	23354
TR15	TRANSISTOR BFY50	1	26112
TR18	TRANSISTOR BCY70	1	23354
TR19	TRANSISTOR BCY70	1	23354
TR20	TRANSISTOR BC108	1	26110
(TR5) (TR6) (TR7) (TR9) (D3) IC2	TRANSISTOR ARRAY CA3086 or MC3346 or ULN2046A	1	52940
CSR1	THYRISTOR 2N4146 or TE105	1	52941
IC1	IC OPA TYPE 748C	1	53549



C COMPACT 80 WIRING DIAGRAMS


DWG. Nº 7A15885
ISSUE E
2A CIRCUIT BREAKER (S/BY)
5A CIRCUIT BREAKER (MAINS)
MAINS I/P
CRATE CHASSIS
PSU 1
PSU 2
PSU 3
FAN 1
FAN 2
FAN PANEL
FAN TERMINAL BLOCK
UPPER CONTROL PANEL CHASSIS
LOWER CONTROL PANEL CHASSIS
LAMP INTENSITY
CORE STORE
CARDS 5 - 20 INCL
CARDS 22 - 26 INCL
VIEWED FROM FRONT
VIEWED FROM REAR
FIG C
RANK STRAND ELECTRIC
RANK AUDIO VISUAL LIMITED
COMPACT 80
POWER WIRING DIAGRAM.
ISSUE E
DWG. Nº 7A15885

DWG. Nº 7A15885 SHT 2 OF 7 | ISSUE A

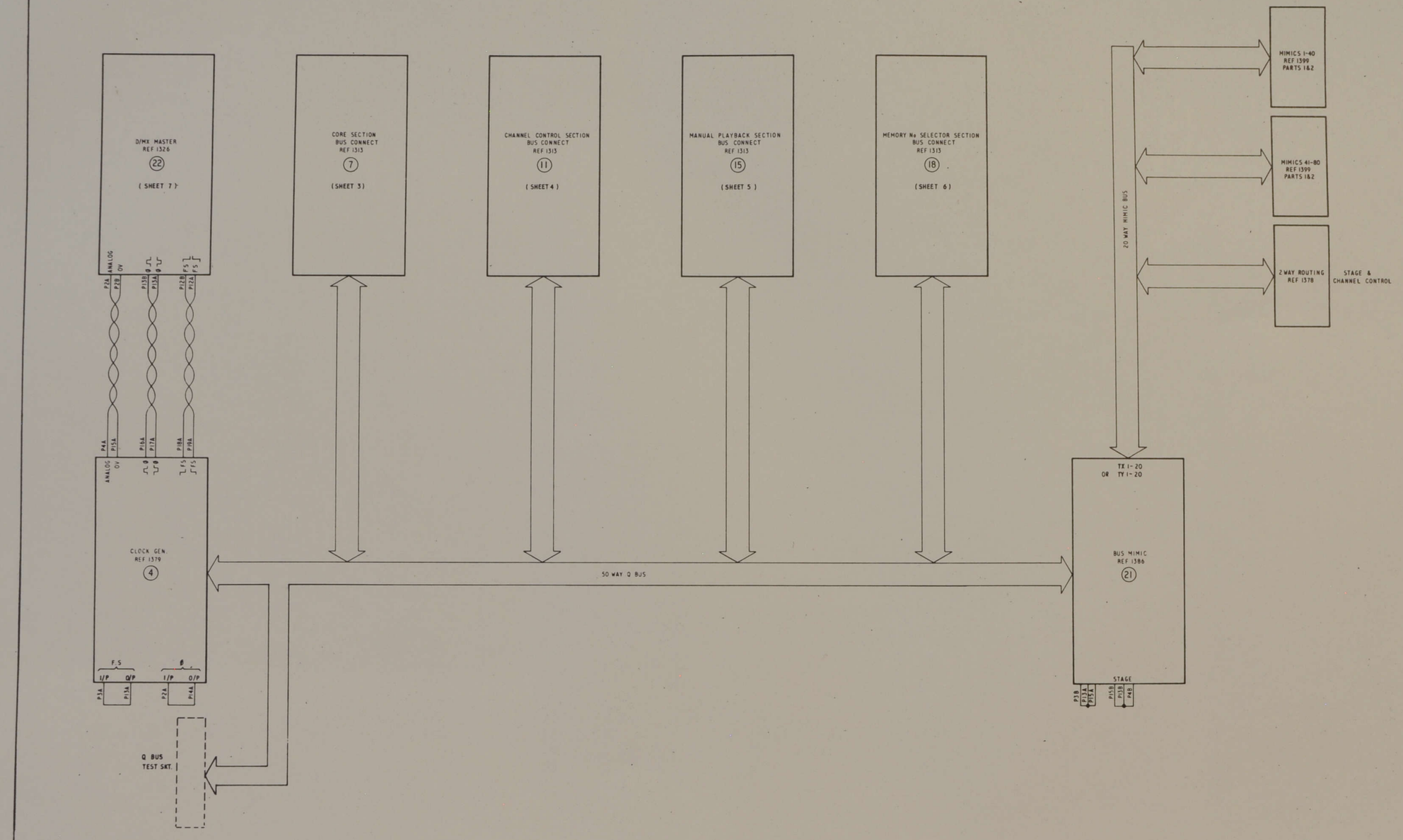


FIG C

RANK STRAND ELECTRIC

A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES
SCALE
DRAWN
CHECKED
APPROVED
MATERIAL
DATE
FINISH

TITLE
COMPACT 80
Q & V MIC BUS CONNECTIONS

ISSUE A | DWG. Nº 7A15885 SHT 2

DWG. Nº 7A15885 SHT 3 OF 7 | ISSUE B

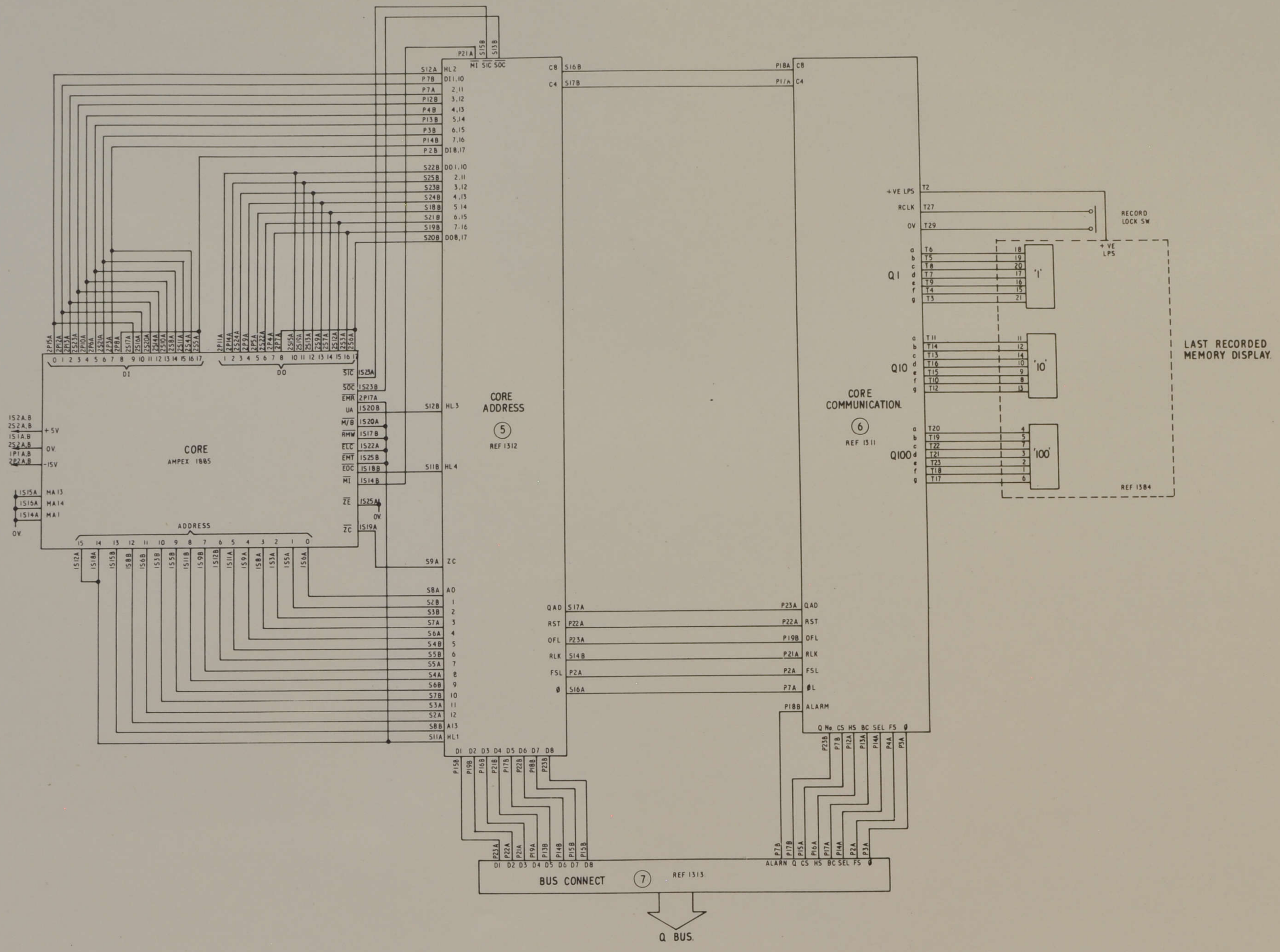


FIG. C

RANK STRAND ELECTRIC PO BOX 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408 A DIVISION OF RANK AUDIO VISUAL LIMITED	TOLERANCES IMPERIAL: FRACTION ± 1/64" DECIMAL ± 005" METRIC: 1 DEC PLACE ± 0.4mm 2 DEC PLACE ± 0.1mm ANGULAR ± 0.25° UNLESS OTHERWISE STATED	SCALE DRAWN 19.3.76 CHECKED 15.7.76 APPROVED MATERIAL -	TITLE - COMPACT 80 CORE STORE WIRING DIAGRAM.
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION	USED ON -	FINISH -	ISSUE B DWG. Nº 7A15885 SHT 3 OF 7

DWG. Nº 7A15885 SHT 4 OF 7 | ISSUE A

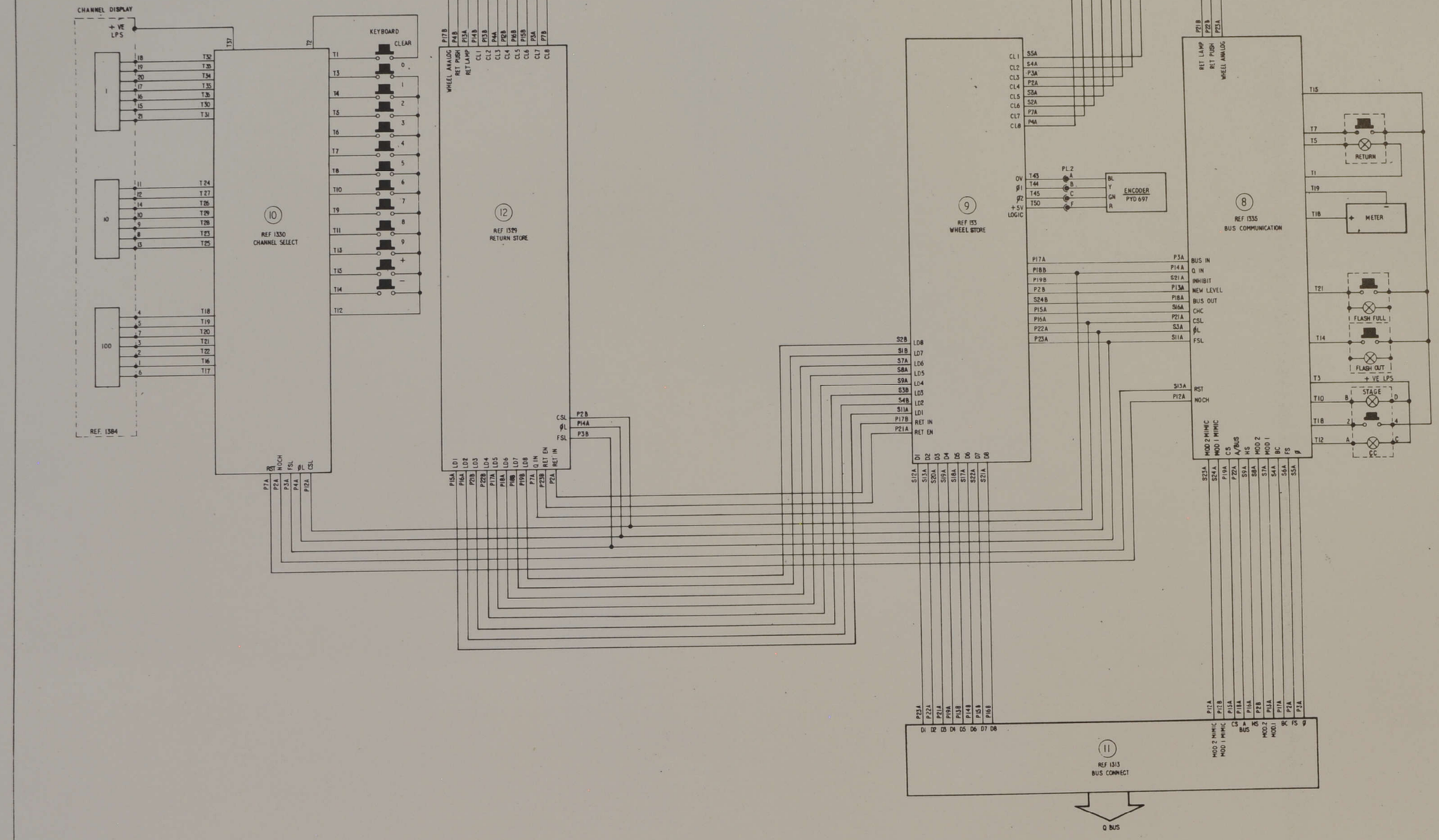


FIG C

RANK STRAND ELECTRIC	TOLERANCES	SCALE	DATE
A DIVISION OF RANK AUDIO VISUAL LIMITED	IMPERIAL / METRIC	DRAWN	TITLE - COMPACT 80
DIMENSIONS IN INCHES/MILLIMETRES	FRACTION ± 1/64 / 1 DEC PLACE ± 0.4mm	CHECKED	CHANNEL CONTROL — WIRING DIAGRAM
THIRD ANGLE PROJECTION	DECIMAL ± .005 / 2 DEC PLACE ± 0.1mm	APPROVED	
	ANGULAR ± 0.25	MATERIAL -	
	UNLESS OTHERWISE STATED	FINISH -	ISSUE A / DWG. Nº 7A15885 SHT 4 OF 7
	USED ON -		

REV. | C.Nº

DWG. Nº 7A15885 SHT 5 OF 7 | ISSUE A B

CONTACTS A COM

PUSH COMMONS

+VE LAMPS

CROSSFADERS

JOYSTICK ALTERNATIVE

FADERS B T41
FADERS SWB T40
UP WIPER T48
FADERS SW A T39
FADERS A T42
DOWN WIPER T47

17 REF 1332 OR REF 1397 (J'STK) FADER CONTROL

GM O/P T43
LINK WHEN JOYSTICK FITTED. T46
GM I/P
T44
0V
GRAND MASTER FADER

B.O T45
B.O SWITCH

16 REF.1333 PLAYBACK STORE

P13A A O/P 16P16B
P14A B O/P 16P13A
STORES

A DISPLAY REF 1384

14 REF. 1342 Q No & CONTACT SCAN

B DISPLAY REF 1384

13 REF. 1341 BUS COMMUNICATION

CCB
WIPE B
CUT B
+B
-B
REC B

PUSH COMMONS

WIPE BLANK P19A
MOD 2 P7A
ØL P21A
FSL P23A
SC P17A
LCA P4A
LCB P13A
QB1 P18A
QB2 P15A
QA1 P14A
QA2 P16A

CUT A
RECORD B
-A
+A
RECORD A
CC B
CC A
+B
CUT B
-B

15 REF. 1313 BUS CONNECT

Q BUS

FIG C

RANK STRAND ELECTRIC
P.O. Box 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24408
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES IMPERIAL	TOLERANCES METRIC
FRACTION ± 1/64"	1 DEC PLACE ± 0.4 mm
DECIMAL ± .005"	2 DEC PLACE ± 0.1 mm
ANGULAR ± 0.25°	
UNLESS OTHERWISE STATED	

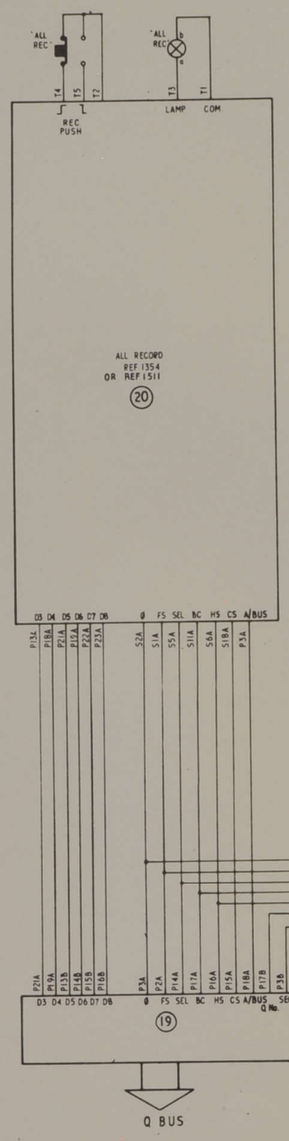
USED ON:-

SCALE
DRAWN DATE 22-12-76
CHECKED
APPROVED
MATERIAL:-
FINISH:-

TITLE:- COMPACT 80
MANUAL PLAYBACK SECTION
WIRING DIAGRAM

ISSUE A B | DWG. Nº 7A15885 | SHT 5 OF 7

DWG. N° 7A 15885 SHT 6 OF 7 | ISSUE A



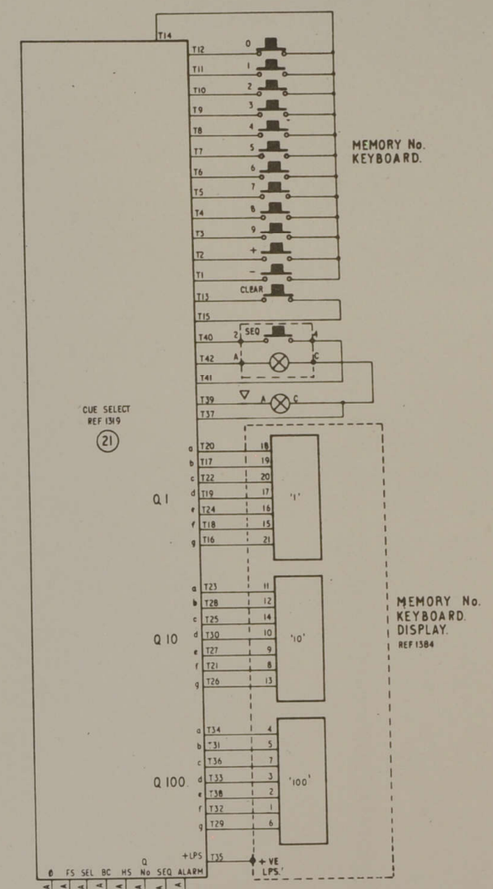
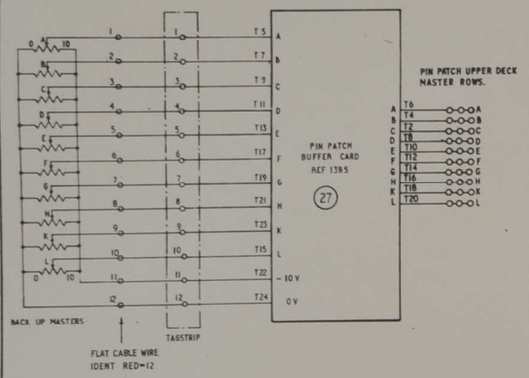
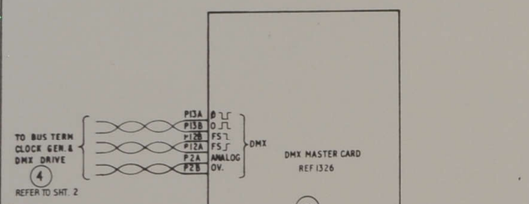


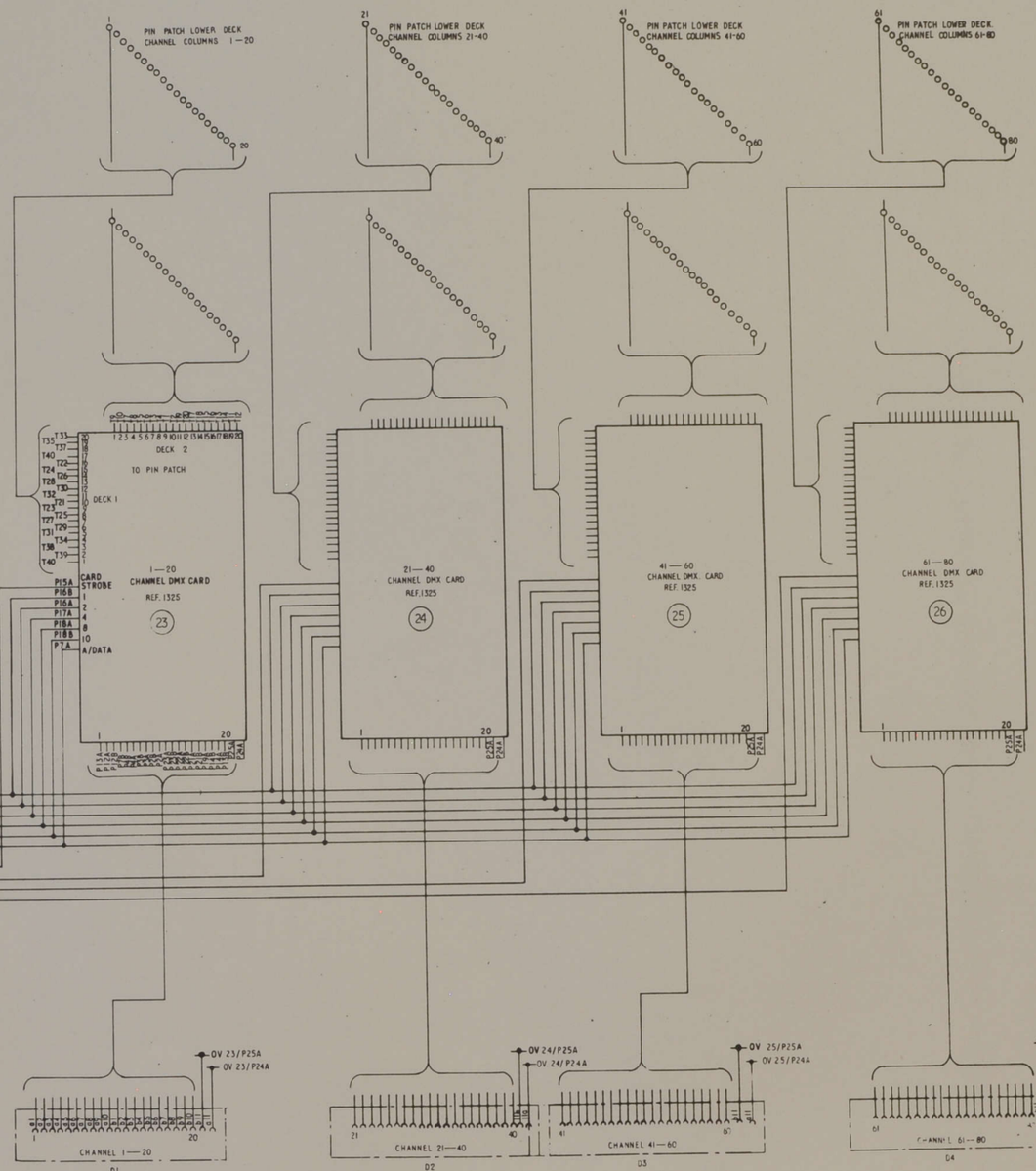
FIG C

RANK STRAND ELECTRIC A DIVISION OF RANK AUDIO VISUAL LIMITED	TOLERANCES IMPERIAL / METRIC FRACTION ± 1/64 / 2 DEC PLACE ± 0.4mm DECIMAL ± .005 / 3 DEC PLACE ± 0.1mm ANGULAR ± 0.25 UNLESS OTHERWISE STATED	SCALE DRAWN CHECKED APPROVED MATERIAL	DATE 2-3-72 15-7-72	TITLE: COMPACT 80 MEMORY No SELECTOR SECTION WIRING DIAGRAM	
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION	USED ON	FINISH		ISSUE A	DWG. N° 7A15885 SHT 6 OF 7

DWG. No 7A15885 SHT 2 OF 7 | ISSUE A







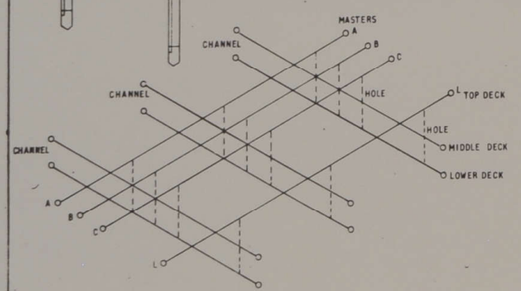


FIG C

RANK STRAND ELECTRIC
PO Box 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24408
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64"	1 DEC PLACE ± 0.4 mm
DECIMAL ± .005"	2 DEC PLACE ± 0.1 mm
ANGULAR ± 0.25°	
UNLESS OTHERWISE STATED	
USED ON -	

SCALE | DATE
DRAWN
CHECKED
APPROVED
MATERIAL
FINISH -

TITLE -
COMPACT 80
CHANNEL O/P WIRING DIAGRAM
PIN PATCH 3 DECK

ISSUE A | DWG. No 7A15885 SHT 2 OF 7

REVS CHG

D COMPACT 120 WIRING DIAGRAMS

DWG. Nº 7A16521 SHT 1 OF 7 | ISSUE F

2A CIRCUIT BREAKER (S/BY)

5A CIRCUIT BREAKER (MAINS)

MAINS I/P

CRATE CHASSIS

PSU 1 (+5V, 20A) (−15V, 3A)

PSU 2. (LPS, 20A) (+15V, 1A)

PSU 3 (−15V, 1·75A S/BY)

FAN 1 FAN 2

FAN PANEL

FAN WIRING IF FITTED

FAN TERMINAL BLOCK.

UPPER CONTROL PANEL CHASSIS

LOWER CONTROL PANEL CHASSIS

LAMP INTENSITY

VIEWED FROM REAR

METAL SCREEN W POS'N 3

SECONDARY

PRIMARY

Q BUS

CARD POS'NS

(STBY. − 15V.)

(+LPS, +15V.)

(+15V, +15V)

+5V, −15V

+LPS, +15V

STBY −15V

CARD POSITIONS

TO MIMIC PANEL BUS MIMIC

CORE STORE

CLOCK

METAL SCREEN PLATE

REFER TO SHTS. 2 3

CORE

C.P.

MANUAL P/B

MEMORY SEL.

CHANNEL O/P

POWER WIRING

VIEWED FROM FRONT

IW15897 WIRING SCHEDULE

25 PIN ARRANGMENT

INDICATES POSITION OF 50 WAY 3M CONNECTORS USE 20 WAY 3M IN POS'N 22 (TO MIMIC PANELS)

CORE STORE

CARDS 5 − 21 INCL

CARDS 23 − 29

FIG D

RANK STRAND ELECTRIC

A DIVISION OF RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES

THIRD ANGLE PROJECTION

TOLERANCES

IMPERIAL: FRACTION ± 1/64; DECIMAL ± .005

METRIC: 1 DEC PLACE ± 0·4mm; 2 DEC PLACE ± 0·1mm

ANGULAR ± 0·25

UNLESS OTHERWISE STATED

USED ON :-

SCALE

DRAWN

CHECKED

APPROVED 04 19-2-74

MATERIAL :-

FINISH :-

DATE

TITLE :- COMPACT 120 POWER WIRING DIAGRAM

ISSUE F

DWG. Nº 7A16521 SHT 1 OF 7

DWG. Nº 7A16521 SHT 2 OF 7 ISSUE B

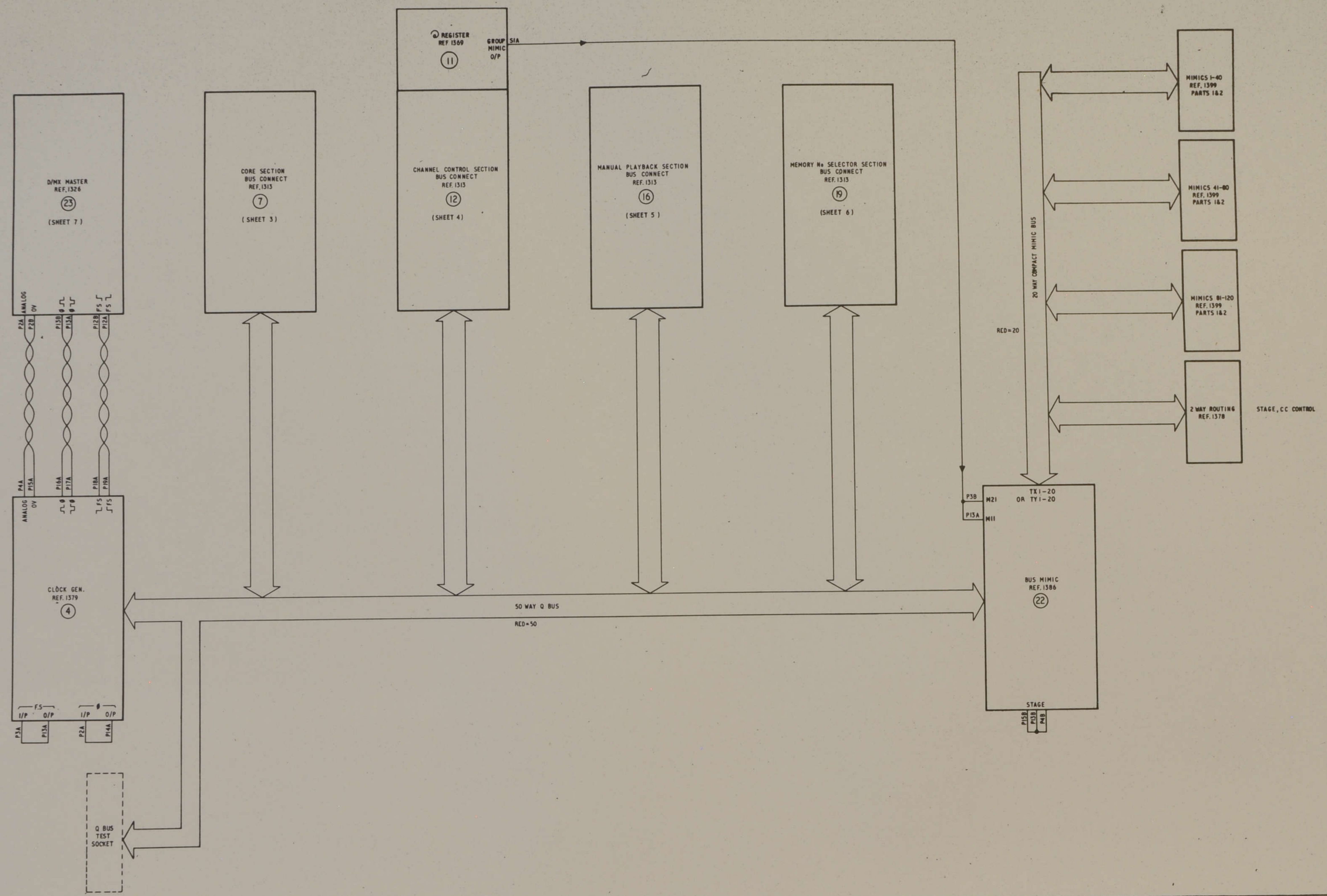


FIG D

RANK STRAND ELECTRIC
PO Box 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24408
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64"	1 DEC PLACE ± 0·4 mm
DECIMAL ± ·005"	2 DEC PLACE ± 0·1 mm
ANGULAR ± 0·25°	
UNLESS OTHERWISE STATED	

USED ON :-

		DATE
SCALE		
DRAWN	P.L. [illegible]	8·6·78
CHECKED	[illegible]	[illegible]
APPROVED		

MATERIAL :-

FINISH :-

TITLE :- COMPACT 120
Q & MIMIC BUS CONNECTIONS

ISSUE B

DWG. Nº 7A16521 SHT 2 OF 7

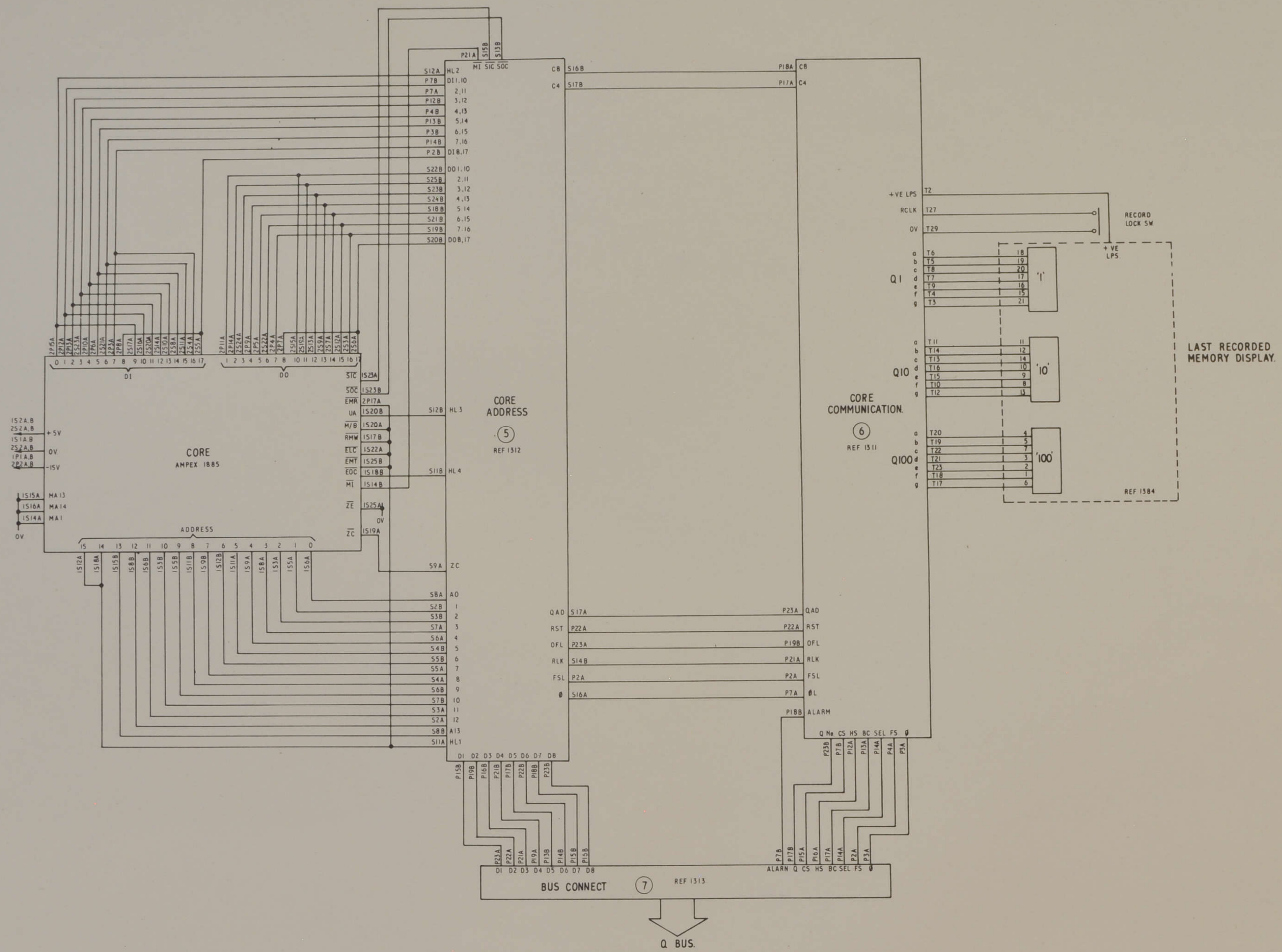


FIG. D.

REV.1 C. Nº E2343
STAGE & C/C
FACILITY ADDED
2.4.76.

REV 2 C No. E 3009
EMR WAS CONNECTED
TO A13
7.1.77
10.1.77

RANK STRAND ELECTRIC	TOLERANCES		SCALE		DATE	TITLE -
PO BOX 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408	IMPERIAL	METRIC	DRAWN		20.11.75	COMPACT 120
A DIVISION OF RANK AUDIO VISUAL LIMITED	FRACTION ± 1/64"	1 DEC PLACE ± 0.4mm	CHECKED		15.7.76	CORE STORE WIRING DIAGRAM
	DECIMAL ± .005"	2 DEC PLACE ± 0.1mm	APPROVED			
	ANGULAR ± 0.25°		MATERIAL -			
DIMENSIONS IN INCHES/MILLIMETRES	UNLESS OTHERWISE STATED		FINISH -			ISSUE C
THIRD ANGLE PROJECTION	USED ON -					DWG. Nº 7A16521 SHT 3 OF 7

DWG. Nº 7A16521 SHT4 OF 7 | ISSUE C

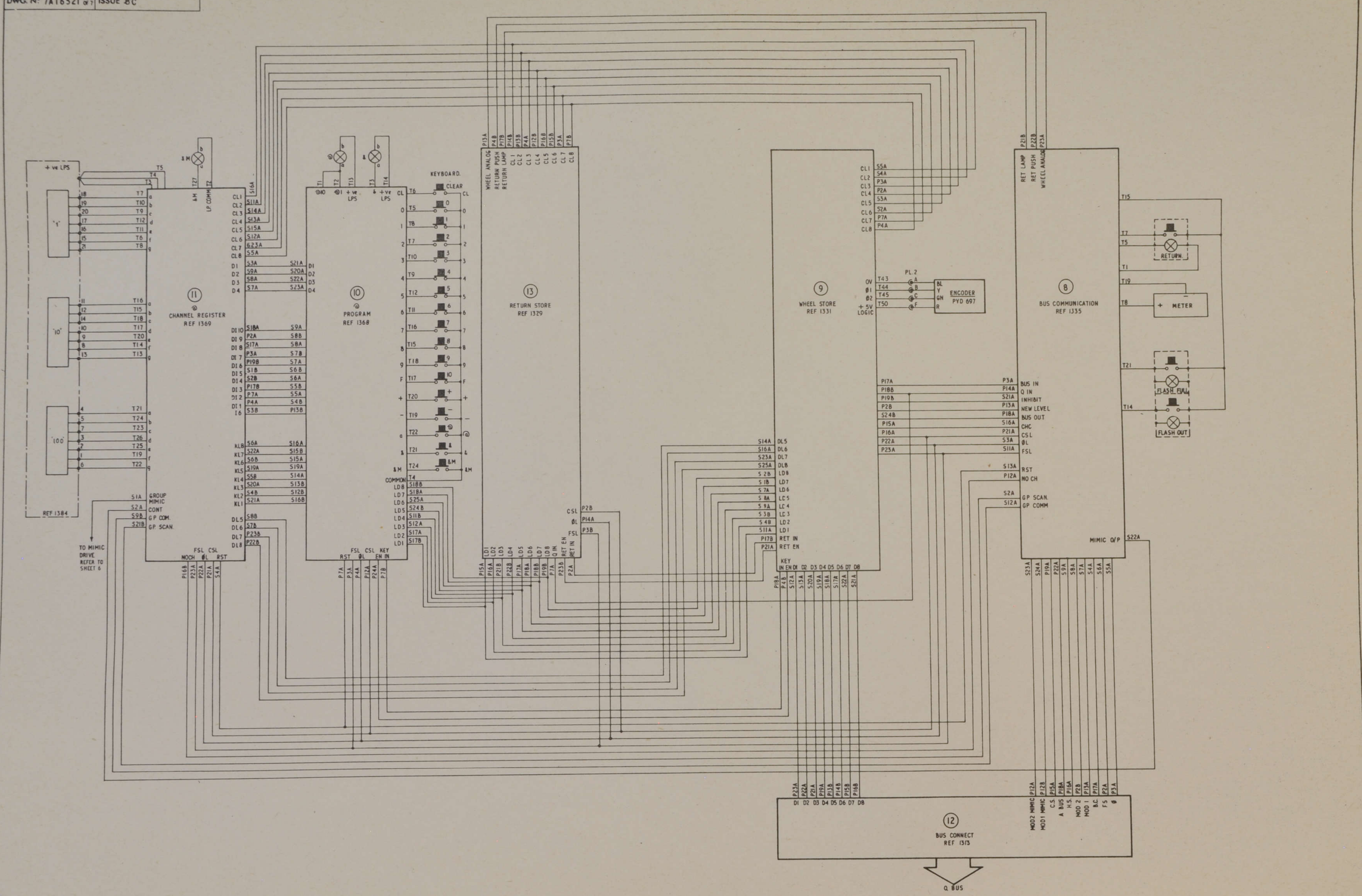


FIG D

RANK STRAND ELECTRIC PO Box 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408 A DIVISION OF **RANK AUDIO VISUAL LIMITED**	TOLERANCES IMPERIAL: FRACTION ± 1/64", DECIMAL ± ·005" METRIC: 1 DEC PLACE ± 0·4 mm, 2 DEC PLACE ± 0·1 mm ANGULAR ± 0·25° UNLESS OTHERWISE STATED	SCALE DRAWN CHECKED APPROVED MATERIAL:- DATE	TITLE:- COMPACT 120 @K CHANNEL CONTROL WIRING DIAGRAM.
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION	USED ON:-	FINISH:-	ISSUE C — DWG. Nº 7A16521 SHT4 OF 7

DWG. Nº 7A16521 SHT 5 OF 7 | ISSUE 8C

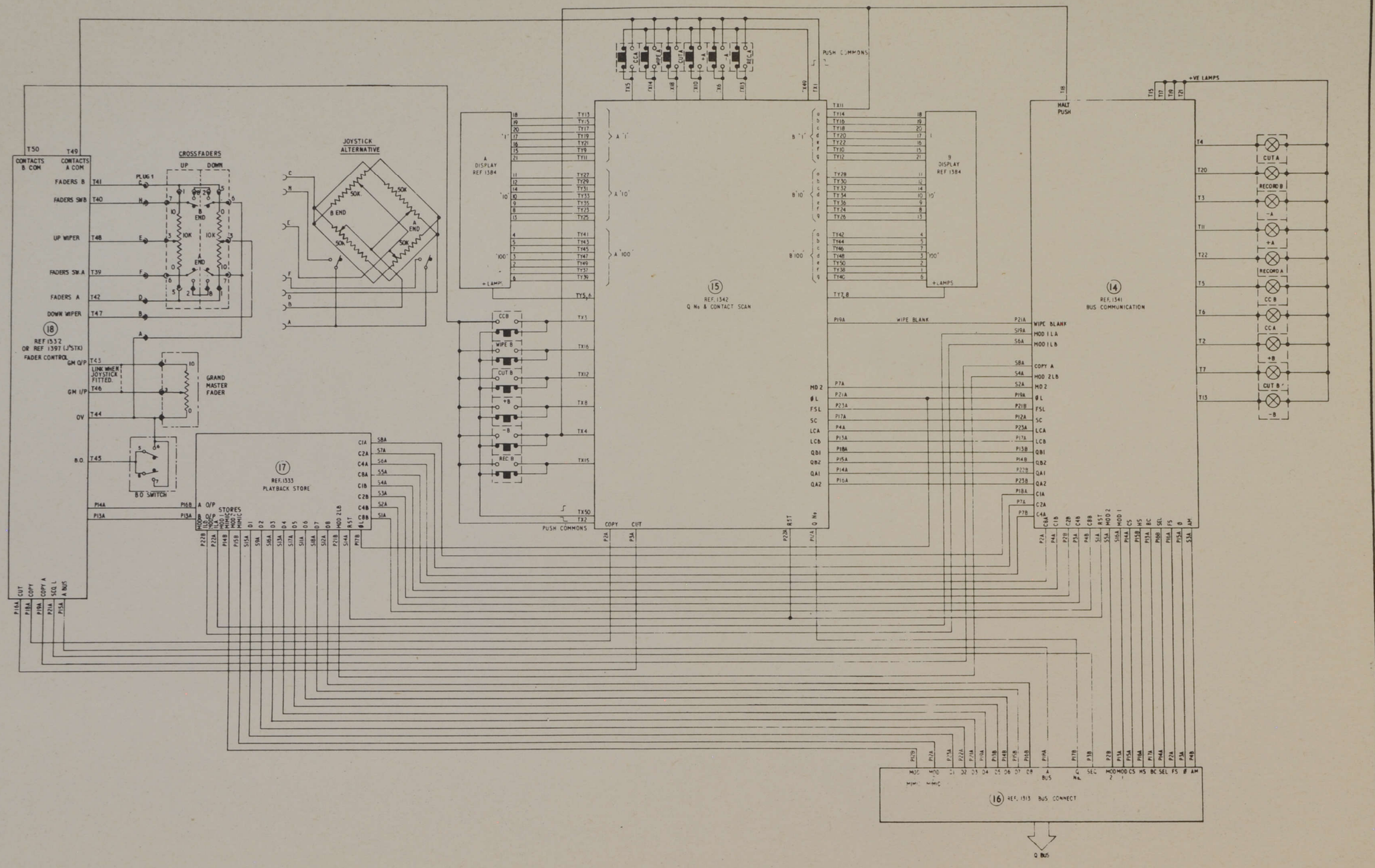


FIG D

RANK STRAND ELECTRIC
A DIVISION OF
RANK AUDIO VISUAL LIMITED

TOLERANCES
IMPERIAL | METRIC
FRACTION ± 1/64 | 1 DEC PLACE ± 0.4mm
DECIMAL .005 | 2 DEC PLACE ± 0.1mm
ANGULAR ± 0.25°
UNLESS OTHERWISE STATED
USED ON:-
DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

SCALE | DRAWN | CHECKED | APPROVED | MATERIAL:- | FINISH:- | DATE

TITLE:- COMPACT 120 MANUAL PLAYBACK SECTION WIRING DIAGRAM

ISSUE 8C | DWG. Nº 7A16521 SHT 5 OF 7

DWG. Nº 7A16521 SHT 6 OF 7 | ISSUE B

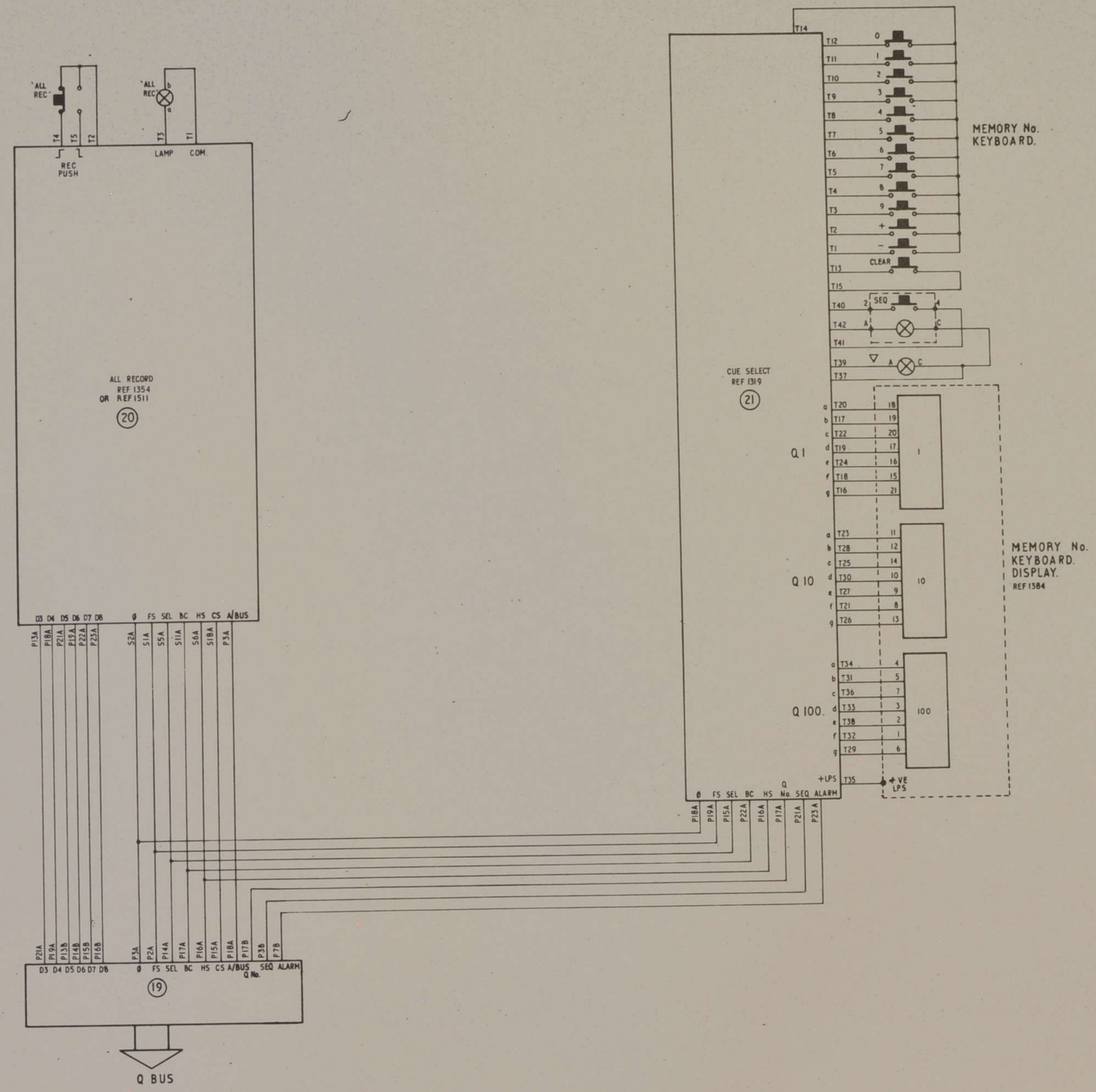


FIG D

RANK STRAND ELECTRIC
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64"	1 DEC PLACE ± 0.4mm
DECIMAL ± .005"	2 DEC PLACE ± 0.1mm
ANGULAR ± 0.25°	
UNLESS OTHERWISE STATED	

USED ON :-

SCALE | DRAWN | CHECKED | APPROVED | DATE

MATERIAL :-

FINISH :-

TITLE :- COMPACT 120
MEMORY No. SELECTOR SECTION.
WIRING DIAGRAM

ISSUE B

DWG. Nº 7A16521 SHT 6 OF 7

DWG. N° 7A16521 SHT 7 OF 7 | ISSUE B

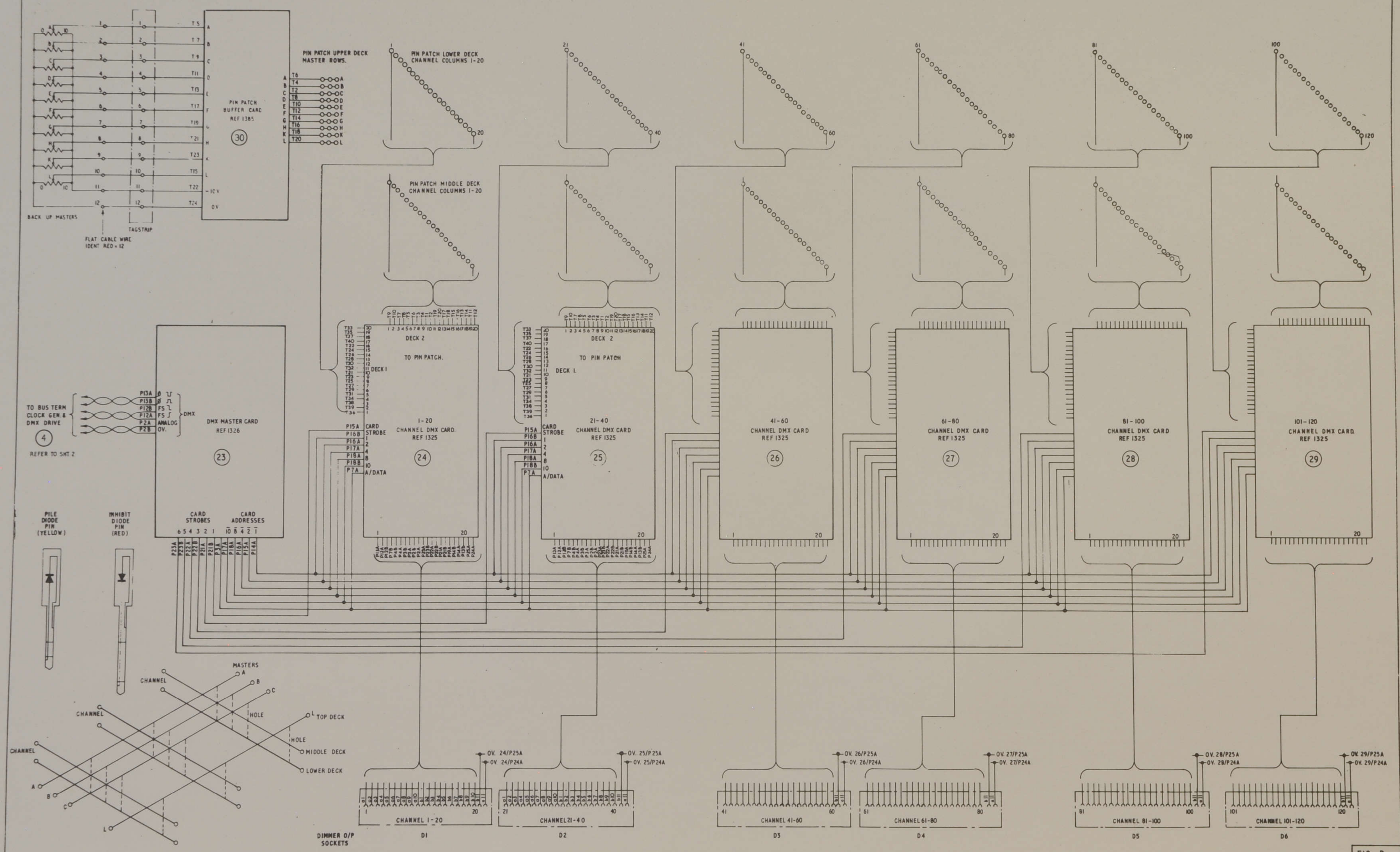


FIG D

RANK STRAND ELECTRIC PO Box 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408 A DIVISION OF **RANK AUDIO VISUAL LIMITED**	TOLERANCES IMPERIAL: FRACTION ± 1/64" / DECIMAL ± ·005" METRIC: 1 DEC PLACE ± 0·4 mm / 2 DEC PLACE ± 0·1 mm ANGULAR ± 0·25° UNLESS OTHERWISE STATED	SCALE DRAWN CHECKED APPROVED MATERIAL :-	TITLE :- COMPAC 120 CHANNEL O/P WIRING DIAGRAM. (Pin Patch 3 Deck)
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION	USED ON :-	FINISH :-	ISSUE B — DWG. N° 7A16521 SHT 7 OF 7

E COMPACT 200, 201 & G.T. WIRING DIAGRAMS

DWG. No. 7A16871 SHT 1 OF 7 ISSUE F

2A CIRCUIT BREAKER (S/BY)

5A CIRCUIT BREAKER (MAINS)

COMPACT 200 INDIV. I/P
COMPACT 80 G.T. 240 V

MAINS I/P

CRATE CHASSIS

PSU 1 (+5V, 20A / -15V, 3A)

PSU 2. (-PS, 20A / +15V, 1A)

PSU 3 (-15V, 1·75A S/BY)

FAN 1 FAN 2

FANS WIRING IF FITTED

FAN PANEL

FAN PANEL TERMINAL BLOCK

UPPER CONTROL PANEL CHASSIS

LOWER CONTROL PANEL CHASSIS

LAMP INTENSITY

+5V.-15V + LPS.+15V STBY-15V

CARD POSITIONS

TO MIMIC PANEL BUS MIMIC

NOTE POSITION 21 IS WIRED TO ACCEPT CARD FOR A/MOD ON COMPACT 201 ONLY

CORE STORE CLOCK

METAL SCREEN PLATE

CORE C.C. MANUAL P/B RECORDED SEQ. MEMORY No. CHANNEL O/P POWER WIRING

REFER TO SHTS. 2 3 4 5 6 2 7 1

VIEWED FROM FRONT

50 INDICATES POSITION OF 50 WAY 3M CONNECTORS USE 20 WAY 3M IN POS'N 24 (TO MIMIC PANELS)

SECONDARY Q BUS PRIMARY CARD POSNS

PSU 3 (STBY.-15V.) PSU 2 (+LPS,+15V) PSU 1 (+5V.+15V)

VIEWED FROM REAR

METAL SCREEN IN POS'N 3

25 PIN ARRANGMENT

WIRING SCHEDULE IWI 6712

CORE STORE

CARDS 5 – 22 INCL

CARDS 24 – 29 INCL

FIG E

RANK STRAND ELECTRIC

RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES MILLIMETRES

THIRD ANGLE PROJECTION

TOLERANCES IMPERIAL METRIC FRACTION ± DECIMAL ± ANGULAR ± UNLESS OTHERWISE STATED

USED ON

SCALE DRAWN CHECKED APPROVED MATERIAL FINISH DATE

TITLE

COMPACTS 200, 201 & 80 G.T. POWER WIRING DIAGRAM

ISSUE F. DWG. No. 7A16871 SHT 1 OF 7

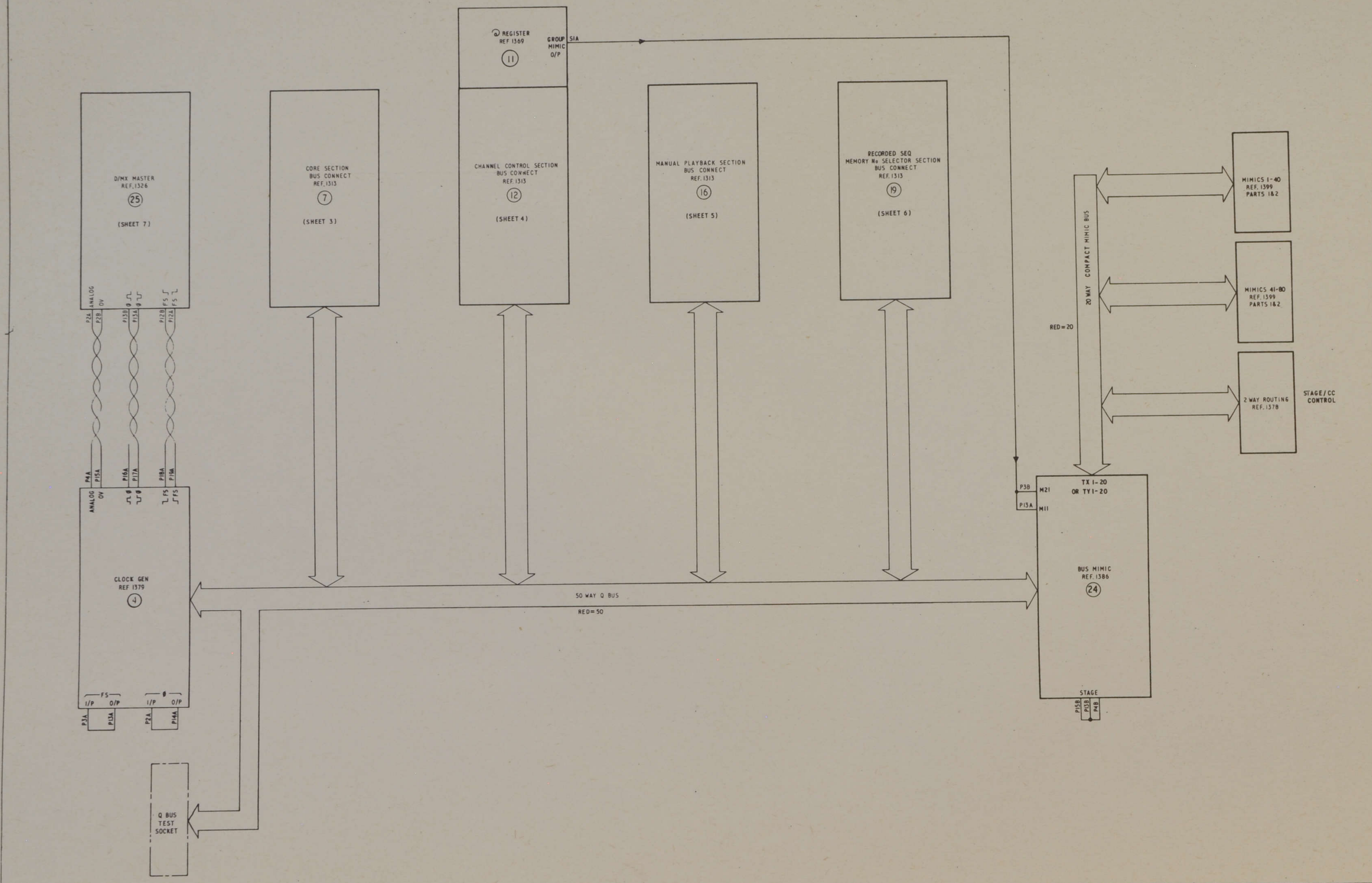


FIG E

RANK STRAND ELECTRIC
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION	DEC PLACE
DECIMAL ± .005	DEC PLACE
ANGULAR ± 0.25	
UNLESS OTHERWISE STATED	

USED ON

		DATE
SCALE		
DRAWN		9.3.76
CHECKED		
APPROVED		15.7.76
MATERIAL -		
FINISH -		

TITLE - COMPACT 200, 201 & 80 G.T
Q & MIMIC BUS CONNECTIONS

ISSUE X.B.C.

DWG. No 7A16871 SHT 2 OF 7

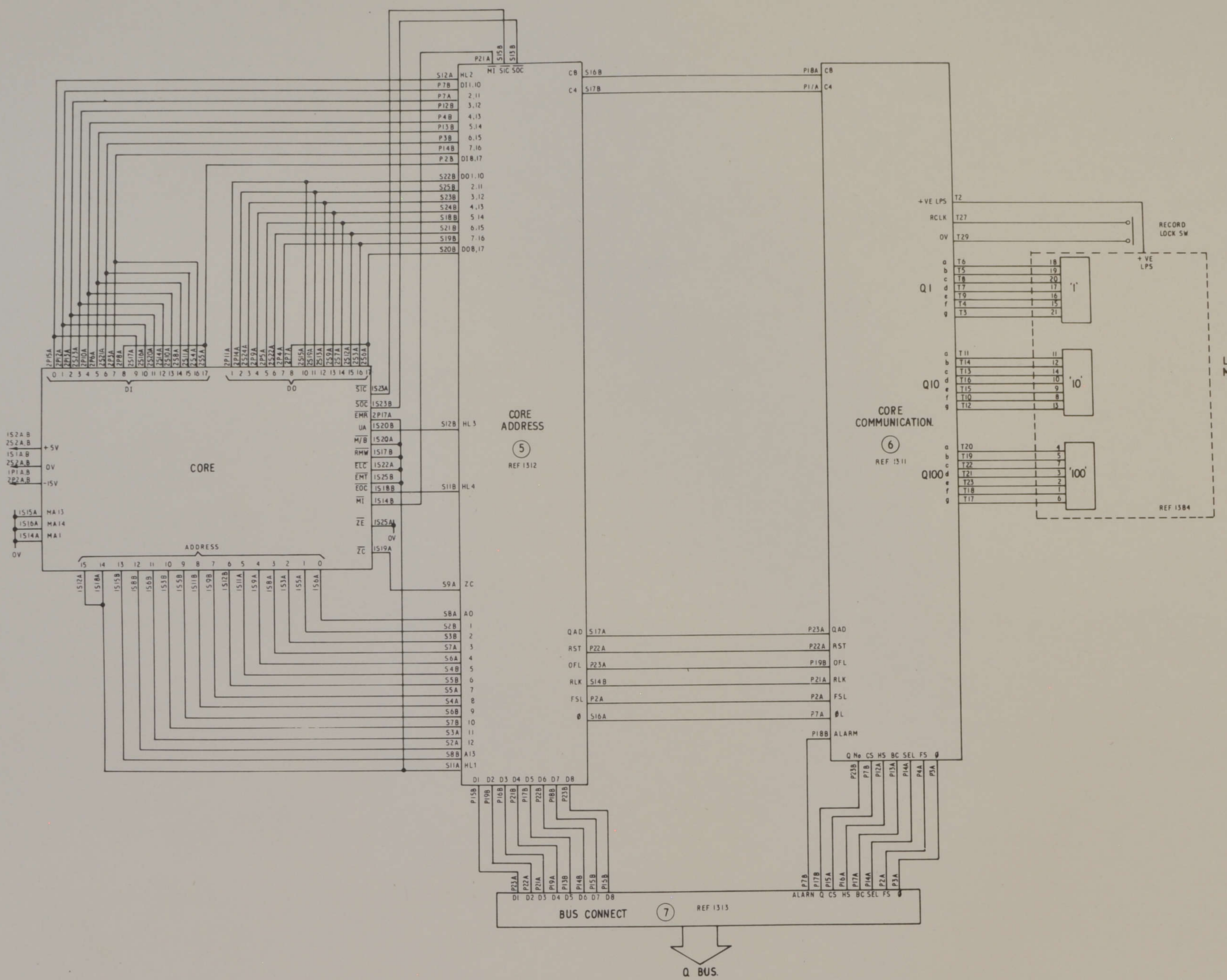


FIG. E

RANK STRAND ELECTRIC PO BOX 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408 A DIVISION OF **RANK AUDIO VISUAL LIMITED**	TOLERANCES IMPERIAL: FRACTION ± 1/64", DECIMAL ± .005" METRIC: 1 DEC PLACE ± 0.4mm, 2 DEC PLACE ± 0.1mm ANGULAR ± 0.25° UNLESS OTHERWISE STATED	SCALE DRAWN CHECKED APPROVED MATERIAL - FINISH -	TITLE - COMPACT 200, 201, & 80 G.T CORE STORE WIRING DIAGRAM
DIMENSIONS IN INCHES MILLIMETRES THIRD ANGLE PROJECTION	USED ON -		ISSUE C — DWG. Nº 7A16871 SHT 3 OF 7

REV. 1 C. Nº E2453
COMPACT 80 G.T.
ADDED.
20 10 76 C. Hayward
22 10 76

REV. 2 C. No. E3009
EMR WAS CONNECTED
TO A13
7.1.77 C. Hayward
10 1 77

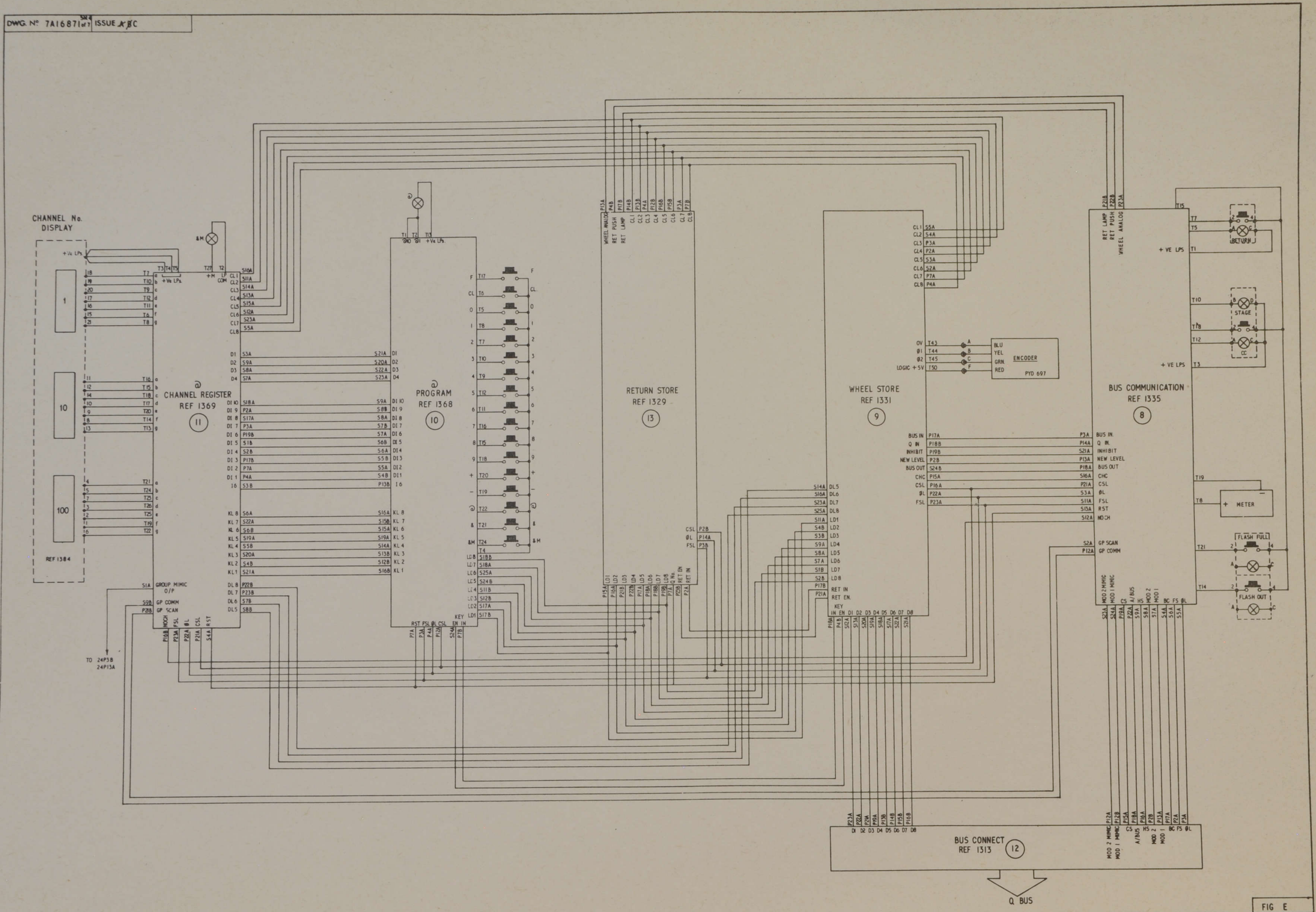


FIG E

RANK STRAND ELECTRIC PO Box 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408 A DIVISION OF **RANK AUDIO VISUAL LIMITED**	TOLERANCES IMPERIAL: FRACTION ± 1/64" DECIMAL ± ·005" METRIC: 1 DEC PLACE ± 0·4 mm 2 DEC PLACE ± 0·1 mm ANGULAR ± 0·25° UNLESS OTHERWISE STATED	SCALE DRAWN 11·1·76 CHECKED 15·7·76 APPROVED MATERIAL:-	TITLE:- COMPACT 200,201 & 80G.T. Ⓓ CHANNEL CONTROL SECTION. WIRING DIAGRAM.	
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION	USED ON:-	FINISH:-	ISSUE C	DWG. Nº 7A16871 SHT 4 OF 7

DWG. Nº 7A16871 SHT 5 OF 7 | ISSUE ~~A~~ B C

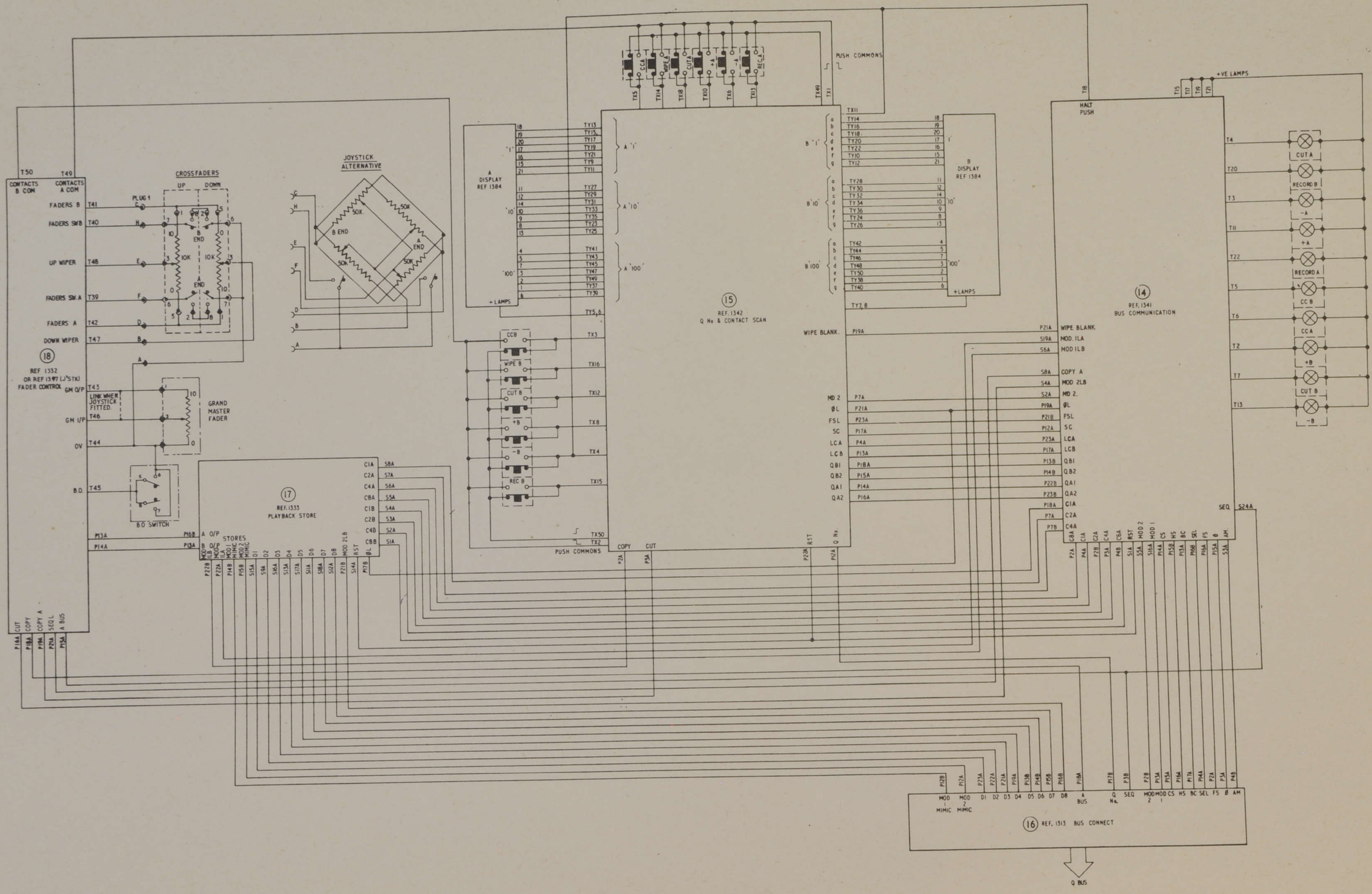


FIG E

RANK STRAND ELECTRIC PO Box 70 Great West Road Brentford Middlesex TW8 9HR Telephone 01-568 9222 Telex 24408 A DIVISION OF RANK AUDIO VISUAL LIMITED	TOLERANCES	SCALE		DATE	TITLE:-
	IMPERIAL: FRACTION ± 1/64" DECIMAL ± .005"	DRAWN		9-5-76	COMPACT 200, 201 & 80 G.T.
	METRIC: 1 DEC PLACE ± 0.4 mm 2 DEC PLACE ± 0.1 mm	CHECKED			MANUAL PLAYBACK SECTION
	ANGULAR ± 0.25°	APPROVED	D.M.	15-7-76	WIRING DIAGRAM
	UNLESS OTHERWISE STATED	MATERIAL:-			
DIMENSIONS IN INCHES/MILLIMETRES	USED ON:-	FINISH:-			ISSUE ~~A~~ B C
THIRD ANGLE PROJECTION					DWG. Nº 7A16871 SHT 5 OF 7

DWG. No 7A16871 SHT 6 OF 7 ISSUE A B C

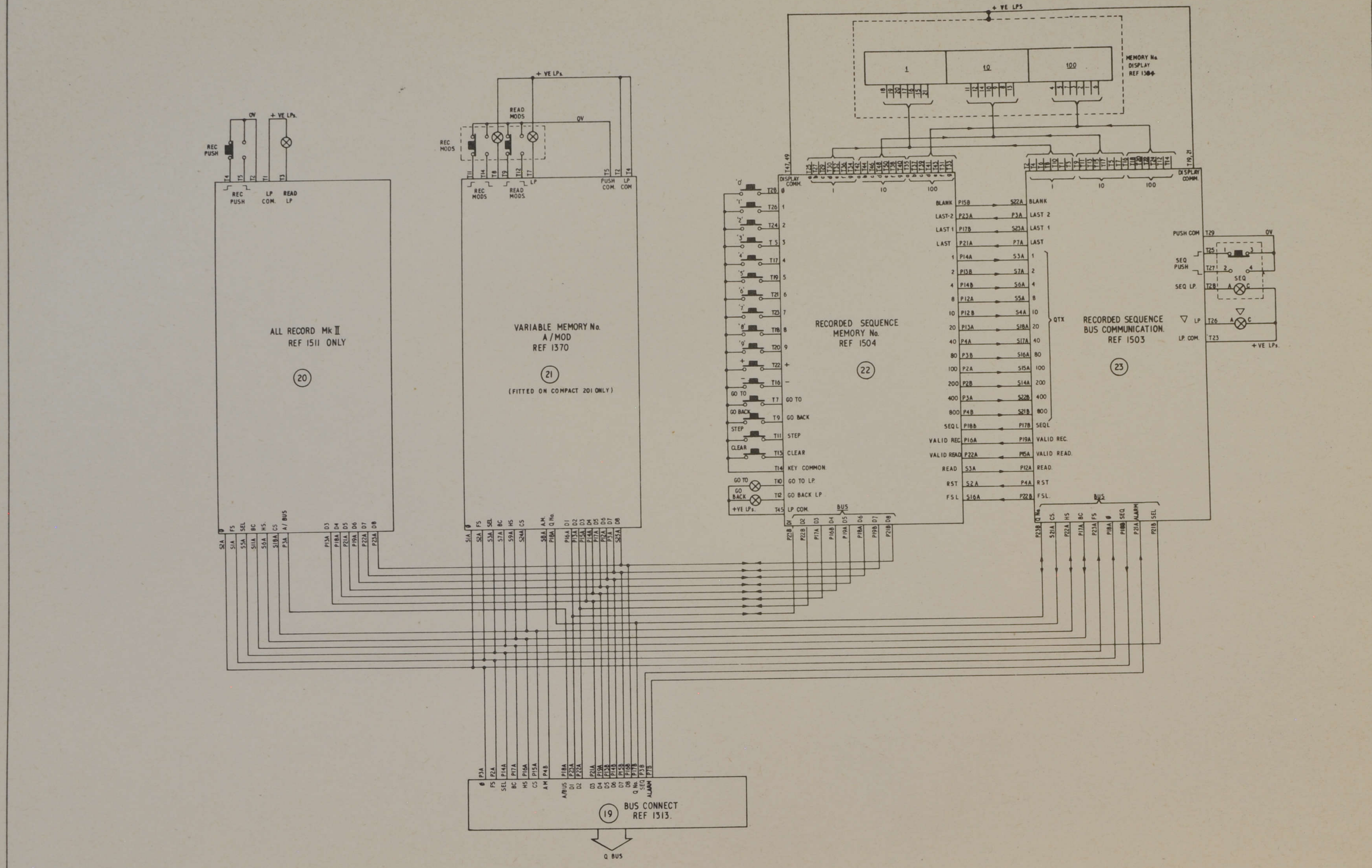


FIG E

RANK STRAND ELECTRIC

A DIVISION OF

RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES

THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64	1 DEC PLACE ± 0.4mm
DECIMAL ± .005"	2 DEC PLACE ± 0.1mm
ANGULAR ± 0.25	
UNLESS OTHERWISE STATED	

USED ON :-

		DATE
SCALE		
DRAWN		10.3.76
CHECKED	DAS	13.7.76
APPROVED		

MATERIAL :-

FINISH :-

TITLE :- COMPACT 200, 201. & 80 G.T.
RECORDED SEQUENCE MEMORY No. SECTION
WIRING DIAGRAM

ISSUE A, B C

DWG. No 7A16871 SHT 6 OF 7

DWG. Nº 7A16871 SHT 7 OF 7 ISSUE A B C.

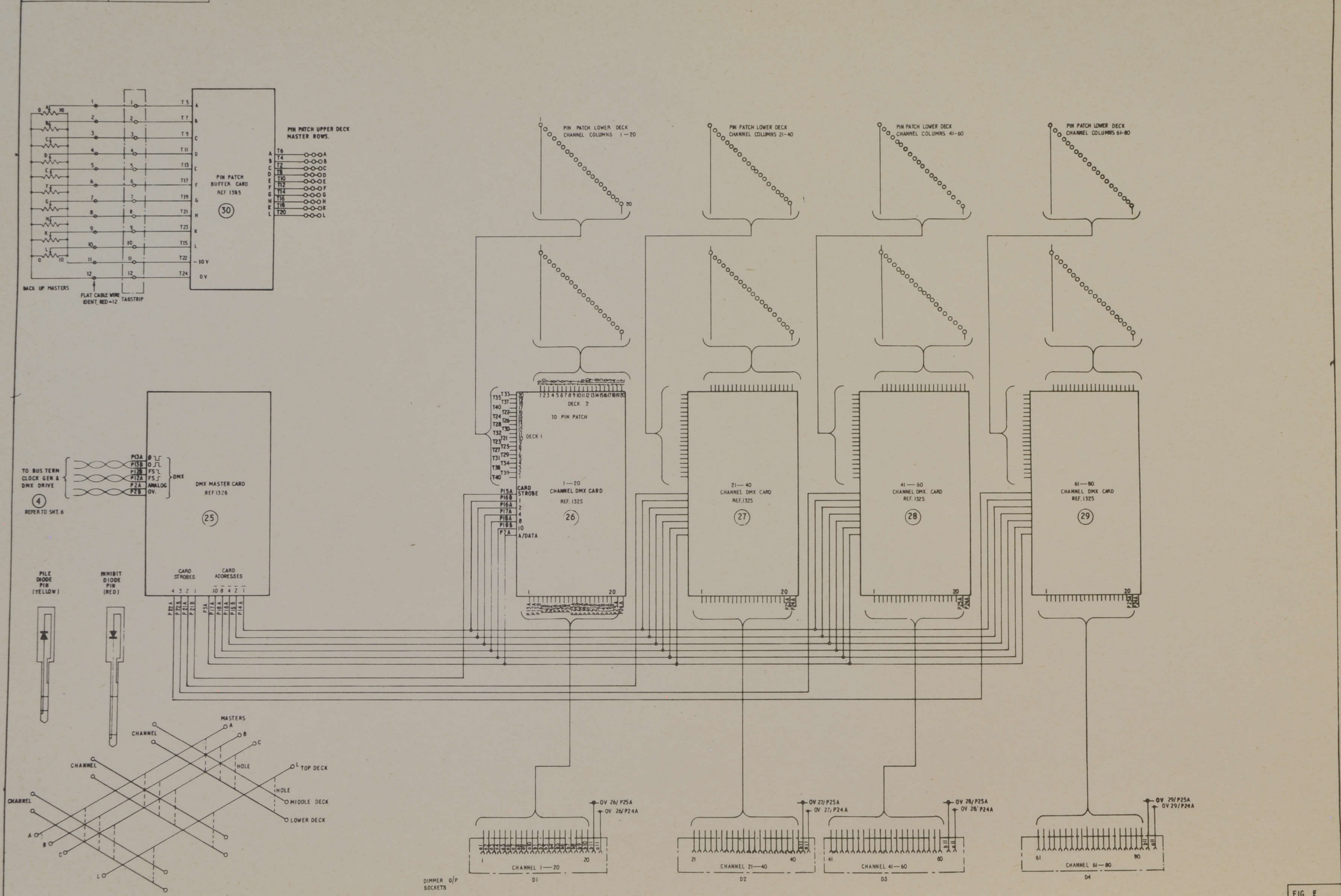


FIG E

RANK STRAND ELECTRIC
PO Box 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24408
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES		
	IMPERIAL	METRIC
FRACTION	± 1/64"	1 DEC PLACE ± 0·4 mm
DECIMAL	± ·005"	2 DEC PLACE ± 0·1 mm
ANGULAR ± 0·25°		
UNLESS OTHERWISE STATED		

USED ON :-

SCALE :- DRAWN :- CHECKED :- APPROVED :- DATE
MATERIAL :-
FINISH :-

TITLE :- COMPACT 200, 201 & 80 G.T. CHANNEL O/P WIRING DIAGRAM PIN PATCH 3 DECK

ISSUE A B C

DWG. Nº 7A16871 SHT 7 OF 7

F COMPACT 48 WIRING DIAGRAM

DWG. N° 7A18324 SHT 2 OF 7 | ISSUE A

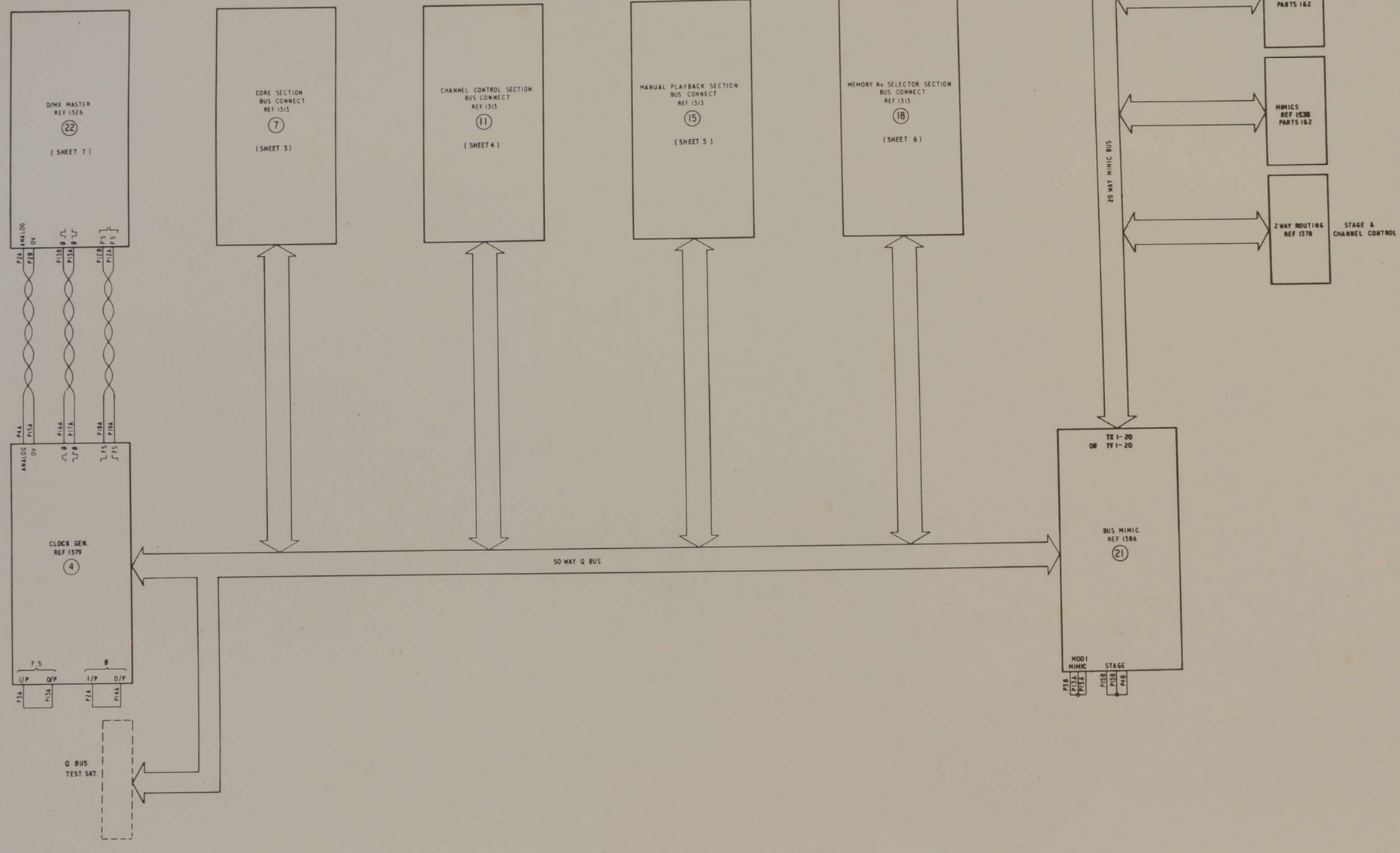


FIG F

RANK STRAND ELECTRIC
A DIVISION OF
RANK AUDIO VISUAL LIMITED
DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES
IMPEDIAL METRIC
UNLESS OTHERWISE STATED

IL18325

SCALE
DRAWN G. Alexander 24-5-72
CHECKED
APPROVED
MATERIAL
FINISH

TITLE COMPACT 48
Q & MIMIC BUS CONNECTIONS

ISSUE A | DWG. N° 7A18324 SHT 2 OF 7

DWG. N° 7A18324 (Sht 1 of 7) | ISSUE A

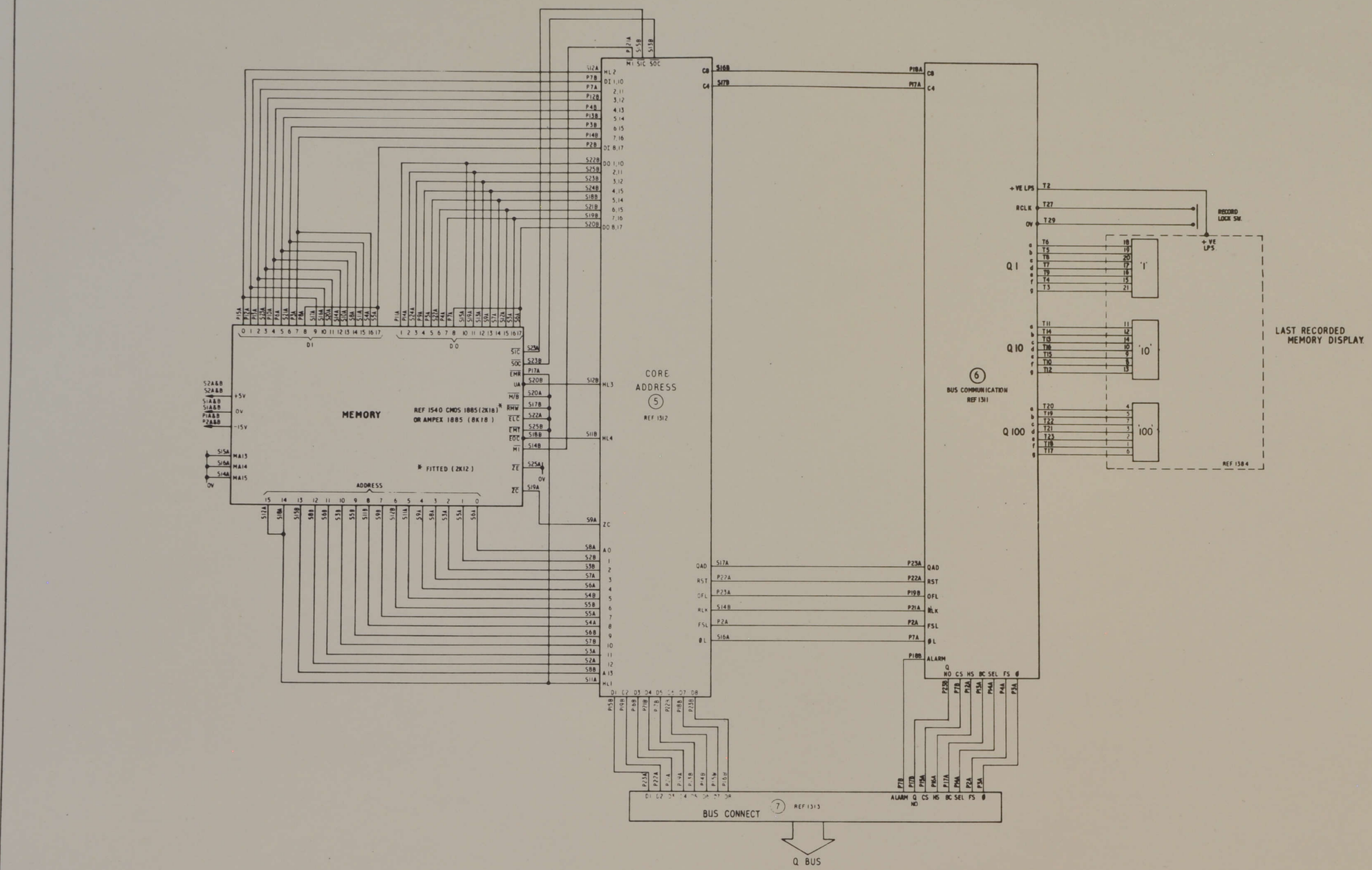


FIG F

RANK STRAND ELECTRIC

RANK AUDIO VISUAL LIMITED

COMPACT 48 [illegible]

IL18325 | ISSUE A | DWG N° 7A18324

DWG. Nº 7A[redacted] SHT 4 OF 7 | ISSUE A

CHANNEL DISPLAY

+VE LPS

KEYBOARD

CLEAR

0 1 2 3 4 5 6 7 8 9 + −

1 10 100

REF 1384

(10) REF 1330 CHANNEL SELECT

(12) REF 1329 RETURN STORE

(9) REF 1331 WHEEL STORE

(8) REF 1335 BUS COMMUNICATION

ENCODER PYD 697

METER

RETURN

FLASH FULL

FLASH OUT

STAGE

(11) REF 1313 BUS CONNECT

Q BUS

FIG F

RANK STRAND ELECTRIC

A DIVISION OF RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES
IMPERIAL: FRACTION ± 1/64" DECIMAL ± .005" ANGULAR ± 0.25°
METRIC: 1 DEC PLACE ± 0.4mm 2 DEC PLACE ± 0.1mm
UNLESS OTHERWISE STATED

USED ON: IL18325

SCALE
DRAWN [illegible] DATE 18-1-77
CHECKED
APPROVED
MATERIAL:
FINISH:

TITLE:- COMPACT 48
CHANNEL CONTROL — WIRING DIAGRAM

ISSUE A | DWG. Nº 7A18326 SHT 4 OF 7

DWG. No 7A18324 SHT 5 OF 7 | ISSUE A

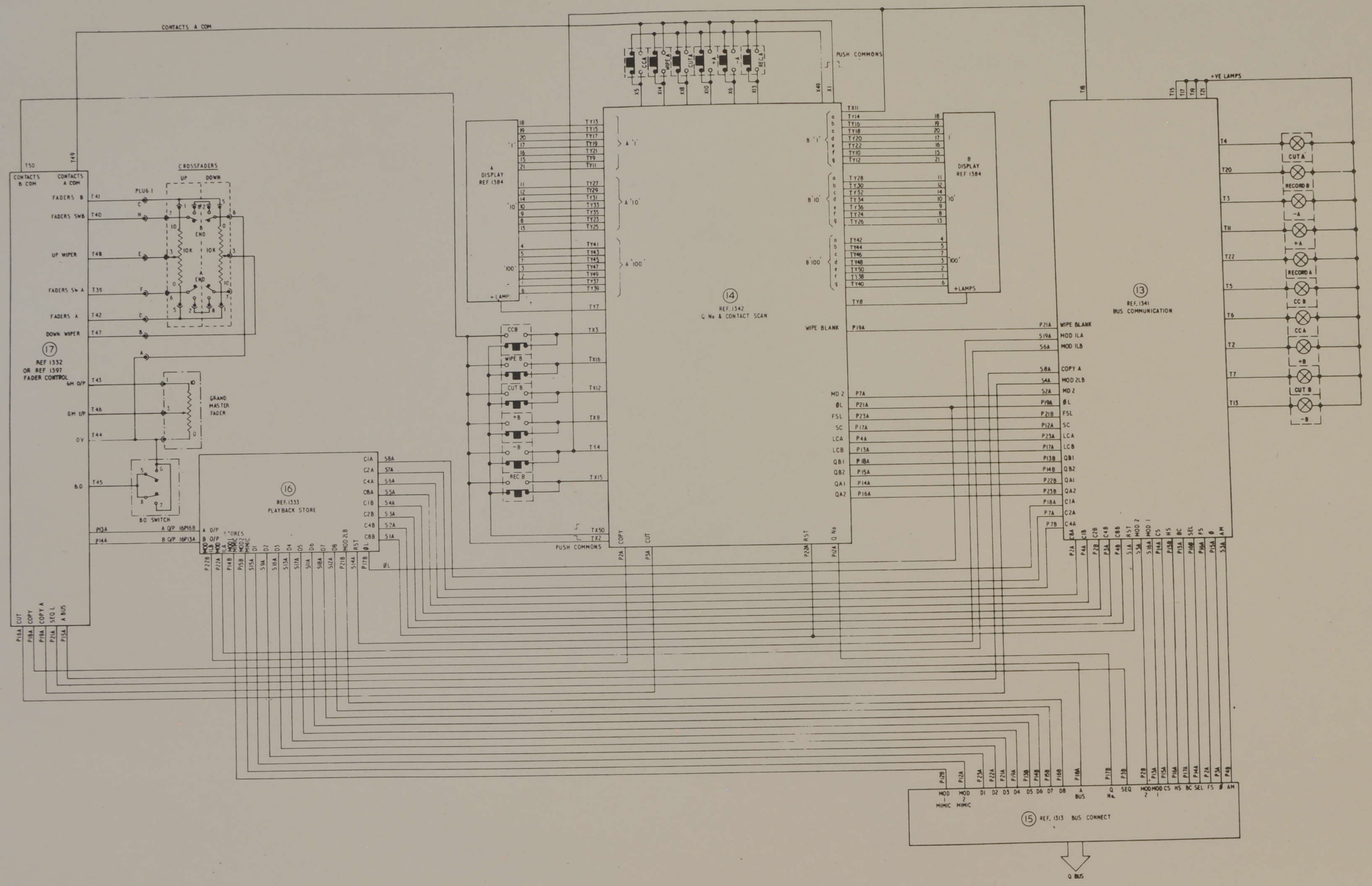


FIG F

RANK STRAND ELECTRIC
A DIVISION OF
RANK AUDIO VISUAL LIMITED

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64"	1 DEC PLACE ± 0.4 mm
DECIMAL ± .005"	2 DEC PLACE ± 0.1 mm
ANGULAR ± 0·25°	
UNLESS OTHERWISE STATED	

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

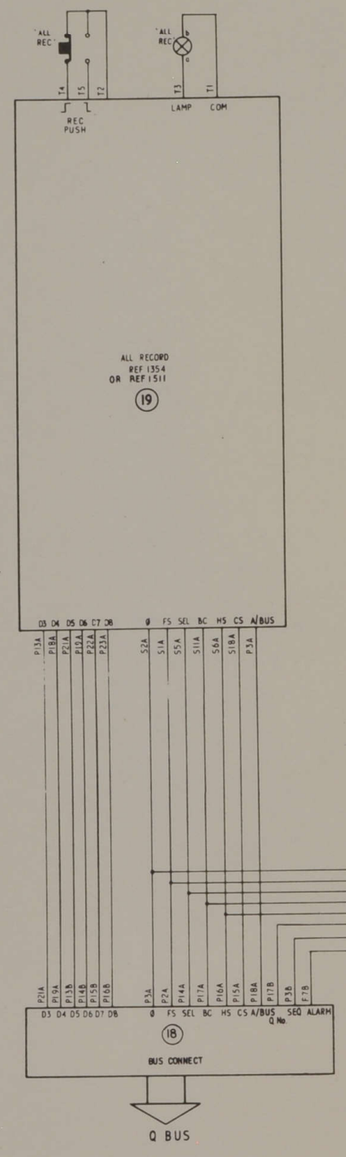
USED ON:- IL18325

SCALE | DRAWN | CHECKED | APPROVED | DATE
MATERIAL:-
FINISH:-

TITLE:- COMPACT 48
MANUAL PLAYBACK SECTION
WIRING DIAGRAM

ISSUE A | DWG. No 7A18324

DWG. N° 7A18324 SHT 6 OF 7 | ISSUE A



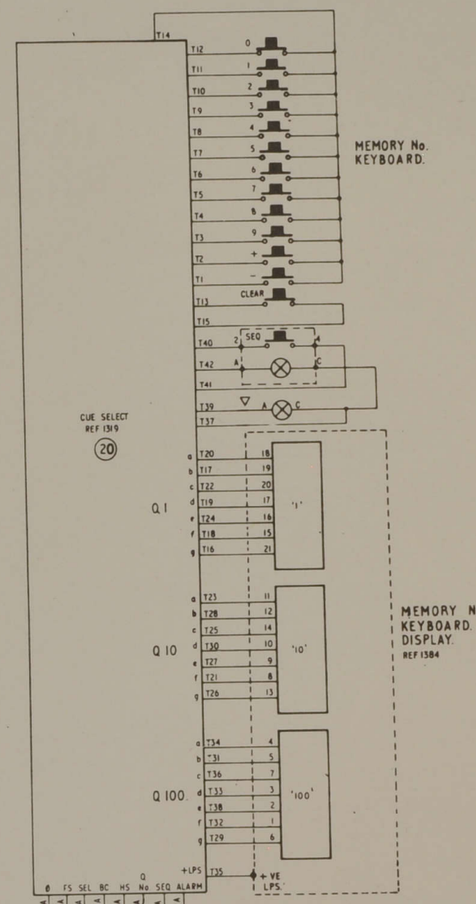


FIG F

RANK STRAND ELECTRIC A DIVISION OF RANK AUDIO VISUAL LIMITED	TOLERANCES IMPERIAL / METRIC FRACTION ± 1/64 / 1 DEC PLACE ± 0.4mm DECIMAL ± .005 / 2 DEC PLACE ± 0.1mm ANGULAR ± 0.25° UNLESS OTHERWISE STATED USED ON:- IL18325	SCALE / DATE DRAWN CHECKED APPROVED MATERIAL:- FINISH:-	TITLE:- COMPACT 48 MEMORY No. SELECTOR SECTION. WIRING DIAGRAM		
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION			ISSUE A	DWG. N°7A18324	SHT 6 OF 7

DRWG. No 7A18324 Sht 1 of 7 | ISSUE A

PIN PATCH UPPER DECK MASTER ROWS.

PIN PATCH BUFFER CARD REF 1385

27

BACK UP MASTERS

TAGSTRIP

FLAT CABLE WIRE IDENT RED=12

PIN PATCH BOTTOM DECK CHANNEL COLUMNS 1-20

PIN PATCH BOTTOM DECK CHANNEL COLUMNS 21-40

PIN PATCH BOTTOM DECK CHANNEL COLUMNS 41-48

PILE I/P 10 PIN PATCH

1-20 CHANNEL DMX CARD REF 1325

23

21-40 CHANNEL DMX CARD REF 1325

24

41-48 CHANNEL DMX CARD REF 1325

25

TO DMS TERM CLOCK GEN & DMX DRIVE

4

REFER TO SHT 2

DMX

DMX MASTER CARD REF 1326

22

CARD STROBES

CARD ADDRESSES

CARD STROBE

A/DATA

DIMMER O/PS

PILE DIODE PIN (YELLOW)

MASTERS

CHANNEL

HOLE

TOP DECK

BOTTOM DECK

DIMMER O/P SOCKETS N.B 12 WAYS/SOCKET

0V 23/P24A

0V 24/P24A

0V 25/P24A

CHANNEL 1—12

CHANNEL 13-24

CHANNEL 25-36

CHANNEL 37-48

COMMON

D1

D2

D3

D4

F16 F

RANK STRAND ELECTRIC

A DIVISION OF RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION

TOLERANCES

IMPERIAL | METRIC

FRACTION ± 1/64" | 1 DEC PLACE ± 0·4mm

DECIMAL ± .005" | 2 DEC PLACE ± 0·1mm

ANGULAR ± 0·25°

UNLESS OTHERWISE STATED

USED ON:- IL 18325

SCALE

DRAWN

CHECKED

APPD

MATERIAL:-

FINISH:-

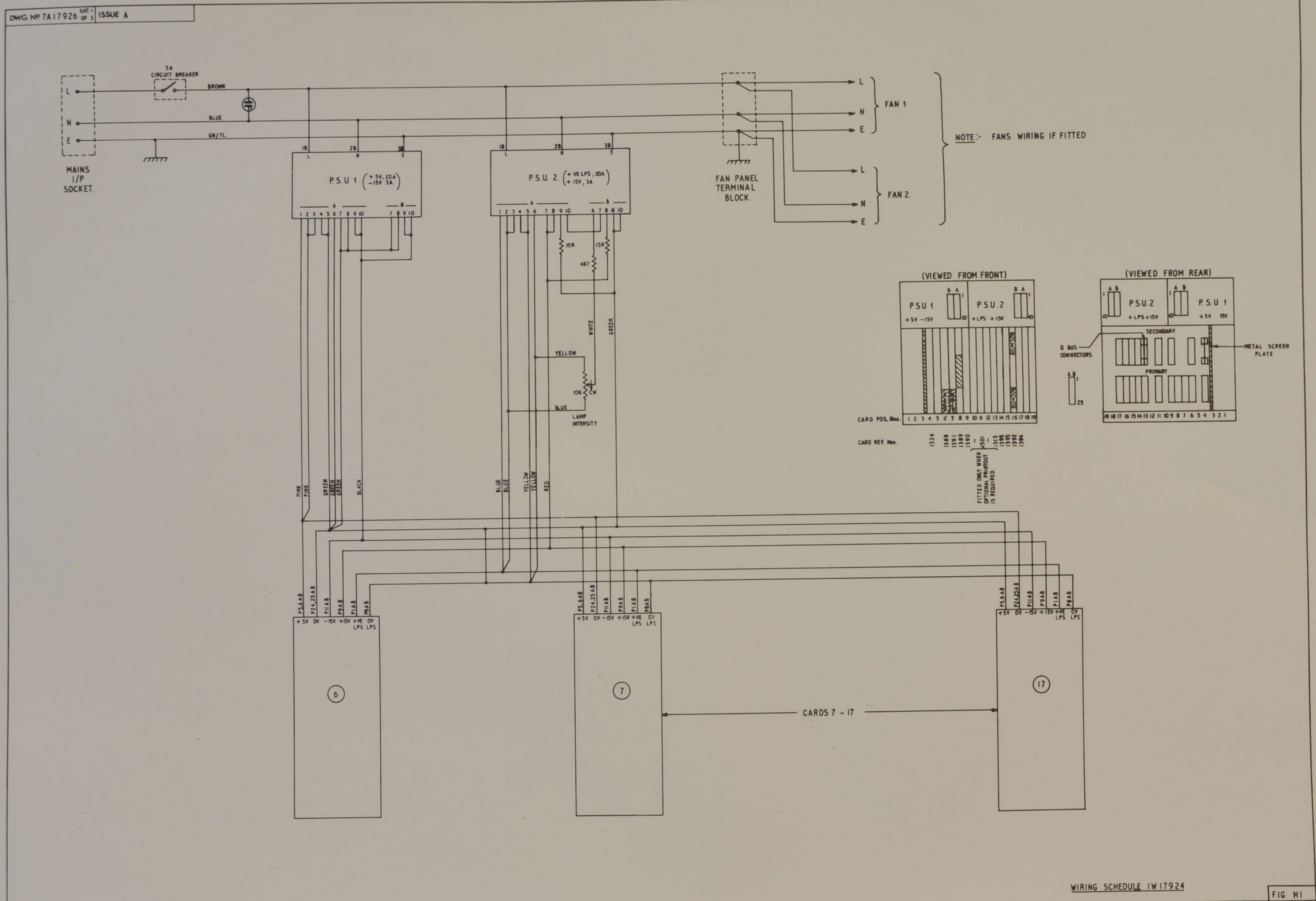
DATE

TITLE:- COMPACT 48 CHANNEL O/P WIRING DIAGRAM

ISSUE A

DRWG. 7A18324

H COMPACT TAPE



RANK STRAND ELECTRIC
A DIVISION OF RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

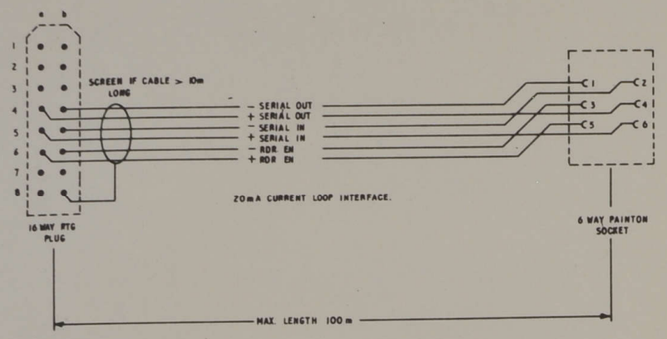
TOLERANCES: IMPERIAL — FRACTION ± 1/64", DECIMAL ± ·005"; METRIC — 1 DEC PLACE ± 0·4mm, 2 DEC PLACE ± 0·1mm; ANGULAR ± 0·25° UNLESS OTHERWISE STATED

TITLE - COMPACT TAPE EXTENSION. POWER WIRING DIAGRAM

ISSUE A

DWG. Nº 7A17926 SHT 1 OF 3

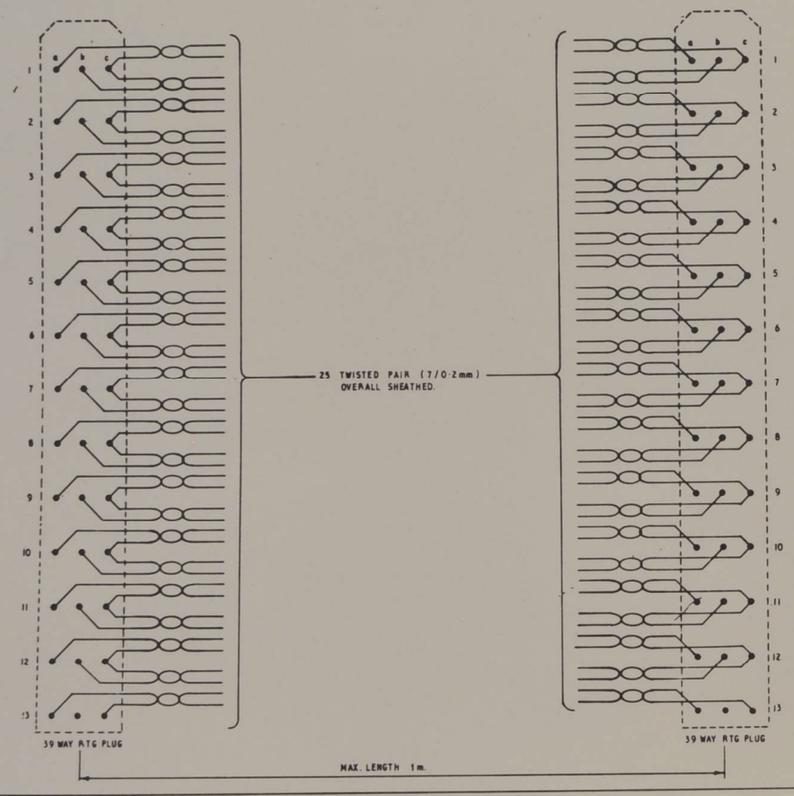
DWG. Nº 7A 17926. SHT 2 OF 3 ISSUE A



TELETYPE CONNECTION CABLE

(USED ONLY WHEN PRINTOUT OPTION FITTED.)

COMPACT Q BUS EXTENSION CABLE



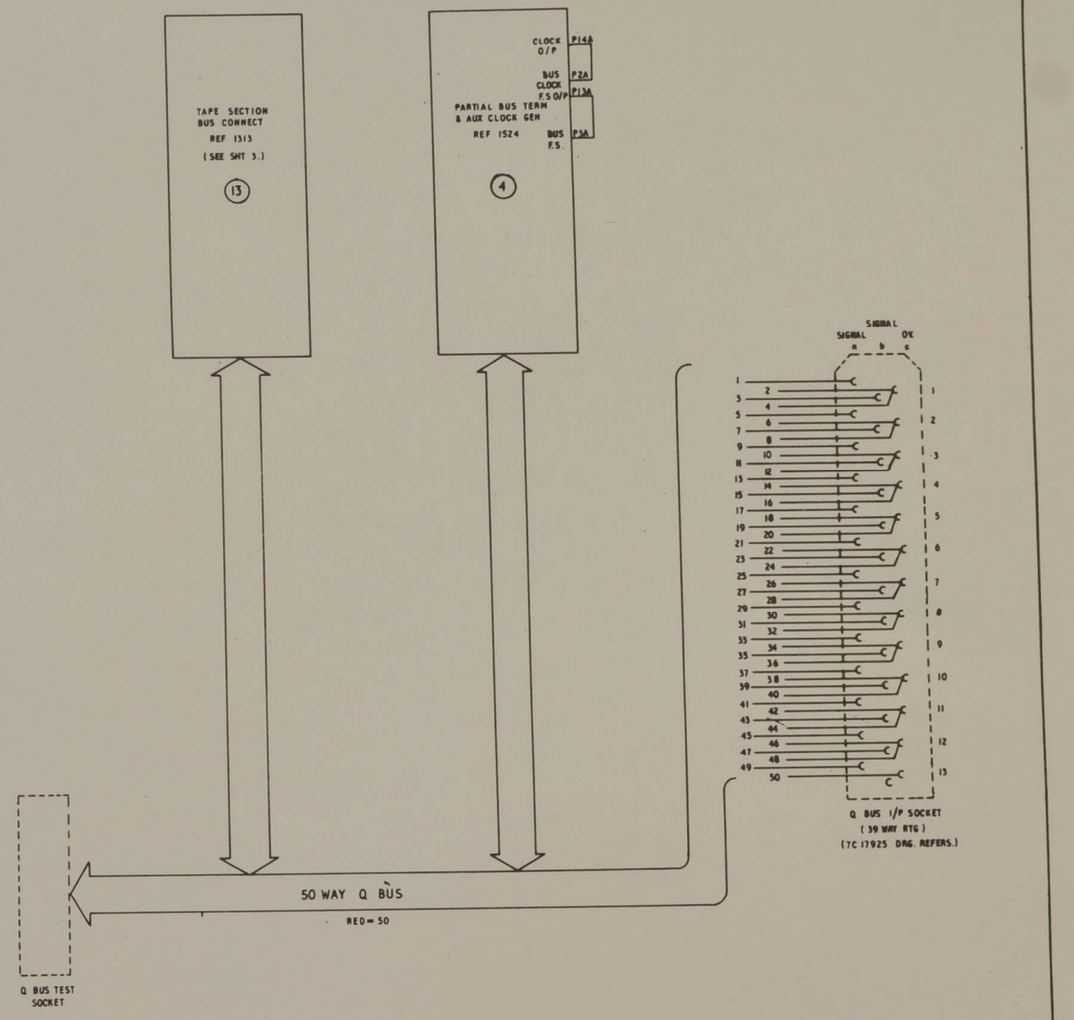


FIG N2

REV.1 C.N.P.

RANK STRAND ELECTRIC
PO BOX 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24400
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES		SCALE		DATE
IMPERIAL	METRIC	DRAWN		9.76
FRACTION ± 1/64"	1 DEC PLACE ± 0·4mm	CHECKED		
DECIMAL ± .005"	3 DEC PLACE ± 0·1mm	APPROVED		
ANGULAR ± 0·25°		MATERIAL:–		
UNLESS OTHERWISE STATED				
USED ON:–		FINISH:–		

TITLE:–
COMPACT TAPE EXTENSION & Q BUS CABLE WIRING DIAGRAM.

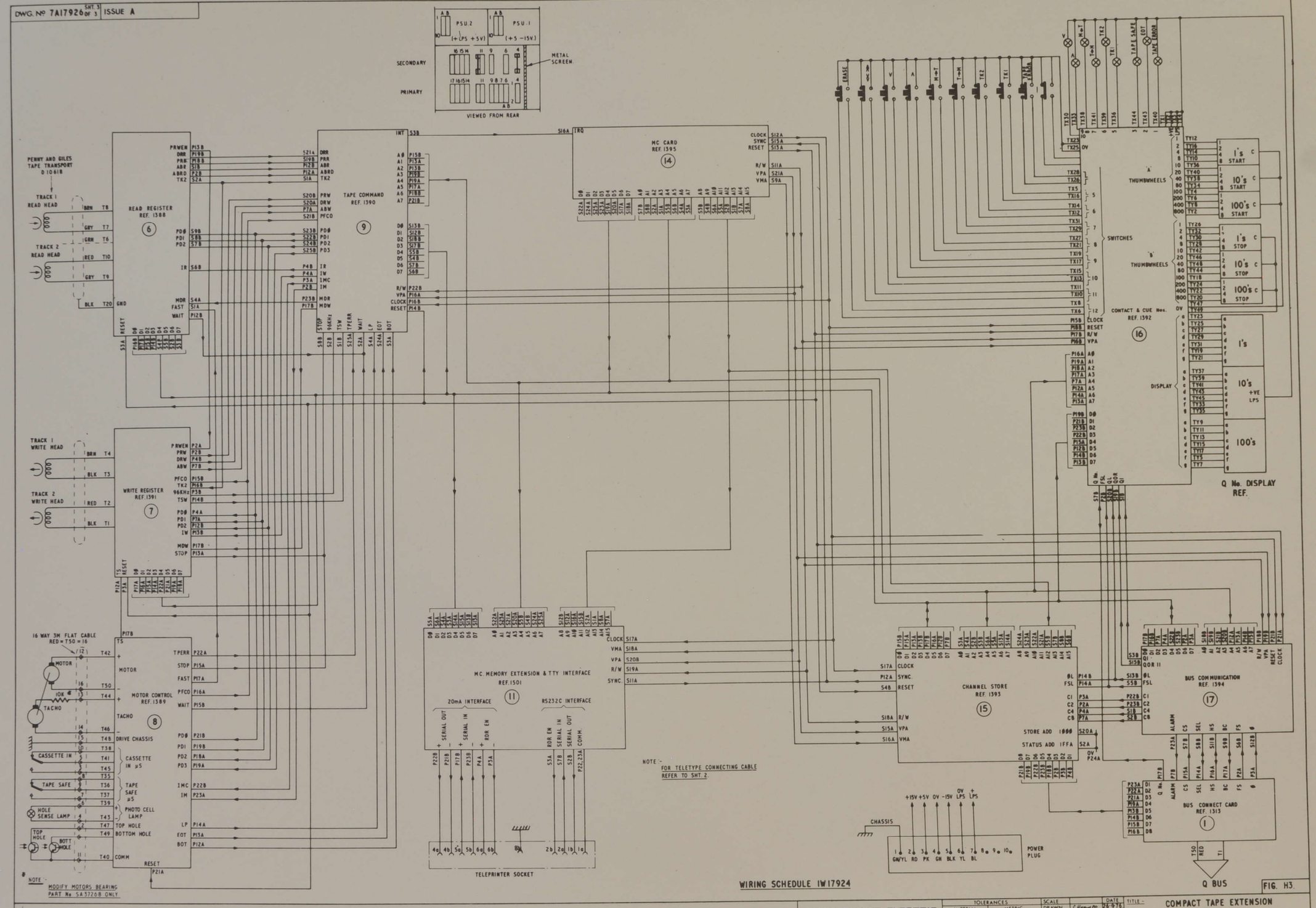
ISSUE A

DWG. Nº 7A 17926 SHT 2 OF 3

N (MMS) CIRCUIT DIAGRAMS

See MMS Handbook for MMS circuits

DWG. Nº 7A17926 SHT. 3 OF 3 | ISSUE A

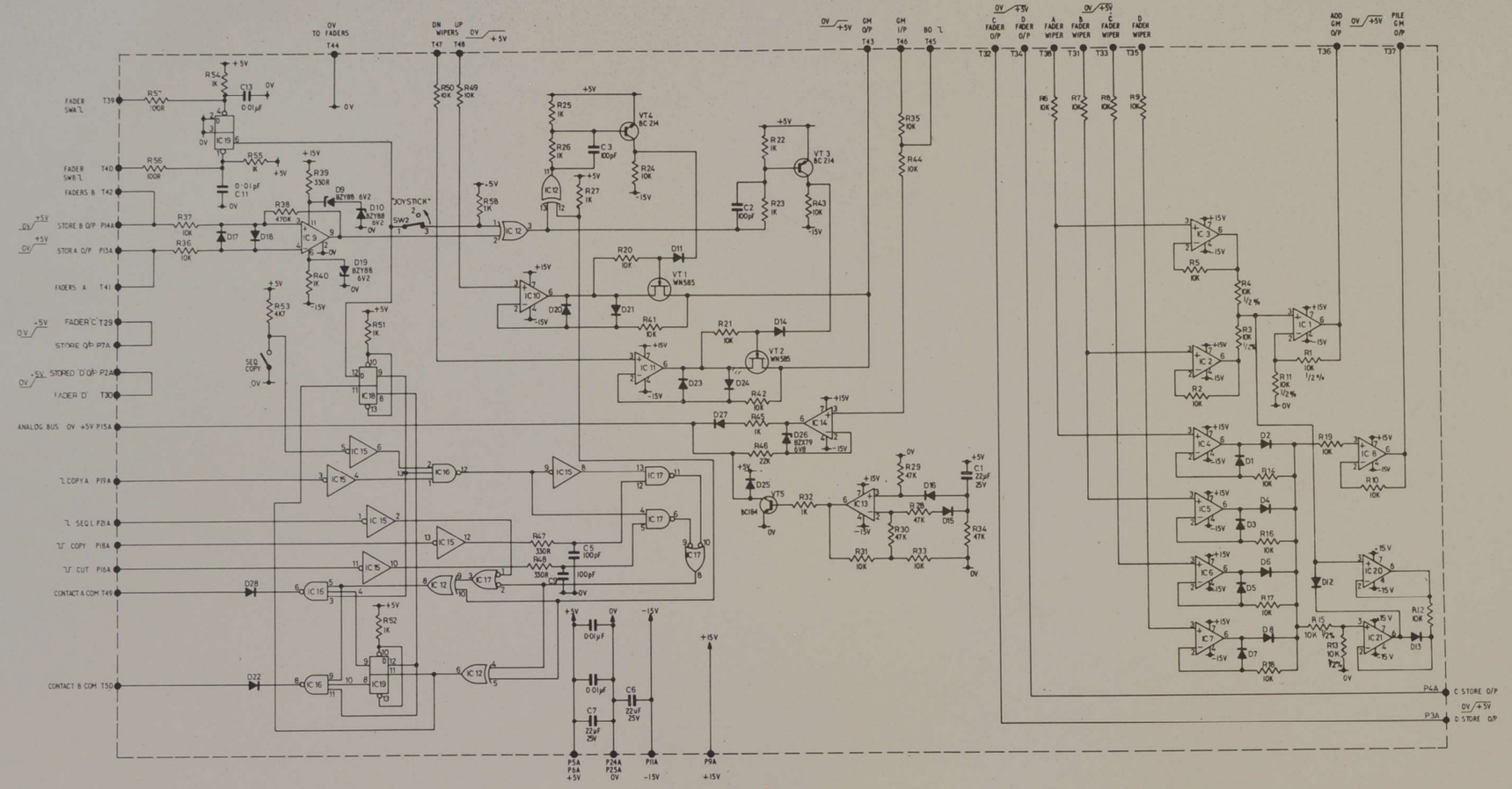


WIRING SCHEDULE IW17924

FIG. H3

RANK STRAND ELECTRIC DIVISION OF RANK AUDIO VISUAL LIMITED	TOLERANCES IMPERIAL / METRIC FRACTION ± 1/64" / 1 DEC PLACE ± 0.4mm DECIMAL ± .005" / 2 DEC PLACE ± 0.1mm ANGULAR ± 0.25° UNLESS OTHERWISE STATED USED ON -	SCALE - DRAWN - C Hepworth 26.9.76 CHECKED - APPROVED - MATERIAL - FINISH -	TITLE - COMPACT TAPE EXTENSION TAPE SECTION WIRING DIAGRAM.
DIMENSIONS IN INCHES/MILLIMETRES THIRD ANGLE PROJECTION			ISSUE A / DWG. Nº 7A17926 SHT. 3 OF 3

DWG N° 6A15765 ISSUE A B C



REF	TYPE	Vcc	0V
IC 17	SN7400 N	14	7
IC 15	SN7404 N	14	7
IC 16	SN7410 N	14	7
IC 18 19	SN7474 N	14	7
IC 12	SN7486 N	14	7
IC 9	SN72710N	–	–
IC 1-8,10 11 13 14 20 21	SN7240 P	–	–

NOTE
ALL DIODES ARE IN914 UNLESS SPECIFIED OTHERWISE

PCB 5A15767
SPECIALE ISSUE

RANK STRAND ELECTRIC
A DIVISION OF
RANK AUDIO VISUAL LIMITED

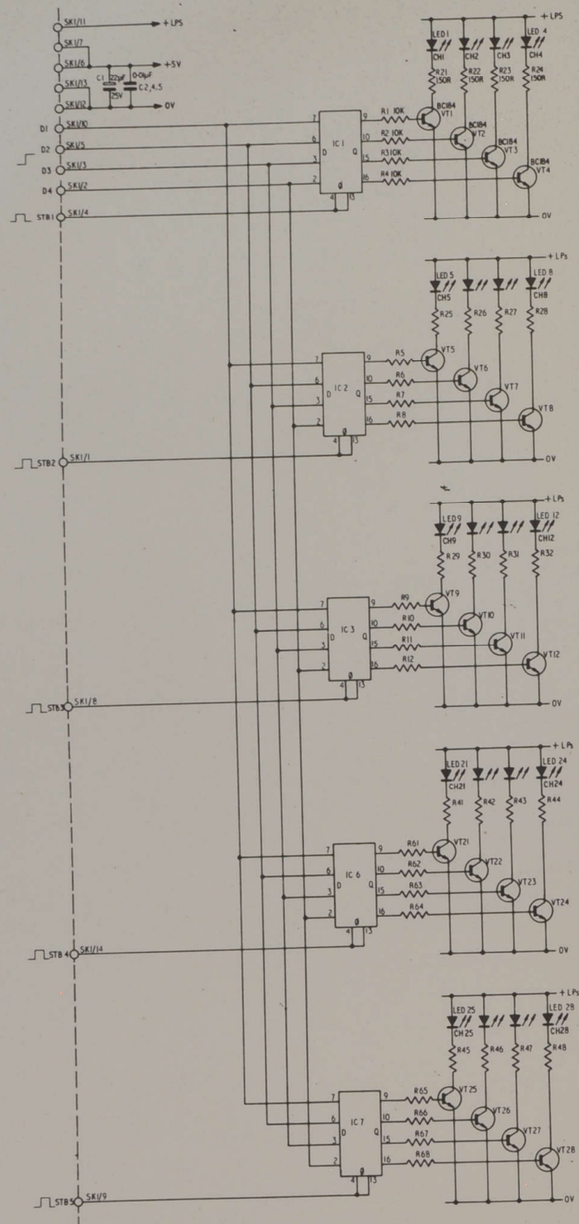
DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

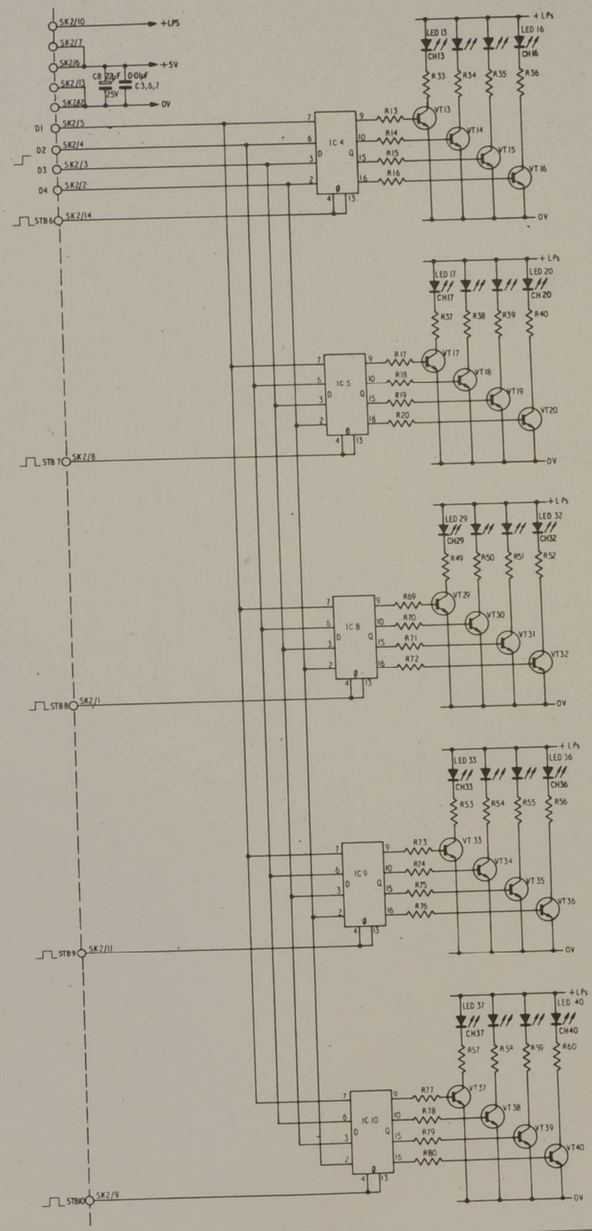
TOLERANCES		SCALE	DATE
IMPERIAL	METRIC	DRAWN	
FRACTION ± 1/64"	1 DEC PLACE ± 0.4mm	CHECKED	
DECIMAL ± .005	2 DEC PLACE ± 0.1mm	APPROVED	
ANGULAR ± 0.25°		MATERIAL	
UNLESS OTHERWISE STATED			
USED ON		FINISH	

TITLE
MMS MANUAL PLAYBACK MODULE
COMPLEX FADER CONTROL CARD
PCB 453/2 REF 139?

ISSUE A B C DWG. N° 6A15[illegible]

DWG. Nº 6A15771 | ISSUE A





RESISTORS R1-20 61-80	15C R
RESISTORS R21-60	15C R
TRANSISTORS VT1-40	BC 184
LEDs LED 1-40	MONSANTO MV5054-2

IC	TYPE	Vcc	0V
1-10	SN74LS75	5	12

SCHEDULE 5S15772
PC BOARD 5B15773

RANK STRAND ELECTRIC
A DIVISION OF RANK AUDIO VISUAL LIMITED

TOLERANCES: IMPERIAL | METRIC
FRACTION ± 1/64 2 DEC PLACE ± 0.4
DECIMAL ± .015 3 DEC PLACE ± 0.1
ANGULAR ± 0.5°
UNLESS OTHERWISE STATED

SCALE 1/1 DRAWN CHECKED APPROVED MATERIAL DATE 4.8.75 11.5.75

THIRD ANGLE PROJECTION

TITLE
COMPACT 40 WAY MIMIC LAMP BOARD
PCB 455 REF 1399 PT.1
ISSUE A DWG. Nº 6A15771

DWG. Nº 6A15768 | ISSUE B

INTEGRATED CIRCUITS			
IC. REF	TYPE	Vcc	GND
IC2	SN7400N	14	7
IC5,8	SN7404N	14	7
IC10	SN7414N	14	7
IC9	SN7474N	14	7
IC7	SN7496N	5	12
IC1	SN74123N	16	8
IC6	SN74154N	24	12
IC3,4	SN74193N	16	8
IC11,12	SN75107N	14	7

SCHEDULE 5S15769

P.C.BOARD 5B15770

RANK STRAND ELECTRIC

A DIVISION OF RANK AUDIO VISUAL LIMITED

TOLERANCES: IMPERIAL / METRIC; FRACTION ± 1/64 | 1 DEC PLACE ± 0.4mm; DECIMAL ± .005 | 2 DEC PLACE ± 0.1mm; ANGULAR ± 0.25; UNLESS OTHERWISE STATED

THIRD ANGLE PROJECTION

SCALE | DRAWN | CHECKED | APPROVED | MATERIAL | FINISH | DATE

TITLE: COMPACT 40 WAY MIMIC DECODE BOARD

PCB 454/1 REF 1399 PT.2

ISSUE B DWG. Nº 6A15768

REVI C.N

DWG. Nº 6A16785 | ISSUE A

INTEGRATED CIRCUITS			
REF	TYPE	Vcc	Gnd
IC11,17	SN7404	14	7
IC12,15	SN7410	14	7
IC35	SN7430	14	7
IC8,27,33,39	SN7438	14	7
IC4,29	SN7442	16	8
IC3,9,16,30,31,37,41,43,44	SN7474	14	7
IC28,34	SN7486	14	7
IC22	SN72710		2
IC5,36	SN7493	5	10
IC2	SN7414	14	7
IC19-21	SN72741		
IC13,14	SN74121	14	7
IC42	SN74123	16	8
IC23-25	1403	8	-Vcc 4
IC26	DAC 371-8		
IC1,18	DTL 936	14	7
IC6,10,32,38,40	SN7400	14	7

SCHEDULE 5S 16786
PC BOARD 5A 16787

FIG DD7, Q9

RANK STRAND ELECTRIC
A DIVISION OF RANK AUDIO VISUAL LIMITED

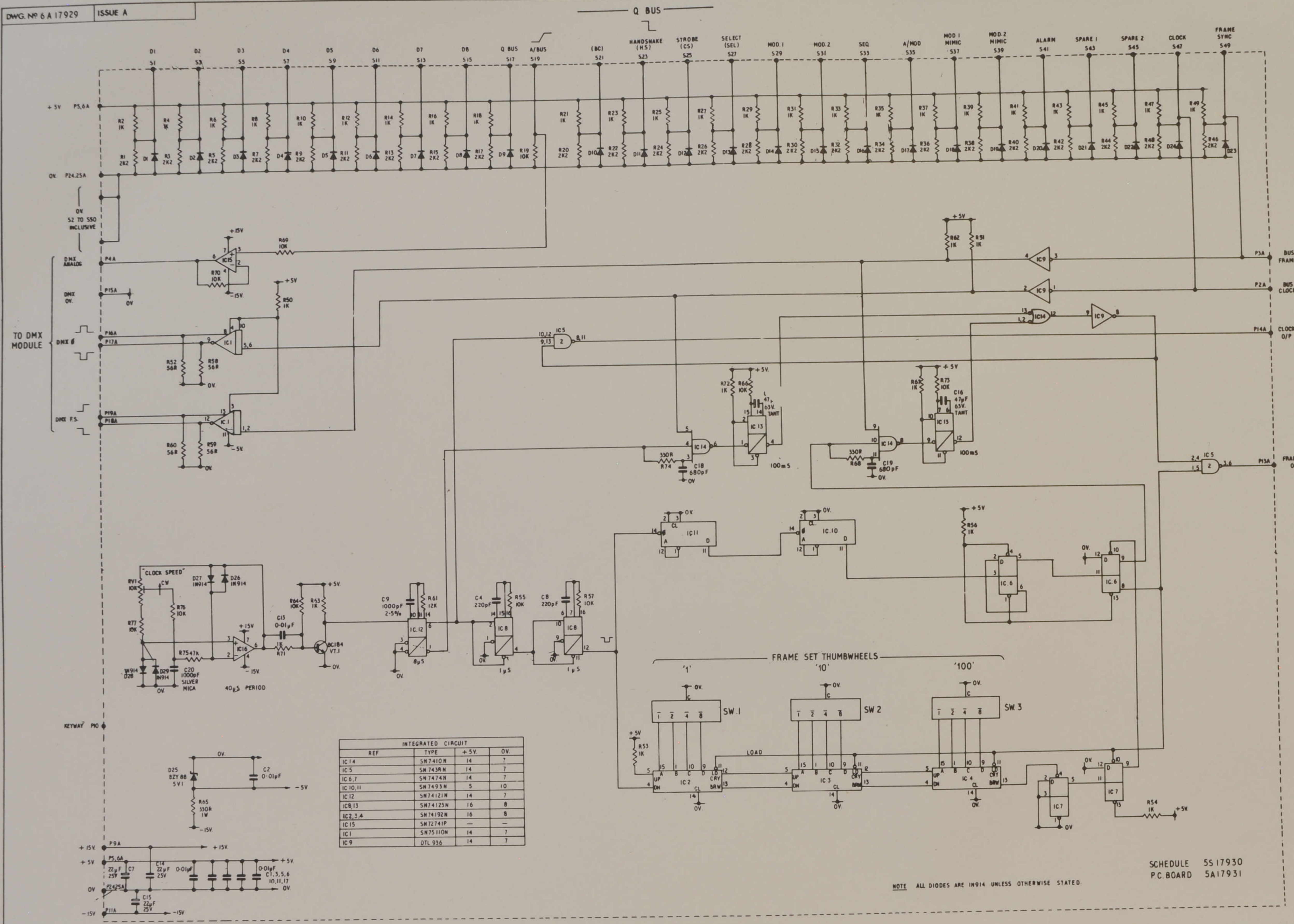
DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES IMPERIAL / METRIC
UNLESS OTHERWISE STATED

SCALE
DRAWN
CHECKED
APPROVED
MATERIAL
FINISH
DATE

TITLE - MMS ALL RECORD CARD Mk II CIRCUIT DIAGRAM
PCB 485 REF 1511
ISSUE A DWG. Nº 6A16785

DWG. No 6 A 17929 | ISSUE A



INTEGRATED CIRCUIT			
REF	TYPE	+5V.	0V.
IC 14	SN7410N	14	7
IC 5	SN 7438N	14	7
IC 6,7	SN 7474N	14	7
IC 10,11	SN 7493N	5	10
IC 12	SN74121N	14	7
IC8,13	SN74123N	16	8
IC2,3,4	SN74192N	16	8
IC 15	SN72741P	—	—
IC 1	SN75110N	14	7
IC 9	DTL 936	14	7

SCHEDULE 5S 17930
P.C. BOARD 5A17931

NOTE ALL DIODES ARE IN914 UNLESS OTHERWISE STATED.

RANK STRAND ELECTRIC
PO BOX 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24408
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES — IMPERIAL: FRACTION ± 1/64", DECIMAL ± ·005"; METRIC: 1 DEC PLACE ± 0·4mm, 2 DEC PLACE ± 0·1mm; ANGULAR ± 0·25°; UNLESS OTHERWISE STATED

USED ON:-

SCALE / DRAWN / CHECKED / APPROVED — DATE 1·9·76

MATERIAL -

FINISH -

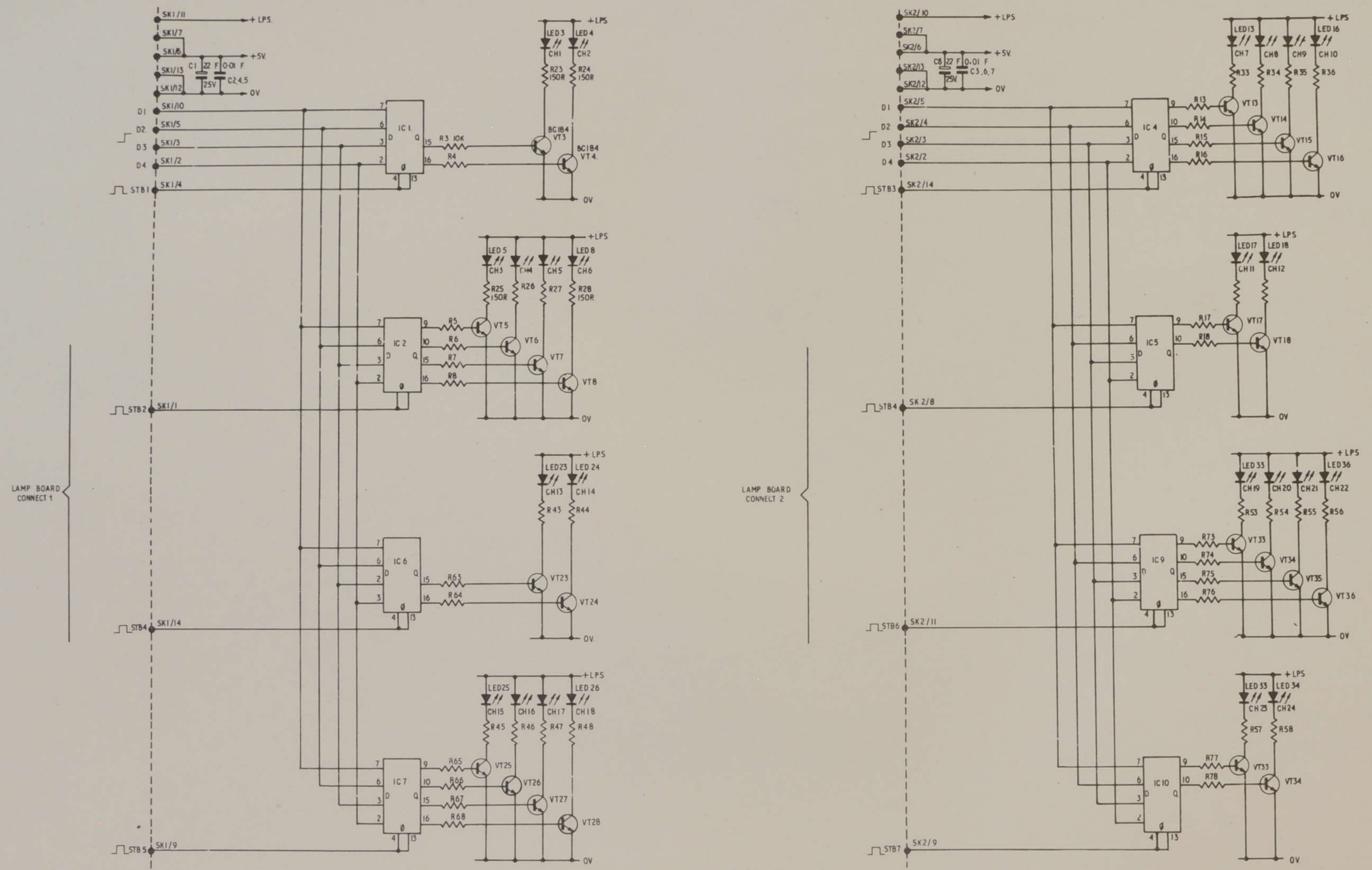
TITLE - COMPACT PARTIAL BUS TERMINATION & AUX. CLOCK GEN. & DEMULTIPLEX DRIVE CIRCUIT DIAGRAM.

P.C.B 514 REF 1524

ISSUE A

DWG. No 6 A 17929

DWG. Nº 6A18289 | ISSUE A



R3-8, 13-18, 63-68, 73-78.	10K OHMS
R23-28, 33-38, 43-48, 53-58.	150 OHMS
VT3-8, 13-18, 23-28, 33-38.	BC 184
IC1, 2, 4, 5, 6, 7, 9, 10.	SN74L75N
LEDS 3-8, 13-18, 23-28, 33-38.	MV 5054-2

SCHEDULE 5S18294
P.C. BOARD 5A15773.

RANK STRAND ELECTRIC
PO BOX 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24408
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64	1 DEC PLACE ± 0.4mm
DECIMAL ± .005	2 DEC PLACE ± 0.1mm
ANGULAR ± 0.25°	
UNLESS OTHERWISE STATED	

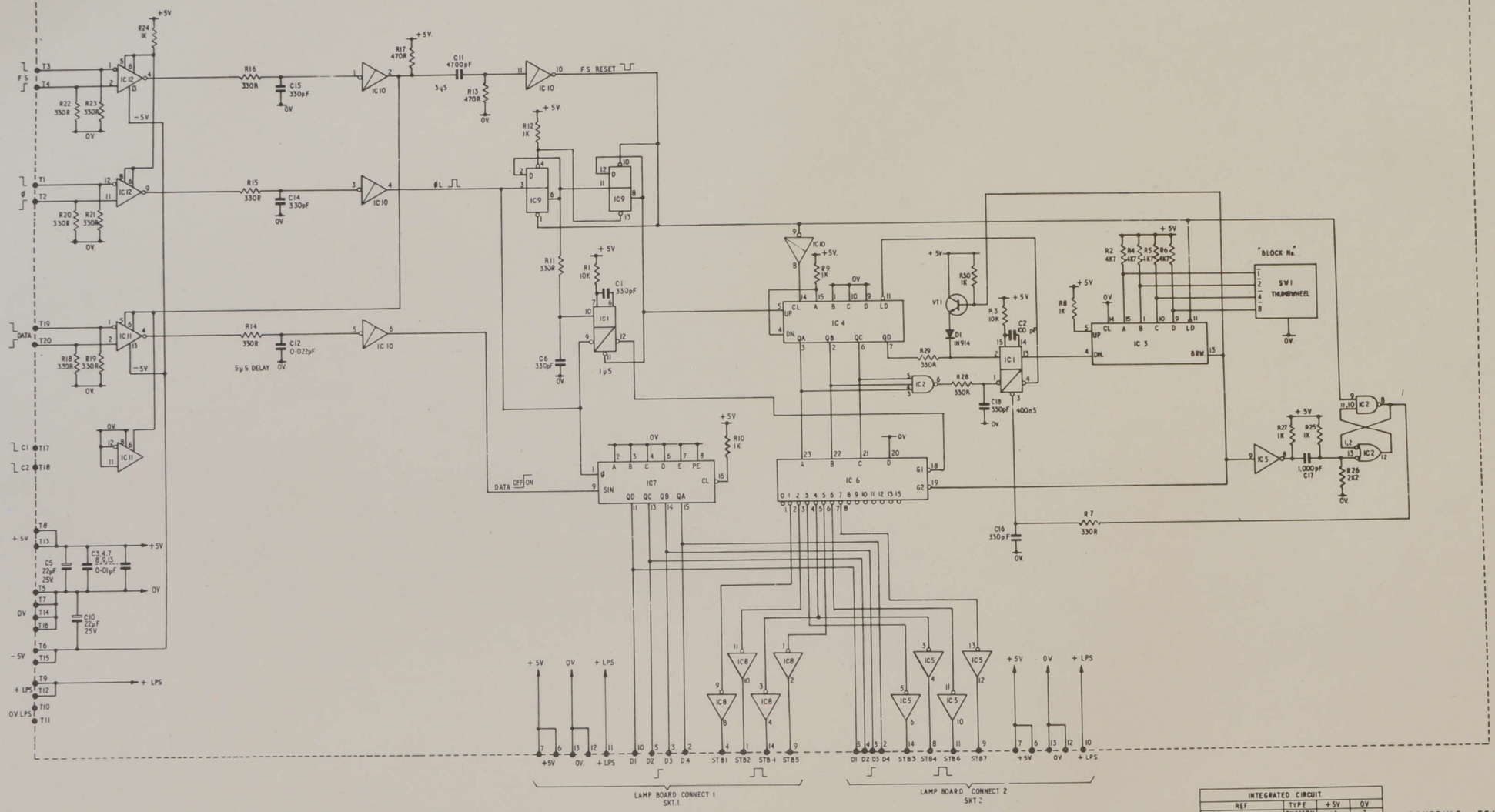
USED ON - IL18325

		DATE
SCALE		
DRAWN	G HAYWARD	22.1.77
CHECKED		
APPROVED		

MATERIAL -
FINISH -

TITLE - COMPACT 24 WAY MIMIC LAMP BOARD.
P.C.B 455
REF 1538 PT1
ISSUE A
DWG. Nº 6A18289

DWG. Nº 6A18286 | ISSUE A B



INTEGRATED CIRCUIT			
REF	TYPE	+5V	0V
IC 2	SN74LON	14	7
IC 5,8	SN7404N	14	7
IC 10	SN7414N	14	7
IC 9	SN7474N	14	7
IC 7	SN5496N	5	12
IC 1	SN74123N	16	8
IC 6	SN74154N	24	12
IC 3,4	SN74193N	16	8
IC 11,12	SN75109N	14	7

SCHEDULE 5S18287
P.C.BOARD 5B18288

REV.1 C.N.º

RANK STRAND ELECTRIC
PO BOX 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24408
A DIVISION OF
RANK AUDIO VISUAL LIMITED

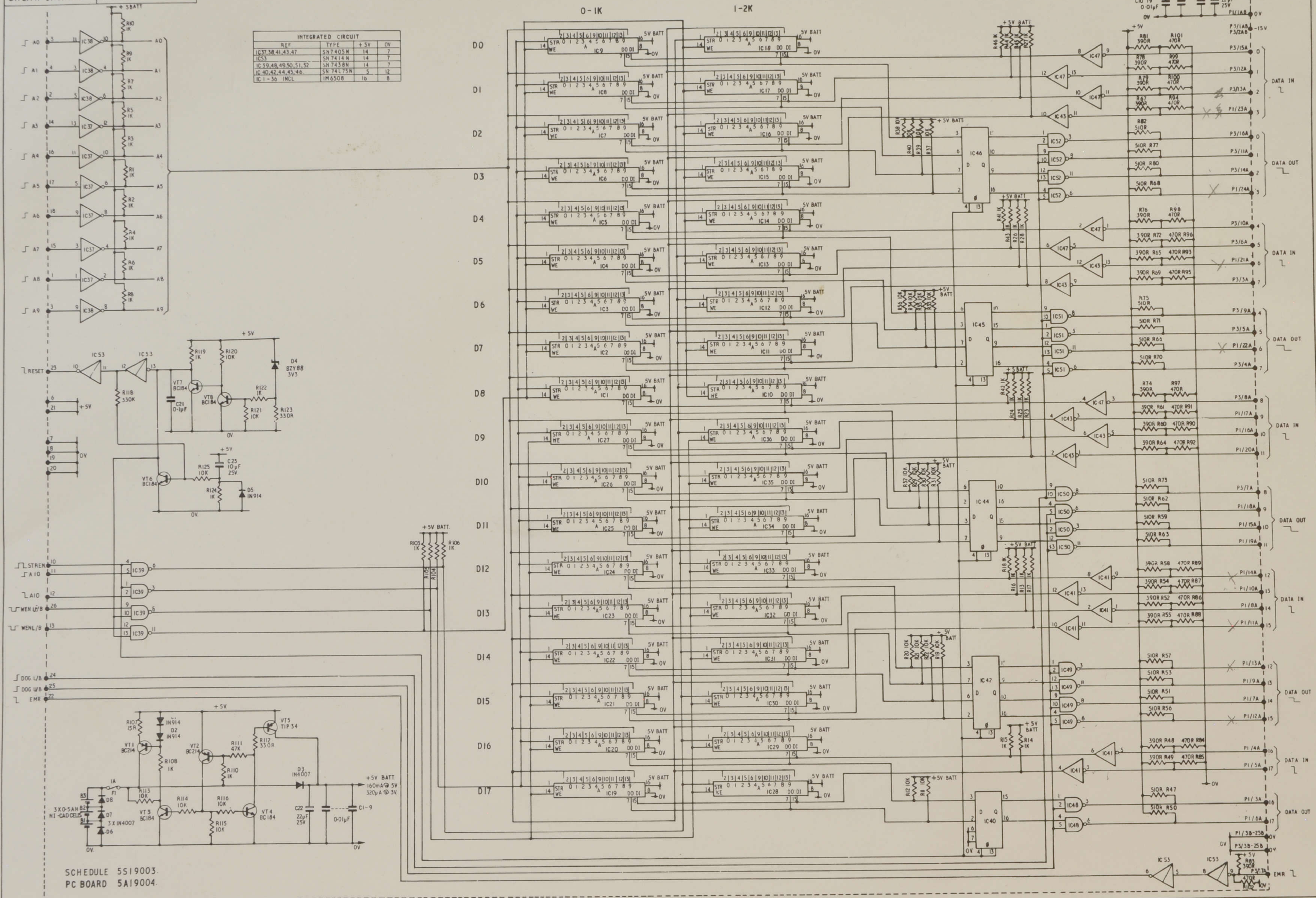
DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES		SCALE		DATE
IMPERIAL	METRIC	DRAWN	G.Harwood	24-1-77
FRACTION ± 1/64	1 DEC PLACE ± 0·4mm	CHECKED		
DECIMAL ± 005	2 DEC PLACE ± 0·1mm	APPROVED		
ANGULAR ± 0·25°		MATERIAL -		
UNLESS OTHERWISE STATED		FINISH -		
USED ON - IL 18325				

TITLE -
COMPACT 24 WAY MIMIC DECODE BOARD.
PCB 529/1
REF 1538.PT2
ISSUE A B
DWG. Nº 6A18286

DWG. Nº 6A19002 | ISSUE B

INTEGRATED CIRCUIT			
REF	TYPE	+ 5V	0V
IC37,38,41,43,47	SN7405N	14	7
IC53	SN7414N	14	7
IC39,48,49,50,51,52	SN7438N	14	7
IC40,42,44,45,46	SN74L75N	5	12
IC 1-36 INCL	IM6508	16	8



SCHEDULE 5S19003
PC BOARD 5A19004

RANK STRAND ELECTRIC
PO BOX 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 24408
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES	
IMPERIAL	METRIC
FRACTION ± 1/64"	1 DEC PLACE ± 0·4mm
DECIMAL ± ·005"	2 DEC PLACE ± 0·1mm
ANGULAR ± 0·25°	
UNLESS OTHERWISE STATED	

USED ON:- IL18325

SCALE	-	DATE
DRAWN	C. Hayward	21.2.77
CHECKED		
APPROVED		

MATERIAL:-
FINISH:-

TITLE:- CMOS 1885 (2K18) MEMORY MODULE DATA PCB

PCB 533/1 REF 1540

ISSUE B

DWG. Nº 6A19002

DWG. Nº 6A19005 | ISSUE B

INTEGRATED CIRCUITS			
REF	TYPE	VCC	GND
IC11	SN74123N	16	8
IC2,3,12	SN7400N	14	7
IC6,18	SN7410N	14	7
IC5	SN7420N	14	7
IC8	SN7430N	14	7
IC1,13,4	SN7404N	14	7
IC9	SN7437N	14	7
IC10,15	SN7438N	14	7
IC17	SN7442N	16	8
IC14	SN7474N	14	7
IC7	SN7486N	14	7
IC16	SN74195N	16	8
IC19	K1100A	14	7

SCHEDULE 5S19006
P.C. BOARD 5A19007

RANK STRAND ELECTRIC
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RANK AUDIO VISUAL LIMITED

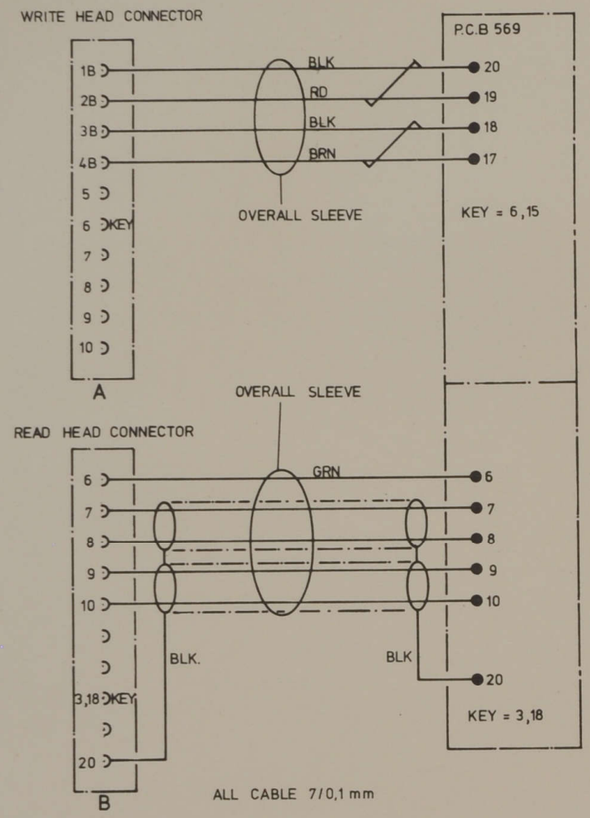
DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES		SCALE	DATE
IMPERIAL	METRIC	DRAWN	
FRACTION ± 1/64	1 DEC PLACE ± 0·4mm	CHECKED	
DECIMAL ± 005	2 DEC PLACE ± 0·1mm	APPROVED	
ANGULAR ± 0·25°		MATERIAL –	
UNLESS OTHERWISE STATED			
USED ON –		FINISH –	
1L18325			

TITLE –
CMOS 1885 2K18 MEMORY MODULE
TIMING & CONTROL PCB
PCB 534/1 REF1540
ISSUE B DWG. Nº 6A19005

REV.1 C.N°

DWG. Nº 5B19768 | ISSUE A

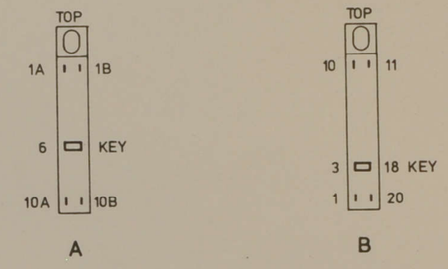


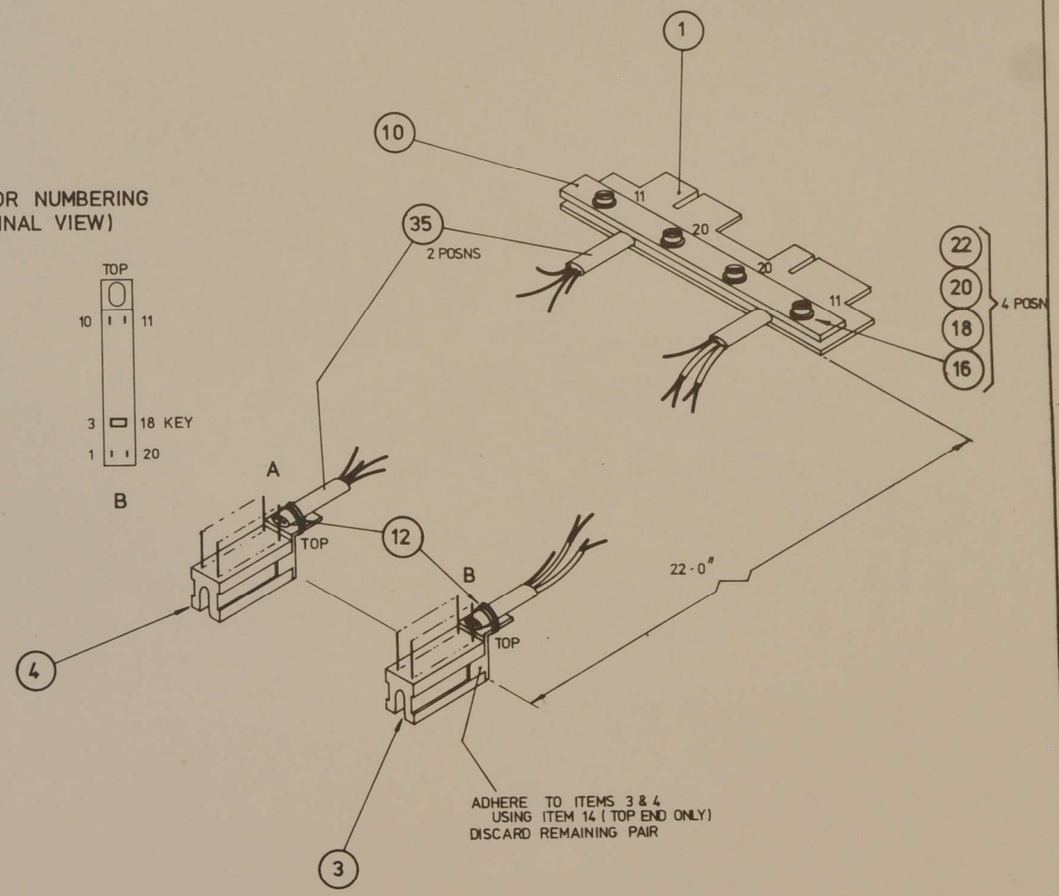
ALL CABLE 7/0,1 mm

OVERALL SCREENED ITEM 33

TWISTED PAIR , ITEMS 25, 27 & 29

CONNECTOR NUMBERING
(TERMINAL VIEW)





REV. | C. Nº

RANK STRAND ELECTRIC
PO BOX 70 Great West Road Brentford Middlesex TW8 9HR
Telephone 01-568 9222 Telex 27976
A DIVISION OF
RANK AUDIO VISUAL LIMITED

DIMENSIONS IN INCHES/MILLIMETRES
THIRD ANGLE PROJECTION

TOLERANCES		SCALE	NTS	DATE
IMPERIAL	METRIC	DRAWN	C.L.CANDY	29-9-77
FRACTION ± 1/64	1 DEC. PLACE ± 0.4mm	CHECKED		4-11-77
DECIMAL ± .005	2 DEC. PLACE ± 0.1mm	APPROVED		
ANGULAR ± 0.25		MATERIAL –		
UNLESS OTHERWISE STATED		FINISH –		
USED ON –				

TITLE – HEAD LEAD EXTENSION ASSEMBLY

PCB 569 REF 1544

ISSUE A DWG. Nº 5B19768

R 31907 6407