

ASC

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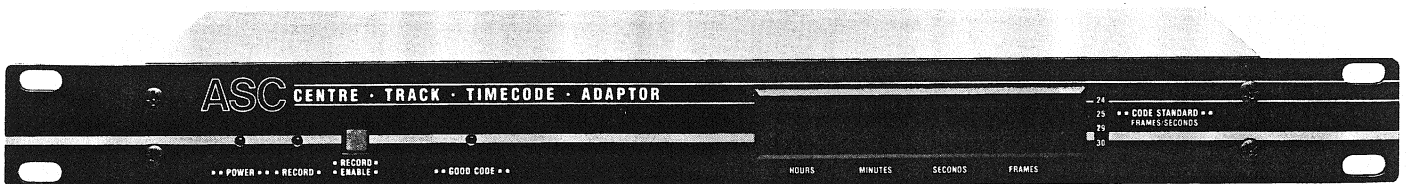
AUDIO SYSTEMS COMPONENTS LIMITED

17a King Street · Mortimer · READING · RG7 3RS · UK
Tel: (0734) 333100 · Fax: (0734) 333400

SO MUCH MORE FOR SO MUCH L E S S

Now you can add centre track timecode to your new or existing 1/4" recorder. Converting it at surprisingly low cost to the equivalent of equipment costing twice as much at least. In fact better than most equivalents. Because this adaptor also provides precise control via a large 'confidence' timecode display. For all code types. Revox PR99, Otari MX5050 series, Soundcraft Series 20 and MCI are examples we've adapted to date.

Contact ASC for much more information about how to achieve much more...for much less.



Centre · Track · Timecode · Adaptor

DESCRIPTION SPECIFICATION

The ASC centre track timecode adaptor provides all the necessary components to convert a two track 1/4" tape recorder to operate with centre track timecode.

The requirements of the tape recorder are as follows:

- Provision for mounting an extra tape head.
- Two track tape format.
- Two track erase head.

The following connections are made to the tape recorder:

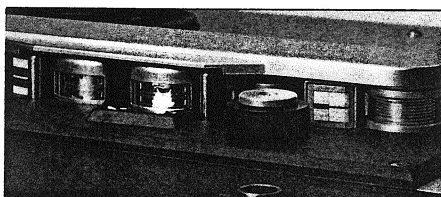
- Tape Speed High/Medium/Low.
- Replay/Selsync output select.
- Master Record enable.

Based on the proven technique of adding a fourth, offset head the software controlled system ties - in to the machine's own logic to automatically recognise speed and direction, pick-up tachometer pulses and thence to identify and self configure to any of the internationally recognised timecode standards.



TIMECODE HEAD

In order to simplify the modification of the target recorder the functions of timecode Erase, Record and Replay are combined in one tape head. The recorded and replayed timecode are adjusted by software to compensate for the different time offsets required by the different modes of operation, tape speeds and timecode types. This same software is used to adjust for different types of tape transport.



Timecode Input

electronically balanced, >10k impedance, -20 to +10dBm, -10dBm nominal unbalanced,

Timecode Output

1k impedance, level +8dBm

Switches and indicators

- Record Ready Switch.
- Timecode display HH:MM:SS:FF.
- Code Standard LED's.
- Good Code LED.
- Power LED.
- Ready/Record LED.

Connectors

- Power Input IEC
- Timecode Input (balanced) XLR Socket
- Timecode Output (balanced) XLR Plug
- Recorder Status 9 pin 'D'
- Timecode Replay/Record/Erase Head 5 pin DIN

Software

The Software modifies the offset in units of one timecode bit (1/80th of a frame) giving an absolute timing accuracy of +/-250µS for EBU timecode. This corresponds to an accuracy of +/-0.004" at 15ips (0.01cm at 38.1cm/sec).

Voltage 120/240VAC, 50/60Hz

Shipping weight 2.5kg net, 4kg gross

Dimensions
 Width 398mm (15 3/4")
 Depth 205mm (8")
 Height 44mm (1 3/4") (optional 19" x lu rack mount panel)



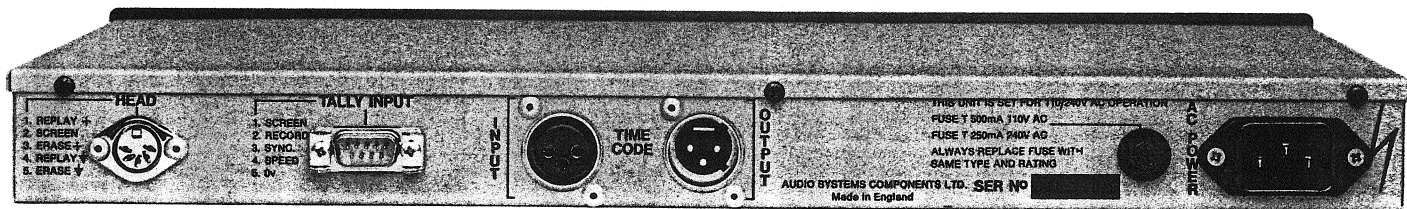
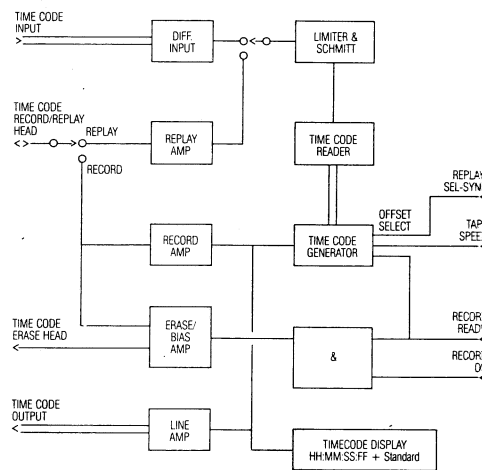
Replay/Selsync

The timecode from the timecode head is amplified and connected to the timecode reader. The reader adds or subtracts the required offset to the current position and this information is used by the timecode generator to re-generate the output timecode.

Record

The unit is only allowed to record a signal on tape if both the record ready for the timecode channel is enabled and master record is enabled.

The timecode from the input is connected to the timecode reader. The required offset is then added or subtracted before the timecode position is transferred to the generator. The output of the generator is connected with the bias signal to the record head.

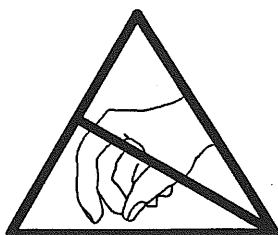


AVAILABLE FROM

As part of a policy of continual improvement, ASC reserve the right to alter specifications without notice.

ASC

REVOX C270 TIMECODE ADAPTOR
INSTALLATION & TESTING



Handling MOS components

- MOS components are extremely sensitive to static charges. therefore please observe the following guidelines:
- Components sensitive to static charges are stored and shipped in protective packaging. On the package you will find the above symbol.
- Avoid any contact of connector pins with foam packages and foil made of similar chargeable package material.
- Don't touch the connector pins, unless your wrist is grounded with a conducting wristlet.
- Use a grounded conducting mat when working with sensitive components.
- Never plug or unplug PCBs containing sensitive components when the equipment is switched on.

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Revision 2, 5th May 1989, C270INST

Installation Instructions for C270 Timecode Kit

NOTE

If MIC option is fitted TC kit cannot be installed

- [] 1off C270 TC Micro P.C.B. (1.777.101-01).
- [] 1off C270 TC Electronics P.C.B. (1.777.101-02).
- [] 1off Timecode head 1.116.810-02).
- [] 1off Replacement 1.5mm guard band erase head. (1.777.101-03).
- [] 1off Revox timecode head mounting plate.(1.050.326-00).
- [] 1off Label for Control panel (GOOD CODE/SAFE READY). (1.777.101-04).
- [] 1off Label for Back panel (TIMECODE IN/OUT). (1.777.101-05).
- [] 1off SWITCH/LED PCB & lead terminated with MOLEX crimp terminals. with 6way MOLEX shell. (1.777.101-06).
- [] 1off Timecode head lead 530mm long, 4way terminated with bare ends and 4way MOLEX shell. (1.777.101-07).
- [] 1off 14way ribbon cable 230mm long, terminated with IDC sockets at each end. (1.777.101-08).
- [] 1off Parallel remote kit complete .(1.777.101-09)
(1.777.101-10 Parallel remote electronics P.C.B.
1.777.101-11 D-Cable ass. complete
1.777.101-12 Adaptor socket).
- [] 1off Male XLR connector. (1.012.300-00).
- [] 2off Spacers M3 x 6mm. (1.010.069-27).
- [] 4off M3 nuts. (22.01.8030).
- [] 2off M3 shakeproof washers. (24.16.1030).
- [] 2off M3 x 14mm c/s pozi screws. (21.30.2371).
- [] 1off M4 x 6mm pan pozi screw. (21.26.0454).
- [] 2off H15 insulating sleeves.
- [] 1off Length of grommet strip. (17.08.7000 per metre).
- [] 1off TC Installation and service instructions.
- [] 1off User instructions.
- [] 1off TC Tape drive cover C270. (1.777.101-13).

In addition to the above you will also need the following tools.

- 1.5mm Hex wrench
- 2.0mm Hex wrench
- 2.5mm Hex wrench
- No. 0 Pozidrive screwdriver.
- No. 1 Pozidrive screwdriver.
- M5 nut driver.
- Soldering iron.
- Small pair of long nose pliers.
- Small pair of diagonal cutters.

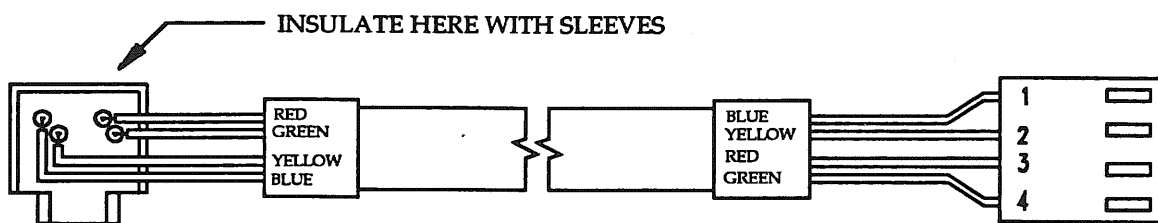
And the following test equipment.

- 5MHz or better oscilloscope
- A.C. millivolt meter (#46020)
- Timecode generator
- 7.5ips. timecode test tape
- Test display.

C270 TIMECODE KIT INSTALLATION

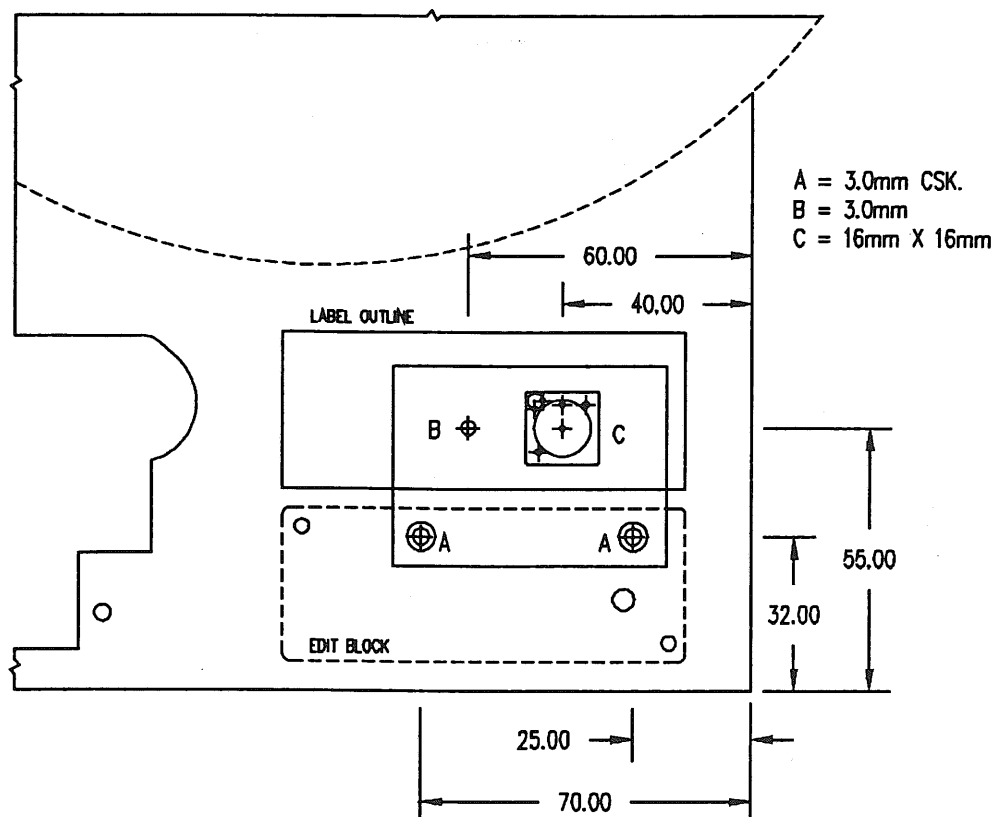
- Remove case (8 screws, rack plates 2.5mm). Also remove feet from base of machine if fitted. (4 screws).
- Remove head cover (2 screws 2.5mm).
- Remove pinch roller (1 screw pozi).
- Remove edit block (2 screws 2.0mm).
- Remove right hand tape guide (1 M5 nut).
- Remove tape drive cover (5 screws 2.5mm). This will be replaced by one modified to accommodate SWITCH/LED PCB.
- Fit timecode head to head mounting plate using M4 x 6mm screw. (tighten only finger tight at this time).
- Undo headblock mounting screws (3 screws No.1 pozi). Gently ease block back to access under side.
- Remove existing tape guide plate between capstan & right hand tape guide (1 screw pozi).
- Fit timecode head & plate assembly onto head block using 2 off M3 x 6mm pozi screws.
- Remove existing 0.8mm guard band erase head, make a note of the connections to this head before desoldering the leads.
- Fit new 1.5mm guard band erase head (only tighten finger tight) and resolder connections.
- Refit headblock to machine (3 screws).

- Place a tape on the machine and line up both the erase head and the timecode head by eye. (height, azimuth & zenith).
- Remove head block and tighten erase head and timecode head fully. (be careful not to turn the heads as you do this !).
- Refit headblock and tighten fully into position. Re-lacquer screw heads.
- Solder head lead to timecode head & insulate with supplied sleeves (cut sleeves in half). See diagram for wiring.
- Feed timecode head leads through with other head leads and bring out at left hand side of machine.

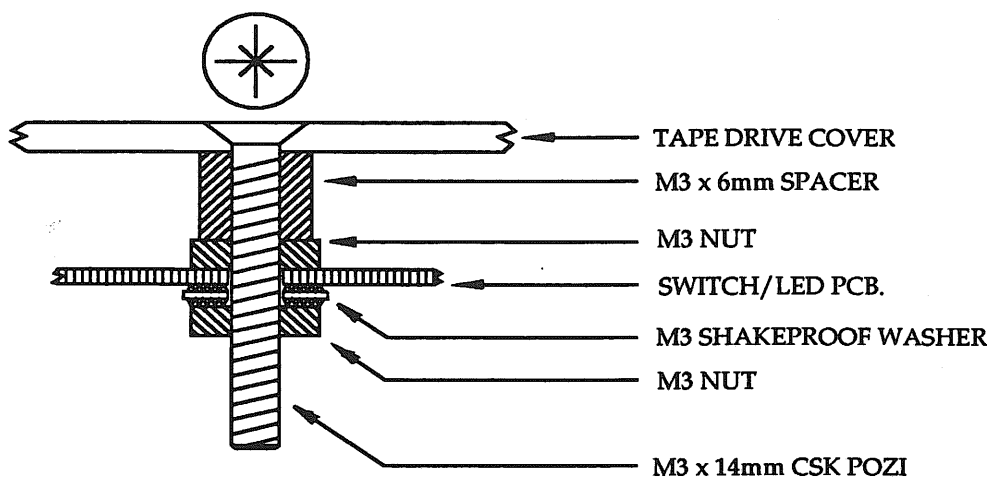


- Fit MOLEX crimp terminals and shell to head lead, see diagram.

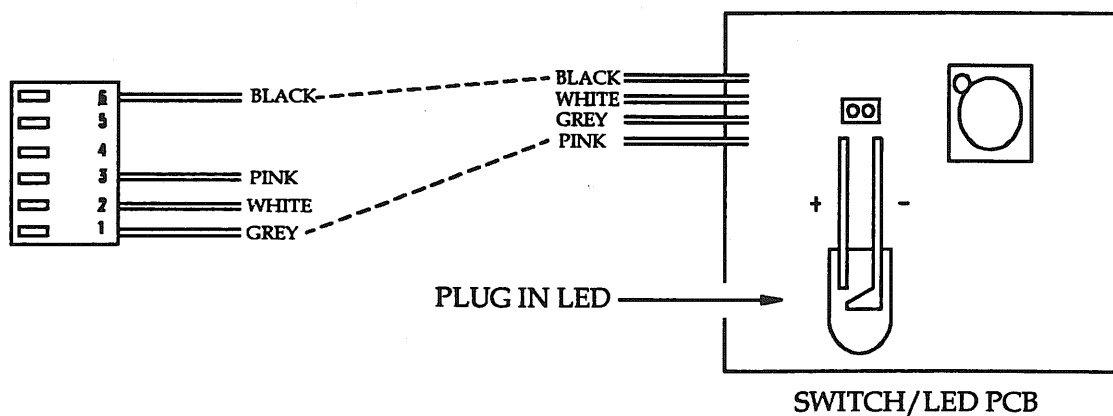
TC Tape drive cover



- Mount SWITCH/LED card to motor cover in position see drawing below.

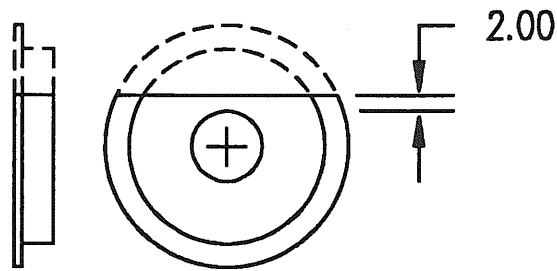


- Route leads across towards the left of the machine. (near timecode head leads).
- Fit 6way MOLEX shell to switch card lead, as per drawing below.



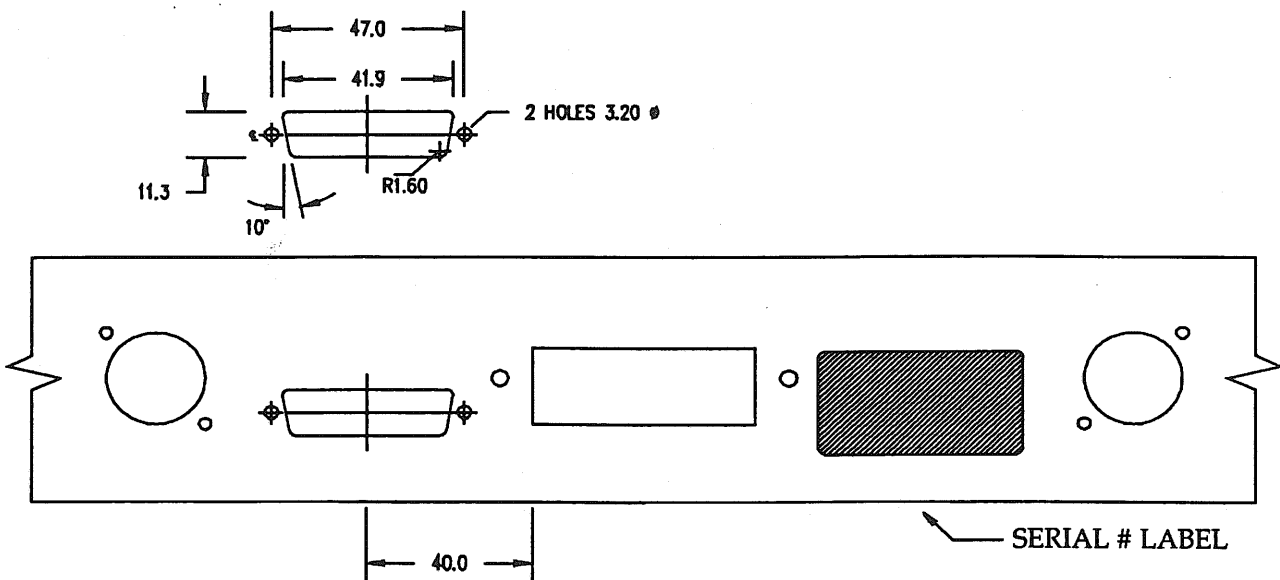
- Refit tape drive cover (5 screws 2.5mm).
- Stick 'GOOD CODE' label in position as shown on tape drive cover modification drawing.
- Refit edit block (2 screws 2.0mm).
- Refit pinch roller (1 screw pozi).

- Cut a section from the black plastic part under the right hand tape guide as below.



- Loosen 4 screws on front control panel. lift panel up and backwards.
- Plug in timecode board set (with the track side facing towards the left hand side of the machine) in to the spare slot at the left of the machine.
- Fit grommet strip to the second upper most round hole next to the timecode board. (towards the inside of the machine).
- Feed wire from SWITCH/LED PCB. through and plug into to J3 on the top PCB.
- Feed wires from timecode head through and plug into J1.
- Stand machine vertically and turn it around in order to work on the control board.
- Undo control board (10 pozi screws).
- Disconnect control board, making a note of where all the connections are.
- Carefully remove the processor chip (IC6 HD 637A01YOP).
- Plug processor chip into socket on parallel remote board ensuring that it is correctly orientated.
- Fit adaptor socket (64way) to socket on the track side of the parallel remote board.
- Plug complete remote board into the socket vacated by IC6.
- Screw remote board in place using supplied M2.5 x 6mm screw.
- Remove connector panel from top of machine. (2 screws).
- Remove DIN connection board from panel. (2 screws).
- Remove serial number label from panel.

- Modify panel to accommodate extra 'D' range socket as per drawing below.



- Replace DIN connector board. (2 screws).
- Desolder and remove MIC INPUT CH1 XLR, and replace with supplied male XLR. (Blue pin2, White pin3 & screen to pin1).
- Fit 'D' range connector with cable complete from parallel remote to connector panel, using supplied hexagonal screw locks.
- Refit connector panel. (2 screws).
- Remove connector from P3 (control board 1.777.400-23) and connect to P2 of parallel remote electronics PCB.
- Fit 20way ribbon cable from parallel remote electronics PCB. to P3 on control board.
- Fit 14way ribbon cable in to P4 on parallel remote electronics PCB.
- Feed 14way ribbon cable through protected hole to and plug into J1 on TC micro board.
- Refit control board, ensuring that all connectors are correctly replaced. Screw board in position (10 screws).
- Fit supplied label (TIMECODE / IO) in front of XLR connectors, covering MIC input nomenclature.

Check procedure

- Demagnetise and clean all heads and guides.
 - Plug in mains supply and turn machine on, both the 'Record ready' and the 'Good code' LEDs should flash on once and then go out. If this does not happen, then immediately turn off machine and check wiring.
 - Set machine to 15ips.
 - Monitor pin 1 of U4 using an A.C. Millivolt meter.
 - Play a centre track timecode test tape or a known good tape generated to your own standard.
 - Adjust the height of the timecode head to give maximum level indicated on the millivolt meter. (approx -2dBu (610mV) for a 320nWb test tape. Make a note of the exact level as this will be used as the reference for setting the record section.
 - Adjust head setting so that the tape is parallel to the grooves on the head.
 - Check that 'Good code' LED is on.
 - If 'Good code' LED does not come on or flashes then the phase locked loops may need to be adjusted, this can be done as follows.
 - Preset MPLL and SPLL trim pots to their mid positions.
 - Put the machine into play and note the time that it takes for the 'GOOD CODE' LED to light. Stop machine. Repeat above whilst adjusting MPLL trim pot. Set MPLL for minimum time before LED lights.
 - Monitor pin1 of U2 on TC electronics PCB
 - Whilst playing the timecode test tape, adjust SPLL trim pot for minimum jitter on displayed waveform.
- N.B.
If LED still flashes occasionally then monitor pin 1 of U4 on TC electronics PCB. and check that this is not caused by drop outs from tape.
- Put a reel of blank tape on the machine, and feed in timecode to your standard (24/25/30/DF) to the timecode input.

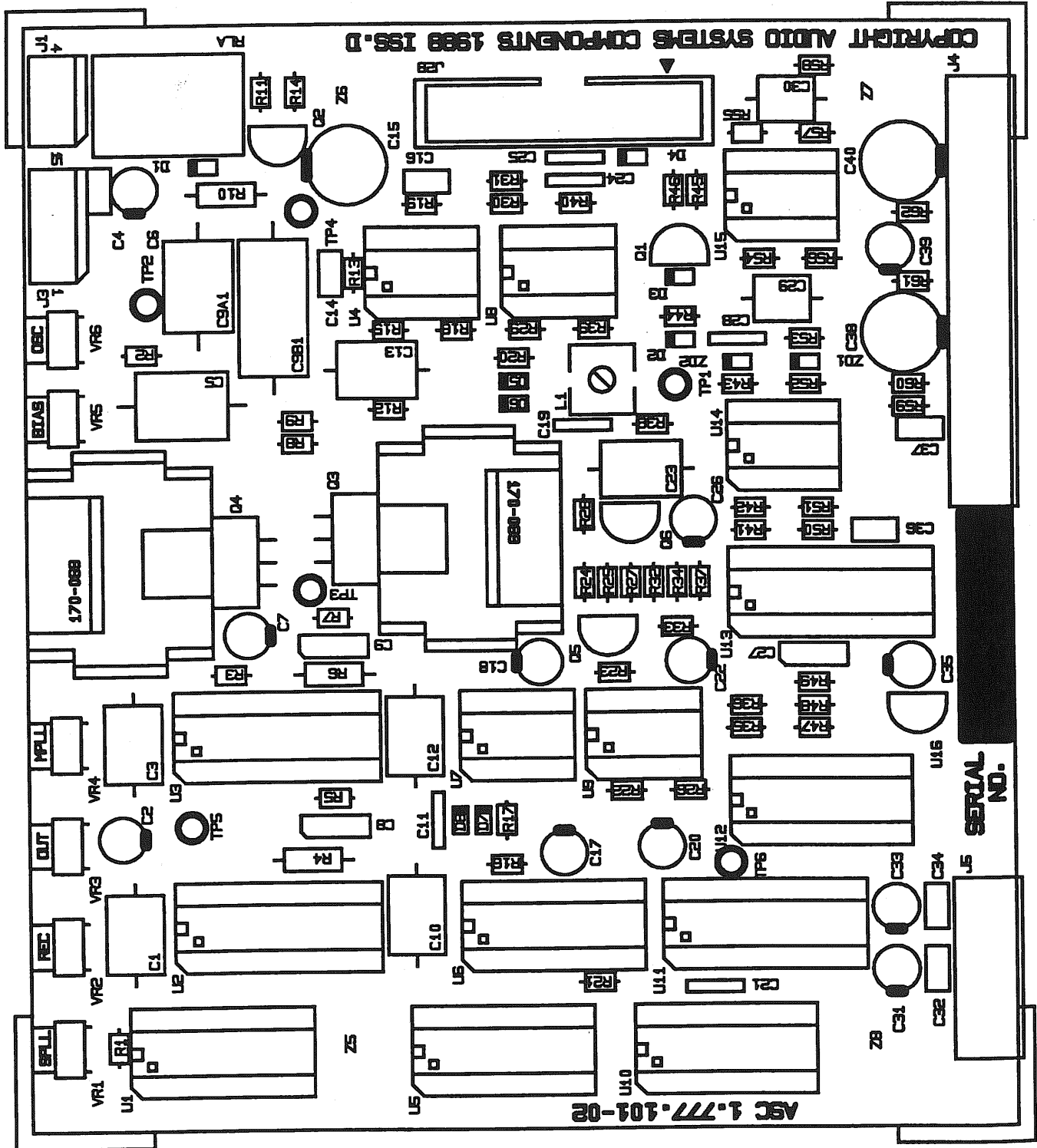
- Record a section of tape, and then rewind to beginning.
- Replay the tape whilst monitoring pin1 of U4 on TC electronics PCB. with a millivolt meter. check that this level is the same as your reference level noted earlier. If not adjust record level preset, record a section of tape and replay again. Repeat this procedure until the correct level is achieved.
- Check that timecode system records and replays OK. at 71/2ips.

N.B.

The timecode card is preset in the factory to record at 320nWb, also the MPLL and SPLL trim pots have been adjusted. The output level from the system is set to be +4dBu (1.25V). The OSC and BIAS trim pots will not usually need to be adjusted.

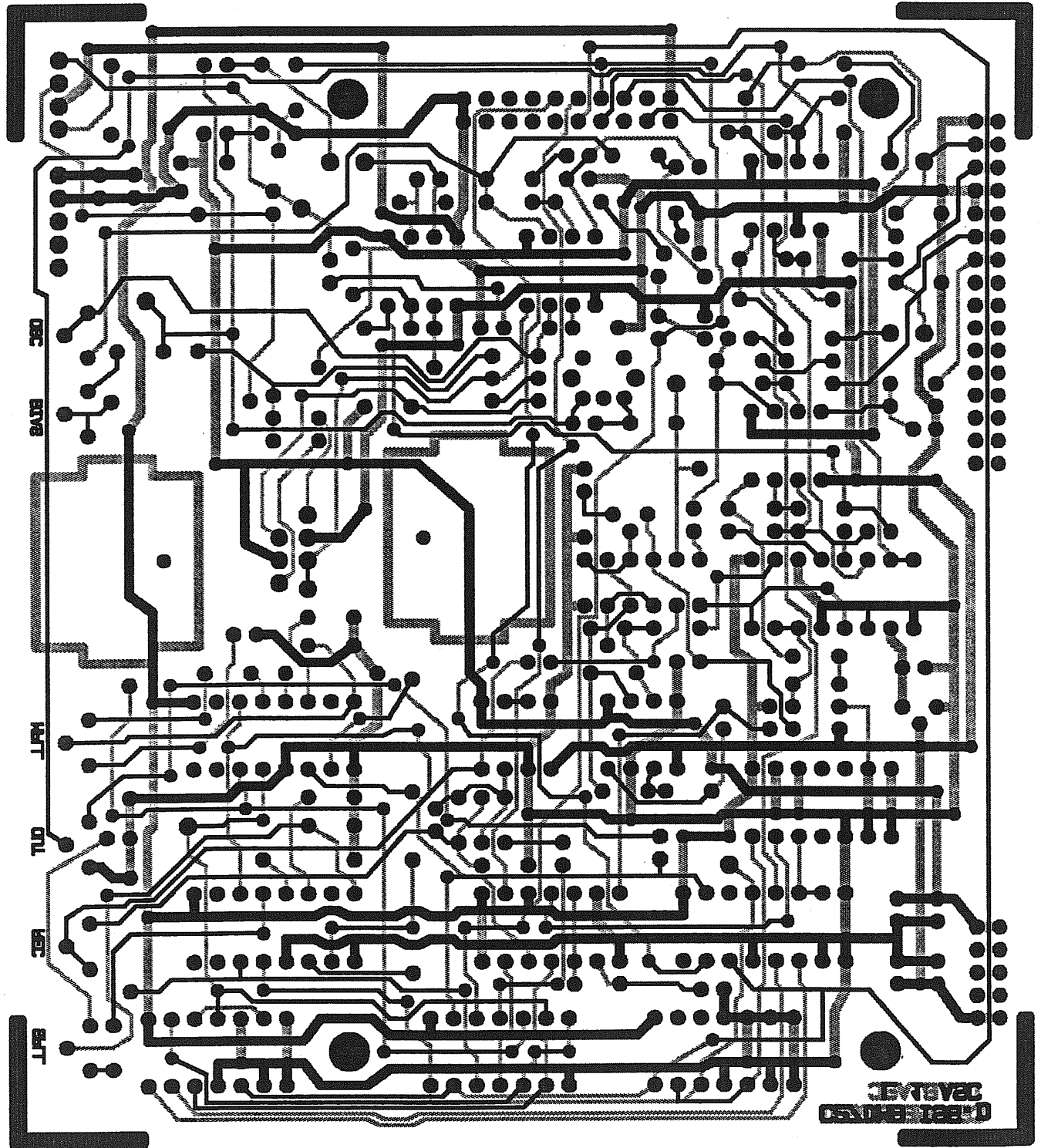
- To set Record and Bias presets.
- Put machine into record.
- Monitor TP4 on TC electronics PCB. with an oscilloscope and adjust OSC trim pot (VR6) for 300mV pk to pk.
- Monitor TP2 on TC electronics PCB. and adjust BIAS trim pot (VR5) for 20 volts pk to pk.
- Monitor TP1 on TC electronics PCB. and adjust L1 for minimum oscillator signal without timecode input. (L1 bias trap need not normally be adjusted).
- Connect TC generator to corresponding input.
- With audio channel inputs terminated with 600R, but set to record ready record a section of tape with timecode. Replay the recorded section and check that timecode crosstalk is below tape noise. If not check adjustment of timecode head.
- Record a 1kHz tone on both audio channels at 0dBu. Rewind tape and record over this section. Replay tape and check that tone has been erased to normal C270 specification. If not check audio erase adjustment in C270 manual.
- Timecode output level is independent of level actually recorded on tape. The timecode output level is set at +4dBu (1.25V), if you need to change this adjust OUT trim pot (VR3). (Maximum output level is +16dBu).

TC ELECTRONICS PCB OVERLAY

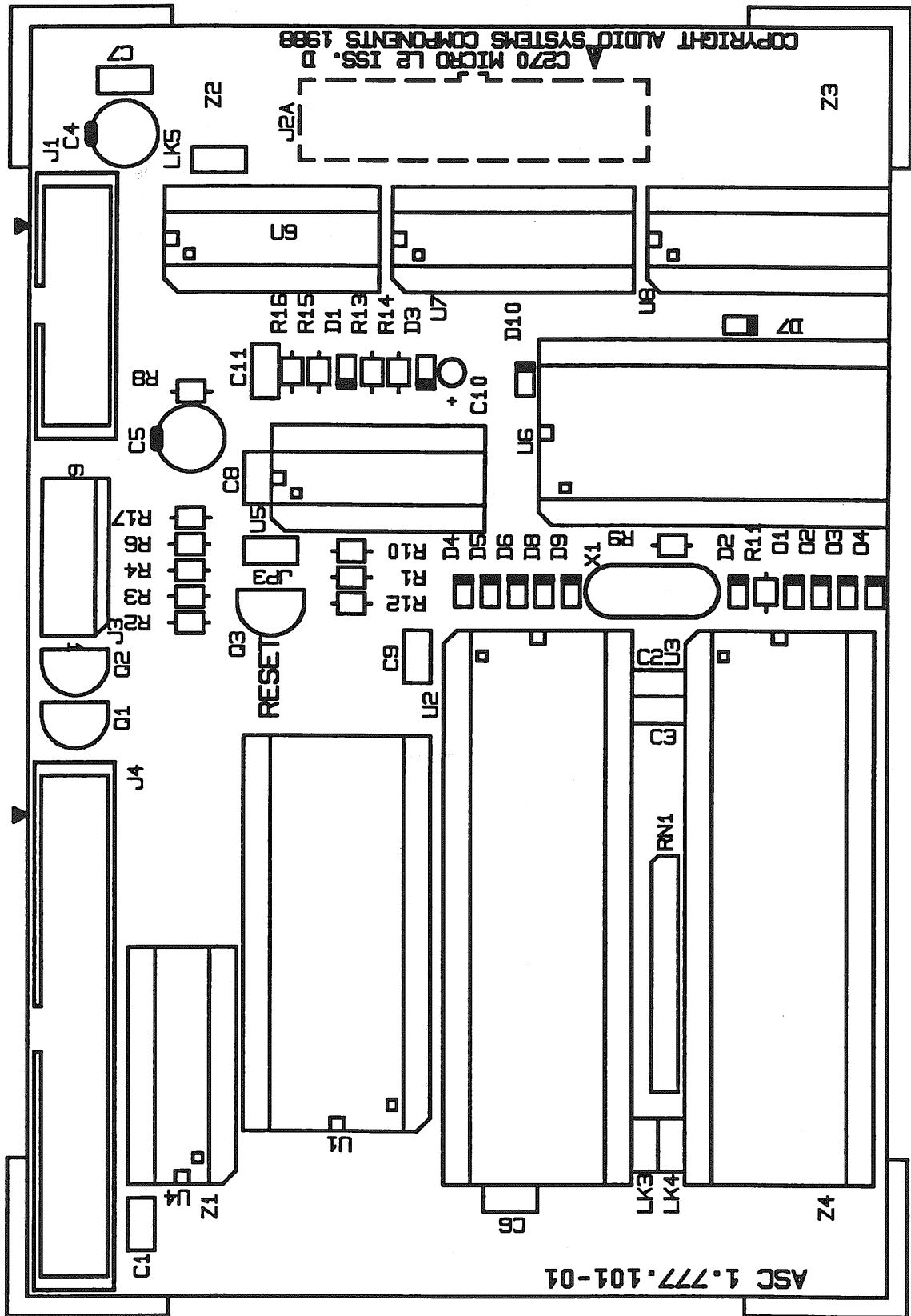


TC ELECTRONICS PCB TRACK

VIEWED FROM COMPONENT SIDE

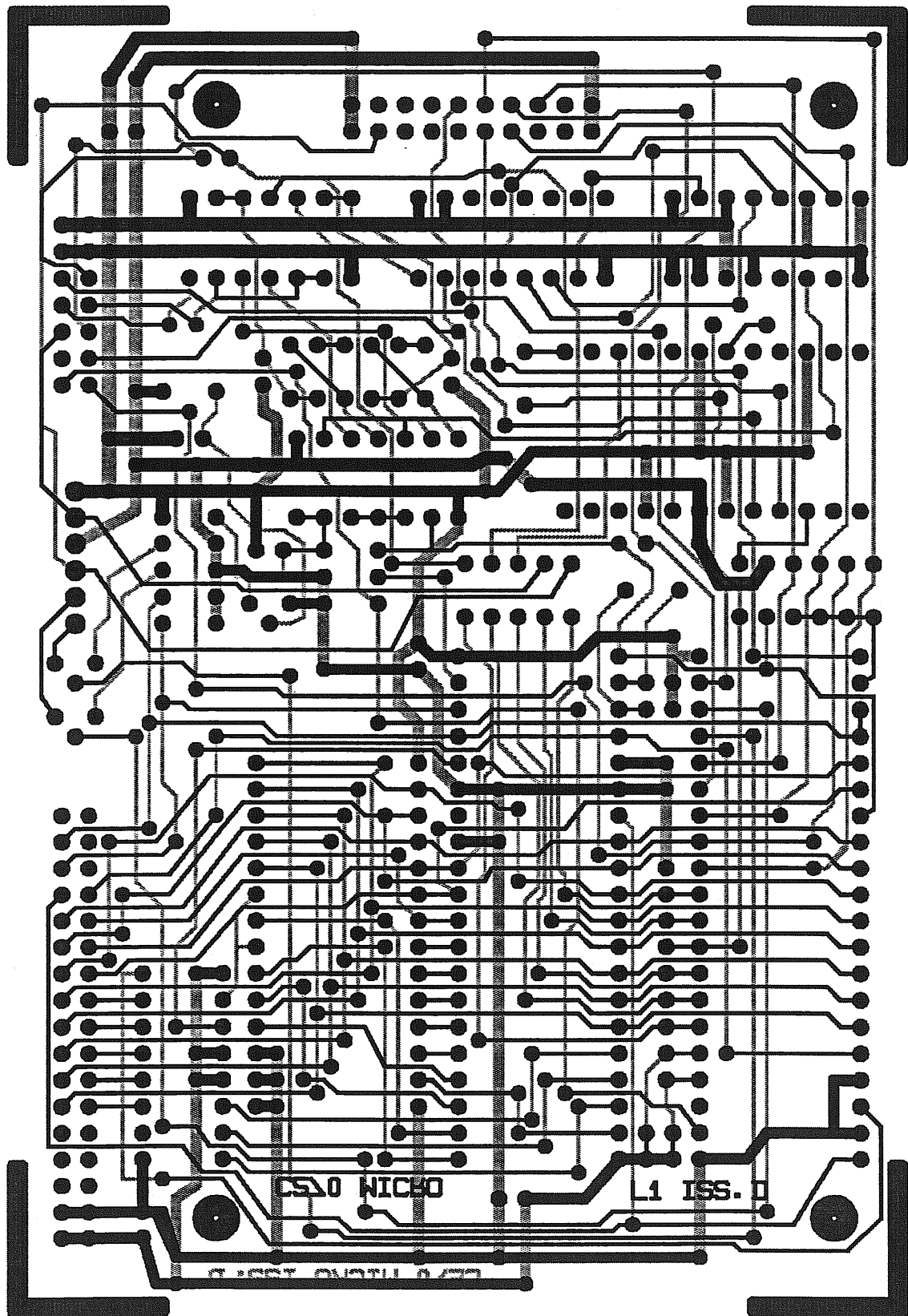


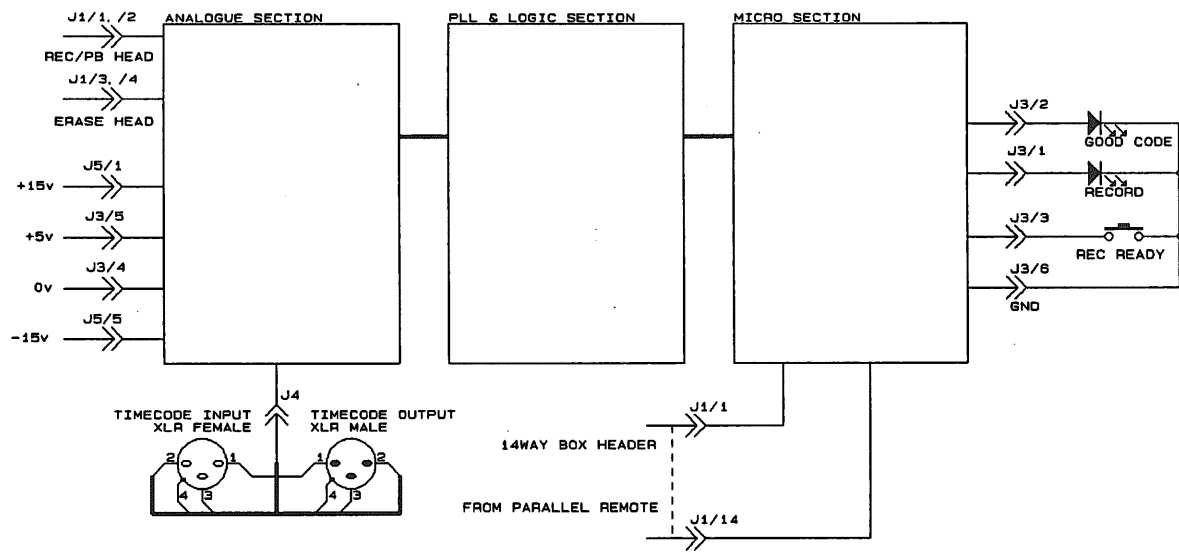
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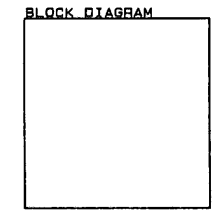
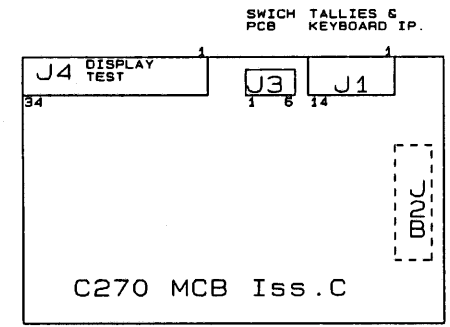
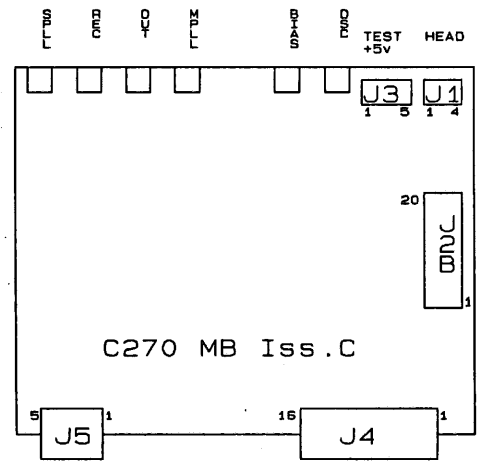
TC MICRO PCB TRACK

VIEWED FROM COMPONENT SIDE





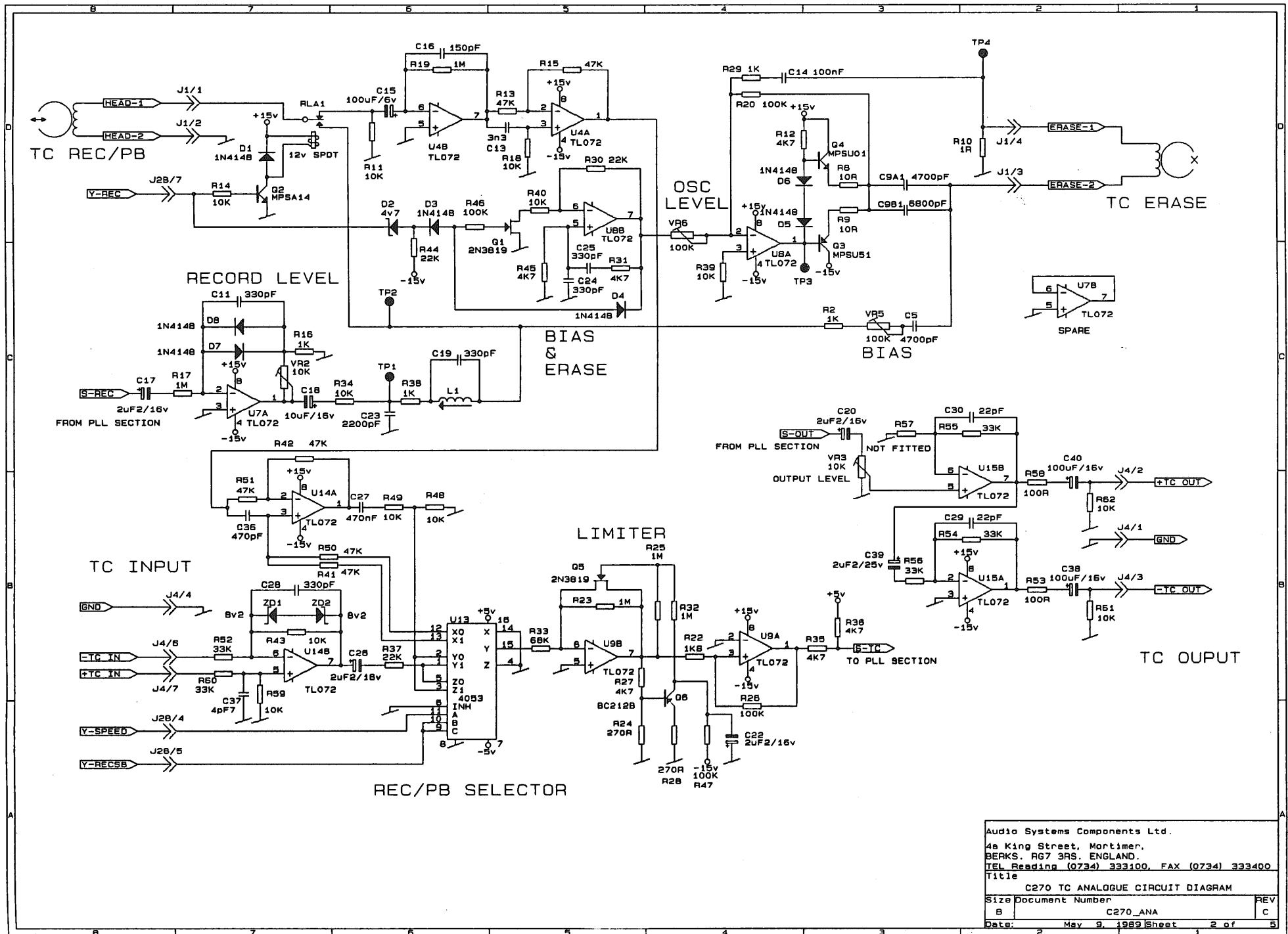
C270 CENTRE TRACK TIME CODE



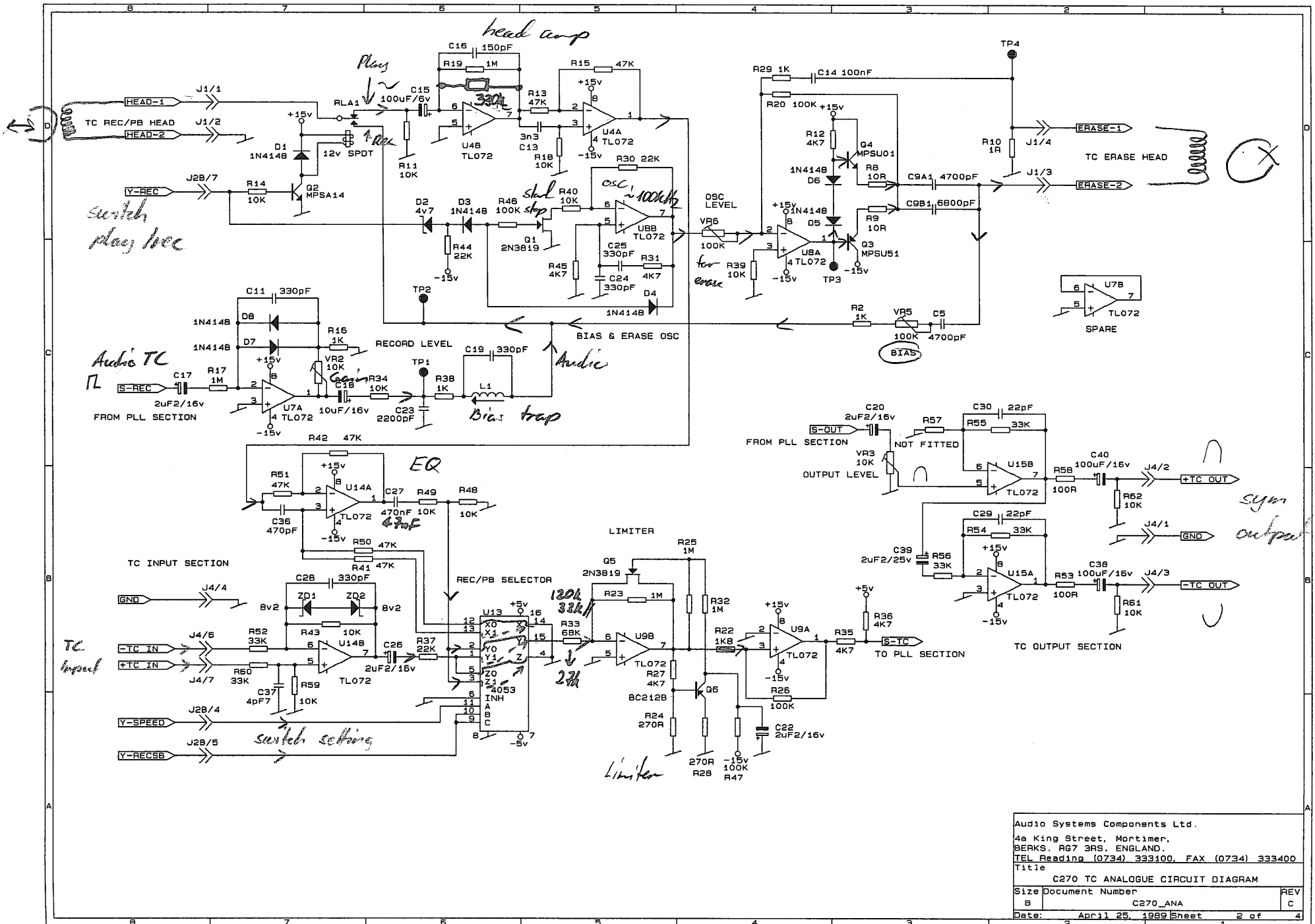
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 C270 TIME CODE BLOCK DIAGRAM

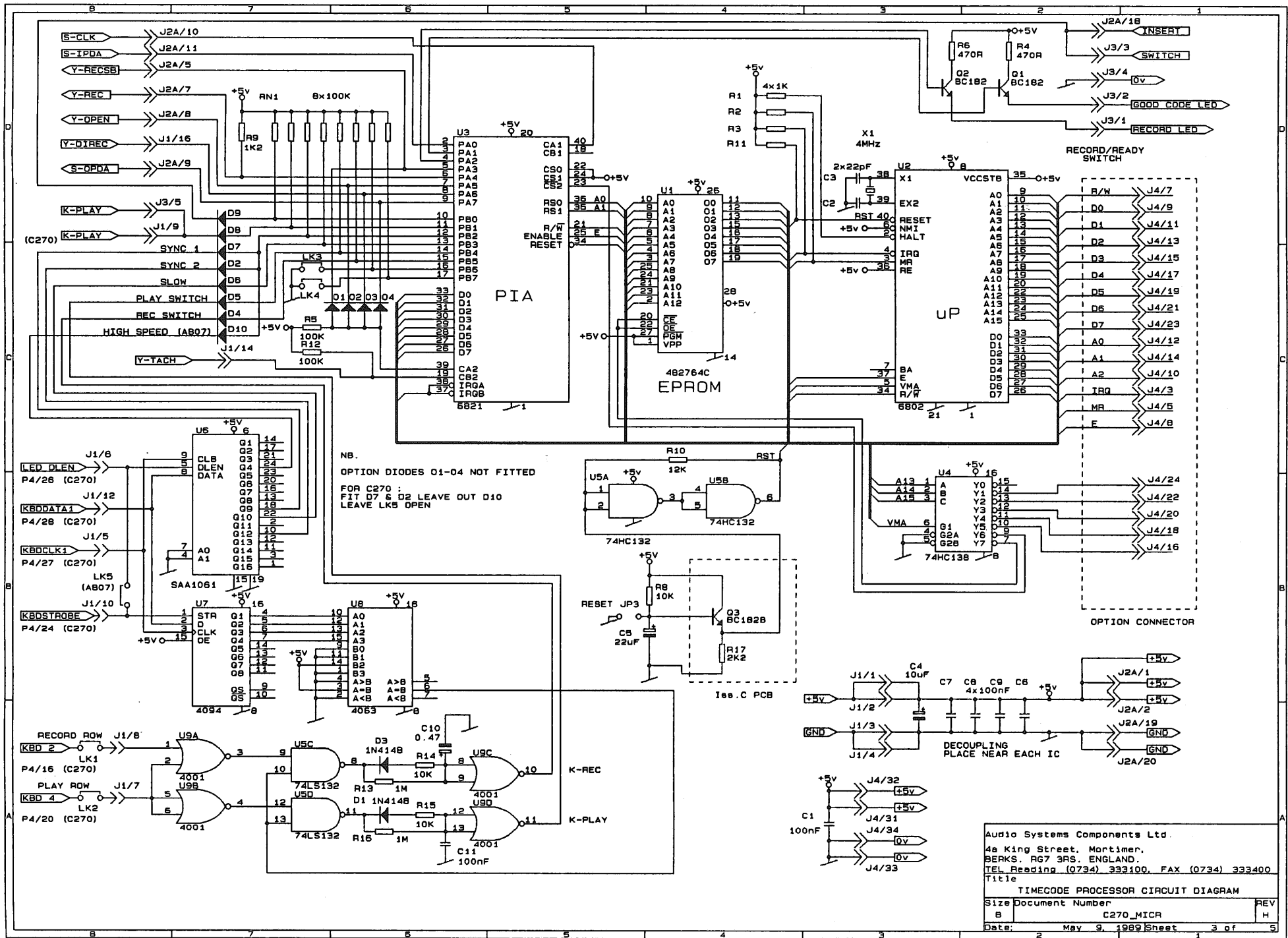
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 Title
 C270 TC ANALOGUE CIRCUIT DIAGRAM
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 B C270_ANA REV C
 Date: 2 May 9, 1989 Sheet 1 of 5

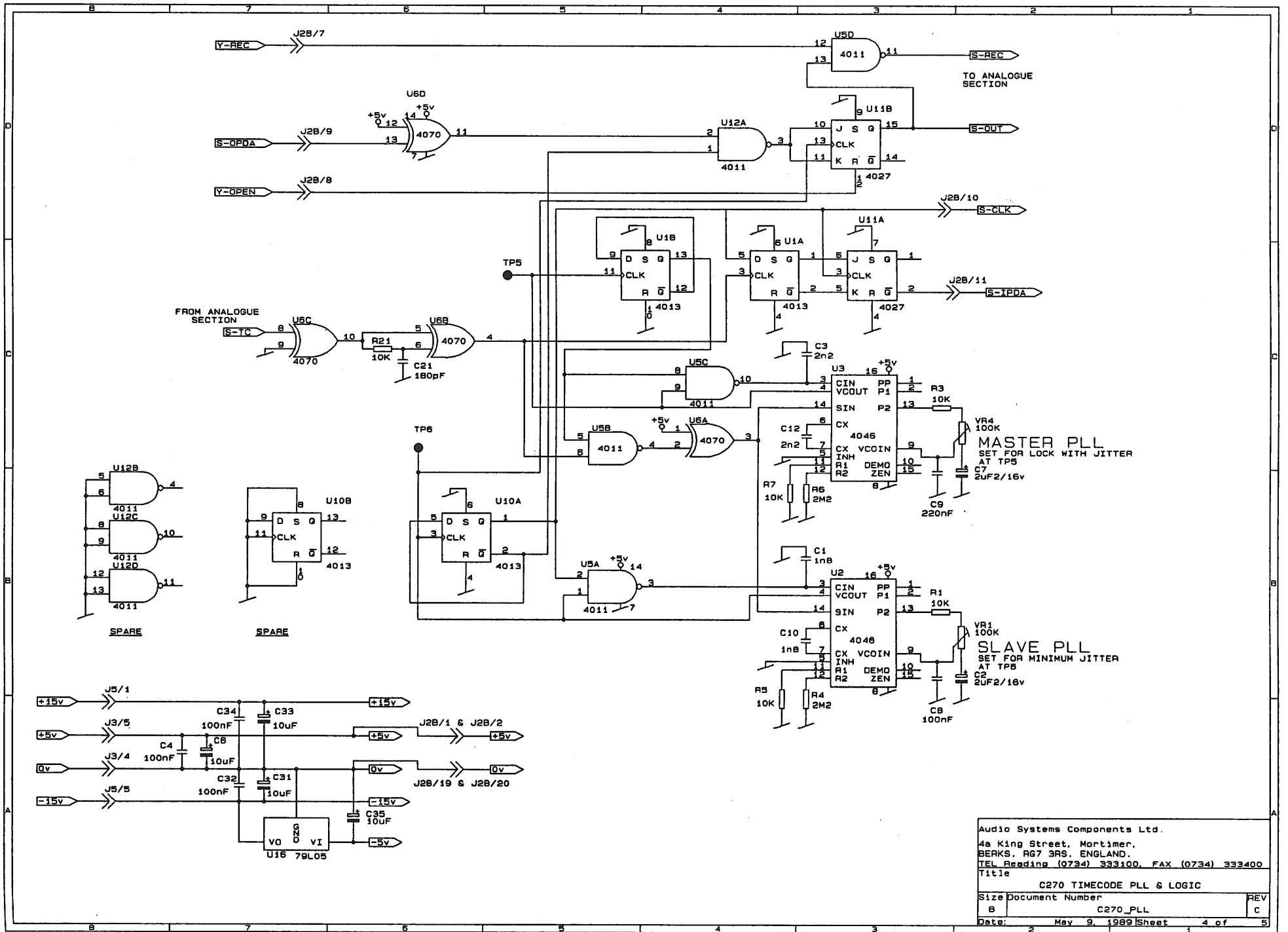


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 C270 TC ANALOGUE CIRCUIT DIAGRAM
 Size Document Number REV
 B C270_ANA C
 Date: April 25, 1989 Sheet 2 of 4



NB.
 OPTION DIODES O1-O4 NOT FITTED
 FOR C270 :
 FIT D7 & D2 LEAVE OUT D10
 LEAVE LK5 OPEN

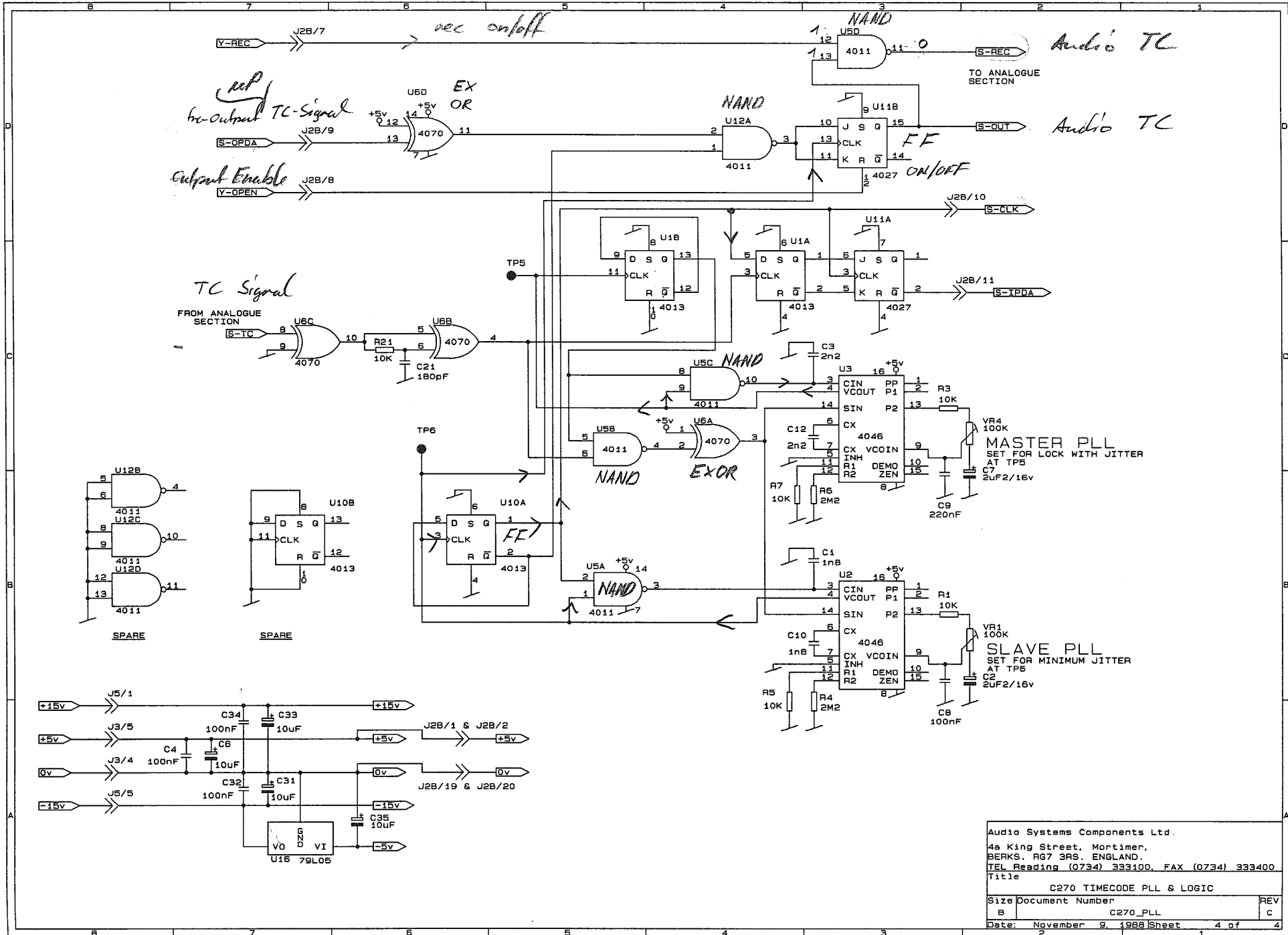
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 Size Document Number
 B C270_MICR
 Date: May 9, 1989 Sheet 3 of 5



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Title
C270 TIMECODE PLL & LOGIC

Size	Document Number	REV
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Date:	May 9, 1989	Sheet 4 of 5



rec
no-Output TC-Signal

rec on/off

Audio TC

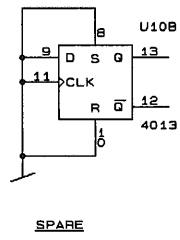
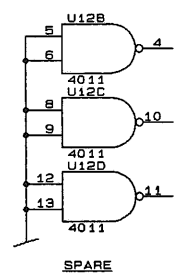
Audio TC

Output Enable

TC Signal

MASTER PLL
 SET FOR LOCK WITH JITTER
 AT TP5

SLAVE PLL
 SET FOR MINIMUM JITTER
 AT TP6



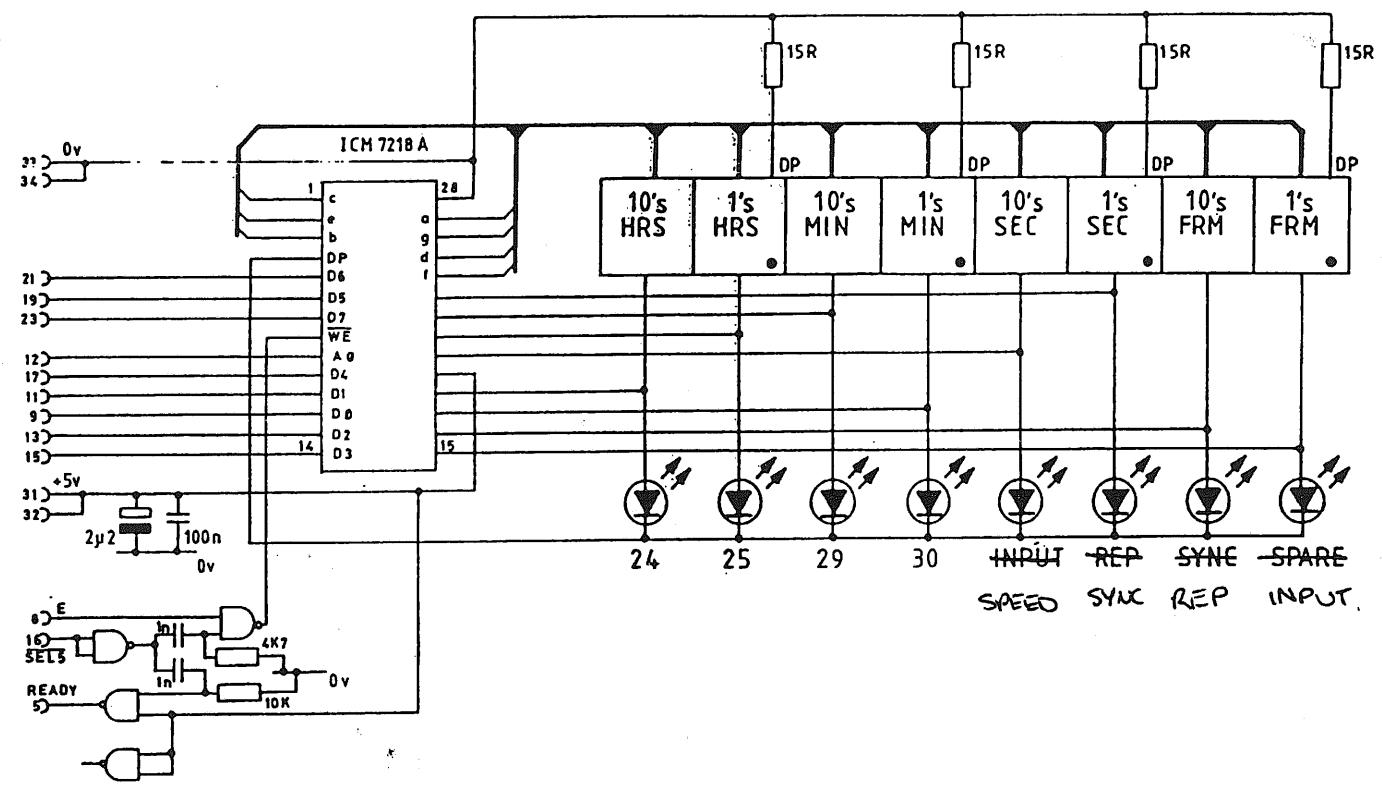
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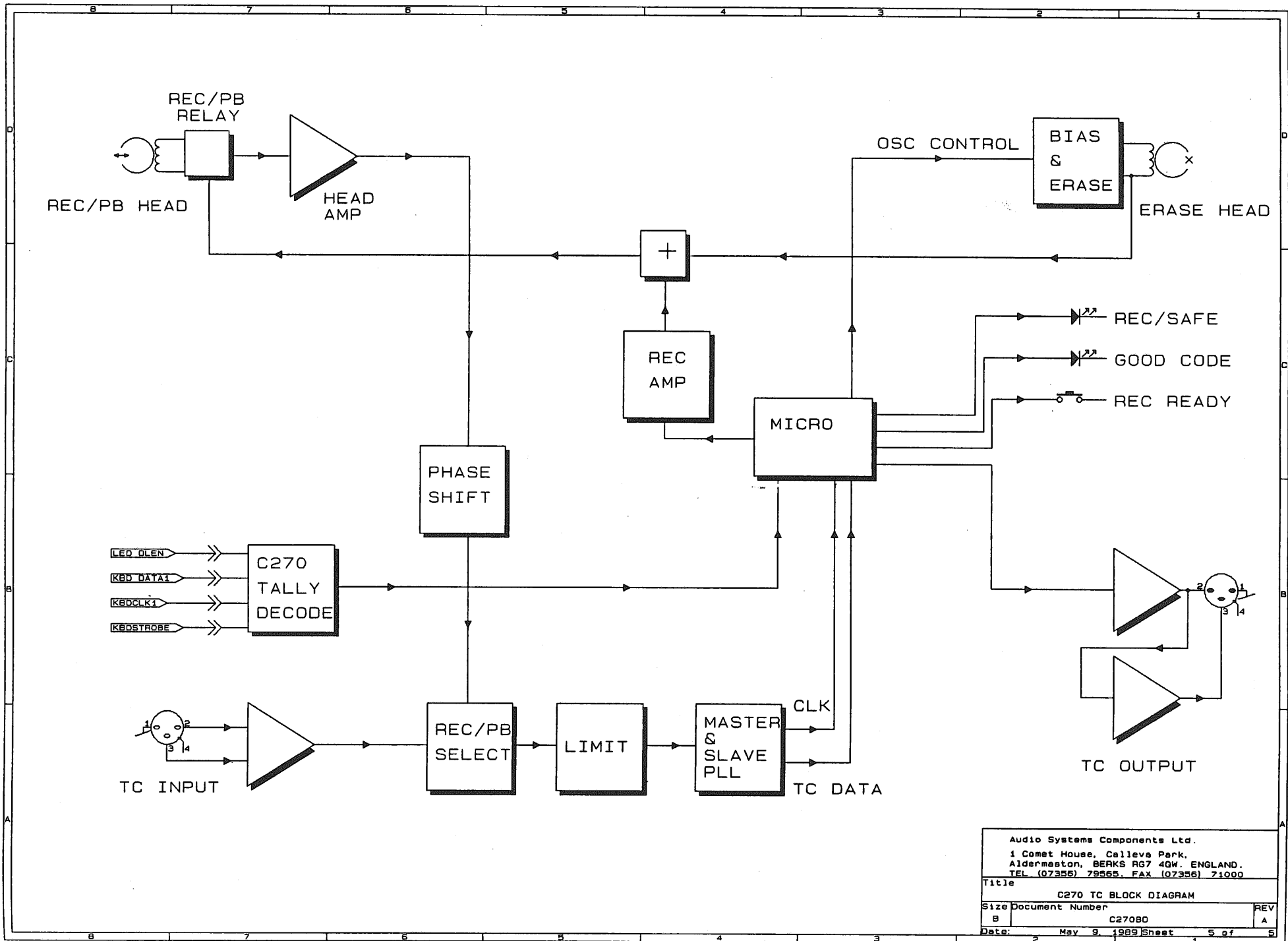


ISSUE	DESCRIPTION	APPD.	DATE

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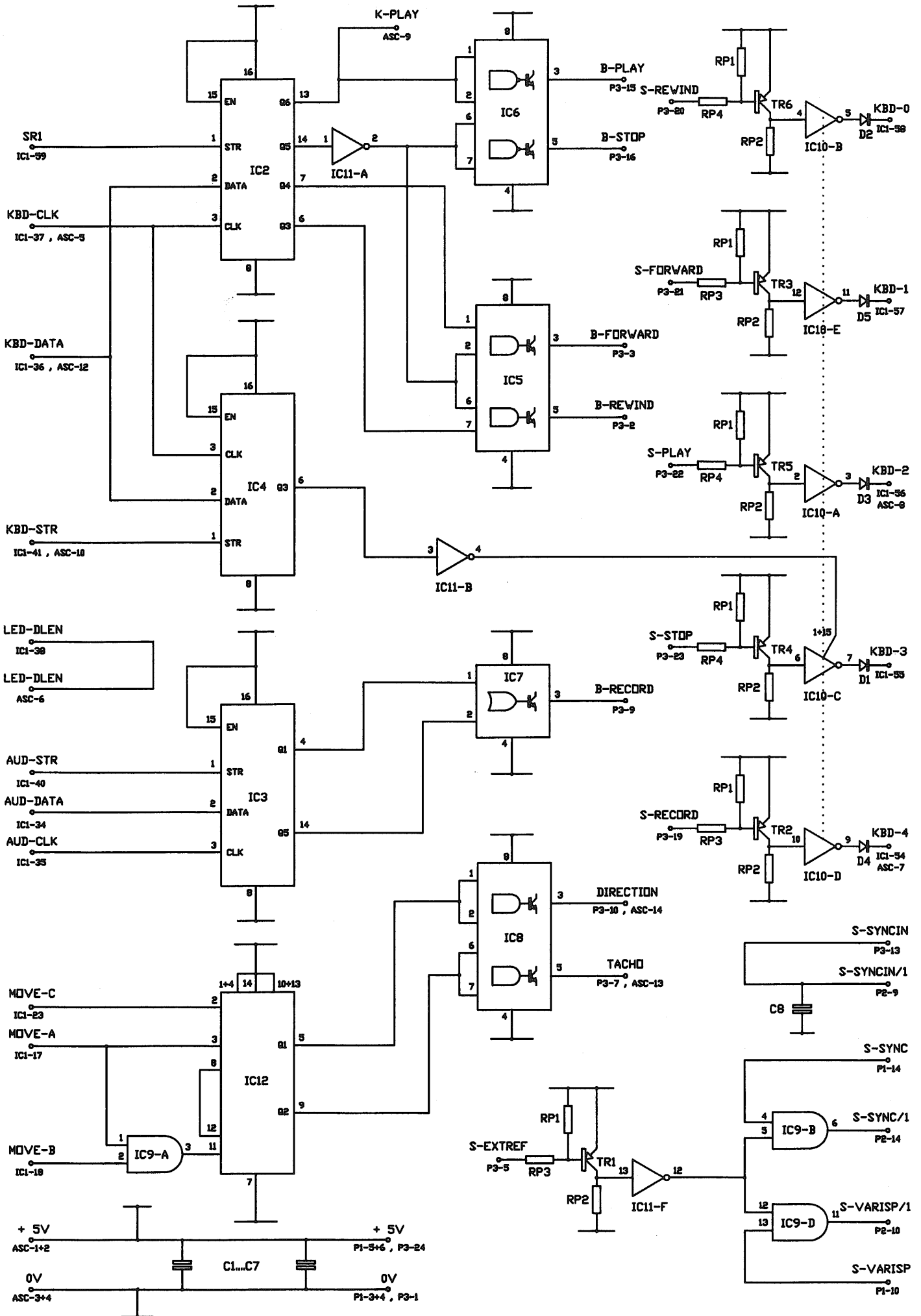
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TIME CODE DISPLAY CARD
CIRCUIT DIAGRAM

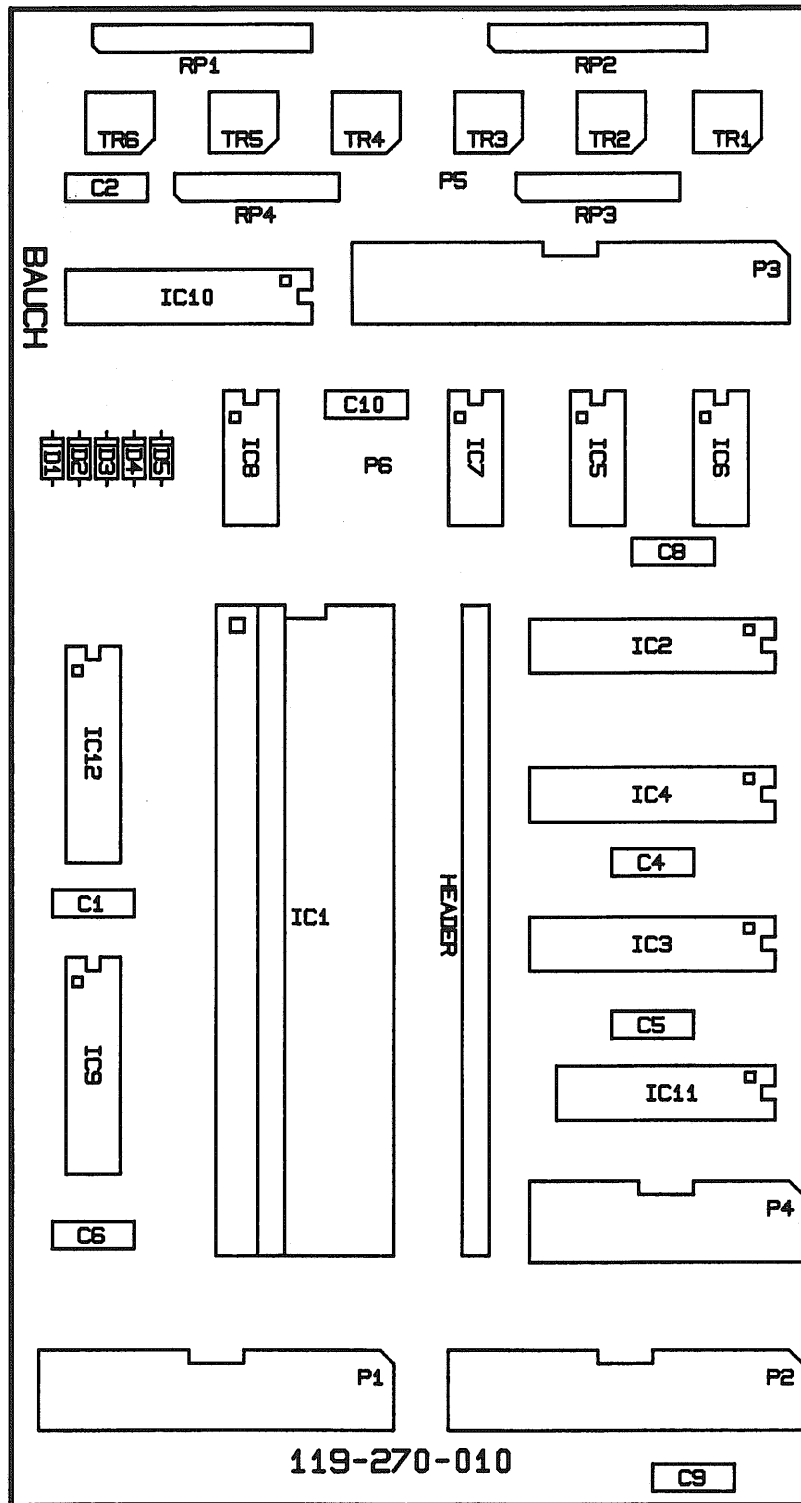
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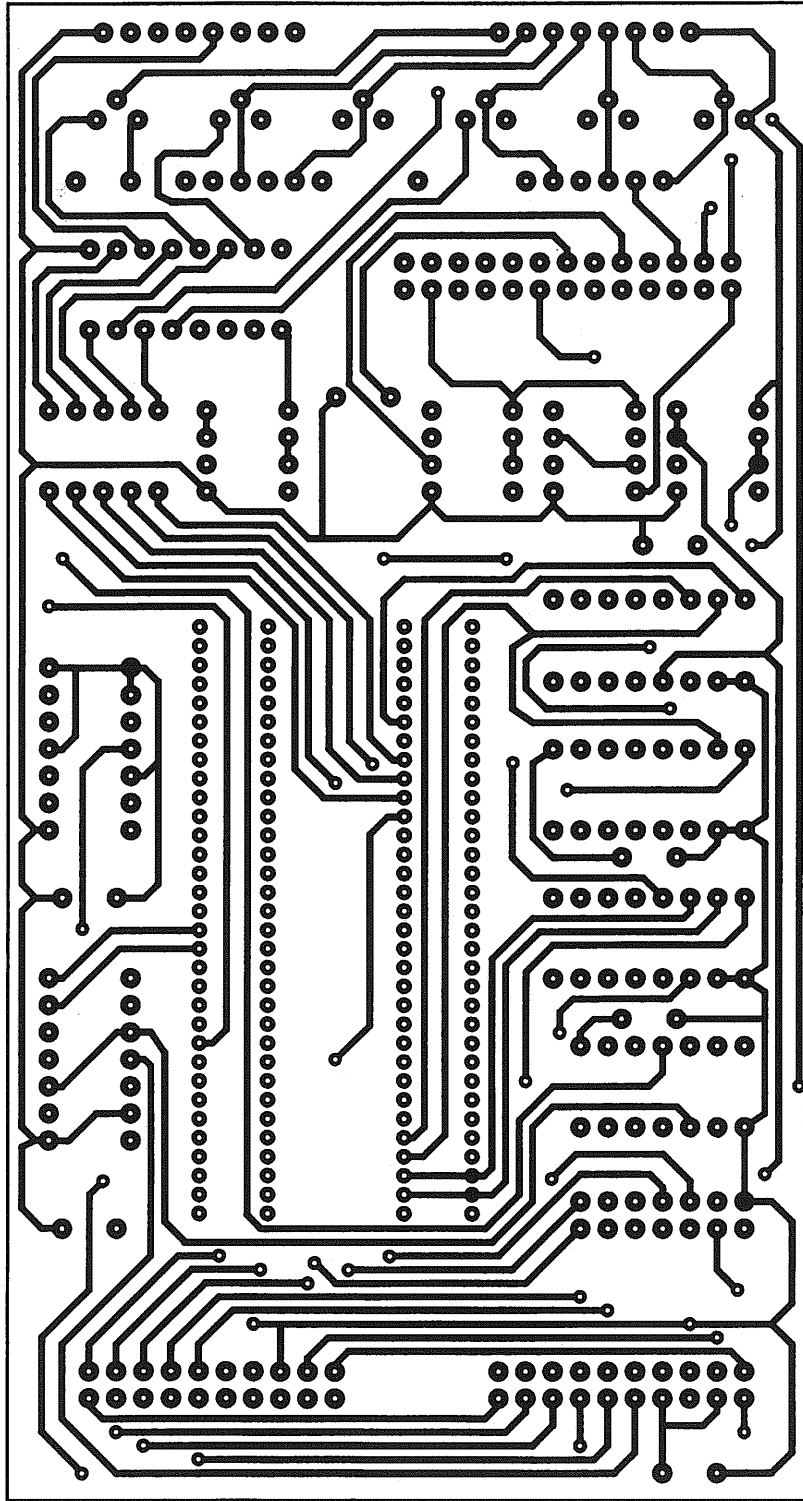
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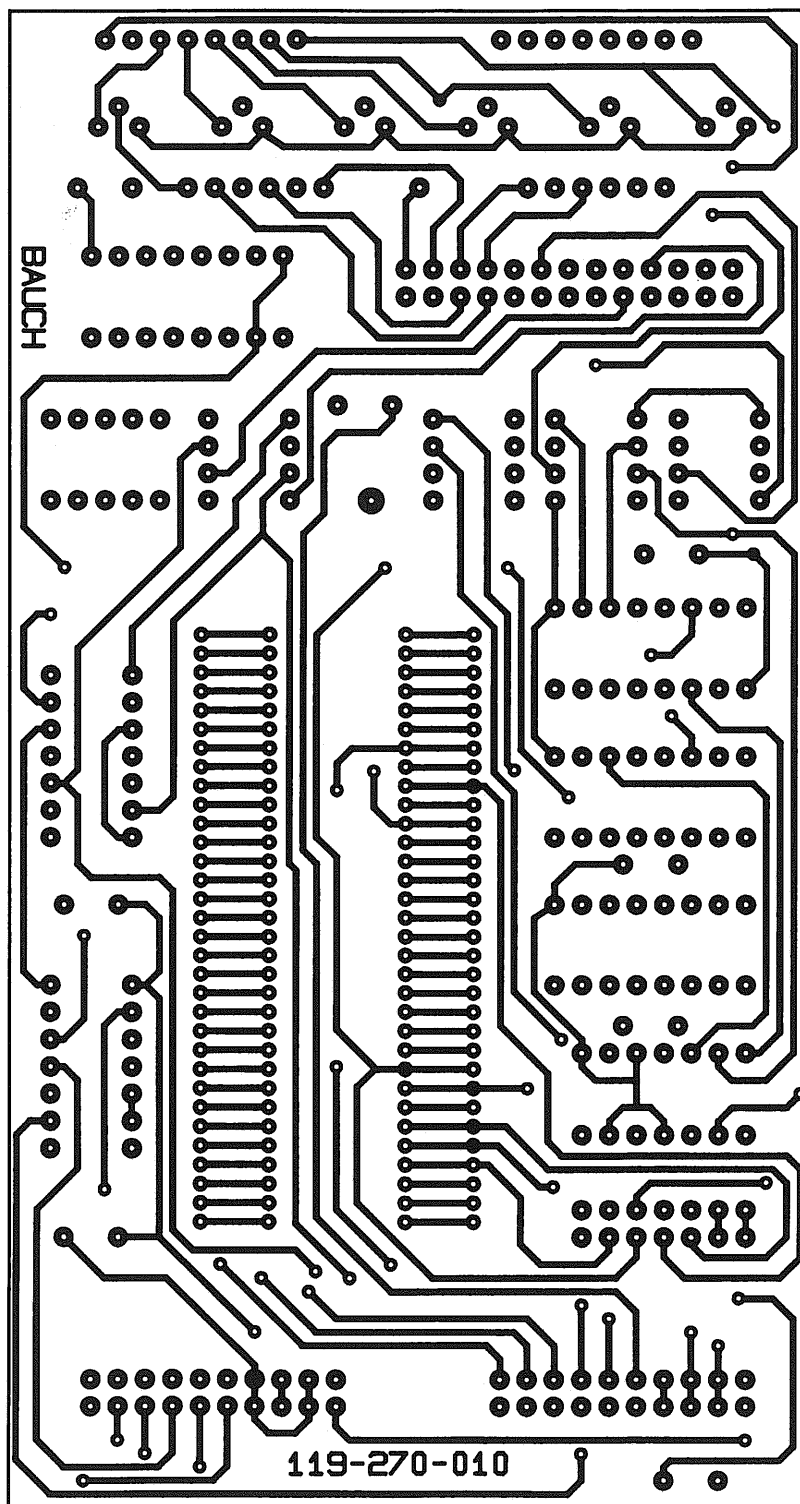
PARALLEL INTERFACE FOR C-270 TC





REVOX REMOTE INTERFACE 119-270-010						
Comp. Ref.	Description	Value	Part No.	Manufacturer	Supplier	Quantity
IC1	Microprocessor	HD367	1.777.402.21	Hitachi	Revox	1
IC2-4	8 Bit Shift Register	HC4094	CD74HC4094E	Texas	Farnell	3
IC5	Dual Peripheral Driver	75462	SN75462P	Texas	Macro	1
IC6	Dual Peripheral Driver	75461	SN75461P	Texas	Macro	1
IC7	Dual Peripheral Driver	75464	SN75464P	Texas	Macro	1
IC8 ***	Dual Peripheral Driver	75462	SN75462P	Texas	Macro	1
IC9	Quad 2 input AND gate	HC08	SN74HC08N	Texas	Farnell	1
IC10	Tri State Hex Inverter	HC368	SN74HC368N	Texas	Farnell	1
IC11	Hex Inverter	HC04	SN74HC04N	Texas	Farnell	1
IC12	Dual 'D' Type Latch	HC74	SN74HC74N	Texas	Farnell	1
TR1-6	Transistor	-	BC212B	Motorola	Macro	6
D1-5	Diode	-	BAT85	-	Farnell	5
C1-7	Capacitor	0.1uF	146-079	Dubilier	Farnell	7
C8	Capacitor	3.3nF	143-688	Wima	Farnell	1
RP1-2	SIL Resistor	10K	090507XM	AB	STC	2
RP3-4	SIL Resistor	33K	020029R	AB	STC	2
P1	Transition Connector	20 Way	609-2053	T & B	Farnell	1
P2	PCB Header	20 Way	609-2027	T & B	Farnell	1
P3	PCB Header	26 Way	609-2627	T & B	Farnell	1
P4	PCB Header	14 Way	609-1427	T & B	Farnell	1
P5	Flying Lead	-	-	-	-	1
ICS1	IC Socket	64 Way	175-967	Harwin	Farnell	1
ICS2-3	SIL Socket	32 Way	720-32-SD-D	Jay-Tec	-	2
HD1	Through Header	64 Way	-	Jay-Tec	-	1
P6	Spacer	17mm	17/6/2.5	-	Farnell	1
PCB	Double Sided TPH	-	119-270-010	Stev. Circuits	-	1
REM	Remote Loom Assy.	25 Way	-	Bauch	-	1
***	SN75461 was used on early units, reversing the sense of the direction signal.					





ADJUSTMENTS FOR C-270 TC

TEST PROCEDURE FOR ASC C270 TIMECODE BOARD. (PRE
INSTALLATION).

TEST EQUIPMENT,

SCOPE

AUDIO TEST SET
TIMECODE GENERATOR
C270 TEST MACHINE
TC12 TIMECODE TEST SET

TEST LEADS,

20 WAY EXTENSION CABLE
8 WAY EXTENSION CABLE
5 WAY EXTENSION CABLE
PHONO TO MALE XLR
BNC TO BNC
SCOPE PROBE
2 * XLR TO XLR LEADS

TEST TAPE,

320nW TEST TAPE
PRE RECORDED CENTRE TRACK TIMECODE TAPE
1/4 INCH TAPE UNRECORDED
FULL TRACK TIMECODE TAPE 15 AND 7.5 IPS

TEST PROCEDURE; MICRO BOARD,

1. CONNECT A KNOWN WORKING ANALOGUE BOARD AND MICRO BOARD UNDER TEST TO THE TEST SET UP (SEE DIAGRAM 1.).
2. POWER UP -CHECK THAT GOOD CODE AND RECORD LEDS ILLUMINATE FOR 0.5 SECONDS APROX THEN GO OUT.
3. SWITCH ON TIMECODE GENERATOR AND DEPRESS RECORD READY SWITCH (TIMECODE) THE RECORD LED SHOULD FLASH AND THE GOOD CODE LED ILLUMINATE.
4. LOAD UNRECORDED 1/4 INCH TAPE ONTO MACHINE AND PLACE INTO RECORD -CHECK THAT TIMECODE RECORD LED ILLUMINATES CONTINUOUSLY. WHEN MACHINE IS OUT OF RECORD MODE TIMECODE LED SHOULD REVERT BACK TO FLASHING.
5. CHECK FOR TIMECODE AT OUTPUT XLR USING AUDIO TEST SET.

TEST PROCEDURE; ANALOGUE BOARD,

1. CONNECT A KNOWN WORKING MICRO BOARD AND ANALOGUE BOARD UNDER TEST TO THE TEST SET UP (SEE DIAGRAM 1.).
2. SET ALL PRESETS ON ANALOGUE BOARD TO MIDWAY POSITION.
3. POWER UP -CHECK THAT GOOD CODE AND RECORD LEDS ILLUMINATE FOR 0.5 SECONDS APROX THEN GO OUT.
4. LOAD PRE-RECORDED CENTRE TRACK TIMECODE TAPE ONTO MACHINE

AND PLAY.

5. COMPARATOR LEVEL ADJUST VR7.

TURN VR7 UNTIL GOODCODE LED ILLUMINATES. AFTER DETERMINING THE RANGE IN WHICH THE GOOD CODE LED ILLUMINATES BY TURNING VR7 IN THE CLOCKWISE AND COUNTER CLOCKWISE DIRECTIONS, SET VR7 TO THE CENTRE OF THIS RANGE. (SEE DIAGRAM 2.)

DEPRESS TIMECODE RECORD READY SWITCH SO THAT RECORD LED FLASHES, TURN TIMECODE GENERATOR ON AND CHECK THAT GOOD CODE LED ILLUMINATES.

6. MPLL ADJUST VR4.

MONITOR TP9 WITH SCOPE, PLAY CT TIMECODE TAPE AND ADJUST VR4 FOR MINIMUM JITTER ON WAVEFORM (SEE WAVEFORM DRAWING 1). STOP TAPE THEN START IT AGAIN, NOTE MENTALLY THE TIME IT TAKES FOR THE GOODCODE LED TO ILLUMINATE, ADJUST VR4 FOR QUICKEST LOCK TIME. COMPROMISE VR4 SETTING BETWEEN QUICKEST LOCK TIME AND LEAST JITTER ON WAVEFORM. (SEE DIAGRAM 3).

7. SPLL ADJUST VR1.

MONITOR TP6 WITH SCOPE, PLAY CT TIMECODE TAPE AND ADJUST VR1 FOR MINIMUM JITTER ON WAVEFORM (SEE WAVEFORM DRAWING 1).

8. LOAD UNRECORDED 1/4 INCH TAPE ONTO MACHINE. DEPRESS TIMECODE RECORD READY SWITCH SO THAT RECORD LED FLASHES, PLACE MACHINE INTO RECORD. ENSURE THAT TIMECODE GENERATOR IS SWITCHED OFF.

9. OSCILLATOR LEVEL ADJUST VR6.

MONITOR TP3 WITH SCOPE AND ADJUST VR6 SO THAT THE SINEWAVE MEASURES 10V P-P. ENSURE THAT THE WAVEFORM IS UNDISTORTED AND THAT ITS FREQUENCY IS 100KHz +/- 15KHz. (FULL CYCLE 10uS). (SEE WAVEFORM DRAWING 2).

10. BIAS TRAP ADJUST L1.

MONITOR TP1 WITH SCOPE AND ADJUST L1 FOR MINIMUM SIGNAL (SEE WAVEFORM DRAWING 3).

11. BIAS LEVEL ADJUST VR5.

MONITOR TP2 WITH SCOPE AND ADJUST VR5 SO THAT THE SINEWAVE MEASURES 25V P-P. ENSURE THAT THE WAVEFORM IS UNDISTORTED. STOP MACHINE.

12. OUTPUT LEVEL ADJUST VR3.

MONITOR TIMECODE OUTPUT XLR WITH AUDIO TEST SET (INPUT Z SET TO 600R) SWITCH ON TIMECODE GENERATOR AND DEPRESS TIMECODE RECORD READY SWITCH SO THAT GOOD CODE LED ILLUMINATES. ADJUST VR3 SO THAT OUTPUT LEVEL IS +4dBu.

13. RECORD LEVEL ADJUST VR2.

LOAD 320nW TEST TAPE ONTO MACHINE. REPLAY 1KHz TONE. MONITOR TP8 WITH AUDIO TEST SET (INPUT Z SET TO 10K) AND NOTE LEVEL, -13dBu +/- 3dB. LOAD UNRECORDED 1/4 INCH TAPE ONTO MACHINE AND RECORD 15 SECONDS OF TIMECODE ONTO IT, REWIND, AND PLAYBACK. IF LEVEL IS NOT THE SAME AS THAT NOTED EARLIER ADJUST VR2 (CLOCKWISE TO INCREASE LEVEL ANTICLOCKWISE TO REDUCE LEVEL). RERECORD AND RECHECK. REPEAT UNTIL CORRECT. NOTE; ADJUSTMENT OF VR2 WILL NOT EFFECT OUTPUT LEVEL.

14. LIMITER OPERATION CHECK.

MONITOR TP7 WITH SCOPE. PLAYBACK PRERECORDED TIMECODE TAPE AND OBSERVE WAVEFORM. IT SHOULD RESEMBLE THAT IN WAVEFORM DRAWING 4 AND SHOULD BE 20 V P-P APPROX. DEPRESS TIMECODE RECORD READY SWITCH, CHECK THAT WAVEFORM LEVEL IS STILL 20 V P-P APPROX AND THAT IT IS A SIMILAR SHAPE TO THAT OFF TAPE. WHEN THERE IS NO SIGNAL PRESENT CHECK THAT LIMITER OUTPUT NOISE IS LESS THAN 1 V P-P.

15. ADEQUATE OPERATION CHECK.

RECORD 2 MINUTES OF TIMECODE ONTO CLEAN 1/4 INCH TAPE, REWIND AND REPLY. CHECK THAT GOOD CODE LED REMAINS ILLUMINATED THROUGHOUT THE 2 MINUTES OF CODE. ENSURE THAT CODE CAN BE RECOVERED IN FAST AND SLOW VARISPEED. IF THIS CANNOT BE ACHIEVED RECHECK PREVIOUS ADJUSTMENTS.

16. OFFSET CHECK.

CONNECT TC12 MEASURING SET TO TIMECODE OUTPUT XLR AND AUDIO OUTPUT CHANNEL 1 (ENSURE THAT OUTPUT ON C270 IS SET TO CALIBRATED). LOAD FULL TRACK TIMECODE TAPE (15 IPS) ONTO MACHINE AND PLAY, MEASURE TIME DIFFERENCE BETWEEN THE TWO OUTPUTS. SHOULD BE AS FOLLOWS;-

0mS +/- 2mS AT 15 IPS REPLAY HEAD.
0mS +/- 2mS AT 15 IPS SYNC HEAD.

CHANGE FULL TRACK TIMECODE TAPE TO 7.5 IPS. ALTER SPEED OF MACHINE TO 7.5 IPS. MEASURE TIME DIFFERENCE BETWEEN THE TWO OUTPUTS. SHOULD BE AS FOLLOWS;-

0mS +/- 2mS AT 7.5 IPS REPLAY HEAD.
0mS +/- 4mS AT 7.5 IPS SYNC HEAD.

DIAGRAM 1

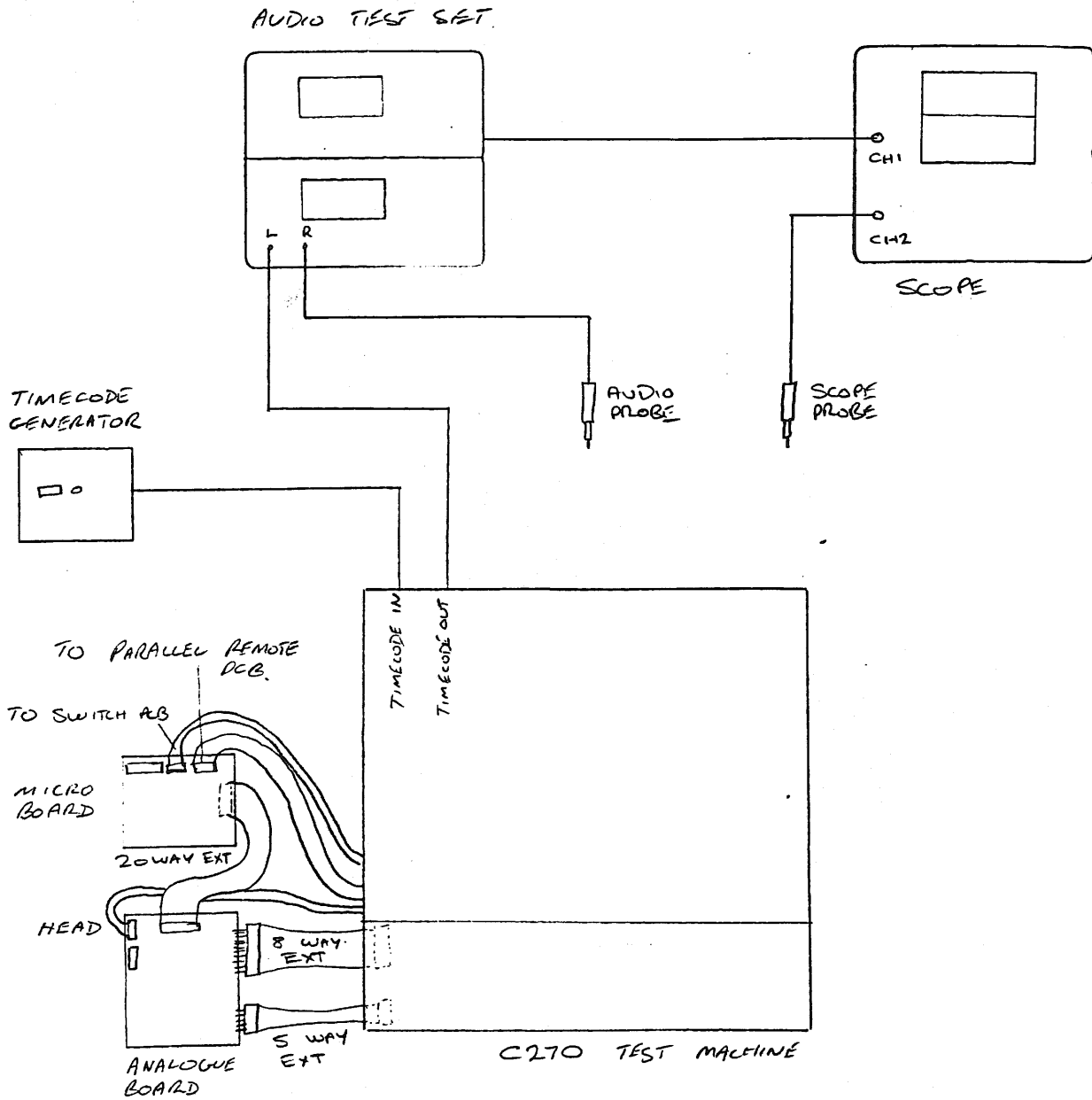


DIAGRAM 2

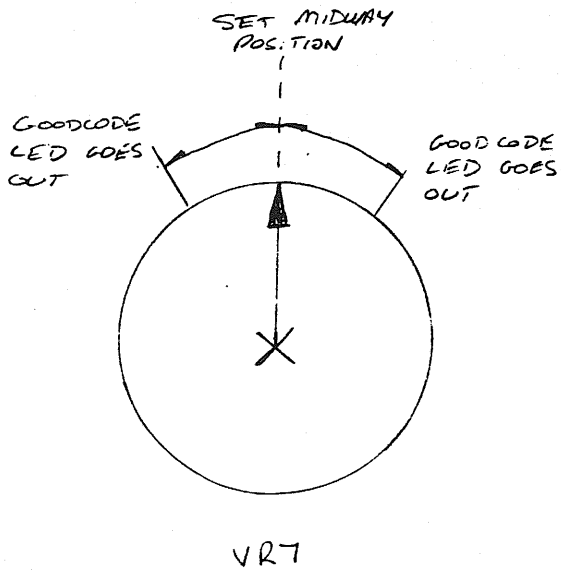
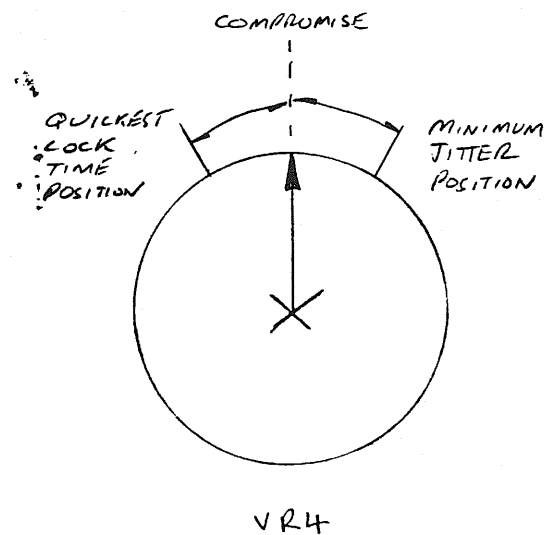
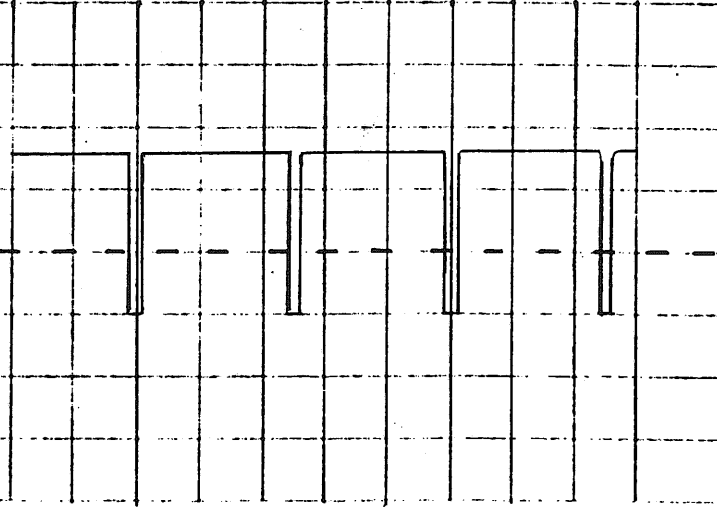


DIAGRAM 3



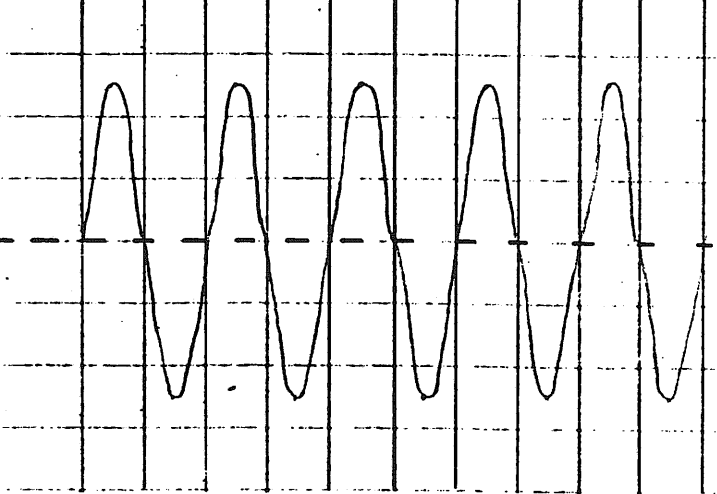
NAME FORM SHEET FOR C270 TIMECODE

1 | TP9 / TP6 PLL JITTER



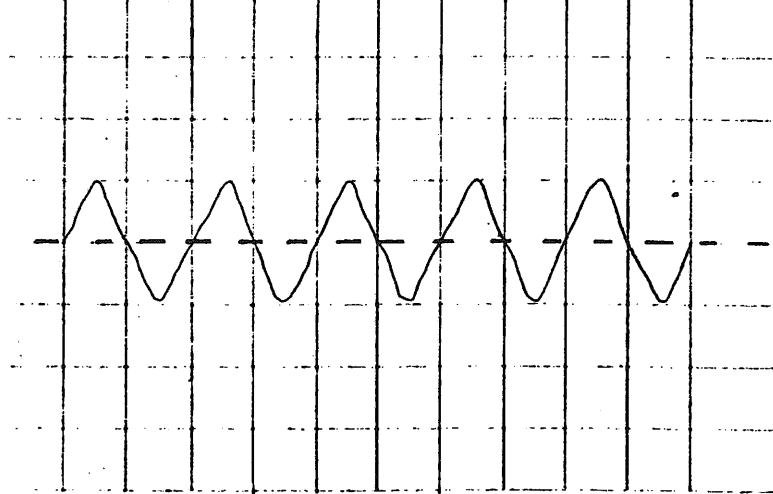
VOLTS / DIV 2V TIME / DIV 0.2ms

2 | TP3 OSCILATOR LEVEL



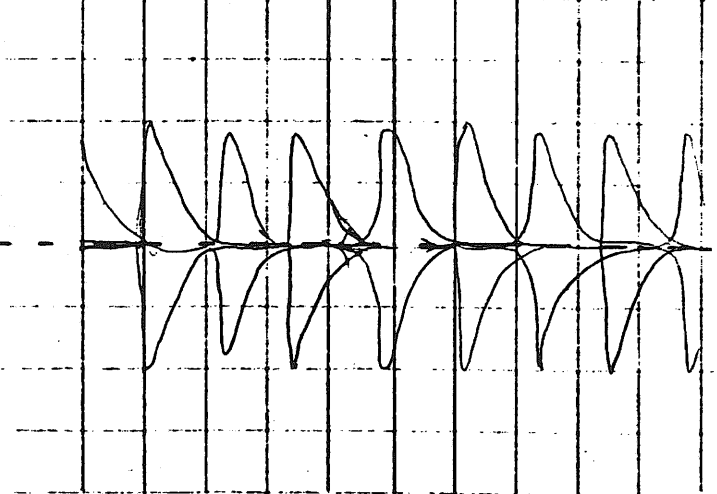
VOLTS / DIV 2V TIME / DIV 5μs

3 | TP1 BIAS TRAP



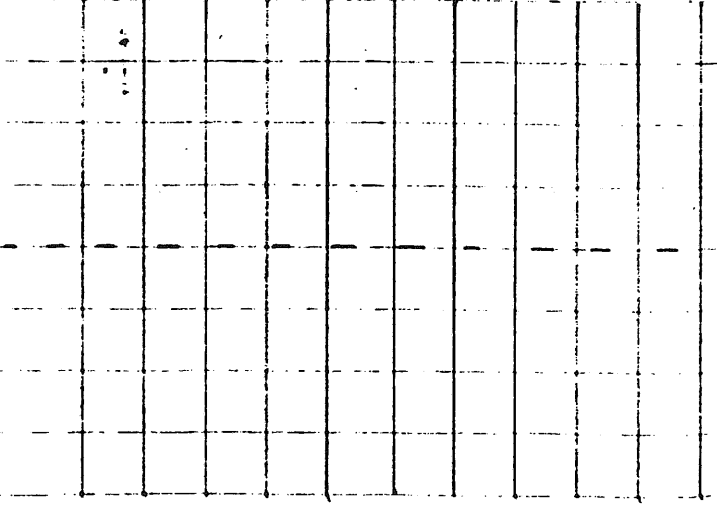
VOLTS / DIV 100mV TIME / DIV 5μs

4 | TP7 LIMITER OUTPUT



VOLTS / DIV 5V TIME / DIV 0.2ms

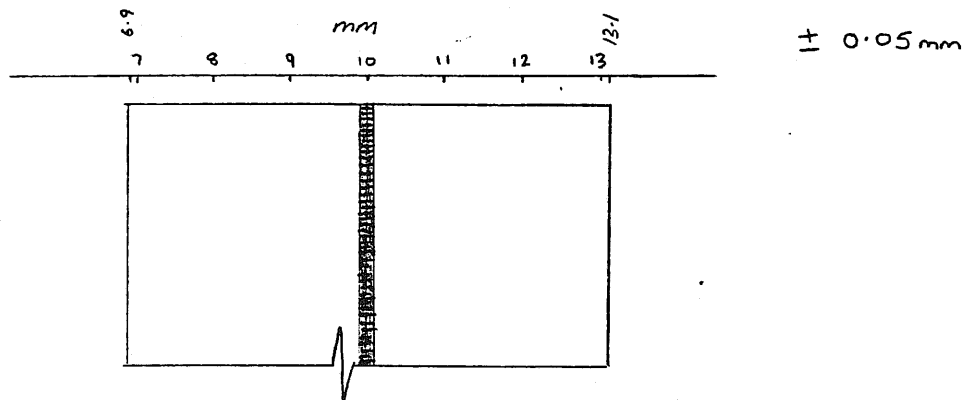
6 |



VOLTS / DIV TIME / DIV

TIMECODE HEAD LINE UP C270.

1. LOAD CLEAN 1/4 INCH TAPE ONTO MACHINE.
2. PLACE MACHINE INTO PLAY AND LINE UP HEAD BY EYE (HEIGHT, AZIMUTH AND ZENITH).
3. RECORD 10 SECONDS OF TIMECODE ONTO START OF TAPE.
4. REPLAY TIMECODE AND CHECK THAT GOODCODE LED ILLUMINATES.
5. STOP MACHINE AFTER 4 SECONDS
6. USING TAPE SPLICER CUT OUT A 2 INCH LENGTH OF TAPE MAKING SURE THAT THE TOP SIDE OF THE TAPE IS KNOWN.
7. SPRAY MAGNETIC IRON OXIDE ONTO THE SECTION OF TAPE AND WAIT UNTIL IT DRIES.
8. VIEW TAPE WITH MAGNIFIER AND ENSURE THAT CENTRE TRACK CODE LINE IS TO THE FOLLOWING SPECIFICATION;-



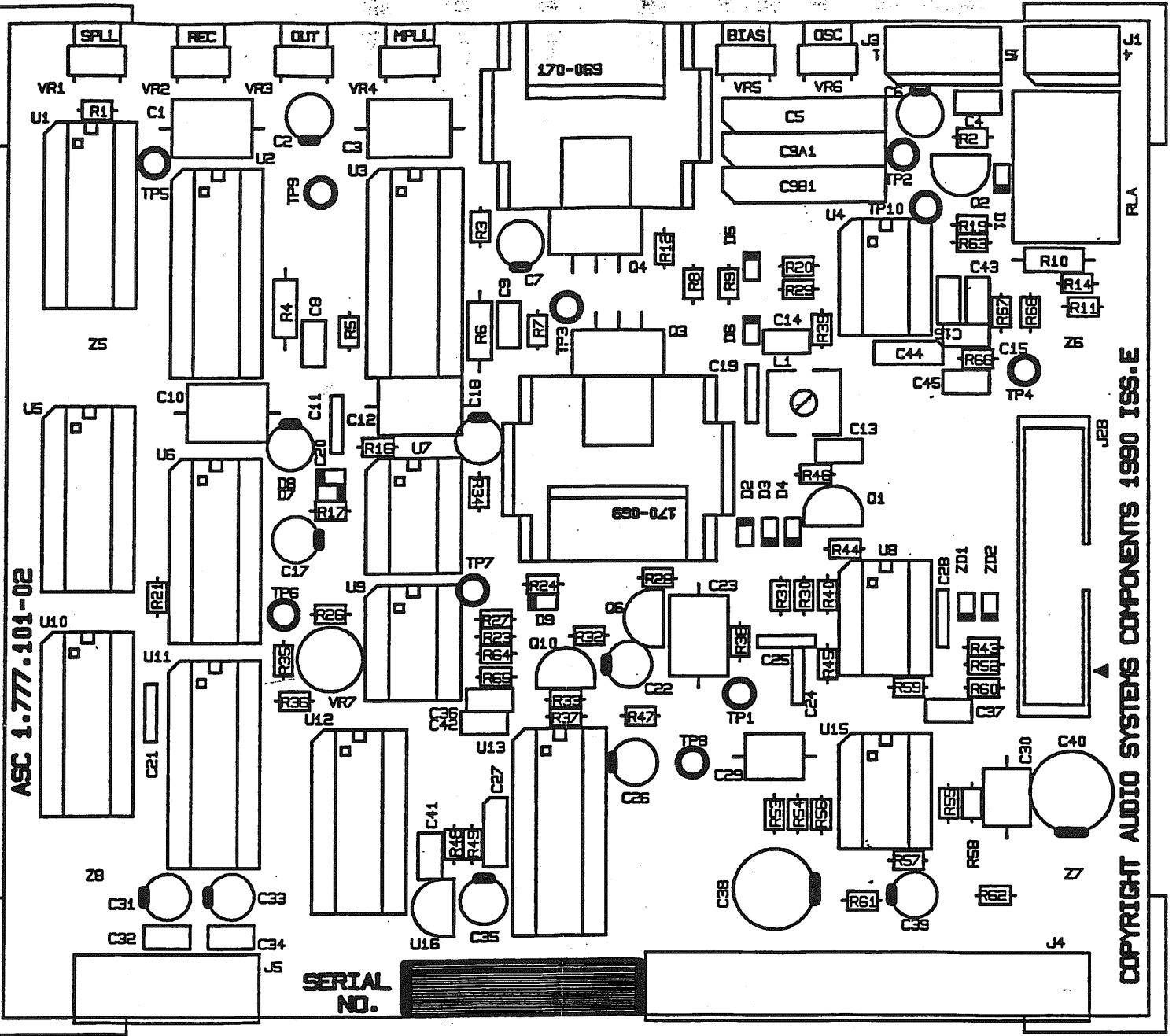
9. IF IT IS NOT WITHIN 0.05mm ADJUST HEAD AND REPEAT STEPS 3 TO 9.
10. SEAL ADJUSTING SCREWS WITH LACQUER.

NOTE:- IT MAY BE NECESSARY TO RE-ADJUST TIME CODE HEAD AFTER A NEW PINCH ROLLER HAS BEEN FITTED.

2mm GUARD BAND ERASE HEAD LINE UP.

1. ENSURE THAT ERASE HEAD IS CENTRALIZED TO TAPE. IF NOT ADJUST HEIGHT USING SPACERS.
2. ENSURE THAT TAPE TO HEAD CONTACT IS MAXIMIZED. IF NOT LOOSEN SECURING SCREW AND ROTATE HEAD UNTIL IT IS, THEN RE-TIGHTEN SCREW.
3. ONCE ADJUSTMENTS HAVE BEEN MADE SEAL SECURING SCREW WITH LACQUER.

ASC 1-777-101-02



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Lageplan des Testpunkte TP1 ... TP10
auf analogem TC Print 1.777.101.02

