MCI JH-10

MCI SERVICE LETTER #6

Sub-Logic Boards

Several recent JH-10 transport problems, both in the field and during machine test at MCI, have been traced to excessive leakage or breakdown (shorting) of C1 (15mfd/25V) on the sub-logic board. As a preventive measure we are enclosing a replacement capacitor for C1 (15mfd/35V). Please replace C1 at your earliest convenience.

The symptom related to this problem is the failure of the deck to accept either fast motion commands or play commands. This may only occur intermittently. All failures of this type are recent and are probably due to a faulty batch of capacitors rather than a design flaw.

Claude J. Hill, Jr.
Marketing/Engineer

July 31, 1972

MCI

SERVICE BULLETIN

PRODUCT JH-16

BULLETIN NO. 103

DATE JULY 20, 1976

P.C. BD. Analog Torque No. 25D30 (Used with JH-100 Transport)

ECO No. 247 THIS ECO APPLIES TO SYSTEMS USING JH-100 TRANSPORT ONLY

THIS IS AN OPTIONAL CHANGE

DESCRIPTION:

Add a 100 pf disc cap in parallel with R138 and R140

REASON FOR CHANGE:

To suppress spurious oscillations in the 7415 Driver chips.

COMPONENT REQUIREMENTS:

(2) 100 pf 1 kv disc caps.

MCI

PRODUCT JH-16 RECORDER

SERVICE BULLETIN

BULLETIN NO. 106

DATE OCTOBER 4, 1976

MAINTENANCE PRECAUTION:

DO NOT PLACE ALL CHANNELS *(or a majority of channels)* ON ANY 16 OR 24 TRACK RECORDER INTO RECORD MODE WITHOUT TAPE MOVING ACROSS THE HEADS.

THIS IS PARTICULARLY TRUE OF MACHINES USING NORTRONICS ERASE HEADS.

REASON:

The tape acts as a heat sink, preventing a possible head burn-up.

MCI

SERVICE BULLETIN

PRODUCT JH-16 RECORDER

BULLETIN NO. 108

DATE NOVEMBER 12, 1976

P.C. BD. JH-24 Audio Power Supply NO. 25D545

ECO NO. 326 IN NEW PRODUCTION ON SERIAL NO. 408

THIS IS AN OPTIONAL CHANGE

REASON FOR CHANGE:

To suppress "punch-in" noise when in CUE mode.

DESCRIPTION OF CHANGE:

Add 4.7 mfd - 63 VDC cap from pin 11 to pin 9 of J4. (+ at pin 11)

COMPONENT REQUIREMENT:

(1) 4.7 mfd - 63 VDC cap

MCI

SERVICE BULLETIN

PRODUCT JH-10

BULLETIN NO. 112

DATE MARCH 30, 1977

P.C. BD. JH-100 Transport Analog Torque Bd. No. 26D1

ECO No. 68

THIS IS AN OPTIONAL CHANGE

MCI KIT 2500-0030-00 is available for this change

REASON FOR CHANGE:

When thin tapes are used on JH-100 transports, the tension can be great enough to stretch the tape. If the customer has this problem, limit the torque by adding the components described below.

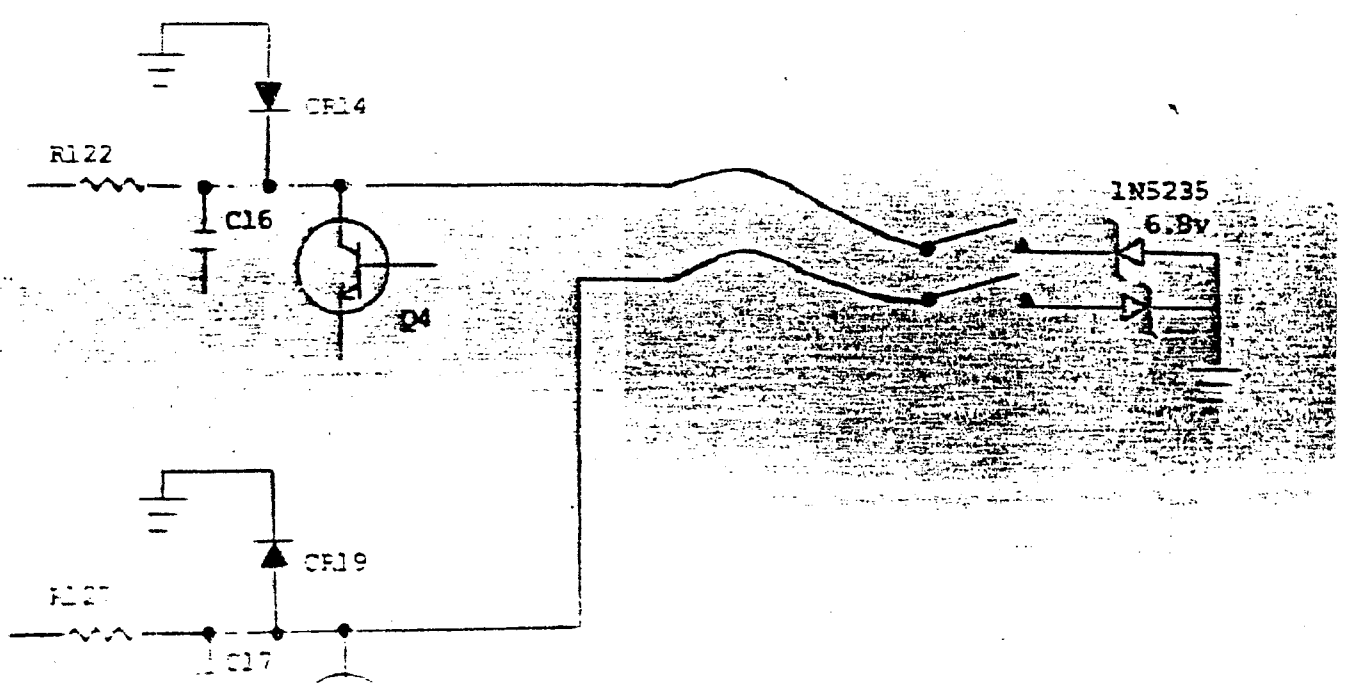
DESCRIPTION OF CHANGE:

Diodes CR14 and CR15 must be shunted by 6.8v zeners (1N5235) to limit the back-bias voltage. The zeners must have the same polarity as the diodes:

If the machine is to used for BOTH thin tapes and regular tapes, a DPST switch should be installed as follows:

Mount a mini-toggle switch in one of the vent slots in the transport electronics chassis. Connect as follows:

NOTE: CR19 on schematic is labeled CR17 on the board



MCI

SERVICE BULLETIN

PRODUCT 3H-16

BULLETIN NO. 112 A

DATE May 8, 1977

P.C. Bd. Control Card NO. 9D117

ECO. 210 IN NEW PRODUCTION ON SERIAL NO. 486

THIS IS AN OPTIONAL CHANGE

REASON FOR CHANGE:

To improve the HEAD ROOM in the audio amplifier.

DESCRIPTION OF CHANGE:

Remove R12

COMPONENT REQUIREMENT:

NONE

MCI

SERVICE BULLETIN

PRODUCT JH-16

BULLETIN NO. 113

DATE APRIL 28,1977

CONTROL CARD RELAY REPLACEMENT

MCI has developed an FET switching circuit to replace the reed relays on the control card of the JH-16. The circuit results in total compatibility and direct substitution for the relays. The circuit can be mixed with relays with no apparent difference in specifications or performance.

A different PC board must be used for K1 and K2.

If specifically requested, Service will send the new FET boards for replacement of electrol relays which have failed in machines still under warranty.

The replacement cost of the FET board is $7.25 list; for the Cue/Repro relay order PCA 9000-0129-01; for the Tape/Input relay order PCA 9000-0129-02.

A kit of eight sets of replacement boards and instructions is available for $100.00 list. To order a kit, reference part number K[illegible] 9000-0129-00.

MCI

SERVICE BULLETIN

PRODUCT JH-16

BULLETIN NO. 114

DATE AUGUST 24, 1977

THIS IS AN OPTIONAL CHANGE FOR SERIAL NUMBERS 486 THROUGH 520

REASON FOR CHANGE: Complaints from the field point out that the FET Cards which replace the mechanical relays on the Control Cards are more noisy than the relays during Punch-in in Auto mode.

This change reduces this noise to the level produced by the mechanical relays.

DESCRIPTION OF CHANGE:

1. K1 replacement card PCA9000B0124-00A (mounted on each Control Card)

   Clip out C1

   Change C3 from .1 mfd to 1.0 mfd 55v. (observe polarity)

   SEE SKETCH BELOW

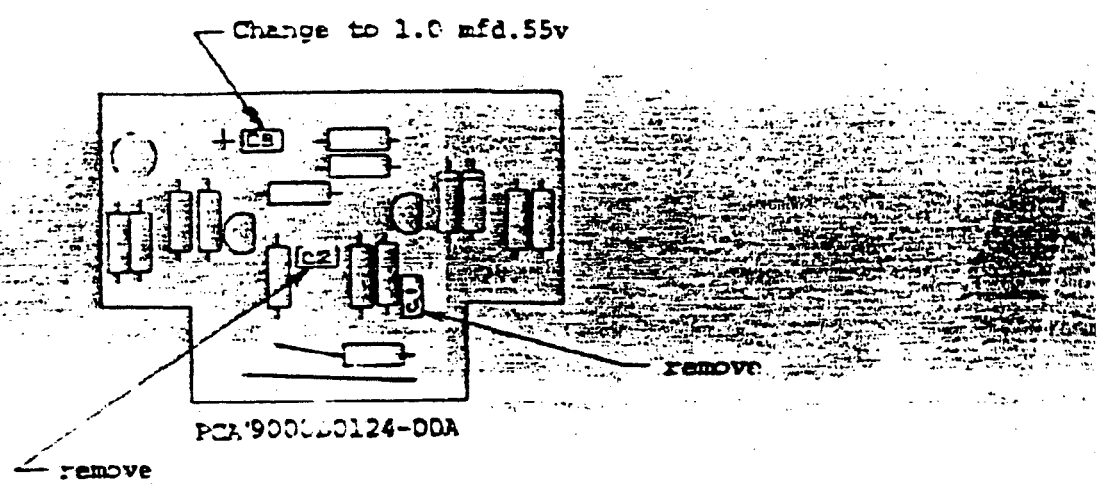
DO NOT MAKE THESE CHANGES ON THE K2 REPLACEMENT CARD.

2. A few of these ca... have a 2.2 mfd cap.(C2). This cap was deleted in later production. IF you are making the changes and IF the Card has a C2 *(See sketch below)* clip it out.

   If the K1 replacement Card has a C2 on it, the K2 replacement Card will also have a C2. Clip out C2 on BOTH cards.

COMPONENT REQUIREMENT:

(1) 1.0 mfd.55v cap per Control Card



MCI

SERVICE BULLETIN

PRODUCT JH-16

BULLETIN NO. 115

DATE OCTOBER 14, 1977

P.C.BD. BIAS AMPLIFIER NO. 9000-0104

ECO NO. 458 IN NEW PRODUCTION ON SERIAL NO. _____

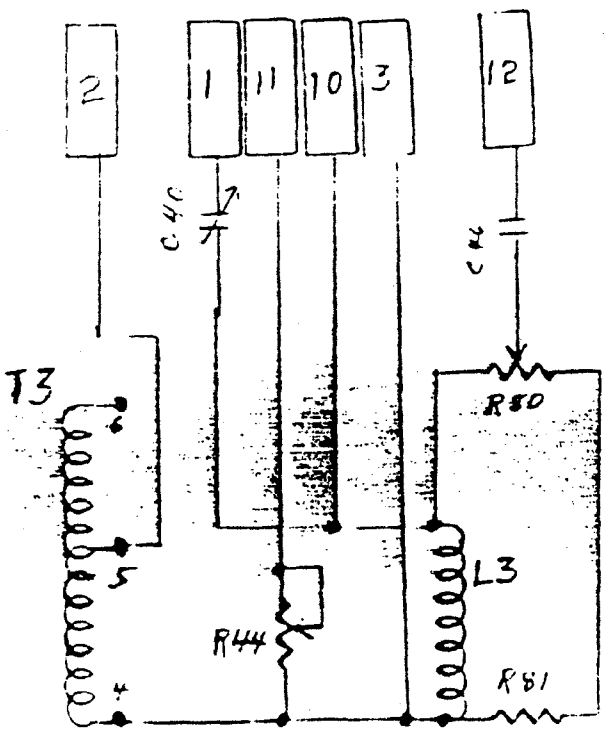
THIS IS A MANDATORY CHANGE FOR RECORDERS USING WOELKE ERASE HEADS ONLY

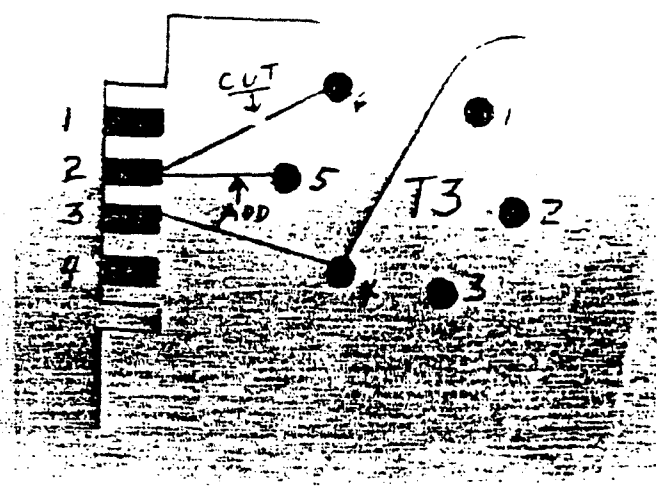
REASON FOR CHANGE: When using WOELKE ERASE HEADS, some interaction has been noted between channels. Also excessive adjustment has been needed when changing between 24 TRK and 16 TRK head assemblies.

DESCRIPTION OF CHANGE: *SEE THE SKETCH BELOW*

1. Cut the land between Pin 6 of T3 and Pin 2 of the edge connector.
2. Add a bus wire from Pin 5 of T3 to Pin 2 of the edge connector.
3. Change R81 from [illegible] kΩ to 240Ω.

COMPONENT REQUIREMENT: per bias card - (1) 240Ω 1/2w 5%





MCI

SERVICE BULLETIN

PRODUCT JH-16

BULLETIN NO. 116

DATE OCTOBER 14, 1977

P.C. BD. BIAS AMPLIFIER No. 9000-0125

ECO No. 458 IN NEW PRODUCTION ON SERIAL NO. _____

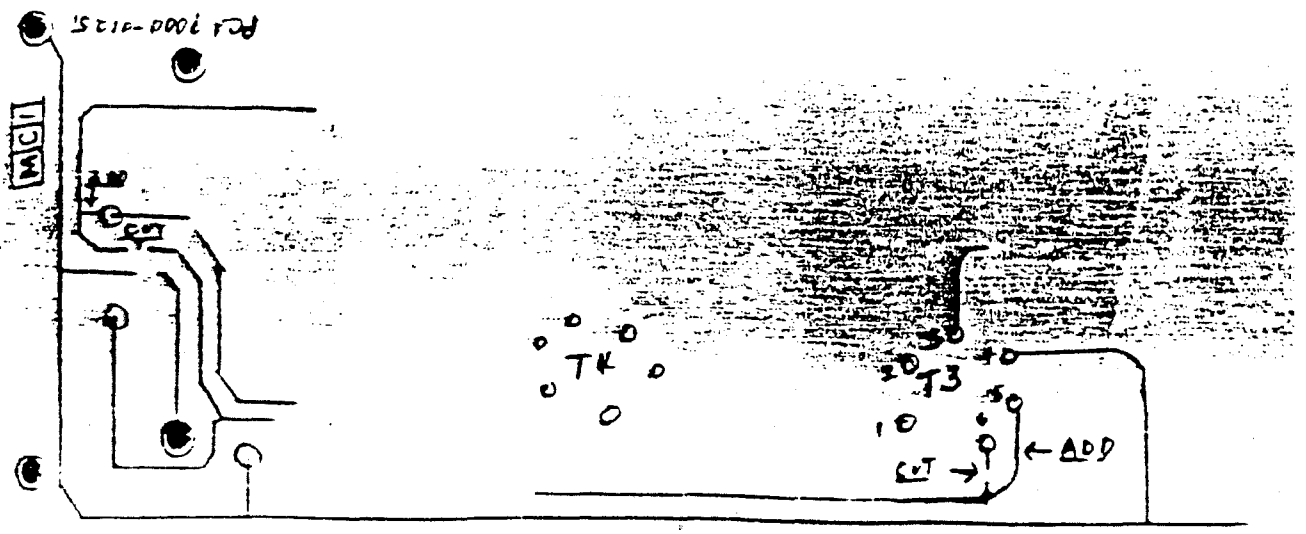
THIS IS A MANDATORY CHANGE FOR RECORDERS USING WOELKE ERASE HEADS ONLY

REASON FOR CHANGE: When using WOELKE ERASE HEADS, some interaction has been noted between channels. Also excessive adjustment has been needed when changing between 24 TRK and 16 TRK head assemblies.

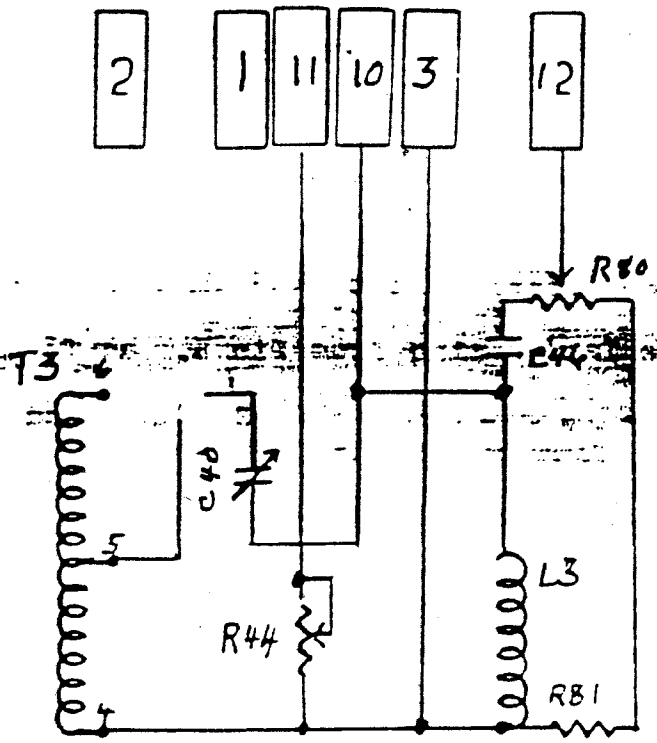
DESCRIPTION OF CHANGE: *SEE THE SKETCH BELOW and SCHEMATIC on next page*

1. Remove C47, replace with bus wire.
2. Cut the land between C47 and C40(trimmer)
3. Connect the output side of C40 *(connects to Pin 10 of the edge connector)* to the land which formerly came from C47.
4. Cut the land coming from Pin 6, at T3. *This land goes to C40.*
5. Install a bus wire from Pin 5, T3 to the land cut in the step above. *(Connects T3, Pin 5 to C40).*
6. Change R83 from 100Ω to 47Ω.
7. Change C42 from .01μf to .012μf.

COMPONENT REQUIREMENT: per BIAS card - (1) 47Ω 1/2 w 5%.
(1) .012μf cap.



MCI #116



MCI

SERVICE BULLETIN

PRODUCT JH-16

BULLETIN NO. 117

DATE OCTOBER 14,1977

ALTERNATE ERASE ALIGNMENT FOR CARDS MODIFIED ACCORDING TO BULLETINS NO. 115 & 116 ONLY *(For use with WOELKE ERASE HEADS only)*

This alternate alignment procedure insures minimum interaction between channels and improves interchangeability between 24 Trk and 16 Trk Head assemblies.

THIS IS A MODIFICATION OF THE PROCEDURE IN SECTION 5.9.6 OF THE JH-16 MANUAL. *(Each step is fully explained in the manual).*

1. With all channels in RECORD, set the Master Oscillator for Frequency and for Symmetry. *(Step #1 in the Manual).*

2. Switch all channels OUT of RECORD mode except for the one channel you are going to align.

3. Tune transformers T3 and T4. *(Steps #2 and #3 in the Manual).* Turn the ERASE TRIMMER for Peak voltage on the ERASE OUTPUT *(The TOP TEST POINT on the EXTENDER card).*

4. Turn the ERASE TRIMMER counter-clockwise until the ERASE voltage drops by 3 to 5 volts.

   DO NOT LEAVE THE ERASE VOLTAGE AT PEAK.
   TEST YOUR SETTING BY PLACING THE CHANNEL INTO AND OUT OF RECORD A FEW TIMES. THE ERASE VOLTAGE MUST RETURN TO THE ORIGINAL LEVEL *(3 to 5 volts below peak).*

   If the voltage is not stable *(does not return to the same level)*, then RETUNE for Peak voltage, and turn the trimmer CCW to 5 to 10 volts below Peak. RETEST.

   THIS PROCEDURE MUST BE REPEATED FOR EACH CHANNEL.

   Typical Peak voltages for WOELKE ERASE HEADS:
   24 TRK = 100v rms 16 TRK = 120v rms
   Typical operating voltages for WOELKE ERASE HEADS:
   24 TRK = 90 to 95v rms 16 TRK = 110v rms

5. Switch ALL channels into RECORD and complete the BIAS and RECORD alignment per Manual instructions.

TO IMPROVE INTERCHANGEABILITY BETWEEN 24 TRK AND 16 TRK HEADS, ALIGN THE ERASE AMPS WITH 24 TRK HEADS INSTALLED.

WHEN CHANGING TO 16 TRK HEADS, DO NOT ADJUST THE ERASE TRIMMER. The system will ERASE satisfactorily as it is adjusted. Adjust ONLY the REPRO, RECORD, and CUE levels, and the BIAS voltages.

MCI

SERVICE BULLETIN

PRODUCT JH-16 RECORDER

BULLETIN NO. 118

DATE DECEMBER 9, 1977

P.C. BD. Bias Amplifier No. 9000-0104 & 9000-0125

ECO No. 485 IN NEW PRODUCTION ON SERIAL NO. 563

THIS IS AN OPTIONAL CHANGE FOR RECORDERS USING WOELKE ERASE HEADS ONLY.

NOTE: THIS BULLETIN SUPERCEDES BULLETINS #115, 116, AND 117. THE CHANGES OUTLINED HERE MAKE ALLIGNMENT EASIER WITH ABOUT THE SAME RESULTS IN ERASURE AND BIAS.

IT IS RECOMMENDED THAT THIS SOLUTION BE USED FOR ANY MACHINE WHICH HAS NOT ALREADY BEEN CONVERTED TO THE SCHEMATIC SHOWN IN BULLETINS #115, 116 AND 117.

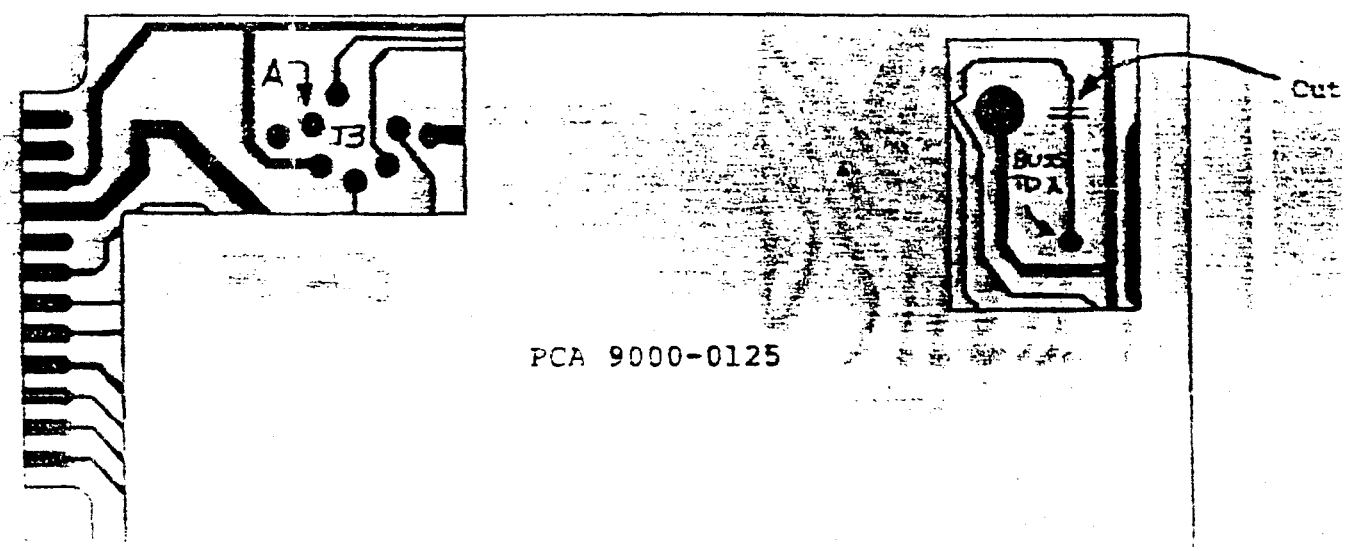
IT IS NOT RECOMMENDED THAT FURTHER CHANGES BE MADE TO A MACHINE THAT HAS ALREADY BEEN CONVERTED.

REASON FOR CHANGE: When using WOELKE ERASE HEADS, some interaction has been noted between channels lso excessive adjustment has been needed when changing between 24 track and 16 track head assemblies.

DESCRIPTION OF CHANGE:

PCA 9000-0125

Cut one land and install one jumper on the circuit side of the board as shown below:



Check the following components and change values when necessary:

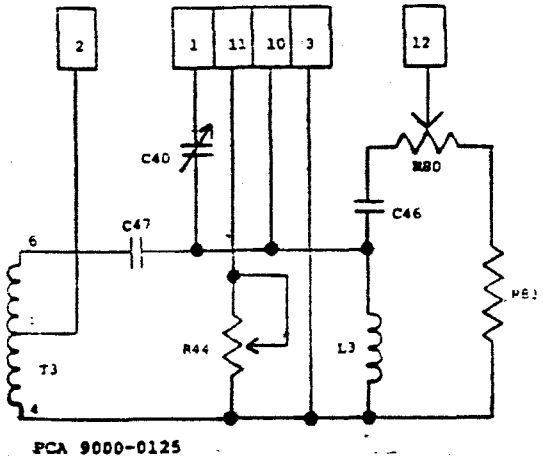
R87 should be 68 ohm
R83 should be 47 ohm
R81 should be 4.7k ohm
L3 should be 2700 mh

C45 should be .01 mfd.
C46 should be 330 pf
C47 should be 1000 pf—silver mica

MC1 #118

Check that you now have C40 connected to terminal 5 of T3
Check that you now have C47 connected to terminal 6 of T3

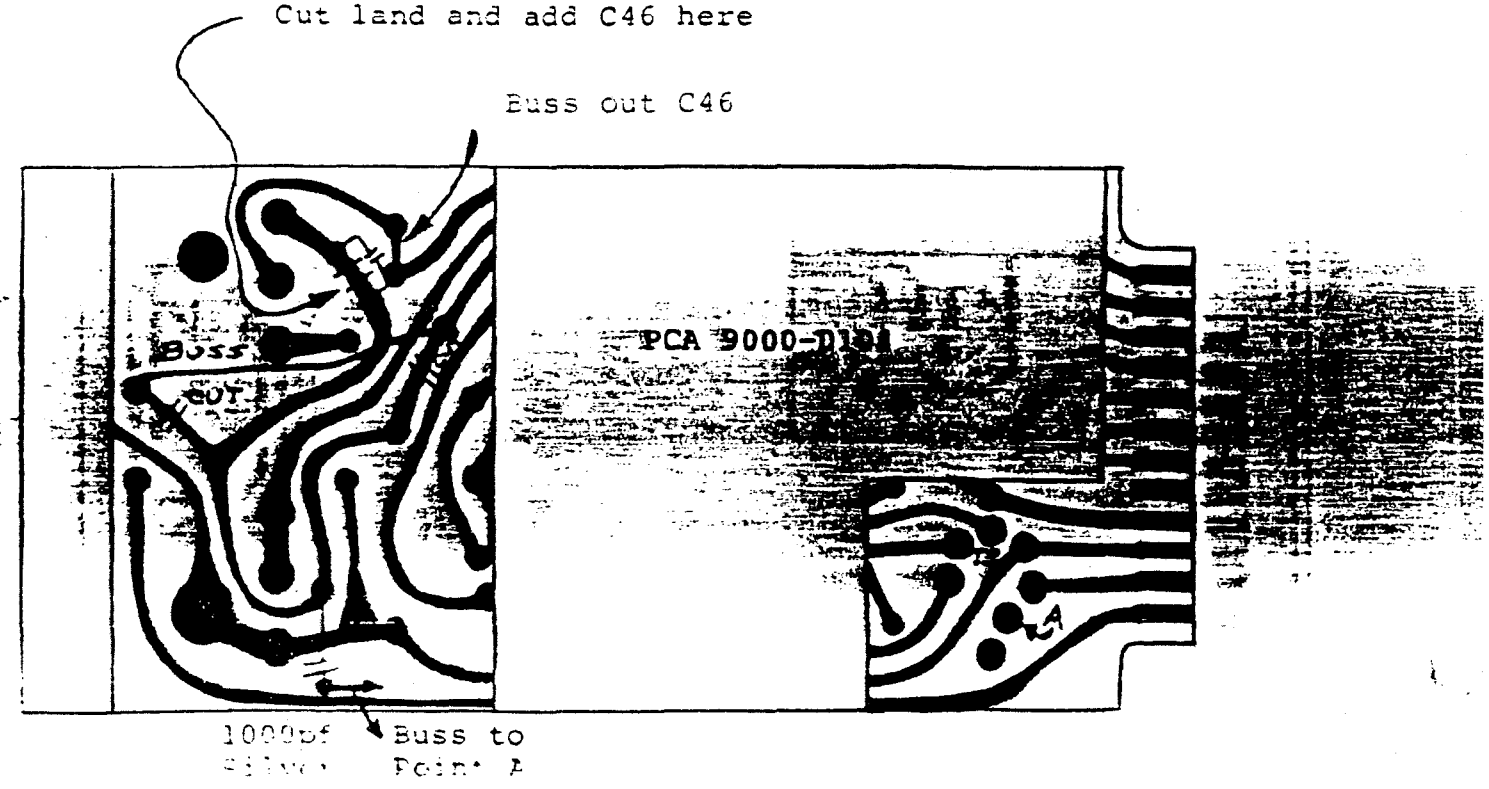
The SCHEMATIC has been changed to:



PCA 9000-0125

PCA 9000-0104

Refer to the sketch below: Cut 3 lands, Add 2 capacitors. Add 3 jumpers (2 on component side of the board).



MANUAL JH-10, JH-100

MCI

SERVICE BULLETIN

BULLETIN NO. 119

DATE FEBRUARY 22,1978

PC BD. JH-10, JH-100 Control Card No. PC 9000C0005

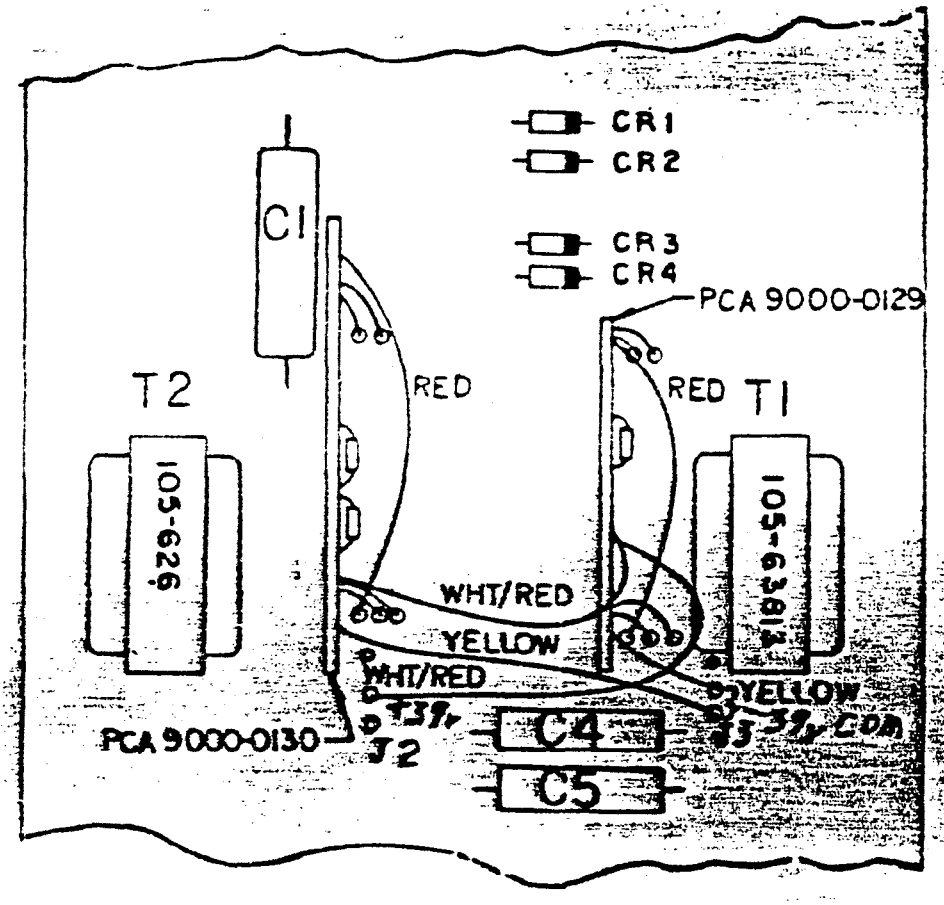
THIS CHANGE SHOULD BE MADE WHERE PROBLEMS OCCUR

REASON FOR CHANGE: Sync relay switching noises can be eliminated by substituting FET switches for K1 and K2.

DESCRIPTION OF CHANGE: Remove K1, K2, and CR2. Remove J2 & J3 *(The 3 pin Molex connectors nearest T1 & T2)*. Install PCA 9000-0129 and PCA 9000-0130 as shown by the sketch below.

CR2 must be removed to prevent feedback when doing OVERDUB in REMIX mode.

COMPONENT REQUIREMENT: PER CHANNEL: (1) PCA 9000-0129
(1) PCA 9000-0130



PC9000C0005
JH-10, JH-100

MCI

SERVICE BULLETIN

PRODUCT JH-16

BULLETIN NO. 120

DATE 7-18-78

P.C. Bd. JH-24 P/S Regulator Bd. No. 2500-0213-00

ECO No. 783 IN NEW PRODUCTION ON SERIAL NO. 382

THIS IS AN OPTIONAL CHANGE

REASON FOR CHANGE:

Normal current limitation is 5A. With 2N3053 current limitation varies from 3 to greater than 5A depending on transistor gain.

DESCRIPTION OF CHANGE:

Change Q2 from 2M3053 to S39568

COMPONENT REQUIREMENT:

(1) S39568

MCI

SERVICE BULLETIN

PRODUCT JH-114

BULLETIN NO. 122, REV. A

DATE 12-20-78

PC Bd Reproduce Board No. 9000-0121-01/02

ECO No. 764, 920 IN NEW PRODUCTION SERIAL NO. _____

THIS IS AN OPTIONAL CHANGE

MCI recommends this be made in ALL machines.

NOTE: THIS SERVICE BULLETIN REPLACES S.B. 122 DATED 8-5-78.

REASON FOR CHANGE:

To improve low frequency response.

This change will dramatically improve low frequency response @ 30 ips. With this change frequency response will be ± ½ dB from 40 to 200 Hz, down 1 dB @ 25 Hz.

Use the low frequency potentiometer to adjust the 80 Hz bump.

DESCRIPTION OF CHANGE:

Replace resistor R103 (1.3M ohm) by a 390K resistor in series with a .0018/200V capacitor.

PARTS DELETED:

(1) 1.3M ohm resistor

PARTS ADDED:

(1) 390K ½w resistor

(1) .0018/200V capacitor

The 390K ohm resistor limits the range of the potentiometer at low frequencies.

MCI

SERVICE BULLETIN

PRODUCT JH-114

BULLETIN NO. 123

DATE 10-2-78

P.C. Bd. Reproduce Board No. 9000-0102-00

ECO No. 863 IN NEW PRODUCTION ON SERIAL NO. 686

THIS IS AN OPTIONAL CHANGE

REASON FOR CHANGE:

To improve low frequency roll off below 20 Hz.

DESCRIPTION OF CHANGE:

Change C13 from 47mf 63v to 10mfd 25v.

COMPONENT REQUIREMENT

(1) 10mfd 25v capacitor.

NOTE: Refer to prior Service Bulletin #122 for additional change to improve low frequency response.

MCI

SERVICE BULLETIN

PRODUCT JH-16 JH-114

BULLETIN NO. 126

DATE APRIL 5, 1979

THIS IS A MANDATORY CHANGE WHEN USING A/L II WITH JH-45 AUTOLOCK

REASON FOR CHANGE:

Improved ground for A/L II

(Refer to JH-16 manual pg. 10-37, 10-37, 10-39 for cable layout)

DESCRIPTION OF CHANGE:

Step 1) Replace ground wire (grey) on A/L connector. (J65 pin 10) this wire runs to power supply connector. (J1 pin 7) to 14 gauge **STRANDED wire.**

***NOTE: Replace no other ground wires.**

Step 2) **Disassemble power cable connectors running from JH 114 deck to power supply. Cut wire (grey) on pin 7 on each end of the cable.**

Step 3) Attach new 14 gauge wire to pin 7 on both ends, this wire may be run on outside of cable sheath and secured with tie wraps to outside of cable sheath.

MCI

SERVICE BULLETIN

PRODUCT JH-100 & 114

BULLETIN NO. 129

DATE 8-13-79

THIS IS AN OPTIONAL CHANGE.

REASON FOR CHANGE:

When installing the TVI (JH-40) in early multi-track transports.

To provide 19.2 kHz Buffered Capstan Pulse and + 8V DC when installing TVI in all JH-100 and early JH-114 (up to and including S/N 425) Tape Transports.

The TVI is capable of running either on a 0-5V TTL pulse or ± 15. The T.V.I. should be strapped for 0-5V pulse.

Note: The TVI can not be installed on the JH-10 Series Transports.

DESCRIPTION OF CHANGE:

Step 1) Cut wires on pins 5 & 7 on J66 (Capstan Servo Programming Plug).

Step 2) Install wire from pin 5 of J66 to pin 12 of J65 (+8V unregulated).

Step 3) Install wire from pin 7 of J66 to pin 8 of HP-42 (19.2 kHz fixed on PLL board located on Mother Board connection).

SERVICE BULLETIN

BULLETIN NO. 130

DATE JANUARY 31, 1980

P.C. BD. Master Status Board (Tape, Input, Auto) P.C. BD. NO. 2500-0231

THIS IS AN OPTIONAL CHANGE.

REASON FOR CHANGE:

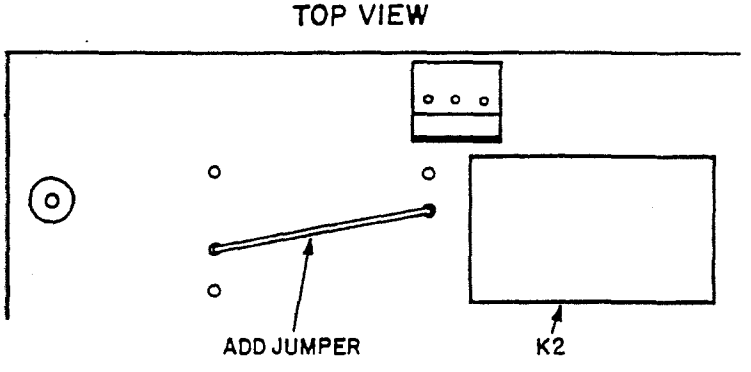
Eliminate switching noise of Sync Relay when in AUTO mode and channels are in Record Ready then switching transport from Play to Stop or Stop to Play.

This change allows the cue relay to remain in cue mode during Stop condition. Monitor is still in input mode.

DESCRIPTION OF CHANGE:

Remove Relay K1 on Master Status Board and jumper common contact and normally open contact (see Illustration on reverse side).

MCI
#130



MCI

SERVICE BULLETIN

PRODUCT AUTO LOCATOR II

BULLETIN NO. 701

DATE APRIL 27, 1976

P.C.BD Debounce Bd. No. P.C.25C199

DESCRIPTION:

The Debounce Kit is built to solve a specific problem in the AUTO LOCATOR II. It contains a PC bd with a cable and a plug attached. This board can be mounted inside the AUTO LOCATOR II on existing standoffs. The plug fits into an existing socket. Specific instructions and a schematic of the Debounce board are furnished as parts of the Kit.

WHY KIT IS NEEDED:

This kit is designed to solve the problem of keyboard switches which bounce when numbers are being entered into the Locate Position Register.

The keyboard switches in the original Auto Locator II design were a non-bounce style. The manufacturer of the keyboards has changed his design and no longer makes a non-bouncing switch. This changed design first appeared in MCI equipment in September, 1975.

NEW EQUIPMENT BEING MANUFACTURED BY MCI HAS A BOUNCE-PROOF CIRCUIT INCORPORATED INTO THE KEYBOARD DECODER SECTION.

WHERE TO USE THIS KIT:

This kit is to be installed ONLY when an AUTO LOCATOR II shows a bounce problem. Auto Locators shipped between September and November, 1975 MAY have this problem.

SYMPTOMS: Two (or more) identical numbers are entered into the register when you tap a number on the keyboard.

ORDERING INFORMATION: If this kit is needed, order:

SERVICE KIT NO. 701

MCI

SERVICE BULLETIN

PRODUCT AUTO LOCATOR II

BULLETIN NO. 702

DATE APRIL 28, 1976

P.C.BD. Auto Locator Logic Bd. No. P.C.25D04

ECO NO. 165 IN NEW PRODUCTION April 28, 1976

DESCRIPTION:

1. Disassemble the Auto Locator and place upside-down with Wrap-around TOWARD you. The I.C. pattern should look like the drawing on the back of this page.

2. Cut the land which exits UPWARDS BETWEEN Pins 11 & 12 of I.C. 29 (position 7C).

CAUTION: THIS IS A MULTI-LAYER BOARD. CARELESS CUTTING CAN EASILY RUIN THE BOARD.

Note that this is a round WIRE imbedded in the board, NOT the usual, flat, thin copper strip.

With very sharp pointed probe, pick out the wire and cut out a short section.

CUTTING TOO DEEP MAY DAMAGE THE NEXT LAYER.

3. Install the following Jumper Wires as shown on the drawing.

Be extremely careful not to create solder bridges to the next pin. Insulate with tubing to prevent shorts.

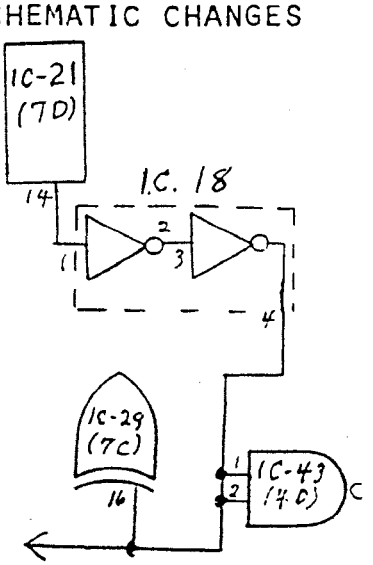
A. A Jumper from Pin 2 to Pin 3 of I.C. 18 (position 7E).
B. A Jumper from Pin 1 of I.C.18 (7E) to Pin 4 of I.C.21(7D).
C. A Jumper from Pin 4 of I.C.18(7E) to Pin 14 of I.C.29(7C).

REASON FOR CHANGE:

The output of I.C. 21 was overloaded. This has resulted in the Subtractor working erratically. In some cases this I.C. has burned out.

This change makes use of two spare inverters (located in I.C. 18) to provide a buffer for the output line of I.C. 21.

SCHEMATIC CHANGES



MCI

SERVICE BULLETIN

PRODUCT AUTO LOCATOR II

BULLETIN NO. 703

DATE MAY 14,1976

P.C. BD. Auto Locator Logic bd. No. 25D1

ECO NO. 185 IN NEW PRODUCTION May 14, 1976

DESCRIPTION:

I.C.s # 21,22,23,24,31,32,33,34 -were type 7483N
-are being changed to type 7483J

REASON FOR CHANGE:

Type 7483N (*plastic case*) has been showing intermittent failures caused by too much heat.

Type 7483J is a ceramic case and will dissipate the heat much better.

COMPONENT REQUIREMENT:

(8) - 7483J per unit

MCI

SERVICE BULLETIN

PRODUCT AUTO LOCATOR II

BULLETIN NO. 708

DATE JANUARY 4, 1977

P.C. Bd. Display Board No. 25C24

ECO No. PCA 24D24-01 IN NEW PRODUCTION AFTER JANUARY 10, 1977

THIS IS A MANDATORY CHANGE

REASON FOR CHANGE:

To improve reliability of the AUTO LOCATOR II.

DESCRIPTION OF CHANGE:

Change all Mechanical Enterprises Mercury switches (M-5C-M-NO).

Replace with Mechanical Enterprises Mechanical contact switches (T-5C-M-NO).

These switches are directly interchangeable.

COMPONENT REQUIREMENT:

Fifteen (15) T-5C-M-NO switches per unit.

MCI

SERVICE BULLETIN

PRODUCT AUTO LOCATOR II

BULLETIN NO. 711

DATE JUNE 2, 1977

P.C. Bd. A/L Logic Bd. No. 2500-0003-00

A/L Debounce Bd. 2500-0199-00

A/L Analog & Debounce Bd. 2500-0205-00

ECO No. 276 IN NEW PRODUCTION ON SERIAL NO. 493

THIS IS AN OPTIONAL CHANGE

REASON FOR CHANGE:

To prevent the sign bit from changing erroneously.
To prevent entry "bounce."

DESCRIPTION OF CHANGE:

2500-0003-00 (Logic Bd.) Add:

a 100pf cap from Pin 14 to Pin 12 (gnd) of IC21.
(this change slows and stabilizes the sign bit)

2500-0199-00 (Debounce Bd.) Add:

a 300 ohm resistor in series between Pin 3 of IC2 and Pin 9 of IC2.
a .47mfd 35v cap from Pin 9 of IC2 to ground.
(this filter stabilizes the input information)

2500-0205-00 (Analog & Debounce Bd.) Add:

a 330 ohm resistor in series between Pin 4 of IC6 and Pin 11 of IC3.
a .47mfd 35v cap from Pin 11 of IC3 to ground.
(this filter stabilizes the input information)

COMPONENT REQUIREMENT:

NOTE: The Auto Locator II has EITHER a 200-0199 board or a 2500-0205 board. It will NEVER have both boards.

(1) 100pf cap
(1) 330 ohm 5% resistor
(1) .47 mfd 25v cap

MCI

SERVICE BULLETIN

PRODUCT AUTO LOCATOR II

BULLETIN NO. 712

DATE JUNE 13, 1978

P.C. BD. A/L Logic Bd. No. PCA2[illegible]

ECO No. 762 IN NEW PRODUCT[illegible]

THIS IS AN OPT[illegible]

REASON FOR CHANGE:

To increase reliab[illegible]
to intermittent

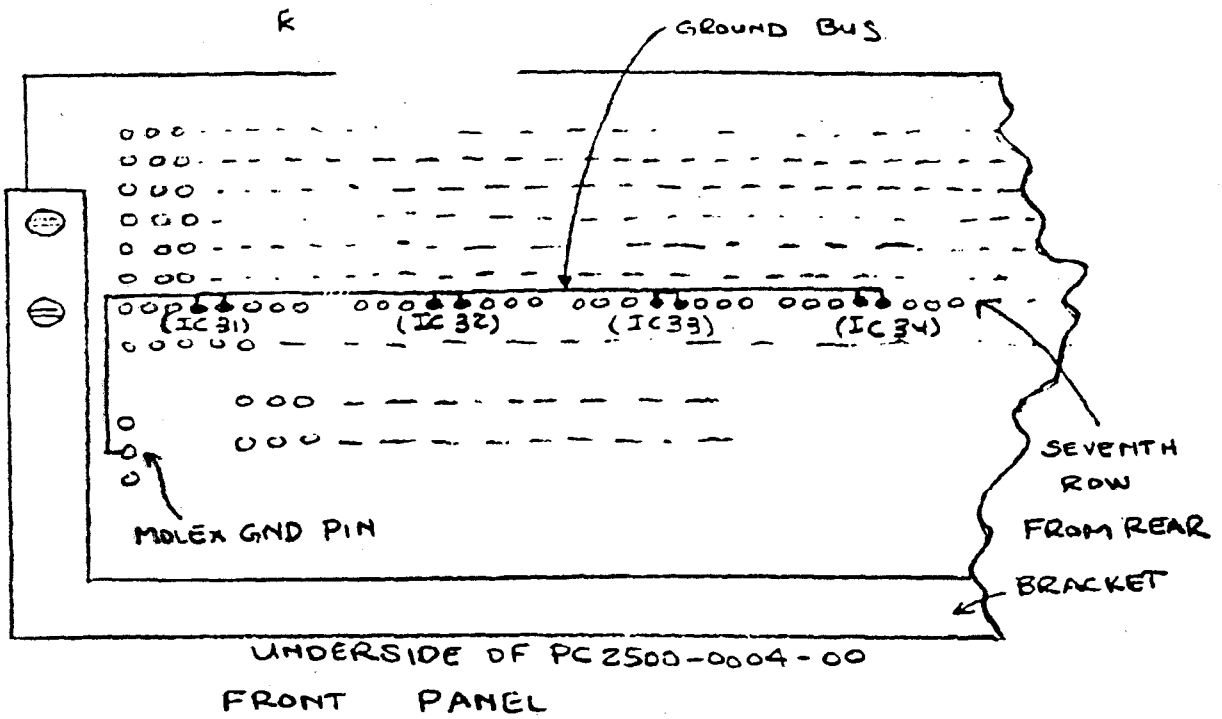
DESCRIPTI[illegible]

Add a [illegible] C33
and

COMPONE[illegible]

None

Cabling Diagr[illegible]



TWM 2501-1012-00