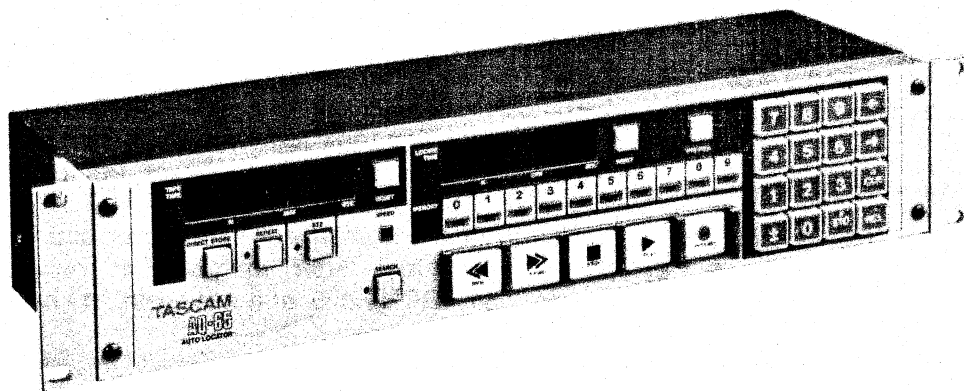


TASCAM

TEAC Professional Division

AQ-65

Auto Locator



OPERATION / MAINTENANCE

5700070002

Introduction

The TASCAM AQ-65 is a multifunction Auto Locator/Tape Transport Controller for use with the TASCAM MS-16, and most Series 40 and 50 recorder/reproducers. To confirm compatibility see p. 8.

Its broad range of features include 10 point memory, programmable duration pre-roll, two point repeat, and duplication of transport control functions. These combine to fulfill the complex requirements of today's professional producer.

Your AQ-65 can be used to:

- *Return to Zero (RTZ) from any point on

the tape. Zero can be used to mark the beginning of tape or as the start of a program segment.

- *Locate any of 10 stored memory locations. These may be programmed from a "cue" sheet by use of the NUMERIC KEYPAD, while the tape is stopped or rolling. Or, by using the DIRECT STORE button while the tape is rolling.

- *Repeat playback of a selected portion of a tape.

- *Preset an amount of play time before the CUE point by using the PRE-ROLL button.

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WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

This apparatus has a serial number located on the rear panel. Please record the model number and serial number and retain them for your records.
Model number _____
Serial number _____

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

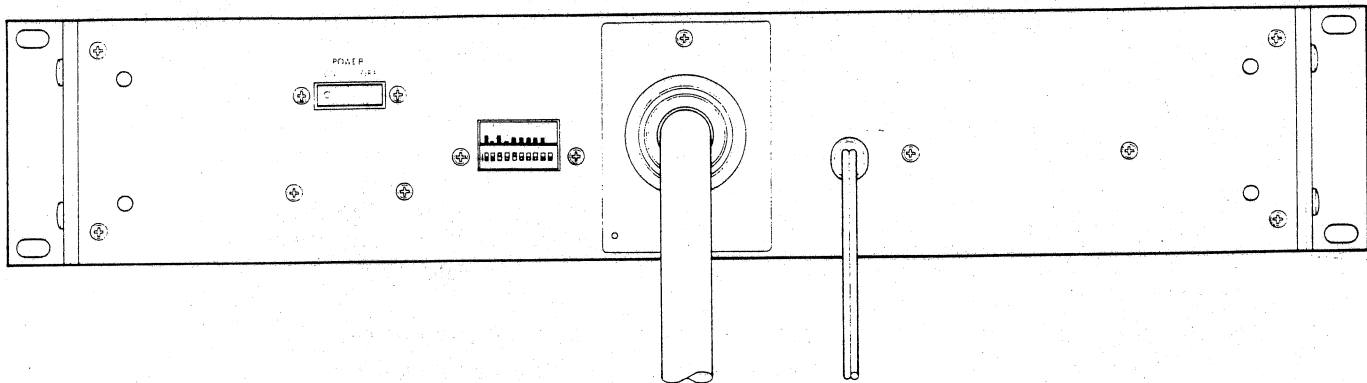
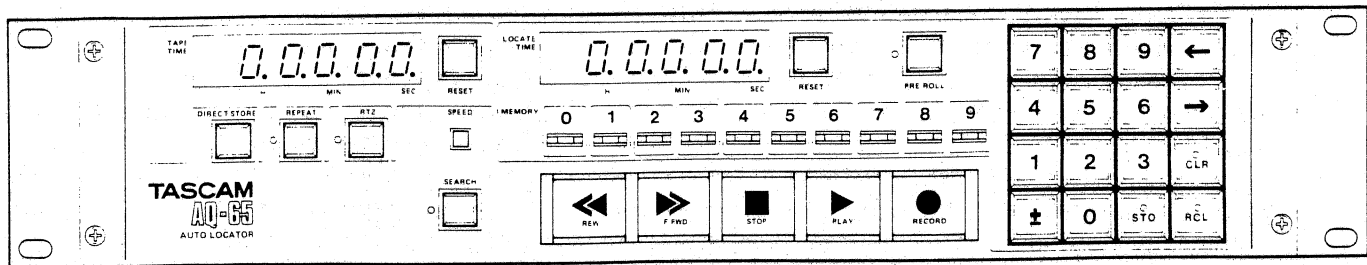


CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

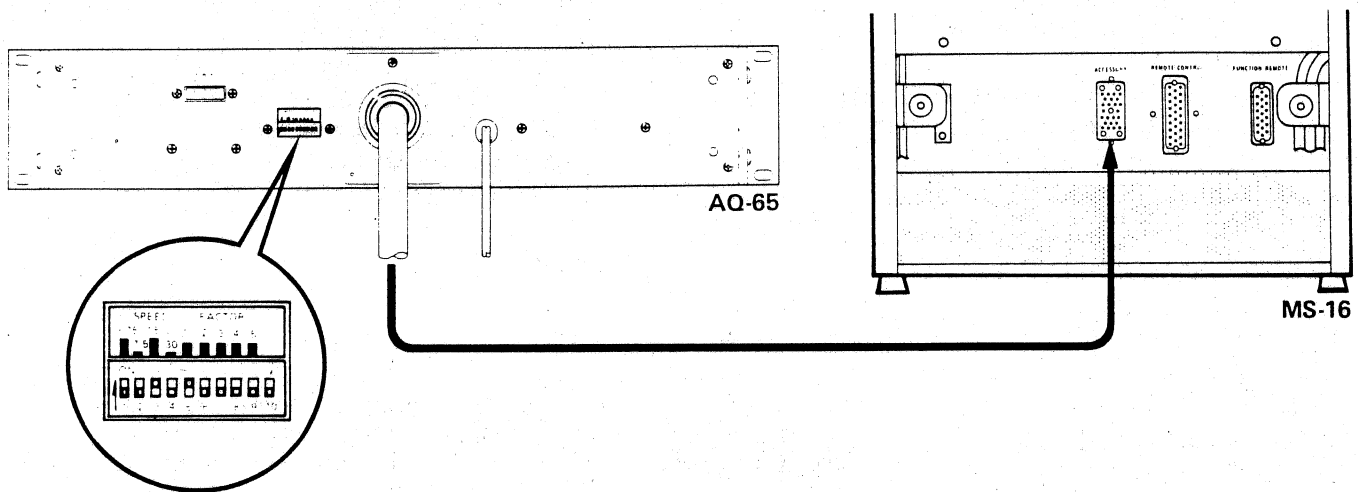
The lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Connections



1. Connect the AQ-65 to the Standard TASCAM 38 pin ACCESSORY connector as shown in Figure.

2. Set the appropriate Speed Selector Switch on the rear panel of the AQ-65 to correspond to the speed set on your tape machine. Be sure that only one speed select switch is on (up).

NOTE: The AQ-65 can be connected in parallel with an Editor/Controller.

How to Use the AQ-65

Load a reel of tape onto your recorder/reproducer and play out 30 seconds of tape. Press the RESET buttons for the TAPE TIME and LOCATE TIME displays. They should now both read 0:00:00. You are now ready to load the AQ-65's memories.

If, when you played the tape, the SPEED INDICATOR LED came on, it means that the SPEED SWITCH setting on the AQ-65 is not the same as your recorder's.

LOADING MEMORY

Press keys 5, 0, and 0 again on the NUMERIC KEYPAD. The LOCATE TIME display should now read 0:05:00. This is five minutes from our Zero starting point.

To store 5 minutes in memory register 1, press the STO KEY (its LED will light) and then NUMERIC KEY 1. The MEMORY 1 LED will blink for 1 second, then stay lit, indicating that the LOCATE TIME has been stored. The other memory locations may be loaded in a similar fashion.

Now enter 70 minutes into the LOCATE TIME display. Press 7, 0, 0, 0. Press the STO button (LED will light) and NUMERIC KEY 2. When the MEMORY 2 LED stays lit, the time has been stored.

DIRECT STORAGE

Press the FAST FORWARD key on the AQ-65. When the TAPE TIME display reaches 0:03:00 press the DIRECT STORE key. This location is now stored in the lowest numbered vacant memory register available (register 0).

RTZ (RETURN TO ZERO)

Press the RTZ (RETURN TO ZERO) button. Its LED will light regardless of tape transport status and the tape will fast wind toward Zero. When the TAPE TIME counter reads 0:00:00 tape motion will stop.

RECALL MEMORY

To recall MEMORY 1, press the RCL button (its LED will light) and then press NUMERIC KEY 1. The LED for that memory register will blink and 0:05:00 will appear on the LOCATE TIME display.

If you want to see everything you have stored so far, press RCL, and while its LED is lit, press it again. The LOCATE TIME stored in the lowest register (0) will be displayed (0:03:00) while the corresponding LED blinks. The memory register LED will then stay on to indicate that the time is still stored in memory.

Repeat this procedure to display the contents of registers 1 (0:05:00) and 2 (1:10:00).

CLEARING A MEMORY

Notice that the time displayed for memory register 2 is 1 hour and 10 minutes (remember that you entered 70 minutes). This is because the AQ-65 converts minutes entries in excess of 59 into hours and minutes. Since this is longer than your tape you will want to delete it from memory.

To clear MEMORY 2, press CLR (its LED lights) and then NUMERIC KEY 2. The CLR LED will turn off and the LED of register 2 will blink and then turn off indicating that the memory has been cleared.

SEARCH

To SEARCH to a memory location, press the RCL button (its LED will light), then press NUMERIC KEY 1. The RCL LED will turn off and the LOCATE TIME will read 0:05:00. The MEMORY 1 LED will now blink showing that the contents of the register have been recalled. Press SEARCH, its LED will light, and the tape will automatically fast wind until the TAPE TIME is equal to the LOCATE TIME. Tape motion will stop and the SEARCH button LED will turn off.

FACTOR SELECTOR CALIBRATION

The FACTOR SELECTOR is used to match the AQ-65 to your tape transport's ballistics. Check the AQ-65 rear panel to see which FACTOR switch is on (up). If during the SEARCH:

1. You were satisfied with machine performance, DON'T DO ANYTHING.

2. The machine "over-ran" the cue point, select (switch up) the next higher numbered FACTOR and turn off (down) the previous FACTOR.

3. The machine took too long while approaching the cue, select the next lower numbered FACTOR and turn off the previous FACTOR.

If you made a change in the factor setting, press RTZ. Then, after the machine returns to zero, SEARCH to 5 minutes again to check the new setting.

PRE-ROLL

If you're working with a memory (cue) point which is too close to a punch-in/insert point, you can change the stop/park point so the tape stops from 1 to 19 seconds before the cue point. This will give you time to allow the talent to become acclimatized to the part they are re-

hearing without having to modify the memory register. To enter a PRE-ROLL value press NUMERIC KEY 5, press STO (the LED lights), then press PRE-ROLL. The PRE-ROLL LED will light, showing that the pre-roll time has been set.

Recall MEMORY 0. Press SEARCH and the transport will stop/park at a point 5 seconds before the LOCATE TIME display. LOCATE TIME should now be 0:03:00 and TAPE TIME should be 0:02:55 (5 seconds before the cue point that you entered with DIRECT STORE).

To display the value of the PRE-ROLL time press and hold the PRE-ROLL button. While PRE-ROLL is depressed, the LOCATE TIME display will show the pre-roll time rather than the LOCATE TIME. The hours and minutes digits will be blank.

To change the pre-roll time you must enter a new value with the NUMERIC KEYPAD, then press STO and PRE-ROLL. The previous pre-roll time will be cleared and the new one set in memory.

To clear the pre-roll time press the PRE-ROLL and CLR buttons. The CLR and PRE-ROLL LEDs will turn off.

REPEAT (LOOPING)

For rehearsing an insert you may want to create a REPEAT loop between the times shown on the TAPE TIME and LOCATE TIME displays. Either display can be the beginning or end since the loop is created with the lower number as the beginning and the higher number as the end.

Recall MEMORY 1 and SEARCH. If you have a 5 second pre-roll, the tape will stop at 0:04:55. Enter 0:05:10 into the LOCATE TIME display using the NUMERIC KEYS. Press the REPEAT button. The REPEAT LED will light and the repeat function will be enabled. Press PLAY to initiate REPEAT and the machine will play from 0:04:55 to 0:05:10, then rewind and play again.

Repeat-loop has two record options determined by the Repeat Function Selector on the rear panel. You can program the AQ-65 to disengage REPEAT when record mode is selected or automatically punch out at the end of the loop and continue repeat playback.

REPEAT may only be enabled from PLAY, RECORD (with Repeat Function selector up) or STOP modes. To disengage REPEAT during its playback phase, press STOP, REWIND, FAST FORWARD, SEARCH or RTZ. To disengage REPEAT during its rewind phase, press any transport buttons, SEARCH or RTZ.

→ (SHIFT TO RIGHT)

Suppose you want to create a loop between a stored memory location and a point 25 seconds before that location.

Recall MEMORY 0 (LOCATE TIME will read 0:03:00). Rewind the tape to TAPE TIME 0:02:35 and stop. Press the SHIFT RIGHT button and the TAPE TIME will be copied to the LOCATE TIME display. This will be the start of your loop. Play the tape until you reach 0:03:00, or the point at which you want to end the loop, then press REPEAT. Your machine will now cycle between the two locations.

You can also use the SHIFT RIGHT function for temporary storage of an edit point.

← (SHIFT TO LEFT)

The SHIFT LEFT function is handy for working with several "takes" of a project. If you set up and store your cue points for take 1, you can shift the whole set to be used with any other take.

Fast wind the tape to TAPE TIME 0:07:00 and stop. If this were the beginning of a take you could use the cues stored in memories 0 and 1. Suppose that the first take started at 0:00:39. Enter 0:00:39 and then press the SHIFT LEFT button. The TAPE TIME display will show 0:00:39 instead of 0:07:00 and your cue points will be positioned correctly for working with this take.

SHIFT LEFT can also be used to make the TAPE TIME display agree with the tape time counter on your recorder. With the tape motion stopped, enter the value displayed on your transport time display using the NUMERIC KEYPAD. Press the SHIFT LEFT KEY.

The TAPE TIME display will now agree with that of the transport.

CLEAR ALL MEMORY

To clear *all* memory registers simultaneously, press CLR and the **↑** KEY. The CLR LED turns off and the memory register LEDs blink, then turn off, indicating that the registers have been cleared.

Features and Controls

To make the AQ-65's features and controls easier to understand, we've divided them into five groups.

1. TAPE TIME DISPLAY AND RELATED FUNCTIONS

This group displays current TAPE TIME and allows the TAPE TIME to be placed in a memory register. SEARCH functions are also initiated from this group.

TAPE TIME counter display

This displays the tape running time (in hours, minutes, and seconds), from any zero point (0:00:00) you select. Maximum time which can be displayed is 9 hours, 59 minutes, 59 seconds in either direction from zero.

RESET button (TAPE TIME)

Pressing the RESET button sets the TAPE TIME counter to 0:00:00.

DIRECT STORE button

Pressing the DIRECT STORE button causes the current TAPE TIME to be stored as a cue point into the lowest numbered memory register available. When storage is complete the LOCATE TIME display will read the same as TAPE TIME.

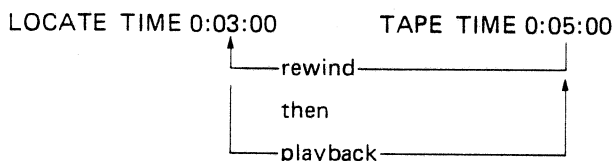
REPEAT button and LED

The REPEAT button activates the two point repeat function between the points currently indicated on the TAPE TIME and LOCATE TIME displays. The LED lights only when the REPEAT function is engaged.

If REPEAT is pressed during record or playback with the Repeat Function selector (the rightmost, 10-numbered switch on the rear) set to the "up" position, the transport will either start to rewind or continue recording or playing back.

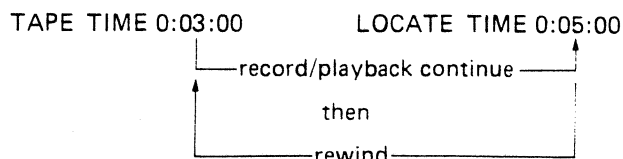
Example:

1. TAPE TIME higher than LOCATE TIME



Pressing REPEAT sets the end of your repeat and the tape will start to rewind toward the repeat start point (LOCATE TIME).

2. TAPE TIME lower than LOCATE TIME



Pressing REPEAT sets the beginning of your repeat and the current record or playback will continue until LOCATE TIME (end of loop) is reached, then, the tape will rewind for starting repeat playback.

RTZ button and LED

Pressing the RTZ causes the tape transport to fast wind the tape until the TAPE TIME counter displays 0:00:00. The LED indicates that the return to zero operation is in progress.

SPEED indicator LED

This LED will light if the tape is running at a different speed from the one set on the AQ-65 rear panel. When it lights, check the speed selected on the AQ-65 and on your tape transport. This indicator may light briefly until the transport speed stabilizes even when the speed selector is set correctly.

SEARCH button and LED

When SEARCH is pressed its LED will light and the transport will fast wind, then stop when the TAPE TIME is equal to the LOCATE TIME.

2. LOCATE TIME AND MEMORY REGISTER DISPLAYS AND RELATED FUNCTIONS

This group tells you to what point the tape will go when SEARCH is activated, and which memory registers contain stored cue points.

LOCATE TIME display

This can display cue points (in hours, minutes, and seconds), which are entered using the NUMERIC KEYS or by recalling the contents of a memory register. It can also display a PRE-ROLL value.

RESET button (LOCATE TIME)

Pressing RESET will cause the LOCATE TIME display to read 0:00:00.

PRE-ROLL button and LED

Pressing PRE-ROLL enables the pre-roll function and stores a pre-roll value which has been entered using the NUMERIC KEYS. PRE-ROLL values may be between 1 and 19 seconds.

The PRE-ROLL LED will light when the pre-roll function is active.

3. TRANSPORT CONTROLS

The use of these is the same as for those on TASCAM recorders, however, their status condition differs depending on the models interfaced. For details, please refer to chart on page 8.

4. NUMERIC KEYPAD

This group of buttons is used to place cue point values into the LOCATE TIME display, to store, to retrieve, and to clear them from the memory registers, and to shift them from one display to the other.

Numeric keys

Use these to enter cue point values, designate memory registers and to enter pre-roll values. Each time a key is pressed, previously entered numerals are shifted to the left in the LOCATE TIME display.

Example:

(1)	0:00:01
(2)	0:00:12
(3)	0:01:25

± Shift key

This button allows you to invert the sign of the value in the LOCATE TIME display. This is handy if you need to get to a location on the tape which is beyond 0:00:00 on the TAPE TIME counter.

STO (STORE) key and LED

This is used to store cue points in memory and to set the pre-roll time. When STO is pressed, its LED will light for about 3 seconds. Storage is only possible when the LED is lit.

RCL (RECALL) key and LED

The RCL button is used in conjunction with the NUMERIC KEYS to retrieve cue points from the memory registers. The LED should light immediately after RCL is pressed.

CLR (CLEAR) key and LED

The CLR button is used to clear those memory registers selected with the NUMERIC KEYS. When CLR is pressed the LED will light. CLR is also used to cancel the stored pre-roll time.

→ (SHIFT-TO-RIGHT) key

Pressing this button causes the number in the TAPE TIME display to be transferred to the LOCATE TIME display. It has no effect if CLR, RCL, STO, SEARCH, or REPEAT is engaged.

← (SHIFT-TO-LEFT) key

Pressing SHIFT-TO-LEFT will cause the number in the LOCATE TIME display to be transferred to the TAPE TIME display. This can be used to correct a discrepancy between the tape machine's counter and the TAPE TIME display or to enter an "offset" value by using the NUMERIC KEYS.

5. REAR PANEL

Power on/off and calibration switches are located here.

POWER switch

When the POWER switch is turned off, all cue point and pre-roll times are deleted from memory. If power is switched off and then on again too quickly, the TAPE TIME and LOCATE TIME displays may not indicate 0:00:00. If this happens, turn the power off, then wait a few seconds before switching it on again.

SPEED selector

This must be set to correspond to the speed selected on your tape transport. If the setting is incorrect, the SPEED LED will light. If two or more speeds are selected, the lowest speed setting is used.

FACTOR selector

The FACTOR selector allows you to adjust the control of your transport to take tape width, length, and reel size into account. The five switches let you select the length of time between fast wind and stop. If two or more "release" points are selected, the lowest value is used.

Repeat Function selector

This two position switch programs the AQ-65 to:

- down** — disengage REPEAT when the record mode is entered.
- up** — continue REPEAT function — when record is entered and, automatically terminate record mode at the end of the loop and continue repeat playback.

Machine Compatibility

Depending on the serial numbers, some TASCAM Recorder/Reproducers have no compatibility with the AQ-65 and others are compatible either with a slight modification or without any. Check the serial number of your

TASCAM Record/Reproducer with the following chart.

Status condition of the AQ-65's transport controls also differs depending on the models interfaced as shown in chart.

Model	Serial No.	Compatibility	Transport Controls on the AQ-65
40 Series			
42	120000 or less	NO	-
44	60000 or less		
48	110000 or less		
42	120001 to 120050	YES; w/ modification	1. F. FWD/REWIND light in spooling mode. 2. STOP lights steadily when power is on, instead of blinking then going off.
44	60001 to 60050		
48	110001 to 110050		
42	120051 or larger	YES; w/o modification	
44	60051 or larger		
48	110051 or larger		
50 Series			
52	30000 or less	YES; w/ modification	REWIND, F. FWD, STOP, PLAY and RECORD remain unlit.
58	30000 or less		
52	30001 to 80000	YES; w/ modification	1. REWIND, F. FWD, STOP and PLAY remain unlit. 2. RECORD blinks in both record and record ready.
58	30001 to 130000		
52	80001 or larger	YES; w/o modification	REWIND, F. FWD, STOP and PLAY remain unlit.
58	130001 or larger		
MS-16	—	YES; w/o modification	1. REWIND/F. FWD light steadily in spooling mode, instead of blinking. 2. STOP lights when power is on, instead of blinking then lighting steadily.
388	—	YES; w/o modification	-
ATR-60 Series	—	YES; w/o modification	1. REWIND/F. FWD light steadily in spooling mode, instead of blinking. 2. STOP lights when power is on, instead of blinking then lighting steadily.
42B	—	YES; w/o modification	1. F. FWD/REWIND light in spooling mode. 2. STOP lights steadily when power is on, instead of blinking then going off.

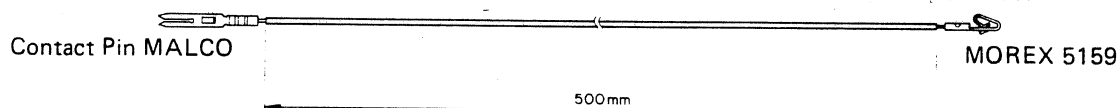
Modification Procedure

Using the separately available connecting wire designed for this purpose (Part No. 5772913300) (or a similar one), shown in Fig., connect terminal "V" of the ACCESSORY connector on your TASCAM recorder to terminal 5 of P2 (40

Series) or terminal 5 of P3 (50 Series) inside your recorder. Discard the wire currently connected to terminal 5 of P3 of the 50 Series recorders. If you are in doubt, please consult your TASCAM dealer or service center.

To terminal "V" of the
ACCESSORY connector

To Control PCB
terminal



Note for U.K. Customers

U.K. Customers Only:

Due to the variety of plugs being used in the U.K., this unit is sold without an AC plug. Please request your dealer to install the correct plug to match the mains power outlet where your unit will be used as per these instructions.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

BLUE: **NEUTRAL**
BROWN: **LIVE**

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals of your plug, proceed as follows.

The wire which is coloured **BLUE** must be connected to the terminal which is marked with the letter **N** or coloured **BLACK**. The wire which is coloured **BROWN** must be connected to the terminal which is marked with the letter **L** or coloured **RED**.

This product is manufactured to comply with the radio interference of EEC directive "82/499/EEC."

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

10 PUNKT AUTOLOCATOR TASCAM AQ-65

(Gerat. Typ. Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

AMTSBLATT 163/1984, VFG 1045/1984

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

TEAC CORPORATION

Name des Herstellers/Importeurs

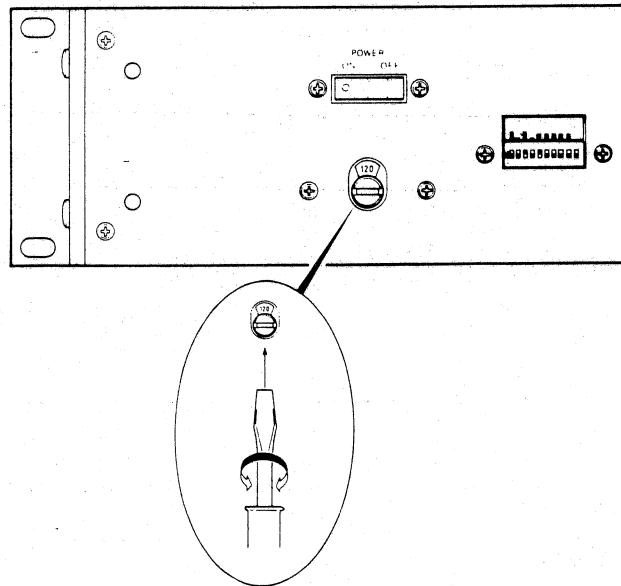
Voltage Selection

This unit is adjusted to operate on the electric voltage specified on the unit or packing carton.

NOTE: This voltage conversion is not possible on models sold in the U.S.A., Canada, U.K., Australia, or Europe.

For general export units, if it is necessary to change the voltage setting of the AQ-65 to match your area, use the following procedures. **ALWAYS DISCONNECT THE POWER LINE BEFORE MAKING THESE CHANGES.**

1. Locate the voltage selector on the rear of the AQ-65.
2. Using a regular (soft blade) screwdriver, turn the selector until the numerals corresponding to the voltage requirements of your area appear.

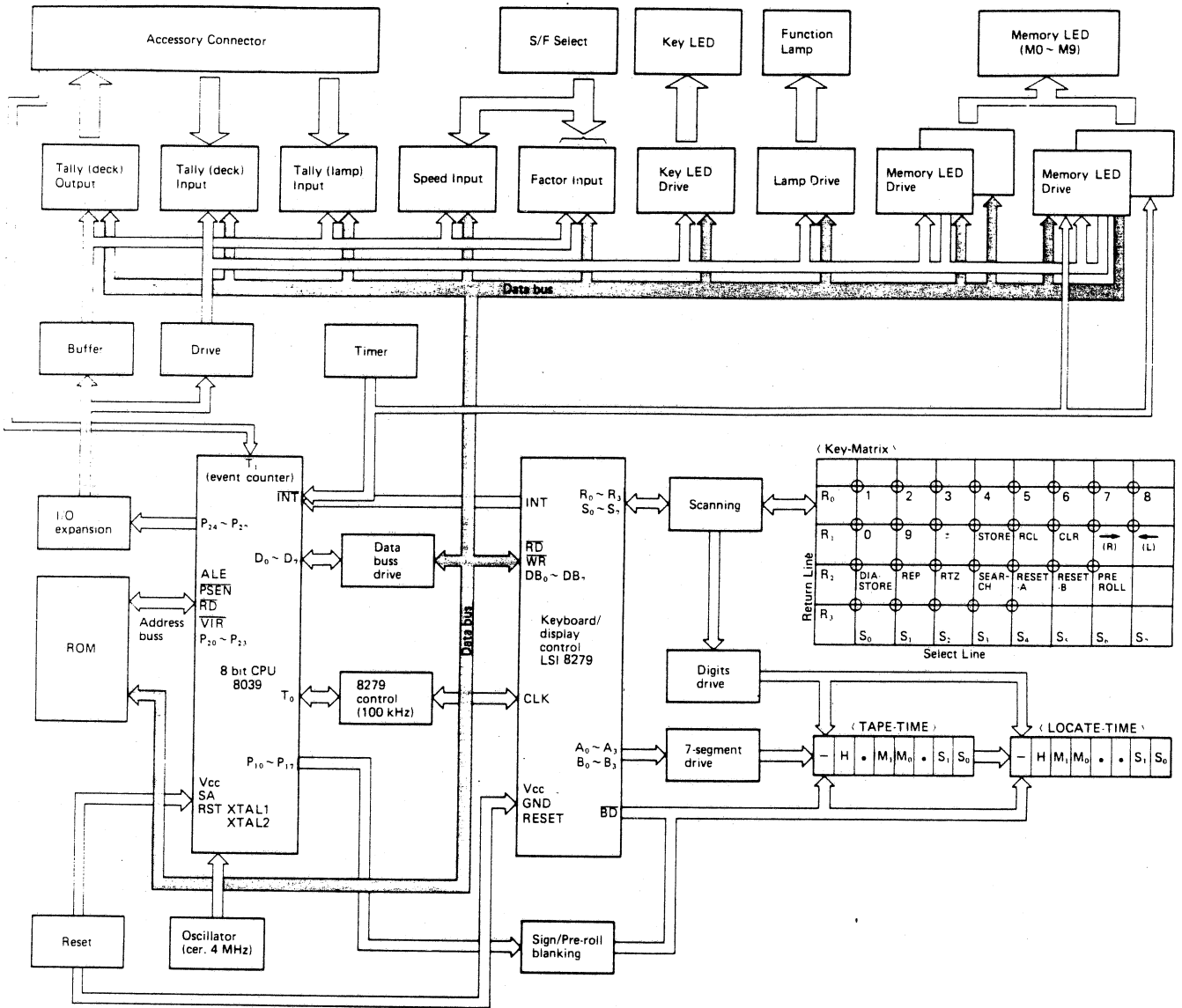


Circuit Descriptions

This section of the manual mainly provides basic information on the theory of operation for the major hardware units mounted in the

AQ-65. If you would like further detailed information on the micros, please refer to the manufacturers' data handbooks.

1. BLOCK DIAGRAM



2. POWER SUPPLY CIRCUIT

This supplies +5 V DC to the CPU (Control PCB Ass'y) and +14 V DC to the lamp drive circuit.

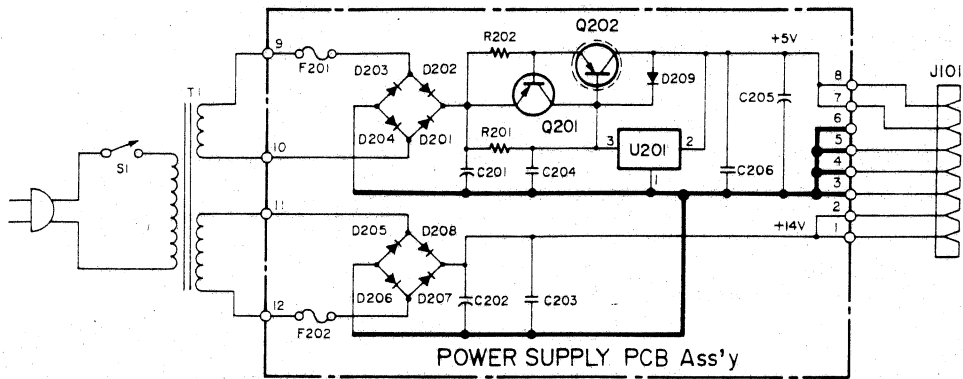
2-1. +5 V DC Supply

The secondary voltage for the transformer is rectified through the silicon diode bridge (D201 – D204), filtered through C201 and regulated through the constant voltage drive IC U201. The output of U201 (78M05) – 500 mA at maximum – is amplified through Q201 (2SA1015) and Q202 (2SB507). The resultant

+5 V is supplied through J101 to the Control PCB Ass'y (refer to the Interconnection Diagram); thence it is sent out through P104 (terminals 11, 12) and P103 (terminal 9).

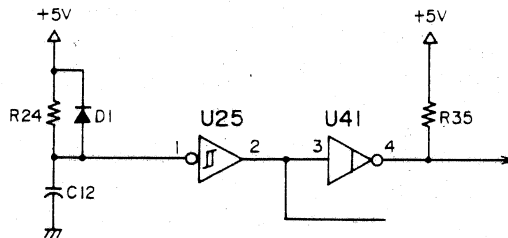
2-2. +14 V DC Supply

This voltage is used to drive the filament lamps. The voltage developed on the secondary side is rectified through the silicon bridge (D205 – D208) and filtered through electrolytic capacitor C202.

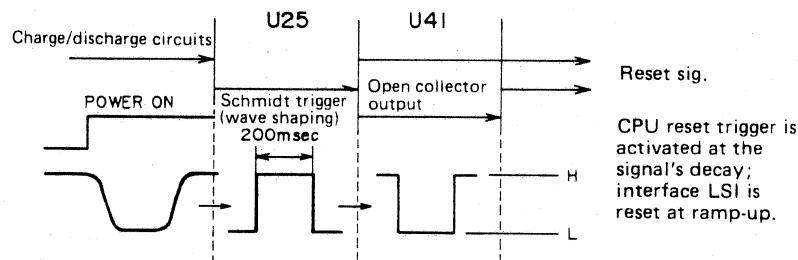


2-3. Power-On Reset Circuit

This is for resetting CPU (8039) and the keyboard-display interface LSI (8279) to initial status when the power is turned on.



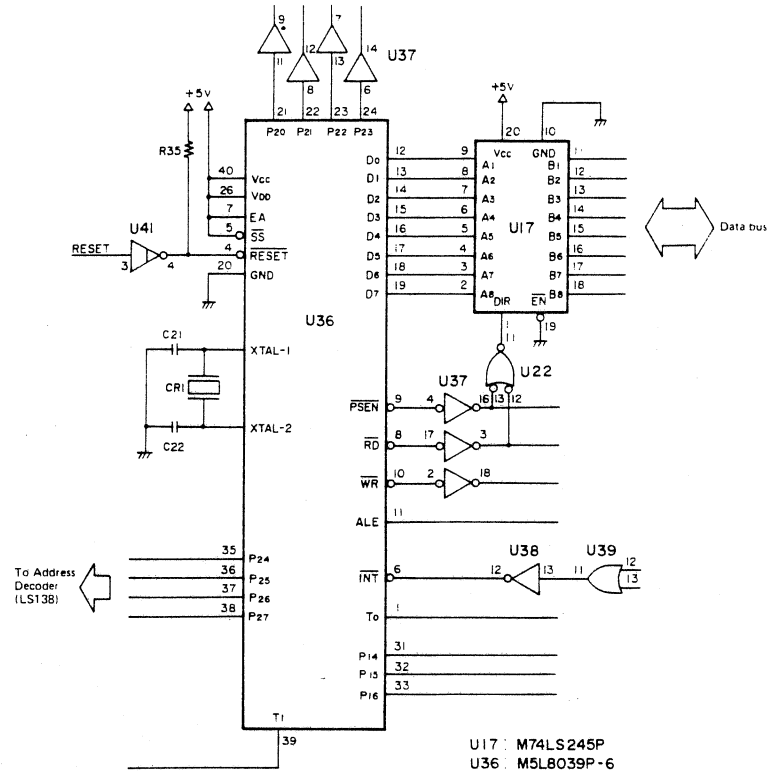
U25: M74LS14 (Schmidt trigger inverter)
U41: M 53216P (open collector output inverter)



3. CPU (8039) CIRCUIT

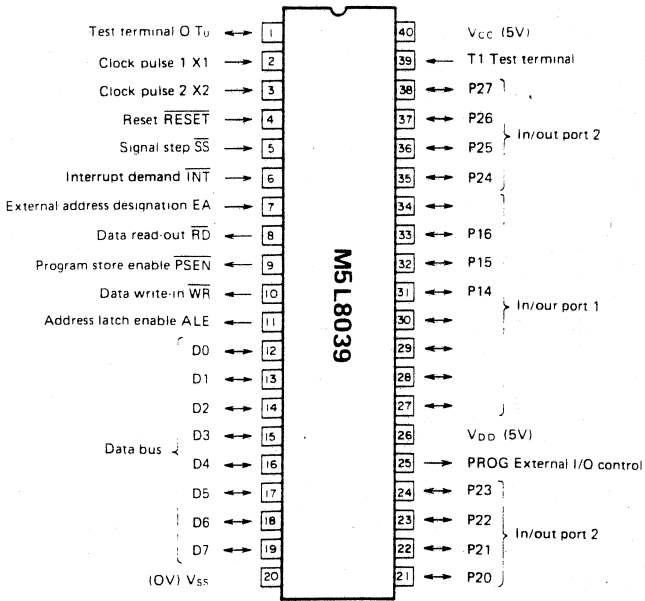
The 8039 is a single-chip microcomputer and a CPU, RAM (128 bytes), I/O (27 ports), timer,

etc., are all integrated in a single chip. (In the AQ-65, it operates at a 4-MHz rate.)



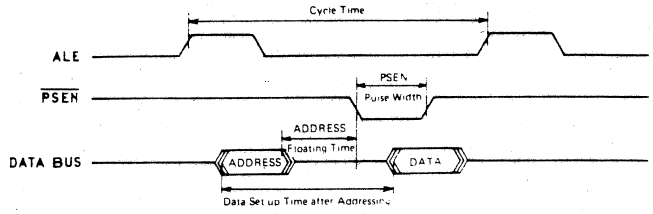
M5L8039 Pin Assignment

Terminal	Nomenclature	In/Out	Function
Vss	GND	—	Power supply ground (0 V DC)
Vcc, VDD	Power Supply	—	+5 V DC supply
P14	Port 1	Out	Blanking the display LED's
P15			Displaying LOCATE TIME & minus (-) sign
P16			Displaying TAPE TIME & minus (-) sign
P20	Port 2	Out	Address line to A8 of the EP-ROM (2764)
P21			Address line to A9 of the EP-ROM (2764)
P22			Address line to A10 of the EP-ROM (2764)
P23			Address line to A11 of the EP-ROM (2764)
P24 ~ P27	Port 2	Out	BCD-address decoding in U15 and U16 (3 ins-to-8 outs) to produce E ₀ ~ E ₁₁ for buffer/driver gate control.
D ₀ ~ D ₇	Data bus	In/Out	Receiving data through buffer gates under the action of \overline{RD} . Transmitting and holding data in the latch under the action of \overline{WR} .
T ₁	Test terminal 1	In	Interrupting the event counter.
T ₀	Test terminal 0	Out	Reference clock pulses (connected to CLK (3) of the keyboard - display interface LSI 8279).
\overline{RD}	Read sig.	Out	Enabling CPU to take data into the data bus.
\overline{WR}	Write sig.	Out	Enabling CPU to write data to the external memory.
INT	Interrupt sig.	In	Causing a break in CPU.
X ₁ , X ₂	Crystal ins.	In	Connecting crystal generator or RC network to generate clock pulses inside CPU. Or, connecting externally generated clock pulses.
\overline{RESET}	Reset sig.	In	Resetting CPU to the initial status.
ALE	Address latch enable sig.	Out	One shot per machine cycle. At its decay, values in the data are received as an address by the ext. memory.
\overline{PSEN}	Program store enable sig.	Out	Sending strobe signal so CPU receives data (instructions) from the ext. memory.
\overline{SS}	Single step sig.	In	Instructions are executed one at a time in response to ALE.

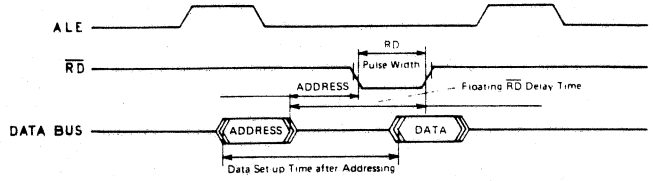


TIMING CHARTS

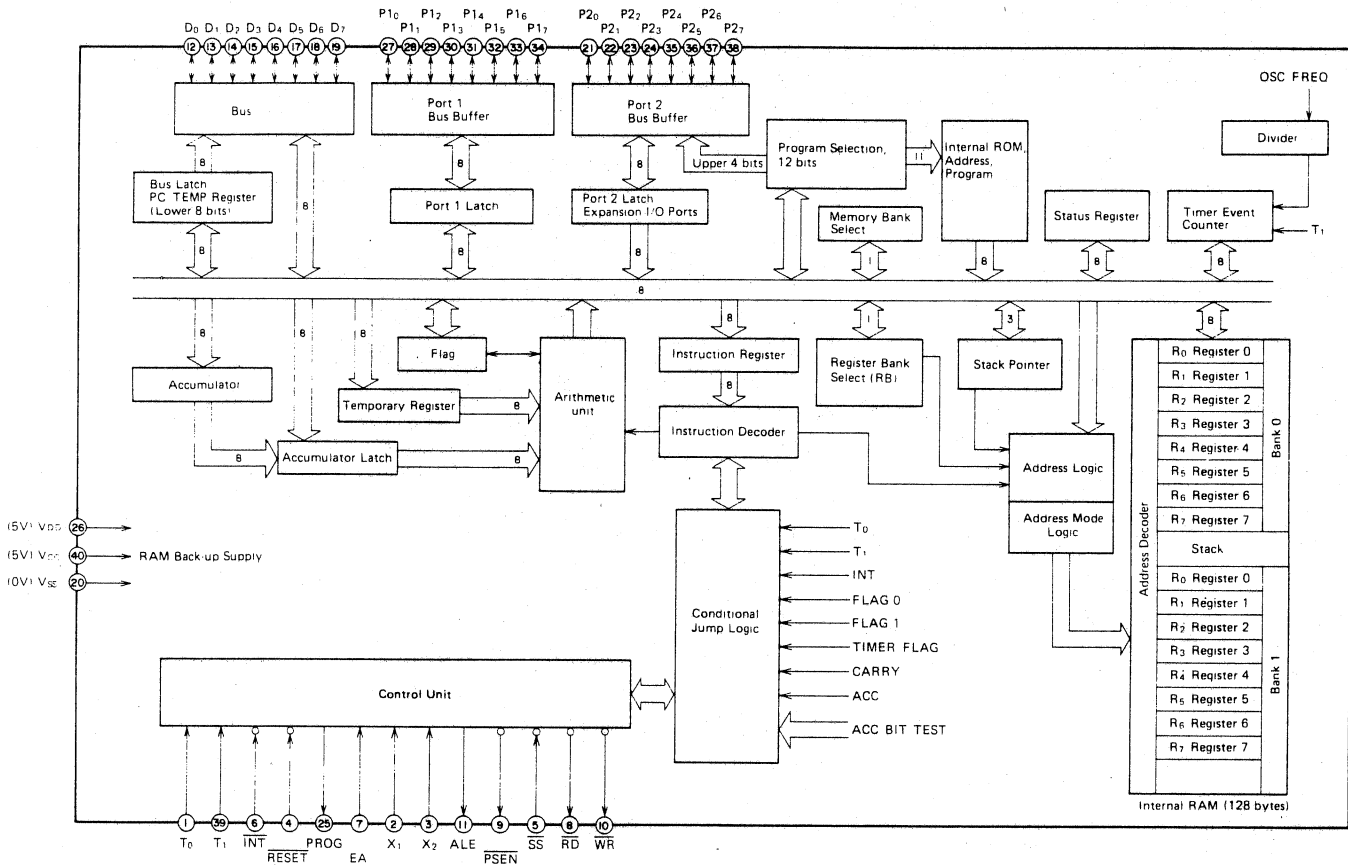
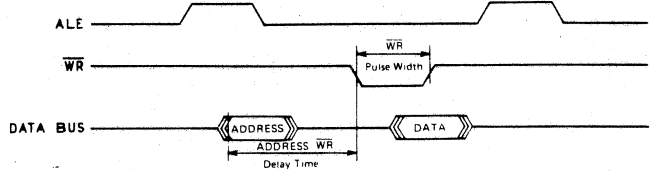
Instruction Fetch from Ext. Program



Read-out from Ext. Data Memory

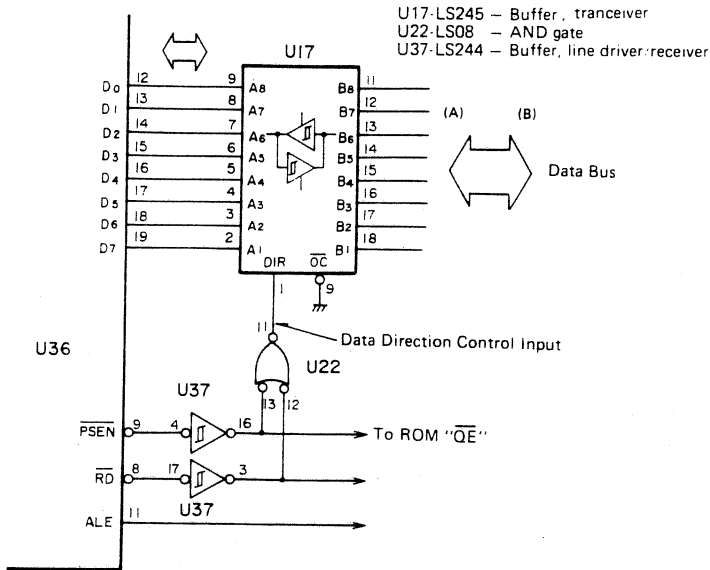


Write-in of Ext. Data



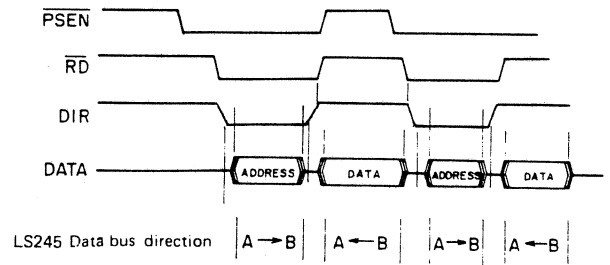
4. DATA BUS DRIVE CONTROL CIRCUIT

Data sent to and received from the 8-bit bi-directional data bus through D₀ – D₇ of CPU are buffered through the transceiver/receiver U17



(LS245) for communication between CPU and EP-ROM/other peripheral units.

TIMING CHART

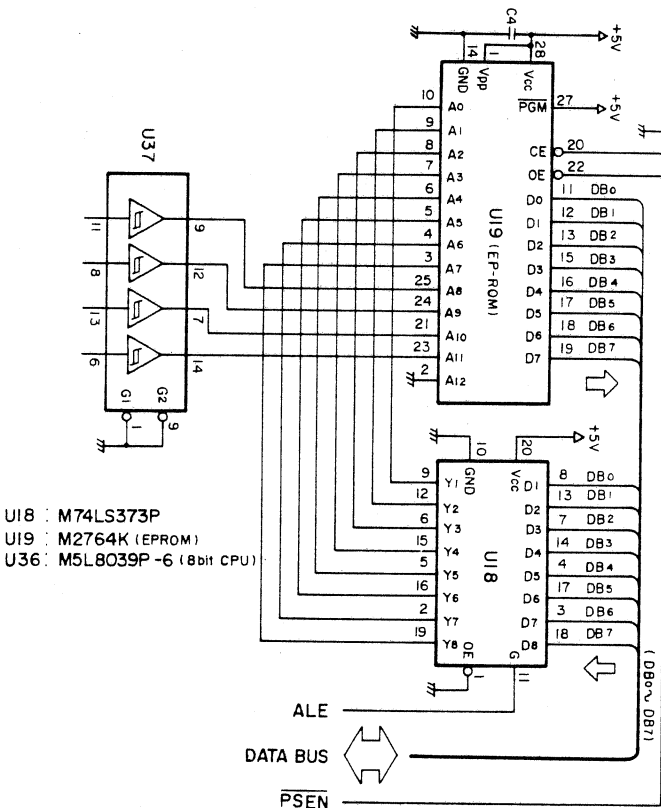


5. MEMORY CIRCUIT (EP-ROM)

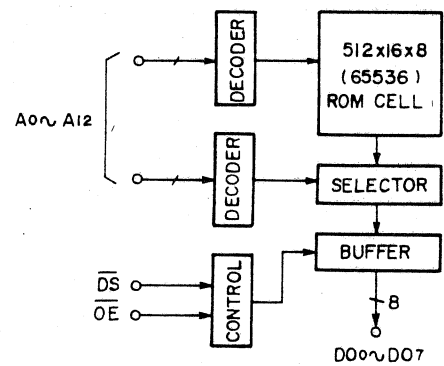
This is a circuit used for reading out the data written to the EP-ROM U19.

Since CPU (8039) uses the same bus as the data and address buses, addresses should be designated

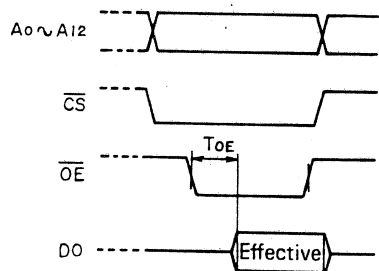
first and be held in the tri-state latch U18 (LS373); only after this, data is able to be read from the EP-ROM U19 (2764).



BLOCK DIAGRAM



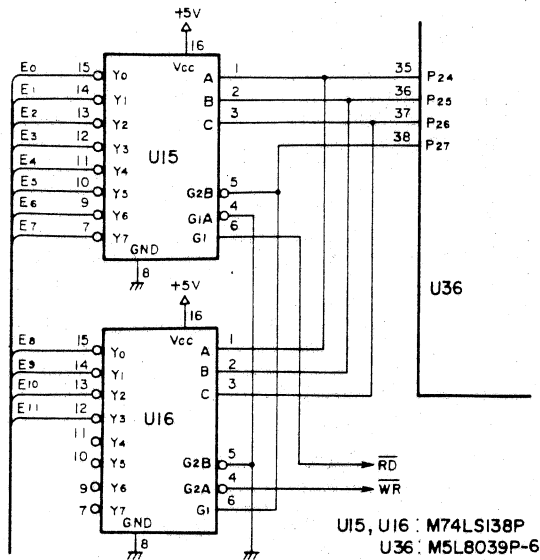
TIMING CHART



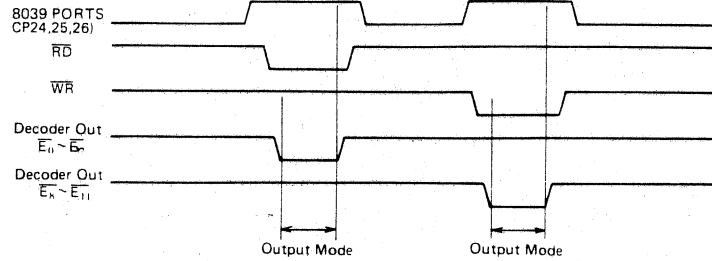
6. I/O EXPANSION CIRCUIT

Since the CPU (8039) has only 2 arrays of I/O ports (8 lines x 2), the address decoder LS138 is used to expand the output ports to 12 lines. Outputs from P24, P25, P26 and P26 of CPU

are input to A, B and C of the address decoder LS138; selection of U15 and U16 is controlled by \overline{RD} and \overline{WR} .



TIMING CHART

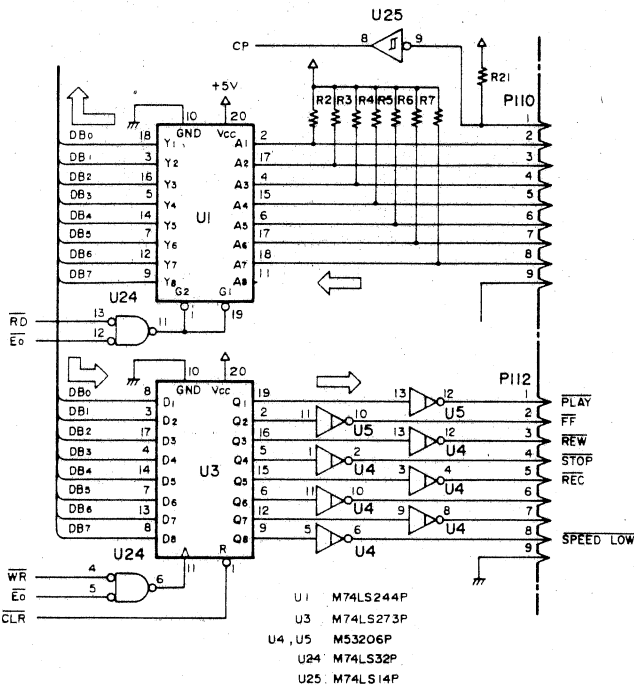


7. INTERFACE OUTPUT CIRCUIT

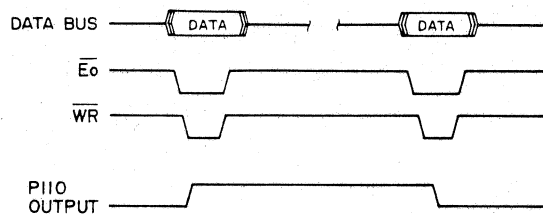
This is a circuit used to send outputs from the AQ-65 to the TASCAM recorder/reproducer being used through the ACCESSORY cable. The output stages of this circuit are all open collector. When a PLAY, FF, REW, STOP, REC or SPEED LOW signal is generated because the corresponding switches in the AQ-65 are turned on, the CPU operates so as to output the data containing information of the enabled

mode to the data bus. This data is sent to U3 (LS273) and the enable signal $\overline{E_0}$ is output from the address decoder. Then, when \overline{WR} is sent out from the CPU, that data is latched in U3.

Because of the limitations of the fan out capacity, output to the recorder/reproducer is done through an open collector inverter.



TIMING CHART



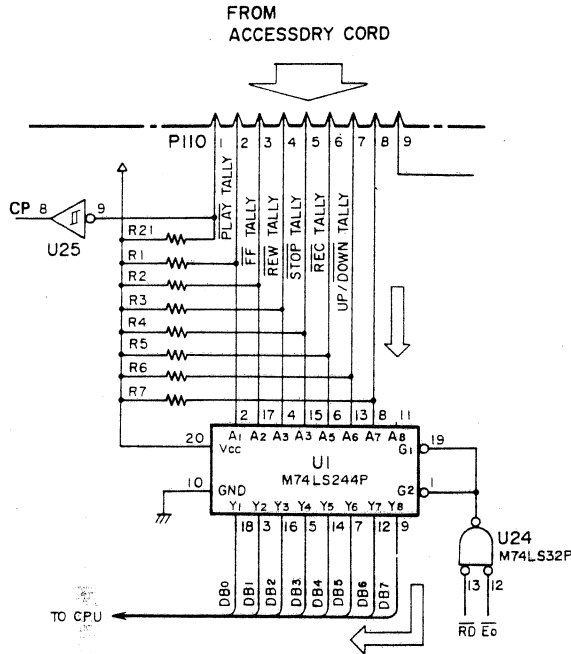
8. INTERFACE INPUT CIRCUIT

This is a circuit to which the outputs of the TASCAM recorder/reproducer being used with the AQ-65 are input. Control signals sent out from the deck via the ACCESSORY cable are connected to a Schmidt trigger type tri-state buffer, LS244, and the buffered data is sent

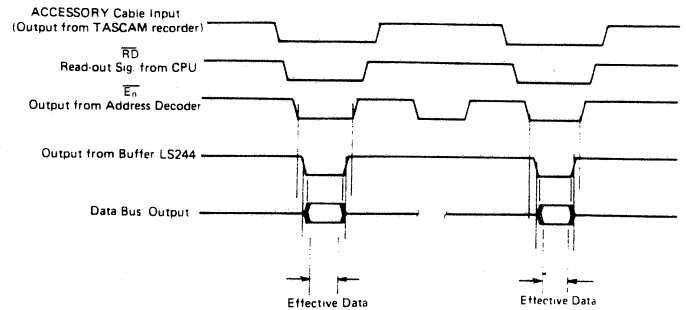
through the data bus to the CPU.

About the CP signal

The CP signal sent from the ACCESSORY connector on the TASCAM deck is received at terminal T₁ of CPU and processed as an event interrupt command.



TIMING CHART

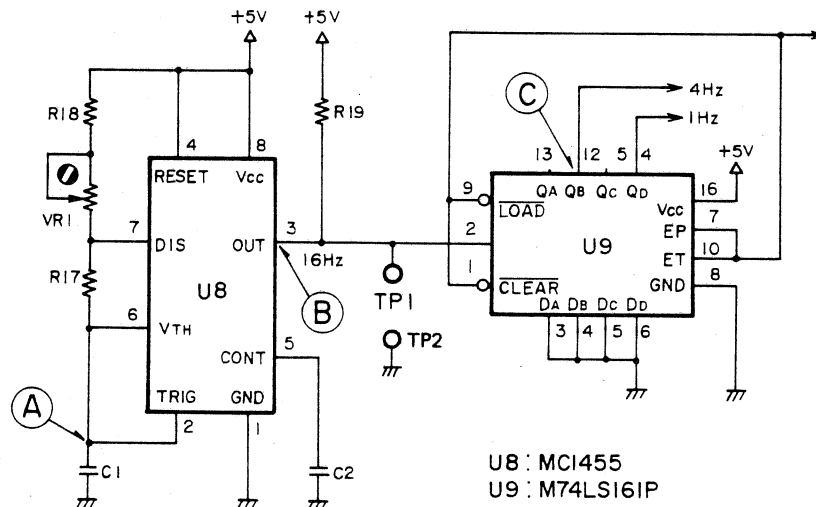


9. TIMER CIRCUIT

9-1. Oscillator

This circuit includes a monolithic timer U8 and an astable multivibrator, the output of this is divided through the 4-bit binary counter, M74LS161, to obtain the necessary clock signal. The timing capacitor C1 connected before the

timer U8 is charged through R17, R18 and VR1; the charge stored in C1 is discharged through R17. Therefore, the output duty factor of this oscillator is determined by the values of R17, R18 and VR1.



U8: MCI455
U9: M74LS161P

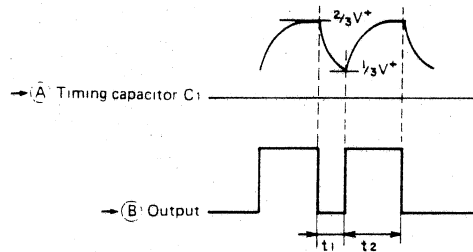
Adjustment of the timer U8 output frequency
 With a frequency counter connected to TP2 (GND) and to output terminal 3 of U8, adjust VR1 so that the counter reads 16 Hz.

$$f = \frac{1.46}{(R17 + R18 + VR1) \times C1} \text{ (Hz)}$$

$$t_1 = 0.69 \times R17 \times C1$$

$$t_2 = 0.69 \times (R17 + R18 + VR1) \times C1$$

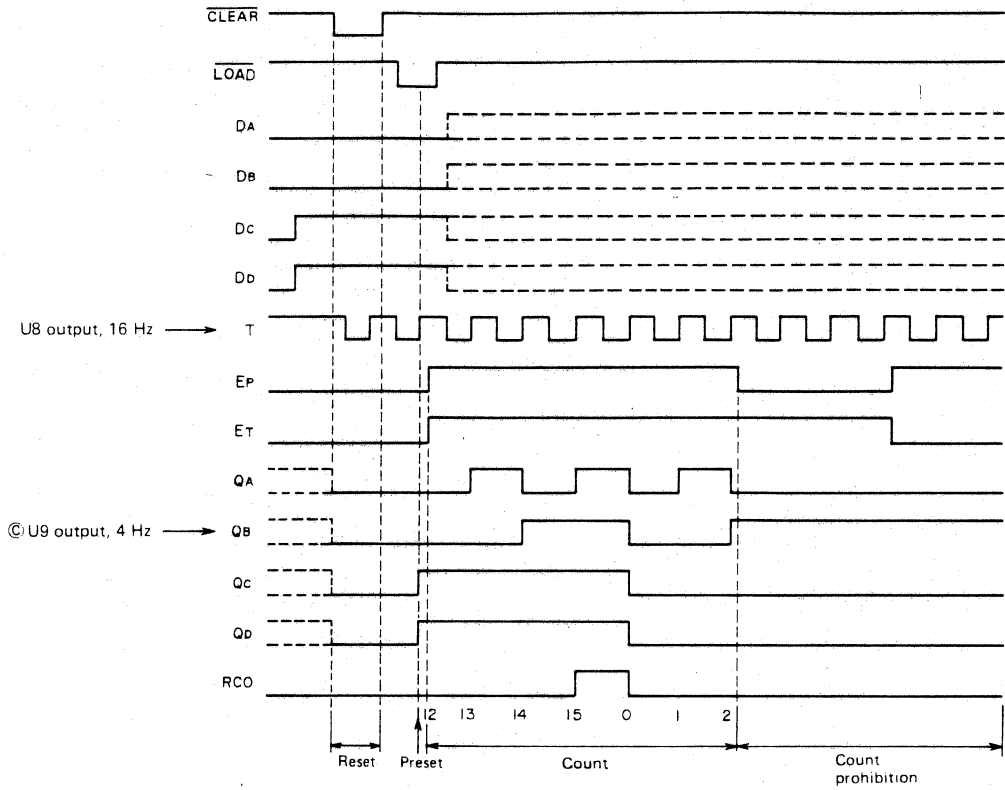
TIMING CHART



9-2. Divider

As shown in the timing chart, when LOAD, CLEAR, EP, ET go L, output QB goes L (QA, QC and QD as well); and when they go H,

input pulses T (16 Hz) are counted so that output QB generates a 16-Hz-divided-by-4 signal (4 Hz).



USE OF THE 4 Hz CLOCK SIGNAL

- The 4 Hz signal appearing at QB of LS161 is used to:
- 1) Cause the MEMORY register LED's to blink at a rate of 4 Hz.
 - 2) Set waiting time of the STO, RCL and CLR keys to 3 sec.
 - 3) Scan the TAPE TIME RST and PRE ROLL keys' status every 1/4 sec.
 - 4) Set the shut-off time of SEARCH and REPEAT

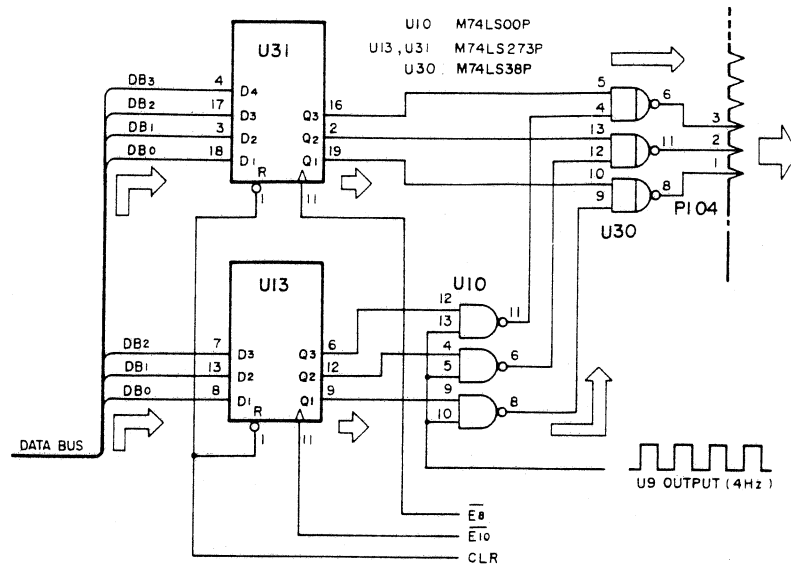
- 5) Compute the tape rolling speed.
- 6) Check the SPEED selector setting of AQ-65 against the interfaced TASCAM deck's playback tape speed (when a rise time of 4/4 - 5/4 sec. has passed and the tape reaches the stabilized rolling status).

10. MEMORY REGISTER LED DRIVE CIRCUIT

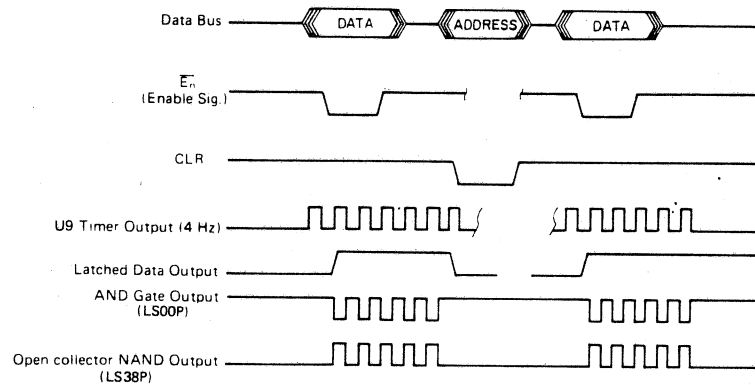
This is a circuit used for lighting the MEMORY register LED's to show which register is designated for cue point storage.

When a specific MEMORY register is designated, the CPU selects the data necessary for driving the relative MEMORY register LED according to its program.

When the enable signal \overline{E}_{10} is fed into U13 (LS273) and U31 (LS273) from the address decoder, the bits representing the register LED to be driven are stored in the latch IC's. The output of the latch IC's and that of the timer (4 Hz), passing through the AND gate U10, are sent out from the open collector type NAND gate U30.



TIMING CHART



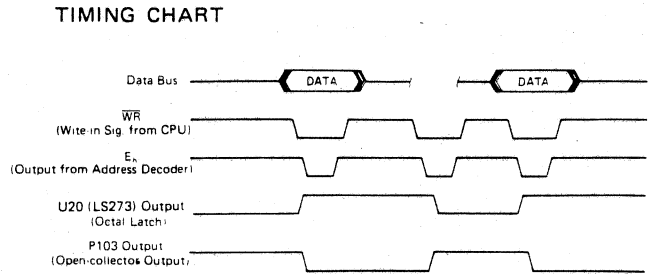
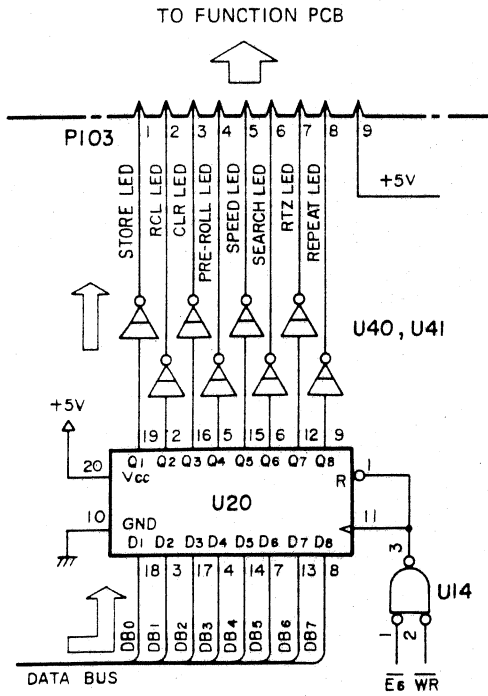
11. LED DRIVE CIRCUIT

This is a circuit for driving the LED's on the Keyboard and Function PCB's.

CPU transmits the data selected according to its program into the data bus and selects the address decoder signal E6 at its I/O ports. Then, when \overline{WR} is sent out from CPU, the selected

data is held in the octal latch U20 (LS273) until the next \overline{WR} signal is sent from CPU.

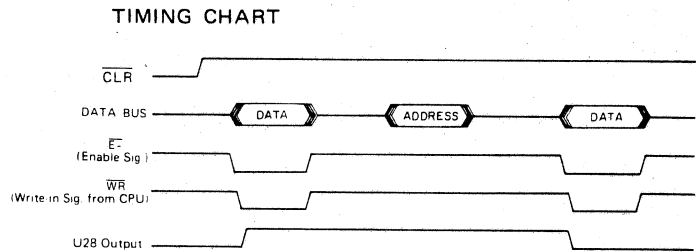
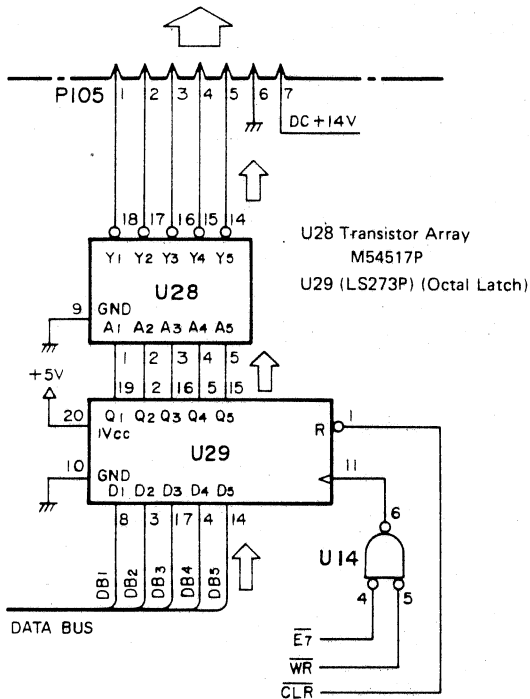
Because of the limitations of the fan out capacity of LS273, its output is through an open-collector inverter.



12. LAMP DRIVE CIRCUIT

When the data corresponding lamp tally signals present in the recorder/reproducer are fed into the latch U29, the CPU, selecting the address decoder output E7, sends out the WR signal to the data bus, then the NAND gate of U14 goes L

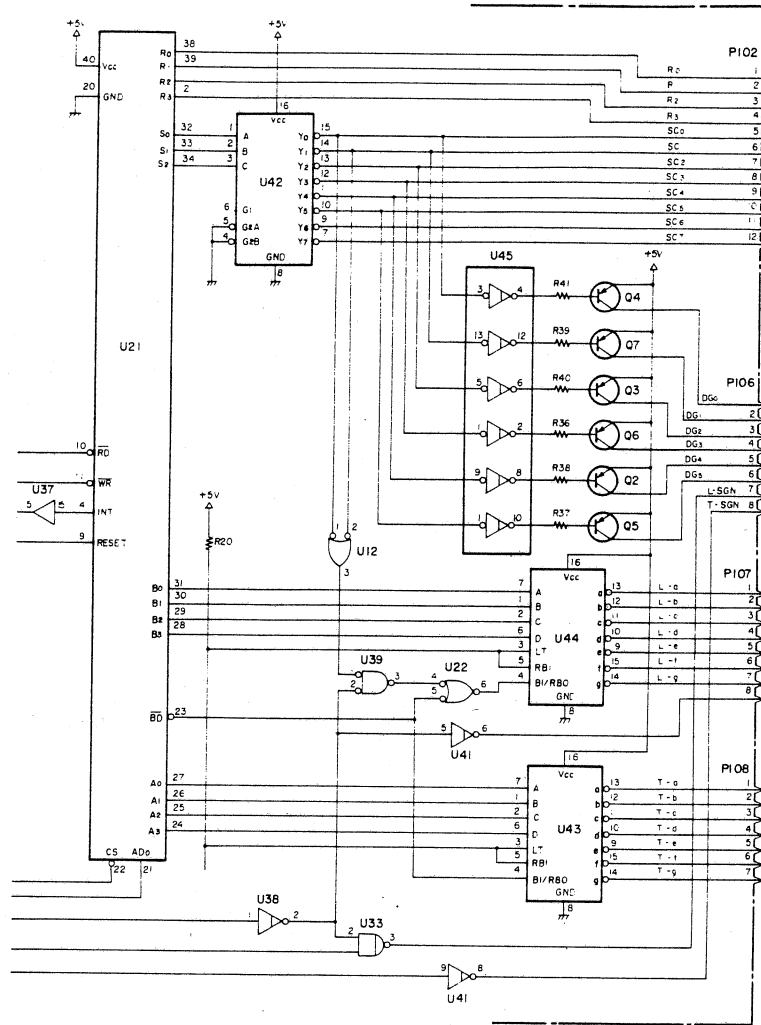
and, as a result, the data is held in latch U29. Because of the limitations of the fan out capacity of U29, the transistor array U28 (open collector) is used to boost signals for driving the filament lamps.



13. KEYBOARD – DISPLAY INTERFACE CIRCUIT

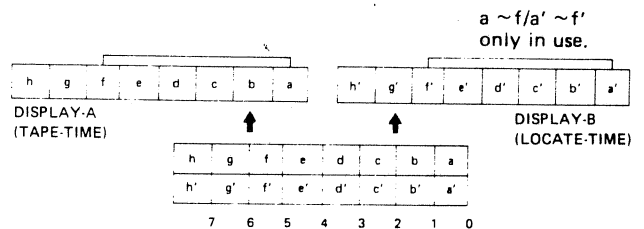
This circuit uses the M5L8279P-5 (U21), LSI designed exclusively for interface use. This LSI comprises of a keyboard section and a display section. The keyboard section includes a 64-bit buffer (for key bounce control) and a 8 x 8-bit FIFO/Sensor RAM, and operates in the keyboard mode, sensor matrix mode or strobe mode. The display section has a 16 x 8-bit display register

(RAM) that can be modified into a dual 16 x 4-bit structure. The display digits are also programmable as 8 or 16 digits. Furthermore, 16 x 4 x 2/8 x 4 x 2 formats are available according to the program. For driving the LED's in the display section, a BCD-to-7-segment decoder 74LS24P (U43, U44) is used.



- 1) Display mode
8-digit x 8-bit character display (right shift mode)
 - 2) Keyboard mode
Encoder display (sensor matrix mode)
 - 3) About the program clock
The 8039 sends a 4/3 MHz signal via its T₀ terminal to the 8279 to prescale the clock pulses generated inside the 8279 to 102.5 kHz.
- * Keyboard scanning time is approx. 5 msec.

4) TAPE TIME and LOCATE TIME displays and the display RAM



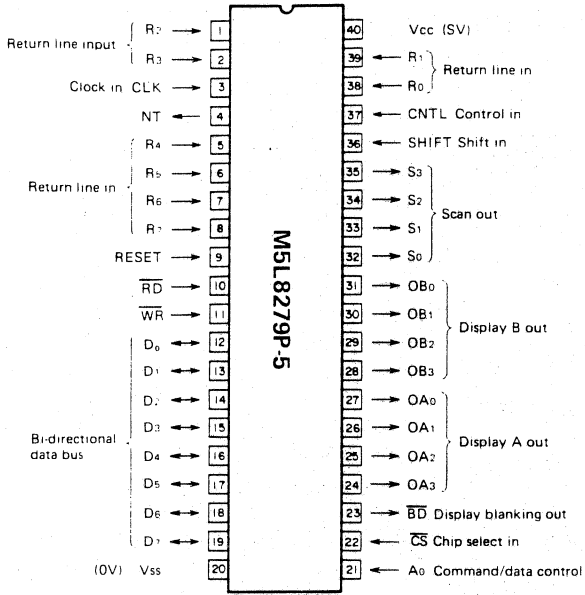
The decimal point lighting is dynamic.

5) Pre-roll time display

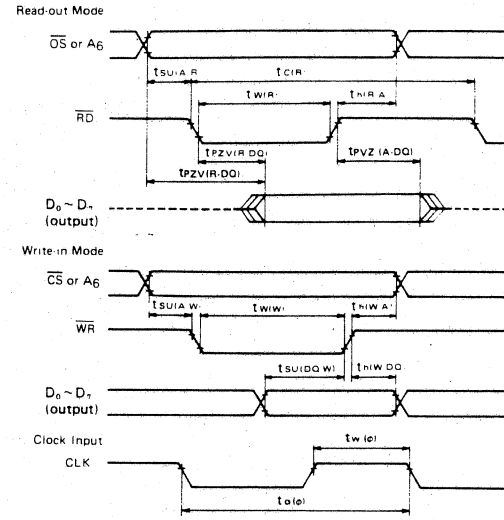
The 8039 transmits a blanking command to the 8279 so that the display B only is first activated (with the display A blanked), then the 8039

acts so as to blank segments c' through f' from its I/O ports, directly.

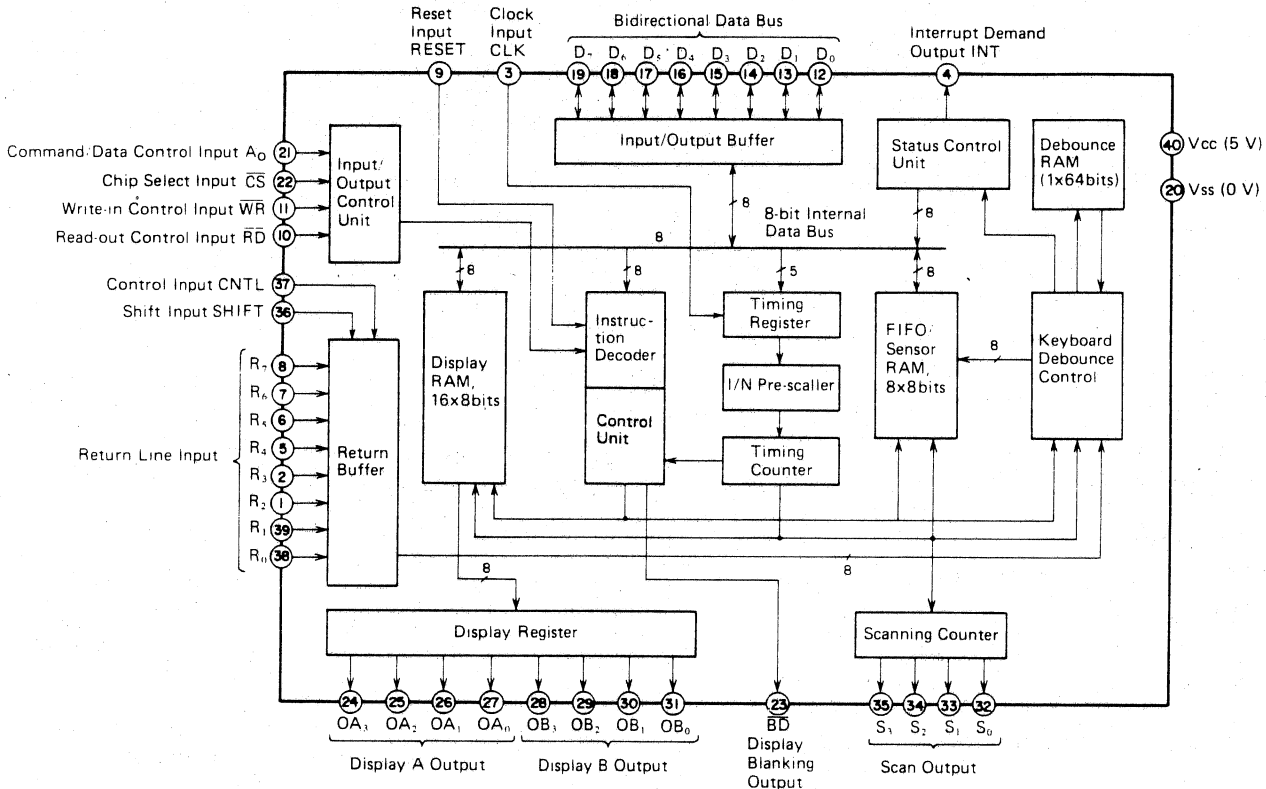
6) Minus (-) sign display is directly controlled from the 8039 I/O ports.



TIMING CHART



BLOCK DIAGRAM



Exploded View

Parts marked with * require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1	*5800710701	Cover, Top	
2	△*5128027000	Cord, AC Power [J]	
	△*5350010800	Cord, AC Power [US, GE]	
	△*5350011200	Cord, AC Power [C]	
	△*5350008200	Cord, AC Power [E]	
	△*5128047000	Cord, AC Power [UK]	
	△*5350008300	Cord, AC Power [A]	
3	*5350508300	Cable Ass'y, Accessory	
4	*5800710600	Panel, Rear	
5	*5534660000	Bushing, 4N-4 [J, US, GE, E, A]	
	*5317001700	Bushing, 4N-5 [UK]	
	*5534663000	Bushing, 6W-1 [C]	
6	*5800719400	Plate, Cable	
7	*5730006800	Connector, Cable	
8	*5800721400	Plate, Mask [All except GE]	
9	*5200177700	PCB Ass'y, S/F SELECT	
10	△5300024900	Switch, Power [J]	
	△5300025000	Switch, Power [US, C, GE]	
	△5300025100	Switch, Power [E, UK, A]	
11	△5131007001	Voltage Selector [GE]	
12	△5052907000	Spark Killer, 0.01 μF + 300 Ω/300 V [J, GE]	
	△5052910000	Spark Killer, 0.033 μF + 120 Ω/125 V [US]	
	△5292002600	Spark Killer, 0.033 μF + 120 Ω/125 V [C]	
	△5267703800	Spark Killer, 4700 pF/400 V [E, UK, A]	
	5730007500	Cover, Spark Killer [E, UK, A]	
	△5267702600	Spark Killer, 0.047 μF/250 V [E]	
13	△5320034200	Transformer, Power [J]	
	△5320034300	Transformer, Power [US, C]	
	△5320034400	Transformer, Power [GE]	
	△5320034500	Transformer, Power [E, UK, A]	
14	5200170800	PCB Ass'y, FUNCTION	
15	5787050600	Support, PCB (MSP-6N)	
16	*5200171000	PCB Ass'y, DISPLAY	
17	5800657700	Button	
18	*5800709200	Holder Ass'y, PCB; L	
19	*5800709700	Guide Ass'y, PCB	
20	*5800709300	Holder Ass'y, PCB; R	
21	5210171100	PCB, KEY	
22	*5800710000	Heatsink	
23	*5200171400	PCB Ass'y, POWER SUPPLY [J, US, C, GE] PCB Ass'y, POWER SUPPLY [E, UK, A]	
24	△5307004100	Fuse, 2A 250 V [US, C, J, GE]	F201
	△5041155000	Fuse, T2A 250 V [E, UK, A]	F201
25	△5307003100	Fuse, 0.5 A 250 V [US, C, J, GE]	F202
	△5041154000	Fuse, T0.5 A 250 V [E, UK, A]	F202
26	*5033291000	Tube, Insulating	
27	*5033295000	Plate, Insulating	
28	*5200171200	PCB Ass'y, SW	
29	*5200171300	PCB Ass'y, LAMP	
30	*5800685000	Pressure Plate, Switch; B	
31	*5800719500	Panel Ass'y Front	
32	*5800657300	Button, D	
33	*5800657400	Button, E	

*Parts marked with *require longer delivery time.

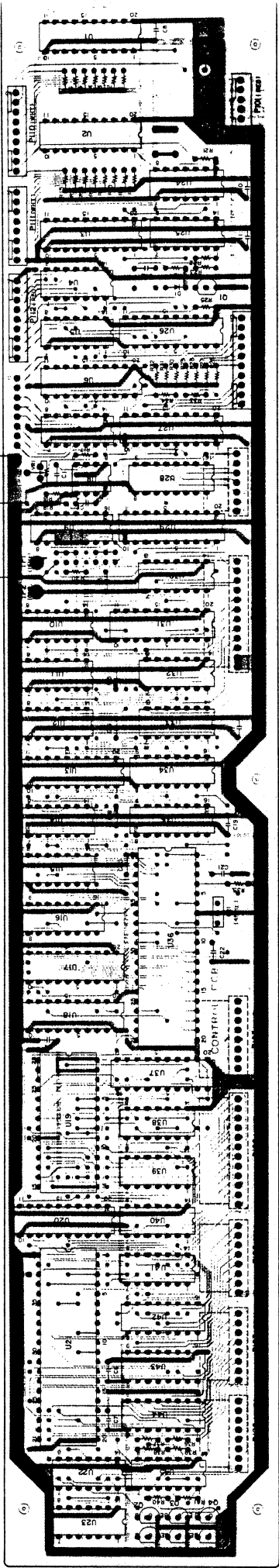
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
34	*5800657100	Button, B	
35	*5800657000	Button, A	
36	*5800657200	Button, C	
37	*5800658200	Guide, Spring	
38	5800658400	Spring, Button	
39	*5800683101	Escutcheon, Button; C	
40	5730007100	Cap, Key Button	
41	5800700900	Sheet, 10 Key	
42	5730007000	Button, Key	
43	*5800710901	Chassis Ass'y	
44	*5200170700	PCB Ass'y, CONTROL	
45	*5800709500	Collar, PCB; A	
46	*5800709600	Collar, PCB; B	
47	*5800565900	Angle, Rack Mounting; 2U	
48	*5200185100	PCB Ass'y, LAMP DRIVE	
49	*5730007400	Stud, PCB	
50	5300033900	Push Switch (13 used)	
51	5300040700	Push Switch with LED (3 used)	
61	*5783114006	Screw, M4 x 6 (BLK Ni)	
62	*5780003006	Screw, Bind M3 x 6	
63	*5780023006	Screw, Bind M3 x 6 (BLK Ni)	
64	*5780024008	Screw, Bind M4 x 8 (BLK Ni)	
65	*5780023012	Screw, Bind M3 x 12 (BLK Ni)	
66	*5780022600	Screw, Bind M2.6 x 6 (BLK Ni)	
67	*5781813000	Nut, M3	
68	*5781814000	Nut, M4	
69	*5780003016	Screw, Bind M3 x 16	
70	*5780014008	Screw, Bind M4 x 8 (Ni)	
71	*5785214206	Washer, Fiber (WHT) $\phi 4 \times \phi 6.5 \times 0.5$ t	
72	*5781704006	Bolt, M4 x 6 (Ni)	
73	5781002008	Screw, Bind Tapping 2 x 8	

INCLUDED ACCESSORIES

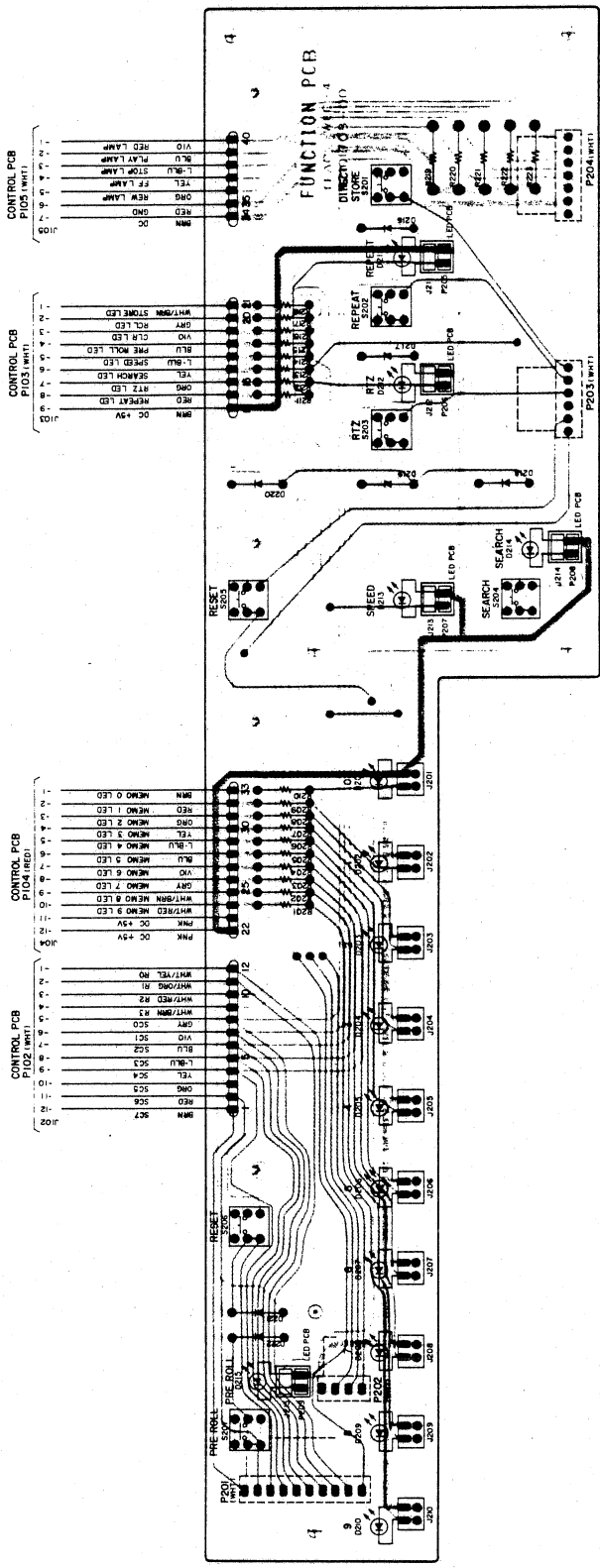
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	5700069900	AQ-65 Owner's Manual [J]	
	5700070000	AQ-65 Owner's Manual [All except J]	
	5800565900	Angle, Rack Mounting; 2U	
	5534659000	Spacer	
	5544995000	Washer	
	5780315015	Screw, Oval Countersunk M5 x 15 (Ni)	
	5780014012	Screw, Bind M4 x 12 (Ni)	
	5730003000	Foot, FF-004	

[US]: U.S.A. [C]: CANADA [J]: JAPAN [GE]: GENERAL EXPORT
[E]: EUROPE [UK]: U.K. [A]: AUSTRALIA

LAMP DRIVE PCB
P2 (REV. 1)
P1 (REV. 1)
P3 (REV. 1)
P4 (REV. 1)
P5 (REV. 1)
P6 (REV. 1)
P7 (REV. 1)
P8 (REV. 1)
P9 (REV. 1)
P10 (REV. 1)
P11 (REV. 1)
P12 (REV. 1)
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P96 (REV. 1)
P97 (REV. 1)
P98 (REV. 1)
P99 (REV. 1)
P100 (REV. 1)



FUNCTION PCB ASS'Y



CONTROL PCB Ass'y

Parts marked with * require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION
	*5200170700	PCB Ass'y
	*5210170700	PCB
	IC's	
U1, U2	5220037900	M74LS244P
U3	5220038200	M74LS273P
U4, U5	5220038400	M53206P
U6	5220038200	M74LS273P
U7	5220038700	M53217P
U8	6048947000	MC1455
U9	5220037700	M74LS161P
U10~U12	5220037100	M74LS00P
U13	5220038200	M74LS273P
U14	5220037400	M74LS32P
U15, U16	5220037600	M74LS138P
U17	5220038000	M74LS245P
U18	5220038300	M74LS373P
U19	5220806000	ROM, M2764K, Entry No. 8401
U20	5220038200	M74LS273P
U21	5220805800	M5L8279P-5
U22	5220037200	M74LS08P
U23	5220036100	M74LS74AP
U24	5220037400	M74LS32P
U25	5220037300	M74LS14P
U26, U27	5220037900	M74LS244P
U29	5220038200	M74LS273P
U30	5220037500	M74LS38P
U31	5220038200	M74LS273P
U32, U33	5220037500	M74LS38P
U34, U35	5220037800	M74LS175P
U36	5220805700	Micro computer, M5L8039P-6
U37	5220037900	M74LS244P
U38	5220038800	M74LS04P
U39	5220037400	M74LS32P
U40, U41	5220038600	M53216P
U42	5220037600	M74LS138P
U43, U44	5220038100	M74LS247P
U45	5220038500	M53207P
	TRANSISTORS	
U28	604866100	Transistor array, M54517P
Q1	5145151000	2SC1815GR
Q2~Q7	5230016100	2SA950Y
	DIODE	
D1	5224015010	ISS133HV
	RESISTORS	
All resistors are rated $\pm 5\%$ tolerance, 1/6 Watt and of carbon type unless otherwise noted.		
R1~R15	5240028220	1 k Ω
R17	5240034200	330 k Ω
R18	5240032420	56 k Ω
R19~R21	5240028220	1 k Ω
R22~R24	5240030620	10 k Ω
R25~R34	5240028220	1 k Ω
R35~R41	5240027420	470 Ω
VR1	5280192600	Semi-fixed, Metal, 330 k Ω

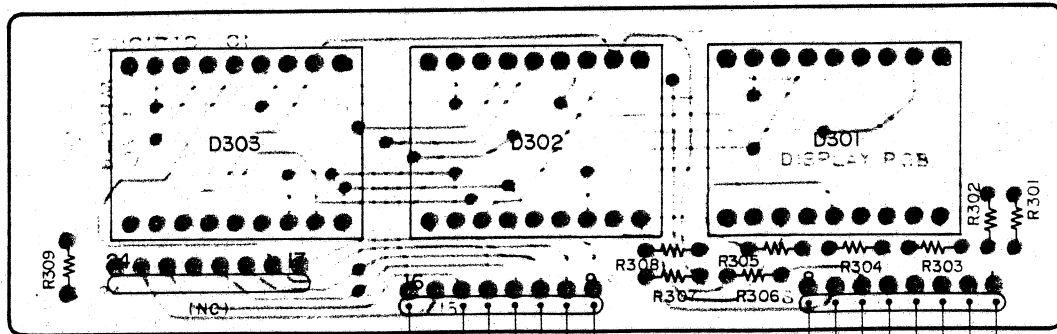
REF. NO.	PARTS NO.	DESCRIPTION
	CAPACITORS	
C1	5171878000	Mylar, 0.1 μ F 50 V 5%
C2	5171856000	Mylar, 0.01 μ F 50 V 5%
C3~C8	5173435000	Ceramic, 0.047 μ F
C9	5173072000	Elec., 470 μ F
C10, C11	5173435000	Ceramic, 0.047 μ F
C12	5260163452	Elec., 22 μ F 25 V
C13~C20	5173435000	Ceramic 0.047 μ F
C21, C22	5172206000	Ceramic 33 pF
	CONNECTOR PLUGS	
P101	5122304000	5045-07A (RED), 7P
P102	5122155000	5046-12A, 12P
P103	5122152000	5046-9A, 9P
P104	5122463000	5046-12A (RED), 12P
P105	5122150000	5046-07A, 7P
P106	5122151000	5046-08A, 8P
P107	5122208000	5046-08A (BLK), 8P
P108	5122459000	5046-08A (RED), 8P
P109	5122134000	5045-10A, 10P
P110	5122133000	5045-09A, 9P
P111	5122132000	5045-08A, 8P
P112	5122306000	5045-09A (RED), 9P
	MISCELLANEOUS	
CR1	5347001000	Ceramic resonator, KBR-4.0 MHz
TP1, TP2	5317002100	DH check pin
	5332013600	IC socket, C46-28
	5181760000	Jumper wire, P = 2.5

FUNCTION PCB Ass'y

REF. NO.	PARTS NO.	DESCRIPTION
	*5200170800	PCB Assy
	*5210170800	PCB
	DIODES	
D201~210	5225007900	LED, GL-9PR2
D211, D212	5225005400	LED, SLP-135B
D213	5225009700	LED, BU1170-1BR
D214, D215	5225005400	LED, SLP-135B
D216~D222	5143118000	IS2473HJ
	CARBON RESISTORS	
R201~R218	5183078000	680 Ω 1/4 W
R219~R223	5180076000	560 Ω 1/2 W
	CONNECTORS	
J201~J215	5336115200	Socket, 3024-02CH, 2P
P201	5122153000	Plug, 5046-10A, 10P
P202	5122147000	Plug, 5046-4A, 4P
P203	5122149000	Plug, 5046-6A, 6P
P204	5122150000	Plug, 5046-7A, 7P
P205~P209	5122354000	Plug, 3022-2A, 2P
	SWITCHES	
S201~S207	5300028100	Push, 2-2N SPH-122A
	*5210170900	LED PCB

DISPLAY PCB ASS'Y

(LOCATE TIME)



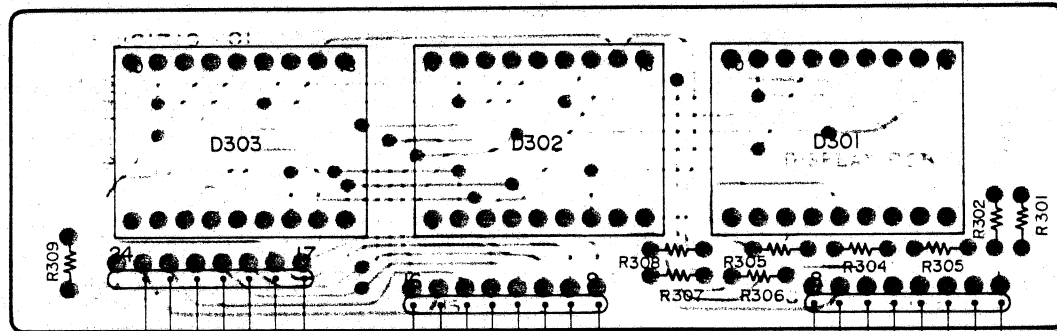
V10
BLU
L-BLU
YEL
ORG
RED
BRN

L-SGN
DG0
DG1
DG2
DG3
DG4
DG5

J107 L-D.P.
-8 GRY
-7 V10
-6 BLU
-5 L-BLU
-4 YEL
-3 ORG
-2 RED
-1 BRN

CONTROL PCB
PI07 (BLK)

(TAPE TIME)



V10
BLU
L-BLU
YEL
ORG
RED
BRN

L-SGN
DG0
DG1
DG2
DG3
DG4
DG5

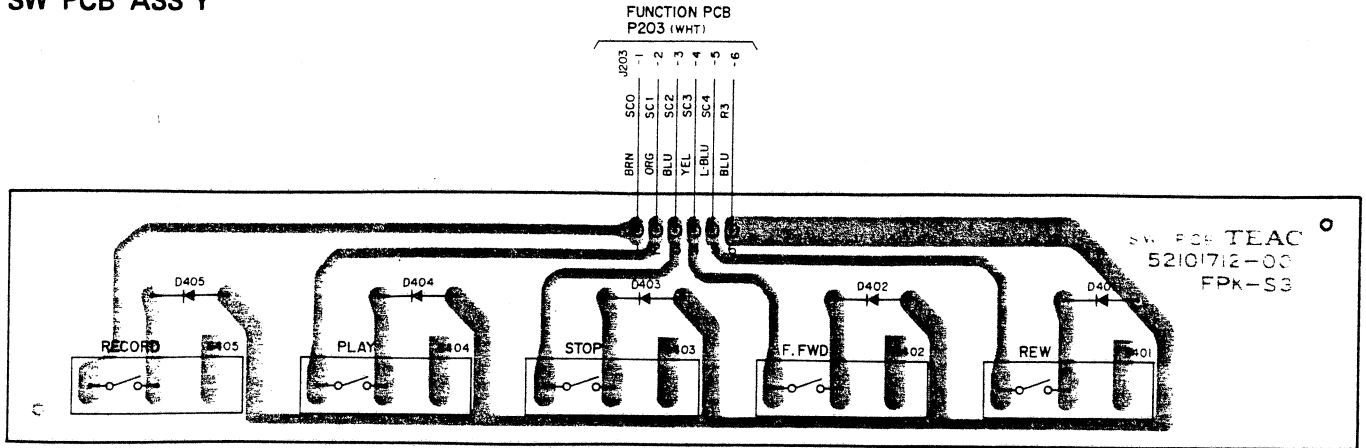
J106 T-SGN
-8 GRY
-7 V10
-6 BRN
-5 RED
-4 ORG
-3 YEL
-2 L-BLU
-1 BLU

J108 T-D.P.
-8 GRY
-7 V10
-6 BLU
-5 L-BLU
-4 YEL
-3 ORG
-2 RED
-1 BRN

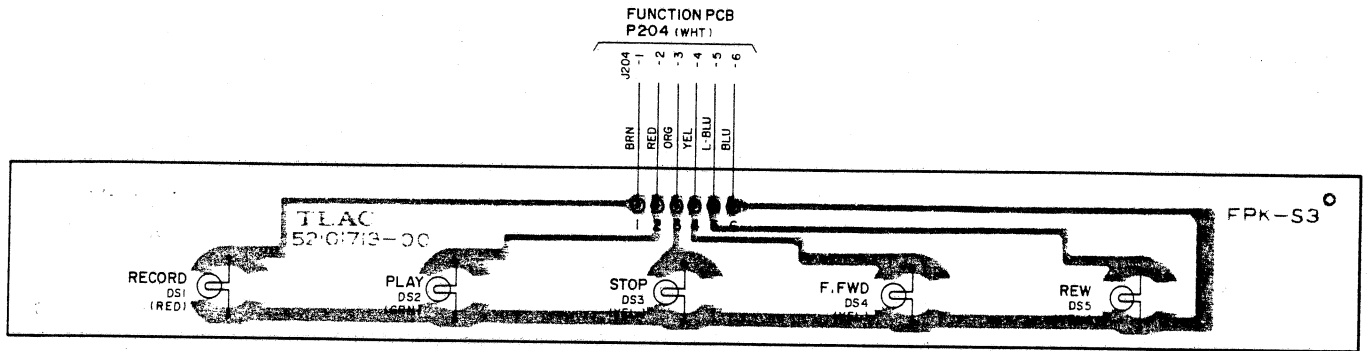
CONTROL PCB
PI06 (WHT)

CONTROL PCB
PI08 (RED)

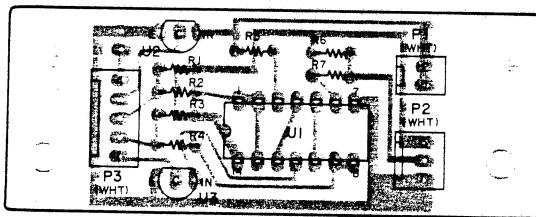
SW PCB ASS'Y



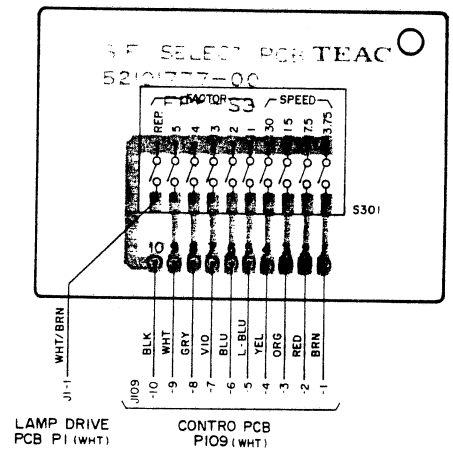
LAMP PCB ASS'Y



LAMP DRIVE PCB ASS'Y



F/S SELECT PCB ASS'Y



Parts marked with * require longer delivery time.

DISPLAY PCB Ass'y

REF. NO.	PARTS NO.	DESCRIPTION
	*5200171000	PCB Ass'y
	*5210170000	PCB
D301~D303	5225014200	7 segment LED, GL-7P201
R301~R309	5240025820	Carbon Resistor, 100 Ω 1/6 W

LAMP DRIVE PCB Ass'y

REF. NO.	PARTS NO.	DESCRIPTION
	*5200185100	PCB Ass'y
	*5210185100	PCB
U1	5220019100	IC, TC4011BP
U2, U3	5232252020	Digital Transistor, 2SC3400
R1~R7	5240030020	Carbon Resistor, 5.6 kΩ 1/6 W 5 %
P1	5122126000	Connector Plug, 2P (WHT), 5045-02A
P2	5122127000	Connector Plug, 3P (WHT), 5045-03A
P3	5122128000	Connector Plug, 4P (WHT), 5045-04A

SW PCB Ass'y

REF. NO.	PARTS NO.	DESCRIPTION
	*5200171200	PCB Ass'y
	*5210171200	PCB
D401~D405	5143118000	Diode, 1S2473HJ
S401~S405	5301455200	Micro Switch, SS5GL13-N

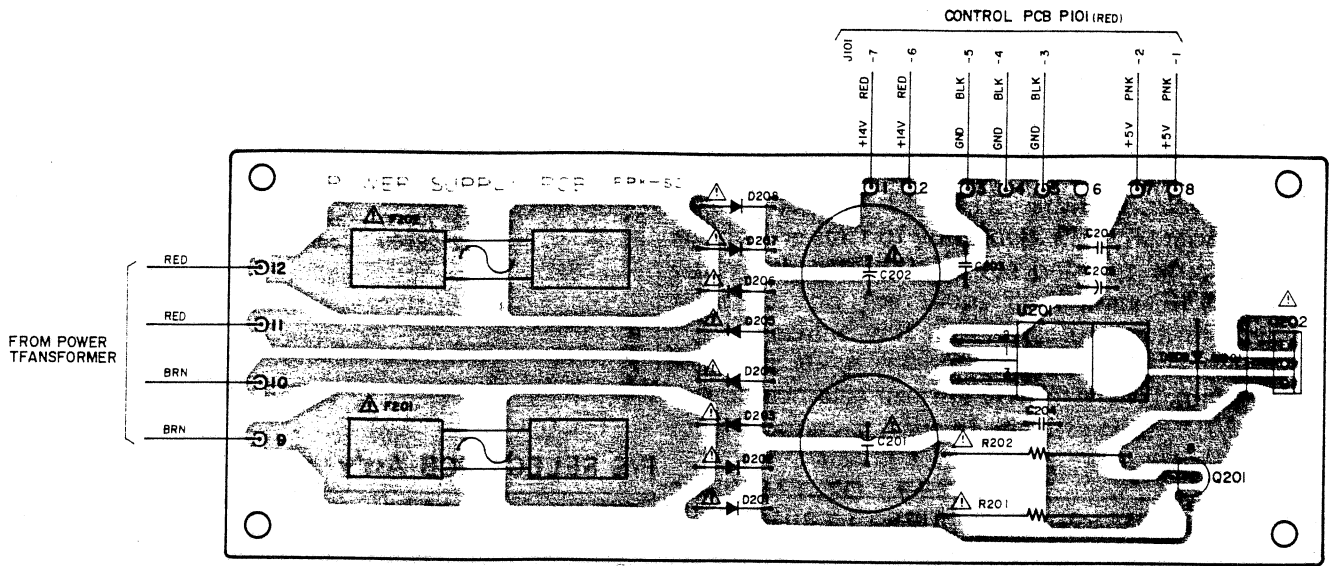
F/S SELECT PCB Ass'y

REF. NO.	PARTS NO.	DESCRIPTION
	*5200177700	PCB Ass'y
	*5210177700	PCB
S301	5302102200	Dip Switch, SGK3102

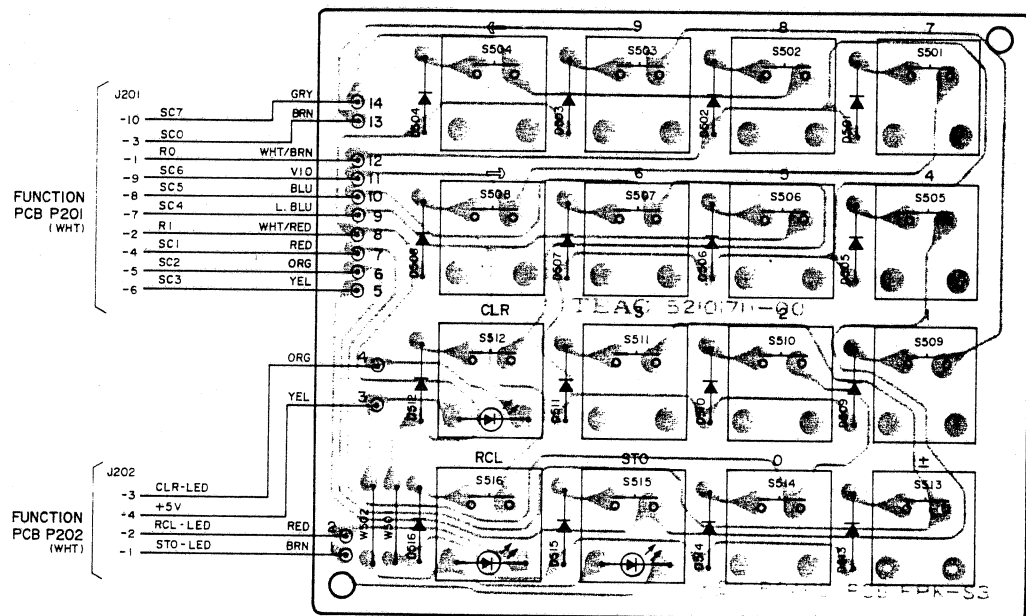
LAMP PCB Ass'y

REF. NO.	PARTS NO.	DESCRIPTION
	*5200171300	PCB Ass'y
	*5210171300	PCB
DS1	5310007100	Mini-base Lamp, 14 V 80 mA (RED)
DS2	5310007300	Mini-base Lamp, 14 V 80 mA (GRN)
DS3~DS5	5310007200	Mini-base Lamp, 14 V 80 mA (YEL)

POWER SUPPLY PCB ASS'Y



KEY BOARD PCB ASS'Y



POWER SUPPLY PCB Ass'y

REF. NO.	PARTS NO.	DESCRIPTION
	*5200171400	PCB Ass'y [US], [C], [J], [GE]
	*5200177600	PCB Ass'y [E], [UK], [A]
	*5210171400	PCB [US], [C], [J], [GE]
	*5210177600	PCB [E], [UK], [A]
IC		
U201	5147058000	Regulator, NJM78M05A
TRANSISTORS		
Q201	514515000	2SA1015GR
Q202	△514512900	2SB507E
DIODES		
D201~D208	△5143243000	ERB12-02G1
D209	5143243000	ERB12-02G1
RESISTORS		
R201	△5241185510	Metal Film, 22 Ω 2 W Non-flammable
R202	△5241221310	Oxide Film, 0.22 Ω 2 W Non-flammable
CAPACITORS		
C201	△5173088000	Elec. 2200 μF 16 V
C202	△5173082000	Elec. 1000 μF 25 V
C203, C204	5267010400	Ceramic 0.1 μF 25 V
C205	5260163452	Elec. 22 μF 25 V
C206	5267010400	Ceramic 0.1 μF 50 V
FUSES		
F201	△5307004100	2A 250 V [US], [C], [J], [GE]
F201	△5142189000	T2A 250 V [E], [US], [A]
F202	△5307003100	0.5A 250 V [US], [U], [J], [GE]
F202	△5041138000	T0.5A 250 V [E], [UK], [A]
MISCELLANEOUS		
	5041237000	Fuse Holder [US], [C], [J], [GE]
	5332014200	Fuse Holder [E], [UK], [A]
	5033291000	Insulating Plate, 1S-313D
	5033295000	Insulating Tube
W201	5181763000	Jumper Wire, P = 10

KEY BOARD PCB Ass'y

REF. NO.	PARTS NO.	DESCRIPTION
	*5200171100	PCB Ass'y
	*5210171100	PCB
D501~D516	5143118000	Diode, 1S2473HJ
S501~S511	5300033900	Push Switch, KCC10921
S512	5300040700	Push Switch with LED, KCC11921
S513, S514	5300033900	Push Switch, KCC10921
S515, S516	5300040700	Push Switch with LED, KCC11921
W501, W502	5181763000	Jumper Wire, P = 10

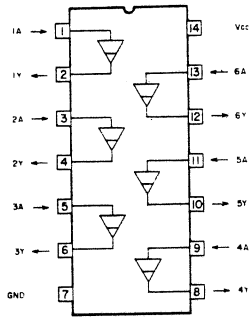
[U]: U.S.A. [C]: CANADA
 [A]: AUSTRALIA [E]: EUROPE
 [L]: LIMITED AREA [J]: JAPAN
 [GE]: GENERAL EXPORT
 [UK]: U.K.

NOTES

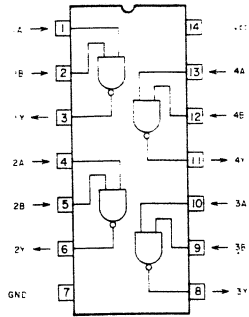
1. All capacitor values are in microfarads (μ = picofarads).
2. Parts marked with Δ are safety critical components.
They must always be replaced with components specified by TEAC.
3. PC boards shown viewed from foil side.
4. Service data are found where they are necessary.
Improvements may result in service data changes without notice.
5. Parts not shown in the parts lists, as well as those listed without parts No.s, are not service parts and are unavailable as such.

IC Internal Block Diagrams

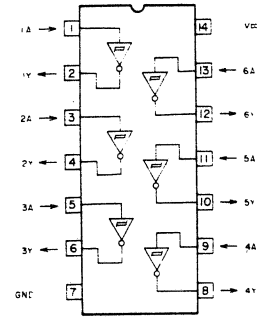
M53207P (U45)



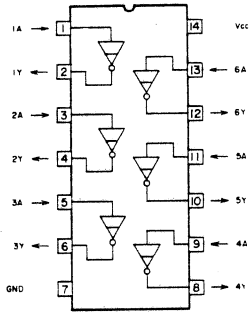
M74LS00P (U10, U11, U12)



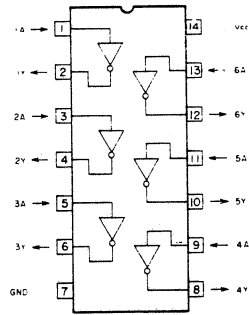
M74LS14P (U25)



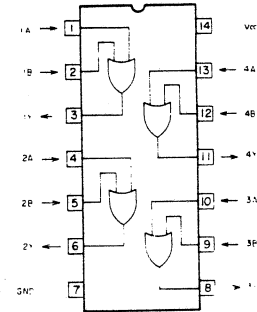
**M53206P (U4, U5)/M53216P (U40, U41)
M53217P (U7)**



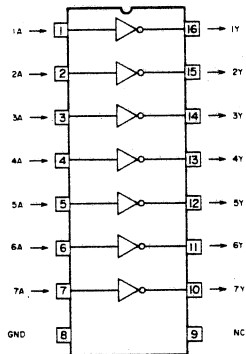
M74LS04P (U38)



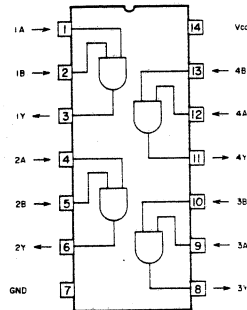
M74LS08P (U22)



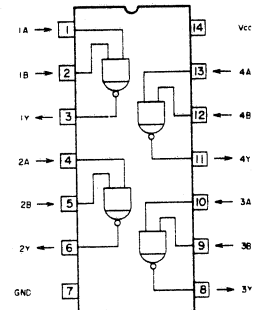
M54517P (U28)



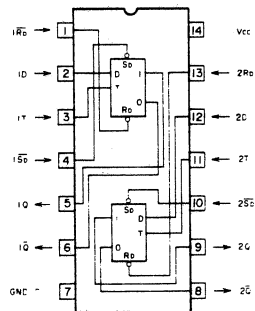
M74LS32P (U14, U24, U39)



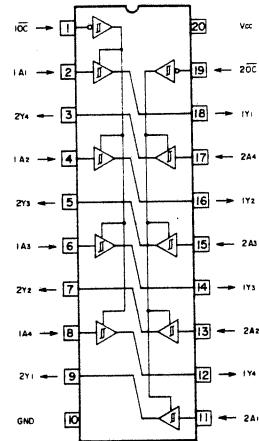
M74LS38P (U30, U32, U33)



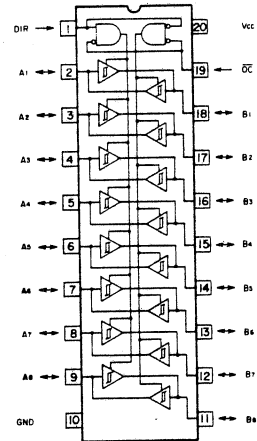
M74LS74AP (U23)



M74LS244P (U1, U2, U26, U27, U37)



M74LS245P (U17)



TASCAM AQ-65

TEAC Professional Division

WIRING DIAGRAM

