

WARNING

The following instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing other than contained in the operating instructions unless you are qualified to do so.

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ADJUSTMENT

To obtain the best performance, periodically calibrate the unit. Sometimes, only one mode need be calibrated, while at other times, all modes should be calibrated. When one mode is calibrated, it must be noted that the other modes may be affected. When calibrating all modes, perform the calibration in the specified sequence.

The following calibration required an accurate measuring instrument and an insulated adjusting flat blade screwdriver. If they are not available, contact your dealer. For optimum adjustment, turn the power on and warm up the unit sufficiently (more than 30 minutes) before starting. Before calibrating the unit, check the power supply voltage.

TEST EQUIPMENT REQUIRED

The following instrument or their equivalent should be used for making adjustment.

OSCILLOSCOPE CS-5170 KENWOOD

PREPARATION FOR ADJUSTMENT

Control Settings

The control settings listed below must be used for each adjustment procedure.

Exceptions to these settings will be noted as they occur.

- Terminate with 75Ω on the oscilloscope.
- Select MONO SCOPE pattern and normal mode.
- Take out the upper case of CG-941.

ADJUSTMENT

1. Adjust the output level of VIDEO OUT 1 to 1 Vp-p.
 - (1) Connect BNC cord to VIDEO OUT 1 jack of CG-941.
 - (2) Adjust RV1 while observing the oscilloscope so that the white peak is 0.714 Vp-p and sync level is 1 Vp-p $\pm 5\%$ (0.95 V to 1.05 V) as shown in Fig. 1.

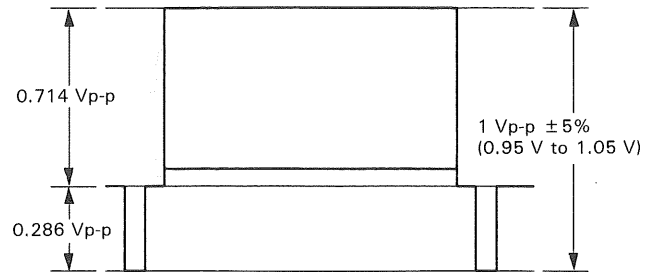
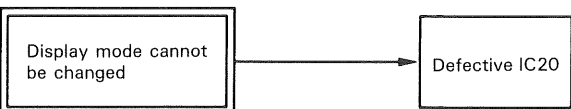
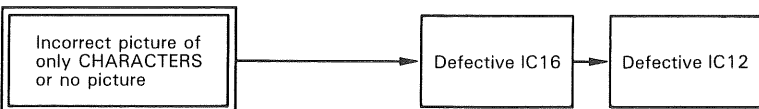
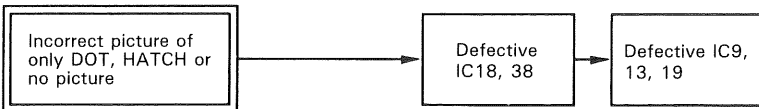
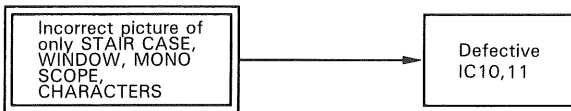
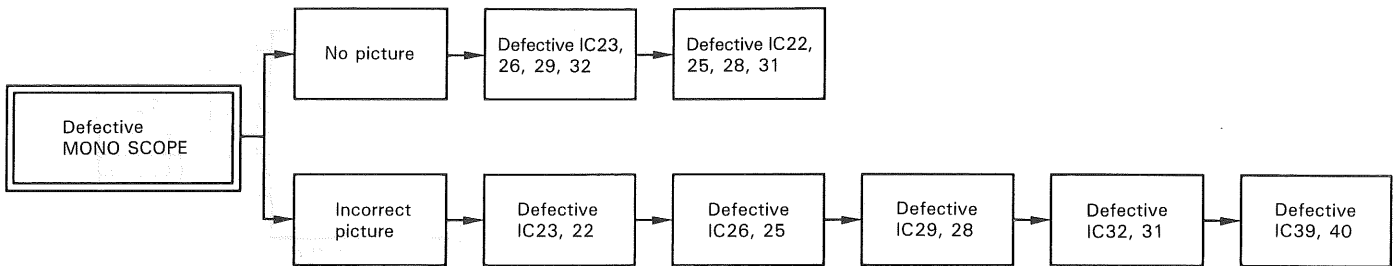
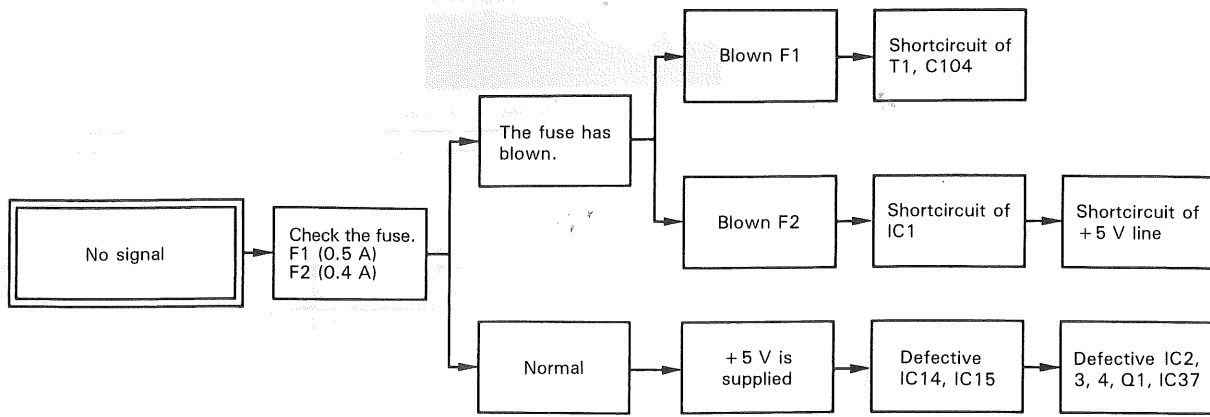


Fig. 1

2. Adjust the output level of VIDEO OUT 2 to 1 Vp-p.
 - (1) Connect BNC cord to VIDEO OUT 2 jack of CG-941.
 - (2) Adjust RV2 while observing the oscilloscope so that the white peak is 0.714 Vp-p and sync level is 1 Vp-p $\pm 5\%$ (0.95 V to 1.05 V) as shown in Fig. 1.

TROUBLESHOOTING



PARTS LIST

CG-941 UNIT

(Y77-1240-00)

| REF. NO | PARTS NO | NAME & DESCRIPTION |
|---------|-------------|-------------------------------|
| | A01-1231-08 | CHASSIS |
| | A01-1232-08 | CASE |
| | A63-0001-08 | FRONT PANEL |
| | B41-0873-08 | CAUTION LABEL; FUSE |
| | B42-3705-08 | NAME PLATE; SERIAL NO. |
| | B63-0001-00 | INSTRUCTION MANUAL; ENG./JAP. |
| | D22-0507-08 | JOINT & COUPLING |
| | E05-0361-08 | BNC RECEPTACLE |
| | E30-1894-05 | JIS POWER CORD WITH CONNECTOR |
| | E30-1895-05 | UL/CSA POWER CORD |
| | E38-0028-08 | WIRE ASS'Y; CN1 TO CN7 |
| | E38-0029-08 | WIRE ASS'Y; POWER SWITCH |
| | E38-0054-08 | WIRE ASS'Y; OUTPUT |
| | F20-0694-08 | INSULATION PLATE |
| | H10-2850-08 | FOAMED STYRENE PAD |
| | H20-1732-08 | VINYL COVER |
| | H53-0001-08 | CARTON BOX |
| | J02-0527-08 | RUBBER FOOT |
| | J21-4705-08 | BRACKET; FOR POWER SWITCH |
| | J29-0513-08 | P.C.B HOLDER |
| | J42-0085-05 | BUSHING; FOR 3-CORE AC CORD |
| | J42-0554-08 | BUSHING (FOR AC CORD) |
| | K27-0558-08 | BUTTON; POWER |
| | N30-3006-41 | SCREW, PAN HD M3X6 |
| | N30-3006-45 | SCREW, PAN HD M3X6 (BLACK) |
| | N32-3006-41 | SCREW, FLAT HD M3X6 |
| | N86-4006-41 | SCREW, BINDING TAPTITE 4X6 |
| | N87-3006-41 | SCREW, BRAZIER TAPTITE 3X6 |
| | S40-1534-08 | PUSH SWITCH; POWER |
| | W02-0499-08 | OVERALL UNIT |

OVERALL UNIT

(W02-0499-08)

| REF. NO | PARTS NO | NAME & DESCRIPTION | | | |
|---------|--------------|------------------------|-------|-------|------|
| | E38-0055-08 | WIRE ASS'Y; CN2 TO CN3 | | | |
| | E40-7114-08 | PIN CONNECTOR 2P | | | |
| | F01-0881-08 | HEAT SINK | | | |
| | J13-0517-08 | FUSE CLIP | | | |
| | J19-1669-08 | LED HOLDER | | | |
| | J73-0007-08 | PCB (UNMOUNTED) | | | |
| | K27-0565-08 | BUTTON; GRAY | | | |
| C1 | CE04EW1C222M | CAP. ELECTRO | 2200 | 20% | 16V |
| C2 | CE04EW1A471M | CAP. ELECTRO | 470 | 20% | 10V |
| C3 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C4 | CC45CH1H120J | CAP. CERAMIC | 12P | 5% | 50V |
| C5 | CC45CH1H150J | CAP. CERAMIC | 15P | 5% | 50V |
| C9 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C10 | CE04EW1A471M | CAP. ELECTRO | 470 | 20% | 10V |
| C11 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C12 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C13 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C14 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C15 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C16 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C17 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C18 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C19 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C20 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C21 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C22 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C23 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C24 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C25 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C26 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C27 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C28 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C29 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C30 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C31 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C32 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C33 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C34 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C35 | CC45SL1H470J | CAP. CERAMIC | 47P | 5% | 50V |
| C36 | CC45SL1H330J | CAP. CERAMIC | 33P | 5% | 50V |
| C51 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C52 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C53 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C54 | NO USE | | | | |
| C55 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C56 | NO USE | | | | |
| C57 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C58 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C59 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C60 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C61 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C62 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C63 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C64 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C65 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C66 | NO USE | | | | |
| C67 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C68 | NO USE | | | | |
| C69 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C70 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C71 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C72 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C75 | CE04EW1A330M | CAP. ELECTRO | 33 | 20% | 10V |
| C76 | CE04EW1A330M | CAP. ELECTRO | 33 | 20% | 10V |
| C77 | CE04EW1A471M | CAP. ELECTRO | 470 | 20% | 10V |
| C78 | CE04EW1C4R7M | CAP. ELECTRO | 4.7 | 20% | 16V |
| C79 | CE04EW1A471M | CAP. ELECTRO | 470 | 20% | 10V |
| C80 | CE04EW1C4R7M | CAP. ELECTRO | 4.7 | 20% | 16V |
| C90 | CS15E1C330M | CAP. TANTURIUM | 33 | 10% | 16V |
| C91 | CC45SL1H020C | CAP. CERAMIC | 2P | 0.25P | 50V |
| C100 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C101 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C102 | C91-0117-05 | CAP. CERAMIC | 0.01 | 10% | 25V |
| C103 | CE04EW1A101M | CAP. ELECTRO | 100 | 20% | 10V |
| C104 | C91-1318-08 | CAP. FILM | 0.047 | 20% | 125V |
| C105 | CK45B1H271J | CAP. CERAMIC | 270P | 5% | 50V |

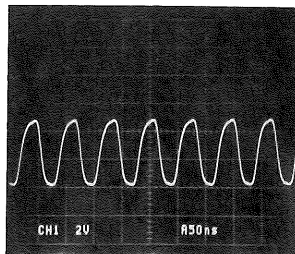
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PARTS LIST

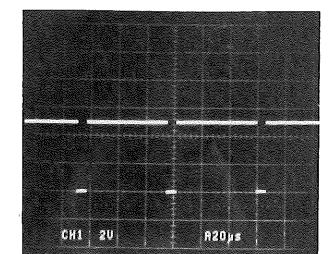
| REF. NO | PARTS NO | NAME & DESCRIPTION |
|---------|---------------|--------------------------------|
| CN1 | E40-7112-08 | PIN CONNECTOR 12P |
| CN2 | E40-7111-08 | PIN CONNECTOR 30P |
| CN3 | E40-7115-08 | PIN CONNECTOR 30P |
| CN4 | E40-7113-08 | PIN CONNECTOR 4P |
| CN5 | E40-7110-08 | PIN CONNECTOR 2P |
| CN6 | E40-7110-08 | PIN CONNECTOR 2P |
| CN7 | E40-7109-08 | PIN CONNECTOR 12P |
| CP1 | R90-0691-08 | RES. NETWORK |
| CP2 | R90-0690-08 | RES. NETWORK 8X100K |
| CP3 | R90-0691-08 | RES. NETWORK |
| CP4 | R90-0690-08 | RES. NETWORK 8X100K |
| D1 | LB-156 | DIODE, STACK |
| D901 | GL9PG24 | LED; GREEN |
| D902 | GL9PG24 | LED; GREEN |
| D903 | GL9PG24 | LED; GREEN |
| D904 | GL9PG24 | LED; GREEN |
| D905 | GL9PG24 | LED; GREEN |
| D906 | GL9PG24 | LED; GREEN |
| D907 | GL9PG24 | LED; GREEN |
| D908 | GL9PG24 | LED; GREEN |
| D909 | GL9PR24 | LED; RED |
| F1 | F50-0014-08 | FUSE (5X20MM) 500MA/125V |
| F2 | F53-0025-08 | MICRO FUSE 400MA/125V |
| IC1 | LM2940CT-5.0 | IC, 1A LOW DROPOUT REGULATOR |
| IC2 | SN74HC05N | IC, HEX INVERTER (OPEN DRAIN) |
| IC3 | MC74HC00AN | IC, QUAD 2-INPUT NAND GATE |
| IC4 | MC74HC86N | IC, QUAD EXCLUSIVE OR GATE |
| IC5 | MC74HC151N | IC, 8-INPUT DATA SELECTOR/MPX |
| IC6 | MC74HC151N | IC, 8-INPUT DATA SELECTOR/MPX |
| IC7 | MC74HC151N | IC, 8-INPUT DATA SELECTOR/MPX |
| IC8 | MC74HC151N | IC, 8-INPUT DATA SELECTOR/MPX |
| IC9 | MC74HC04N | IC, HEX INVERTER |
| IC10 | MC74HC163N | IC, SYNC. 4-BIT BINARY COUNTER |
| IC11 | MC74HC163N | IC, SYNC. 4-BIT BINARY COUNTER |
| IC12 | T93-0700-08 | IC, PROGRAMMED ROM |
| IC13 | TC40H000P | IC, QUAD 2-INPUT NAND GATE |
| IC14 | CX-7930A | IC, SYNC. SIGNAL GENERATOR |
| IC15 | TC40H004P | IC, HEX INVERTER |
| IC16 | SN74HC166N | IC, 8-BIT SHIFT REGISTER |
| IC17 | MC74HC163N | IC, SYNC. 4-BIT BINARY COUNTER |
| IC18 | TC40H163P | IC, BINARY COUNTER |
| IC19 | TC40H010P | IC, QUAD 2-INPUT NAND GATE |
| IC20 | SN74HC148N | IC, ENCODER |
| IC21 | NO USE | |
| IC22 | T93-0698-08 | IC, PROGRAMMED ROM |
| IC23 | SN74HC166N | IC, 8-BIT SHIFT REGISTER |
| IC24 | NO USE | |
| IC25 | T93-0701-08 | IC, PROGRAMMED ROM |
| IC26 | SN74HC166N | IC, 8-BIT SHIFT REGISTER |
| IC27 | NO USE | |
| IC28 | T93-0702-08 | IC, PROGRAMMED ROM |
| IC29 | SN74HC166N | IC, 8-BIT SHIFT REGISTER |
| IC30 | NO USE | |
| IC31 | T93-0703-08 | IC, PROGRAMMED ROM |
| IC32 | SN74HC166N | IC, 8-BIT SHIFT REGISTER |
| IC33 | TC40H004P | IC, HEX INVERTER |
| IC34 | MC74HC10N | IC, TRIPLE 3-INPUT NAND GATE |
| IC35 | TC40H000P | IC, QUAD 2-INPUT NAND GATE |
| IC36 | MC74HC04N | IC, HEX INVERTER |
| IC37 | CX20095A | IC, VIDEO OUTPUT DRIVER |
| IC38 | TC40H163P | IC, BINARY COUNTER |
| IC39 | TC40H163P | IC, BINARY COUNTER |
| IC40 | TC40H163P | IC, BINARY COUNTER |
| IC41 | TC40H000P | IC, QUAD 2-INPUT NAND GATE |
| IC42 | MC74HC00AN | IC, QUAD 2-INPUT NAND GATE |
| L2 | L40-1011-04 | FERRI INDUCTOR 100UH 10% |
| Q1 | 2SC1815(Y) | TR. SI, NPN |
| R10 | RN14BK2C2202F | RES. METAL FILM 22K 1% 1/6W |
| R11 | RN14BK2C1203F | RES. METAL FILM 120K 1% 1/6W |
| R12 | RN14BK2C3300F | RES. METAL FILM 330 1% 1/6W |
| R13 | RN14BK2C1002F | RES. METAL FILM 10K 1% 1/6W |
| R14 | RN14BK2C1203F | RES. METAL FILM 120K 1% 1/6W |
| R15 | RN14BK2C3300F | RES. METAL FILM 330 1% 1/6W |
| R16 | RN14BK2C4701F | RES. METAL FILM 4.7K 1% 1/6W |
| R17 | RN14BK2C1503F | RES. METAL FILM 150K 1% 1/6W |
| R18 | RN14BK2C3300F | RES. METAL FILM 330 1% 1/6W |
| R19 | RN14BK2C2701F | RES. METAL FILM 2.7K 1% 1/6W |
| R20 | RN14BK2C1202F | RES. METAL FILM 12K 1% 1/6W |
| R21 | RN14BK2C3300F | RES. METAL FILM 330 1% 1/6W |

| REF. NO | PARTS NO | NAME & DESCRIPTION |
|---------|---------------|------------------------------|
| R22 | RN14BK2C1502F | RES. METAL FILM 15K 1% 1/6W |
| R23 | RN14BK2C3903F | RES. METAL FILM 390K 1% 1/6W |
| R24 | RN14BK2C3300F | RES. METAL FILM 330 1% 1/6W |
| R25 | RN14BK2C2401F | RES. METAL FILM 2.4K 1% 1/6W |
| R26 | RN14BK2C4302F | RES. METAL FILM 43K 1% 1/6W |
| R27 | RN14BK2C3300F | RES. METAL FILM 330 1% 1/6W |
| R28 | RD14BB2C105J | RES. CARBON 1M 5% 1/6W |
| R29 | NO USE | |
| R30 | RD14BB2C471J | RES. CARBON 470 5% 1/6W |
| R31 | RD14BB2C471J | RES. CARBON 470 5% 1/6W |
| R32 | RD14BB2C332J | RES. CARBON 3.3K 5% 1/6W |
| R33 | RD14BB2C332J | RES. CARBON 3.3K 5% 1/6W |
| R34 | RN14BK2C75R0F | RES. METAL FILM 75.0 1% 1/6W |
| R35 | RN14BK2C75R0F | RES. METAL FILM 75.0 1% 1/6W |
| R36 | RD14BB2C332J | RES. CARBON 3.3K 5% 1/6W |
| R37 | RD14BB2C332J | RES. CARBON 3.3K 5% 1/6W |
| R100 | RN14BK2C1002F | RES. METAL FILM 10K 1% 1/6W |
| R101 | RN14BK2C6801F | RES. METAL FILM 6.8K 1% 1/6W |
| R102 | RD14BB2C273J | RES. CARBON 27K 5% 1/6W |
| R103 | RD14BB2C273J | RES. CARBON 27K 5% 1/6W |
| R901 | RD14BB2C101J | RES. CARBON 100 5% 1/6W |
| R902 | RD14BB2C101J | RES. CARBON 100 5% 1/6W |
| R903 | RD14BB2C101J | RES. CARBON 100 5% 1/6W |
| R904 | RD14BB2C101J | RES. CARBON 100 5% 1/6W |
| R905 | RD14BB2C101J | RES. CARBON 100 5% 1/6W |
| R906 | RD14BB2C101J | RES. CARBON 100 5% 1/6W |
| R907 | RD14BB2C101J | RES. CARBON 100 5% 1/6W |
| R908 | RD14BB2C101J | RES. CARBON 100 5% 1/6W |
| R909 | RD14BB2C102J | RES. CARBON 1K 5% 1/6W |
| R910 | RD14BB2C102J | RES. CARBON 1K 5% 1/6W |
| RV1 | R12-3565-08 | RES. SEMI FIXED 470 B |
| RV2 | R12-3565-08 | RES. SEMI FIXED 470 B |
| S901 | S42-8502-08 | PUSH SWITCH |
| S902 | S42-8502-08 | PUSH SWITCH |
| S903 | S42-8502-08 | PUSH SWITCH |
| S904 | S42-8502-08 | PUSH SWITCH |
| S905 | S42-8502-08 | PUSH SWITCH |
| S906 | S42-8502-08 | PUSH SWITCH |
| S907 | S42-8502-08 | PUSH SWITCH |
| S908 | S42-8502-08 | PUSH SWITCH |
| S909 | S42-2521-08 | PUSH SWITCH |
| S910 | S42-2521-08 | PUSH SWITCH |
| T1 | L01-9950-08 | POWER TRANSFORMER |
| X1 | L77-1052-08 | CRYSTAL RESONATOR |

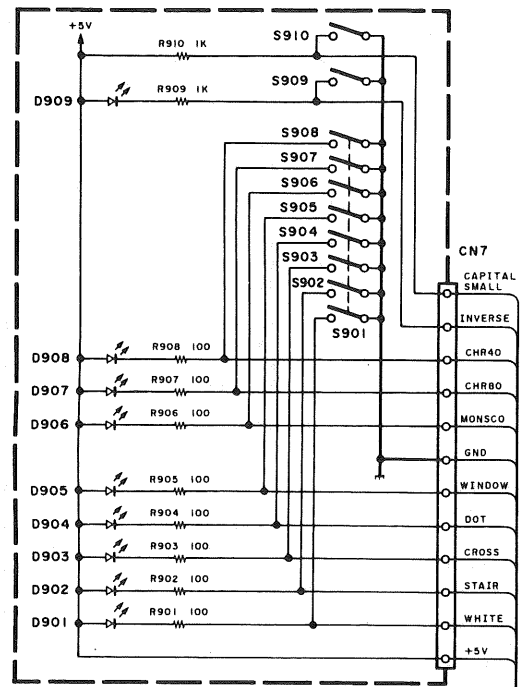
SCHEMATIC DIAGRAM/W



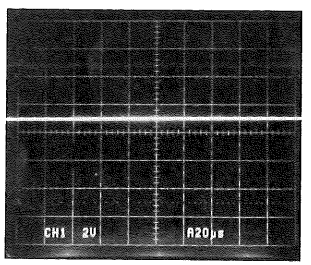
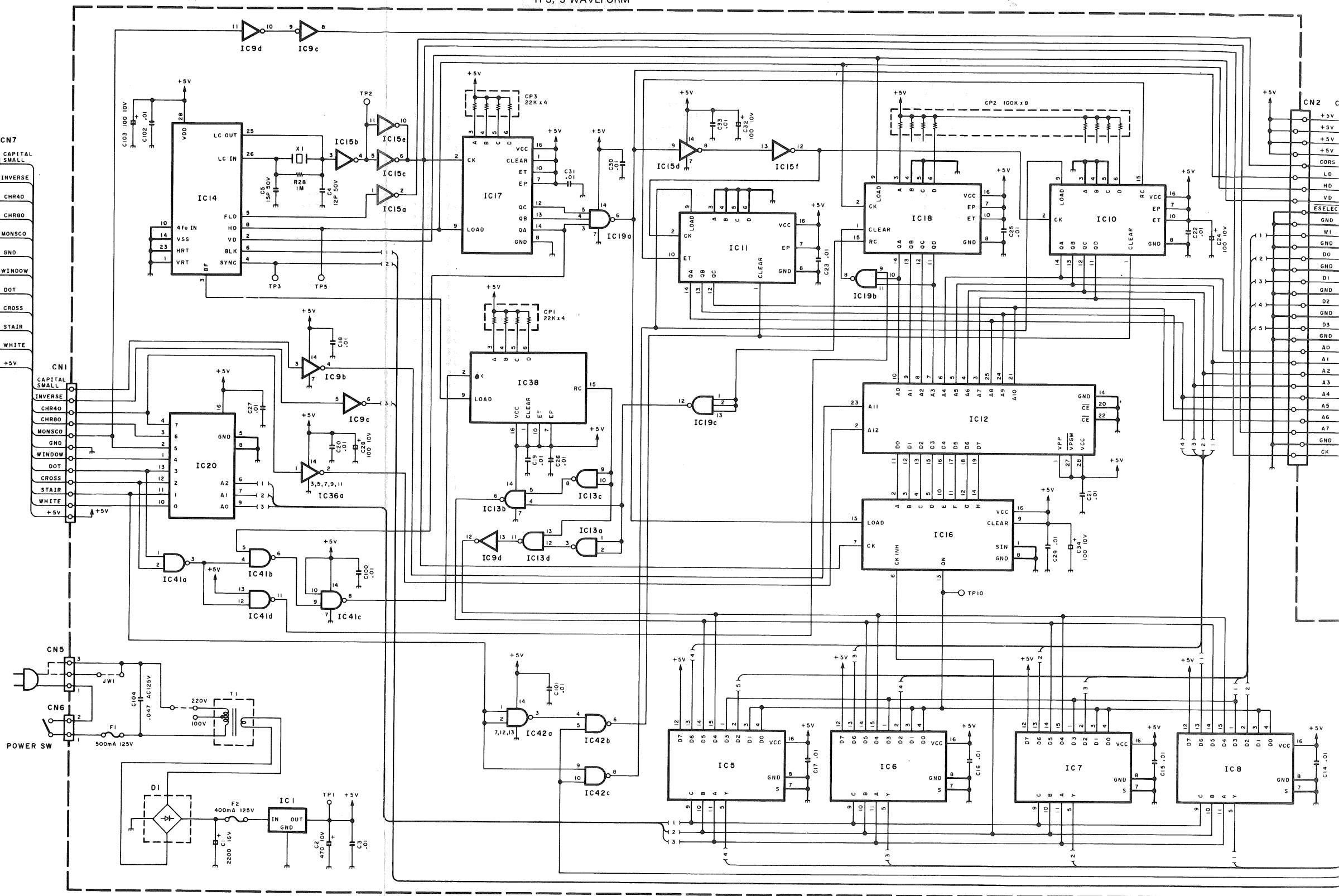
TP2 WAVEFORM



TP3, 5 WAVEFORM

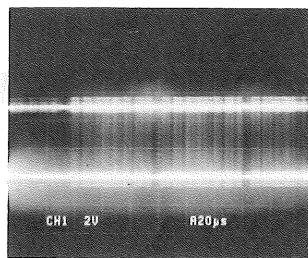


- IC1 : LM2940CT-5.0
- IC2 : SN74HC05N or TC74HC05AP
- IC3,42 : MC74HC00AN
- IC4 : MC74HC86N
- IC5~8 : MC74HC151N
- IC9,36 : MC74HC04N
- IC10,11,17 : MC74HC163N
- IC12 : T93-0700-08
- IC13,35,41 : TC40H000P
- IC14 : CX7930A
- IC15,33 : TC40H004P
- IC16,23,26,29,32 : SN74HC166N or TC74HC166AP
- IC18,38~40 : TC40H163P
- IC19 : TC40H010P
- IC20 : SN74HC148N or TC74HC148P
- IC22 : T93-0698-08
- IC25 : T93-0701-08
- IC28 : T93-0702-08
- IC31 : T93-0703-08
- IC34 : MC74HC10N
- IC37 : CX20095A
- O1 : 2SC1815(Y)
- D1 : LB-156
- D901~908 : GL9PG24
- D909 : GL9PR24

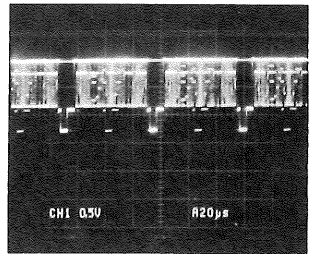
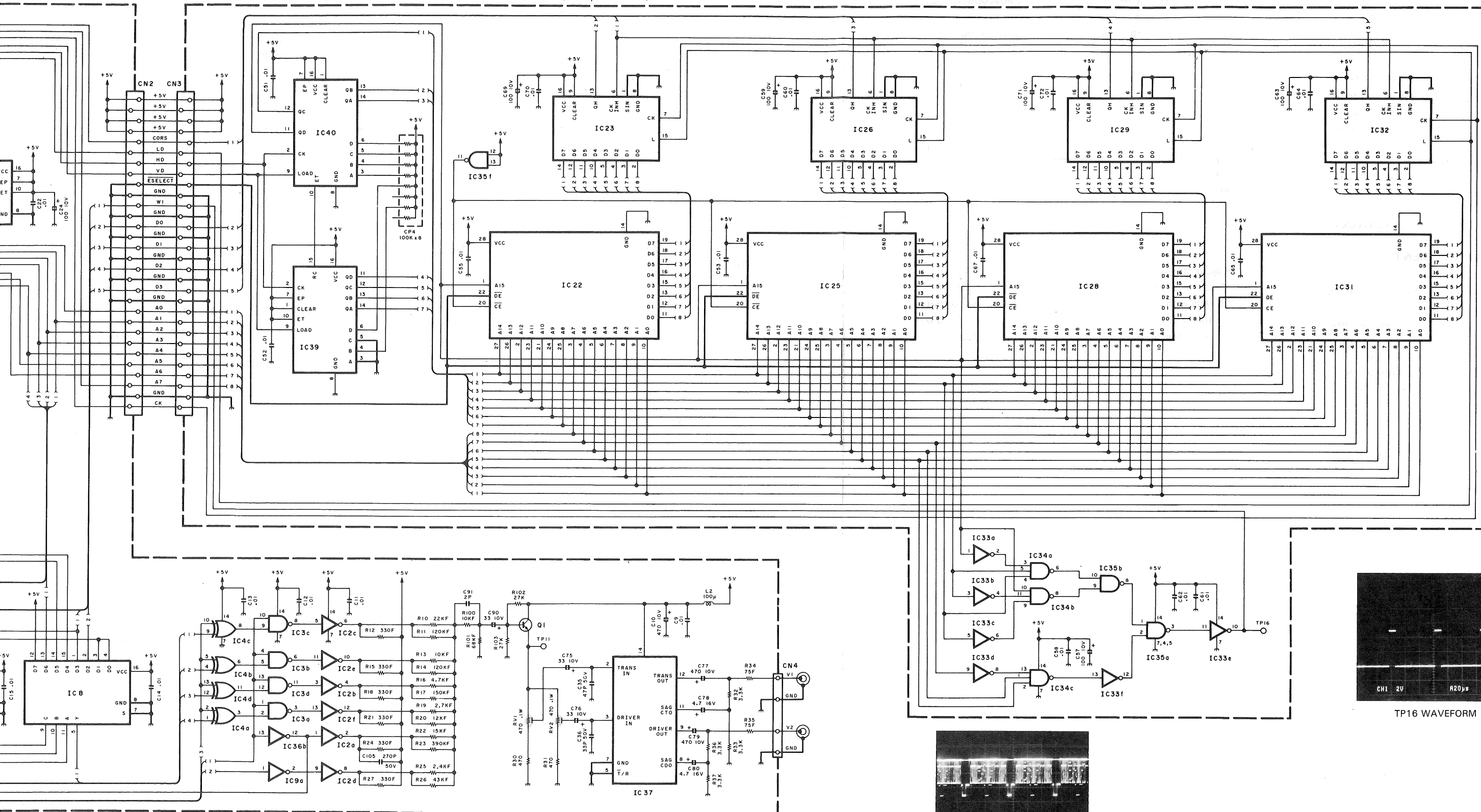


TP1 WAVEFORM

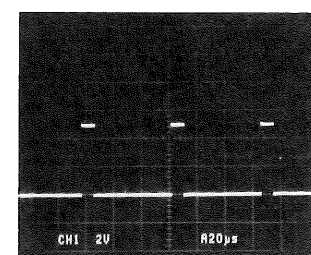
TIC DIAGRAM/WAVEFORM



TP10 WAVEFORM (At Capital 94x24)



TP11 WAVEFORM

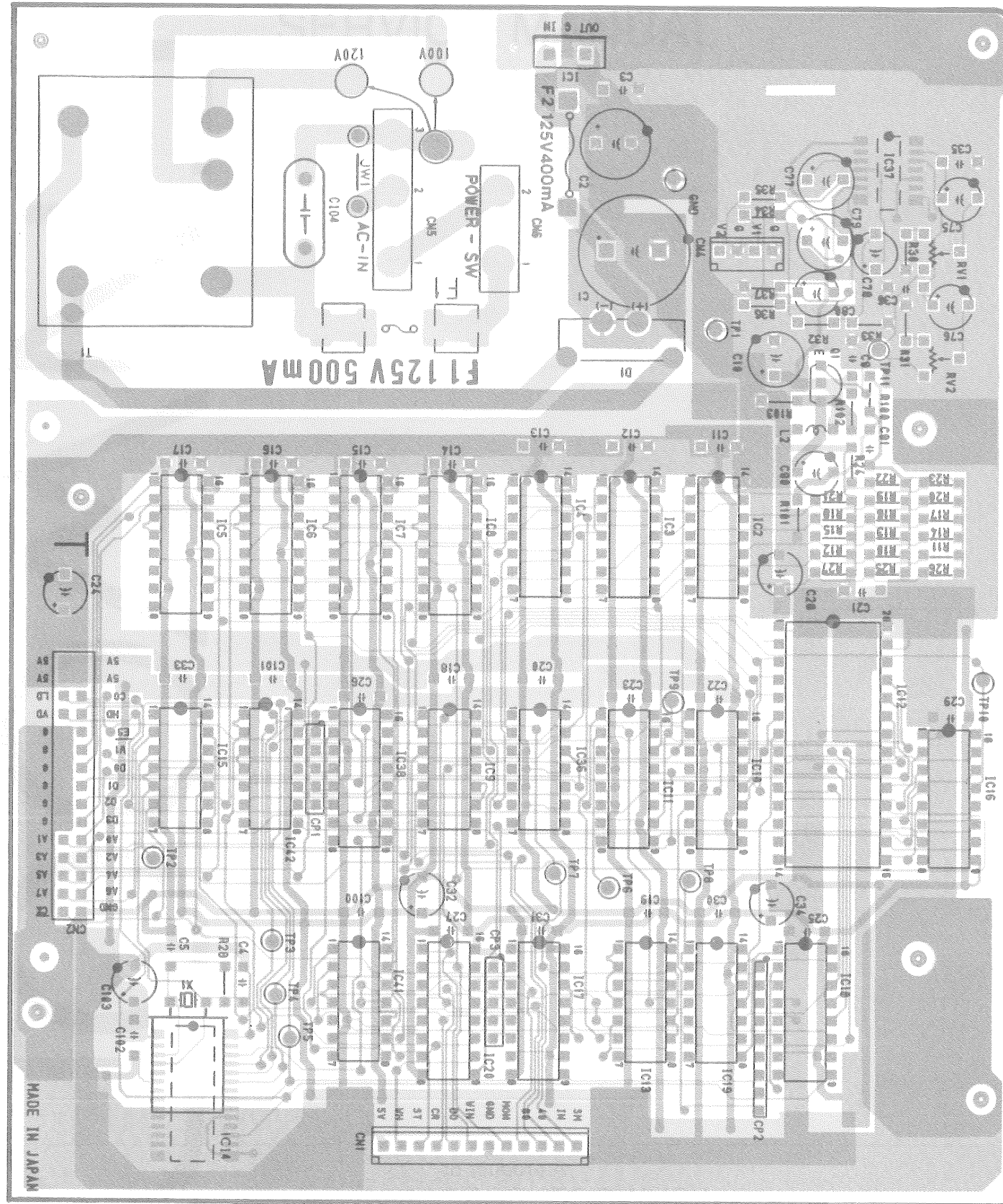


TP16 WAVEFORM

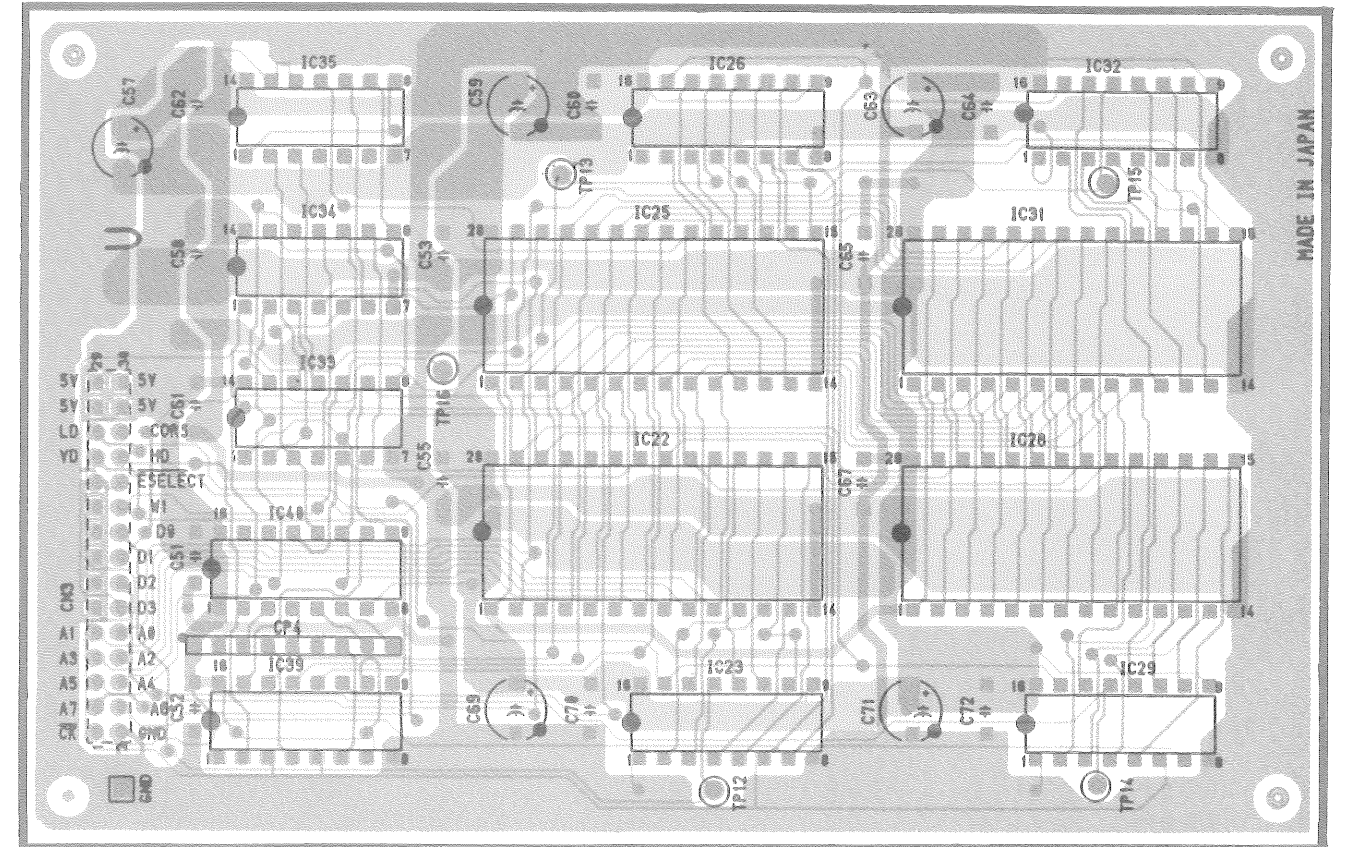
P.C. BOARD

OVERALL UNIT (W02-0499-08)

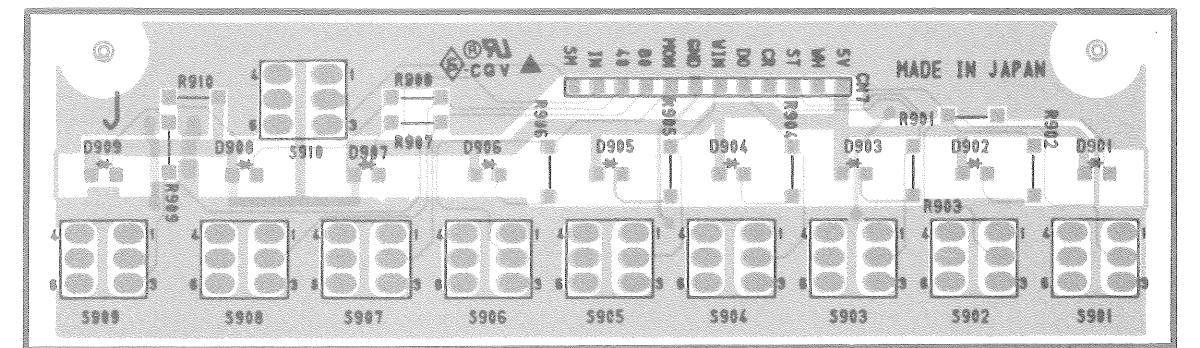
Parts side view



Parts side view



Pattern side view



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