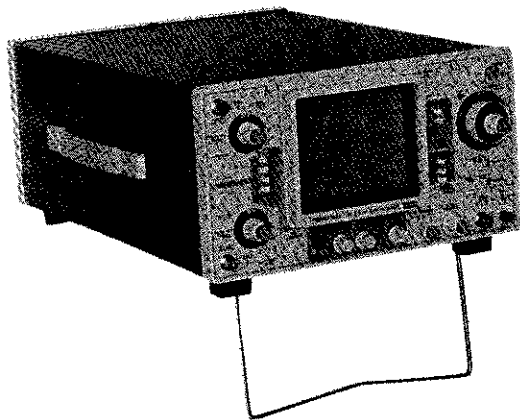




SERVICE MANUAL

OSCILLOSCOPE
SS-5702A/SS-5703A
SS-5705A/SS-5706A

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MEMO

Operators Safety Summary

Read through the following precautions prior to performing any service.

WARNING

The servicing instructions in this manual are for use by qualified personnel only. If you are not qualified, do not perform any servicing other than that contained in operating instructions to avoid personal injury.

Terms

CAUTION : states that the conditions or practices could result in damage to the instrument or other property.

WARNING : states that the conditions or practices could result in personal injury or loss of life.

Safety symbols

-  instruction manual symbol. The instrument is marked with this symbol for the detailed information.
-  indicates hazardous voltage.
-  protective earth (grounding) terminal.

General safety precautions

The instrument shall be disconnected from all voltage sources before it is opened.

WARNING

Opening the covers causes the instrument dangerous, since there are dangerous voltages inside the instrument.

Line voltage check

Before plugging the power cord to an electrical outlet, be sure to check its voltage. The SS-5702A, the SS-5703A, the SS-5705A and the SS-5706A operate from 90 volts to 250 volts ac power line by line selector. It is necessary to replace the fuse. Using the oscilloscope at the voltage other than specified range causes the instrument damage.

Use the power cord supplied

The instrument shall be connected to a protective earth conductor by using the supplied three-wire power cord or equivalent. Do not operate the instrument without earth connection of the power line.

WARNING

Any obstruction of the protective grounding inside or outside the instrument may cause the instrument dangerous. Intentional obstruction is strictly prohibited.

Use the fuse only specified

Use the proper rated fuse only listed below. When the fuse has blown, fix the cause first and replace the proper rated fuse. Using the wrong fuse may lead the instrument to the fire hazard.

SS-5702A and SS-5703A

Circuit No.	Fuse	Usage	Location
F701	125V/0.5A slow-blow (at 90V to 132V) 250V/0.3A slow-blow (at 198V to 250V)	Line fuse	Rear panel
F702	125V/1A slow-blow	CRT circuit	Power supply
F703	250V/0.2A slow-blow	CRT circuit	

SS-5705A and SS-5706A

Circuit No.	Fuse	Usage	Location
15F02	125V/1A slow-blow (at 90V to 128V) 250V/0.5A slow-blow (at 195V to 250V)	Line fuse	Rear panel
F01	125V/1A slow-blow	CRT circuit	Power supply

WARNING

The instrument shall be disconnected from all voltage sources when replacing a fuse.

Do not apply excessive voltage

To avoid damaging the instrument, do not apply the excessive voltage into any input connectors. The following list shows the maximum input voltage rating at the input connectors.

SS-5702A and SS-5703A

CH1 and CH2 inputs: $\pm 250\text{V}$ (DC+AC peak) without probe
 $\pm 600\text{V}$ (DC+AC peak) with SS-0060 probe
EXT TRIG input : $\pm 150\text{V}$ (DC+AC peak) without probe
Z AXIS input : $\pm 50\text{V}$ (DC+AC peak) without probe

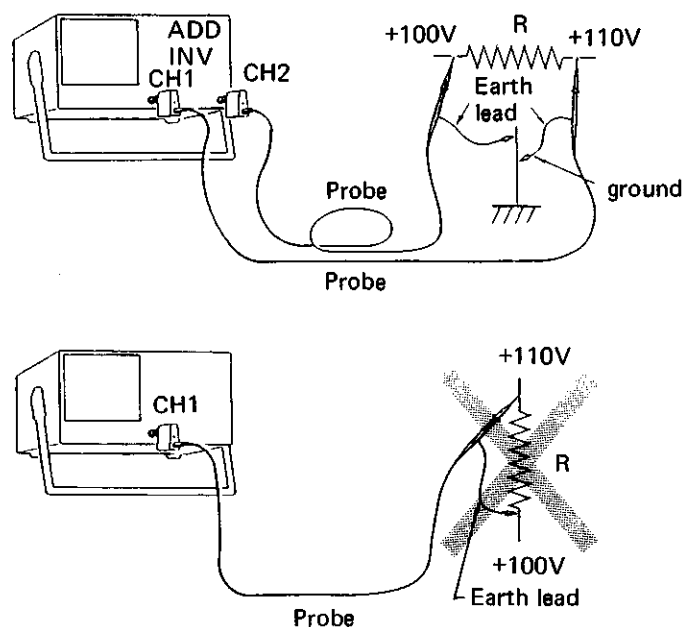
SS-5705A and SS-5706A

CH1, CH2 and CH3 inputs : $\pm 400\text{V}$ (DC+AC peak) without probe
 $\pm 600\text{V}$ (DC+AC peak) with SS-0060 probe
Z AXIS input : $\pm 50\text{V}$ (DC+AC peak) without probe

Grounding

To avoid electrical shock and damage of the instrument, connect the grounds between the instrument and unit under test. Floating measurement illustrated below may cause not only electrical shock but also instrument damage. The differential measurement method is strongly recommended for the operator's safety and avoiding the instrument damage.

Figure S-2. Differential measurement vs. floating measurement



Ambient temperature and ventilation

The SS-5702A, the SS-5703A, the SS-5705A and the SS-5706A oscilloscopes operate under the temperature from 0°C to 50°C. Operating the instrument beyond this temperature range may cause instrument damage. Be careful to make space for the ventilation of the instrument. Do not block the ventilation holes.

Do not increase the CRT intensity highly

For the normal measurement, adjust the CRT intensity not too high. Highly increased intensity may result in eye irritation. When the instrument is left under high intensity condition for a long time, this may burn the phosphor on the CRT face plate.

Standing position of the instrument

When setting the instrument to the standing position, be careful not to topple the instrument accidentally.

Section 1 Specifications

Section 2 Circuit Description

Section 3 Maintenance

Section 4 Check and Adjustment

Section 5 Schematic Diagrams

Section 6 Electrical Parts List

Section 7 Mechanical Parts List and Board Locations

Section 1 Specifications

1-1 GENERAL

The oscilloscope SS-5702A/03A/05A/06A is an indispensable instrument for the production lines and maintenance/servicing as well as research and development of electronic devices and equipment.

This is a measuring instrument which has pursued not only functionality, but also operability, high accuracy and stability.

The major features of this instrument are as follows.

- The vertical deflection system, with the frequency band widths of DC to 20 MHz (SS-5702A/03A), DC to 30 MHz (SS-5706A), DC to 40 MHz (SS-5705A), has the DUAL function (SS-5702A/03A) which allows 2-phenomenon (in the CHOP or ALTERNATE mode) observation, and can provide the 2-phenomenon (in the CHOP or ALTERNATE mode) and 3-phenomenon (in the CHOP or ALTERNATE mode) 6-trace display.

It can also measure the sum and difference of two signals (by ADD). Since the maximum input sensitivity is 1 mV/div. for both CH1 and CH2 due to the PULL x 5 MAG function, microvoltage can be also measured accurately.

- The horizontal deflection system has a maximum sweep rate of 50ns/div. by the PULL x 10 MAG (SS-5702A/03A), of 20 ns/div. by the PULL x 5 MAG (SS-5706A) function, or of 10 ns/div. by the PULL x 10 MAG (SS-5705A), and can measure up to high-speed phenomena accurately.
- It is possible to have the delay sweep function (SS-5705A/06A only) and observe TV signal waveforms due to X-Y operation and TV-V, TV-H (TV-V only for SS-5702A) triggering.
- The CRT is 6-inch (150 mm) rectangular with non-parallax internal graticule. It has a display area of 8 div. (length) x10 div. (width) (1 div. = 10 mm) and allows high-luminance waveform observation due to the stabilized acceleration voltage of about 2 kV (SS-5702A/03A) and 12 kV (SS-5705A/06A).

1-2 ELECTRICAL SPECIFICATIONS

All the specifications in this section are:

- 1) applicable to all of SS-5702A, SS-5703A, SS-5705A and SS-5706A unless otherwise specified.
- 2) valid within +10°C to +35°C, unless otherwise specified.
- 3) valid after 30-minute (SS-5705A/5706A) or 15-minute (SS-5702A/5703A) warm-up time.

Vertical deflection system (Y axis)

Mode:	SS-5705A/5706A	
	CH1, CH2, ADD	
	DUAL/TRI (ALT, CHOP), X-Y	
	CHOP switching frequency:	128 kHz $\pm$ 1%
	SS-5702A/5703A	
	CH1, CH2, DUAL, ADD	
	In DUAL Mode;	
	at 0.2 s/div to 1 ms/div:	Chop mode
	at 0.5 ms/div to 0.5 μ s/div:	Alternate mode
	CHOP switching frequency:	100 kHz $\pm$ 50%

CH1 and CH2

Deflection factor:	5 mV/div to 10 V/div in a 1-2-5 sequence of 11 steps	
	5 mV/div to 25 V/div (continuously variable with VARIABLE)	
	1 mV/div (PULL x5 MAG)	
	Accuracy:	
	5 mV/div to 10 V/div	$\pm$ 2% (SS-5705A/5706A) or $\pm$ 4% (SS-5702A/5703A)
	1 mV/div	$\pm$ 3% (SS-5705A/5706A) or $\pm$ 5% (SS-5702A/5703A)

Frequency response:

SS-5706A		
5 mV/div to 2 V/div;	DC to 30 MHz;	-3dB
1 mV/div to 2 mV/div;	DC to 15 MHz;	-3dB
< Note >		
• The lower cutoff frequency (-3dB) at AC coupling is 4 Hz.		

SS-5705A		
5 mV/div to 2 V/div;	DC to 40 MHz;	-3dB
1 mV/div to 2 mV/div;	DC to 20 MHz;	-3dB
< Note >		
• The lower cutoff frequency (-3dB) at AC coupling is 4 Hz.		

SS-5702A/5703A		
5 mV/div to 0.2 V/div;	DC to 20 MHz;	-3dB
1 mV/div;	DC to 1 MHz;	-3dB
< Note >		
• The lower cutoff frequency (-3 dB) at AC coupling is 4 Hz.		

Rise time:

11.6 ns (SS-5706A)
8.75 ns (SS-5705A)
17.5 ns (SS-5702A/5703A)
(Rise time is calculated from "Bandwidth x Rise time = 0.35")

Pulse response:	At 5 mV/div (SS-5705A/5706A)	At 10 mV/div (SS-5702A/5703A)
	Overshoot : 7%	Overshoot : 6%
	Sag (at 1 kHz) : 2%	Sag (at 1 kHz) : 2%
	Other distortion : 5%	Other distortion : 5%
Signal delay:	By internal delay cable (only for SS-5705A)	
Input coupling:	AC, DC, GND	
Input RC:	SS-5705A/5706A	
	1 M Ω $\pm$ 2% // 32pF $\pm$ 2pF (without probe)	
	10M Ω $\pm$ 2% // Approx. 23pF (with SS-0060 (x10) probe)	
	SS-5702A/5703A	
	1 M Ω $\pm$ 3% // 30pF $\pm$ 3pF (without probe)	
	10M Ω $\pm$ 5% // Approx. 23pF (with SS-0060 (x10) probe)	
Maximum input voltage:	SS-5705A/5706A	
	$\pm$ 400 V MAX (without probe)	
	$\pm$ 600 V MAX (with SS-0060 (x10)probe)	
	SS-5702A/5703A	
	$\pm$ 250 V MAX (without probe)	
	$\pm$ 600 V MAX (withSS-0060 (x10) probe)	
Drift:	SS-5705A/5706A	
	0.5 div./hour (at 5 mV/div.) or 2.5 div/hour (at 1 mV/div.) after 30 - minute warmup (typical value)	
	SS-5702A/5703A	
	0.5 div./hour (at 5 mV/div.) after 15 - minute warmup (typical value)	
Common mode rejection ratio:	SS-5705A/5706A	
	At 5 mV/div.	
	40: 1 (1 kHz sine wave)	
	15: 1 (5 MHz sine wave)	
	SS-5702A/5703A	
	At 20 mV/div.	
	40: 1 (1 kHz sine wave)	
	20: 1 (1 MHz sine wave)	
Polarity:	CH2 only	
CH3 (SS-5705A/5706A)		
Deflection factor:	0.1 V/div.	
	Accuracy: $\pm$ 3%	
Frequency response:	SS-5706A	
	DC to 30 MHz; -3dB	
	< Note >	
	• The lower cutoff frequency (-3dB)at AC coupling is 4 Hz.	
	SS-5705A	
	DC to 40 MHz; -3dB	
	< Note >	
	• The lower cutoff frequency (-3dB) at AC coupling is 4 Hz.	
Pulse response:	Overshoot : 9.0%	
	Sag (at 1 kHz) : 2.5%	
	Other distortion : 8.0%	

Input coupling: AC, DC
Input RC: 1 M Ω $\pm$ 2% // 32pF $\pm$ 8pF (without probe)
10M Ω $\pm$ 2% // Approx. 23pF (with SS-0060 (x10) probe)
Maximum input voltage: $\pm$ 400 V MAX (without probe)
 $\pm$ 600 V MAX (with SS-0060 (x10) probe)

Triggering

Trigger sensitivity: SS-5705A/5706A

The value parenthesized is for SS-5705A.

Frequency range	Maximum sensitivity	
	CH1, CH2	CH3
DC to 5 MHz	A : 0.5 div	A : 1.0 div
	B : 0.7 div	B : 1.5 div
5 MHz to 30 (40) MHz	A : 1.5 div	A : 3.0 div
	B : 2.0 div	B : 4.0 div

< Note >

- FIX (only for SS-5705A) is;
1.0 div at 100 Hz to 5 MHz (B: 1.5 div)
2.0 div at 5 MHz to 20 MHz (B: 2.5 div)
- For the trigger level of TV-V and TV-H, the trigger pulse of the synthetic video signal is 1 div. or more. However, it is true when the synthetic signals in a ratio of 7:3 between video signals and trigger signals are entered.
- The trigger signals is attenuated at the frequency of
AC : 10 Hz or lower
HF REJ : 10 kHz or higher
- The lower limit frequency at AUTO mode is 50 Hz.

SS-5702A/5703A

Frequency range	Maximum sensitivity	
	INT (screen amplitude)	EXT (input voltage)
DC to 5 MHz	—	0.5 V
20 Hz to 50 Hz	2.0 div	—
50 Hz to 5 MHz	0.5 div	—
5 MHz to 15 MHz	1.5 div	1.5 V
15 MHz to 20 MHz	2.0 div	2.0 V

< Note >

- The lower limit frequency for internal triggering (AC only) is 20 Hz.
- The lower limit frequency at AUTO mode is 50 Hz.
- For the trigger level of TV-V and TV-H (SS-5703A only), the trigger pulse of the synthetic video signal is 1 div. or more. However, the external input voltage is 1 V or more.
- For FIX (SS-5703A only), the screen amplitude is 1 div. or more for internal triggering (AC) at a range of 100 Hz to 5 MHz and the input voltage 1 V_{p-p} or more for external triggering (DC).

Trigger source: SS-5705A/5706A
 CH1, CH2, CH3, LINE
 (For external trigger, turn the SOURCE switch to CH3.)
 SS-5702A/5703A
 INT (CH1, CH2), EXT (EXT TRIG), Power supply (LINE) (only for SS-5703A)

Coupling: SS-5705A/5706A
 AC, DC, HF REJ, TV (A Sweep: TV-V, B Sweep: TV-H)
 SS-5702A/5703A
 AC (INT only), DC (EXT only), TV-V, TV-H (only for SS-5703A)

Polarity: Positive (+), negative (—)

Input RC: SS-5702A/5703A
 1 M Ω $\pm$ 10% // 30 pF $\pm$ 5pF

Horizontal deflection system (X axis)

Horizontal display: SS-5705A/5706A
 A, A INTEN, B (DLY'D), ALT (SS-5705A only)
 SS-5702A/5703A
 A only

A time base

Sweep mode: AUTO, NORM, SINGLE (only for SS-5703A/5705A/5706A)

Sweep rate: SS-5705A/5706A
 0.1 μ s/div. to 0.5 s/div. in a 1-2-5 sequence of 21 steps
 0.1 μ s/div. to 1.25 s/div. (continuously variable with VARIABLE)
 Accuracy I : (over center 8 divisions)
 $\pm$ 2%
 Accuracy II : (over any 2 divisions within center 8 divisions)
 $\pm$ 5%

SS-5702A/5703A

0.5 μ s/div. to 0.2 s/div. in a 1-2-5 sequence of 18 steps
 0.5 μ s/div. to 0.5 s/div. (continuously variable with VARIABLE)
 Accuracy I : (over center 8 divisions)
 $\pm$ 4% at 0.5 μ s/div. to 5 ms/div.
 $\pm$ 5% at 10 ms/div. to 0.2 s/div.
 Accuracy II : (over any 2 divisions within center 8 divisions)
 $\pm$ 10% at 0.5 μ s/div. to 0.2 s/div.

Holdoff time: Variable by the regulator

B time base (SS-5705A/5706A)

Delay: Continuous delay (RUNS AFT DLY) or triggered delay (TRIG'D)

Sweep rate: 0.1 μ s/div to 50 ms/div. in a 1-2-5 sequence of 18 steps
 Accuracy : (over center 8 divisions)
 $\pm$ 3%

Delay jitter: 1/20,000 or less

Sweep magnification:

5 times (max. sweep rate: 20 ns/div.) (SS-5706A)
10 times (max. sweep rate: 10 ns/div.) (SS-5705A)
10 times (max. sweep rate: 50 ns/div) (SS-5702A/5703A)

SS-5706A

Accuracy I : (over center 8 divisions)

±4% at 20 ns/div. to 0.1 s/div.

Accuracy II : (over any 2 divisions within center 8 divisions)

±9% at 20 ns/div to 0.1 μs/div.

±5% at 0.2 μs/div. to 0.1 s/div.

< Note >

- The first 40 ns and the last 40 ns of the sweep are not valid for this specification.

SS-5705A

Accuracy I : (over center 8 divisions)

±4% at 10 ns/div. to 50 ms/div.

Accuracy II : (over any 2 divisions within center 8 divisions)

±9% at 10 ns/div to 50 ns/div

±5% at 100 ns/div. to 50 ms/div.

< Note >

- The first 20 ns and the last 20 ns of the sweep are not valid for this specification.

SS-5702A/5703A

Accuracy I : (over center 8 divisions)

±5% at 50 ns/div. to 20 ms/div.

Accuracy II : (over any 2 divisions within center 8 divisions)

±15% at 50 ns/div.

±10% at 0.1 μs/div. to 20 ms/div.

< Note >

- The first 0.2μ sec and last 0.2μ sec of the sweep are not valid for this specification.

EXT sweep (HORIZ IN) (SS-5702A/5703A)

Deflection factor:

0.5 V/div., 50 mV/div. (PULL x10 MAG)

Accuracy: ±4% at 0.5 V/div.

±8% at 50 mV/div (PULL x10 MAG)

Frequency response:

DC to 500 kHz -3dB

Input RC:

1 MΩ ±10% // 30 pF ±5pF

Max. input voltage:

±150 V MAX

Phase difference:

within 3° (at DC to 20 kHz)

X-Y operation

Input:

SS-5705A/5706A

SS-5702A/5703A

X axis: CH1

X : SOURCE (X MODE)

Y axis: CH2

Y : V MODE (Y MODE)

X axis	SS-5705A/5706A	SS-5702A/5703A
Deflection factor:	Same as CH1	Same as the channels selected in the SOURCE mode or as EXT
	Accuracy: $\pm 5\%$	$\pm 4\%$ $\pm 8\%$ (PULL x10 MAG)
Frequency response:	DC to 2 MHz; -3dB	DC to 500 kHz; -3dB
Input RC:	Same as CH1	Same as the channels selected in the SOURCE mode or as EXT
Max. input voltage:	Same as CH1	Same as the channels selected in the SOURCE mode or as EXT
Y axis:	Same as CH2	V MODE (same as Y MODE)
Phase difference:	Within 3° (at DC to 50 kHz)	Within 3° at DC to 20 kHz (x MODE CH1 or CH2) or at DC to 10 kHz (x MODE EXT)

External intensity modulation (Z axis)

Values parenthesized are for SS-5702A/5703A.

Min. modulation voltage:	3 Vp-p
Polarity:	Positive-going signal decreases intensity, and negative-going signal increases intensity.
Frequency range:	DC to 3 MHz (DC to 1 MHz)
Input impedance:	9 k Ω $\pm 10\%$ (21 k Ω $\pm 10\%$)
Max. input voltage:	± 50 V MAX

Signal output

Calibrator	SS-5705A/5706A	SS-5702A/5703A
Waveform:	Square wave	Square wave
Repetition rate:	1 kHz	1 kHz
	Accuracy: $\pm 1\%$	Accuracy: $\pm 50\%$
Duty ratio:	40% to 60%	40% to 60%
Output voltage:	0.3 V	0.3 V
	Accuracy: $\pm 1\%$	Accuracy: $\pm 3\%$
CH1 signal output	SS-5705A/5706A	
Output voltage:	$\pm 20\%$ at 50 mV/div (at 50 Ω load)	
Bandwidth:	DC to 10 MHz; -3dB (SS-5706A) DC to 20 MHz; -3dB (SS-5705A)	
Output impedance:	Approx. 50 Ω	
CH2 signal output	SS-5703A only	
Output voltage:	25 mV/div. $\pm 10\%$ (at 50 Ω load)	
Bandwidth:	DC to 10 MHz; -3dB	
Output impedance:	Approx. 1 k Ω	

CRT

Shape:	Rectangular, 6 inches
Display area:	8 div x 10 div (1 div = 10 mm) Non-parallax internal graticule with scale illumination
Phosphor:	B31
Accelerating voltage:	Approx. 12 kV (Approx. 2 kV for SS-5702A/5703A)

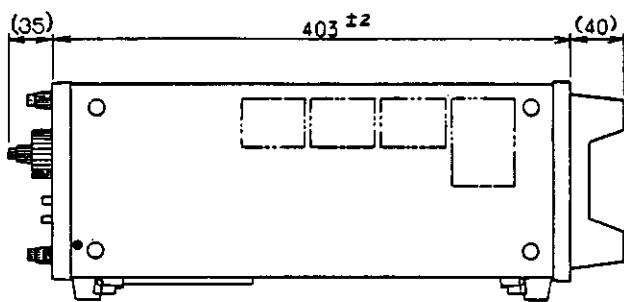
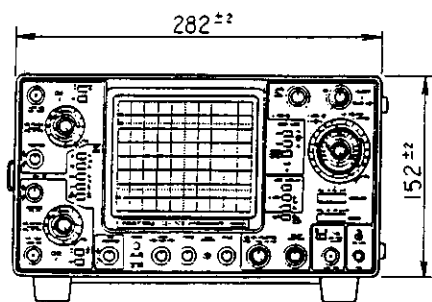
Power supply

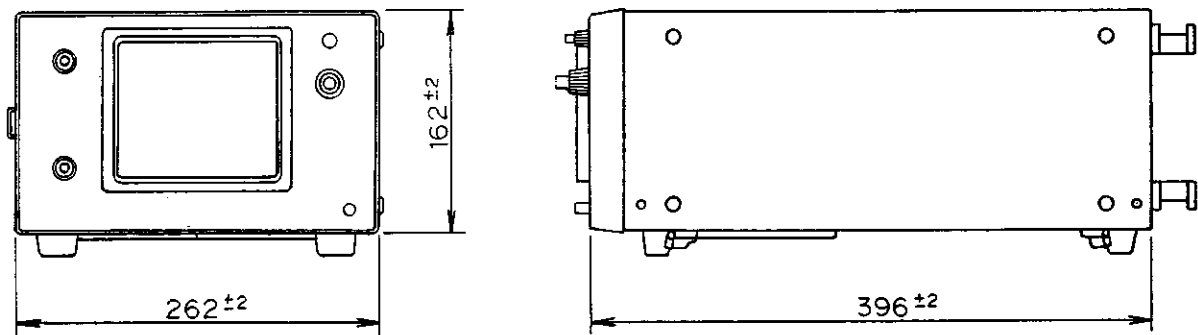
	SS-5705A/5706A	SS-5702A/5703A
Voltage range:	90 to 110/103 to 128/195 to 242/207 to 250 V AC Any one of above ranges can be selected by the voltage selector plugs (A, B, C and D).	90 to 110/108 to 132/198 to 242/216 to 250 V AC Any one of above ranges can be selected by the voltage selector plugs.
Frequency range:	50 Hz to 440 Hz	50 Hz to 440 Hz
Power consumption:	Approx. 48 W (at 100V AC)	Approx. 35 W (at 100V AC)

1-3 WEIGHT AND DIMENSIONS

	SS-5705A/5706A	SS-5702A/5703A
Weight:	Approx. 7 kg	Approx. 6.3 kg
Size:	(282 ±2) W x (152 ±2) H x (403 ±2) L [mm]	(262 ±2) W x (162 ±2) H x (396 ±2) L [mm]

SS-5705A/5706A





1-4 ENVIRONMENTAL CHARACTERISTICS

Operating temperature:	0°C to +40°C
Operating humidity:	Less than 90% at 40°C (relative humidity)
Storage temperature:	-20°C to +70°C
Storage humidity:	Less than 80% at 70°C (relative humidity)
Altitude:	Operating : 5,000 m, barometric pressure of 405 mmHg Non-operating : 15,000 m, barometric pressure of 90 mm Hg
Vibration test:	Start from 10 Hz to 55 Hz and back in one minute. Peak-to-peak amplitude 0.67 mm; for 15 minutes each in vertical, horizontal, and longitudinal directions for a total of 45 minutes.
Shock test:	Raise one side by 10 cm and let it fall onto a piece of hard wood, 4 times for each side.
Drop test:	Pack the instrument in the transportation carton and drop it from the height of 90 cm.
Warm-up time:	The specifications for SS-5705A/5706A are assured after 30 minutes of warm-up time. The specifications for SS-5702A/5703A are assured after 15 minutes of warm-up time.

MEMO

Section 2 Circuit Description

2-1 GENERAL DESCRIPTION

This section describes the basic operation using the block diagram in Figure 2-1-1 and Figure 2-1-2.

2-1-1 SS-5705A/06A

The circuit for these oscilloscopes consists of the components shown in Figure 2-1-1.

For similar circuits such as preamplifiers of CH1 and CH2 or preamplifier of CH3 and A synchronization signal amplifier, only the differences are described for the latter.

The vertical deflection system consists of three independent preamplifiers. With the combination of attenuator variable and magnifier, the input sensitivity for CH1 and CH2 can be set to 1 mV to 25 V per display scale division and CH3 can be set to 0.1 V per display scale division. The input signal applied to each of these channels is converted to balance signal, and amplified. The input signal passes through a delay cable driver circuit for SS-5705A only.

SS-5705A only

The delay cable driver circuit opens or closes the diode gate with a switching circuit to pass the balanced signal from each preamplifier independently or in time division to vertical main amplifier through a delay cable. The method in which this signal is passed can be selected with the vertical mode switch. A selection is made among independent display of CH1 or CH2, their sum or difference, dual-trace observation of CH1 and CH2 (ALT or CHOP), and triple-trace observation from CH1 to CH3 (TRI) and is passed through the delay cable.

When a signal passes through the delay cable, it is delayed by approximately 100 nsec. The delayed signal is passed to the vertical main amplifier.

The vertical main amplifier deflects the electron beam scanning the phosphorus surface of the screen in the vertical direction (Y axis). It amplifies the signal according to the deflection sensitivity unique to the display tube so that the vertical input sensitivity of the oscilloscope corresponds to the display scale divisions.

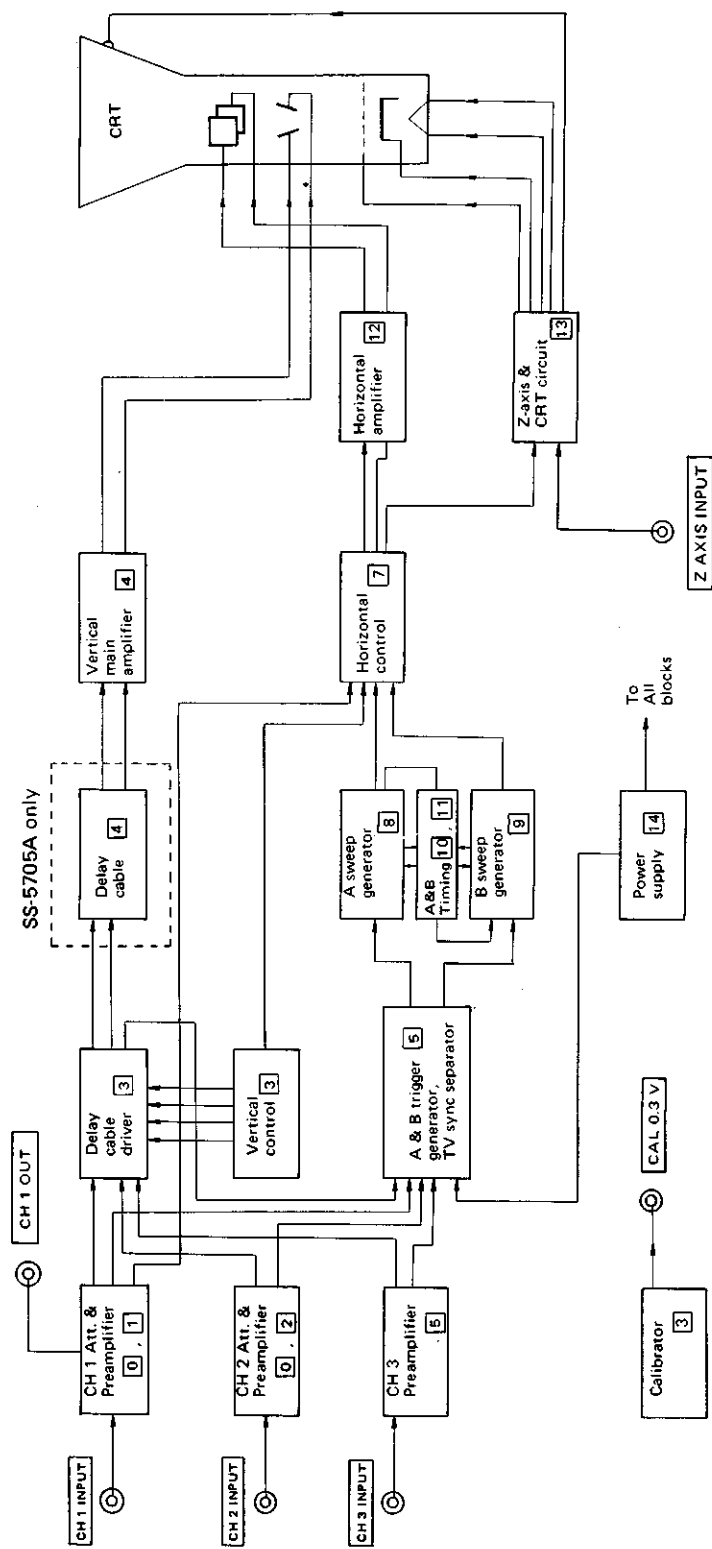
On the other hand, the signal applied to the preamplifier is divided and passed to the SOURCE switch. CH1, CH2, CH3, and LINE (internal connection) are connected to the SOURCE switch. They are connected to the COUPLING switch when selected with the switch. Connected to the COUPLING switch are AC, DC, HF rejection, and TV synchronization separation circuit. A signal component is selected with a switch and passed to the trigger signal amplifier. The signal amplified by the amplifier is converted to a trigger pulse with a constant rise time and voltage by the waveform shaping circuit and passed to A and B -sweep generator.

When a trigger pulse is applied to the A-sweep generator, a sawtooth horizontal axis sweep signal is generated. The B-sweep generator generates sweep signals after the A-sweep generator starts. The sawtooth sweep generated by B is called a delayed sweep.

The horizontal amplifier deflects the electron beam scanning the phosphorus surface of the screen in the horizontal direction (X axis). It amplifies the sweep signal from A and B sawtooth generator according to the deflection sensitivity unique to the display tube so that it corresponds to the time axis division.

The Z-axis amplifier amplifies the sweep gate pulses from the A and B sawtooth generator and creates intensity modulation signal. The output pulse from the Z-axis amplifier is called an unblanking pulse because it increases intensity only during horizontal sweeps.

Figure 2-2-1 SS-5705A/5706A Overall block diagram



The CRT circuit consists of high voltage power source circuit for high speed scanning of electron beams, CRT electrode circuit for focusing, and a circuit for guiding unblanking signals to CRT.

The low voltage power source circuit provides constant voltage sources to drive the circuits shown in Figure 2-1-1 from commercial power supply. It also supplies the power for display scale light, and line signals for synchronizing with commercial power.

The calibrator is a square wave generator which generates calibration voltage. This signal is used to adjust the probe phase and vertical input sensitivity.

2-1-2 SS-5702A/03A

The circuit for this oscilloscope consists of the components shown in Figure 2-1-2. The circuit blocks enclosed with a dotted line apply to SS-5703A only.

The vertical Deflection System consists of two independent Attenuators and Preamplifiers and one Main Amplifier. Signal to be displayed on the CRT is applied to the INPUT connector, converted into a push-pull output signal and amplified in the Preamplifier, and connected to the Main amplifier.

The Vertical MODE switch, CH1-CH2-DUAL-ADD selects the following three modes; Either Channel 1 or Channel 2 alone (CH1 or CH2) or two signals electronically switched (DUAL) or the algebraic sum (ADD). In the DUAL mode, setting the TIME/DIV switch to a position faster than or equal to 0.5 mS/div allows the alternate mode and setting it to a position slower than or equal to 1 mS/div permits the chopped mode. In the alternate mode, the Vertical Mode Switching circuit in the Main Amplifier is driven by the alternate signal from the Sweep Generator, resulting in an alternate display of the Channel 1 and Channel 2 signals as complete sweeps. In the chopped mode, the Vertical Mode Switching circuit oscillates on a freerunning basis at a repetition rate of approximately 100kHz which switches the Diode Gate (opens or closes) causing the output signals from the two channels to be chop-displayed at a repetition rate of approximately

100kHz regardless of the sweep rate. In this mode, the chop blanking signal is supplied from the Vertical Mode Switching circuit to the Z Axis Amplifier to blank the transients of the switching action.

The CH2 OUT circuit is intended for taking a differential signal out of the CH2 preamplifier, amplifying it and sending it out of the rear panel.

A sampling of the input signal is supplied from the Preamplifier to the Trigger Amplifier and Selector circuit where it is amplified and supplied to the Trigger Generator circuit.

The Main Amplifier provides the final amplification and deflects the beam vertically in the CRT.

The Trigger Generator circuit converts trigger signal of its input into a first-rise trigger pulse which initiates the sawtooth signal produced by the Sweep Generator circuit.

The Sweep Generator circuit produces a linear sawtooth signal of which the slope is determined by the TIME/DIV switch. The Sweep Generator circuit also produces an unblanking gate signal to unblank the CRT.

The Horizontal Amplifier provides the amplification of the sawtooth signal or the X-axis signal in the X-Y mode and deflects the beam horizontally in the CRT.

The Z Axis Amplifier circuit determines the CRT intensity and blanking. This circuit sums current inputs from the INTEN control, Gate circuit of the Sweep Generator and external Z AXIS binding post. The output of this circuit is connected to the control grid of the CRT.

The Power Supply circuit produces the 6.3 V AC supply used for the graticule illumination lamps and the low DC voltage supplies to operate each circuit of this instrument.

The Calibrator circuit produces a square-wave signal with accurate amplitude which can be used to check the deflection factor and compensation of the probes.

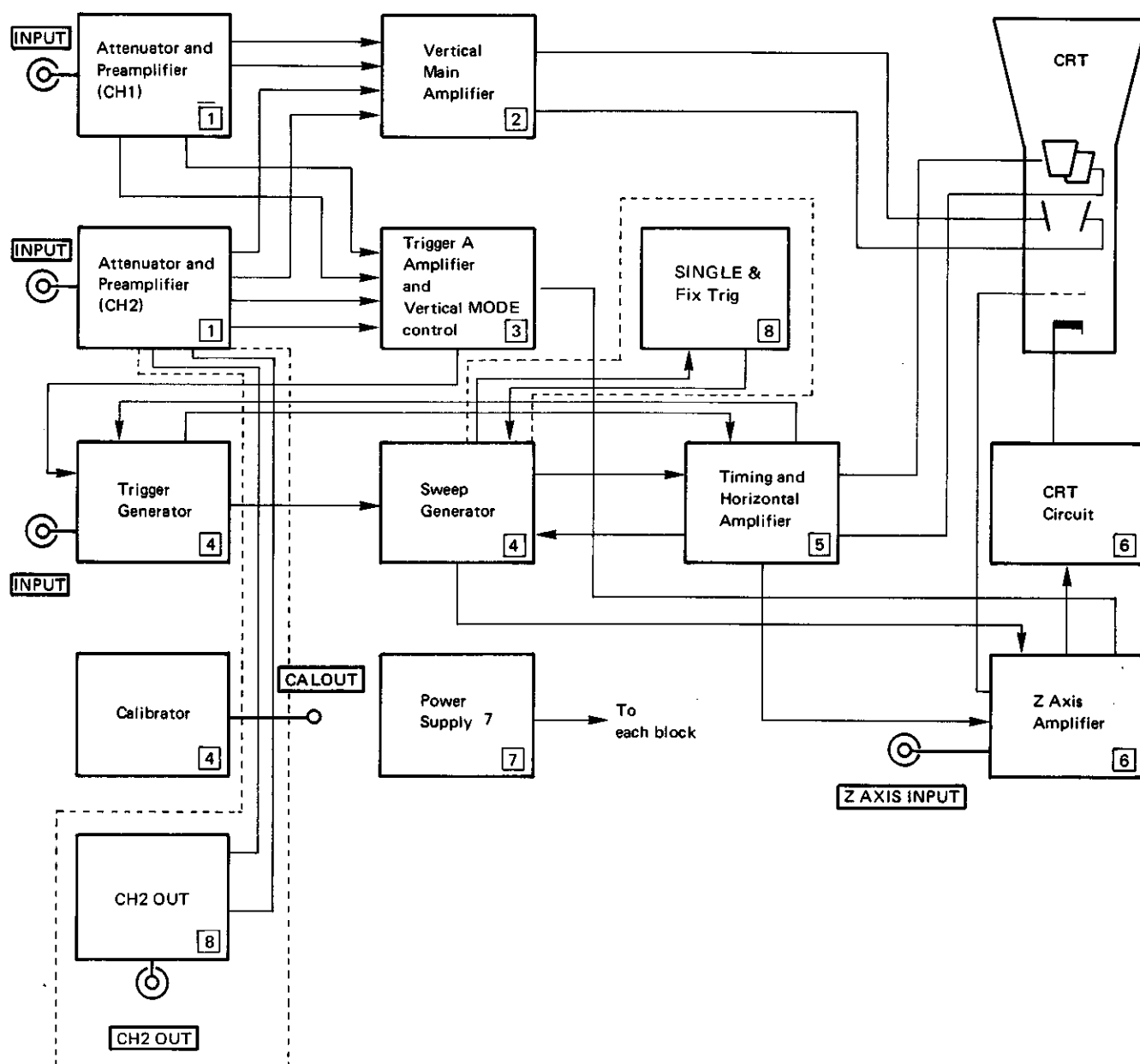
Next section describes detailed functions and operations of each block of SS-5705A/06A. Each block contains

a circuit number (□) referring to the circuit diagrams at the end.

Note: Circuit Number

Example for 1R01, the number **1** in front of parts number, which starts with R, is the circuit number.

Figure 2-1-2 SS-5702A/03A Overall block diagram



2-2 VERTICAL AXIS

2-2-1 Vertical Axis Input and Attenuator (CH1 circuit numbers are used) 0 , 1 , 2

The signal to be measured may be very low or very high voltage, AC current, DC current, or DC current superimposed upon AC current. In order to cope with these signals and obtain the best amplitude, an AC-GND-DC switch is provided to change the connection between the attenuator and input.

The AC-DC-GND switch selects the input connection type according to the signal applied to the connector.

When this switch is set to AC, the circuit 0C21 changes the vertical deflection system input to AC connection and removes the DC component and passes only the AC component.

When it is set to DC, the connection is changed to DC and all frequency components including DC component are passed.

When it is set to GND, the input signal and the attenuator are disconnected and the attenuator input is grounded. (The input signal is not grounded). Therefore, it is easy to verify the no-signal reference voltage.

The attenuator can switch the sensitivity of the vertical deflection system from 5 mV/div to 10 V/div in 11 steps in a 1-2-5 sequence. Also, with the use of a VARIABLE control, attenuation can become 2.5 times or more greater and each range can be compensated linearly.

When the control is set to x5 MAG for 5 mV/div and 10 mV/div, sensitivity can be increased to 1 mV/div and 2 mV/div.

2-2-2 Preamplifier (CH1, CH2) 1 , 2

The CH1 and CH2 preamplifiers are as shown in Figure 2-2-1. The input signal passes through an attenuator and is applied to the impedance convertor 1Q01. The input impedance of the oscilloscope is 1 M Ω , but it is converted to low impedance output when the input impedance of the next step amplifier is high because it is difficult to handle high-frequency signals.

The signals applied to preamplifier 1Q02, 1Q08, 1Q04, and 2Q05 are amplified and converted to balanced signals. When the vertical axis sensitivity becomes five times higher using x5 MAG, switch 1S03 is closed and the 1Q04 and 1Q05 common emitter is reduced to amplify five times. The previous step amplifier output is applied to the amplifier formed by 1Q12, 1Q13, 1Q18, and 1Q19 to further amplify and passed to the switching circuit.

On the other hand, the trigger signal and X-Y signal divide the preamplifier output, pass through 1Q11 and 1Q14 base ground amplifier, and are applied to emitter follower 1Q11 and 1Q12. This emitter follower is input to CH1 only and lowers the base impedance of 1Q07, 1Q08, 1Q15, and 1Q16. This is to prevent the unbalanced components of both transistors from affecting CH1 OUT and XY DC level when the SOURCE switch is switched and the collector output voltage of 1Q15 and 1Q16 are changed.

The CH1 trigger signal, going through the emitter follower, passes through 1Q15, 1Q16, TRIG SOURCE switching circuits 1D20, 1D21, 1Q17, and 1Q23, and is output from 1Q20 and then sent to synchronization signal amplifier through SOURCE and COUPLING switches.

The CH1 OUT signal is passes through amplifiers 1Q07 and 1Q08, and is output from 1Q06.

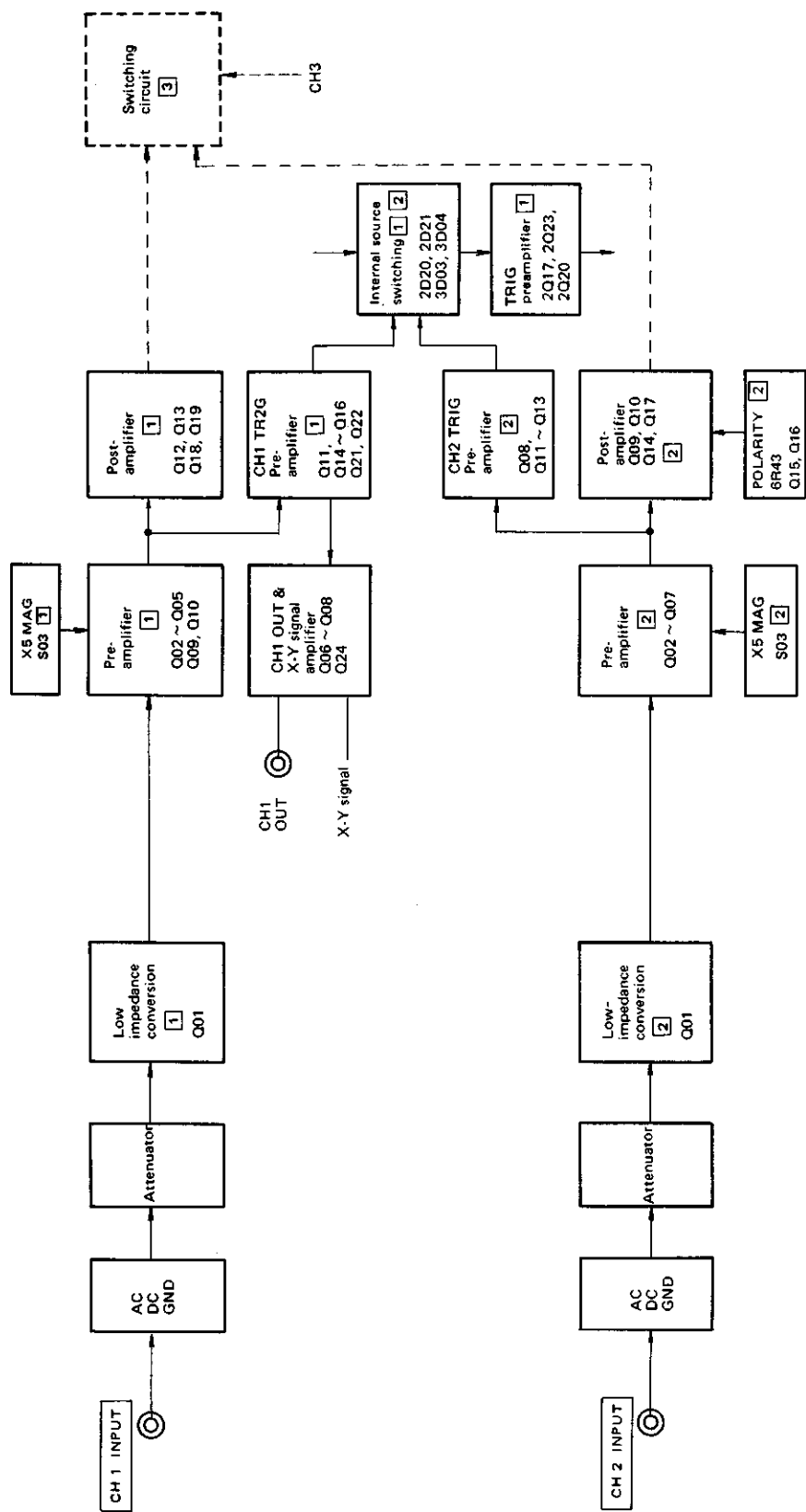
The X axis signal during X-Y operation divides the CH1 OUT signal, passes through 1Q24, and goes to HORIZONTAL CONTROL circuit.

POSITION enables the changing of vertical position of displayed waveform by changing the 1Q18 and 1Q19 emitter current with variable resistor 6R55.

CH2 POLARITY 6R43 enables the reversing of CH2 input signal polarity. Normally (NORM), signals are applied to 2Q14 and 2Q17 emitters and output from the collector with the same polarity as the emitters. When set to INVERT, 2Q14 and 2Q17 become off and the signals are output from collector with the same polarities as the emitter applied to 2Q15 and 2Q16. The transferred signals are applied to the CRT deflectors with reverse polarity because the output signal is connected in reverse and sent to the switching circuit.

The CH2 synchronization signal passes through 2Q08, 2Q11, 2Q12, and 2Q13, and then through TRIG SOURCE switching diodes 2D03 and 2D04, and goes through the same path as the CH1 synchronization signal.

Figure 2-2-1. Block diagram of CH1 and CH2 preamplifier 1, 2



2-2-3 Preamplifier (CH3) 5

The CH3 preamplifier circuit is as shown in Figure 2-2-3. The input circuit operation and preamplifier functions are similar to CH1 and CH2. The difference is that only AC and DC switching is available without GND and that there is no attenuator.

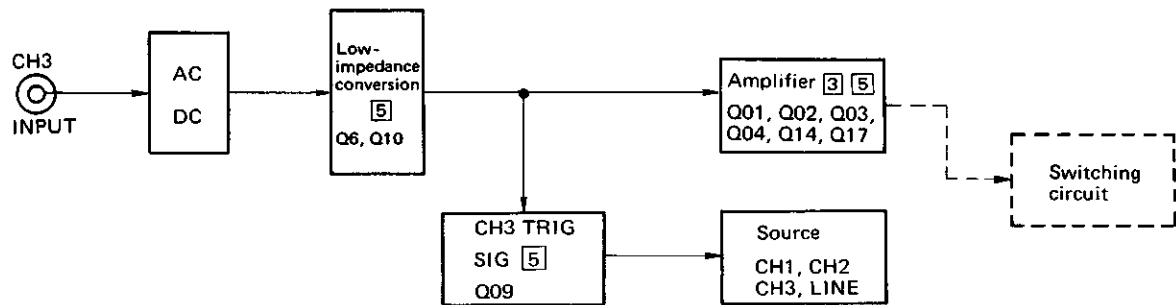
The input signal passes through AC-DC switch and is applied to the gate of impedance convertor 5Q06. It is converted to low impedance output by 5Q06, passes through emitter follower 5Q10 and 5Q17, sent to bal-

anced-type amplifier 3Q01, 3Q02, 3Q03 and 3Q04, and then the amplified signal is sent to the switching circuit.

The CH3 synchronization signal is divided at 5Q10 and provided to SOURCE switch and CH3 Trigger Circuit.

CH3 POSITION is a variable resistor 6R17 connected to the 14Q20 base of the balanced-type amplifier and is used to change the vertical location of the CH3 displayed waveform.

Figure 2-2-3. Block diagram of CH3 preamplifier



2-2-4 Delay Cable Driving Amplifier (SS-5705A only) [3]

The delay cable driving amplifier and vertical main amplifier are as shown in Figure 2-2-4. Output signals from CH1, CH2, and CH3 preamplifiers are selected according to the MODE set by the vertical axis control circuit in the switching circuit.

The balanced signal selected by the switching circuit is amplified by the proceeding delay cable driving amplifiers 3Q06 and 3Q07. The amplified signal is delayed by a certain amount in the delay cable and, after a certain interval, it is sent to the vertical deflection main amplifier (vertical axis final step amplifier).

2-2-5 Switching Circuit [3]

The switching circuit is used to selectively connect the signal set with the vertical axis mode switch to the main amplifier. Its basic operation is described next. Refer to Figure 2-2-5.

For example, when the vertical axis mode is set to CH1, low level voltage passes through switching control 3IC03 to 3IC05 and is applied to the common anode of 3D02 and 3D03 of CH1, and high level voltage is applied to other common anodes 3D06 and 3D07 of CH2, and 3D13 and 3D14 of CH3.

Therefore, 3D02 and 3D03 of CH1, for which low-level voltage is applied, become reverse bias and are turned off and 3D01 and 3D04 are turned on with forward bias.

On the other hand, 3D06 and 3D07 of CH2 and 3D14 of CH3 for which high voltage is applied, become forward bias and turn on. 3D05 and 3D08 of CH2 and 3D11 and 3D12 of CH3 become reverse bias and turn off. Therefore, only the signal from CH1 is sent to the amplifier.

Thus only channels with low-level voltage applied to the switching diode of common anode are sent to the main amplifier.

a. ALT

When the vertical axis mode is set to ALT, alternate pulse (V MODE PLS) generated by the sweep generator and passing through H control and V control is input to switching circuit 3IC03. As for the switching signal output from 3IC03, the channel is switched for each sweep and each signal is sent to the main amplifier.

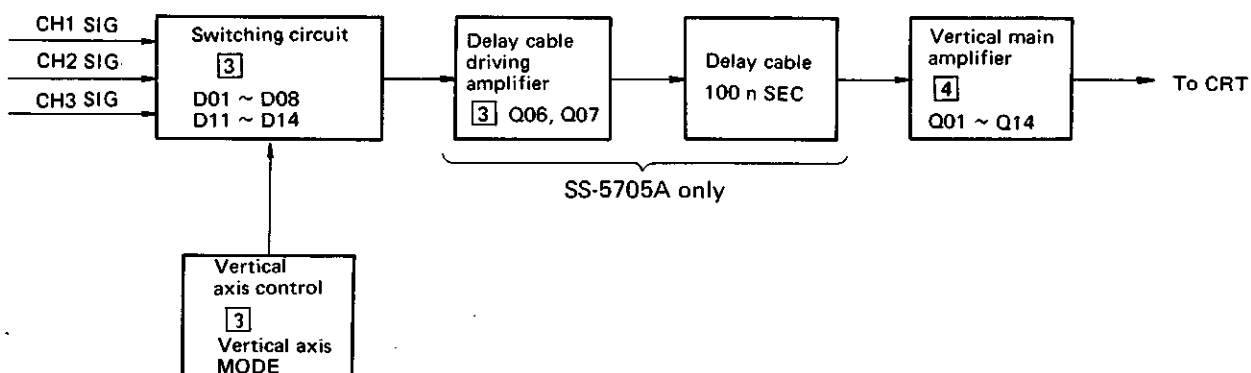
This MODE is switched by a sweep gate signal and therefore, multiple traces cannot be observed simultaneously in the low sweep range.

Therefore, this suits for observation of multiple traces when the signals to be measured are relatively high.

b. CHOP

When the vertical axis mode is set to CHOP, the signal generated by calibration oscillator 3IC01 is sent to the

Figure 2-2-4. Block diagram of delay cable driving amplifier [3] and vertical main amplifier circuit [4]



switching circuit through 3IC05. This oscillator uses a ceramic oscillator 3X01 and oscillates at 256 kHz. The signal sent to the switching circuit is applied to the clock input terminal of the flip-flop 3IC03. This flip-flop switches at the positive edge and the switching frequency is half the oscillating frequency or 128 kHz. The signal for each channel switched with this output is sent to the delay cable.

Fast channel switching can be performed in this manner even during sweep to enable easy observation of multiple traces when the measured frequencies are relatively low.

The chop blanking pulse is a trace elimination pulse

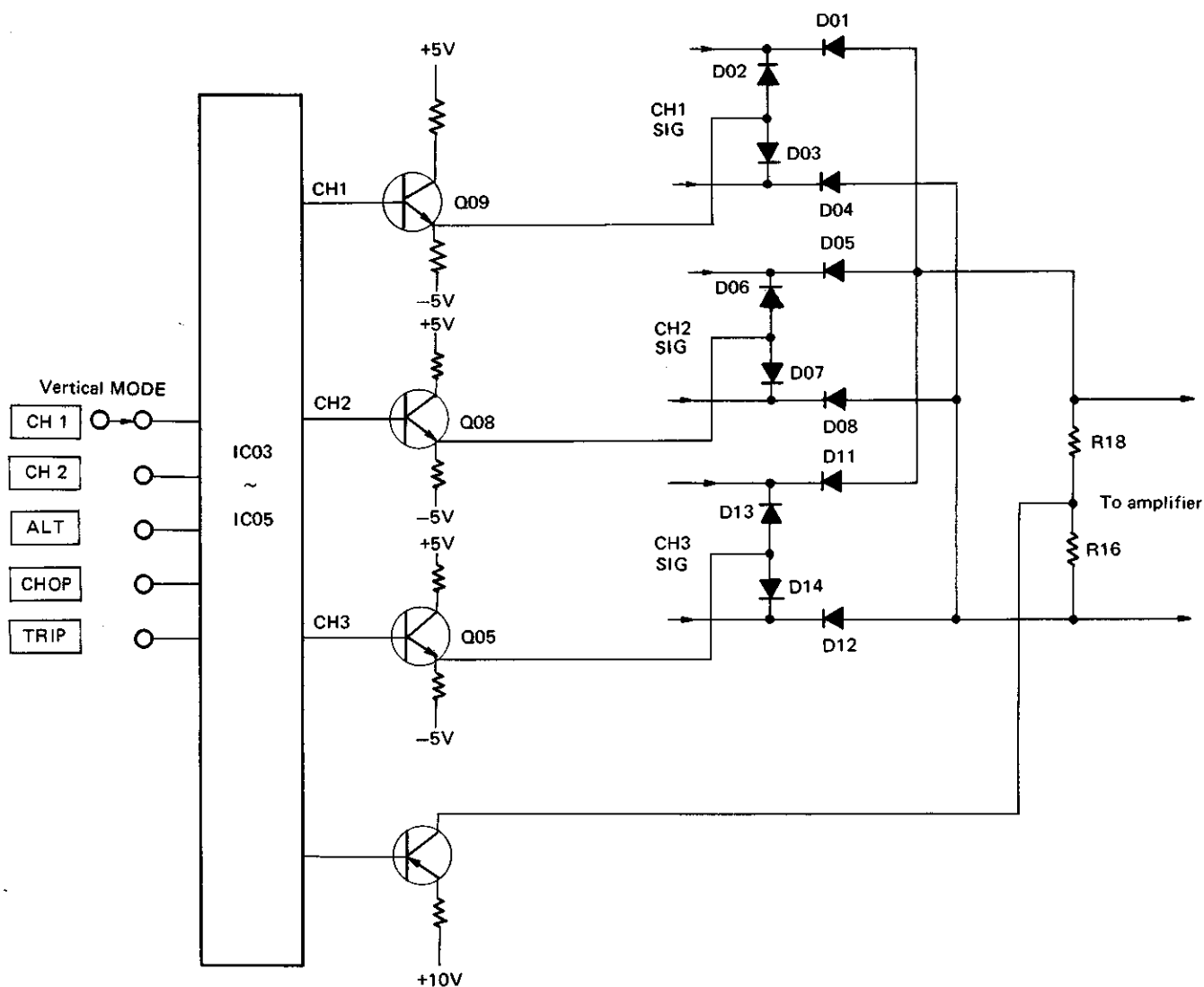
which removes the instability when channels are switched. This pulse is passed through 3IC01 and sent to the Z-axis amplifier.

c. ADD

When the vertical axis MODE is set to ADD, the sum of signals applied to CH1 and CH2 (CH1 + CH2) is displayed on the CRT.

Because CH1 and CH2 are on together, the base voltage of switching circuits 3Q08 and 3Q09 are kept low and 3D02, 3D03, 3D06, and 3D07 are turned off. In this case, because a two-channel amplifier is connected, current for.

Figure 2-2-5. Switching circuit 3



one channel is supplied through 3R16 and 3R18 by turning 3Q10 on.

As a result, a signal for one channel is sent to delay cable driving amplifier and amplified. When CH2 POLAR switch is set to INV from this state, the polarity of input signal to CH1 is reversed and the switching circuit output is displayed on the CRT as the difference of signals applied to CH1 and CH2 ($CH1 + (-CH2)$).

d. TRI

When the vertical axis MODE is set to ALT or CHOP and then set to TRI, the multiple trace display of ALT and CHOP become triple trace observation and CH1, CH2, and CH3 input signals are displayed on the CRT.

In the case of triple trace observation with CHOP mode, the chop frequency is 1/3 of 256 kHz or approximately 85 kHz.

2-2-6 Delay Cable (SS-5705A only) 3

The delay cable is provided to observe the front edge (rise and fall) of signal with internal frequency. The sawtooth waveform applied to the horizontal deflector and the Z-axis signal applied to grid take longer to process than vertical axis signal because the circuits for creating these signals are complicated. Therefore, the vertical axis is equipped with a 100 ns delay cable in order to compensate for these delays and to accurately observe the triggered point. As a result, the front edge of input pulse signals can be observed with internal synchronization.

2-2-7 Vertical Main Amplifier 4

This amplifier receives the output signal from delay cable with a terminating resistor, amplifies it to proper amplitude, and supplies it to the vertical axis deflector.

The outputs of the first level balance amplifiers 4Q01 and 4Q02 are connected to beam finder circuit and trace separator circuit.

The beam finder circuit is connected between the collectors of 4D10, 4D11, 4R17, 4R09, 4Q01, and 4Q02. When the beam finder is turned on, the control line is grounded and the above resistors and diodes are connected in parallel to 4R13 and 4R14 to attenuate the gain. This

brings the beam that was outside the display to inside the display and enables easy verification of trace position.

The trace separation circuit enables the separation of vertical display position of A-sweep and B-sweep during alternate sweep. A beam separation gate pulse from anode of 4D03 passes through 4D04 and is input to the collector of 4Q01. A B-sweep beam level control signal is input to the base of 4Q15. This DC level is changed to change the DC level of the main amplifier during B-sweep through 4Q15 to enable the separation of the beam.

The last step is a totempole-type negative feedback circuit consisting of 4Q03 to 4Q14. 4R10 to 4R12, 4C36, and 4D05 form a temperature compensation circuit with high frequency characteristic. 4R24 and 4R31 are feedback resistors and the approximate gain is determined by emitter resistor 4R18. 4Q13, 4Q14, 4D08, 4R43, and 4R44 form a constant current circuit. 4D07, 4D08, and 4R34 are used to create base voltage bias for 4Q09 to 4Q14. 4R37 is a heat balance resistor for 4Q09, 4Q11, 4Q12, and 4Q14. 4Q06, 4Q07, 4R26, 4R28, 4C15, 4C16, 4R62, and 4R40 form a high frequency bypass circuit.

When a signal is input to 4Q03 and 4Q04, vertical deflection output signal is obtained from the collectors of 4Q09 and 4Q11. High frequency signal is inverted by the collectors of 4Q03 and 4Q04, passes through emitter followers 4Q06 and 4Q08, and is converted to differential pulse by 4C15, 4R12, 4C16, and 4R4. This pulse is applied to 4Q13 and 4Q14 and improves frequency characteristics. 4L01 and 4L02 are peaking coils to improve frequency characteristics.

2-3 TRIGGER GENERATOR CIRCUIT

The trigger generator circuit consists of source signal for selecting synchronization signal source, coupling circuit to select synchronization signal component, amplification circuit, and a circuit to convert synchronized signal to trigger pulse.

2-3-1 Coupling Circuit [5]

The coupling circuit includes TV synchronization separation circuit which separates synchronization signal from TV signal.

The SOURCE switch is used to select the synchronization signal source. The signal applied to the vertical axis input is divided and connected to CH1, CH2, and CH3. When LINE is selected, the power line signal becomes the synchronization signal and enables observation of line frequency and its higher harmonics.

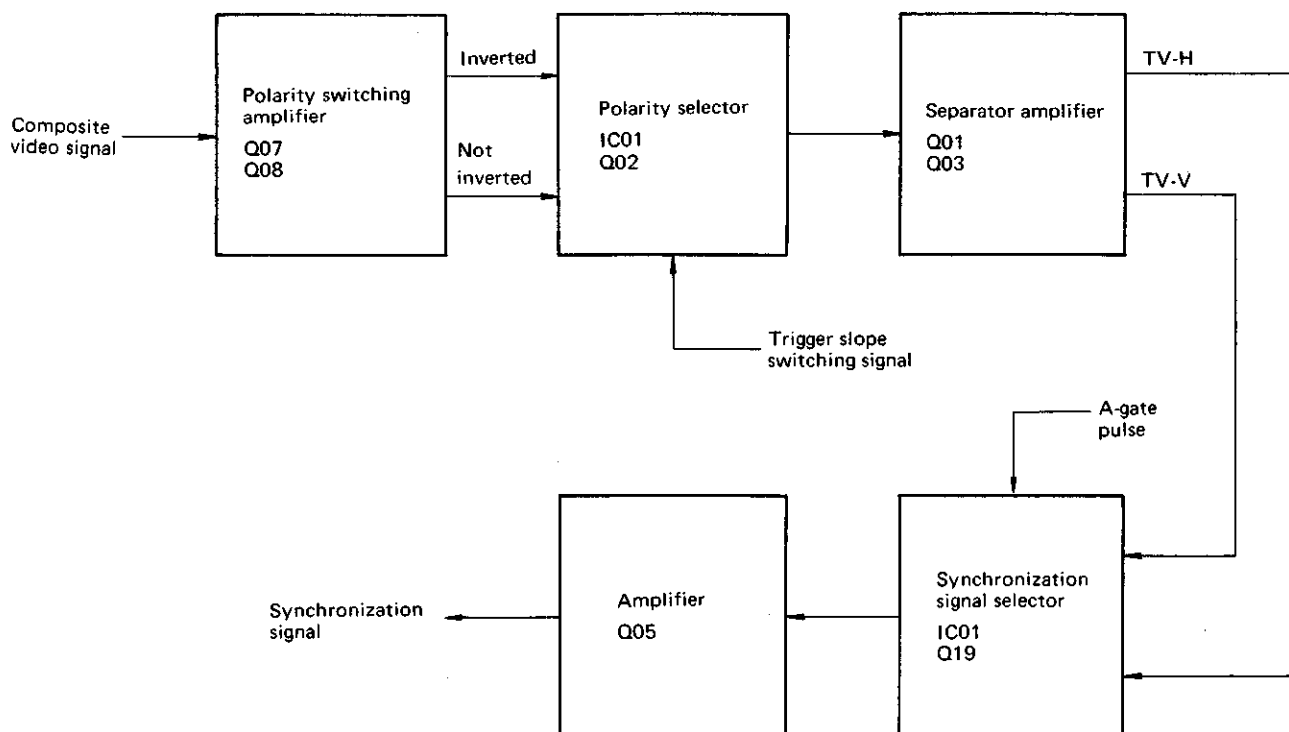
The COUPLING switch is used to select the method of connecting synchronization signal source and synchronization signal amplifier. When AC is selected, AC connection is made and the DC component is suppressed with capacitor

5C13 so that synchronization is unaffected by DC component.

When DC is selected, DC connection is made and synchronization is performed with DC component.

When HF REJ is selected, a low pass filter is formed by 5R36 and 5C14 and frequencies exceeding 10 kHz are attenuated. Therefore, this is suitable for observing signals containing high frequency noise. When FIX is selected, the synchronization level is fixed so that synchronization is made without synchronization operation. When TV-H is selected, TV horizontal synchronization pulse is used to synchronize and composite video signal waveform can be observed for 1 H. When TV-V is selected, TV vertical synchronization pulse is used to synchronize and composite video signal waveform can be observed for 1 V.

Figure 2-3-2. Block diagram of TV synchronization signal separation circuit [5]



2-3-2 TV Synchronization Signal Separation Circuit 5

The TV Synchronization signal separation circuit is as shown in Figure 2-3-2. This circuit separates and amplifies the synchronization signal component from composite video signal and then separates it into horizontal synchronization signal TV-H and vertical synchronization signal TV-V. The separated TV-V and TV-H signals are selected by a control signal from A-sweep generator and sent to synchronization signal amplifier.

When composite video signal is applied to the base of 5Q08, an inversed and amplified signal from the collector of 5Q08 is sent to the base of 5Q07 and pin no.8 of polarity selector 5IC01.

An inverted signal of signal from 5Q08 is obtained at the collector of 5Q07 and is passed to pin no. 11 of 5IC01. The inverted and non-inverted composite video signals created by 5Q07 and 5Q08 are switched by a trigger slope polarity switching signal.

Pins number 10 and 11 of 5IC01 are connected for positive slope and pins 8 and 9 are connected for negative slope and the synchronized signal component is always sent to the base of the next step amplifier 5Q03 so that the synchronization component is always positive.

The composite video signal is amplified at the collector of 5Q03 with the synchronization signal component having negative polarity and sent to the cathode of 5D01 and base of 5Q01.

The 5D01 clamps the video signal from the amplified composite video signal, uses the threshold level of 5Q01 to separate and amplify synchronization component and video signal component and sends them to the integration/differentiation circuit to separate TV-V and TV-H pulses.

The vertical synchronization signal TV-V is separated from the synchronization signal component by an integration circuit consisting of 5R11 and 5C02, and sent to pin number 4 of 5IC01. On the other hand, the horizontal synchronization signal TV-H passes through a differentiating circuit formed by 5C03 and 5R12 and is sent to 5IC01 pin number 1. The TV-V and TV-H signals sent to 5IC01 are output from pins number 2 and 3 as follows by the switching signal A-GATE PULSE output from A-sweep generator.

- A-sweep generation circuit trigger wait time
TV-V synchronization signal
- B-sweep generation circuit trigger wait time
TV-H synchronization signal

The TV-V or TV-H signal output to pins 2 and 3 are sent to the base of 5Q05, amplified by the collector, passes through a coupling switch, and sent to the synchronization signal amplifier.

2-4 SWEEP SIGNAL GENERATION CIRCUIT

2-4-1 A-Sweep Generator Circuit 8 , 10

The A-sweep generator circuit is as shown in Figure 2-4-1-(1).

The sweep generator circuit is switched by horizontal axis MODE switch to perform AUTO operation, NORM operation, and SINGLE operation.

When horizontal axis mode AUTO is selected, the sweep generator synchronizes with the trigger signal and generates sweep signal when the trigger signals greater than 50 Hz is input. When there is no trigger signal or when the frequency is less than 50 Hz, sweep is started automatically after HOLD OFF time ends and auto sweep is performed.

When the horizontal axis mode NORM is selected, the sweep generation circuit sweeps when a trigger signal is input and stops sweep and waits when no trigger signal is input.

When the horizontal axis mode SINGLE is selected, the sweep generation circuit waits for a trigger and when a trigger signal is input, synchronizes, performs one sweep, and ends. When the SINGLE (RESET) switch is pressed, it reenters trigger wait.

The sawtooth waveform generated by these steps passes through signal selection circuit of H-CONTROL circuit, goes through horizontal axis amplifier, and is applied to the horizontal deflector of the CRT. Also, it is sent to B-sweep generation circuit in order to create delay pulse for B-sweep generation.

Figure 2-4-1-(1) A-sweep signal generation circuit [7], [9]

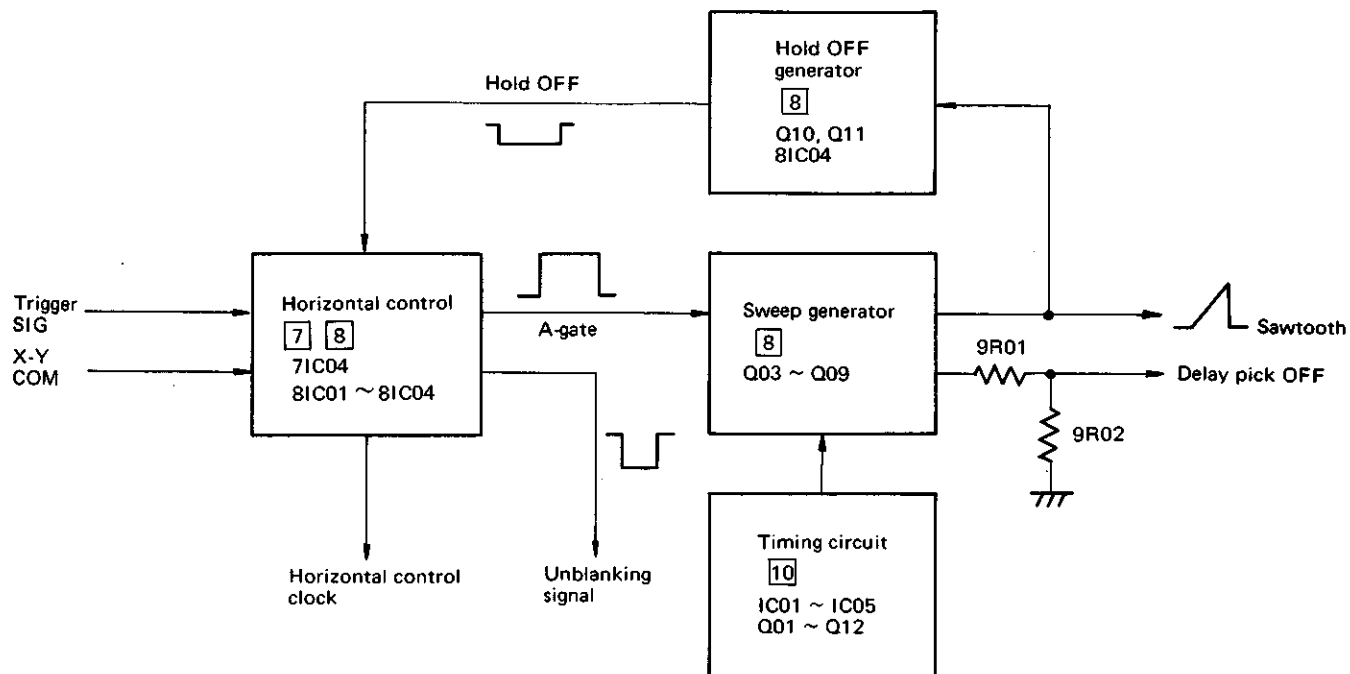
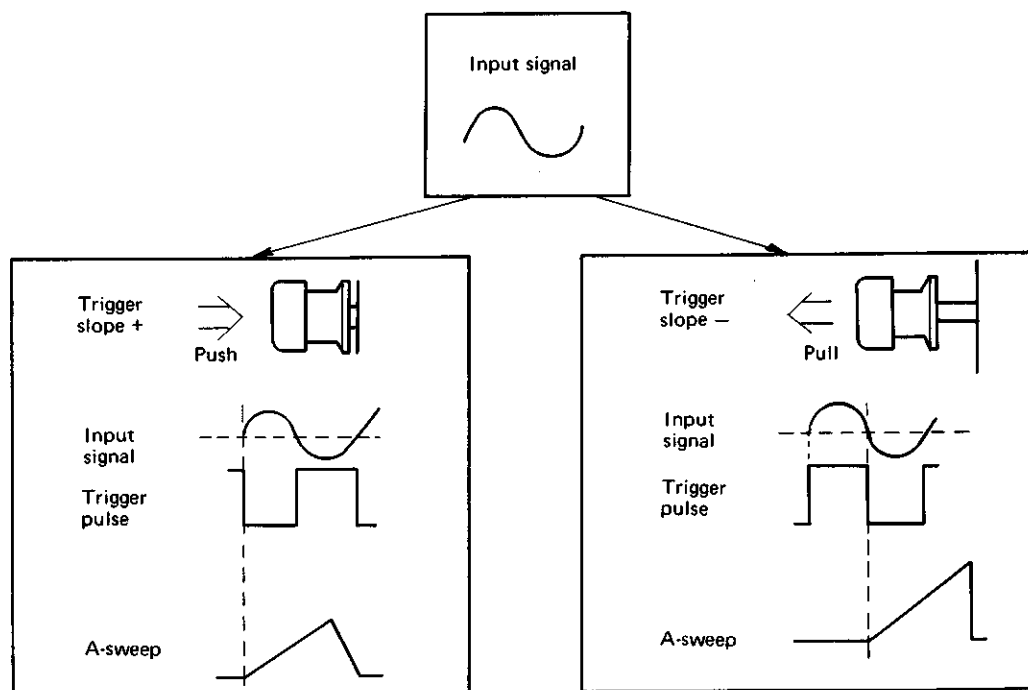


Figure 2-4-1-(2). Trigger slope setting and generation circuit synchronization



The gate waveform for creating sawtooth waveform is used as unblanking signal. This signal is sent to Z-axis amplifier and applied to the CRT.

Also, the sweep switch clock (2 SW) is the clock of the input switch circuit of the horizontal amplifier and is supplied from the H-CONTROL circuit.

The A-sweep generation circuit starts sweep at the fall of the trigger pulse converted to TTL level. During this, the relationship between the trigger slope setting for the input waveform and sweep generation circuit synchronization is as shown in Figure 2-4-1-(2) and the timing chart is as shown in Figure 2-4-1-(3).

The sweep signal generation circuit controls the start and end of sweep with sweep controller 8IC03.

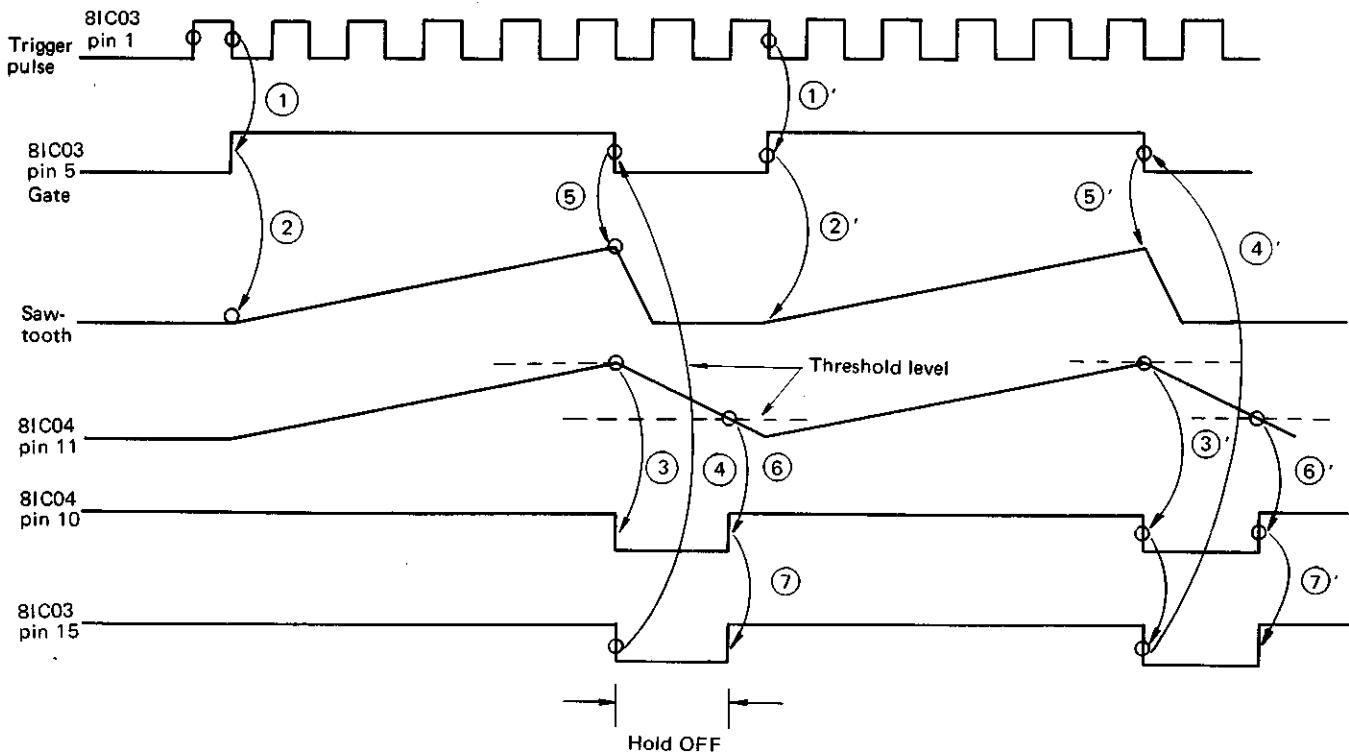
When set to AUTO, the 8IC03 switches between automatic sweep and single sweep with output from 8IC01. 8IC02 controls the auto sweep low frequency limit and enables jitterless operation when the trigger pulse is a high frequency pulse.

In the sweep signal generation circuit, when the output

from 8IC03 pin number 5 is high, the disconnect switch 8Q04 is turned off, reverse bias is applied to disconnect diodes 8Q05 and 8D02, and the timing capacitor is charged with timing current from A-timing circuit [10]. The capacitor terminal voltage forms a sawtooth sweep waveform that passes sweep signal generator buffer amplifiers 8Q07 and 8Q08, and goes to horizontal amplifier input switch H-CONTROL-B [7] and [9] sweep generation delay pulse generator. At the same time, this sawtooth waveform passes through sweep generator 8R24, 8R25, and buffer amplifier 8Q10, and charges the HOLD OFF capacitor.

The terminal voltage of the HOLD OFF capacitor is applied to buffer amplifier 8Q11 and comparator 8IC04. When the voltage of the sawtooth waveform reaches approximately 14.5 volts, pin number 11 of the comparator 8IC04 reaches approximately 1.7 volts, the output from pin number 10 is changed to low, resets 8IC03 in the control unit, and inverts the sweep gate to low. Then the gate signal becomes low, the disconnect switch on the sweep generator is turned on, the timing capacitor is discharged

Figure 2-4-1-(3). Sweep generator timing chart signal to change from (1) to (7)



through disconnect diode, and the output from buffer amplifier 8Q07 and 8Q08 returns to the start level of this sawtooth waveform. The sweep start comparator 8Q09 feeds back the buffer amplifier output to disconnected amplifier, discharges the timing capacitor terminal voltage to constant level (start level), and maintains that level. This completes a sweep.

On the other hand, the charges of the HOLD OFF capacitor accumulated during sweep are discharged through 10R28 and 8R37. At the same time, the setting of 8IC03 through buffer amplifier 8Q11 and comparator 8IC04 is prohibited. This is done to obtain the time to prepare for the next sweep and sweep does not start when a trigger pulse is input during HOLD OFF. This time can be changed up to four times by using the 8R37 [HOLD OFF] control.

When the horizontal MODE is set to SINGLE, pin number 3 (J) of sweep controller 8IC03 is controlled so that sweep is inhibited after one sweep and does not become ready to receive trigger until SINGLE/RESET is pressed once more.

Pin number 3 of 8IC03 is controlled by the R-S flip-flop formed by 6IC01 of H-CONTROL circuit [6]. Sweep end signal is sent from A-sweep generator to pin number 4 (reset) of R-S flip-flop (6IC01). When the sweep ends, output pin number 12 (Q) becomes low, the signal is sent to 8IC03 pin number 3, and sweep is inhibited. When SINGLE/RESET switch is pressed, set pulse is sent to pin number 1 of 6IC01 to set R-S flip-flop and make output pin number 12 (Q) high, and then sent to pin number 3 of 8IC03 to make the sweep generator ready to receive trigger signals.

2-4-2 B-Sweep Generator Circuit [9] , [11]

The B-sweep generator is as shown in Figure 2-4-2. In the explanation below, operations identical to those under A-sweep generator are omitted and only operations unique to B-sweep generator are described.

The B-sweep generator operates when the horizontal axis DISPLAY is set to A-INTEN, ALT, and B.

The B-sweep generator starts sweep at a certain interval (delay time) after A-sweep generator starts. The delay time is determined by A-TIME/DIV and DELAY TIME POSITION settings.

When B-MODE is set to synchronized delay, a delay pick-off pulse is applied to horizontal control and after delay time has elapsed, B-sweep is started by the first synchronized signal that arrives. When RUNS AFTER DELAY is set, sweep starts as soon as delay pick-off pulse is applied.

2-5 H-CONTROL [6] , [7]

The H-CONTROL circuit is as shown in Figure 2-5-1. It selects signals to horizontal amplifier and controls Z axis amplifier and trace separation according to switch settings.

A, A-INTEN, B, and ALT settings on H-DISPLAY are used to create A-COM (command), INT-COM, and B-COM control signals. The relationship between each setting and control line is shown in Table 2-5-1. The control signal is sent to B-sweep generator controller, Z-axis controller, and vertical axis switching signal selector.

Figure 2-4-2. Block diagram of B-sweep generator [9] , [11]

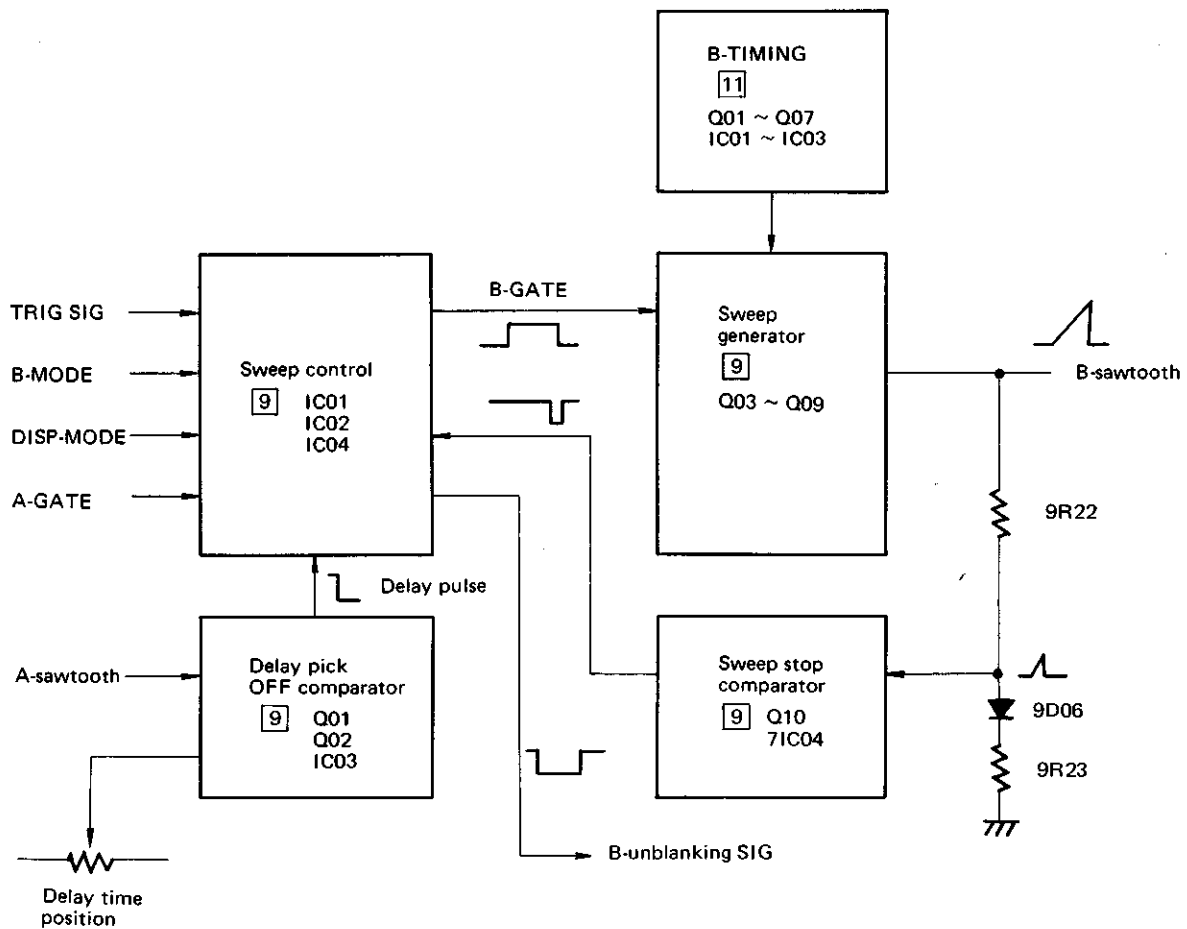


Table 2-5-1

H-DISPLAY Setting	Control Line		
	A-CM	INT-CM	B-CM
A	Hi	Hi	Low
A-INT	Hi	Low	Low
B	Low	Hi	Hi
ALT	Hi	Low	Hi

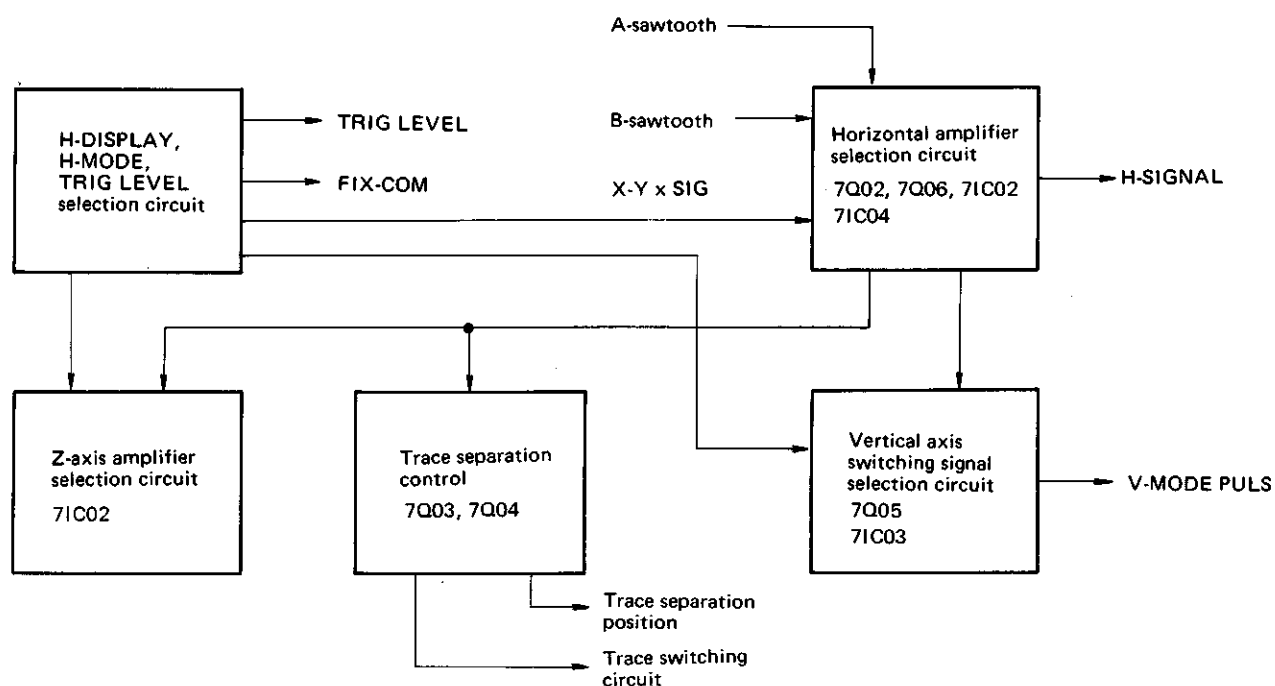
The H-MODE push button switches are used to set AUTO, NORM, SINGLE/RESET; control free-running sweep of A-sweep generator; and control trigger wait and sweep inhibit when single sweep is selected. It also activates the relay that fixes the trigger level and makes AC connection when both AUTO and NORM switches are pressed.

2-6 HORIZONTAL AMPLIFIER 12

The Horizontal amplifier is as shown in Figure 2-6-1. This amplifier amplifies the H-signal of the A-sweep, B-sweep, or X-Y signal selected by the H-CONTROL and sends it to the CRT horizontal deflector.

The signal sent to the base of 12Q01 in the first step of the horizontal amplifier is amplified and output from the collector. On the other hand, H-POSITION control is connected to the base of 12Q02 and DC voltage between 4 and 12 volts is output from the collector according to the position of the H-POSITION control.

The outputs from 12Q01 and 12Q02 are connected to the base of the differential amplifier formed by 12Q05 and 12Q06. A GAIN switching relay to obtain x 10 magnification is connected between the emitters of 12Q05 and 12Q06 and when the FINE Knob is pulled, the relay turns on, 12R16, 12R17, and 12R18 are connected to the emitters and gain is magnified by ten times. The emitter currents for 12Q05 and 12Q06 are supplied by the constant-current circuit 12Q07. The signal sent to the base of

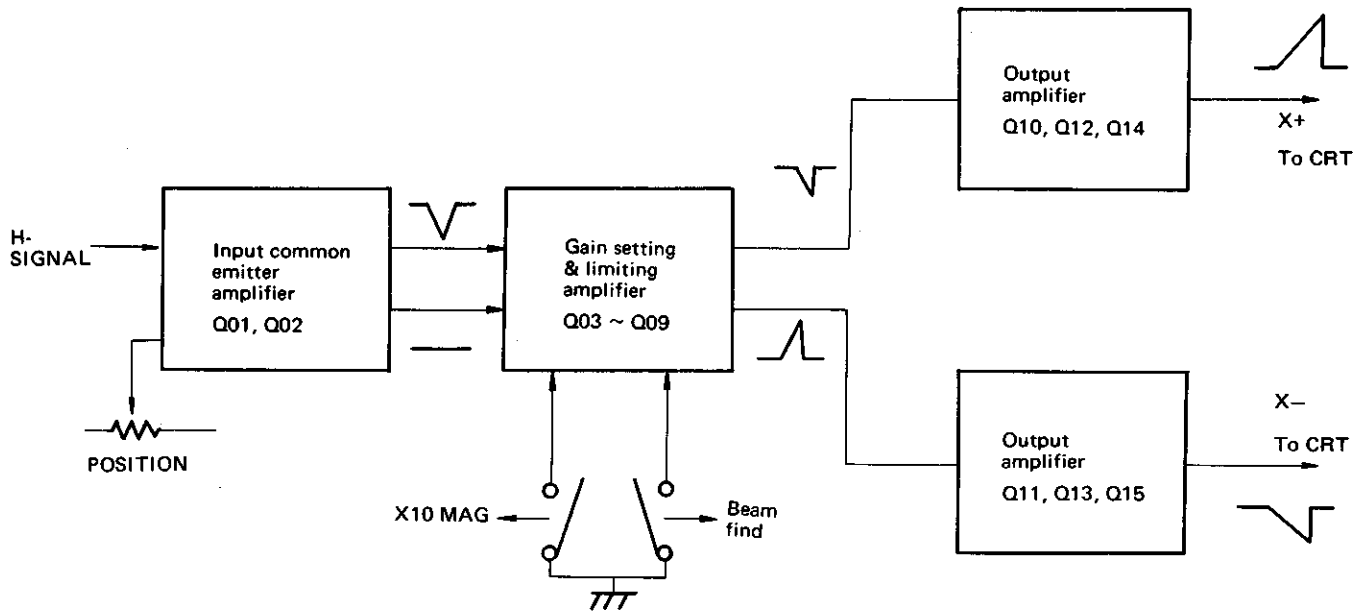
Figure 2-5-1. Horizontal control circuit 6 , 7

12Q05 is output from the collectors of 12Q05 and 12Q06 as signals with opposite polarity. Because the current source for 12Q05 and 12Q06 is a constant-current source, the amplified signal voltage is limited to 12 Vp-p and is sent to the bases of 12Q08 and 12Q09.

The signal amplified by 12Q08 and 12Q09 is sent to the

bases of output amplifier 12Q10 and 12Q11. The output amplifiers 12Q10 to 12Q15 amplify the signal from the previous step so that its amplitude is sufficient for deflecting the CRT beam in the horizontal direction and send it to the horizontal deflector.

Figure 2-6-1. Horizontal amplifier 12



2-7 AXIS AMPLIFIER AND CRT CIRCUIT

The Z-axis amplifier and the CRT circuit are as shown in Figure 2-7-1.

2-7-1 Z-Axis Amplifier 13

The Z-axis amplifier consists of 13Q02, 13Q04, 13Q06, and 13Q08. It performs the following functions:

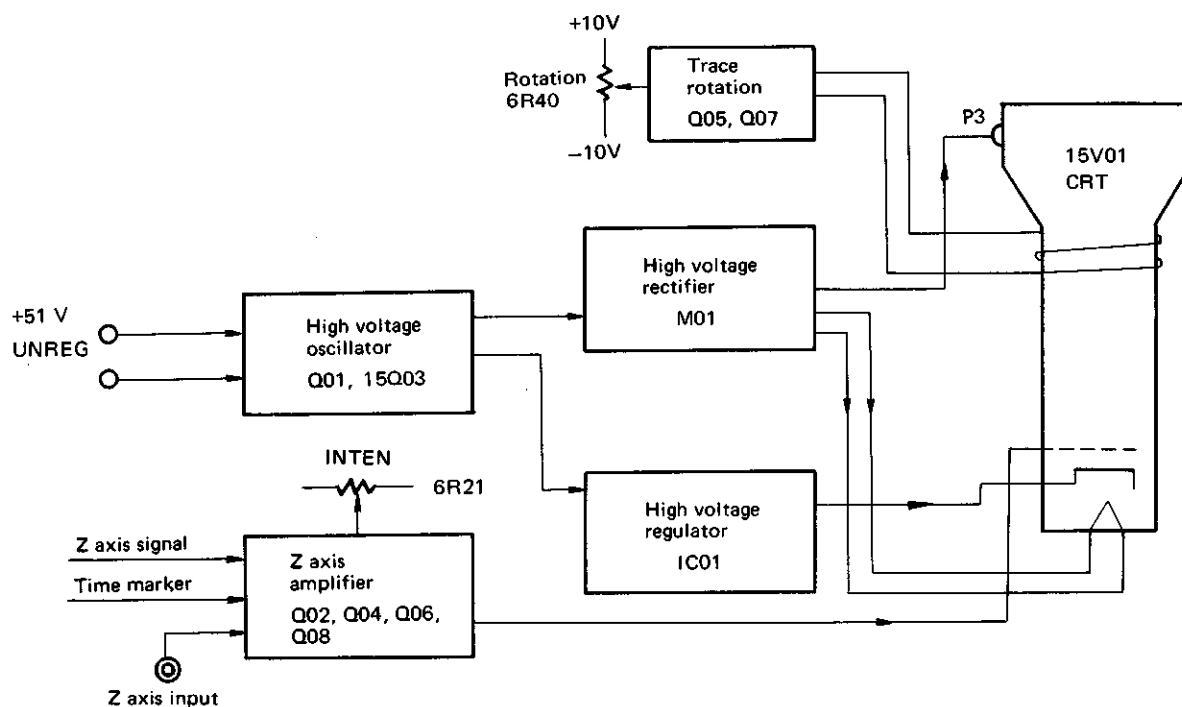
- Amplifies the sweep gate signal (unblanking pulse) that illuminates the CRT during A- and B-sweep and clears the CRT during flyback time.
- Amplifies the chop blanking signal used to erase the channel switching time transient that appears when the vertical axis mode is set to CHOP.

- Amplifies Z-axis input signal (external intensity modulation signal).
- Controls the intensity of the sweep line with INTEN.

The signal input to the Z-axis amplifier is sent to the emitter of 13Q02. 13Q02 is a base-ground-type amplifier with low input impedance and 13D10 and 13D11 function as limiting circuit so that 12Q06 and 12Q08 do not become saturated.

13Q02, 13Q04, 13Q06, and 13Q08 form a negative-feedback-type amplifier and the amplified signal is output from the collector of 13Q06. 13C08 is a speed increasing capacitor and the signal is differentiated by 13R26 and 13R29 and applied to the base of 13Q08 to improve the rise of output blanking signal. The output signal is sent to the grid of the CRT.

Figure 2-7-1. Block diagram of Z-axis amplifier and CRT circuit 13



2-7-2 CRT Circuit **13**

The CRT circuit generates the high voltage used for the bias voltage of each CRT electrode in order to display a clear signal.

Various bias voltages between 30 V and 10.5 kV are applied to the CRT.

The high voltage oscillator circuit consists of 13Q01, 15Q03, and the primary winding of 13T01. A positive feedback is applied to 15Q03 from the collector winding of oscillating transformer 13T01 through the base winding. 15Q03 oscillates at approximately 40 kHz and generates a high voltage in the secondary winding. 13Q01 and 13R06 supply the base current of 15Q03. 13D09, 13D21, and 13R12 form a protective circuit so that the negative withstand voltage between the base and emitter of 13Q01 is not exceeded.

The error amplifier circuit 13IC01 controls the 13Q01 base so that the high voltage generated by the high voltage oscillator can keep the CRT cathode voltage at -1.75 kV regardless of the change in intensity or primary winding voltage. This circuit consists of 13IC01, 13R14 to 13R17, and 13R41, 13R42, 13R43, 13R18, and 13R19 that use $+10$ V as base power source.

The high voltage rectifier circuit is composed of a 12-time voltage rectifier (for supplying $+10.25$ kV to the third anode P3 of CRT), M01, cathode voltage generation rectifying circuit 13C05, 13D15, 13D14, 13C10, first grid voltage generation circuit 13C12, 13D19, 13D18, 13C11, 13R25, and 13C06. Also included is a heater voltage circuit from pins 5 and 6 of FOCUS, ASTIG, and GEOMETRY electrode circuit 13T01.

TRACE ROTATION consists of 6Q05, 6Q07, 6R35, 6R40, and rotation coil 15L01. The rotation coil is attached to the neck of the CRT and adjusts the electron beam angle with a magnetic field.

2-8 POWER SUPPLY **14**

The constant voltage power supply is as shown in Figure 2-8-1. It consists of five power sources that supply constant power to each circuit. This circuit provides constant output voltage even when the load changes. Ripple is small and a protective circuit is provided to protect the constant power source circuit from damage when the output is grounded.

When power switch 15S01 is turned on, the power is supplied through a fuse to the power supply selecting plug. The power supply selection plug uses the two primary windings of the power supply transformer 15T01 to enable the selection of 100 V, 115 V, 220 V, 230 V, or 240 V.

The -10 V power supply circuit supplies the reference voltage for other power supplies (except $+5$ V power supply). The $+10$ V and -10 V secondary winding output voltages of the transformer are full-wave rectified by rectifier 14D01 and smoothed by capacitors 14C01 and 14C02 and changed to DC current. The positive and negative smoothed output voltages are sent to $+10$ V series regulator circuit and -10 V series regulator circuit respectively.

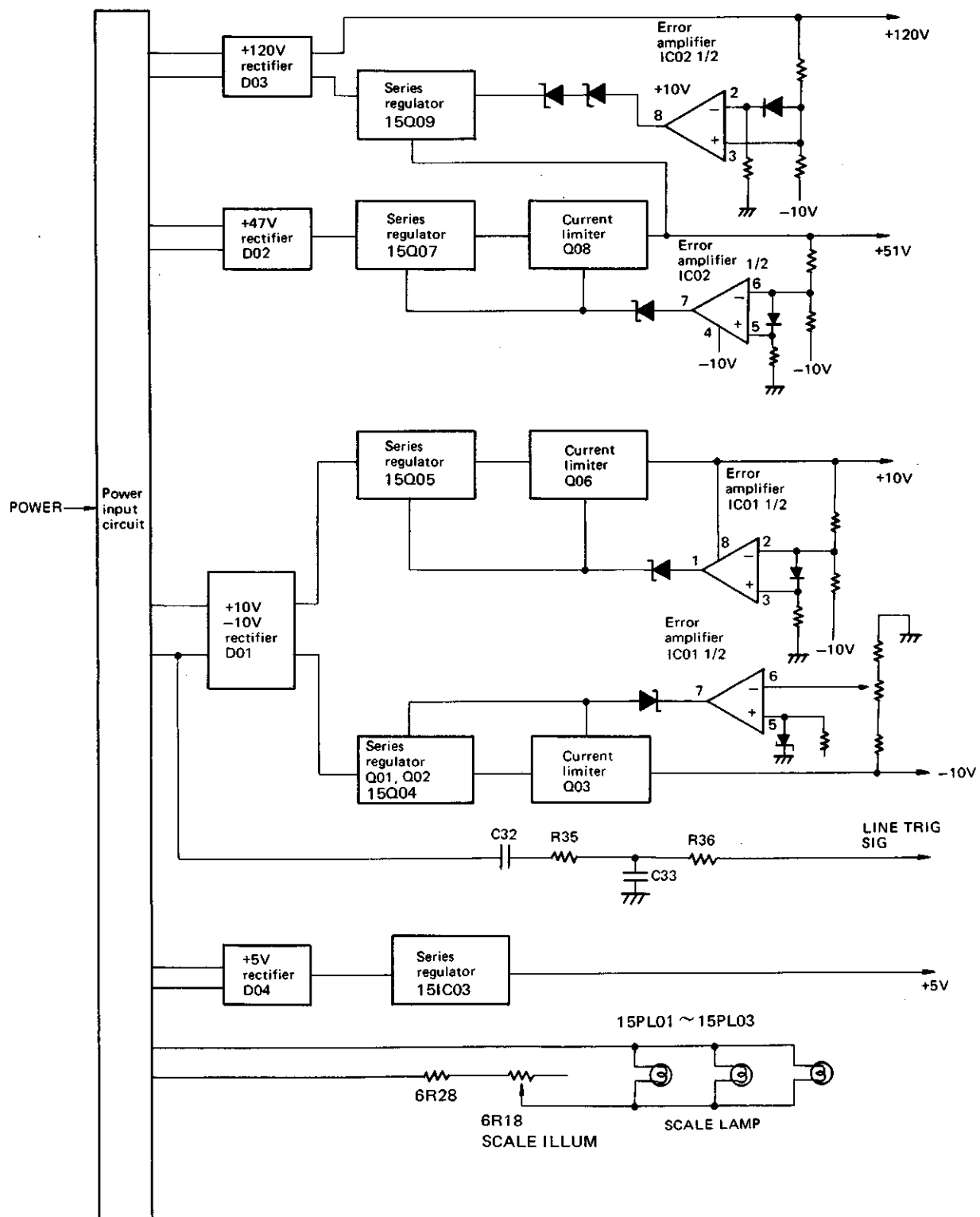
The $+5$ V power supply circuit supplies the secondary winding output voltage to rectifier 14D04, full-wave rectifies it, smooths it with capacitor 14C05, and sends it to 15IC03. 15IC03 is a three-terminal regulator and outputs a $+5$ V constant power supply voltage with a single IC.

The $+10$ V, $+51$ V, and $+120$ V power supply circuit uses the -10 V constant power supply voltage as reference and outputs the respective constant voltage. The structure and operation of these circuits are the same as -10 V power supply circuit.

The scale lamp uses the secondary winding output voltage and drops it to approximately 6.3 V by 6R28 to illuminate the CRT scale. The brightness of the lamp can be adjusted with the SCALE ILLUM variable resistor 6R18.

The line trigger signal is sent from the secondary winding output to the synchronization signal generator circuit through 14C32, 14C33, 14R35, and 14R36.

Figure 2-8-1. Block diagram of power supply 14



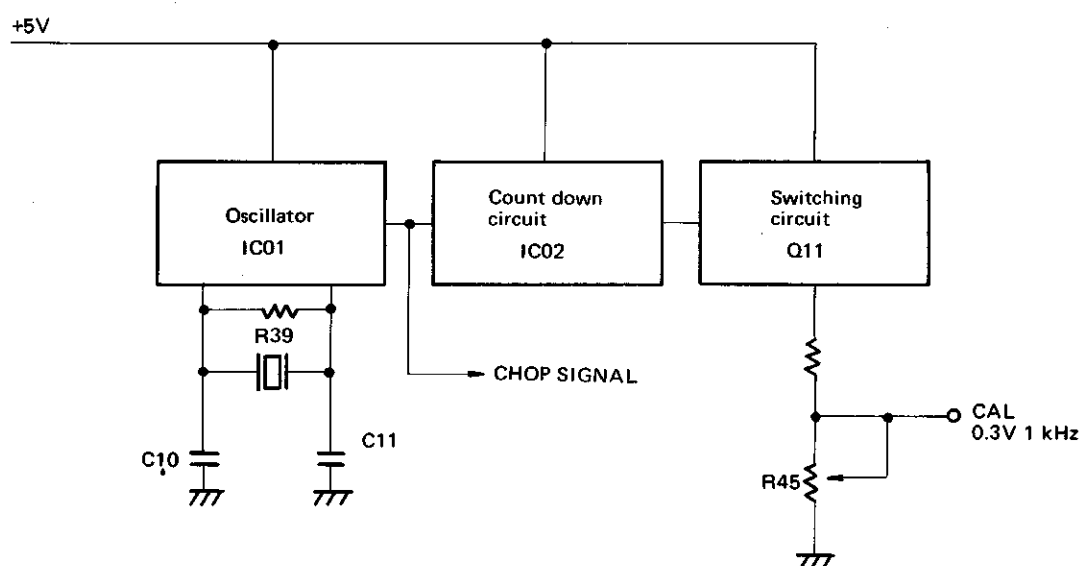
2-9 CALIBRATOR 3

The calibrator circuit is as shown in Figure 2-9-1. It repeatedly outputs 0.3 V, 1 kHz square wave. The output voltage is used mainly for vertical axis deflection sensitivity calibration, probe phase adjustment, and timing adjustment.

The calibrator 3IC01 forms an oscillator with 3R39, 3X01, 3C10, and 3C11. The frequency of the oscillator is determined by the ceramic oscillating element 3X01. The

256 kHz signal is output from pin number 12 of 3IC01, passes through inverter buffer, and separated into CHOF switching signal and CAL signal. The CAL signal passes through count down IC 3IC02, is divided by 256, and is output as a 1 kHz signal. This output signal is switched by 3Q11 using the +5 V constant power supply. Then it is divided by 3R45 and 3R46 and output from CAL terminal as 0.3 V (1 kHz) signal.

Figure 2-9-1. Block diagram of calibrator circuit 3



Section 3 Maintenance

This section describes how to keep the oscilloscope in good condition over a long period of time, and includes how to make a troubleshooting, and the replacement of components.

Before starting maintenance, read the operating manual carefully to familiarize yourself with the operation of the oscilloscope.

3-1 PREVENTIVE MAINTENANCE

To avoid causing unnecessary damage to the oscilloscope, keep the oscilloscope clean, and make visual inspection and calibration of the oscilloscope periodically.

3-1-1 Cleaning

When the instrument is used in the dirty room, the instrument will get dust easily. Even in the clean room, still the instrument will get dust. Accumulation of the dust in the instrument may cause overheating, since the dust obstructs the heat radiation. Under high humidity condition, the dust may loose the insulation between components. A dirty switch contact or connector contact may loose stable connection. Worst thing is that accumulation of the dust may cause spark in wet season and may damage the component. In order to clean the instrument, select the appropriate cleaner in the Table 3-1-1.

Table 3-1-1 Cleaner selection

Liquid recommended as cleaner	Water, mild detergent
Prohibited liquid	Ether, lacquer thinner, methyl-ethyl as chemicals containing ketone detergent

Exterior

Using wet cloths dipped in cleaning liquid, clean the dirty surface of the instrument. The brush is useful as well particularly for cleaning corner. Be careful to use only liquid recommended in Table 3-1-1.

Interior

The best way to clean the dust accumulated in the instrument is to use an air compressor. Dust which remains after air blowing may be removed by using a soft paint brush and blowing again with air compressor.

CRT and Filter Cleaning

The front face of the CRT and the filter will get dirty easily. Wet soft cloth will remove dust and fingerprints. If necessary, use alcohol.

3-1-2 Storage

When the instrument is not used for a long time, remove probes, power cord and accessories attached. Store the accessories in the accessory bag, and place the dust cover over the instrument (SS-5705/06A only). Then store the instrument in the clean and dry room.

3-1-3 Visual Checking

Visual checking is the easiest way to find out bad components. Burnt resistors, loose connectors, and damaged printed circuit boards are easily identified by visual inspection. Many troubles are prevented by repairing them before they get serious.

3-1-4 Periodical Check and Adjustment

Periodical check and adjustment are important for keeping the instrument in proper operating condition at all times. When the instrument is used frequently, check and adjust the instrument every 1000 hours. When the instrument is not used frequently, once each six months is recommended.

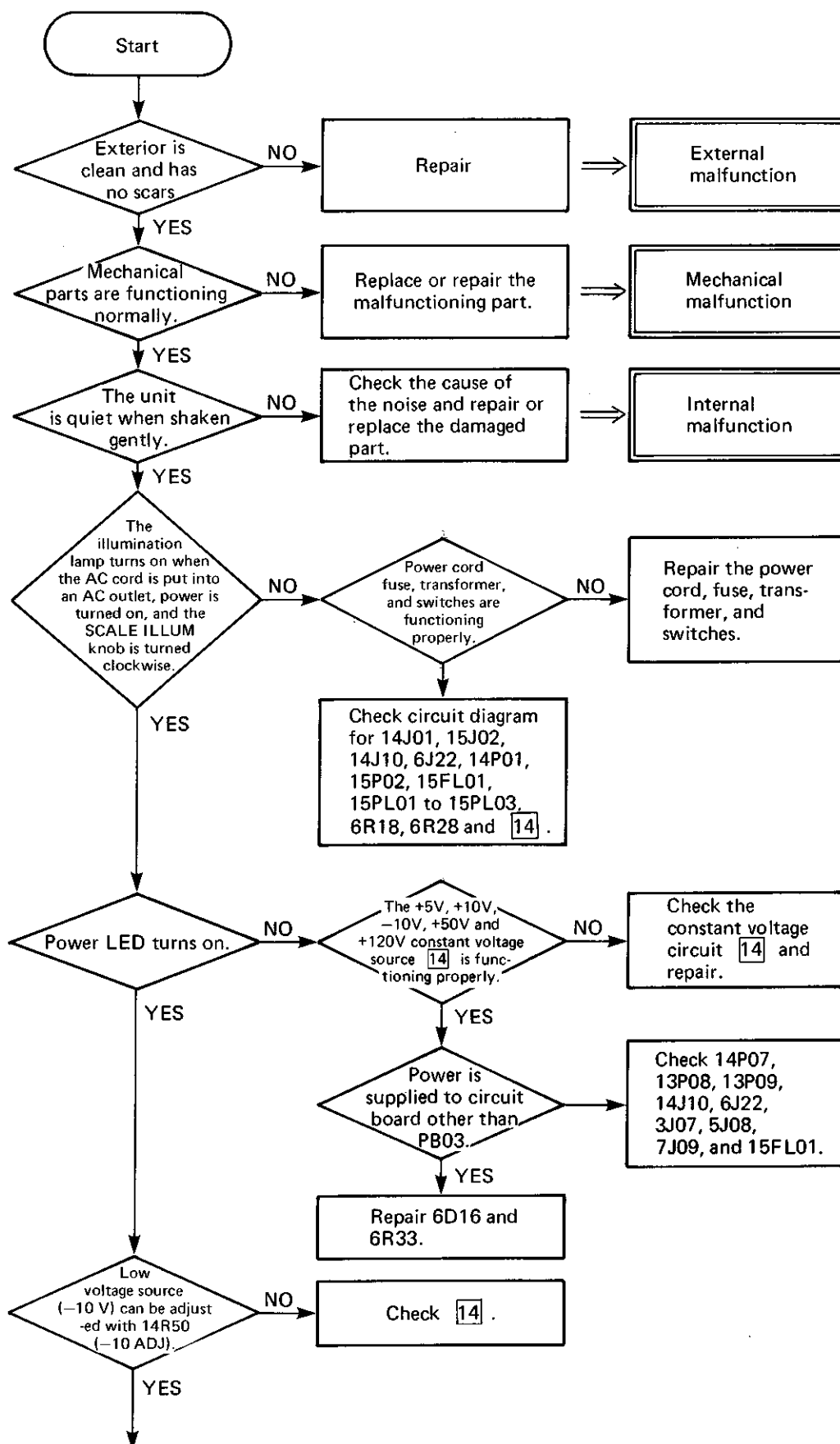
3-2 TROUBLESHOOTING FLOW CHART

The basic troubleshooting procedures are illustrated in this chapter. At first, follow from the beginning.

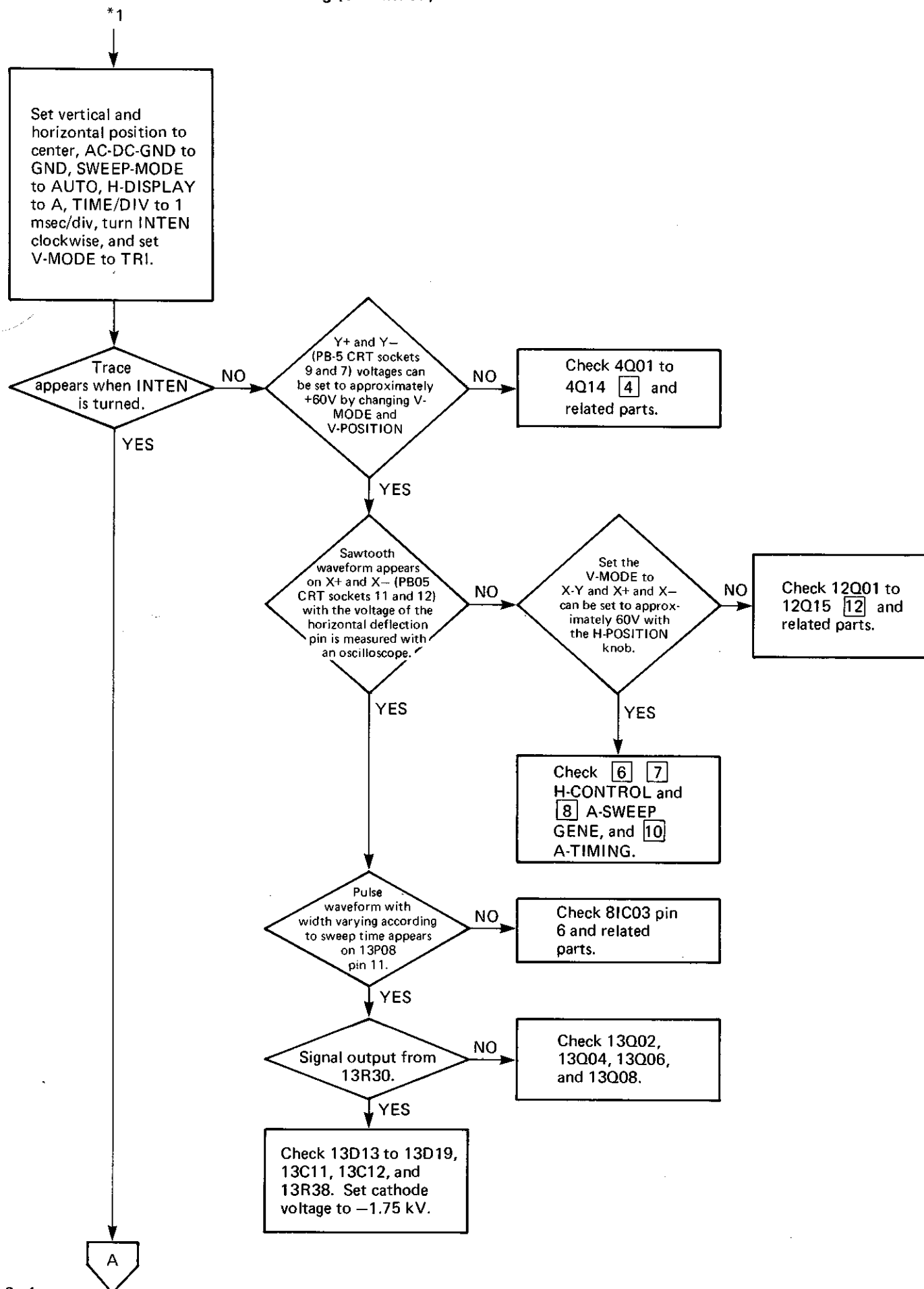
3-2-1 SS-5705A/5706A Troubleshooting

3-2-2 SS-5702A/5703A Troubleshooting

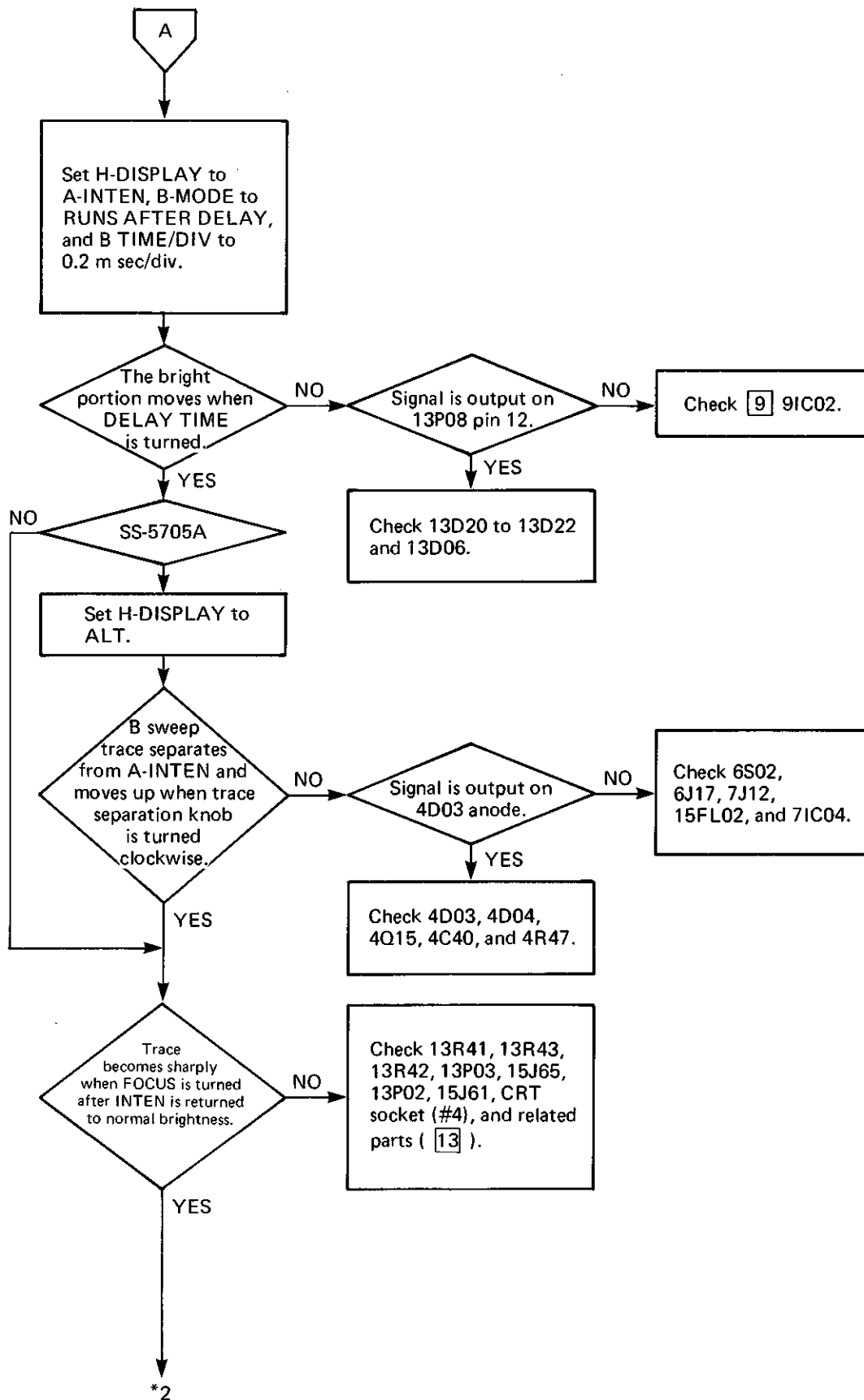
3-2-1 SS-5705A/06A Troubleshooting



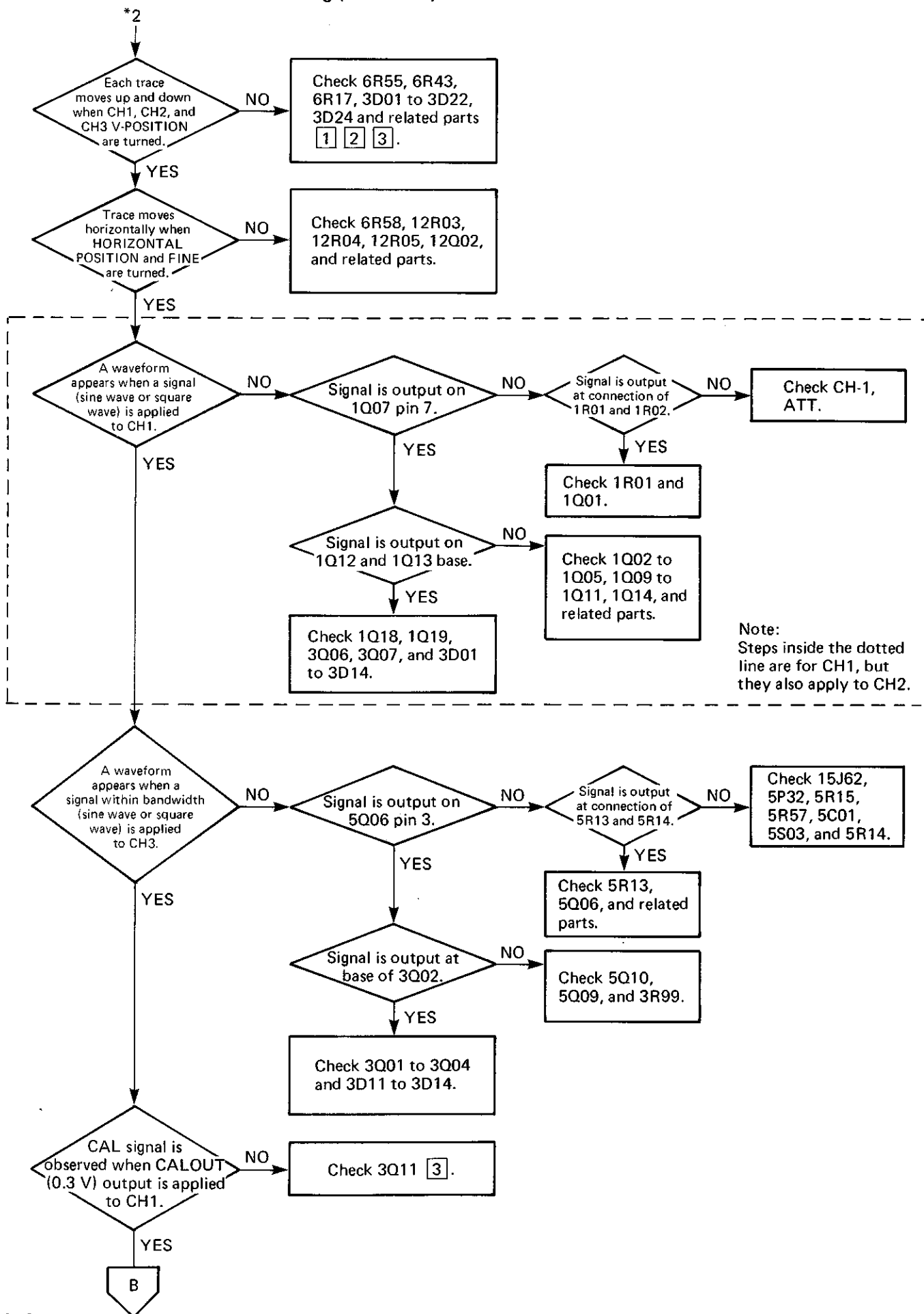
3-2-1 SS-5705A/06A Troubleshooting (continued)



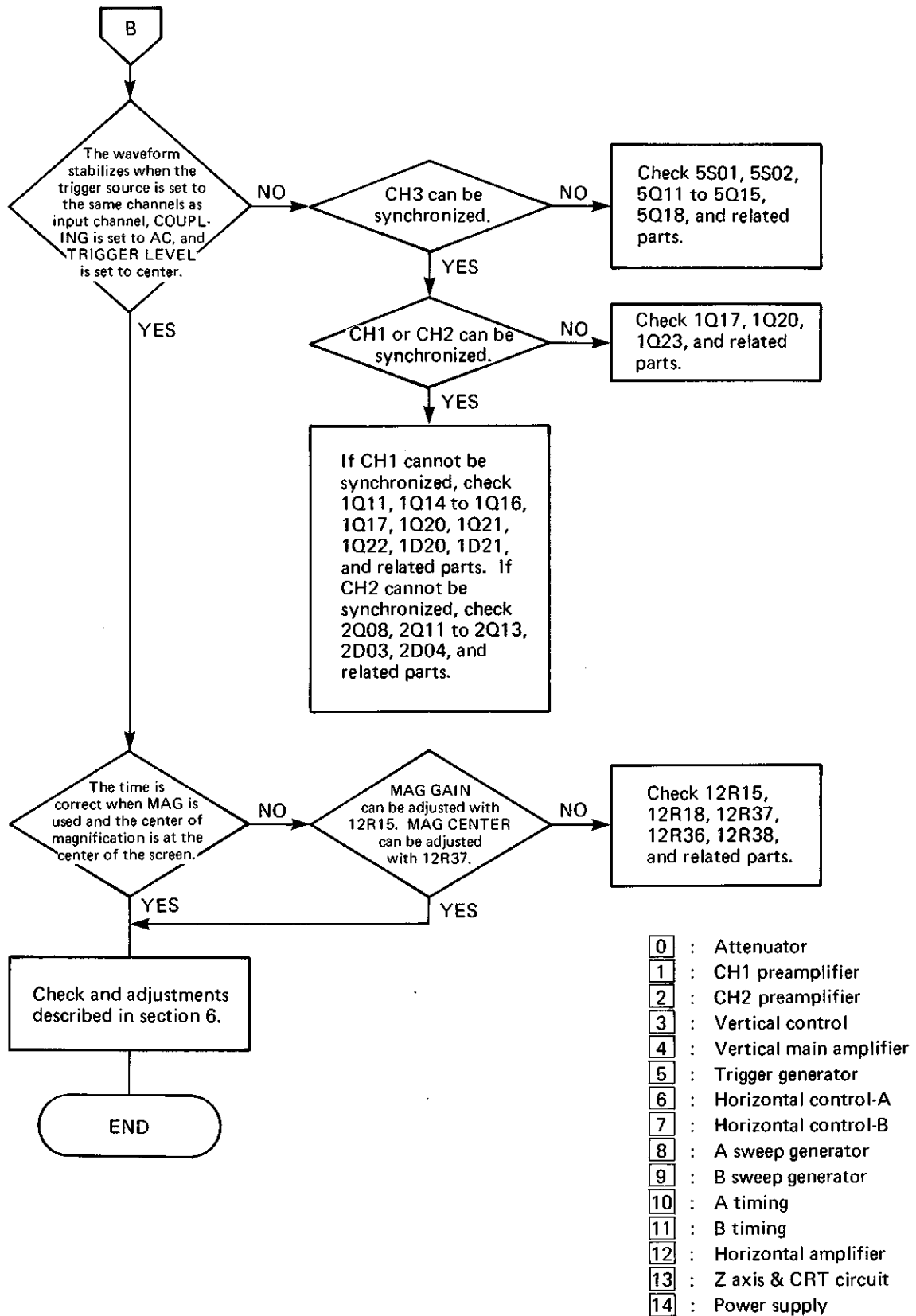
3-2-1 SS-5705A/06A Troubleshooting (continued)



3-2-1 SS-5705A/06A Troubleshooting (continued)



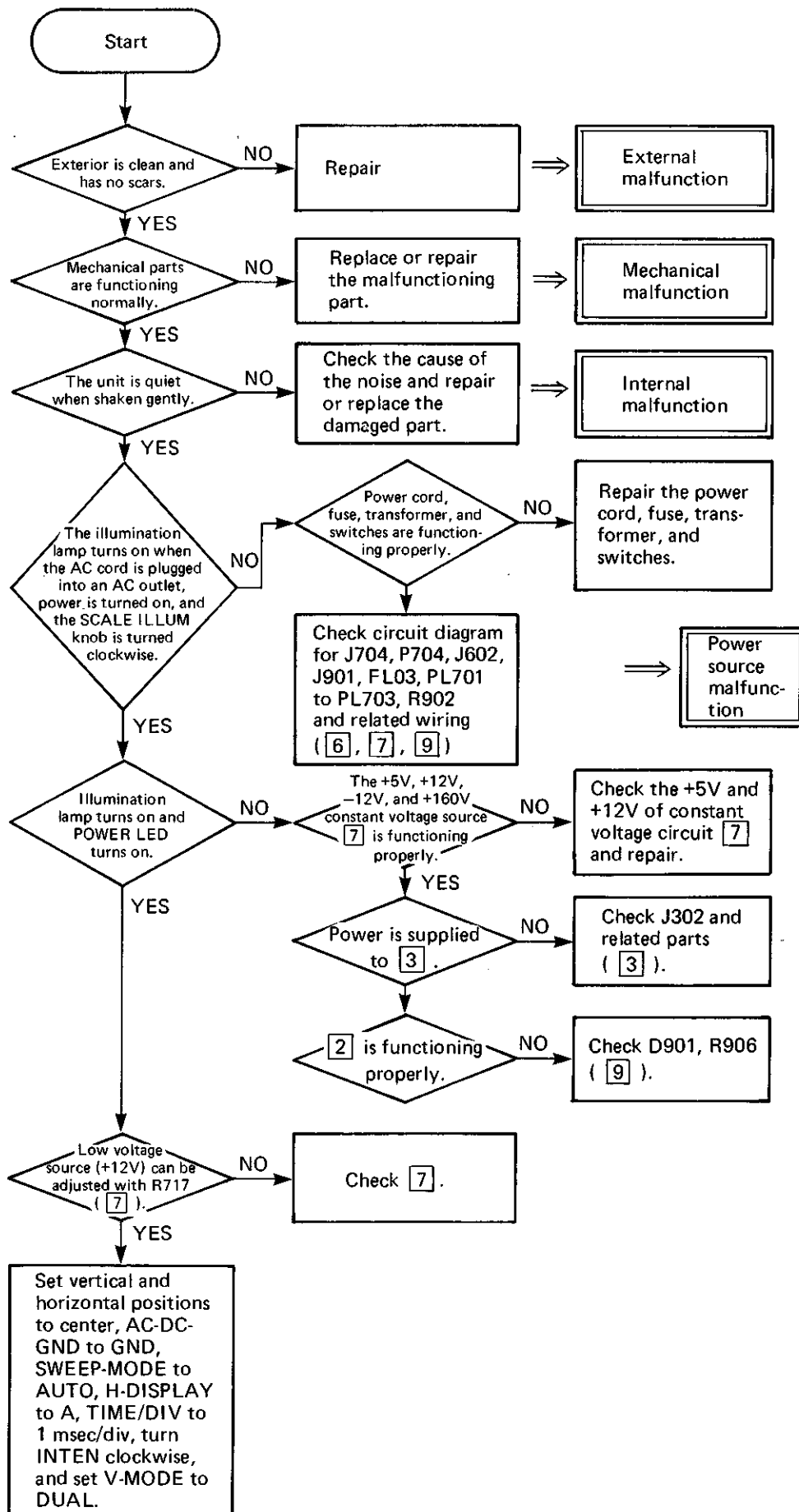
3-2-1 SS-5705A/5706A Troubleshooting (continued)



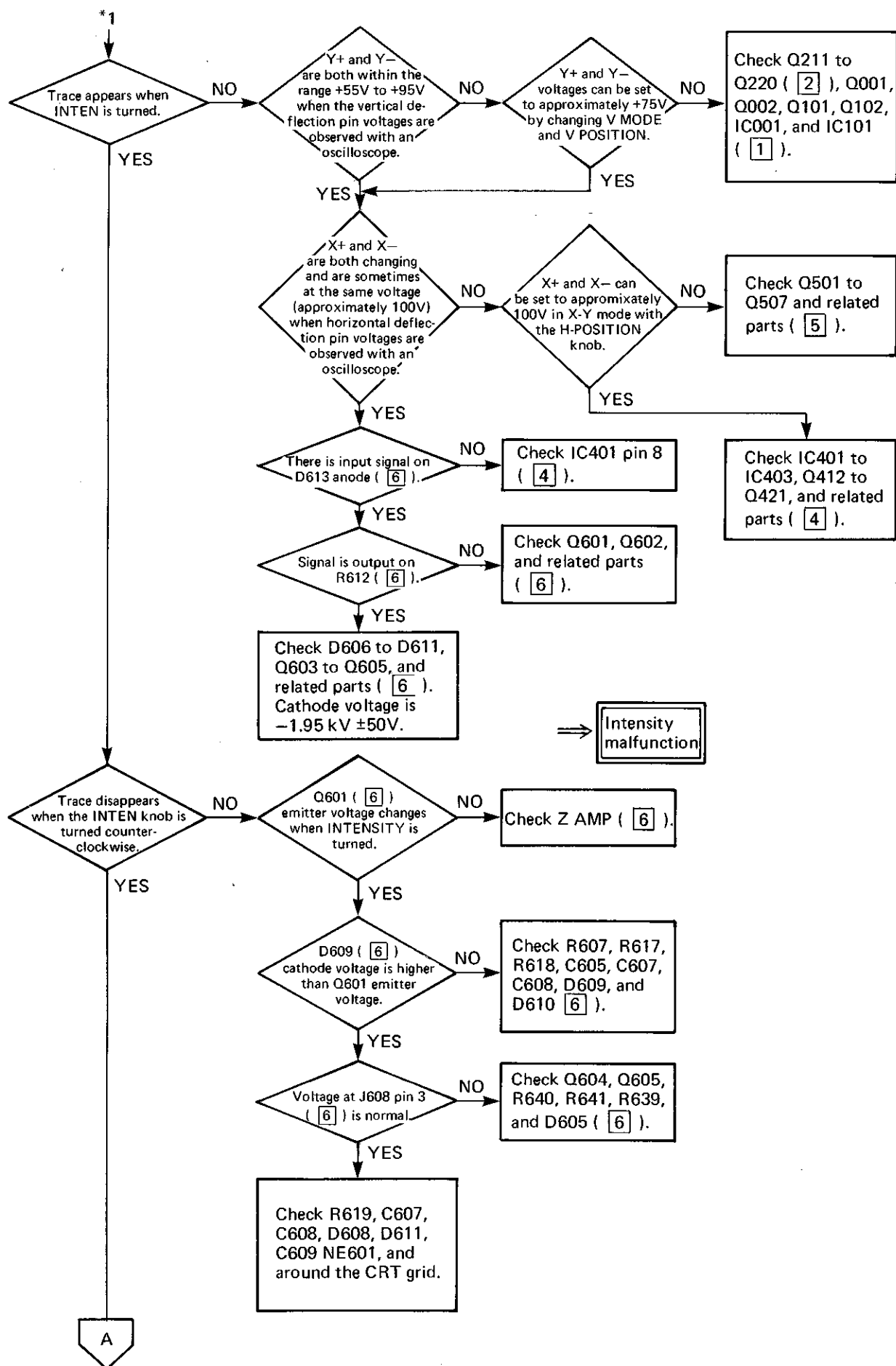
3-2-2 SS-5702A/5703A Troubleshooting

POWER	Off	POSITION	Mid-range
INTEN	Mid-range	SWEEP LENGTH	Push,
FOCUS	Mid-range	(PULL x5 MAG)	Fully clockwise
SCALE	Fully clockwise	TIME/DIV	1 mSEC
Vertical MODE	CH 1	VARIABLE	CAL
POSITION	Mid-range	LEVEL/SLOPE	Push, Mid-range
VOLTS/DIV	5 mV	SWEEP MODE	NORM
VARIABLE	CAL	COUPLING	AC (EXT DC)
AC-GND-DC	DC	SOURCE	CH1

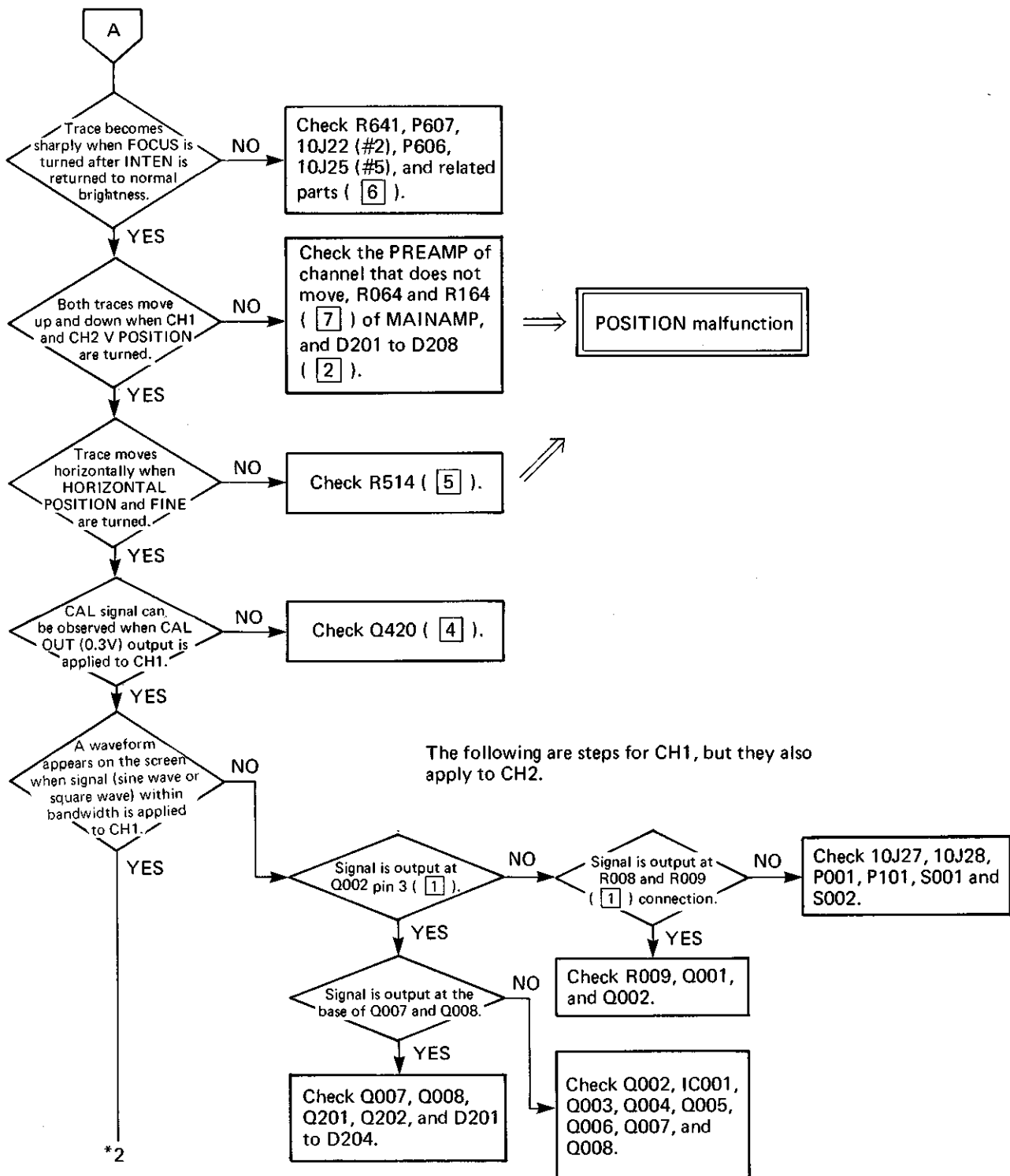
3-2-2 SS-5702A/03A Troubleshooting (continued)



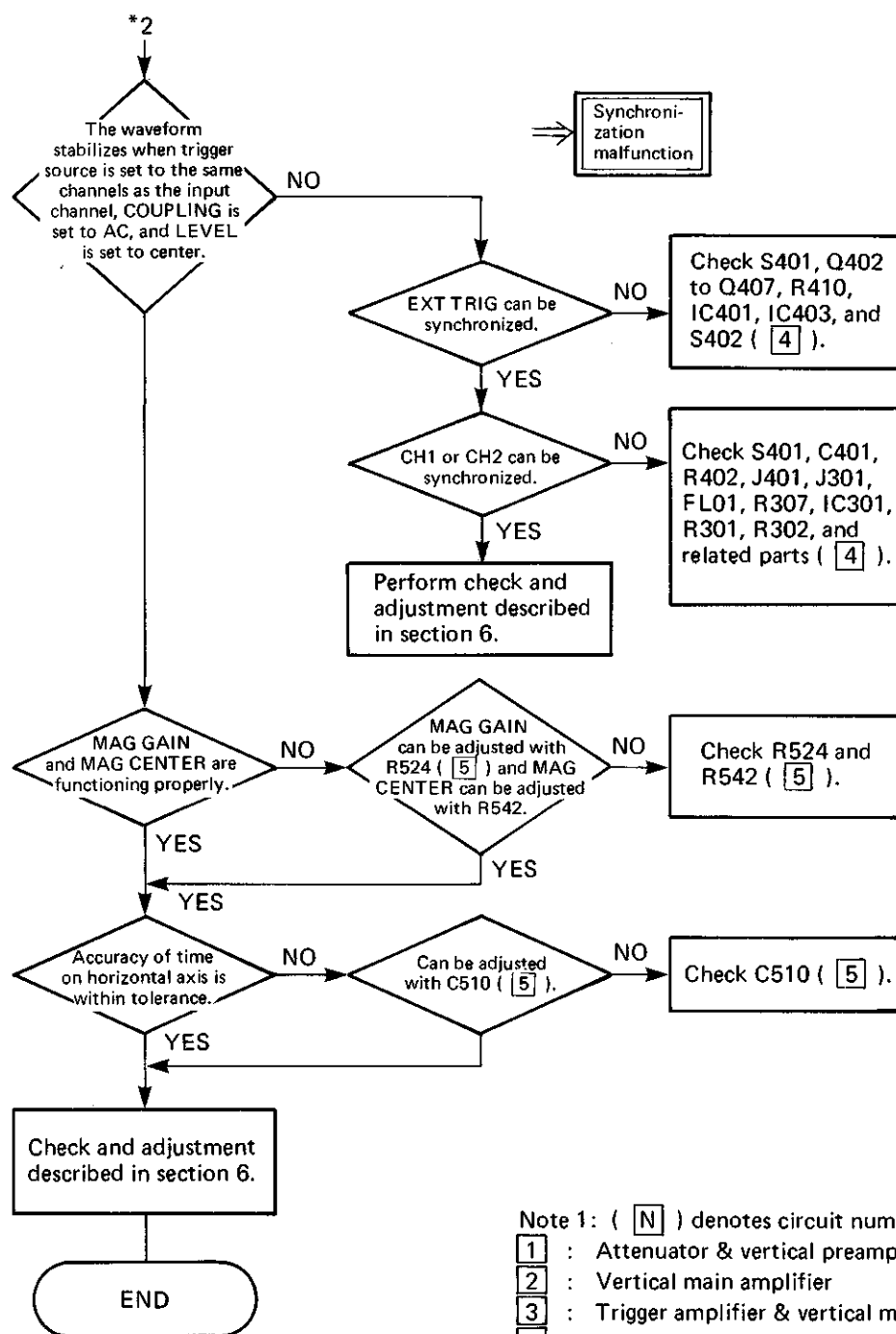
3-2-2 SS-5702A/03A Troubleshooting (continued)



3-2-2 SS-5702A/03A Troubleshooting (continued)



3-2-2 SS-5702A/03A Troubleshooting (continued)



Note 1: ([N]) denotes circuit number.

- [1] : Attenuator & vertical preamplifier
- [2] : Vertical main amplifier
- [3] : Trigger amplifier & vertical mode control
- [4] : Trigger & sweep generator
- [5] : Timing & horizontal amplifier
- [6] : Z axis amplifier & CRT circuit
- [7] : Power supply
- [9] : CRT control

Note 2: Refer to figure 5-3 for printed circuit board [N].

3-3 BOARD REMOVAL AND REPLACEMENT INSTRUCTIONS

This section explains how to remove the printed circuit boards, and bad components. The printed circuit board location photographs in "Section 7" offer quick board identification. The mechanical drawing in "Section 7" will be helpful as well for the removal and reinstallation of components or subassemblies. The Table 3-3-1 lists maintenance aids for quick reference.

WARNING

To avoid electric shock, disconnect the power cord of the instrument in front of the AC power line before removing covers.

Table 3-3-1 Maintenance aids

Description	Specification	Usage
1. Soldering iron	15 W to 25 W	General soldering and unsoldering.
2. Crossed-head screwdriver	2.6 mm, 3 mm	Assembly and disassembly.
3. Torque screwdriver	2.5 kgf x cm	Assembling handle.
4. Nut screwdriver	3 mm, 11 mm, 13 mm (subtense)	Assembly and disassembly.
5. Hexagonal-head screwdriver	3 mm (subtense)	Knob replacement.
6. Long-nose plier		Component removal and replacement.
7. Vacuum solder extractor	No static charge retention	Unsoldering static sensitive devices and components on boards.
8. Spray cleaner	No noise	Cleaning switches and connector contacts.
9. IC removal tool		Removing DIP-ICs.
10. Isopropyl alcohol	Reagent grade	Cleaning front panel.

3-3-1 Cover Removal

To start the internal check, remove the covers first according to the following procedure.

SS-5702A/03A

When removing or attaching the top cover, widen on both edges of the cover as shown in the figure below.

Remove each of the screws in the front and rear parts of the bottom cover, and remove the bottom cover by pulling rearward. (The front end of the bottom cover is inserted in a ditch behind the front panel).

SS-5705A/06A

Be sure to remove the rear panel first in removing the covers. The rear panel can be removed by removing each of the screws on the right and left of the panel. Then, remove the five screws from the top, left, and right sides of the top cover, and remove the cover by pulling it rearward. (The front end of the top cover is inserted in a ditch behind the front panel.)

Note: When removing or attaching the top cover, widen on both edges of the cover as shown in the figure below.

Remove each of the screws in the front and rear parts of the bottom cover, and remove the bottom cover by pulling rearward. (The front end of the bottom cover is inserted in a ditch behind the front panel).

Figure 3-3-1-(1). SS-5705A/06A Rear view

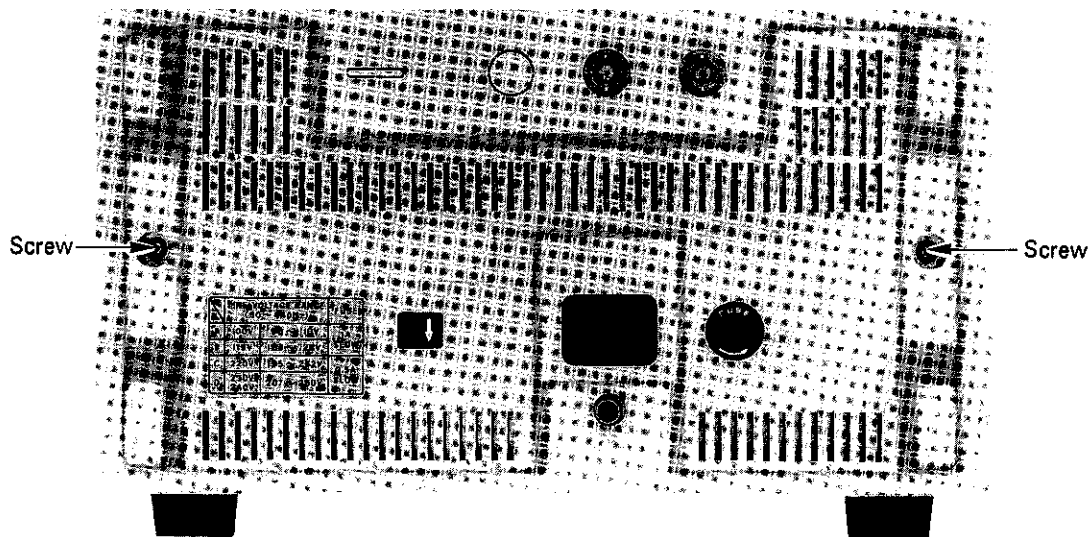


Figure 3-3-1-(2). SS-5702A/03A Top view

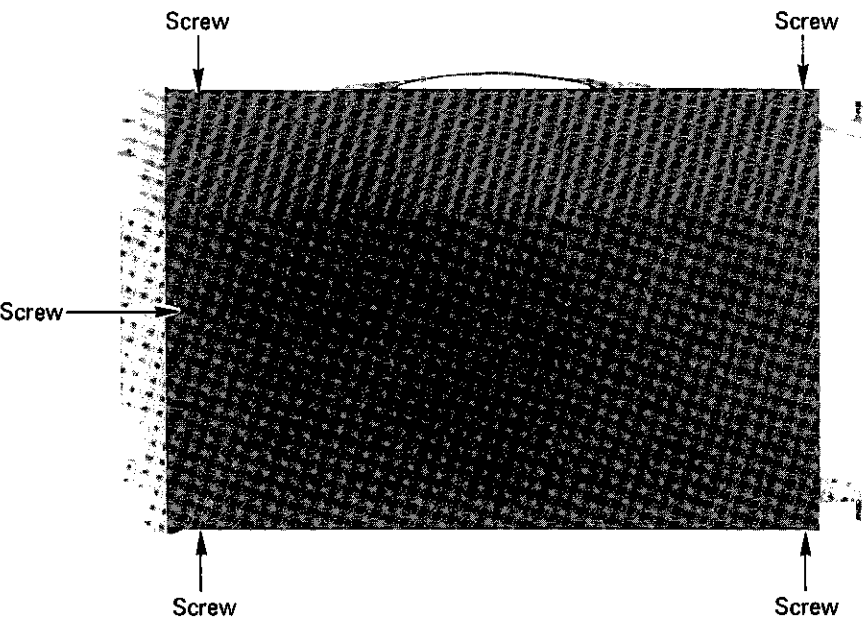


Figure 3-3-1-(3). SS-5702A/03A Bottom view

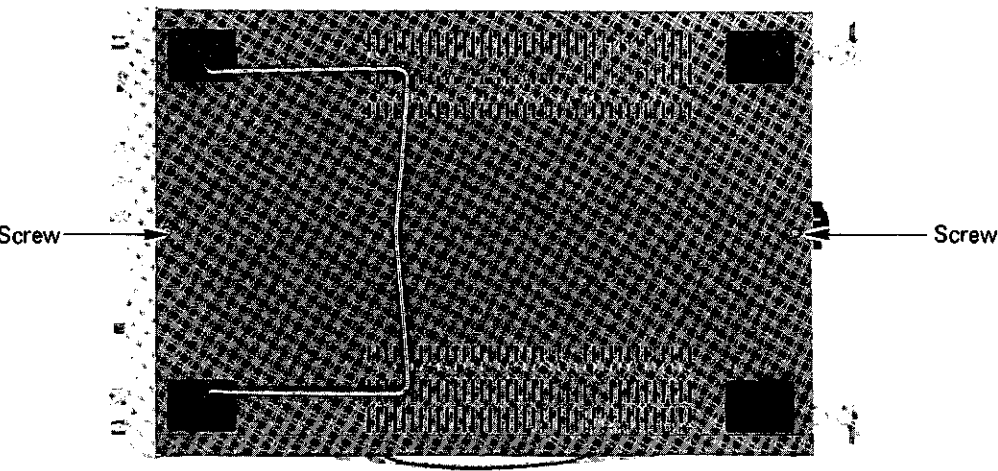


Figure 3-3-1-(4). SS-5705A/06A Top view

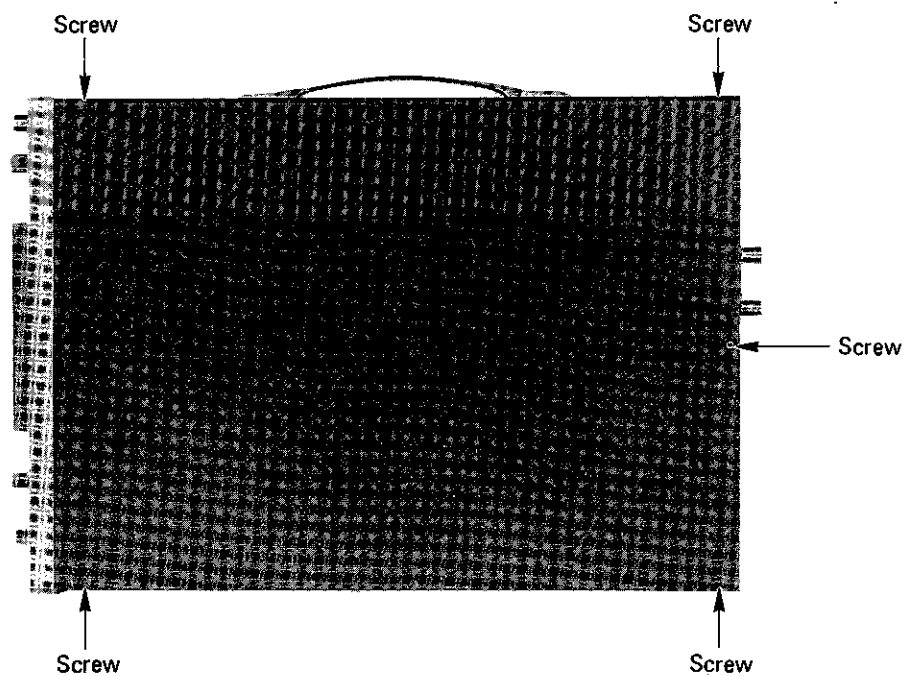
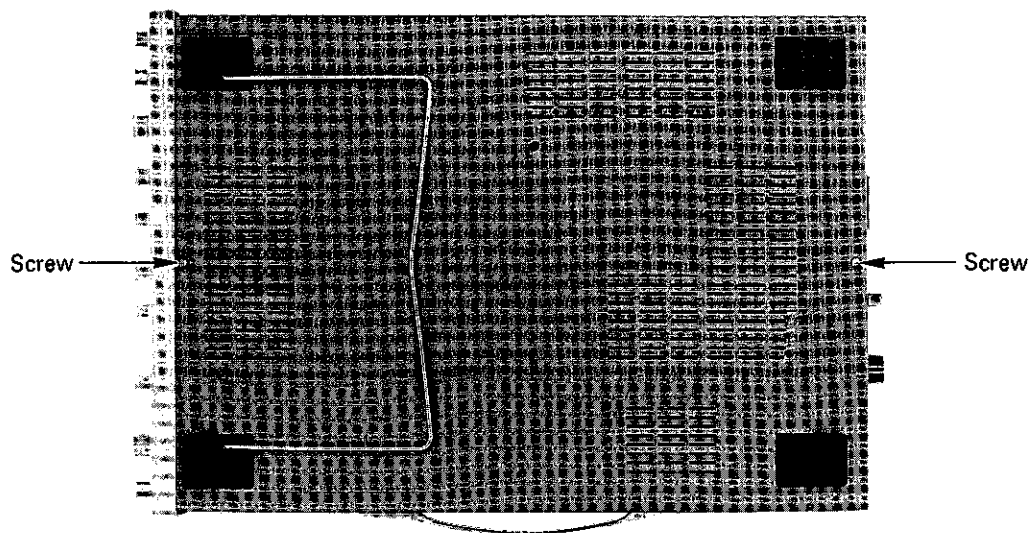


Figure 3-3-1-(5). SS-5705A/06A Bottom view



3-3-2 SS-5705A/06A (Left Side)

V Board (ATTENUATOR **0**, CH1-CH2 PREAMP **1****2**, V CONTROL **3**)

1. Remove CH1-CH2 VARIABLE and VOLTS/DIV knobs on the front panel.
2. Remove the nuts holding the CH1 and CH2 VOLTS/DIV switches.
3. Remove the connectors attached to this board.
Remove the soldered wire (signal wire to MAIN AMP).
4. Remove the six screws holding this board.

3-3-3 SS-5705A/06A (Left Side)

V MAIN Board (V MAIN AMP **4**)

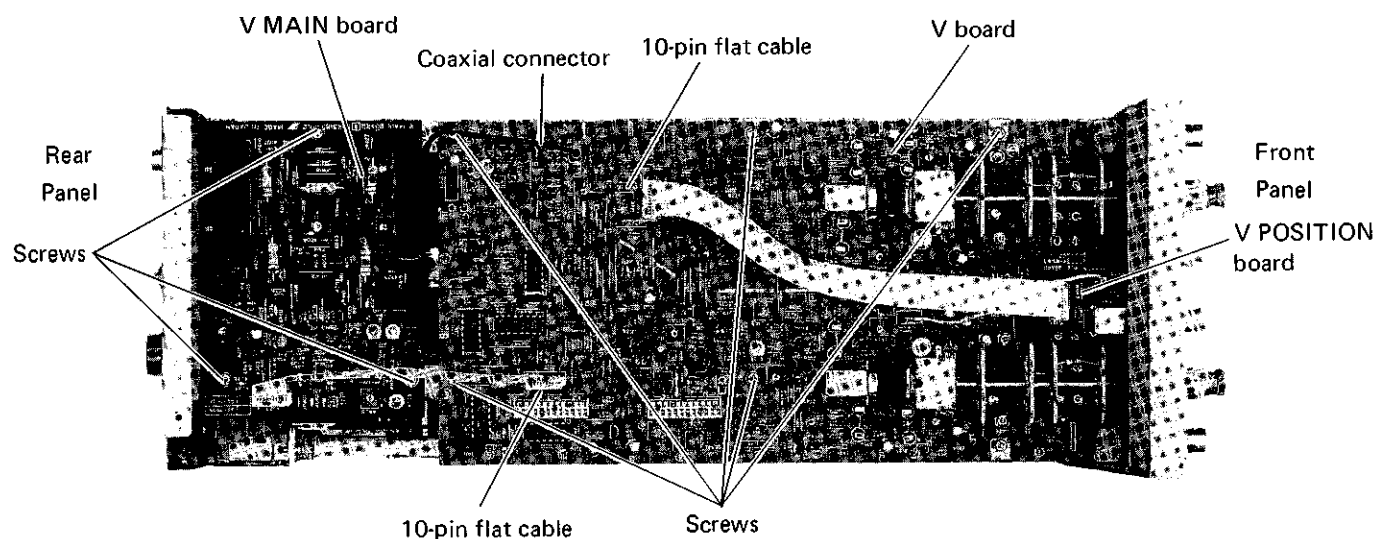
1. Remove the connectors attached to this board.
2. Remove the soldered wires (2 output wires, signal wire from PREAMP, and ground wire) (SS-5705A only).
3. Remove the three screws holding this board.

3-3-4 SS-5705A/06A (Left Side)

V POSITION Board (CH1-CH2 PREAMP **1****2**)

1. Remove the connectors attached to this board.
2. Remove CH1-CH2 and $\downarrow$ POSITION variable resistor.
3. Remove the hexagon nuts holding the $\downarrow$ POSITION variable resistor.

Figure 3-2-3-(1). Printed circuit board replacement I (Left)



3-3-5 SS-5705A/06A (Right Side)

TIMING Board (A TIMING **10** , B TIMING **11**)

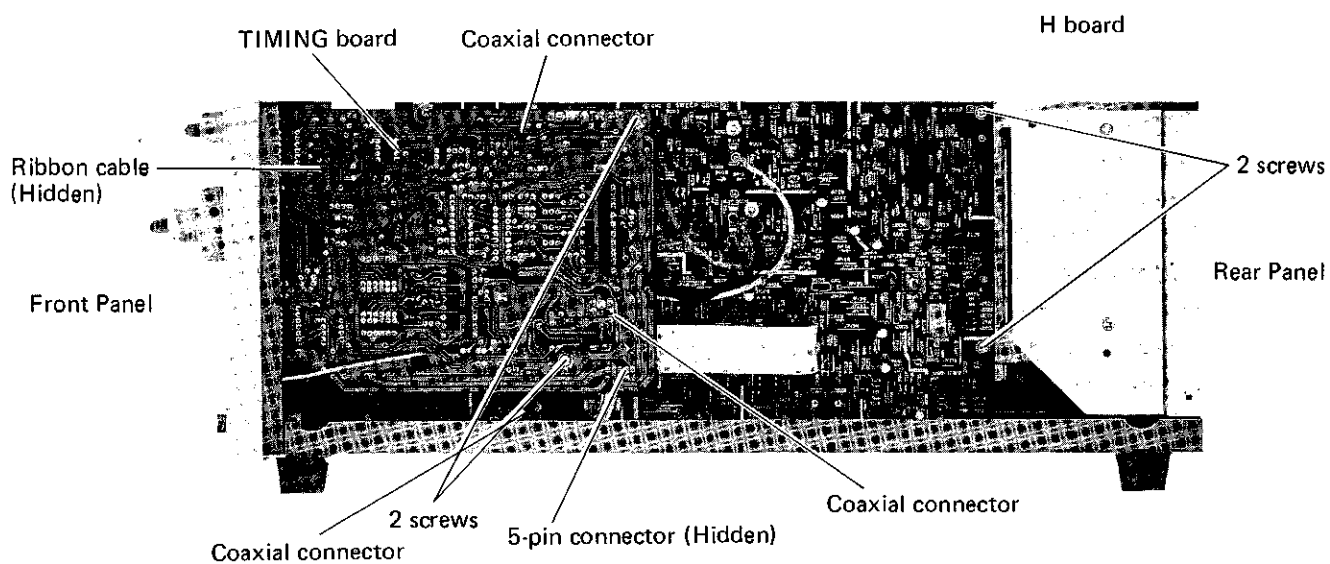
1. Remove the A VARIABLE and A·B TIME/DIV knobs.
2. Remove the hexagon nut holding the TIME/DIV switch.
Remove the soldered wire (signal wire from POWER BOARD).
3. Remove the two screws holding this board.
4. Remove the connectors attached to this board.

3-3-6 SS-5705A/06A (Right Side)

H Board (TRIGGER GENERATOR **5** ,
A SWEEP GENE **8** , B SWEEP GENE **9** ,
H AMP **12** , CH3 PREAMP **5**)

1. Remove the TIMING board.
2. Remove the HOLDOFF and TRACE SEPARATION knobs.
3. Remove the hexagon nuts holding the variable resistors.
4. Remove the connectors and cables attached to this board.
5. Remove the two screws holding this board and the hexagonal pillars.

Section 3 Figure 3-2-3-(2). Printed circuit board replacement II (Right)



3-3-7 SS-5705A/06A (Bottom)

POWER Board (Z AXIS & CRT CIRCUIT 13, POWER 14)

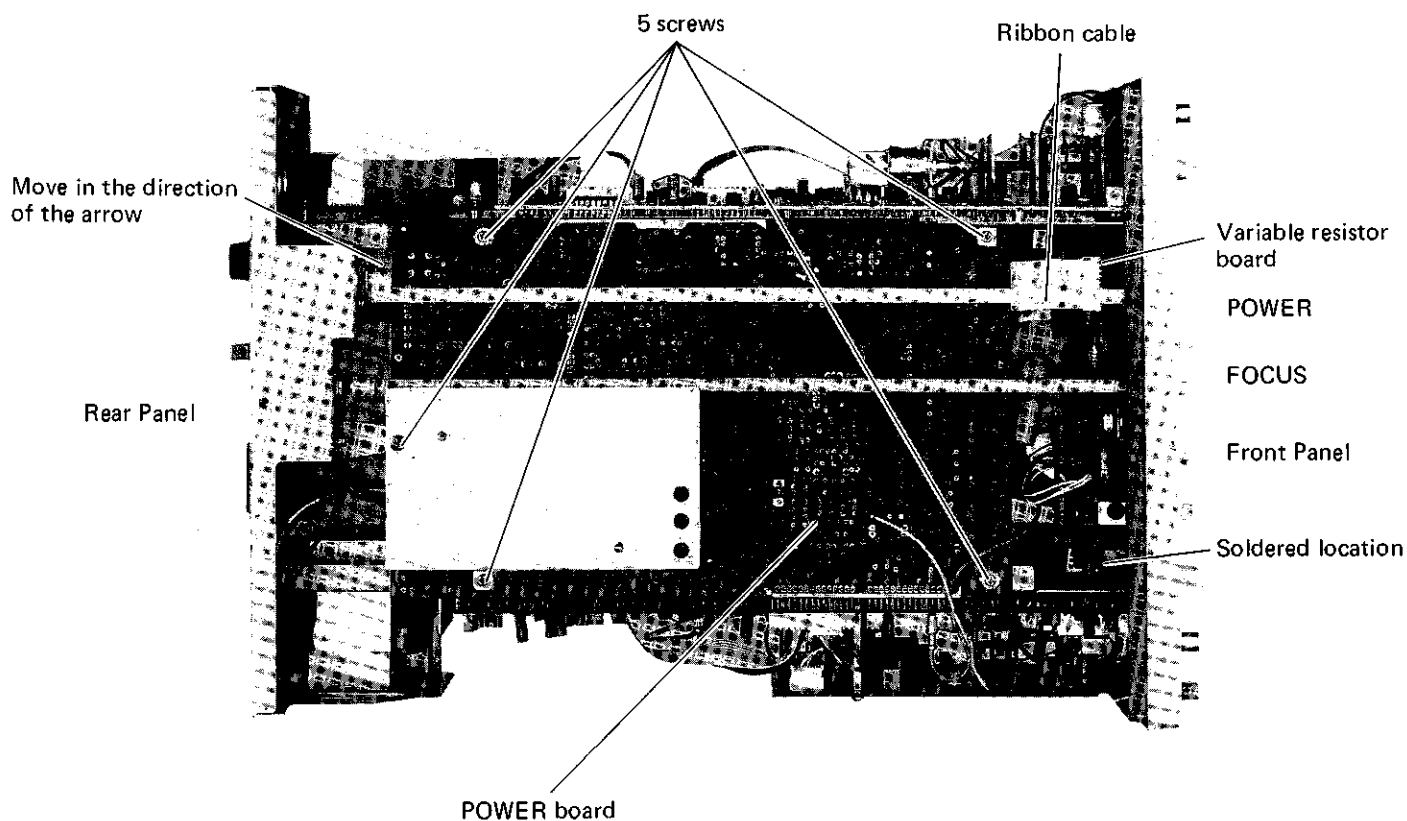
1. Remove the V board, TIMING board, and H board on the left and right sides.
2. Remove the three screws and then remove the high voltage cover.
3. Pull out the FOCUS knob. Use a tool to hold the FOCUS variable resistor at the junction (see Figure 3-2-3-(3)) of the extension shaft and FOCUS variable resistor and pull out the extension shaft.
4. Open the end of the extension shaft at the junction of the POWER switch and extension shaft (see Figure 3-2-3(3)) and move in the direction of the arrow to remove the extension shaft. Note that if moved without opening the end, the ridge holding the switch will be scraped and the switch will become loose. Also open the end of the extension shaft when attaching it to the switch.
5. Remove the connectors attached to this board.
6. Remove the five screws holding this board.

3-3-8 SS-5705A/06A (Bottom)

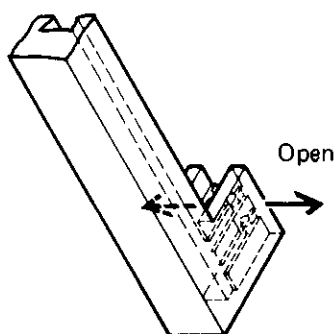
VOLUME Board 6

1. Remove the FOCUS knob from the extension shaft as described in (f).
2. Remove the POWER switch from the extension shaft as described in (f).
3. Remove the flat cable.
4. Remove the solder from the soldered location.
5. Remove the CH3 POSITION, INTEN, SCALE, ↔ POSITION, and FINE knobs.
6. Remove the hexagon nuts holding each variable resistor.

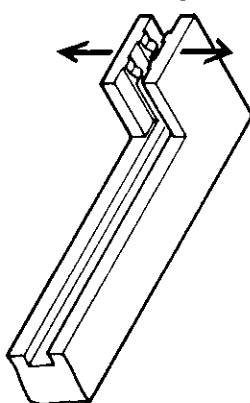
Figure 3-2-3-(3). Printed circuit board replacement III (Bottom)



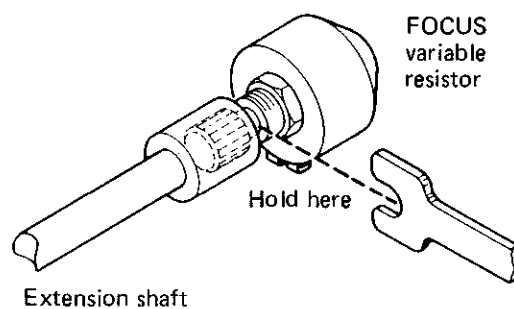
Extension shaft for POWER switch



Ridge



Junction between FOCUS variable resistor and extension shaft

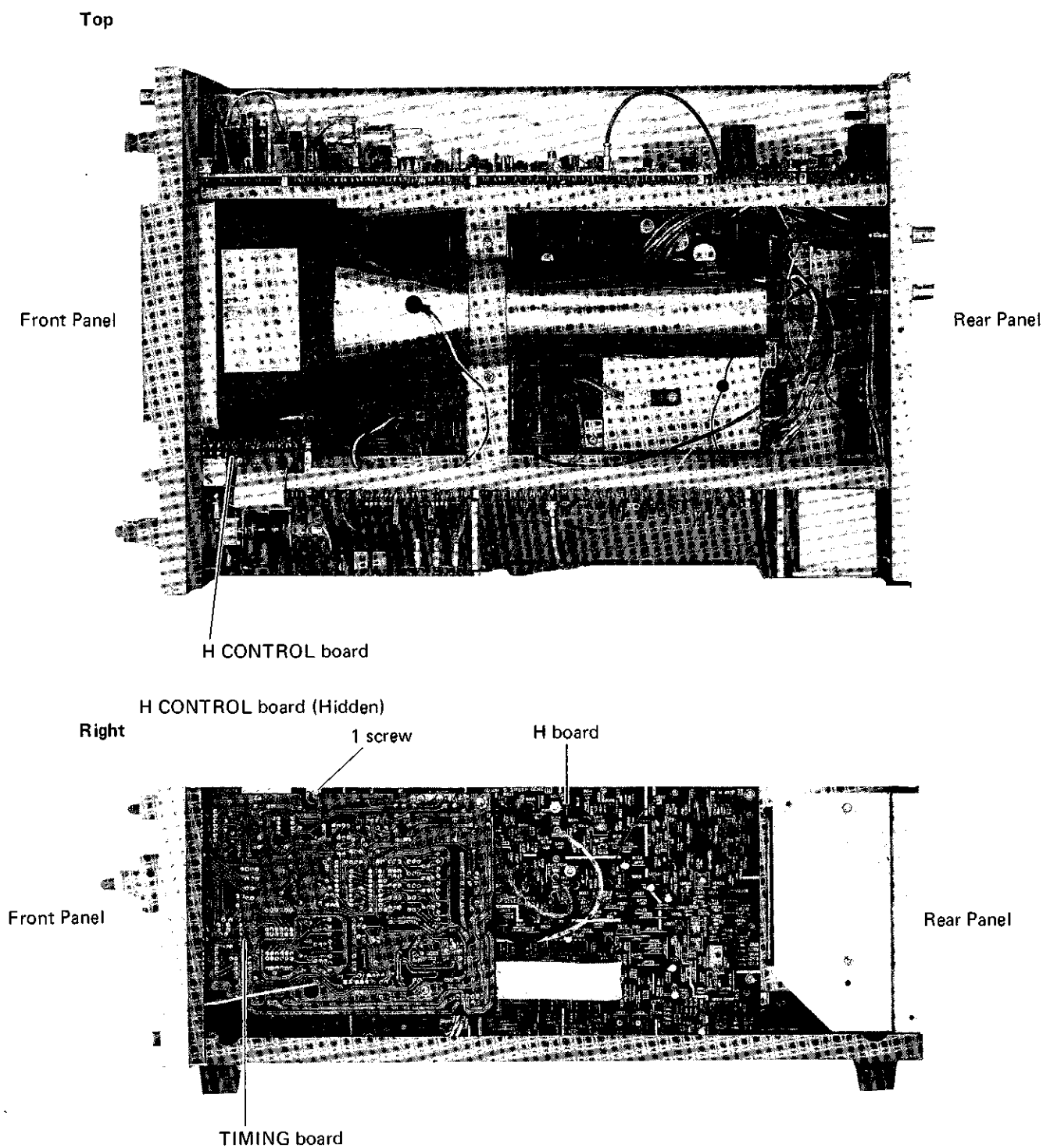


3-3-9 SS-5705A/06A (Top)

H CONTROL Board (H CONTROL 6)

1. Remove the ribbon cable attached to the H board.
2. Remove the LEVEL and DELAY TIME knobs.
3. Remove the nuts holding each variable resistor.
4. Loosen the screw on the right side holding the board.
5. Slide the board back and then lift it up.

Figure 3-2-3-(4). Printed circuit board replacement IV



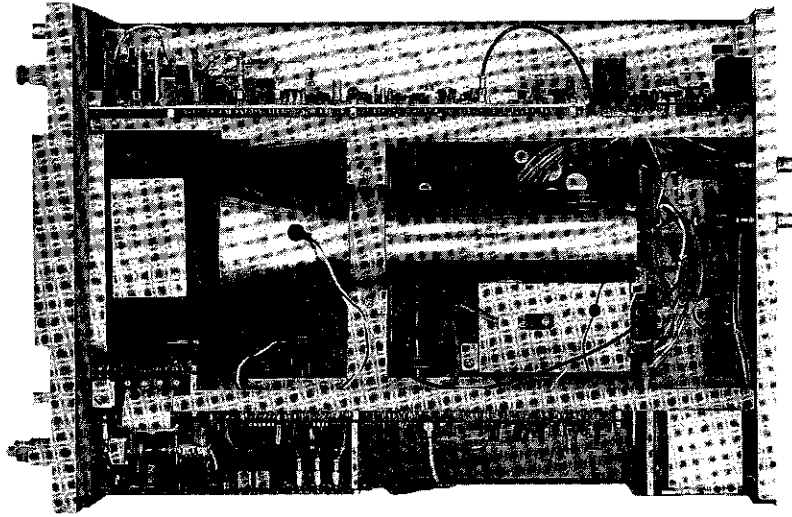
3-3-10 Vertical Board

1. Remove the top and bottom covers.
2. Desolder two wires (yellow and blue wires) from the CRT socket.
3. Disconnect two connectors connected to the INPUT BNC connector(s) and its earth lug(s).
4. Desolder the earth wire.
5. Remove knobs of the VARIABLE control and the VOLTS/DIV switch using the hexagonal wrench provided as an option and loosen nut of the VOLTS/DIV switch and Vertical POSITION controls.
6. Disconnect five connectors on the board.
Disconnect connector on the CH2 OUT board (SS-5703A only).
7. Loosen seven mounting screws.
8. Pull the board backward and outward.

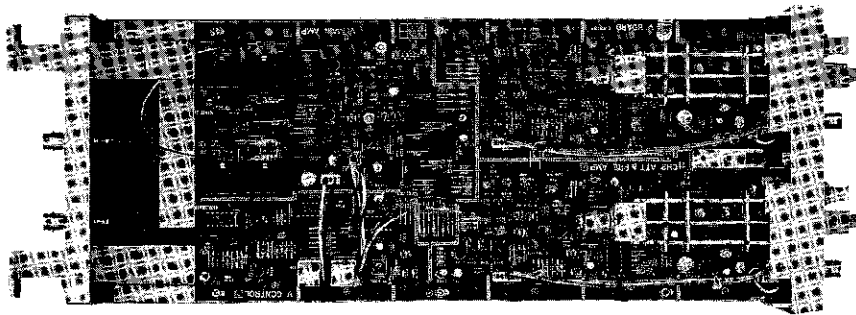
3-3-11 Horizontal Board

1. Remove the top and bottom covers.
2. Desolder two wires (white and black wires) from the CRT socket.
3. Remove the cover of the CRT circuit by loosen two mounting screws.
4. Remove knob of the POSITION, SWEEP LENGTH, TIME/DIV, VARIABLE and LEVEL controls using the hexagonal wrench provided as an option.
5. Loosen nut of the TIME/DIV switch.
6. Disconnect 8 connectors on the board.
7. Loosen five mounting screws.
8. Pull the board back and outward.

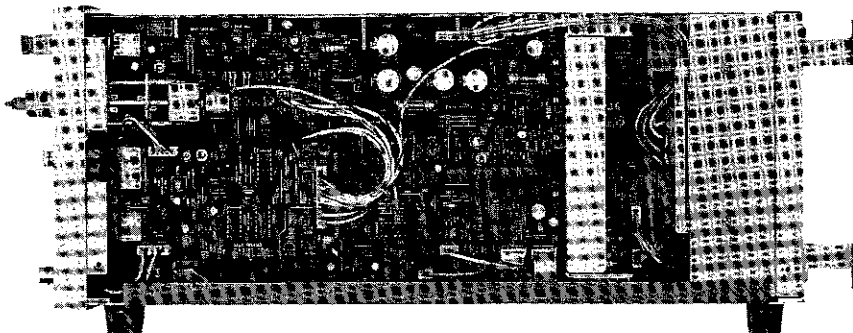
Top



Left



Right



3-4 PART REPLACEMENT

This section shows how to replace the faulty component. Be sure to disconnect the power cord from the power line before starting replacement.

3-4-1 Parts

While replacing diodes, transistors, ICs, resistors, or capacitors on the printed circuit board, use the soldering iron carefully not to damage the other components and electric path on the printed circuit board. Table 3-4-1 shows the resistor color coding, Table 3-4-2 does the semiconductor lead configurations for SS-5705A/06A, and Table 3-4-3 does the semiconductor lead configurations for SS-5702A/5703A.

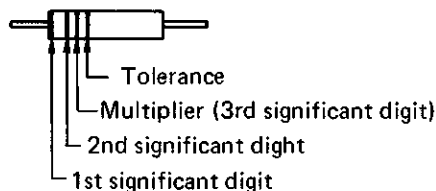
Since the semiconductors such as transistors, diodes, and ICs are vulnerable to heat, use small power solder iron carefully and quickly not to damage the semiconductors. Use the vacuum solder extractor, when necessary. The replacement of the semiconductors may change the characteristic of the instrument. Therefore, it is necessary to replace with the part having the same specification as the one used originally had. For the detail, refer to "Section 6 Electrical Parts List." After replacement, it is necessary to check the characteristic of the instrument.

Passive components such as resistors, capacitors, and inductors are carefully selected. Therefore, the replacement of the passive components needs the same characteristic as the original ones have and is listed in "Section 6 Electrical Parts List."

Some serious damage of the semiconductors may cause the secondary damage, or other component damage. When this happens, repair the primary damage first.

Table 3-4-1 Color coding of resistor

Resistor



Color	Resistance value		Tolerance for resistor
	1st or 2nd significant digit	Multiplier	
BLK	0	1	—
BRN	1	10	±1
RED	2	10 ²	±2
ORG	3	10 ³	—
YEL	4	10 ⁴	—
GRN	5	10 ⁵	—
BLU	6	10 ⁶	—
VLT	7	10 ⁷	—
GRY	8	10 ⁸	—
WHI	9	10 ⁹	—
GOLD	—	10 ⁻¹	±5
SILVER	—	10 ⁻²	±10
No color	—	—	±20

Table 3-4-2 Semiconductor package and pin configurations for SS-5705A/06A

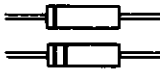
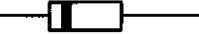
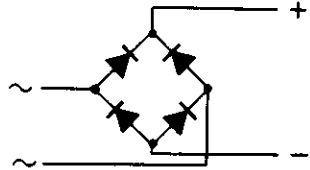
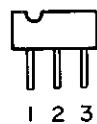
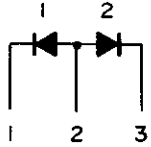
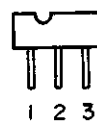
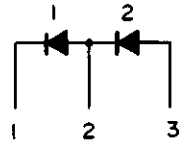
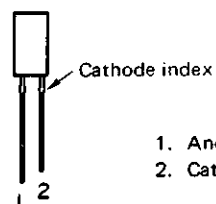
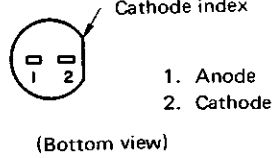
Type of diode	Electrode marking	Polarity or connection
MA700 SHV-02 SHV-06 1S1544A 1SS97		
V06E		
1SV69		
RD type		
1D4B1 1B4B1		
DAP201	 1. Cathode 1 2. Anode 1 and 2 3. Cathode 2	
DA203	 1. Cathode 1 2. Anode 1 and cathode 2 3. Anode 2	
TLG206 AA2533D	 1. Anode 2. Cathode	
TLG144	 1. Anode 2. Cathode (Bottom view)	

Table 3-4-2 Semiconductor package and pin configurations for SS-5705A/06A (continued)

Type of diode	Electrode marking	Connection
2SC2570A	 1 2 3 (Bottom view)	1. Base 2. Emitter 3. Collector
2SC1815GR 2SC1907 2SC982TM	 1 2 3 (Bottom view)	1. Emitter 2. Collector 3. Base
2SC2901	 1 2 3 (Bottom view)	1. Emitter 2. Base 3. Collector
2SC1904 2SC4001L/K 2SD668AC	 1 2 3	1. Emitter 2. Collector 3. Base
2SC3570L 2SD1266P/Q 2SD1407O/Y	 1 2 3	1. Base 2. Collector 3. Emitter
2SA1015Y 2SA988EA/FA 2SA992F	 1 2 3 (Bottom view)	1. Emitter 2. Collector 3. Base
2SA1206	 1 2 3 (Bottom view)	1. Emitter 2. Base 3. Collector
2SA899 2SA1546L/K 2SB648AC	 1 2 3	1. Emitter 2. Collector 3. Base
2SB941P/Q 2SA1306B O/Y	 1 2 3	1. Base 2. Collector 3. Emitter

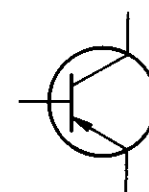
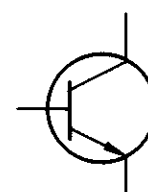
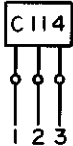
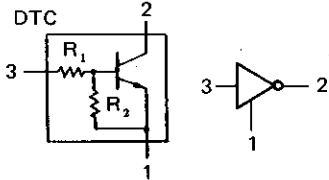
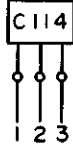
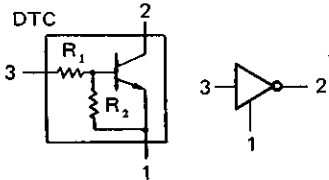
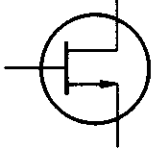
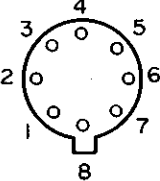
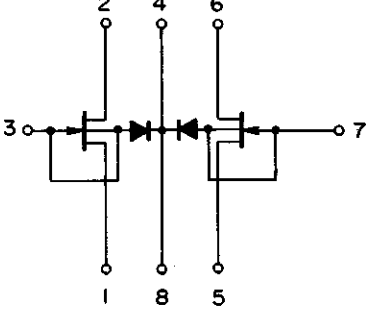


Table 3-4-2 Semiconductor package and pin configurations for SS-5705A/06A (continued)

Type of diode	Electrode marking	Connection
DTC 114TS $R_1=10k\Omega$, $R_2=0$ DTC 114YS $R_1=10k\Omega$, $R_2=47k\Omega$	 1. GND 2. OUT 3. IN	
DTA 114TS $R_1=10k\Omega$, $R_2=0$	 1. GND 2. OUT 3. IN	
2SK30AY	 1. Source 2. Gate 3. Drain	
μ PA61AL	 1. Source 1 2. Drain 1 3. Gate 1 4. Sub 5. Source 2 6. Drain 2 7. Gate 2 8. Sub	

3-4-2 Knobs

- (a) The knobs VOLTS/DIV, VOLTS/DIV VARIABLE, A TIME/DIV, B TIME/DIV (SS-5705A/06A only), A VARIABLE, ↔ POSITION FINE (SS-5705A/06A only), DELAY POSITION (SS-5705A/06A only), HOLD OFF are all held with hexagonal screws. To remove the knobs, remove the hexagonal screw and pull.
- (b) All other knobs can be removed just by pulling.

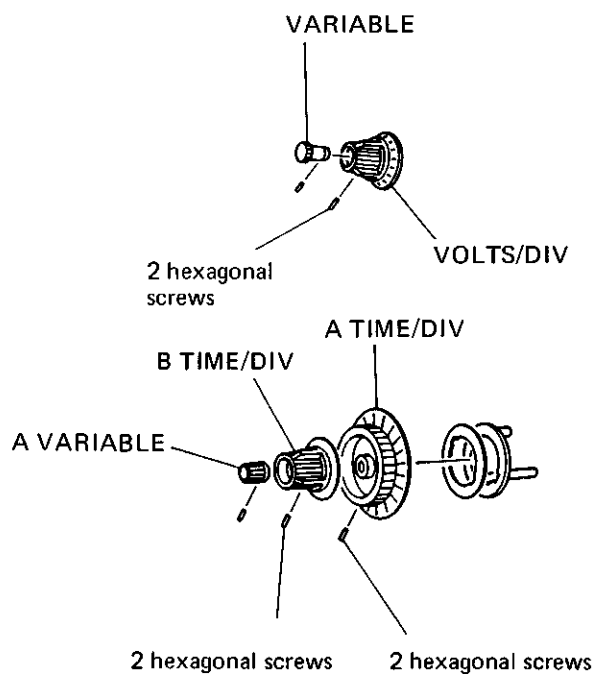
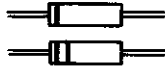
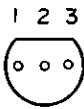
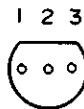
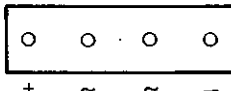
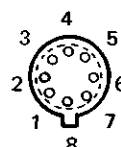
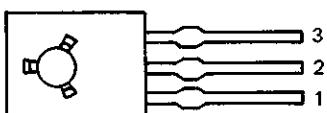
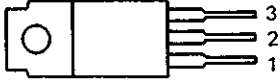


Table 3-4-3 Semiconductor package and pin configurations for SS-5702A/03A

Type of diode	Electrode making	Polarity	Type of diode	Electrode marking
1S953 ESJA35-12 ISS120 MA700			2SA1206	 1. Emitter 2. Base 3. Collector
RA 5.6ESB RD 3.0ESB RD 5.1ESB RD 15ESB RD 4.7ESB RD 12ESB			2SK30A-Y	 1. Source 2. Gate 3. Drain
IG4B1	Top view 		2SA1015Y/O 2S1815GR	 1. Emitter 2. Collector 3. Base
SIVB	 (Bottom view)		μPA61A	 1. Source 2. Drain 3. Gate 4. Case 5. Source 6. Drain 3. Gate 4. Case
			2SA1142 2SC2682 2SC3063 2SD668	 1. Emitter 2. Collector 3. Base
			2SC2570A	 1. Base 2. Emitter 3. Collector
			2SC3946 2SD1266 2SB941	 1. Base 2. Collector 3. Emitter

3-4-3 SS-5705A/06A Switches

VOLTS/DIV rotary switches

1. Remove the PREAMP board. (See 3-2-3)
2. Melt the solder that fastens the printed circuit board by using a soldering iron, and remove the switches.

TIME/DIV rotary switch

1. Remove the TIMING board. (See 3-2-3)
2. Melt the solder that fastens the printed circuit board by using a soldering iron, and remove the switch.

Vertical MODE and AC-DC, GND push-button switches

1. Remove the PREAMP board. (See 3-2-3)
2. Melt the solder that fastens the printed circuit board by using a soldering iron, and remove the switches.

Trigger COUPLING, trigger SOURCE slide switch and CH3 AC-DC pushbutton switches

1. Remove the HORIZONTAL board. (See 3-2-3)
2. Melt the solder that fastens the printed circuit board by using a soldering iron, and remove the switches.

Horizontal MODE and HORIZ DISPLAY Push-Button Switches

1. Remove the H CONTROL board. (See 3-2-3)
2. Melt the solder that fastens the printed circuit board by using a soldering iron, and remove the switches.

3-4-4 SS-5705A/06A CRT

Handle the CRT carefully in replacing it because it will be damaged easily by dropping or shock.

The CRT removal procedure is as follows:

1. Remove the rear panel and top cover.
2. Carefully back the socket on the CRT socket board and remove.
3. Remove the 2-pin connector (with blue and green lead wires) on the main board.
4. Remove the three ground wires connecting the CRT case and ground. Three of these are screwed on the ground side. Remove these screws. The other is soldered on the circuit board. Remove the solder.
5. Remove the two screws on the CRT supporting plate B to remove the board.
6. Carefully pull back the CRT and shield case to remove from the main unit except for the anode cap connection.
7. Discharge any remaining high voltage and then remove the anode cap.
8. Remove the black tape around the shield case.
9. Melt the solder that fastens the shield case with a soldering iron.
10. Remove the CRT from the shield case.

Reverse the above procedure for installing the CRT. If the CRT is replaced, readjustments must be made by referring to section 4 Check and Adjustment.

< Note >

Use a torque driver to tighten the screws holding the CRT supporting plate B. Set the torque at 2.5 kg f cm and alternately tighten the two screws. Do not apply force greater than 2.5 kg f cm.

3-4-5 SS-5702A/03A CRT

Dropping of or excessive shock to the CRT is very hazardous. Handle the CRT with special care.

Replace the CRT, when required, in the procedure given below:

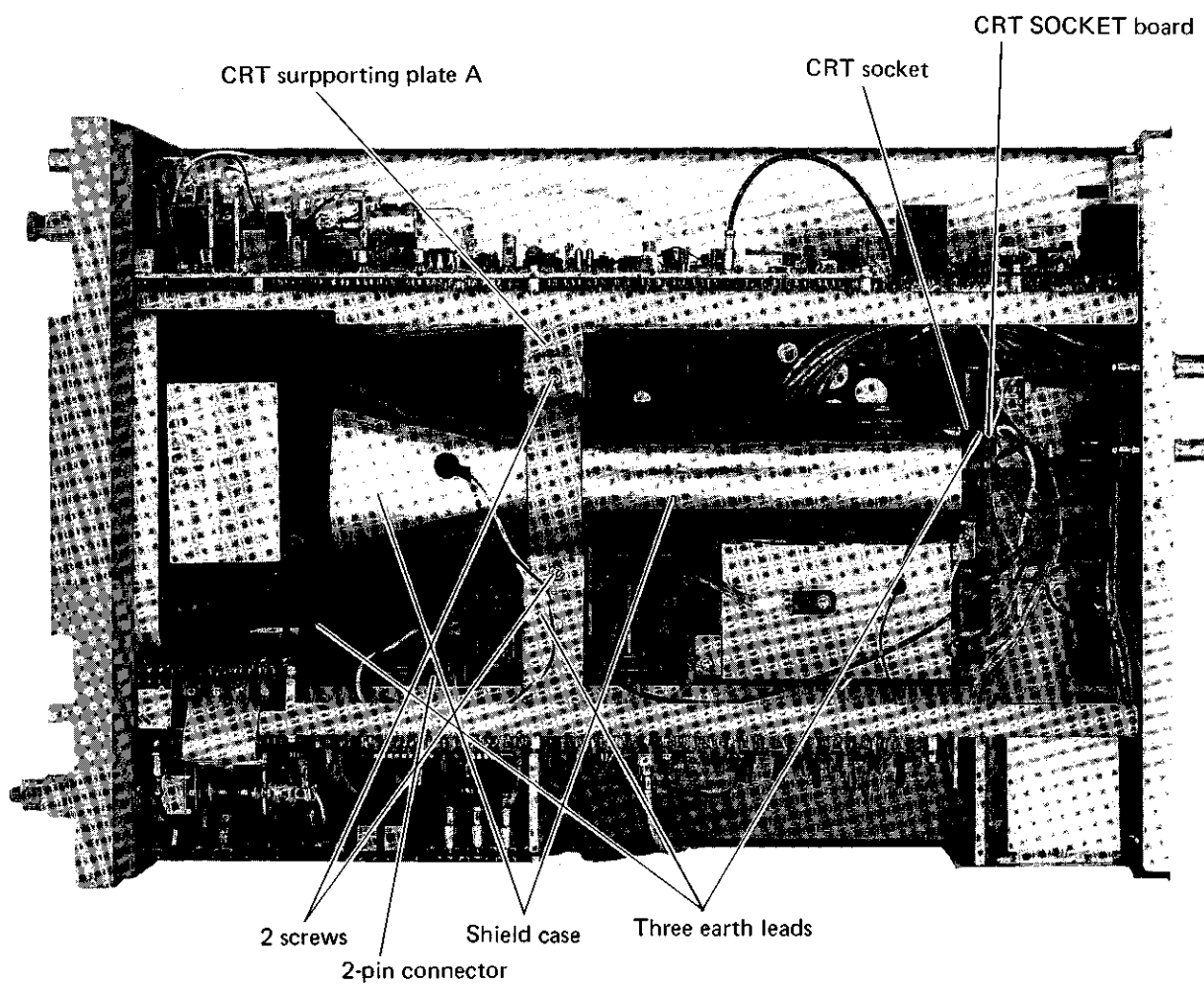
1. Remove the top cover.
2. Desolder two wires (blue and green wires) between the CRT shield cases.
3. Loosen two tightening screws of the rear CRT stopper.
(See Figure. 5-4)

4. Loosen two tightening screws of the upper CRT stopper.
5. Disconnect the CRT socket.
6. Gradually pull the CRT together with the shield case backward and outward.

The CRT can be mounted in the reversed manner.

When the CRT is replaced, the deflection factor and sweep rate must be calibrated.

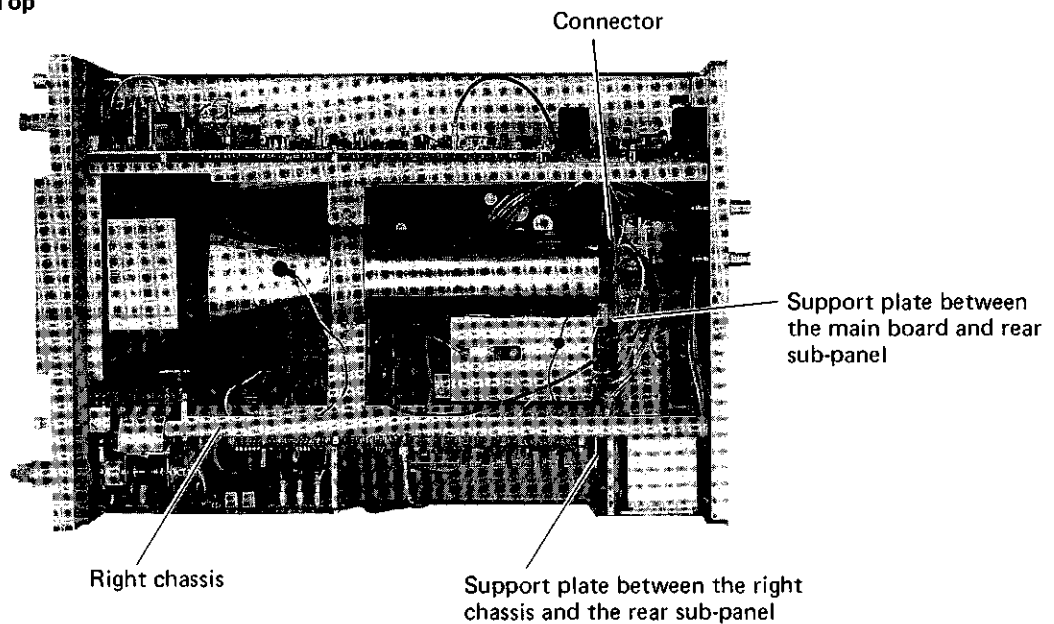
Figure 3-2-4-(1). SS-5705A/06A



3-4-6 SS-5705A/06A Power Transformer

1. Remove the connectors attached to the transformer.
2. Remove the FOCUS knob and extension shaft (see 3-2-3).
3. Remove the support panel between the main board and rear sub-panel.
4. Remove the support panel between the right chassis and rear sub-panel.
5. Remove the two screws holding the transformer.
6. Remove the four screws on the sub-panel and remove the sub-panel.

Top



Right

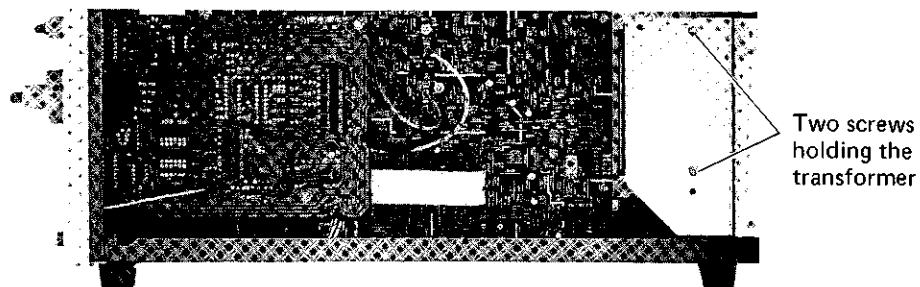
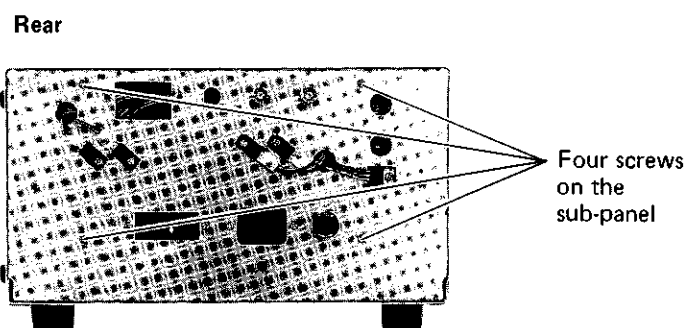
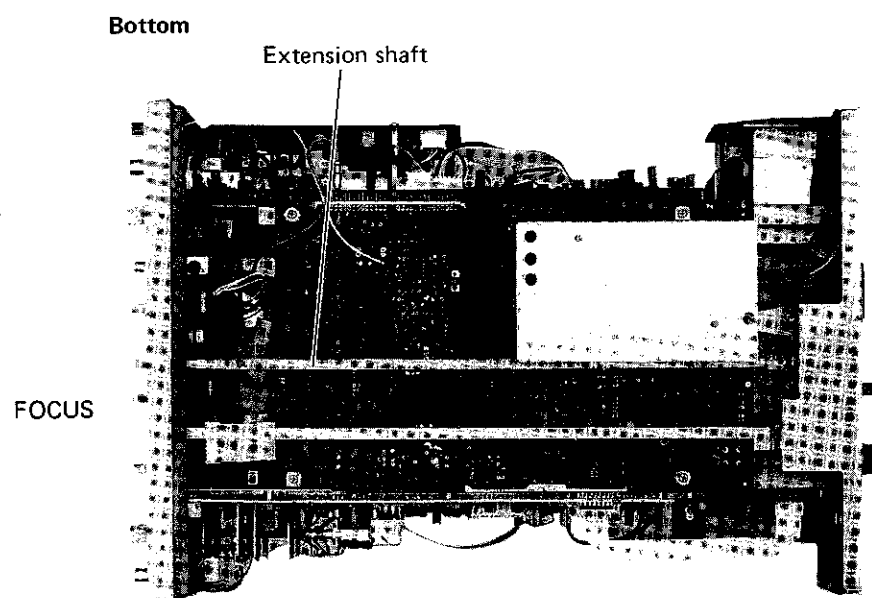


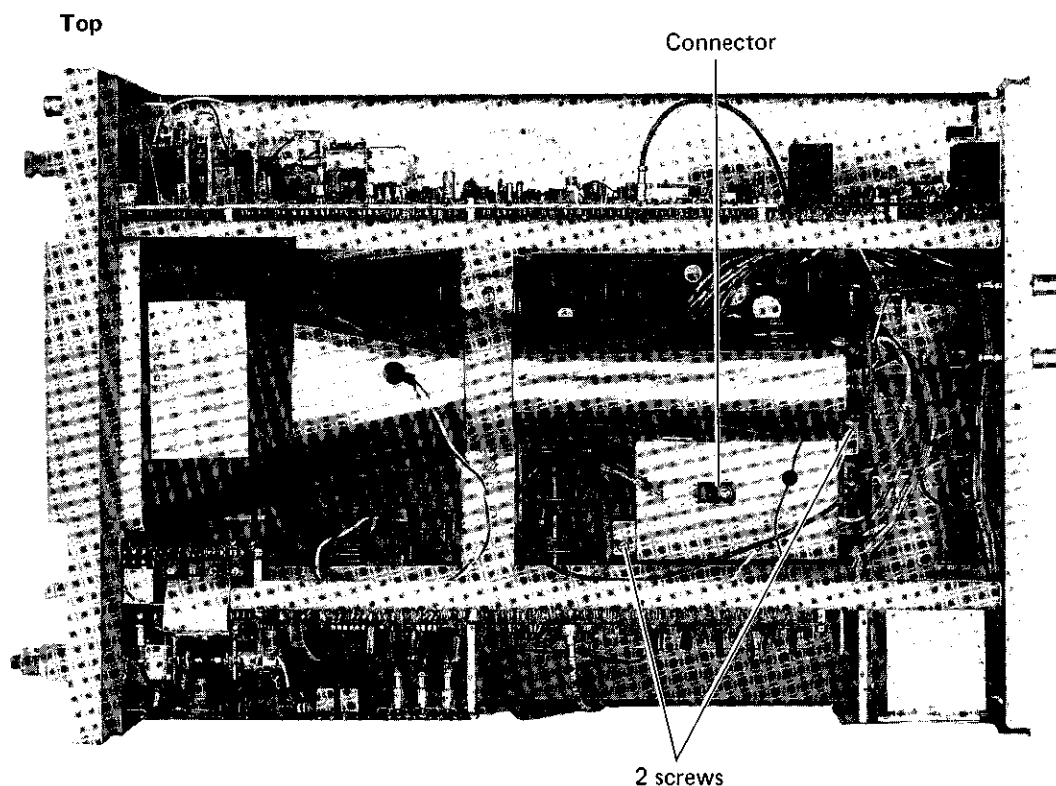
Figure 3-2-4-(2) Power transformer replacement



3-4-7 SS-5705A/06A

High Voltage Transformer Replacement

1. Remove the connectors attached to the transistors on the high-voltage shield case.
2. Remove the two screws and remove the high-voltage shield case.
3. Remove the solders from the soldered locations on the main board.



3-4-8 SS-5702A/03A Fuse

This instrument uses the fuses shown in Table 5-4 in order to prevent damage to the circuit due to overcurrent.

If these fuses are blown, check its cause correctly, repair the defective parts or circuits, and exchange the blown fuse with a prescribed new one. The use of a new fuse which is not prescribed may result in danger; therefore, such use is prohibited.

Table 5-4

Circuit No.	Type of Fuses	Function	Location
F701	0.5A slow blow	Use this fuse when the Line Voltage Selector is set to A or B.	Rear panel
	0.3A slow blow	Use when the Selector is set to C or D.	
F702	1A slow blow	Protection of the CRT circuit	Right side board (POWER SUPPLY Circuit)
F703	0.2A fast blow	Protection of +240V circuit	

MEMO

Section 4 Check and Adjustment

4-1 GENERAL

Correct measurement requires the normal operation of each circuit in this instrument and satisfactory maintenance of their performance.

Reliable performance can be maintained for a long time by conducting regular check and adjustment. This section describes the appropriate check and adjustment methods.

4-2 PERIOD OF CHECK AND ADJUSTMENT

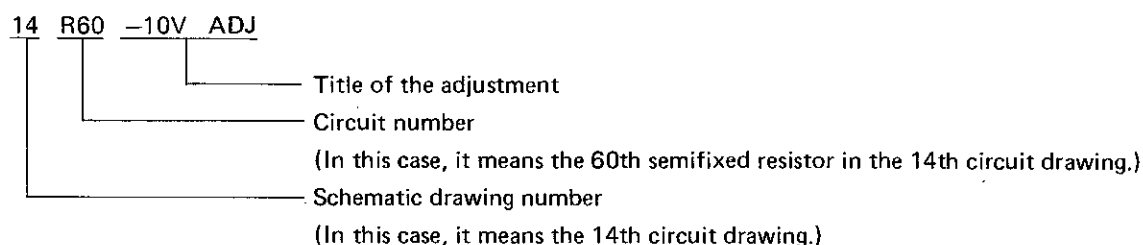
To measure signals correctly, it is necessary to check and adjust the measuring instrument periodically. It is recommended to check semiannually.

4-3 BEFORE STARTING

For the performance check and adjustment, pay attention to the following.

1. In each of the check and adjustment items, the description of the operation of the switches and controls assumes the condition in Table 4-6-1. Therefore, whether the check and adjustment are carried out for all items or limited items, make sure to start from the condition shown in Table 4-6-1.
2. Since some signal generators output at 50Ω termination, terminate the cable end at the scope side with a 50Ω terminator (e.g., IWATSU BB50M1), using a coaxial cable with characteristic impedance of 50Ω (e.g., IWATSU BB-120C).
3. The low-voltage power is supplied to all the circuits. If its voltage or ripple changes beyond the specified values, other performance is affected.
When carrying out the check and adjustment, therefore, check the low-voltage power first.
4. The CRT circuit has a high voltage. When checking /adjusting it, be careful not to get an electric shock. Also, during the check and adjustment, do not increase its intensity too high and leave it in that condition for a long time, because the fluorescent screen of the CRT may be burnt out.
5. In the photos used in this section, the letters and numbers indicated by the outgoing lines from the adjusters have the following meanings.

< Example > For SS-5705A



4-4 TEST AND MEASURING INSTRUMENTS REQUIRED

When carrying out the check and adjustment, you need the measuring instruments and accessories shown in Table 4-4-1. The performance of the measuring instruments must be equal to or greater than those described. The

signal input connector of this instrument is BNC type. If the terminators or signal output terminals used for the measuring instruments are not BNC type, prepare conversion connectors.

Table 4-4-1 List of Measuring Instruments Required

Measuring Instruments Required	Minimum Specification	Purpose	Model
1. Oscilloscope Band width Minimum sensitivity	DC to 100 MHz 5 mV/div.	Check and adjustment of the low-voltage power supply	IWATSU SS-7604
2. Digital multimeter Range	DC to 300V DC Accuracy: $\pm 0.2\% + 1$ dgt. 0 to 2kV DC (with high-voltage probe used) Accuracy: $\pm 5\% + 1$ dgt.	Check and adjustment of the low voltage Check and adjustment of the CRT cathode voltage	IWATSU VOAC7511 IWATSU SS-003
3. Frequency counter Range Resolution	10 Hz to 200 MHz 0.1 Hz or less (at 1 kHz)	Frequency check of the calibration voltage	IWATSU SS-7201

Table 4-4-1 List of Measuring Instruments Required (Continued)

Measuring Instruments Required	Minimum Specification	Purpose	Model
4. Scope calibrator • Calibration voltage generator Output voltage • Square wave generator Repetition frequency Rise time • Sine wave generator Repetition frequency • Time marker generator Repetition frequency	60 mV to 60 V Accuracy: Within 0.5% 50 Hz to 200 kHz 5 ns or less 1 kHz Accuracy: Within 20% 50 ns to 0.5 s Accuracy: Within 0.5%	Check and adjustment of the vertical deflection system Check and adjustment of the triggering system Check and adjustment of the horizontal deflection system	IWATSU SS-340
5. Constant-amplitude signal generator Repetition frequency Output voltage	50 kHz to 50 MHz 60 mV or more Output voltage accuracy: ± 0.5 dB (should be able to be calibrated to a constant level if the frequency is changed)	Frequency band width check Phase difference check	
6. Pulse generator Repetition frequency Rise time Waveform distortion Output voltage	50 kHz to 100 kHz 1 ns or less Should be less 60 mVp-p or more	Square wave characteristic check	Model 2600 J by PSPL
7. Oscilloscope Probe Attenuation ratio	10 : 1, 1 : 1	Signal input	IWATSU SS-0060
8. 50 Ω terminator (2 pcs.) Impedance	50 Ω	Signal input	IWATSU BB-50M1
9. Attenuator Attenuation	10 dB 3 dB	As required	IWATSU AA-10B, AA-03B
10. BNC coaxial cable (2 pcs.) Characteristic impedance	50 Ω	Signal input	IWATSU BB-120C
11. Adjustment driver	Low capacity	Adjustment	Probe's accessory

4-5 CHECK AND ADJUSTMENT ITEMS

Table 4-5-1 shows the check and adjustment items.

The right column indicates the items that may be affected when adjusting the item shown to the left. Therefore, if other items are affected by adjusting a certain

item, check and adjust those items as well.

When checking and adjusting all the items, do so in the sequence shown in Table 4-5-1.

Table 4-5-1 Check and Adjustment Items

Order	Check/Adjustment Item	Page	Affected Items
Power Supply and CRT			
1	4-7-1-1 Secondary DC Supply Voltage (SS-5705A/5706A)	4-12	All items
	4-7-1-2 Secondary DC Supply Voltage (SS-5702A/5703A)	4-13	All items
2	4-7-2-1 CRT Cathode Voltage (SS-5705A/5706A)	4-16	4-7-3, 4-7-4, 4-9-1, 4-9-2, 4-9-10, 4-11-1, 4-11-3, 4-12-1
	4-7-2-2 CRT Cathode Voltage (SS-5702A/5703A)	4-17	4-7-3, 4-7-4, 4-9-14, 4-11-1, 4-11-2, 4-12-1, 4-12-2, 4-12-3
3	4-7-3-1 Intensity (SS-5705A/5706A)	4-18	4-7-4
	4-7-3-2 Intensity (SS-5702A/5703A)	4-19	
4	4-7-4-1 Focus (SS-5705A/5706A)	4-21	
	4-7-4-2 Focus (SS-5702A/5703A)	4-22	4-9-5, 4-13-3, 4-13-4
5	4-7-5 Trace Rotation	4-23	
Calibrator Output			
6	4-8-1-1 Output Voltage (SS-5705A/5706A)	4-24	
	4-8-1-2 Output Voltage (SS-5702A/5703A)	4-25	
7	4-8-2-1 Frequency (SS-5705A/5706A)	4-26	
	4-8-2-2 Frequency (SS-5702A/5703A)	4-26	
Vertical Deflection System			
8	4-9-1-1 Sensitivity CH1, CH2 (SS-5705A/5706A)	4-27	
	4-9-1-2 Step Balance (SS-5702A/5703A)	4-28	4-9-2, 4-9-3, 4-9-4
9	4-9-2-1 Sensitivity CH3 (SS-5705A/5706A)	4-30	
	4-9-2-2 VARIABLE Balance (SS-5702A/5703A)	4-31	4-9-3, 4-9-4
10	4-9-3-1 X5 MAG Balance (SS-5705A/5706A)	4-31	4-9-4, 4-10-1, 4-12-1
	4-9-3-2 X5 MAG Balance (SS-5702A/5703A)	4-32	4-9-4

Table 4-5-1 Check and Adjustment Items (continued)

Order	Check/Adjustment Item	Page	Affected Items
11	4-9-4-1 VARIABLE Balance (SS-5705A/5706A)	4-32	4-9-1, 4-12-1
	4-9-4-2 POLARITY Selecting Balance (SS-5702A/5703A)	4-33	
12	4-9-5-1 CH2 INV Selecting Balance (SS-5705A/5706A)	4-35	
	4-9-5-2 Sensitivity (SS-5702A/5703A)	4-36	
13	4-9-6-1 CH1/CH2 Attenuator Phases (SS-5705A/SS-5706A)	4-37	
	4-9-6-2 Square Wave Characteristics (SS-5702A/5703A)	4-39	4-9-7
14	4-9-7-1 Probe Phase CH3 (SS-5705A/5706A)	4-41	
	4-9-7-2 Bandwidth (SS-5702A/5703A)	4-42	
15	4-9-8-1 Square Wave Characteristics (SS-5705A/5706A)	4-43	4-9-9, 4-10-1
	4-9-8-2 Linearity (SS-5702A/5703A)	4-45	
16	4-9-9-1 Bandwidth (SS-5705A/SS-5706A)	4-46	4-12-1
	4-9-9-2 Attenuator Phase (SS-5702A/5703A)	4-48	
17	4-9-10-1 Linearity (SS-5705A/5706A)	4-50	
	4-9-10-2 CH2 OUT Offset Voltage (SS-5703A only)	4-51	
18	4-9-11-1 CH1 OUT Level (SS-5705A/5706A)	4-52	
	4-9-11-2 Sensitivity CH2 OUT (SS-5703A only)	4-53	
Triggering System			
19	4-10-1-1 CH1, CH2, CH3 Triggering (SS-5705A/5706A)	4-54	
	4-10-1-2 LEVEL Center (SS-5702A/5703A)	4-56	
20	4-10-2 FIX (SS-5703A only)	4-57	4-13-2
External Sweep (SS-5702A/5703A)			
21	4-11-1 POSITION Center	4-58	4-11-2, 4-13-1, 4-13-2
22	4-11-2 Sensitivity	4-59	4-8-1, 4-13-1, 4-13-2
23	4-11-3 Attenuator Phase	4-60	
Horizontal Deflection System			
24	4-12-1-1 A/B Sweep Rate (SS-5705A/5706A)	4-61	4-11-3, 4-12-2
	4-12-1-2 Sweep Magnification Position (SS-5702A/5703A)	4-63	

Table 4-5-1 Check and Adjustment Items (continued)

Order	Check/Adjustment Item	Page	Affected Items
25	4-12-2-1 Sweep Magnification Position (SS-5705A/5706A)	4-64	4-12-1
	4-12-2-2 Sweep Rate (SS-5702A/5703A)	4-65	4-12-3
26	4-12-3-1 Sweep Rate at Sweep Magnification (SS-5705A/5706A)	4-66	
	4-12-3-2 Sweep Rate at Sweep Magnification (SS-5702A/5703A)	4-68	
		4-69	
27	4-12-4 B-Sweep Start Point (SS-5705A/5706A)	4-70	
28	4-12-5 Time Lag Measurement (SS-5705A/5706A)	4-71	
29	4-12-6 Delay Jitter (SS-5705A/5706A)	4-72	
	X-Y Operation		
30	4-13-1-1 Sensitivity and Trace Position (SS-5705A/5706A)	4-74	
	4-13-1-2 POSITION Center (SS-5702A/5703A)	4-75	
31	4-13-2-1 Phase difference (SS-5705A/5706A)	4-76	
	4-13-2-2 Sensitivity (SS-5702A/5703A)	4-77	
32	4-13-3 Phase difference (SS-5702A/5703A)		

4-6 INITIAL SETUP

4-6-1 Setting Switches and Controls

Follow the next steps before starting check and adjustment.

1. Set ambient temperature to $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$.
2. Before setting power to ON, arrange switches and controls as shown in the Table 4-6-1.
3. Turn the **POWER** switch on and adjust the **INTEN** control for the optimum intensity.
4. Warm up the instrument for approx. 30 minutes or approx. 15 minutes (SS-5702A/5703A) before starting check and adjustment.

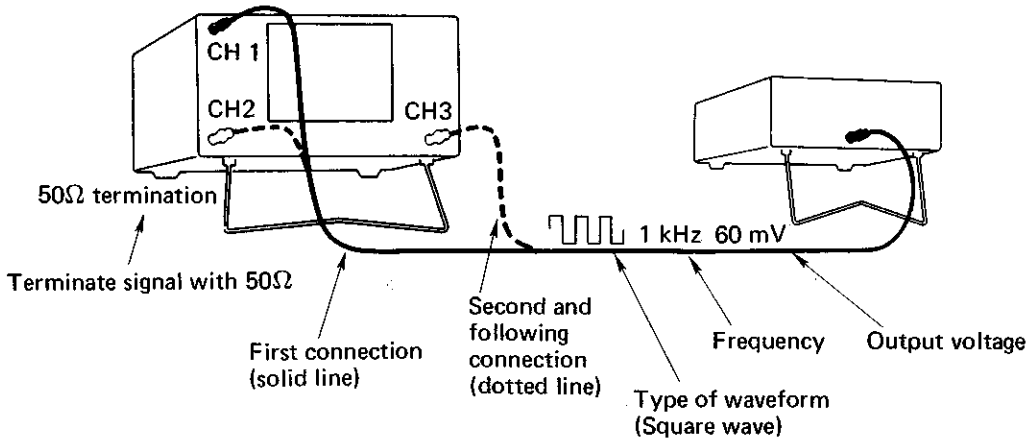
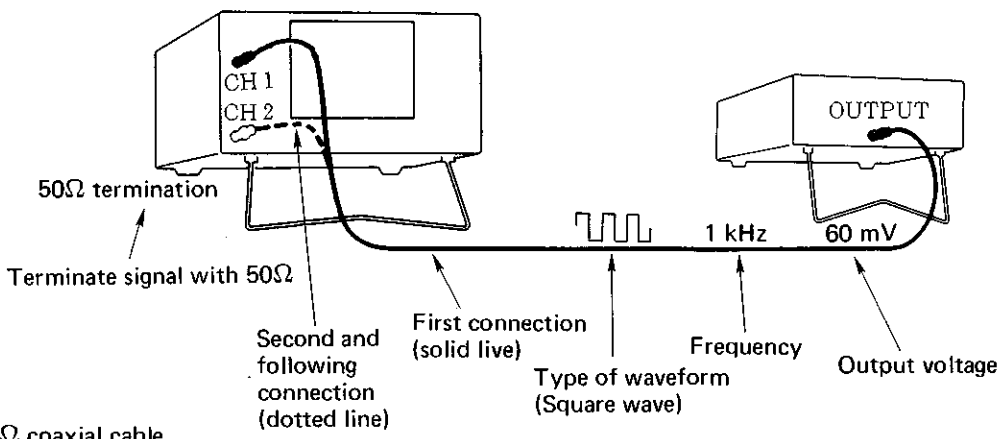
Table 4-6-1 Initial Setup
SS-5705A/5706A

Switches and Controls	Setting
INTEN (PUSH BEAM FIND)	Almost to the midpoint
FOCUS	Almost to the midpoint
SCALE	90° to the right from midpoint
VERT MODE	CH1
AC-DC, GND (CH1/2)	DC
AC-DC (CH3)	DC
VOLTS/DIV (CH1/2)	5mV
VARIABLE (CH1/2)	CAL
PULL X 5 MAG (CH1/2)	Push
↕POSITION (CH1/2/3)	Midpoint
PULL INV (CH2)	Push
↔POSITION	Midpoint
PULL X 5 (10) MAG	Push
LEVEL	Midpoint
PULL SLOPE-	Push
HOLDOFF	Fully to the left
TRACE SEP	Fully to the left
A · B SEC/DIV	1m SEC
A VARIABLE	CAL
SWEEP MODE	AUTO
HORIZ DISPLAY	A
COUPLING	AC
SOURCE	CH1
TRIG'D-RUNS AFT DLY	RUNS AFTER DELAY
DELAY POSITION	Almost to the midpoint

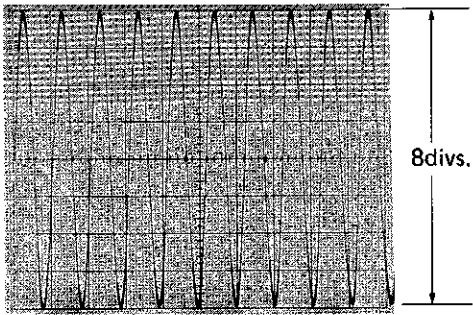
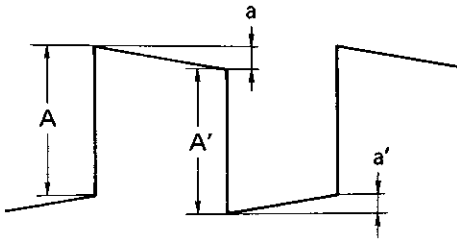
SS-5702A/5703A

Switches and Controls	Setting
INTEN	Almost to the midpoint
FOCUS	Almost to the midpoint
SCALE	90° to the right from midpoint
VERT MODE	CH1
CH2 INV	OFF (Normal)
POSITION (CH1/2)	Midpoint
PULL X 5 MAG (CH1/2)	OFF (Normal)
VOLTS/DIV (CH1/2)	5mV
VARIABLE (CH1/2)	CAL
AC-DC (CH1/2)	DC
GND (CH1/2)	OFF
SWEEP MODE	AUTO
LEVEL	Midpoint, Push
POSITION	Midpoint
HOLD OFF	Fully to the left
PULL X 10 MAG	Push (Normal)
SEC/DIV	1m SEC
COUPLING	INT AC
SOURCE	CH1
FIX (SS-5703A only)	OFF
SINGLE (SS-5703A only)	OFF

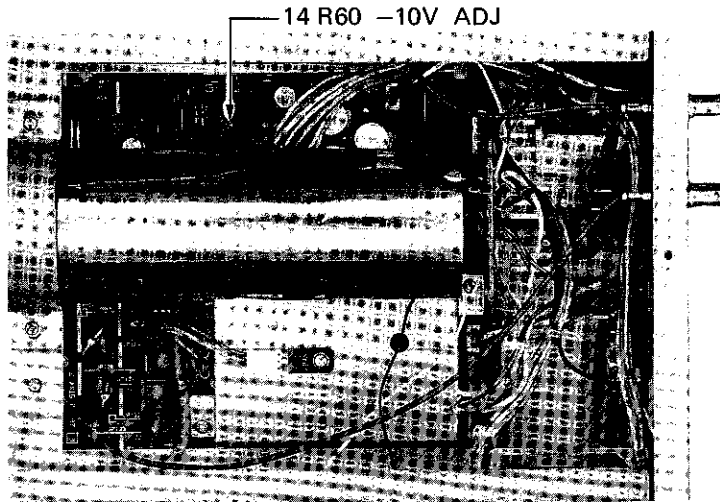
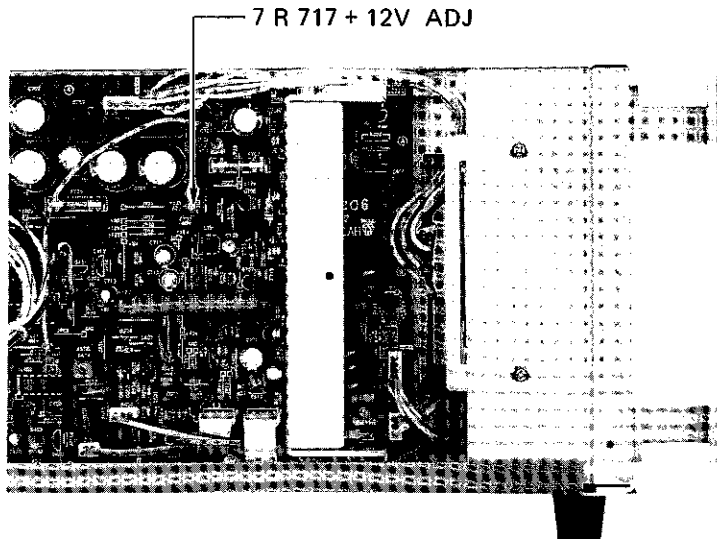
4-6-2 How to Read Check and Adjustment Procedure

Item	Description
Rating	$\pm 3\%$ ← Specification required
Connection	Illustrate connection between equipments (SS-5705A/5706A) Square wave generator ← Name of signal generator (SC-340) ← Recommended model  50Ω coaxial cable ↑ Type of cable (SS-5702A/5703A) Square wave generator ← Name of signal generator (SC-340) ← Recommended model  50Ω coaxial cable ↑ Type of cable

4-6-2 How to Read Check and Adjustment Procedure (continued)

Item	Description
Setting	HORIZ DISPLAY : A SEC/DIV : 1m SEC } Although the unspecified swithes/controls should be set in accordance with Table 4-6-1, they may be described duple- cately depending on the items. Time marker (input signal) : 1ms ← Initial setting of the input signal
Procedure	1. Adjust to the optimum focus with FOCUS control and 13R37 ASTIG (refer to Fig. 4-7-2.) (for SS-5705A and SS-5706A). 2. Check and adjustment procedure. First, check whether the specification is met. If beyond the specification, adjust with the specified adjuster.
Waveform on screen	Well-aligned focus ← Title of picture Input signal: Sine wave ← Type of signal : 1 KHz ← Frequency : 40 mV ← Amplitude 
Definition	Shows reference for calibration aid. $\text{Sag} = a/A \text{ (or } a'/A') \times 100\%$ Whichever is greater. (defined in "MEA-27" by Electronic Industries Association of Japan). 

4-6-2 How to Read Check and Adjustment Procedure (continued)

Item	Description
Check and adjustment locations	SS-5705A/5706A Top view ← Shows the top. The check and adjustment locations described in the procedure are shown below (only adjustment locations from time to time).  SS-5702A/5703A Right-side view ← Shows the right side. The check and adjustment locations described in the procedure are shown below (only adjustment locations from time to time). 

4-7 POWER SUPPLY AND CRT

4-7-1-1 Secondary DC Power Supply (SS-5705A/5706A)

Item	Description			
Rating and Test point	DC voltage	Error limit	Ripple voltage	Test point
	+120V	±4.8V	2.0mV	+120V (Figure 4-7-1-1)
	+ 50V	±1.0V	1.0mV	+ 50V (Figure 4-7-1-1)
	+ 10V	±0.15V	0.5mV	+ 10V (Figure 4-7-1-1)
	+ 5V	±0.15V	3.0mV	+ 5V (Figure 4-7-1-1)
	– 10V	±0.05V	0.5mV	– 10V (Figure 4-7-1-1)
Procedure	———— Error limit ———— - Using digital multimeter, check power sources between check point and ground. - When error exceeds limits, adjust 14R60 – 10V ADJ (see Figure 4-7-2.). - Repeat step 1. < Note > Check all power sources before starting adjustment. –10V adjustment assures all power sources to be in their error limits.			
	———— Ripple voltage ———— - Set SWEEP MODE to SINGLE and STOP. - Using test oscilloscope with 1:1 probe, check ripple voltage.			

4-7-1-2 Secondary DC Power Supply (SS-5702A/5703A)

Item	Description			
Rating and Test point	DC voltage	Error limit	Ripple voltage	Test point
	+ 5V	$\pm 0.5V$	10mV	+ 5V (Figure 4-7-1-2)
	- 12V	$\pm 0.7V$	10mV	- 12V (Figure 4-7-1-2)
	+ 12V	$\pm 0.1V$	10mV	+ 12V (Figure 4-7-1-2)
	+160V	150~170V	—	+160V (Figure 4-7-2)
	+240V	220~260V	—	+240V (Figure 4-7-1-2)
< Note > The ratings of +160V and of +240V are effective at 100VAC.				
Procedure	Error limit			
	1. Using digital multimeter, check power sources between check point and ground.			
	2. When error exceeds limits, adjust 7R717 +12V ADJ (see Figure 4-7-1-2.).			
	3. Repeat step 1.			
	< Note > Check all power sources before starting adjustment. +12V adjustment assures all power sources to be in their error limits.			
	Ripple voltage			
	4. Set SWEEP MODE to NORM and STOP .			
	5. Using test oscilloscope with 1:1 probe, check ripple voltage.			

Figure 4-7-1-1. Right-Side View
SS-5705A/5706A

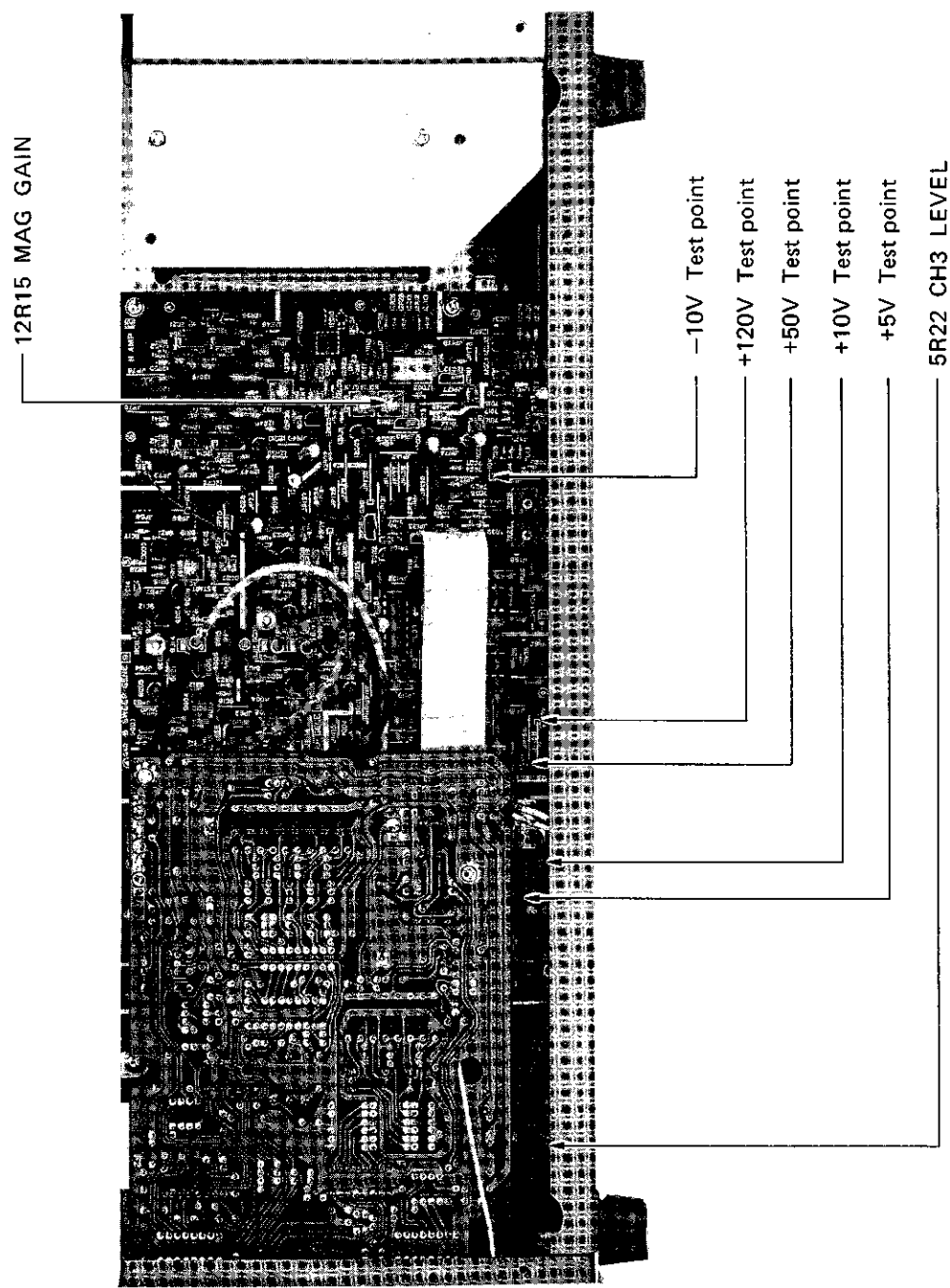
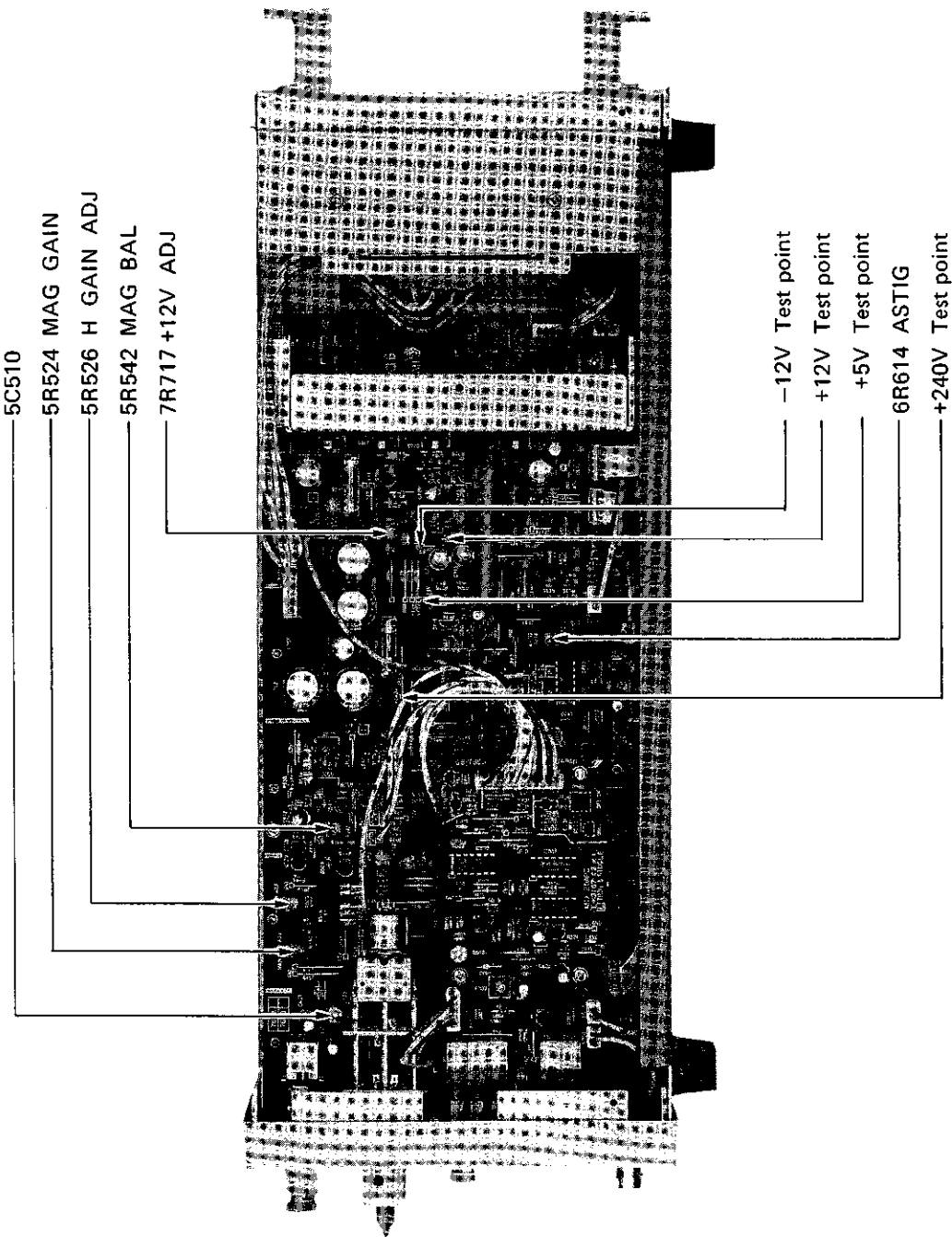
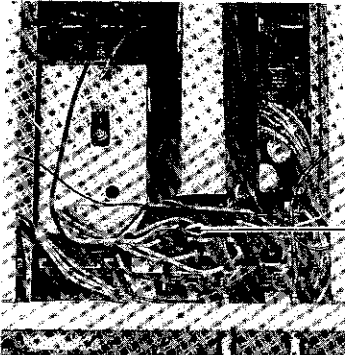
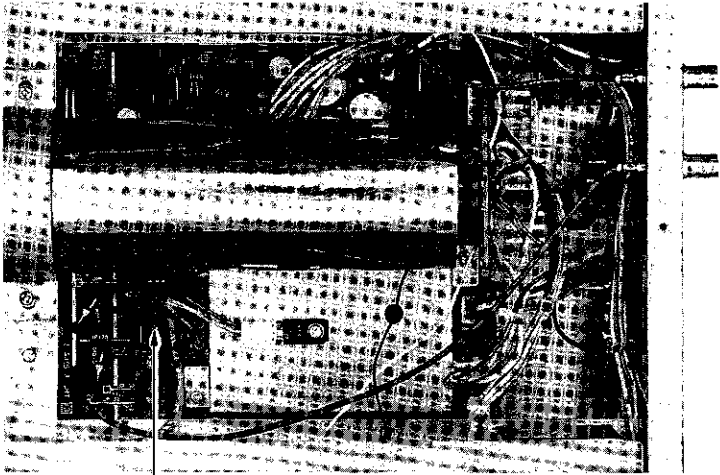


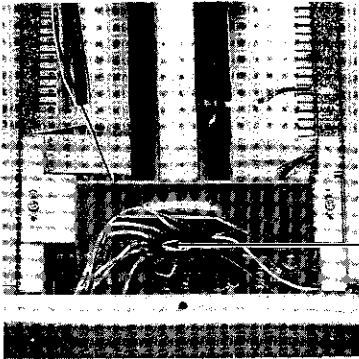
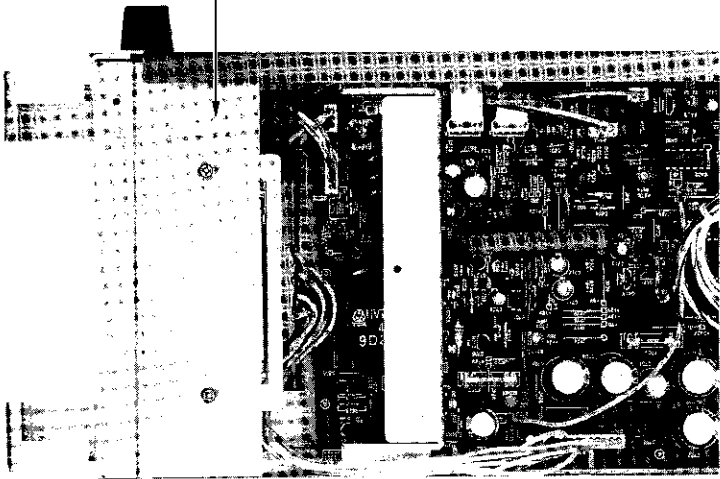
Figure 4-7-1-2: Right-Side View
SS-5702A/5703A



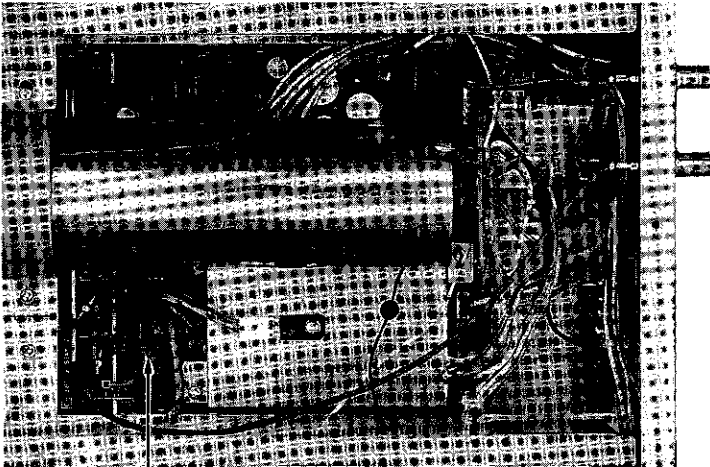
4-7-2-1 CRT Cathode Voltage (SS-5705A/5706A)

Item	Description
Rating	−1.75 kV ±5%
Procedure	1. Using digital multimeter with the DMM high voltage probe (SS-003), check CRT cathode voltage between pin 3 of the CRT socket and ground. 2. When error exceeds limits, adjust 13R18 HV ADJ (see the figure below.). CAUTION If you measure the cathode voltage of the CRT and its error is within ±5%, do not make adjustment unless you make calibration about all the check and adjustment items.
Check and adjustment locations	 Socket pin 3 Top:  13R18 HV ADJ

4-7-2-2 CRT Cathode Voltage (SS-5702A/5703A)

Item	Description
Rating	-1950 V ±50V
Procedure	1. Using digital multimeter with the DMM high voltage probe (SS-003), check CRT cathode voltage between pin 3 of the CRT socket and ground. 2. When error exceeds limits, adjust 6R632 HV ADJ (see the figure below.). CAUTION If you measure the cathode voltage of the CRT and its error is within ±50 V, do not make adjustment unless you make calibration about all the check and adjustment items.
Check and adjustment locations	 Socket pin 3 Right side:  6R632 HV ADJ

4-7-3-1 Intensity (SS-5705A/5706A)

Item	Description
Rating	When INTEN control is set to near the center, the trace should have adequate intensity, and when INTEN is turned fully to the left, the trace should disappear.
Setting and Procedure	1. Set SWEEP MODE to AUTO to perform the sweep. 2. Check that the trace disappears when INTEN is turned fully to the left. 3. Check that the trace appears from near 30° to the left from the center when INTEN is turned to the right. 4. If the specification still cannot be met after the above checks, adjust with 13R31 INTEN ADJ (refer to the below figure.).
Adjustment location	Top:  13R31 INTEN ADJ

4-7-3-2 Intensity (SS-5702A/15703A)

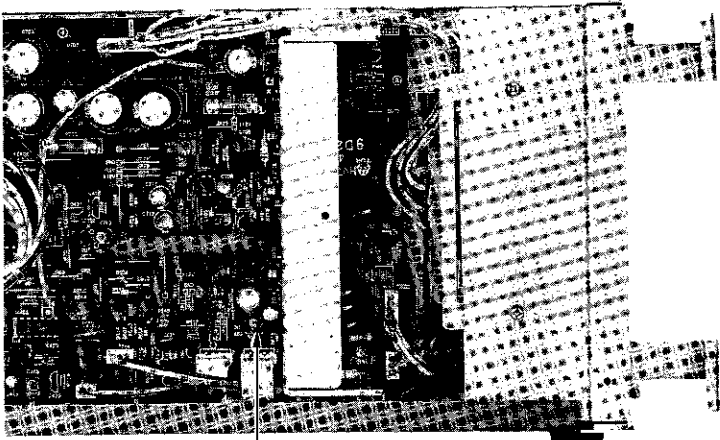
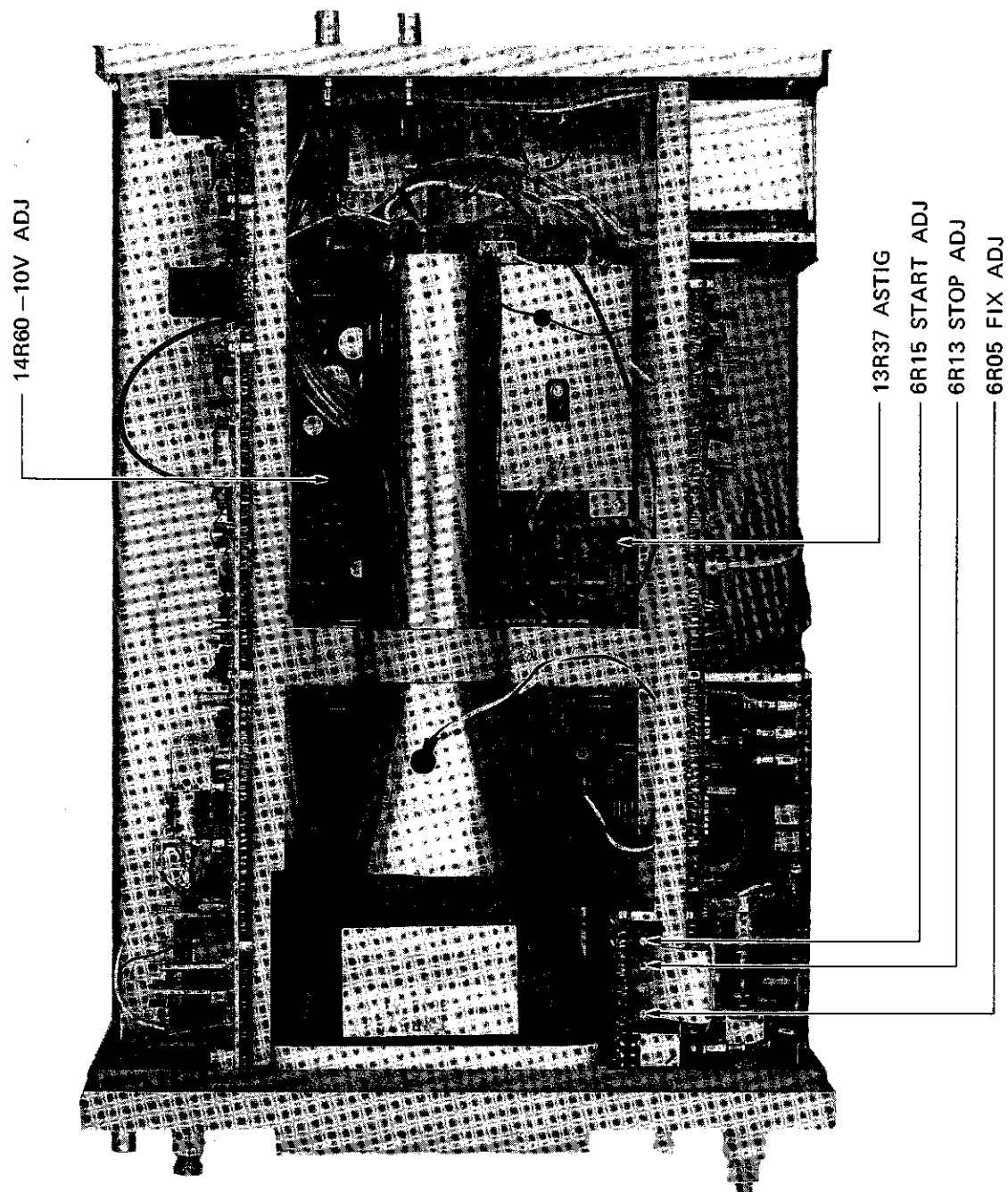
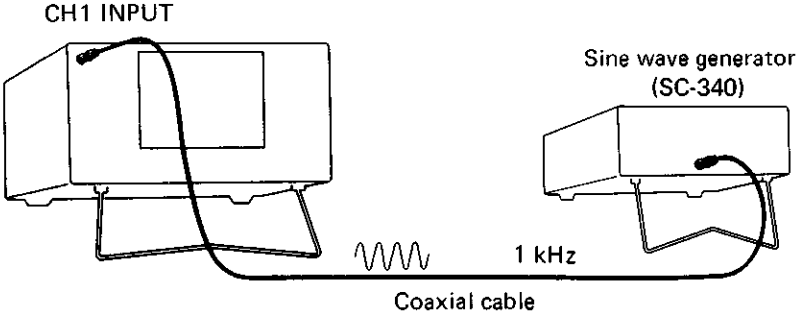
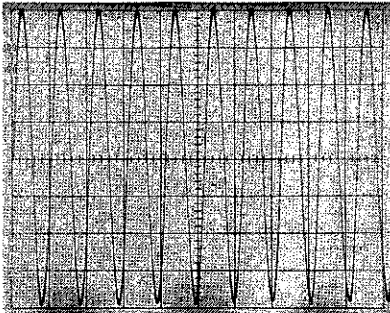
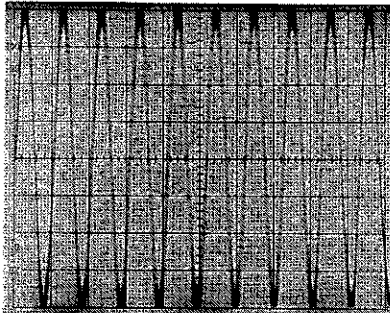
Item	Description
Rating	When INTEN control is turned fully to the left, the trace should disappear.
Setting and Procedure	1. Set SWEEP MODE to AUTO to perform the sweep. 2. Check that the trace disappears when INTEN is turned fully to the left. 3. Check that the trace appears from near 30° to the left from the center when INTEN is turned to the right. 4. If the specification still cannot be met after the above checks, adjust with 6R617 INTEN ADJ (refer to the below figure.).
Adjustment location	Right side:  6R617 INTEN ADJ

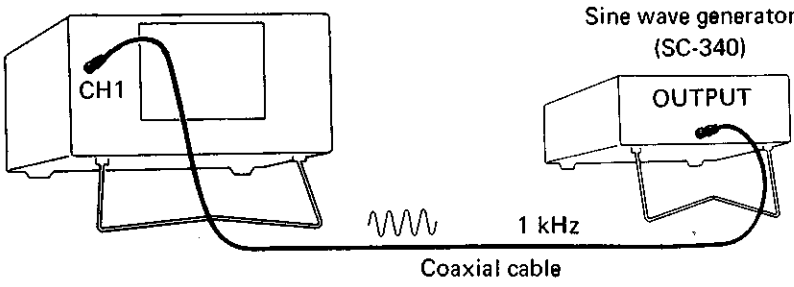
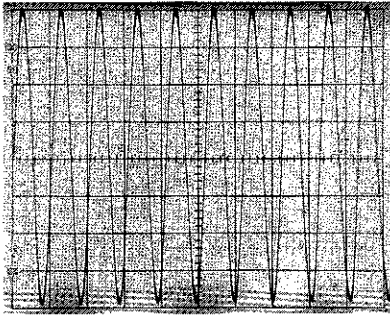
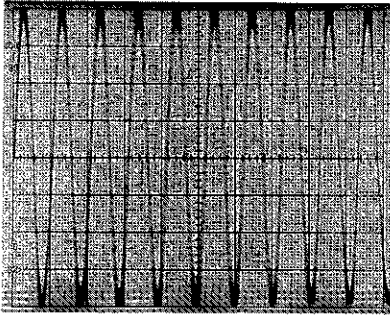
Figure 4-7-2. Top View



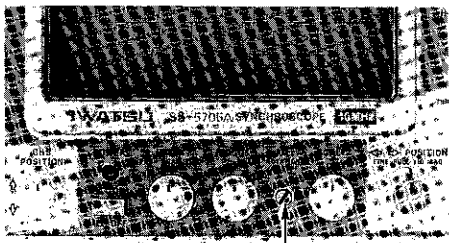
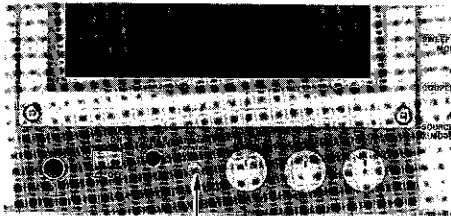
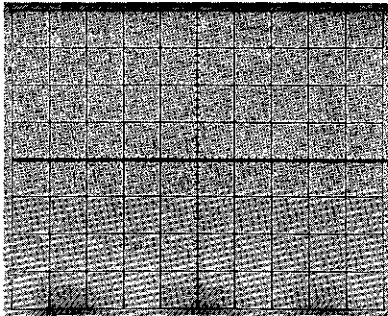
4-7-4-1 Focus (SS-5705A/5706A)

Item	Description
Rating	The focus with the best waveform must be obtained by adjusting FOCUS control when you display a sine wave by 8 divs. on the screen and set it to the optimum intensity with INTEN.
Connecting	CH1 INPUT 
Setting	INTEN : For dim trace A SEC/DIV : 1 mSEC SWEEP MODE : AUTO FOCUS : Almost to midpoint
Procedure	1. Display a 1 kHz sine wave by 8 divs. at the center of the screen. 2. Check that the best focus is obtained when FOCUS is set to almost the midpoint. 3. If the focus is found unsatisfactory, adjust it with 13R37 ASTIG (refer to Figure 4-7-2.).
Waveform on screen	Focused well:  Focused wrong: 

4-7-4-2 Focus (SS-5702A/5703A)

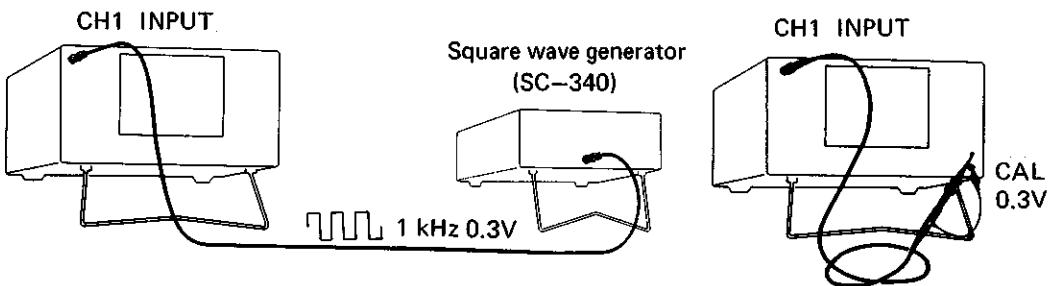
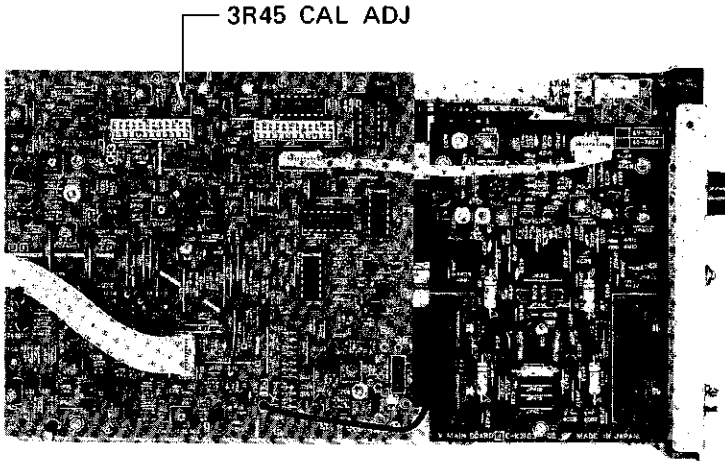
Item	Description
Rating	The focus with the best waveform must be obtained by adjusting FOCUS control when you display a sine wave by 8 divs. on the screen and set it to the optimum intensity with INTEN control.
Connecting	
Setting	INTEN : For dim trace SEC/DIV : 1 mSEC SWEEP MODE : AUTO FOCUS : Almost to midpoint
Procedure	1. Display a 1 kHz sine wave by 8 divs. at the center of the screen. 2. Check that the best focus is obtained when FOCUS is set to almost the midpoint. 3. If the focus is found unsatisfactory, adjust it with 6R614 ASTIG (referto Figure 4-7-1-2.).
Waveform on screen	Focused well:  Focused wrong: 

4-7-5 Trace Rotation

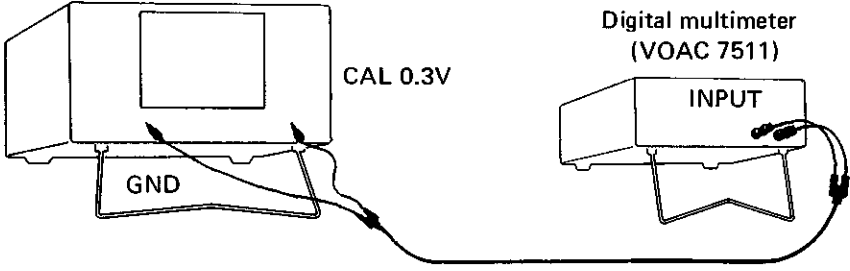
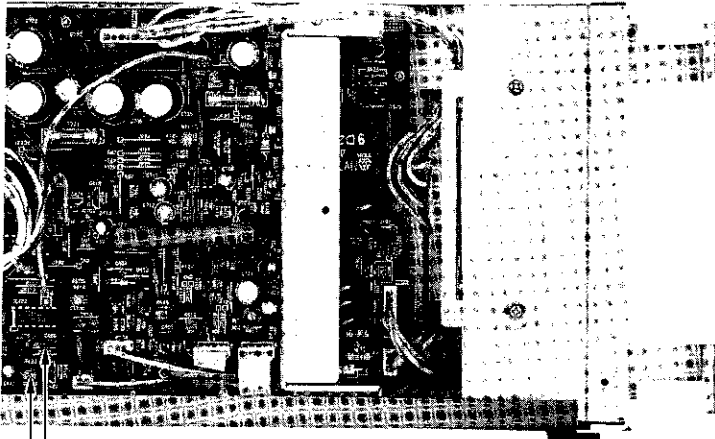
Item	Description
Rating	Trace align with center horizontal scale line.
Setting	SWEEP MODE : AUTO A SEC/DIV : 1 mSEC GND (CH1) : ON (GND)
Procedure	1. Set SWEEP MODE to AUTO to perform the sweep. 2. Press the GND key to turn on. 3. With the screwdriver, adjust TRACE ROTATION control located on the front panel, so that the sweep trace (horizontal trace) will match the horizontal scale line at the screen center. CAUTION The tilt of the trace is slightly affected by terrestrial magnetism. Place this instrument in the normal operating position and carry out the check and adjustment.
Adjustment location Waveform on screen	Partial front panel: SS-5705A/5706A  TRACE ROTATION SS-5702A/5703A  TRACE ROTATION Screen: 

4-8 CALIBRATOR OUTPUT

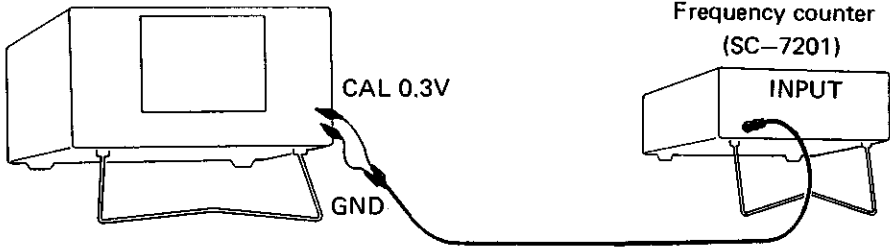
4-8-1-1 Output Voltage (SS-5705A/5706A)

Item	Description
Rating	0.3V ±1%
Connecting	
Procedure	1. Apply the square wave of 1 kHz and 0.3 V to INPUT of CH 1, and adjust with VARIABLE so that the screen amplitude will be 6 divs. ±0 %. 2. Apply CAL 0.3 V to INPUT of CH1, and adjust with 3R45 CAL ADJ (refer to the below figure.) so that the screen amplitude will be within 6 divs. ±1 %.
Adjustment location	Left side 

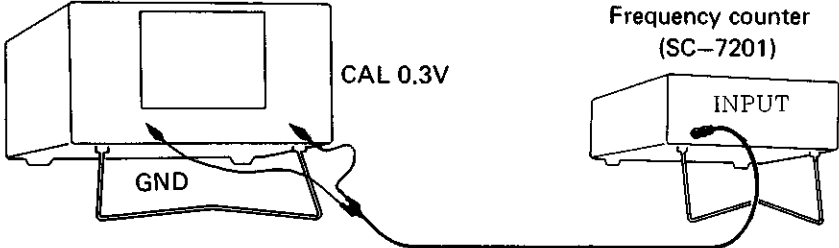
4-8-1-2 Output Voltage (SS-5702A/5703A)

Item	Description
Rating	0.3V $\pm$ 3%
Connecting	
Procedure	1. Turn off the power of this instrument once, and short between 4IC402 pin 6 (refer to the below figure.) and the ground. 2. Turn on the power, connect the digital multimeter to the CAL 0.3V output terminal, and check whether a displayed value is within 0.3V $\pm$ 3% 3. If an error exceeds the limit, adjust with 4R463 CAL ADJ (refer to the figure below.).
Adjustment location	Right side:  4IC402 pin6 4R463 CAL ADJ

4-8-2-1 Frequency (SS-5705A/5706A)

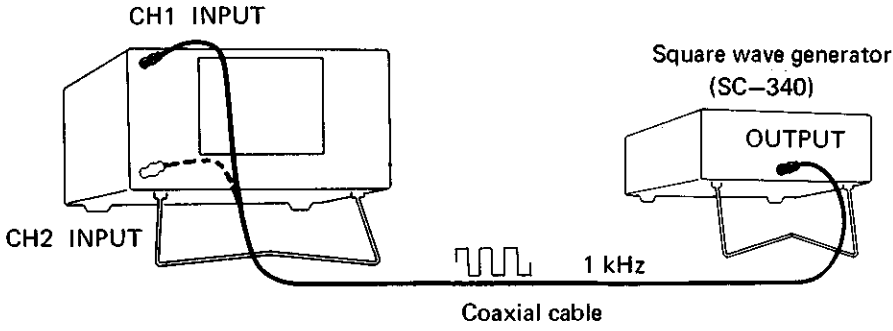
Item	Description
Rating	1 kHz ± 1%
Connecting	
Procedure	1. Connect the frequency counter to the CAL 0.3V output terminal. 2. Check that a counter reading is within 1 kHz ± 1%.

4-8-2-2 Frequency (SS-5702A/5703A)

Item	Description
Rating	1 kHz ± 50%
Connecting	
Procedure	1. Connect the frequency counter to the CAL 0.3V output terminal. 2. Check that a counter reading is within 1 kHz ± 50%.

4-9 VERTICAL DEFLECTION SYSTEM

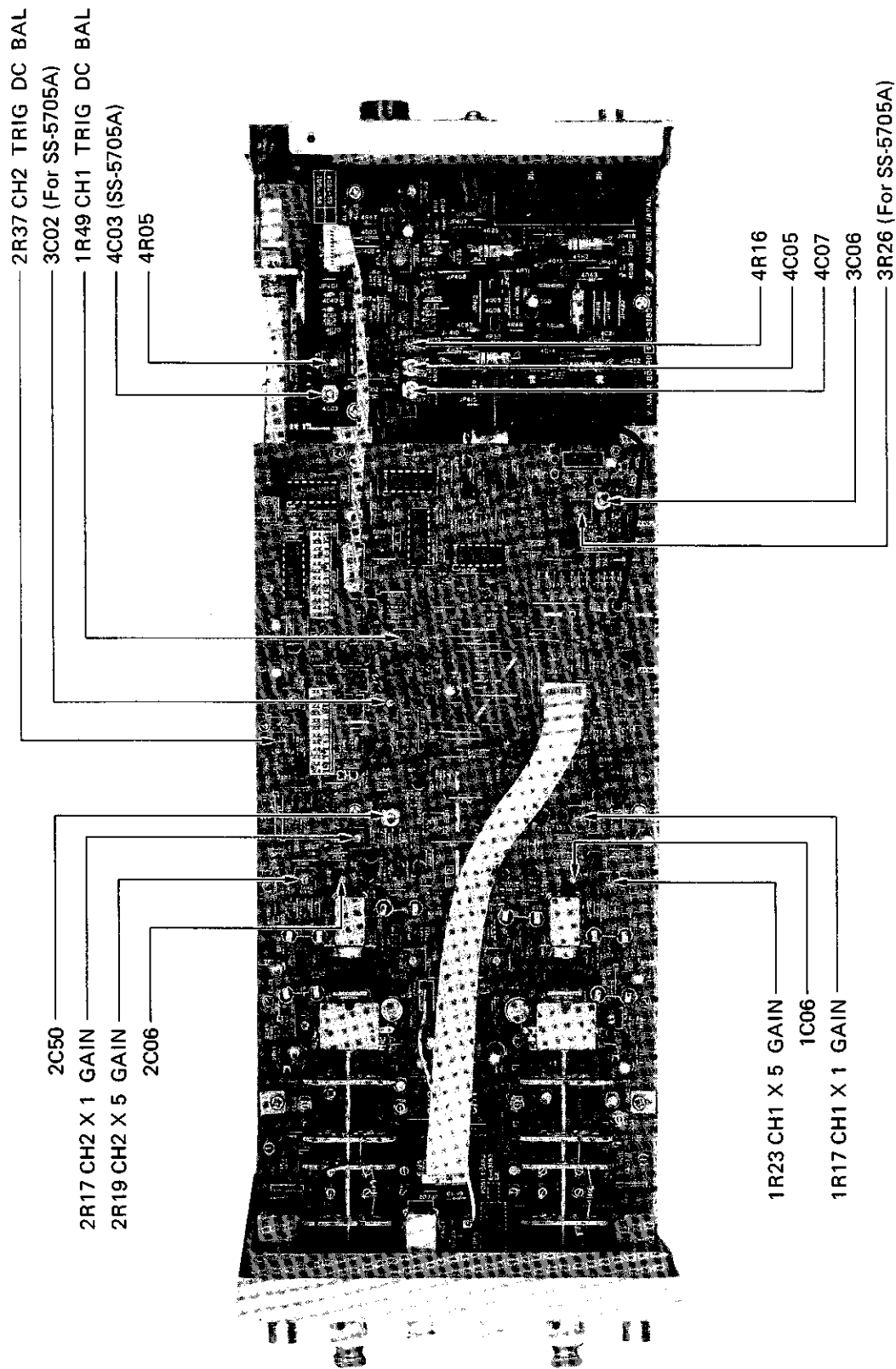
4-9-1-1 Sensitivity CH1, CH2 (SS-5705A/5706A)

Item	Description
Rating	5 mV/div. to 10 V/div. $\pm 2\%$ (X 1) 1 mV/div. $\pm 3\%$ (X 5)
Connecting	 The diagram illustrates the setup for sensitivity testing. A square wave generator (SC-340) is connected to the CH1 INPUT of the oscilloscope. A coaxial cable is used to connect the generator's output to the CH1 INPUT. The CH2 INPUT is also connected to the same coaxial cable. A square wave signal is shown on the cable, labeled 1 kHz.
Setting and Procedure	1. Set VERT MODE to CH1. 2. Set VOLTS/DIV to 5 mV for both CH1 and CH2. 3. Apply the square wave of 1 kHz and 30 mV to INPUT of CH1, and check that the screen amplitude is within 6 divs. $\pm 2\%$. 4. If an error exceeds the limit, adjust with 1R17 x 1 GAIN (refer to Figure 4-7-3-1.). 5. When the square wave of 1 kHz and 6 mV is applied to INPUT of CH1 and x5 MAG is selected, check that the screen amplitude is within 6 divs. $\pm 3\%$ 6. If an error exceeds the limit, adjust with 1R23 x 5 GAIN (refer to Figure 4-7-3-1.). 7. Set VERT MODE to CH2 and check CH2 in the same manner as in the above step 3. As a result, if an error exceeds the limit, adjust 2R17 x 1 GAIN (refer to Figure 4-7-3-1.). 8. Set to CH2 X 5 MAG and check in the same manner as in the above step 5. As a result, if an error exceeds the limit, adjust 2R19 x 5 GAIN (refer to Figure 4-7-3-1.). REMARK By carrying out the above check and adjustment, the 10 mV range onward will satisfy the specification unconditionally.

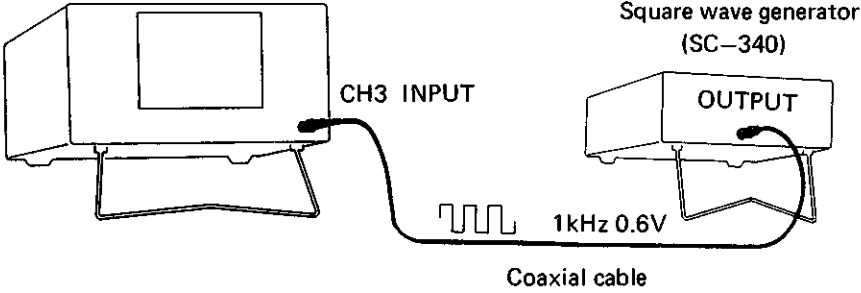
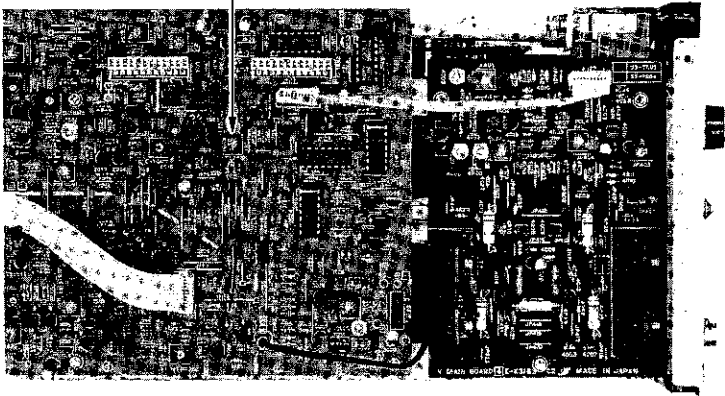
4-9-1-2 Step Balance (SS-5702A/5703A)

Item	Description
Rating	VERT MODE : DUAL
Procedure	1. Set VERT MODE to DUAL. 2. Set the CH1/CH2 trace to the midpoint on the screen. 3. When both CH1 VOLTS/DIV and CH2 VOLTS/DIV are switched from 5 mV to 20 mV, check that the trace does not move. 4. If the trace moves, adjust with 1R013 (CH1)/1R113 (CH2) DC BAL (refer to Figure 4-7 -3-2.).

Figure 4-7-3-1: Left-side View
SS-5705A/5706A



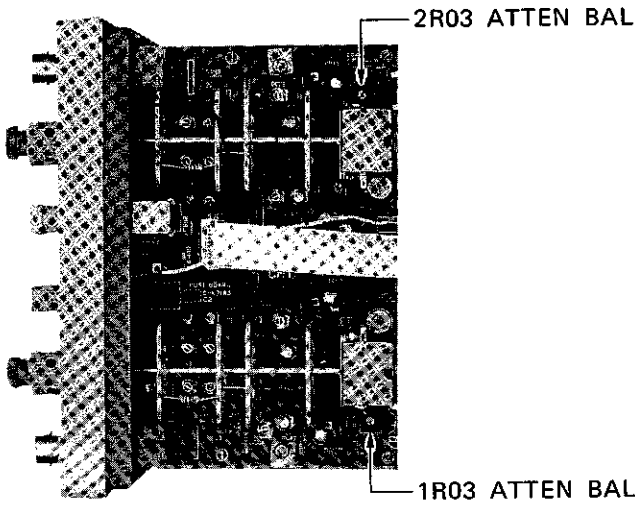
4-9-2-1 Sensitivity CH3 (SS-5705A/5706A)

Item	Description
Rating	0.1 V $\pm$ 3%
Connecting	
Setting	VERT MODE : TRI
Procedure	1. Apply the square wave of 1 kHz and 0.6 V to INPUT of CH3, and check that the screen amplitude is within 6 divs. $\pm$3%. 2. If an error exceeds the limit, adjust with 3R11 CH3 GAIN (refer to the below figure.).
Adjustment location	Left side: 

4-9-2-2 VARIABLE Balance (SS-5702A/5703A)

Item	Description
Setting	VERT MODE : DUAL
Procedure	1. Set VERT MODE to DUAL. 2. Set the CH1/CH2 trace to the midpoint on the screen. 3. Turn CH1/CH2 VARIABLE and check that the trace does not move. 4. If the trace moves, adjust with 1R035 (CH1)/1R135 (CH2) VAR BAL (refer to Figure 4-7-3-2.).

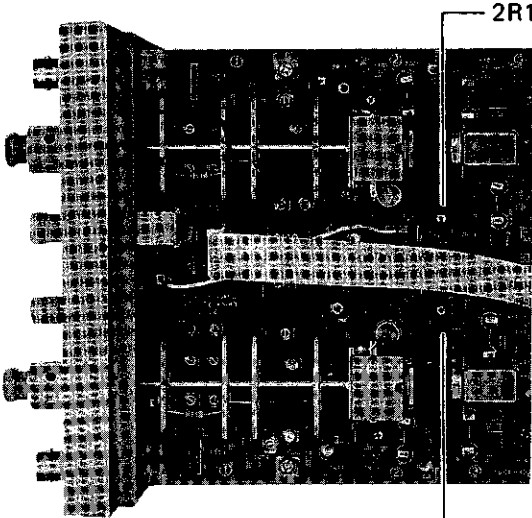
4-9-3-1 $\times 5$ MAG Balance (SS-5705A/5706A)

Item	Description
Setting	GND (CH1 · 2) : ON (GND) VOLTS/DIV (CH1 · 2) : 5 mV
Procedure	1. Set VERT MODE to CH1. 2. When PULL $\times 5$ MAG is switched over (pushed/pulled), check that the trace does not move. 3. When the trace moves, adjust with 1R03 ATTEN BAL (refer to the below figure.). 4. Set VERT MODE to CH2. 5. When PULL $\times 5$ MAG for CH2 is switched over (pushed/pulled), check that the trace does not move. 6. When the trace moves, adjust with 2R03 ATTEN BAL (refer to the below figure.).
Adjustment location	Left side: 

4-9-3-2 × 5 MAG Balance (SS-5702A/5703A)

Item	Description
Setting	VERT MODE : DUAL
Procedure	1. Set VERT MODE to DUAL. 2. Set the CH1/CH2 traces to the midpoint on the screen. 3. When the CH1/CH2 POSITION knobs are switched over to PULL x 5 MAG, check that the trace does not move. 4. If the trace moves, adjust with 1R041 (CH1)/1R141 (CH2) MAG BAL (refer to the figure on page 4-36.).

4-9-4-1 VARIABLE Balance (SS-5705A/5706A)

Item	Description
Setting	GND (CH1 - 2) : ON (GND) VOLTS/DIV (CH1 - 2) : 5 mV
Procedure	1. Set VERT MODE to CH1. 2. Check that the trace does not move when VARIABLE is turned. 3. If the trace moves, adjust with 1R13 VARI BAL (refer to the below figure.). 4. Set VERT MODE to CH2. 5. Check that the trace does not move when VARIABLE is turned. 6. If the trace moves, adjust with 2R13 VARI BAL (refer to the below figure.).
Adjustment location	Left side: 

4-9-4-2 POLARITY Selecting Balance (SS-5702A/5703A)

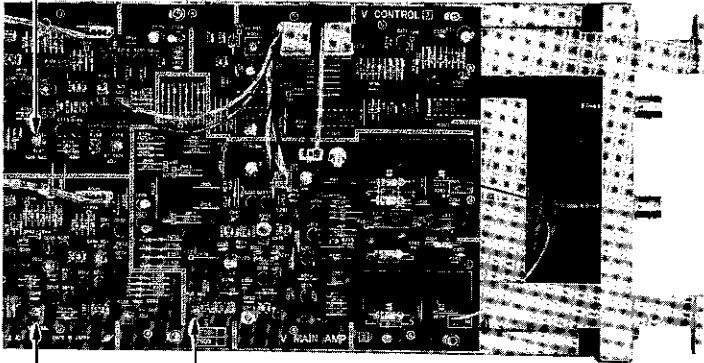
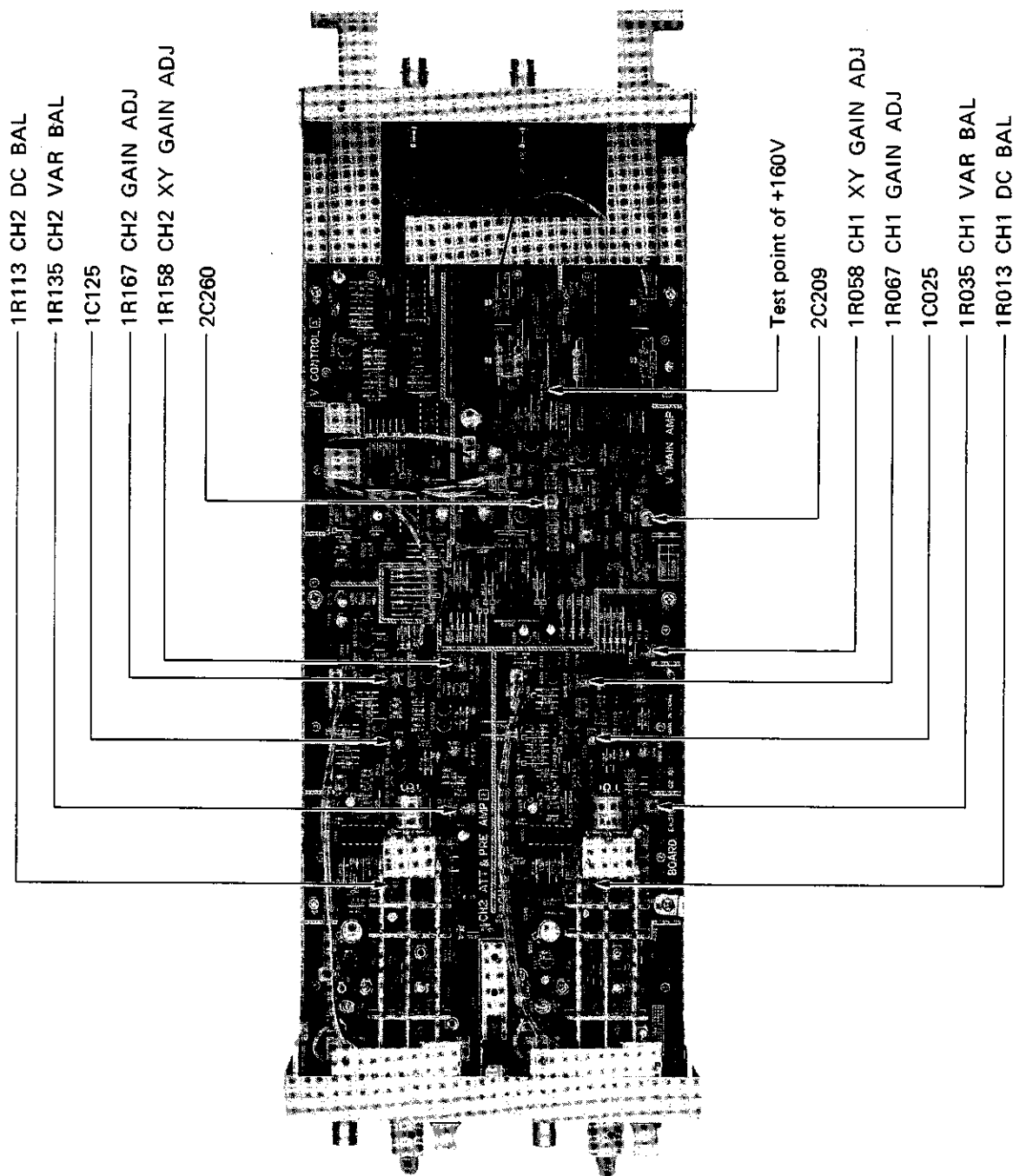
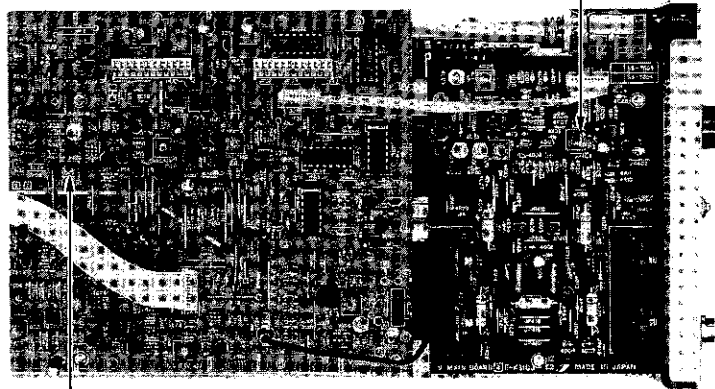
Item	Description
Setting	VERT MODE : CH2 GND (CH2) : ON (GND)
Procedure	1. Set the CH2 trace to the midpoint on the screen. 2. When the CH2 INV key is turned on/off, check that the trace does not move. 3. If the trace moves, adjust with 2R219 POS ADJ (refer to the below figure.).
Adjustment location	Left side: 

Figure 4-7-3-2. Left-Side View

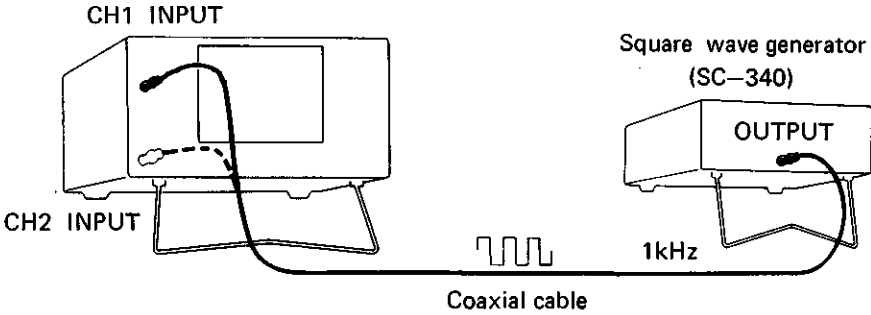
SS-5702A/5703A



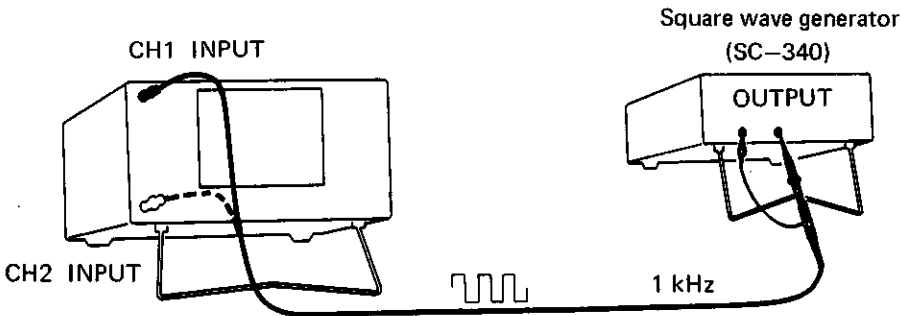
4-9-5-1 CH2 INV Selecting Balance (SS-5705A/5706A)

Item	Description
Setting	VERT MODE : CH2
Procedure	1. Set the CH2 trace to the midpoint on the screen. 2. When the CH2 POSITION (PULL INV) knob is pushed/pulled, check whether a trace move amount is within ± 1.5 divs. 3. When the trace move amount is large minimize it with 4R56 POLA BAL (refer to the below figure.). 4. Set the CH2 POSITION knob almost to the midpoint and adjust with 2R29 POS CENT (refer to the figure below.) so that the trace will match the center scale on the screen.
Adjustment location	Left side:  4R56 POLA BAL 2R29 POS CENT

4-9-5-2 Sensitivity (SS-5702A/5703A)

Item	Description
Rating	5 mV/div. to 10 V/div. ±4% (X 1) 1 mV/div. ±5% (X 5)
Connecting	 CH1 INPUT CH2 INPUT Square wave generator (SC-340) OUTPUT 1kHz Coaxial cable
Setting and Procedure	1. Set VERT MODE to CH1. 2. Set CH1 VOLTS/DIV to 20 mV. 3. Apply the square wave of 1 kHz and 120 mV to CH1 INPUT, and check that the screen amplitude is within 6 divs. ±4%. 4. If there is an error, adjust with 1R067 CH2 GAIN ADJ (refer to Figure 4-7-3-2.). 5. Set VERT MODE to CH2. 6. Set CH2 VOLTS/DIV to 20 mV and check in the same way as in 3 above. 7. If there is an error, adjust with 1R167 CH2 GAIN ADJ (refer to Figure 4-7-3-2.). 8. Check the other CH1 and CH2 ranges. 9. Set VOLTS/DIV to 5 mV for both CH1 and CH2. 10. Apply the square waves of 1 kHz and 6 mV to CH1 and CH2 INPUTs, and check that the screen amplitude is within 6 divs. ±5% respectively when switched over to PULL x 5 MAG. CAUTION If you adjust in the 20-mV range of VOLTS/DIV for both CH1 and CH2, the other ranges will be adjusted to within the specification without adjustment.

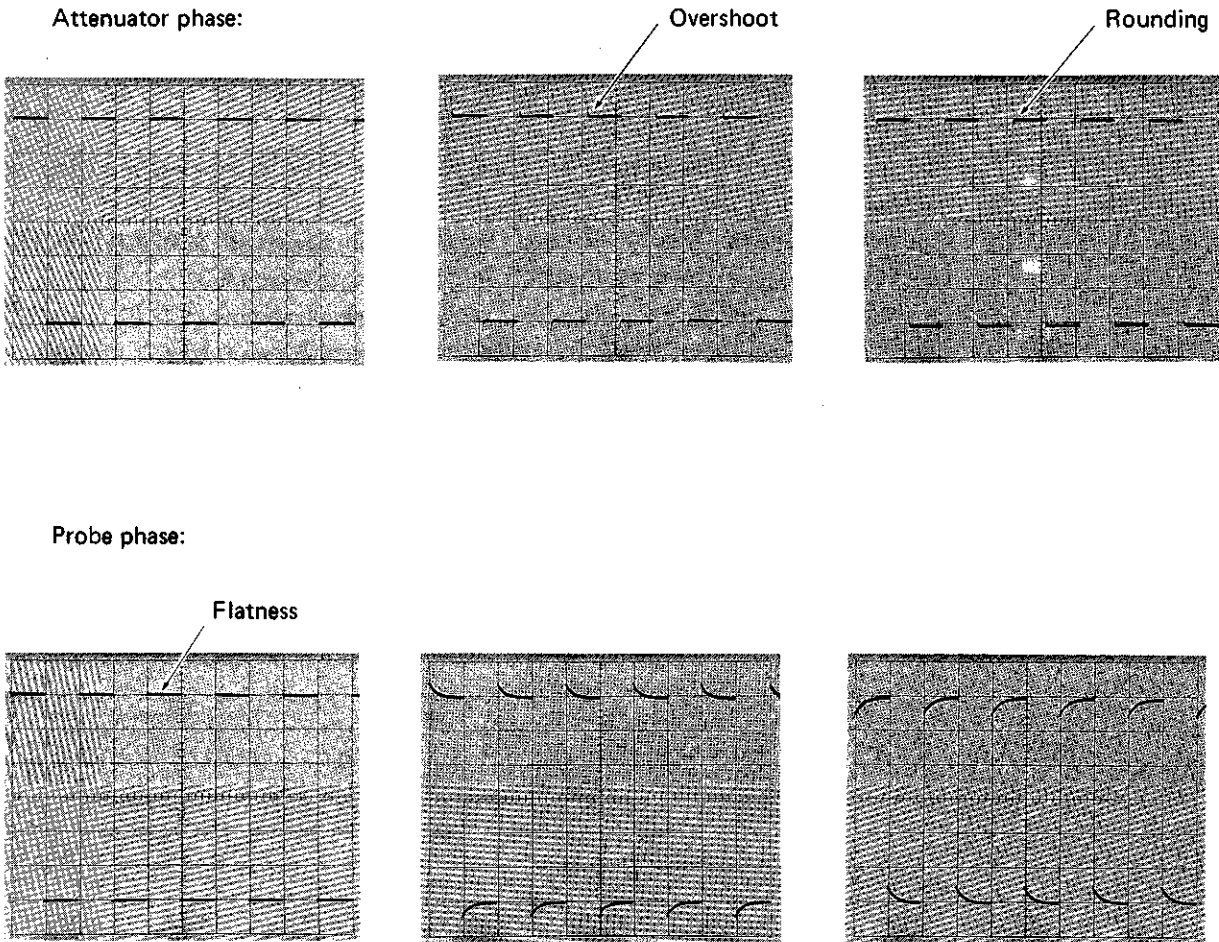
4-9-6-1 CH1/CH2 Attenuator Phases (SS-5705A/5706A)

Item	Description
Rating	Attenuator phase : $\pm 2\%$ Probe phase : $\pm 3\%$
Connecting	 The diagram illustrates the setup for adjusting attenuator phases. A square wave generator (SC-340) is connected to the CH1 INPUT of the oscilloscope. A 1 kHz square wave signal is shown between the CH1 and CH2 inputs. The CH2 INPUT is also connected to the CH1 INPUT.
Setting and Procedure	1. Using the accessory probe, apply the output voltage of a 1 kHz square wave to INPUT. 2. Set VOLTS/DIV to 5 mV and display the square wave amplitude by 6 div. at the screen center. 3. Adjust the phase of the probe proper to adjust flatness to the appropriate condition shown in Figure 4-7-4. 4. Set VOLTS/DIV to 10 mV, and adjust the attenuator phase with 0C05(CH1)/0C25(CH2), and the probe phase with 0C04(CH1)/0C24(CH2) (refer to Figure 4-7-5.). 5. Set VOLTS/DIV to 20 mV, and adjust the attenuator phase with 0C07(CH1)/0C27(CH2), and the probe phase with 0C06(CH1)/0C26(CH2) (refer to Figure 4-7-5.). 6. Set VOLTS/DIV to 50 mV, and adjust the attenuator phase with 0C09(CH1)/0C29(CH2), and the probe phase with 0C08(CH1)/0C28(CH2) (refer to Figure 4-7-5.). 7. Set VOLTS/DIV to 0.5 V, and adjust the attenuator phase with 0C13(CH1)/0C33(CH2), and the probe phase with 0C12(CH1)/0C32(CH2) (refer to Figure 4-7-5.). 8. Set VOLTS/DIV to 5 V, and adjust the attenuator phase with 0C17(CH1)/0C37(CH2), and the probe phase with 0C16(CH1)/0C36(CH2) (refer to Figure 4-7-5.).

4-9-6-1 CH1/CH2 Attenuator Phases (SS-5705A/5706A) (continued)

Item	Description				
Setting and Procedure	VOLTS/DIV	CH1		CH2	
		Attenuator phase adjuster	Probe phase adjuster	Attenuator phase adjuster	Probe phase adjuster
	5 mV	—	Probe proper	—	Probe proper
	10 mV	0 C05	0 C04	0 C25	0 C24
	20 mV	0 C07	0 C06	0 C27	0 C26
	50 mV to 0.2V	0 C09	0 C08	0 C29	0 C28
	0.5 V to 2 V	0 C13	0 C12	0 C33	0 C32
	5 V, 10 V	0 C17	0 C16	0 C37	0 C36

Figure 4-7-4 Phase Waveforms



4-9-6-2 Square Wave Characteristics (SS-5702A/5703A)

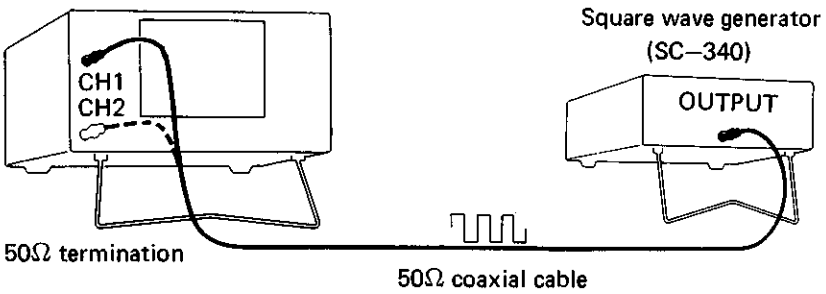
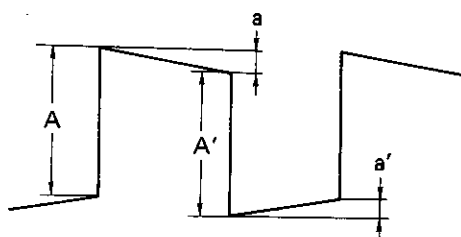
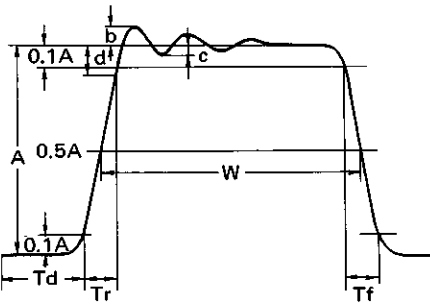
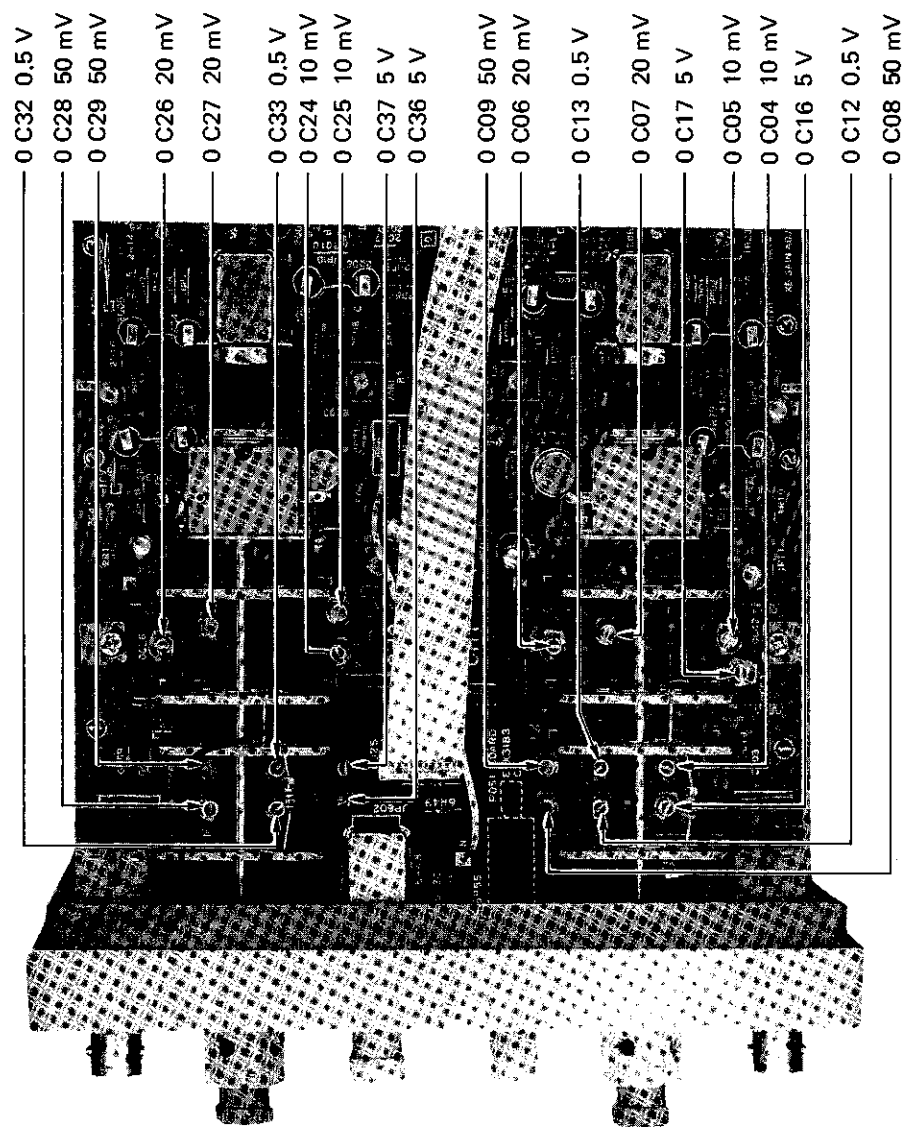
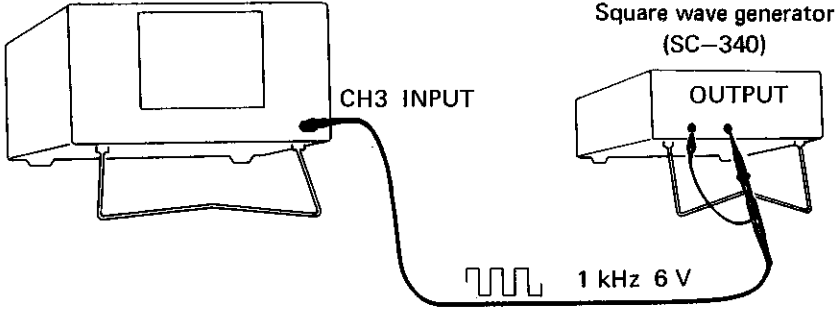
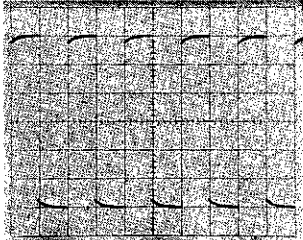
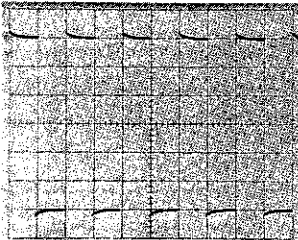
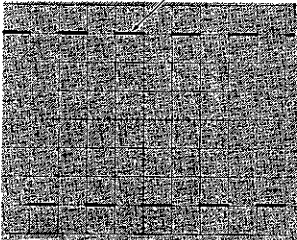
Item	Description
Rating	Over shoot : 6% (at 10 mV/div.) Sag (at 1 kHz) : 2% (at 10 mV/div.) Other distortion : 5% (at 10 mV/div.)
Connecting	
Procedure	1. Set CH and CH2 VOLTS/DIVs to 10 mV. 2. Apply a 1 kHz square wave to CH1 and CH2 INPUTs, display the screen amplitude by 6 divs., and check the sags of the respective channels. 3. Apply a 500 kHz square wave to CH1 and CH2 INPUTs, display the screen amplitude by 6 divs., and check the overshoots and other distortion of the respective channels. 4. If the overshoot is large, adjust 1C025(CH1)/1C125(CH2) (refer to Figure 4-7-3-2.) and 2C209, 2C260 (refer to Figure 4-7-3-2.) (common to CH1 and CH2).
Reference	 A : Base amplitudeTr : Rise time $\frac{b}{A}$: OvershootTf : Fall time $\frac{c}{A}$: Ringing$\frac{d}{A}$: Rounding W : Pulse widthTd : Delay time A : Base amplitude Sag=$\frac{a}{A}$ (or $\frac{a'}{A}$) 100% a : Sag A greater value of either $\frac{a}{A}$ or $\frac{a'}{A}$

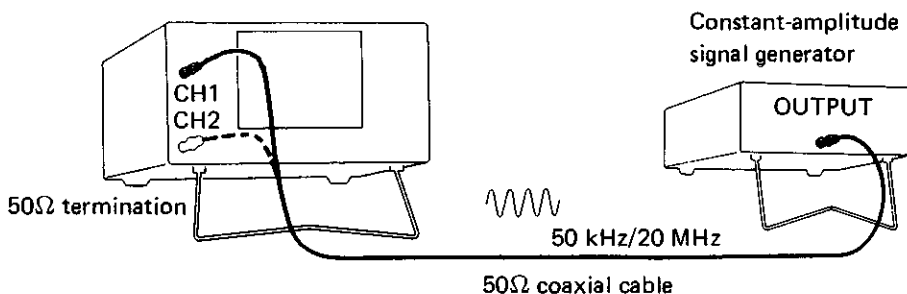
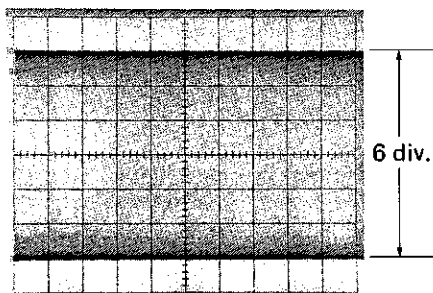
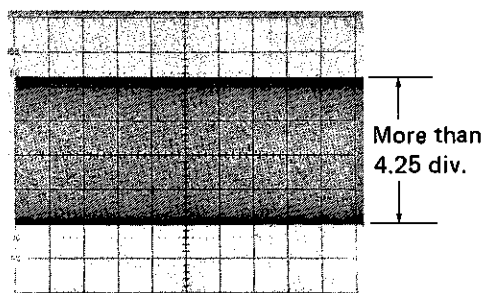
Figure 4-7-5 Attenuator



4-9-7-1 Probe Phase CH3 (SS-5705A/5706A)

Item	Description
Rating	Probe phase : $\pm 3\%$
Connecting	
Setting	VERT MODE : TRI
Procedure	1. Using the accessory probe, apply the output voltage of a 1kHz square wave to INPUT of CH3. 2. Adjust the output voltage of the square wave generator and display the amplitude by 6 divs. at the screen center. 3. Adjust the phase of the probe proper to adjust flatness to the appropriate condition shown in the below figure (a).
Waveform on screen	Probe phase:  (a) Appropriate (b) Inappropriate (over compensation) (c) Inappropriate (under compensation)

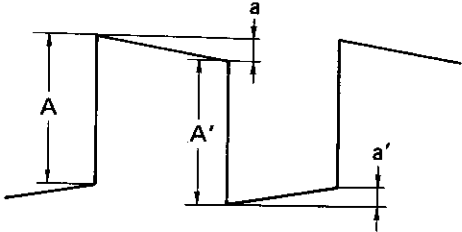
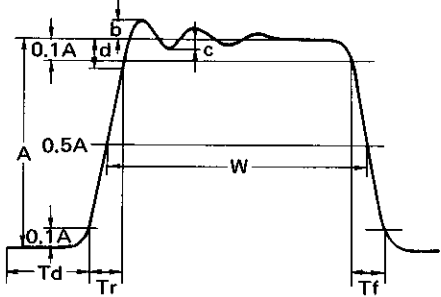
4-9-7-2 Bandwidth (SS-5702A/5703A)

Item	Description																	
Rating	5 mV/div, to 0.2 V/div. 1 mV/div. (X 5)	DC to 20MHz — 3 dB DC to 1 MHz — 3 dB																
Connecting	 Constant-amplitude signal generator 50Ω termination CH1 CH2 50 kHz/20 MHz 50Ω coaxial cable OUTPUT																	
Setting	VOLTS/DIV (CH1 · 2) : 5 mV and 1 mV (X 5)																	
Procedure	1. Set the reference frequency to 50 kHz, adjust the output voltage of the signal generator, and display the amplitude by 6 divs. at the screen center. 2. Read the screen amplitude when the frequency of the signal generator is changed to the respective specified ones (20 MHz, 1 MHz), and check that they are within the specification. 3. Check both CH1 and CH2.																	
Waveform on screen	Amplitude of reference frequency (50 kHz)  6 div.	Amplitude with specified frequency equal to — 3 dB  More than 4.25 div.																
Reference	The following shows the decibel conversion table when the reference amplitude is set to 6 divs. <table><tr><td>Amplitude(div.)</td><td>6.0</td><td>4.4</td><td>4.3</td><td>4.25</td><td>4.2</td><td>4.1</td><td>4.0</td></tr><tr><td>Decibel(dB)</td><td>0.0</td><td>−2.7</td><td>−2.9</td><td>−3.0</td><td>−3.1</td><td>−3.3</td><td>−3.5</td></tr></table>		Amplitude(div.)	6.0	4.4	4.3	4.25	4.2	4.1	4.0	Decibel(dB)	0.0	−2.7	−2.9	−3.0	−3.1	−3.3	−3.5
Amplitude(div.)	6.0	4.4	4.3	4.25	4.2	4.1	4.0											
Decibel(dB)	0.0	−2.7	−2.9	−3.0	−3.1	−3.3	−3.5											

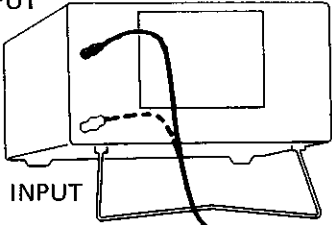
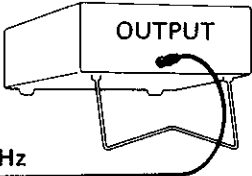
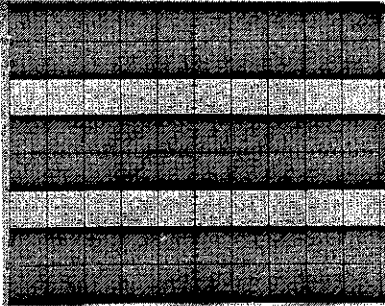
4-9-8-1 Square Wave Characteristics (SS-5705A/5706A)

Item	Description										
Rating	CH1, CH2	CH3									
	Overshoot:	7.0% (at 5 mV/div.)	9.0%								
	Sag (at 1 kHz):	2.0% (at 5 mV/div.)	2.5%								
	Other distortion:	5.0% (at 5 mV/div.)	8.0%								
Connecting	CH1 INPUT (50Ω termination) CH2 INPUT (50Ω termination) CH3 INPUT (50Ω termination) 50Ω coaxial cable Square wave generator (SC-340) OUTPUT										
Setting	VOLTS/DIV (CH1 · 2) : 5 mV AC – DC (CH1 · 2 · 3) : DC										
Procedure	1. Apply a 1 kHz square wave to CH1, CH2 and CH3 INPUTs, display the screen amplitude by 6 divs., and check the sags of the respective channels. 2. Apply a 100 kHz square wave to CH1, CH2 and CH3 INPUTs, display the screen amplitude by 6 divs., and check the overshoots and other distortion of the respective channels. 3. When the specification is not met, adjust with the adjusters shown in the below table.										
Adjustment location	<table><tr><th>CH1 adjuster</th><th>CH2 adjuster</th><th>Adjuster common to CH1 and CH2</th><th>CH3 adjuster</th></tr><tr><td>1 C06</td><td>2 C06 2 C50 (SS-5705 only)</td><td>3 C02 (SS-5705 only) 3 C06 4 C03 4 C07 (SS-5705 only) 4 C05 4 R16 4 R05 3 R26 (SS-5705 only)</td><td>3 C02 (SS-5705 only)</td></tr></table> * For adjusters' positions, refer to Figure 4-7-3-1. * When adjusting the waveform, refer to the figures on the next page. * When you made adjustment with the adjuster, check "4-9-9-1 Frequency Response".			CH1 adjuster	CH2 adjuster	Adjuster common to CH1 and CH2	CH3 adjuster	1 C06	2 C06 2 C50 (SS-5705 only)	3 C02 (SS-5705 only) 3 C06 4 C03 4 C07 (SS-5705 only) 4 C05 4 R16 4 R05 3 R26 (SS-5705 only)	3 C02 (SS-5705 only)
CH1 adjuster	CH2 adjuster	Adjuster common to CH1 and CH2	CH3 adjuster								
1 C06	2 C06 2 C50 (SS-5705 only)	3 C02 (SS-5705 only) 3 C06 4 C03 4 C07 (SS-5705 only) 4 C05 4 R16 4 R05 3 R26 (SS-5705 only)	3 C02 (SS-5705 only)								

4-9-8-1 Square Wave Characteristics (SS-5705A/5706A) (continued)

Item	Description
Reference	 A : Base amplitude $\text{Sag} = \frac{a}{A} \text{ (or } \frac{a'}{A'}) \times 100\%$ a : Sag A greater value of either $\frac{a}{A}$ or $\frac{a'}{A'}$  A : Base amplitude Tr : Rise time $\frac{b}{A}$: Overshoot Tf : Fall time $\frac{b}{A}$: Ringing $\frac{d}{A}$: Rounding W : Pulse width Td : Delay time

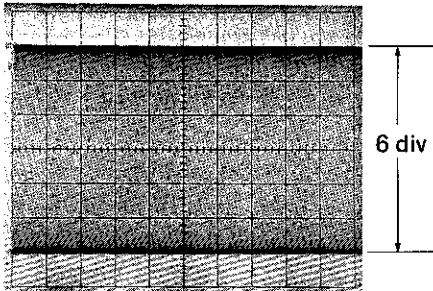
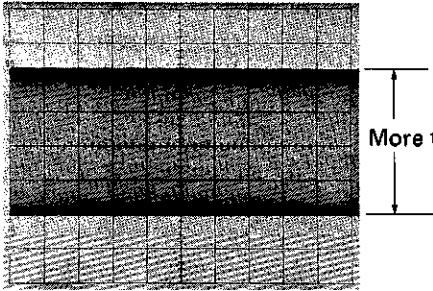
4-9-8-2 Linearity (SS-5702A/5703A)

Item	Description
Rating	±5% (at 1kHz)
Connecting	CH1 INPUT CH2 INPUT  Sine wave generator (SC-340) OUTPUT   1 kHz Coaxial cable
Setting and Procedure	1. Apply a 1 kHz sine wave to CH1 INPUT. 2. Adjusting the VOLTS/DIV and VARIABLE, display the amplitude by 2 divs. at the screen center. 3. With POSITION knob, move the waveform to within the top and bottom 2 divs. of the screen scale, and check that the amplitude changes only within ±5% (±0.1 div). 4. Check CH2 in the same manner.
Waveform on screen	Top Middle Bottom  2 divs. Input signal: Sine wave 1 kHz

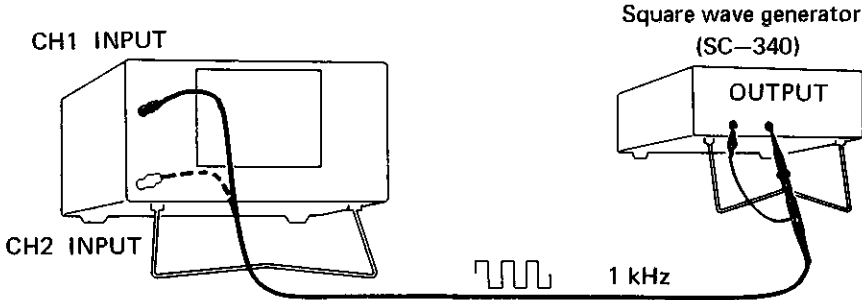
4-9-9-1 Bandwidth (SS-5705A/5706A)

Item	Description																																							
Rating	SS-5706A: (CH1, CH2) 5 mV/div to 1 V/div. DC to 30MHz - 3 dB 1 mV/div., 2 mV/div. DC to 15MHz - 3 dB (CH3) 0.1 V/div. DC to 30MHz - 3 dB SS-5705A (CH1, CH2) 5 mV/div to 1 V/div. DC to 40MHz - 3 dB 1 mV/div., 2 mV/div. DC to 20MHz - 3 dB (CH3) 0.1 V/div. DC to 40MHz - 3 dB																																							
Connecting	CH1 INPUT (50Ω termination) CH2 INPUT (50Ω termination) CH3 INPUT (50Ω terminator) Constant-amplitude signal generator OUTPUT 50 kHz/30 MHz (40 MHz) 50Ω coaxial cable																																							
Setting	<table><tr><th rowspan="2">Adjustment order</th><th rowspan="2">Channel</th><th rowspan="2">VOLTS/DIV</th><th colspan="3">Input signal</th><th rowspan="2">Screen amplitude</th></tr><tr><th>Voltage</th><th>Wave-form</th><th>Frequency</th></tr><tr><td>1</td><td rowspan="4">CH1-CH2</td><td rowspan="2">5 mV</td><td rowspan="2">30mV</td><td rowspan="6">Sine wave</td><td>50kHz</td><td>6 divs.</td></tr><tr><td>2</td><td>30(40)MHz.</td><td>More than 4.25 divs.</td></tr><tr><td>3</td><td rowspan="2">1 mV</td><td colspan="2" rowspan="2">6 mV</td><td>50kHz</td><td>6 divs.</td></tr><tr><td>4</td><td>15(20)MHz</td><td>More than 4.25divs.</td></tr><tr><td>5</td><td rowspan="2">CH3</td><td rowspan="2">0.1V</td><td colspan="2" rowspan="2">0.6V</td><td>50kHz</td><td>6 divs.</td></tr><tr><td>6</td><td>30(40)MHz</td><td>More than 4.25 divs.</td></tr></table> * The values parenthesized apply to SS-5705A.	Adjustment order	Channel	VOLTS/DIV	Input signal			Screen amplitude	Voltage	Wave-form	Frequency	1	CH1-CH2	5 mV	30mV	Sine wave	50kHz	6 divs.	2	30(40)MHz.	More than 4.25 divs.	3	1 mV	6 mV		50kHz	6 divs.	4	15(20)MHz	More than 4.25divs.	5	CH3	0.1V	0.6V		50kHz	6 divs.	6	30(40)MHz	More than 4.25 divs.
Adjustment order	Channel				VOLTS/DIV	Input signal			Screen amplitude																															
		Voltage	Wave-form	Frequency																																				
1	CH1-CH2	5 mV	30mV	Sine wave	50kHz	6 divs.																																		
2					30(40)MHz.	More than 4.25 divs.																																		
3		1 mV	6 mV		50kHz	6 divs.																																		
4					15(20)MHz	More than 4.25divs.																																		
5	CH3	0.1V	0.6V		50kHz	6 divs.																																		
6					30(40)MHz	More than 4.25 divs.																																		
Reference	The following shows the decibel conversion table when the reference amplitude is set to 6 divs. <table><tr><td>Amplitude(div.)</td><td>6.0</td><td>4.4</td><td>4.3</td><td>4.25</td><td>4.2</td><td>4.1</td><td>4.0</td></tr><tr><td>Decibel(dB)</td><td>0.0</td><td>-2.7</td><td>-2.9</td><td>-3.0</td><td>-3.1</td><td>-3.3</td><td>-3.5</td></tr></table>	Amplitude(div.)	6.0	4.4	4.3	4.25	4.2	4.1	4.0	Decibel(dB)	0.0	-2.7	-2.9	-3.0	-3.1	-3.3	-3.5																							
Amplitude(div.)	6.0	4.4	4.3	4.25	4.2	4.1	4.0																																	
Decibel(dB)	0.0	-2.7	-2.9	-3.0	-3.1	-3.3	-3.5																																	

4-9-9-1 Bandwidth (SS-5705A/5706A) (continued)

Item	Description
Procedure	1. Set the reference frequency to 50 kHz, adjust the output voltage of the signal generator, and display the amplitude by 6 divs. at the screen center. 2. Read the screen amplitude when the frequency of the signal generator is changed to the respective specified ones (30 MHz, 40 MHz), and check that they are within the specification. 3. Check all of CH1, CH2 and CH3.
Waveform on screen	Amplitude of reference frequency (50kHz)  6 div Amplitude with specified frequency equal to - 3 dB.  More than 4.25div.

4-9-9-2 Attenuator Phase (SS-5702A/5703A)

Item	Description
Rating	$\pm 3\%$ (Attenuator phase) $\pm 4\%$ (Probe phase)
Connecting	
Setting and Procedure	1. Using the accessory probe, apply an output voltage with 1 kHz sine wave to INPUT. 2. Set VOLTS/DIV to 5 mV and display the sine wave amplitude by 6 divs. at the midpoint of the screen. 3. Make phase adjustment of the probe proper so that proper flatness shown in Figure 4-7-6 is obtained. 4. Set VOLTS/DIV to 50 mV, and adjust overshoot and roundness with 1C003 (CH1)/1C103 (CH2) (refer to Figure 4-7-7.). 5. Set VOLTS/DIV to 0.5 V, and adjust overshoot and roundness with 1C006 (CH1)/1C106 (CH2) (refer to Figure 4-7-7.), and flatness with 1C007 (CH1)/1C107 (CH2) (refer to Figure 4-7-7.). 6. Set VOLTS/DIV to 5 V, and adjust overshoot and roundness with 1C009 (CH1)/1C109 (CH2) (refer to Figure 4-7-7.), and flatness with 1C010 (CH1)/1C110 (CH2) (refer to Figure 4-7-7.).

VOLTS/DIV	CH 1		CH 2	
	Overshoot or Roundness	Flatness	Overshoot or Roundness	Flatness
5 mV	—	Phase adjustment of probe proper	—	Phase adjustment of probe proper
10mV to 50mV	1 C003	1 C004	1 C103	1 C104
0.1V to 0.5V	1 C006	1 C007	1 C106	1 C107
1 V to 10V	1 C009	1 C010	1 C109	1 C110

Figure 4-7-6 Attenuator Phase Waveforms

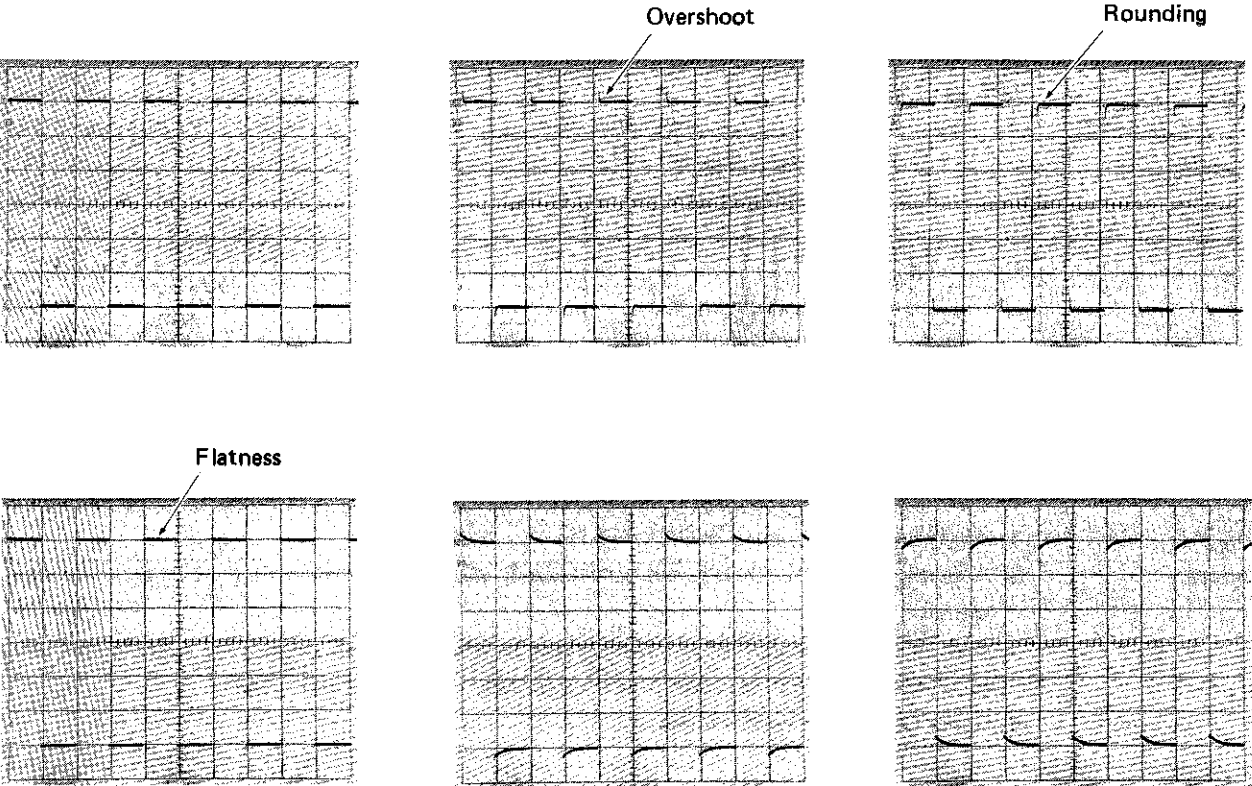
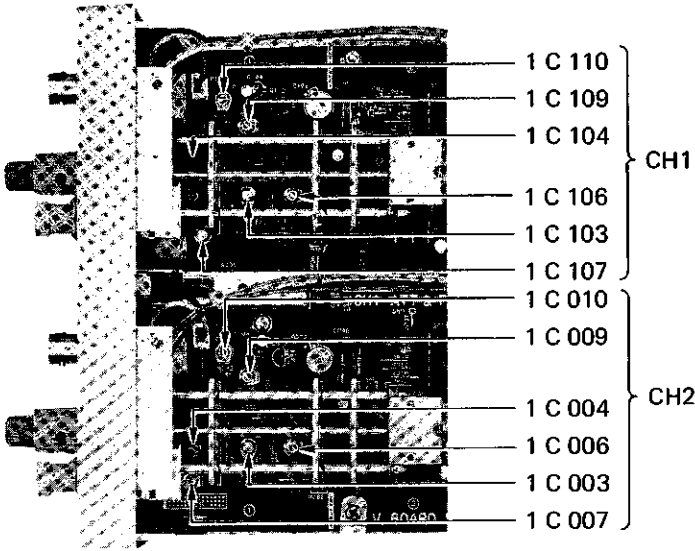
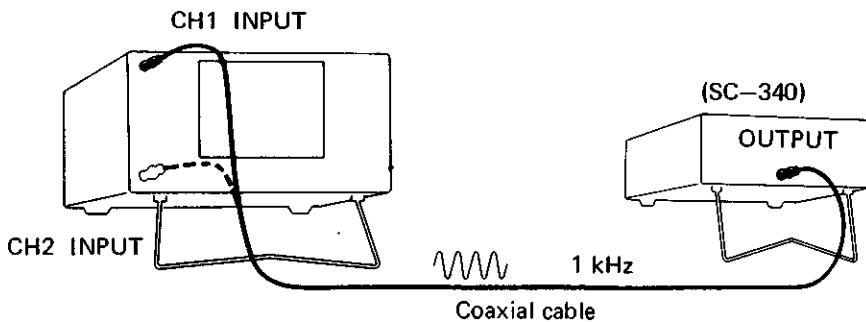
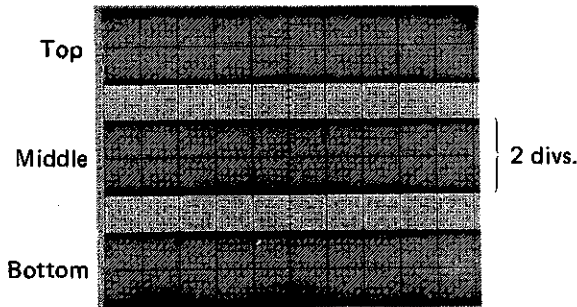


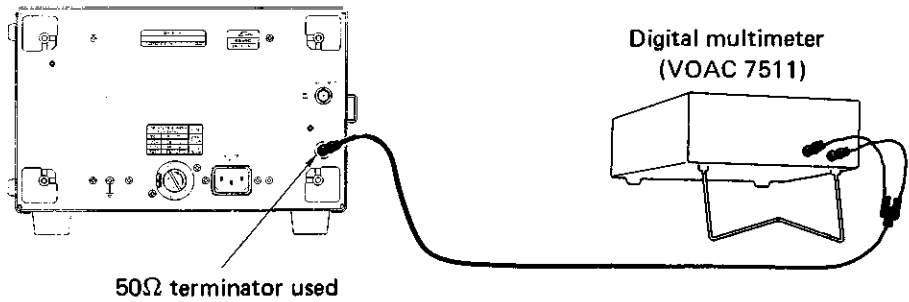
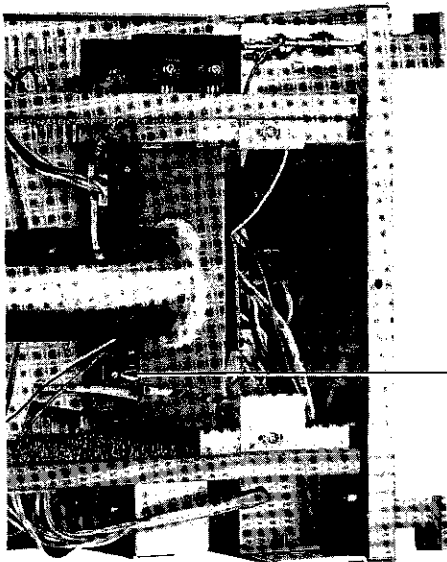
Figure 4-7-7 Attenuator Phase Adjusters



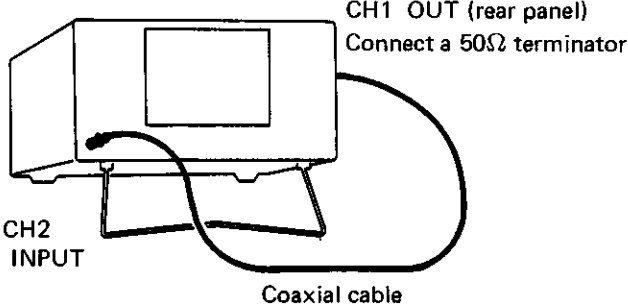
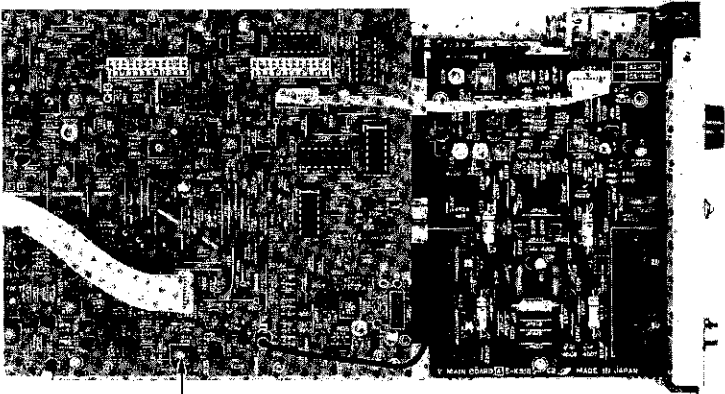
4-9-10-1 Linearity (SS-5705A/SS-5706A)

Item	Description
Rating	$\pm 5\%$ (at 1 kHz)
Connecting	
Setting and Procedure	1. Apply a 1 kHz sine wave to CH1 INPUT. 2. Adjusting the VOLTS/DIV and VARIABLE, display the amplitude by 2 divs. at the screen center. 3. With POSITION knob, move the waveform to within the top and bottom 2 divs. of the screen scale, and check that the amplitude changes only within $\pm 5\%$ (± 0.1 div). 4. Check CH2 in the same manner.
Waveform on screen	 Input signal : Sine wave 1 kHz

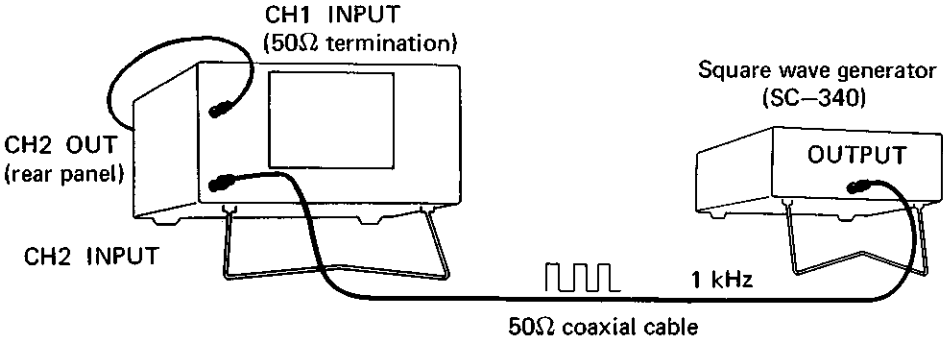
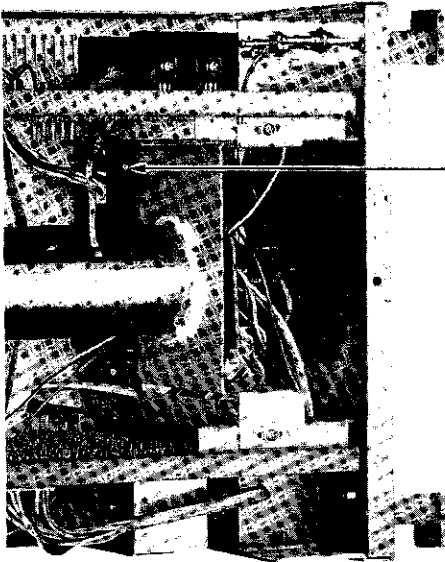
4-9-10-2 CH2 OUT Offset Voltage (55-5703A only)

Item	Description
Rating	Within ± 0.3 V (at 50Ω load)
Connecting	Rear panel:  50Ω terminator used Digital multimeter (VOAC 7511)
Setting	CH2 GND : ON (GND)
Procedure	1. Set CH2 AC-GND-DC to GND. 2. Connect the digital multimeter to the CH2 OUT connector via the 50 Ω terminator, and check at this time that the reading is within ± 0.3 V. 3. If an error exceeds the limit, adjust with 8R859 CH2 OUT LEVEL (refer to below figure.).
Adjustment location	Top rear:  8 R 859 CH2 OUT LEVEL

4-9-11-1 CH1 OUT Level (SS-5705A/5706A)

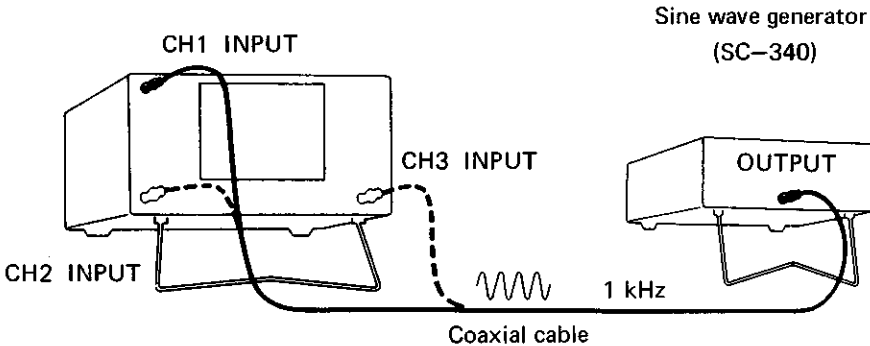
Item	Description
Connecting	 CH1 OUT (rear panel) Connect a 50Ω terminator CH2 INPUT Coaxial cable
Setting	VERT MODE : CH2 Connect the CH1 OUT terminal to CH2 INPUT via the 50Ω terminator. GND (CH1) : ON (GND)
Procedure	1. Set VERT MODE to CH2, and CH1 GND to ON (GND). 2. Connect the CH1 OUT terminal (rear panel) to CH2 INPUT via the 50Ω terminator. 3. Adjust with 1R26 CH1 OUT DC ADJ (refer to the below figure.) so that the screen amplitude will be +100 mV.
Adjustment location	Left side:  1 R 26 CH1 OUT DC ADJ

4-9-11-2 Sensitivity CH2 OUT (SS-5703A only)

Item	Description
Rating	25 mV/div. ±10% (at 50 Ω load)
Connecting	
Setting	CH1 VOLTS/DIV : 50 mV CH2 VOLTS/DIV : 5 mV VERT MODE : CH1 Connect CH2 OUT and CH1 INPUT with the 50Ω coaxial cable and terminate with the 50Ω terminator.
Procedure	1. Using the 50Ω coaxial cable, apply the output voltage with the sine wave of 1 kHz and 30 mV to CH2 INPUT. 2. Check that the CH1 screen amplitude is within 3 divs. ±10%. 3. If an error exceeds the limit, adjust with 8R854 CH2 OUT GAIN (refer to the below figure.).
Adjustment location	Top rear: 

4-10 TRIGGERING SYSTEM

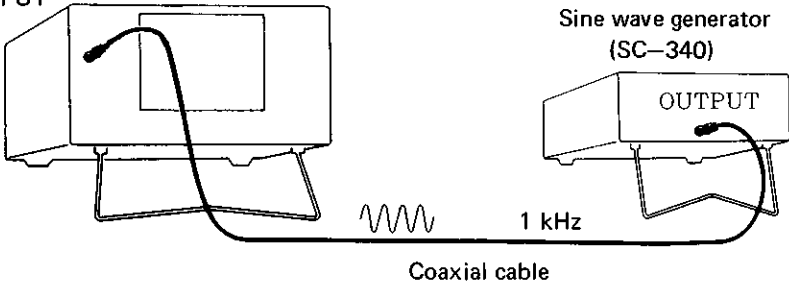
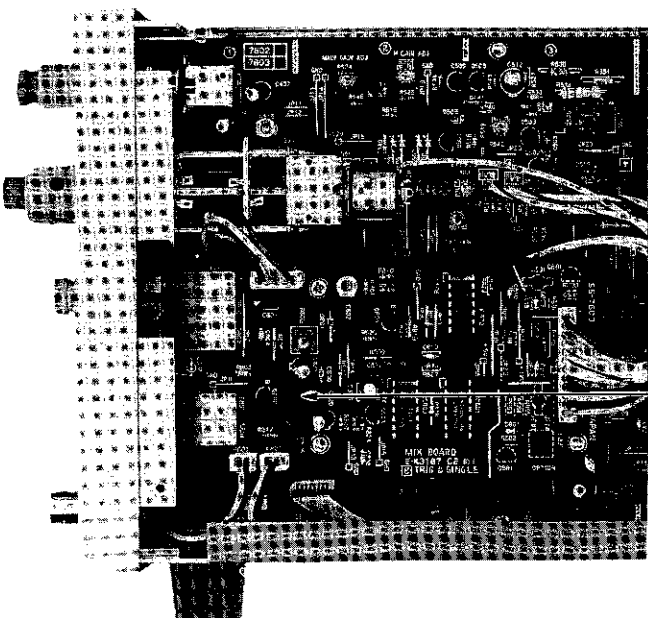
4-10-1-1 CH1, CH2, CH3 Triggering (SS-5705A/5706A)

Item	Description															
Rating	(+10°C to +35°C) The values parenthesized apply to SS-5705A. <table><tr><th rowspan="2">Triggering frequency</th><th colspan="2">Maximum sensitivity</th></tr><tr><th>CH1, CH2</th><th>CH3</th></tr><tr><td rowspan="2">DC to 5 MHz</td><td>A : 0.5 div.</td><td>A : 1.0 div.</td></tr><tr><td>B : 0.7 div.</td><td>B : 1.5 div.</td></tr><tr><td rowspan="2">5 MHz to 30(40)MHz</td><td>A : 1.5 div.</td><td>A : 3.0 divs.</td></tr><tr><td>B : 2.0 divs.</td><td>B : 4.0 divs.</td></tr></table> FIX (SS-5705A only) 1.0 div. at 100 Hz to 5 MHz (B : 1.5 div.) 0.2 div. at 5 MHz to 20 MHz (B : 2.5 divs.) < Note > A : A-sweep trigger B : B-sweep trigger	Triggering frequency	Maximum sensitivity		CH1, CH2	CH3	DC to 5 MHz	A : 0.5 div.	A : 1.0 div.	B : 0.7 div.	B : 1.5 div.	5 MHz to 30(40)MHz	A : 1.5 div.	A : 3.0 divs.	B : 2.0 divs.	B : 4.0 divs.
Triggering frequency	Maximum sensitivity															
	CH1, CH2	CH3														
DC to 5 MHz	A : 0.5 div.	A : 1.0 div.														
	B : 0.7 div.	B : 1.5 div.														
5 MHz to 30(40)MHz	A : 1.5 div.	A : 3.0 divs.														
	B : 2.0 divs.	B : 4.0 divs.														
Connecting																
Setting and Procedure	1. Apply a 1 kHz sine wave to CH1 INPUT and display the amplitude by 4 dives, at the screen center. 2. Set LEVEL to the center and adjust with 1R49 CH1 TRIG DC BAL (refer to Figure 4-7-3-1.) so that the sweep start point will be triggered in the same position when COUPLING is switched DC/AC. 3. Set VERT MODE to CH2, apply the 1 kHz sine wave to CH2 INPUT, and display the amplitude by 4 divs. at the screen center. 4. Similarly to in 2 above, adjust with 2R37 CH2 TRIG DC BAL (refer to Figure 4-7-3-1.) so that the sweep start point will be triggered in the same position when COUPLING is switched DC/AC. —— FIX Mode —— (SS-5705A only) 5. Adjust with 6R05 FIX ADJ (refer to Figure 4-7-2.) so that the amplitude will be displayed symmetrically from the horizontal center line position of the scale when SWEEP MODE is set to LEVEL FIX and the slope is switched +/- . Also, check that the trigger point does not change even if LEVEL is turned.															

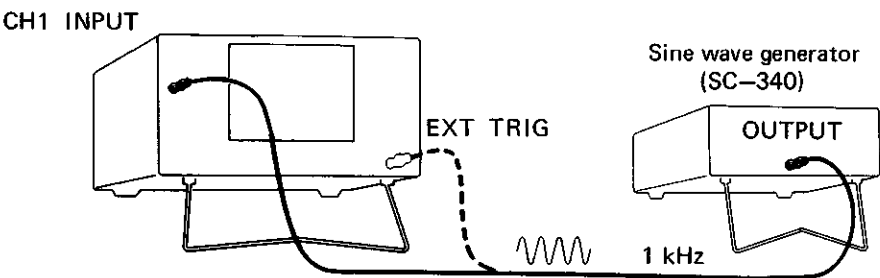
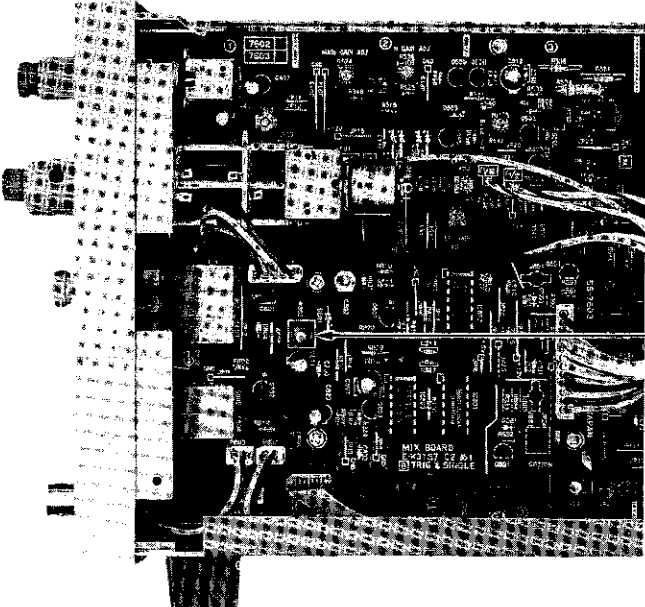
4-10-1-1 CH1, CH2, CH3 Triggering (SS-5705A/5706A) (continued)

Item	Description
Setting and Procedure	6. Set VERT MODE to TRI, apply the 1 kHz sine wave to CH3 INPUT, and display the amplitude by 4 divs. at the screen center. 7. Similarly to in 2 above, adjust with 5R22 CH3 LEVEL (refer to Figure 4-7-1-1.) so that the sweep start point will be triggered in the same position when COUPLING is switched DC/AC. 8. Check CH1, CH2 and CH3 for A- and B-sweep trigger with the respective amplitudes corresponding to the specified triggering frequency. * When VERT MODE is switched to CH1, CH2 or TRI, switch SOURCE to CH1, CH2 or CH3 as well.

4-10-1-2 LEVEL Center (SS-5702A/5703A)

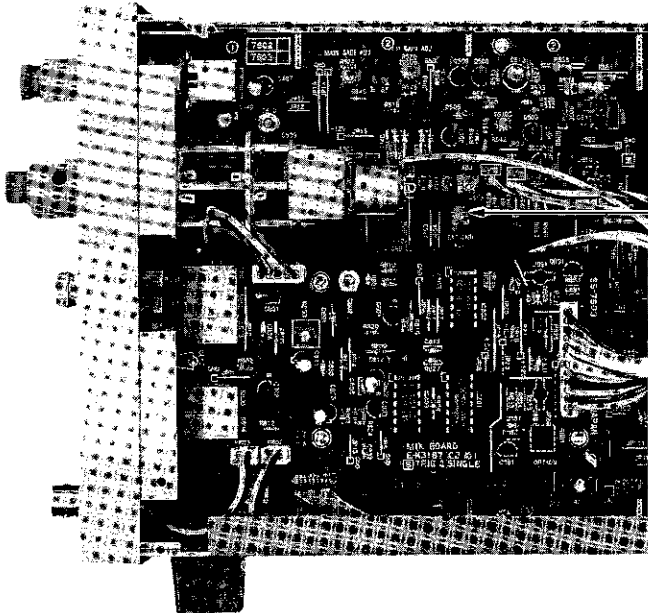
Item	Description
Connecting	CH1 INPUT 
Procedure	1. Apply a 1 kHz sine wave to CH1 INPUT and display the amplitude by 6 divs. at the screen center. 2. Set LEVEL to the center and adjust with 4R408 LEVEL CENTER (refer to below figure.) so that the amplitude will be displayed symmetrically from the horizontal center line position of the scale when the slope is switched +/-.
Adjustment location	Right side: 

4-10-2 FIX (SS-5703A only)

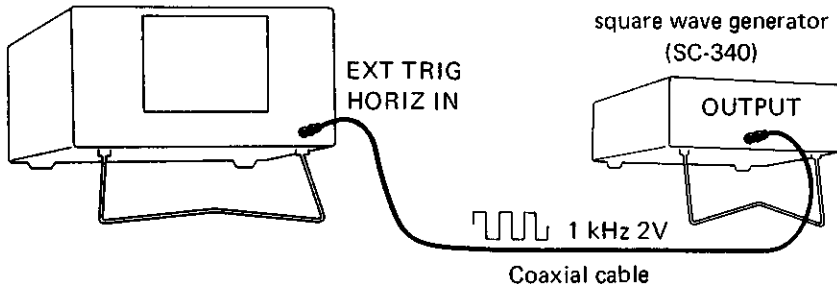
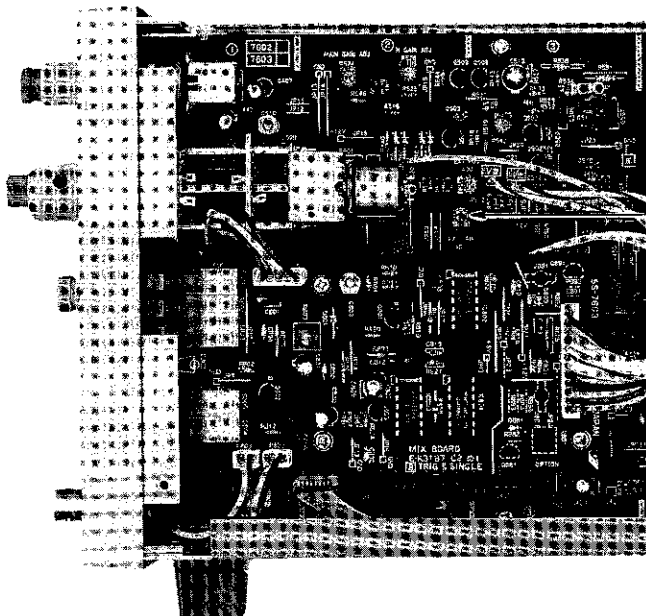
Item	Description
Rating	100 Hz to 5 MHz Internal trigger : Screen amplitude 1 div. External trigger : Input voltage 1 Vp-p.
Connecting	 CH1 INPUT EXT TRIG Sine wave generator (SC-340) OUTPUT 1 kHz
Setting and Procedure	1. Apply a 1 kHz sine wave to CH1 INPUT and display the amplitude by 1 div. at the screen center. 2. Press the FIX key to specify FIX. 3. Check that the amplitude is displayed symmetrically from the horizontal center line position of the scale when the slope is switched +/-. 4. Check that the triggering point does not change if the LEVEL knob is turned. 5. When the distance from the horizontal center line is great when the slope is switched, adjust with 8R803 FIX ADJ (refer to the below figure.).
Adjustment location	Right side:  8 R 803 FIX ADJ

4-11 EXTERNAL SWEEP (SS-5702A/5703A)

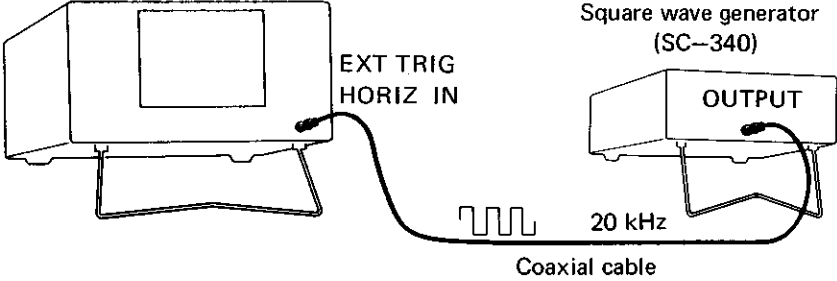
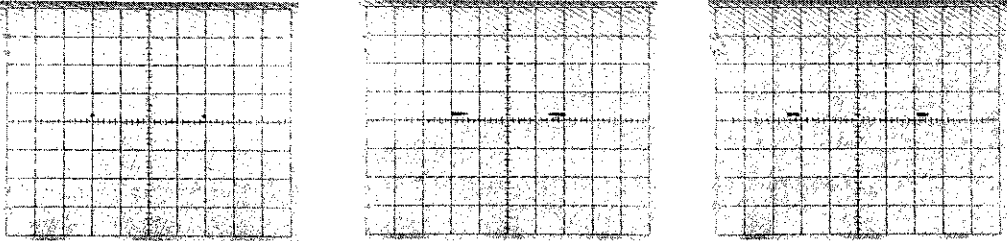
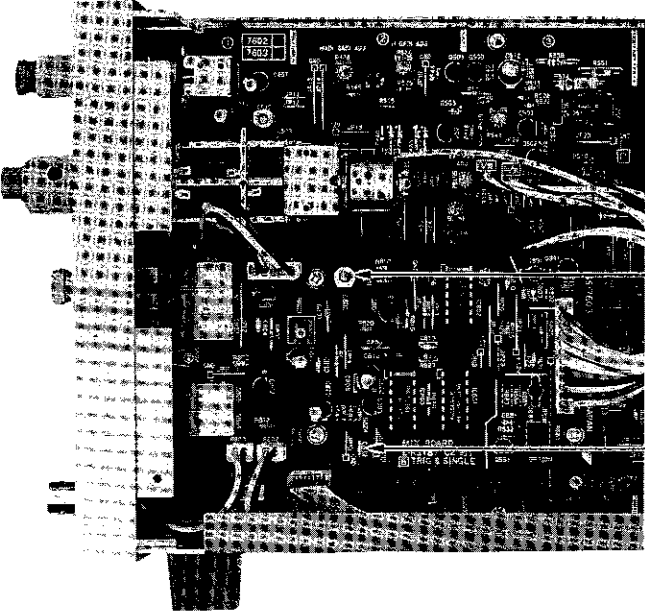
4-11-1 POSITION Center

Item	Description
Setting and Procedure	1. Set SOURCE to EXT. 2. Set SEC/DIV to 1 mSEC, and the sweep start point to the left side of the scale. (5 divs. to the left from the center line of the scale) 3. Adjust with 5R512 EXT POS (refer to the below figure.) so that the trace position will be at the screen center when SEC/DIV is set to X-Y.
Adjustment location	Right side:  5 R 510 EXT

4-11-2 Sensitivity

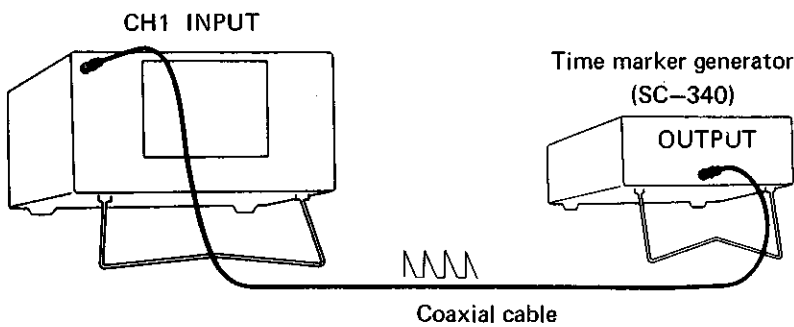
Item	Description
Rating	0.5 V/div. $\pm 4\%$
Connecting	
Setting	SOURCE : EXT SEC/DIV : X – Y
Procedure	1. Apply the sine wave of 1 kHz and 2 V to the HORIZ IN connector. 2. Adjust with 5R510 EXT GAIN (refer to the below figure.) so that the horizontal amplitude on the screen will be 4 divs. $\pm 5\%$.
Adjustment location	Right side: 

4-11-3 Attenuator Phase

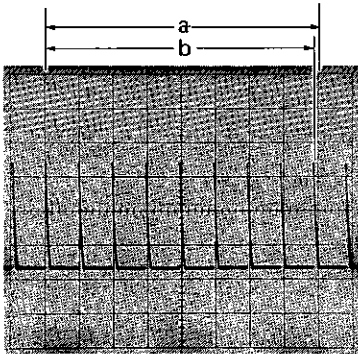
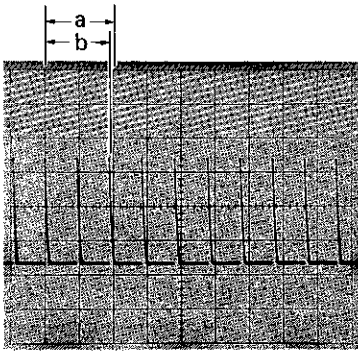
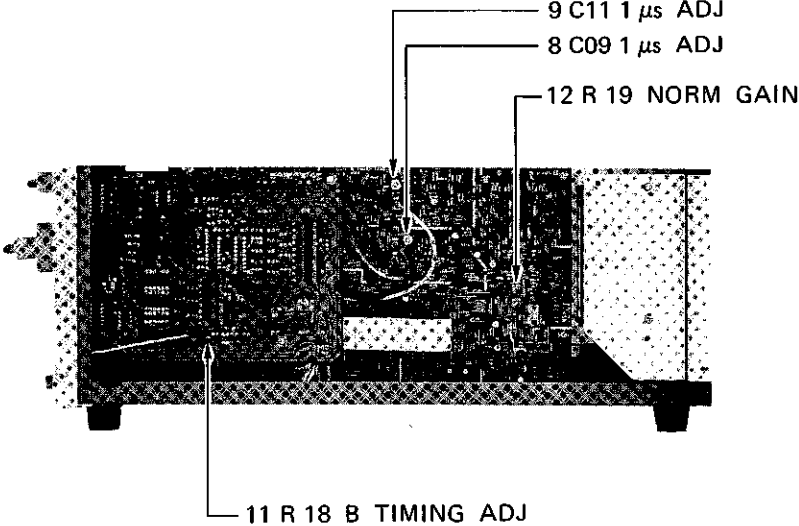
Item	Description
Connecting	
Setting	SOURCE : EXT SEC/DIV : X - Y
Procedure	1. Apply a 20 kHz sine wave to the HORIZ IN connector. 2. Adjust the output voltage of the sine wave and display the horizontal amplitude by 4 divs. at the screen center. 3. Adjust with 4C432 (SS-5702A) and 8C802 (SS-5703A) (refer to the below figure.) so that the proper condition can be obtained as shown in the below screen waveform figure.
Waveform on screen	
Adjustment location	Right side:  8 C 802 (For SS-5703A) 4 C 432 (For SS-5702A)

4-12 HORIZONTAL DEFLECTION SYSTEM

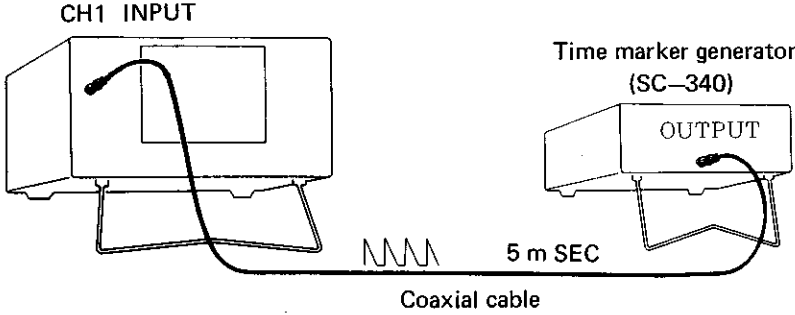
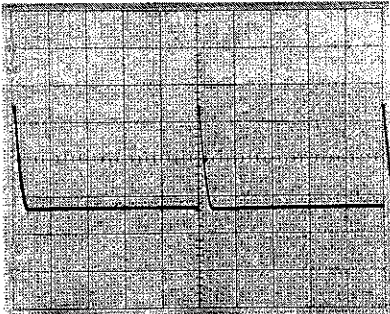
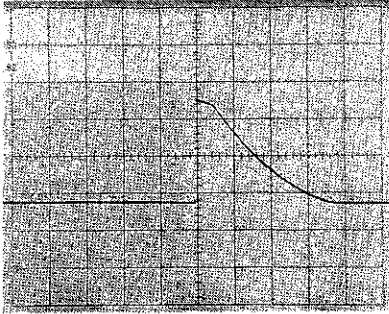
4-12-1-1 A/B Sweep Rate (SS-5705A/5706A)

Item	Description
Rating	A sweep rate : Accuracy I (at screen center 8 divs.) 0.1 μs/div. to 0.5 s/div. $\pm 2\%$ Accuracy II (at any 2 divs. within screen center 8 divs.) $\pm 5\%$ B sweep rate : Accuracy I (at screen center 8 divs.) 0.1 μs/div. to 50 ms/div. $\pm 3\%$
Connecting	 CH1 INPUT Time marker generator (SC-340) OUTPUT Coaxial cable
Setting and Procedure	—— A Sweep Rate —— 1. Apply a 0.1ms time marker to CH1 INPUT. 2. Set A SEC/DIV to 0.1mSEC and check for Accuracy I and II. (Refer to the screen waveforms on the next page.) 3. If an error exceeds the limit, adjust with 12R19 NORM GAIN (refer to the figure on the next page.) so that Accuracy I will stay within $\pm 2\%$. 4. Switch the time marker to 1μs, set A SEC/DIV to 1μSEC, and check for Accuracy I and II. 5. If an error exceeds the limit, adjust with 8C09 1μs ADJ (refer to the figure on the next page.) so that Accuracy I will stay within $\pm 2\%$. 6. Switch over A SEC/DIV and the time marker, and check for other ranges. —— B Sweep Rate —— 7. Set HORIZ DISPLAY to B, A SEC/DIV to 0.2mSEC, and B SEC/DIV to 0.1mSEC. 8. Set the time marker to 0.1ms and check for Accuracy I and II. 9. If an error exceeds the limit, adjust with 11R18 B TIMING ADJ (refer to the figure on the next page.) so that it will be within $\pm 2\%$. 10. Switch the time marker to 1μs, set A SEC/DIV to 2μSEC and B SEC/DIV to 1μSEC, and check for Accuracy I and II. 11. If an error exceeds the limit, adjust with 9C11 1μs ADJ (refer to the figure on the next page.) so that it will be within $\pm 3\%$. 12. Switch over A SEC/DIV, B SEC/DIV and the time marker, and check for other ranges.

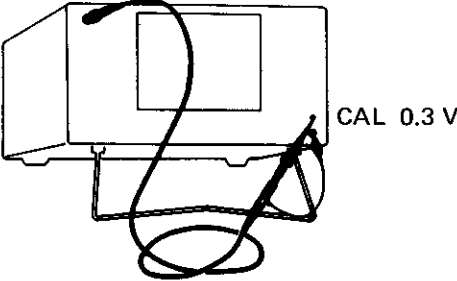
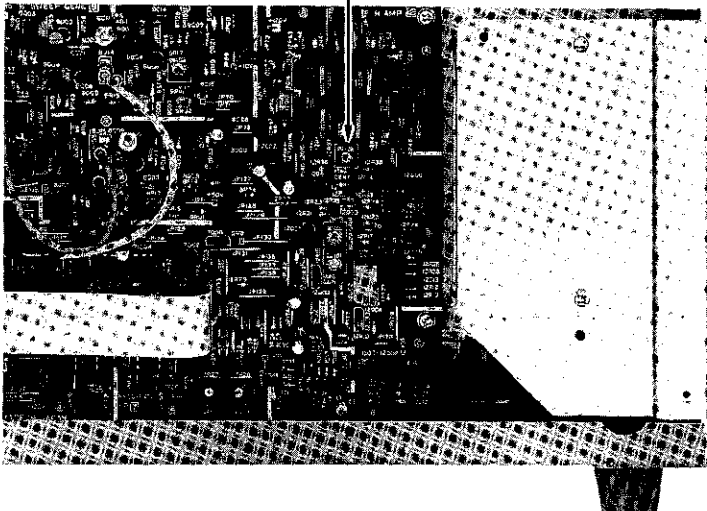
4-12-1-1 A/B Sweep Rate (SS-5705A/5706A) (continued)

Item	Description	
Waveform on screen	Viewing Accuracy I :	Viewing Accuracy II :
	 Error ratio at sweep = $\frac{a-b}{a} \times 100$ (%) Where, a: Effective horizontal surface total scale length (8 divs.) b: Measured value of the time marker corresponding to "a"	 Error ratio at sweep = $\frac{a-b}{a} \times 100$ (%) Where, a: Any 2 divs. on the effective horizontal surface b: Measured value of the time marker corresponding to "a"
Adjustment location	Right side:  9 C11 1 μs ADJ 8 C09 1 μs ADJ 12 R 19 NORM GAIN 11 R 18 B TIMING ADJ	

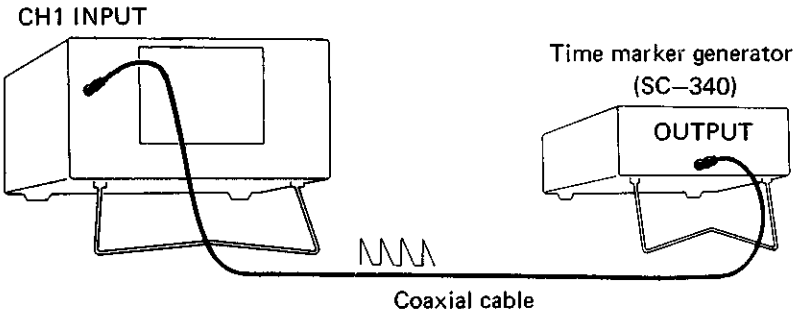
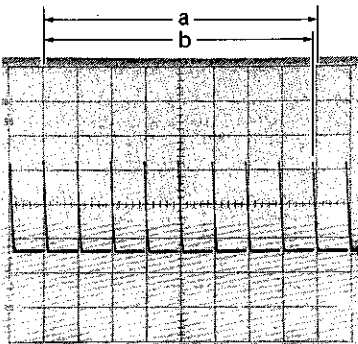
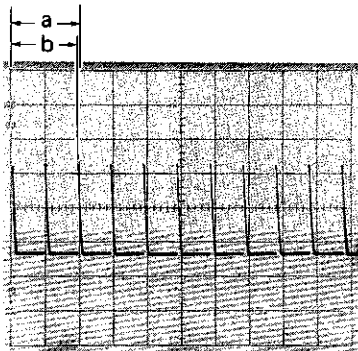
4-12-1-2 Sweep Magnification Position (SS-5702A/5703A)

Item	Description
Connecting	 CH1 INPUT Time marker generator (SC-340) OUTPUT 5 m SEC Coaxial cable
Setting	SEC/DIV : 1 mSEC VERT MODE : CH1
Procedure	1. Apply a 5 mSEC time marker to CH INPUT. 2. Display 3 pulses on the screen and adjust the 2nd one to the vertical center line of the scale. 3. Pull the PULL x 10 MAG. When this is done, adjust with 5R542 MAG BAL (refer to Figure 4-7-1-2) so that the center pulse does not move.
Waveform on screen	X 10 MAG pushed:  X 10 MAG pulled: 

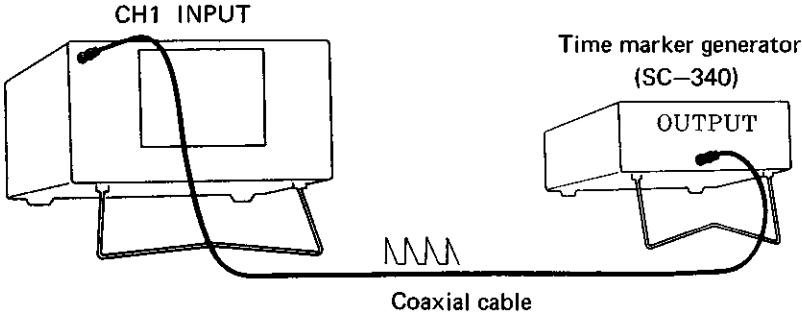
4-12-2-1 Sweep Magnification Position (SS-5705A/5706A)

Item	Description
Connecting	CH1 INPUT  CAL 0.3 V
Setting and Procedure	1. SET A SEC/DIV to 0.1mSEC. 2. With the accessory probe, apply CAL 0.3 V to CH1 INPUT. 3. With the POSITION knob on the horizontal axis, set the sweep start point in the vertical center line of the scale. 4. Pull PULL x 5 MAG (SS-5706A) and FINE PULL x 10 MAG (SS-5705A), and when this is done, check that the sweep start point does not move. 5. If it moves, adjust with 12R37 MAG CENT (refer to the below figure.).
Adjustment location	Right side:  12 R 37 MAG CENT

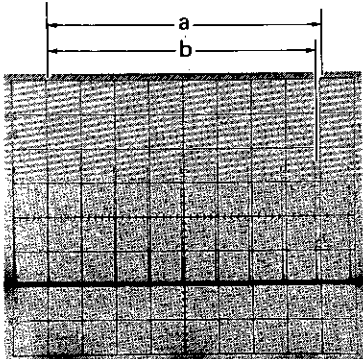
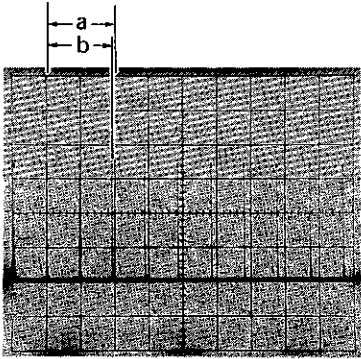
4-12-2-2 Sweep Rate (SS-5702A/5703A)

Item	Description
Rating	Accuracy I : (at the screen center 8 divs.) $0.5\mu\text{s}/\text{div. to } 5 \text{ ms}/\text{div. } \pm 4\%$ $10\text{ms}/\text{div. to } 0.2\text{s}/\text{div. } \pm 5\%$ Accuracy II : (at any 2 divs. within the screen center 8 divs.) $0.5\mu\text{s}/\text{div. to } 0.2\text{s}/\text{div. } \pm 10\%$
Connecting	
Setting	SEC/DIV : 1 mSEC VERT MODE : CH1
Procedure	1. Apply a 1 mSEC time marker to CH1 INPUT. 2. Check for Accuracy I and II. (Refer to the below figure.) 3. Switch over the time marker as well together with SEC/DIV from 0.2SEC to $50\mu\text{SEC}$, and check Accuracy I and II. If an error exceeds the limit, adjust with 5R526 H GAIN ADJ (refer to Figure 4-7-1-2.). 4. If an error exceeds the limit when SEC/DIV is switched from $20\mu\text{SEC}$ to $0.5\mu\text{SEC}$, adjust with 5C510 (refer to Figure 4-7-1-2.).
Waveform on screen	Viewing Accuracy I:  Error ratio at sweep = $\frac{a-b}{a} \times 100 (\%)$ Where, a: Effective horizontal surface total scale length (8 divs.) b: Measured value of the time marker corresponding to "a" Viewing Accuracy II:  Error ratio at sweep = $\frac{a-b}{a} \times 100 (\%)$ Where, a: Any 2 divs. on the effective horizontal surface b: Measured value of the time marker corresponding to "a"

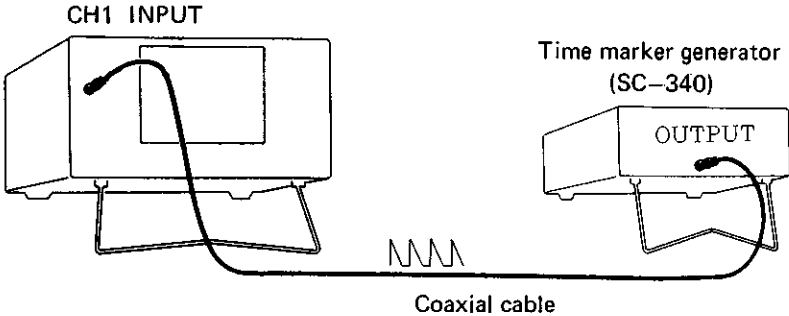
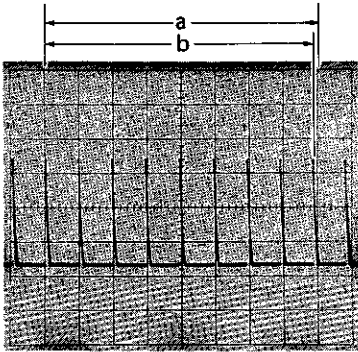
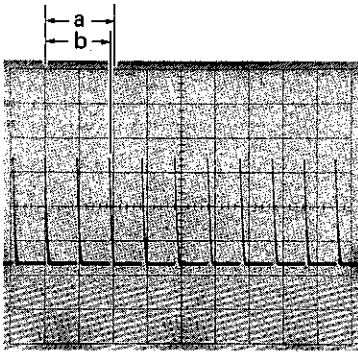
4-12-3-1 Sweep Rate at Sweep Magnification (SS-5705A/5706A)

Item	Description
Rating	SS-5706A X 5 MAG Accuracy I (at the screen center 8 divs.) 20ns/div. to 0.1s/div. ±4% Accuracy II (at any 2 divs. within the screen center 8 divs.) 20ns/div. to 0.1μs/div. ±9% 0.2μs/div. to 0.1s/div. ±5% SS-5705A X 10 MAG Accuracy I (at the screen center 8 divs.) 10ns/div. to 50ms/div. ±4% Accuracy II (at any 2 divs. within the screen center 8 divs.) 10ns/div to 50ns/div. ±9% 100ns/div to 50ms/div. ±5%
Connecting	 CH1 INPUT Time marker generator (SC-340) OUTPUT Coaxial cable
Setting and Procedure	1. Apply a time marker output signal to CH1 INPUT. 2. Pull x 5 (10) MAG and check for Accuracy I and II. 3. If an error exceeds the limit, adjust with 12R15 MAG GAIN (refer to Figure 4-7-1-1.) so that Accuracy I will be within ±4%.

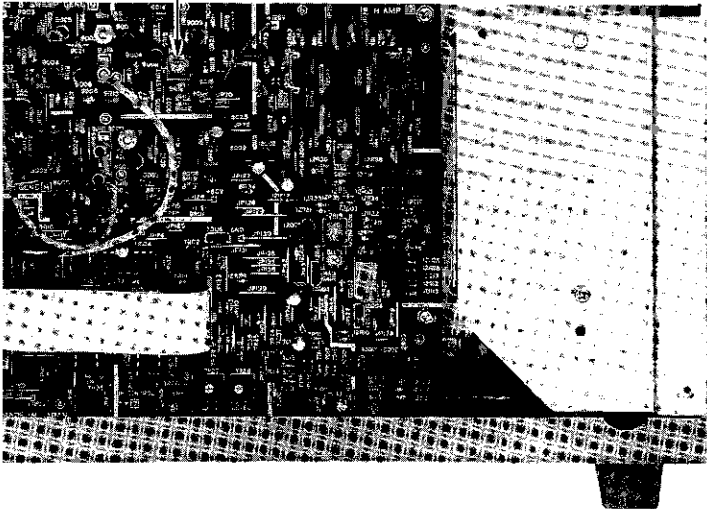
4-12-3-1 Sweep Rate at Sweep Magnification (SS-5705A/SS-5706A) (continued)

Waveform on screen	Viewing Accuracy I:	Viewing Accuracy II:
		
	Error ratio at sweep = $\frac{a-b}{a} \times 100$ (%) Where, a: Effective horizontal surface total scale length (8 divs.) b: Measured value of the time marker corresponding to "a"	Error ratio at sweep = $\frac{a-b}{a} \times 100$ (%) Where, a: Any 2 divs. on the effective horizontal surface b: Measured value of the time marker corresponding to "a"

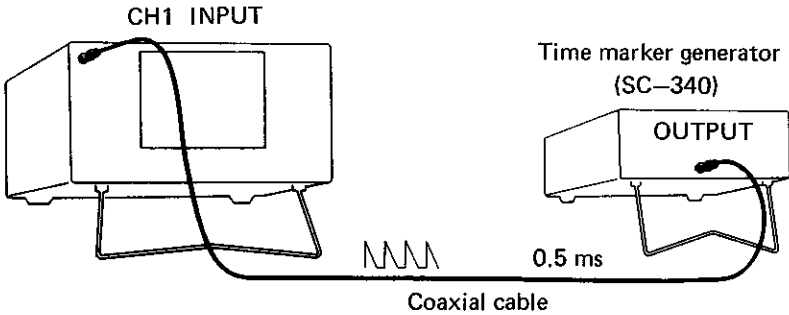
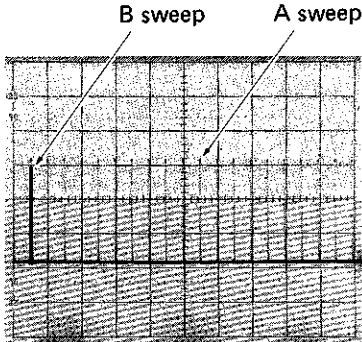
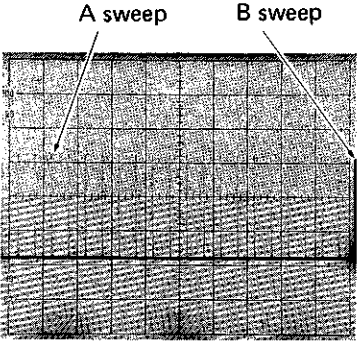
4-12-3-2 Sweep Rate at Sweep Magnification (SS-5702A/5703A)

Item	Description	
Rating	Accuracy I: (at the screen center 8 divs.) 50ns/div. to 20ms/div. ±5% Accuracy II: (at any 2 divs. within the screen center 8 divs.) 50ns/div. ±15% 0.1μs/div. to 20ms/div. ±10%	
Connecting		
Setting	Pull the PULL X10 MAG knob.	
Procedure	1. Apply a 0.1 mSEC time marker to CH1 INPUT. 2. Set SEC/DIV to 1mSEC and pull the PULL x 10 MAG knob, and check Accuracy I and II. (Refer to the below figure.) 3. If an error exceeds the limit, adjust with 5R524 MAG GAIN (refer to Figure 4-7-1-2.). 4. Adjust to each range of SEC/DIV, switch over the time marker and check for Accuracy I and II.	
Waveform on screen	Viewing Accuracy I at magnification  Error ratio at sweep = $\frac{a-b}{a} \times 100$ (%) Where, a: Effective horizontal surface total scale length (8 divs.) b: Measured value of the time marker corresponding to "a"	Viewing Accuracy II at magnification  Error ratio at sweep = $\frac{a-b}{a} \times 100$ (%) Where, a: Any 2 divs. on the effective horizontal surface b: Measured value of the time marker corresponding to "a"

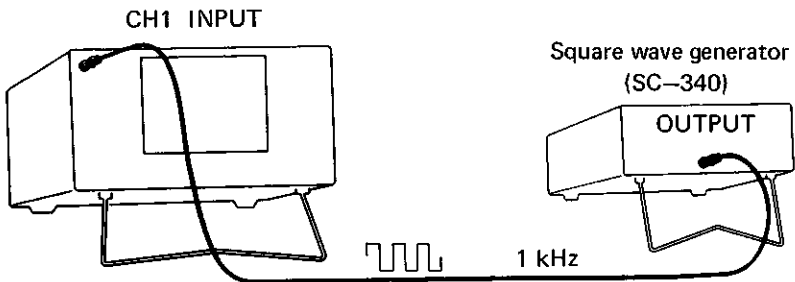
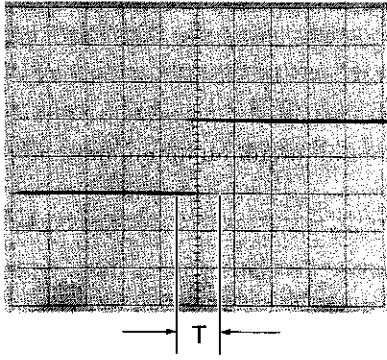
4-12-4 B-Sweep Start Point (SS-5705A/5706A)

Item	Description
Setting	A - B SEC/DIV : 0.1mSEC PULL X 5 (10) MAG : PULL SWEEP MODE : AUTO HORIZ DISPLAY : A TRIG'D - RUNS AFTER DELAY : RUNS AFTER DELAY
Procedure	1. With POSITION knob on the horizontal axis, set the A-sweep start point to the left-end vertical line of the scale. 2. Set HORIZ DISPLAY to B. When this is done, check whether the B-sweep start point coincides with the left-end vertical line. 3. If not, adjust with 9R17 B START ADJ (refer to the below figure.).
Adjustment location	Right side: 

4-12-5 Time Lag Measurement (SS-5705A/5706A)

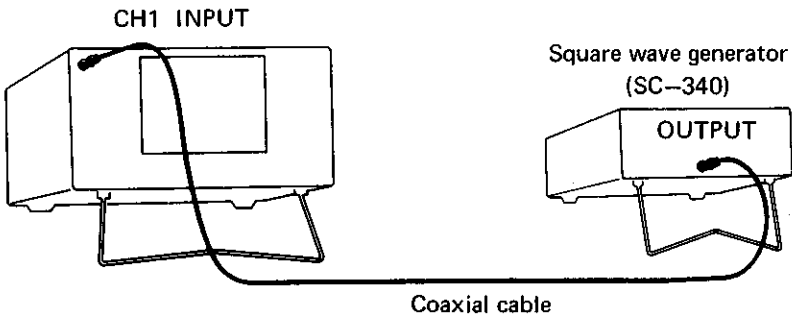
Item	Description	
Connecting		
Setting	HORIZ DISPLAY : A INTEN TRIG'D – RUNS AFTER DELAY : RUNS AFTER DELAY A SEC/DIV : 1 mSEC B SEC/DIV : 5 μSEC	
Procedure	1. Apply a 0.5 ms time marker to CH1 INPUT. 2. With the POSITION knob on the horizontal axis, set the A-sweep start point (1st pulse) to the left end of the vertical scale. 3. Adjust with 6R15 START ADJ (refer to Figure 4-7-2.) so that the B-sweep start point will be at the 2nd pulse (0.5 div. position) from the left end, when the DELAY POSITION knob is turned fully to the left. 4. Adjust with 6R13 STOP ADJ (refer to Figure 4-7-2.) so that the B-sweep start point will be at the 22nd pulse (10.5 div. position) from the left end, when the DELAY POSITION knob is turned fully to the right. 5. Repeat the adjustments in 3 and 4 above.	
Waveform on screen	DELAY POSITION knob turned fully to the left:  A SEC/DIV 1 mSEC, B SEC/DIV 5 μSEC Input signal: 0.5 mSEC pulse waveform	DELAY POSITION knob turned fully to the right:  A SEC/DIV 1 mSEC, B SEC/DIV 5 μSEC Input signal: 0.5 mSEC pulse waveform

4-12-6 Delay Jitter (SS-5705A/5706A)

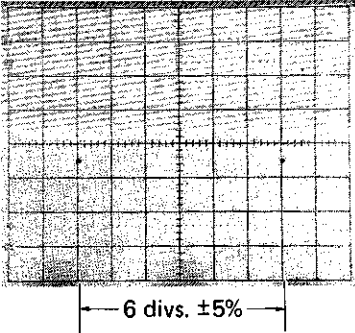
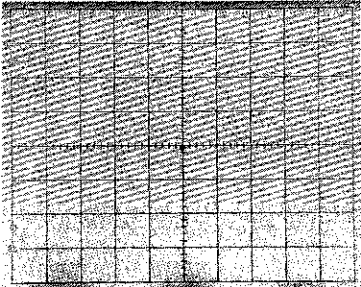
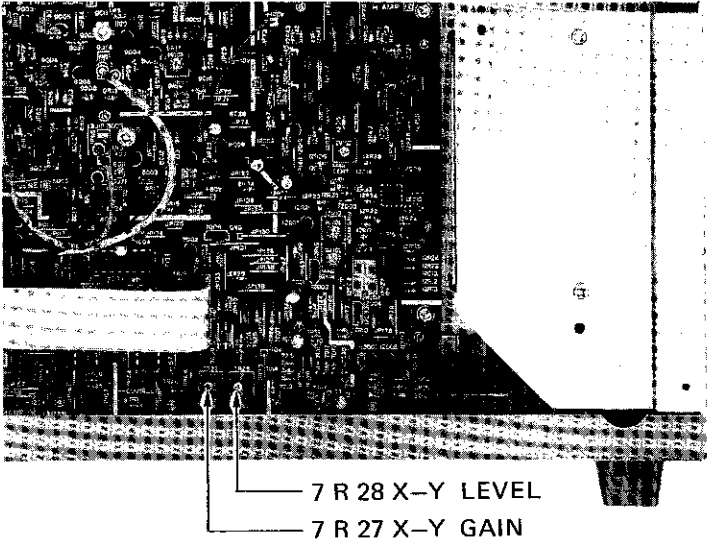
Item	Description
Rating	Less than 1/20,000
Connecting	
Setting	A SEC/DIV : 0.2 mSEC B SEC/DIV : 0.1 μSEC HORIZ DISPLAY : B TRIG'D - RUNS AFTER DELAY : RUNS AFTER DELAY
Procedure	1. Apply a 1 kHz square wave to CH1 INPUT, adjust output voltage, and display the amplitude by 2 div. 2. Turn the DELAY POSITION knob, observe the rise part of the waveform, and check whether the then jitter is within 1 div.
Waveform on screen	 T = Should be within 1 div.

4-13 X – Y OPERATION

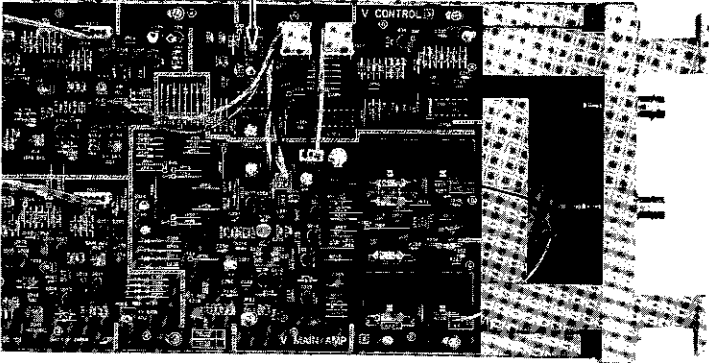
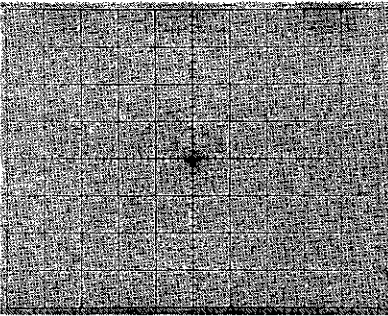
4-13-1-1 Sensitivity and Trace Position (SS-5705A/5706A)

Item	Description
Rating	Y axis : Same as CH2 X axis : $\pm 5\%$ of the reading of CH1 VOLTS/DIV (at X 1)
Connecting	 CH1 INPUT Square wave generator (SC-340) OUTPUT Coaxial cable
Setting	VERT MODE : X – Y CH2 GND : ON (GND)
Procedure	1. Apply the square wave of 1kHz and 30mV to CH1 INPUT. 2. Check whether the horizontal screen amplitude is within 6 divs. $\pm 5\%$. 3. If an error exceeds the limit, adjust with 7R27 X–Y GAIN (refer to the figure on the next page.). 4. Set VERT MODE to DUAL and CH1 GND to ON (GND). Set the CH1 and CH2 trace to the screen center, using the POSITION knob on the vertical axis, and set the sweep start point to the left end of the scale, using the POSITION knob on the horizontal axis. 5. Adjust with 7R28 X–Y LEVEL (refer to the figure on the next page.) so that the trace will be located at the screen center, when VERT MODE is switched to X–Y again. CAUTIONS • Repeat the adjustments in 3 and 5 above because they are mutually associated. • In the X–Y mode, do not terminate CH1 OUT (rear panel) connector at 50 Ω . It affects X–Y sensitivity, and so on.

4-13-1-1 Sensitivity and Trace Position (SS-5705A/5706A) (continued)

Item	Description
Waveform on screen	Sensitivity adjustment:  6 divs. $\pm 5\%$ Trace position adjustment:  Input signal : Square wave 1 kHz 30 mV
Adjustment location	Right side:  7 R 28 X-Y LEVEL 7 R 27 X-Y GAIN

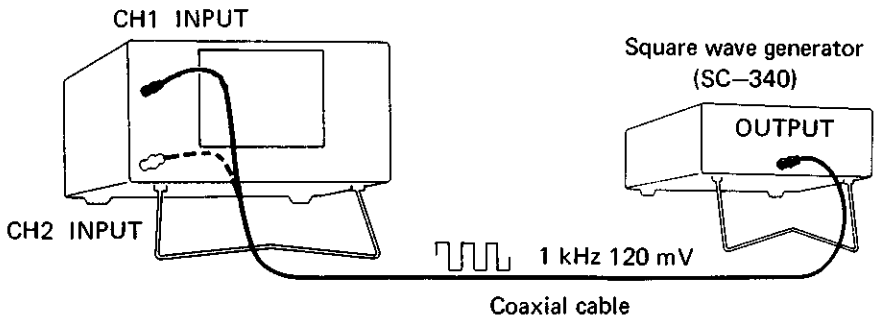
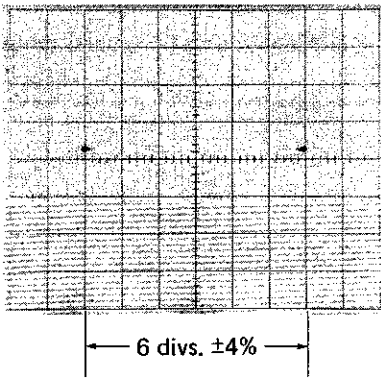
4-13-1-2 POSITION Center (SS-5702A/5703A)

Item	Description
Setting and Procedure	1. Set SEC/DIV to X-Y. 2. Set SOURCE to EXT, and the trace to the screen center. 3. Adjust with 3R304 X-Y POS (refer to the below figure.) so that the trace will not move when SOURCE is switched to CH2.
Adjustment location and waveform on screen	Left side:  Waveform on screen 

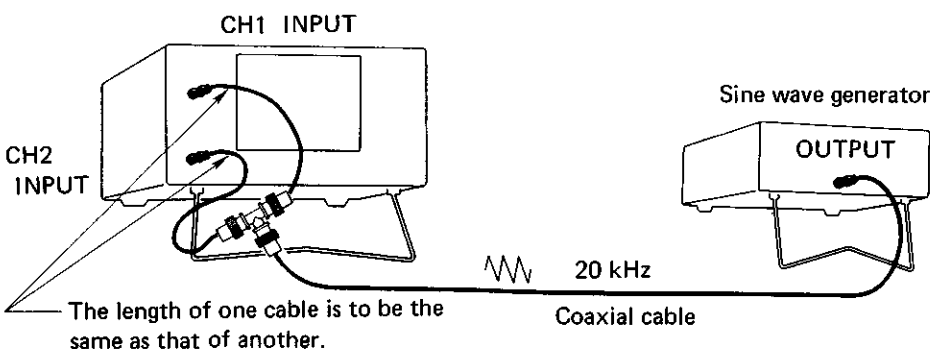
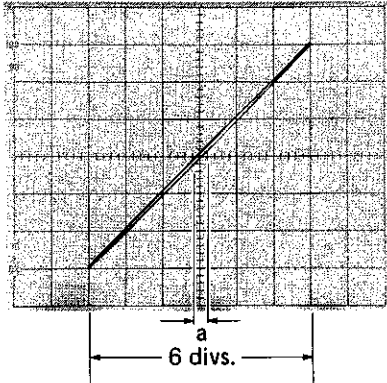
4-13-2-1 Phase Difference (SS-5705A/5706A)

Item	Description
Rating	Within 3° (DC to 50 kHz sine wave)
Connecting	CH1 INPUT CH2 INPUT Sine wave generator (SC-340) OUTPUT 50 kHz 30 mV Coaxial cable The length of one cable is to be the same as that of the another.
Setting	VERT MODE : X - Y VOLTS/DIV (CH1 · 2) : 5 mV
Procedure	1. Apply a 30 mV sine wave to CH1 and CH2 INPUTs. 2. Read "a" of the screen waveform and check that this is 0.3 div. or less.
Waveform on screen	a : Difference on a horizontal center line

4-13-2-2 Sensitivity (SS-5702A/5703A)

Item	Description
Rating	Same as the reading of VOLTS/DIV on the channel specified by SOURCE. Accuracy : $\pm 4\%$: $\pm 8\%$ (PULL X 10 MAG)
Connecting	
Setting	SEC/DIV : X - Y VOLTS/DIV (CH1 · 2) : 20 mV
Procedure	1. Apply a 1 kHz sine wave of 120 mV output voltage to CH1 INPUT. 2. Set SOURCE to CH1 and VERT MODE to CH2. When this is done, adjust with 1R058 X-Y GAIN ADJ (refer to Figure 4-7-3-2.) so that the horizontal screen amplitude on the screen will be within 6 divs. $\pm 4\%$. 3. Apply a 1 kHz sine wave of 120 mV output voltage to CH2 INPUT. 4. Set SOURCE to CH2 and VERT MODE to CH1. When this is done, adjust with 1R158 X-Y GAIN ADJ (refer to Figure 4-7-3-2.) so that the horizontal screen amplitude on the screen will be within 6 divs. $\pm 4\%$. 5. Set VOLTS/DIV to 0.2 V and pull the PULL x 10 MAG knob, and check CH1 and CH2 in the same manner as above.
Waveform on screen	

4-13-3 Phase Difference (SS-5702A/5703A)

Item	Description
Rating	Within 3° (DC to 20 kHz sine wave)
Connecting	 CH1 INPUT CH2 INPUT Sine wave generator OUTPUT 20 kHz Coaxial cable The length of one cable is to be the same as that of another.
Setting	SEC/DIV : X – Y VERT MODE : CH1 SOURCE : CH1
Procedure	1. Apply a 20 kHz sine wave to CH1 and CH2 INPUTs under the identical condition, adjust the output voltage and display the horizontal screen amplitude by 6 divs. on the screen. 2. Read "a" of the screen waveform as shown in the below figure and check that this is within 0.3 div.
Waveform on screen	 6 divs. a

MEMO

Section 5 Schematic Diagrams

SS-5702A/5703A

CH1/CH2 ATT & PRE AMP	1
V MAIN AMP	2
TRIG AMP & V CONTROL	3
TRIG & SWEEP GENERATOR	4
TIMING & H AMP	5
CRT & Z AMP	6
POWER SUPPLY	7
ADDED CIRCUITS	8
CRT CONTROL	9

SS-5702A

BBWSS 24317102
BBWSS 24304102
BBWSS 10103102
BBWSS 20131102
BBWSS 24306102
BBWSS 41033102
BBWSS 08072102
Not available
BBWSS 41039102

SS-5703A

BBWSS 24303102
BBWSS 24304102
BBWSS 10103102
BBWSS 20134102
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SS-5705A/5706A

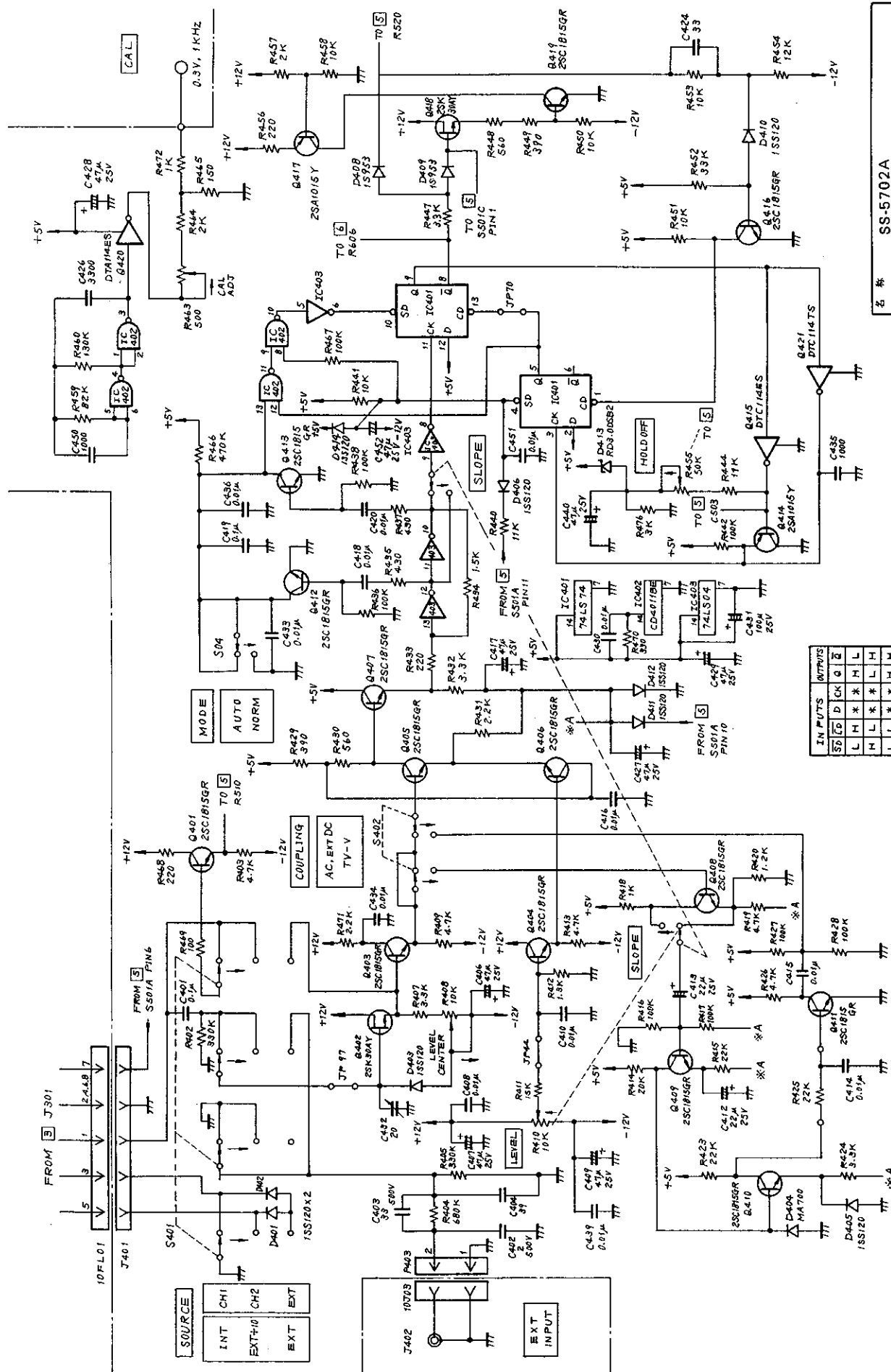
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CH1 PRE AMP	1
CH2 PRE AMP	2
VERT CONTROL	3
V MAIN AMP	4
TRIG GENERATOR	5
H CONTROL-A	6
H CONTROL-B	7
A SWEEP GENERATOR	8
B SWEEP GENERATOR	9
A TIMING	10
B TIMING	11
HORIZ AMP	12
Z AXIS & CRT	13
POWER SUPPLY	14

SS-5705A

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BBWSS 24301102
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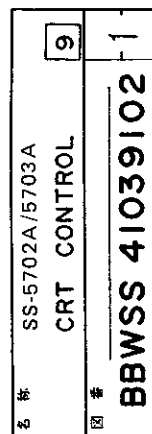
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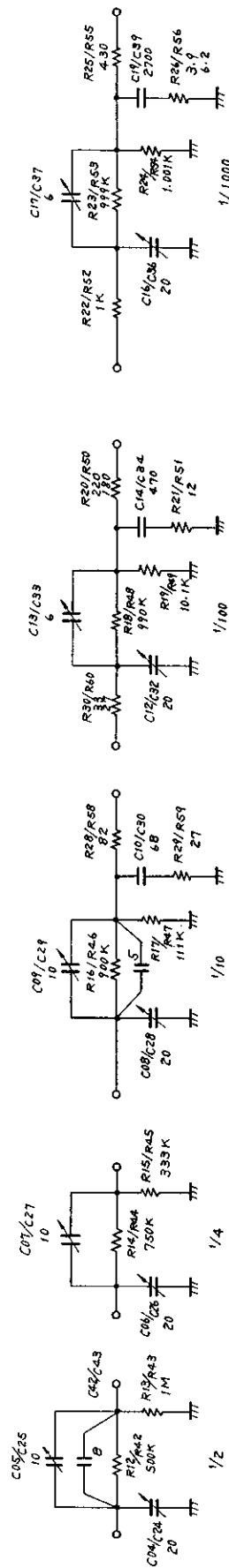
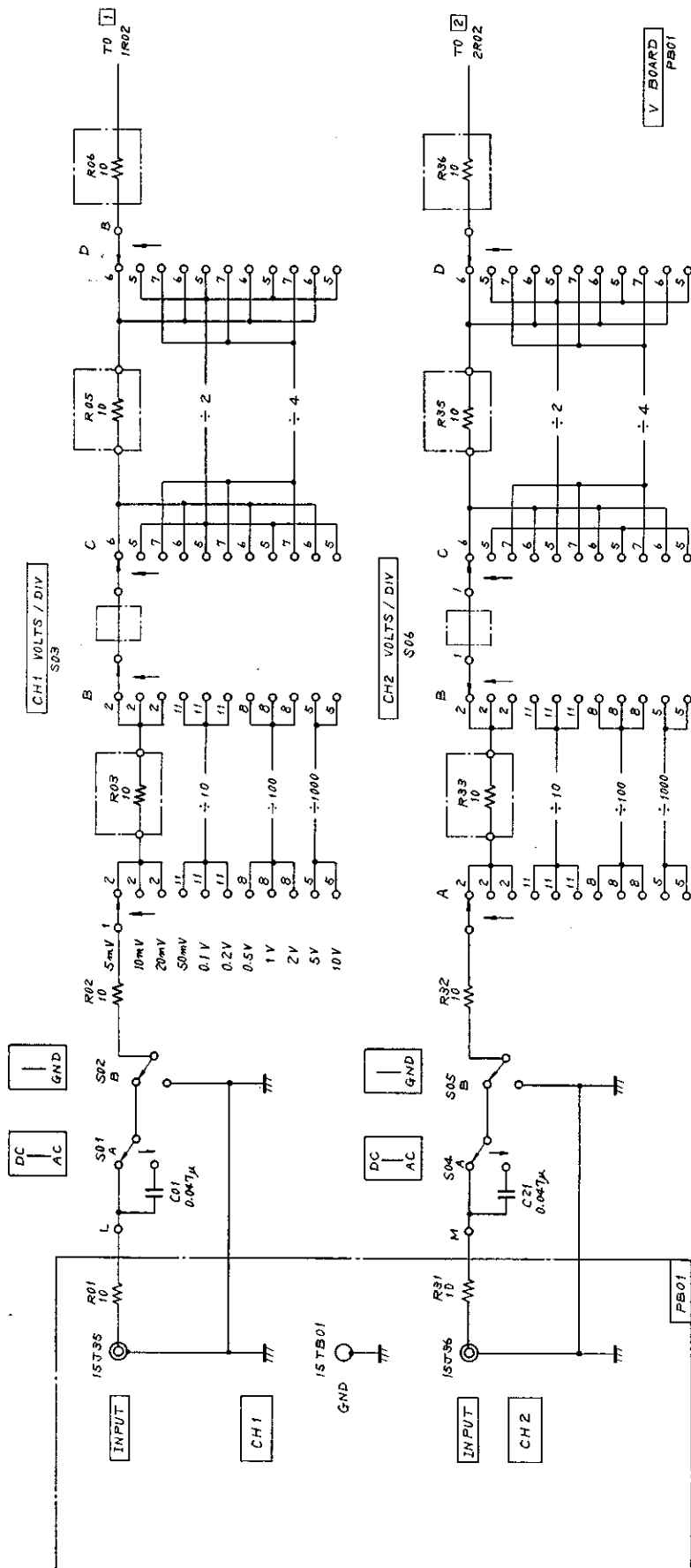
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IN PUTS		OUT PUTS	
SP	CD	CK	Q
L	H	L	H
L	H	L	H
L	H	L	H
L	H	L	H
L	H	L	H
L	H	L	H
L	H	L	H
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L	H	L	H

名 称 SS-5702A
 TRIG & SWEEP GENERATOR 4
 图 号 BWSS 20131102
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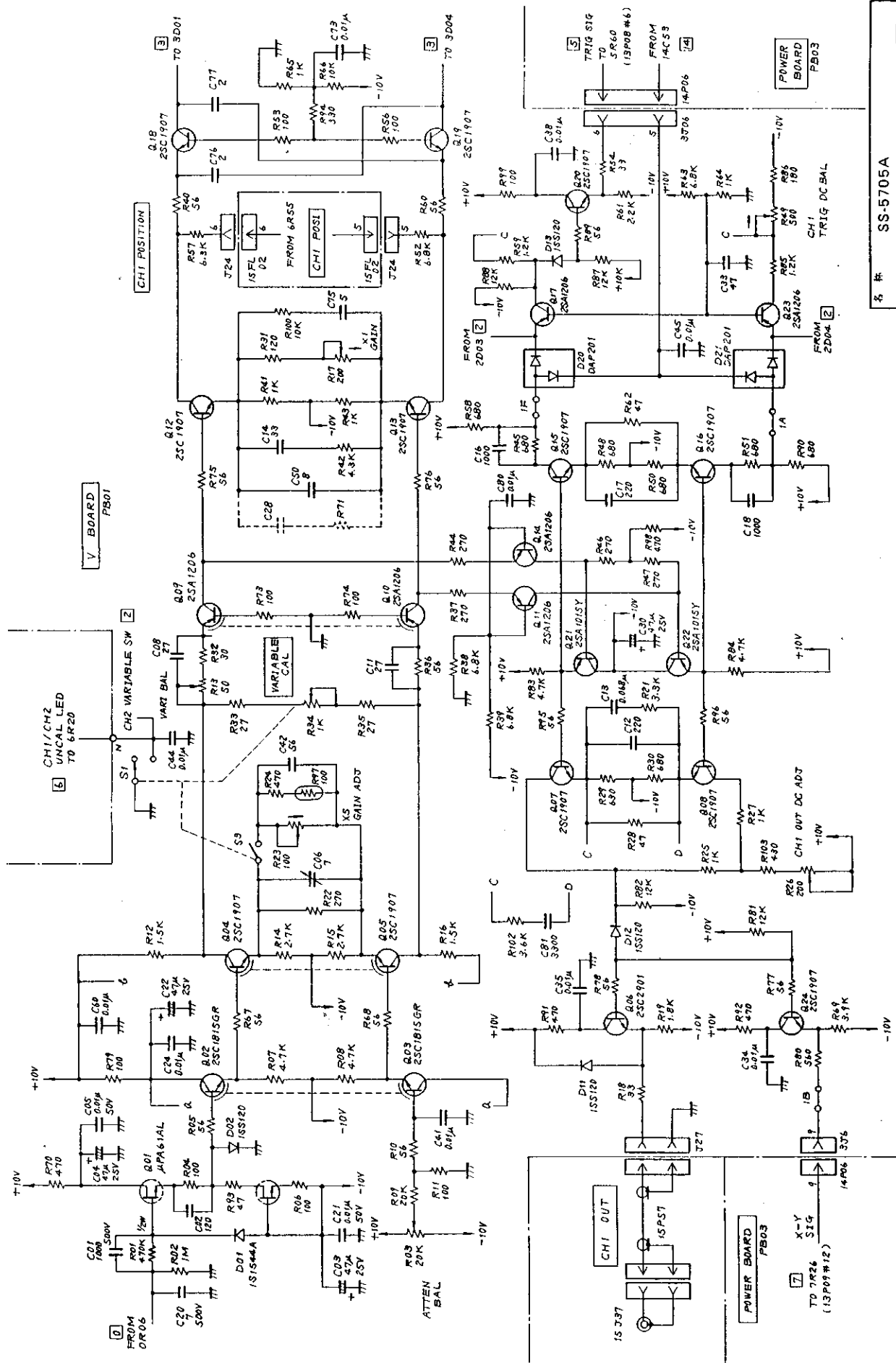
名称 SS-5705A/5706A

CH1 / CH2 ATTENUATOR

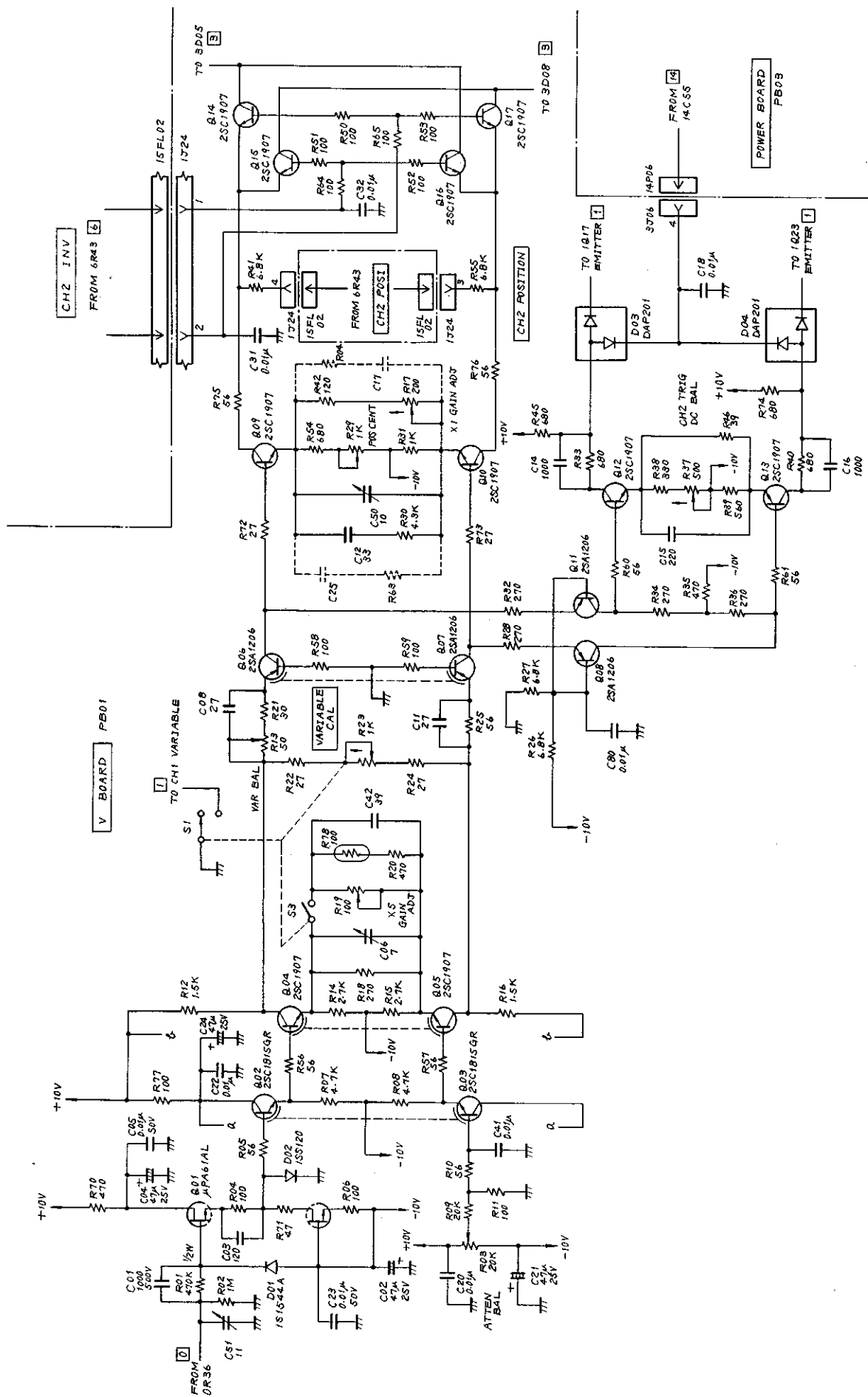
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BBWSS 24295102

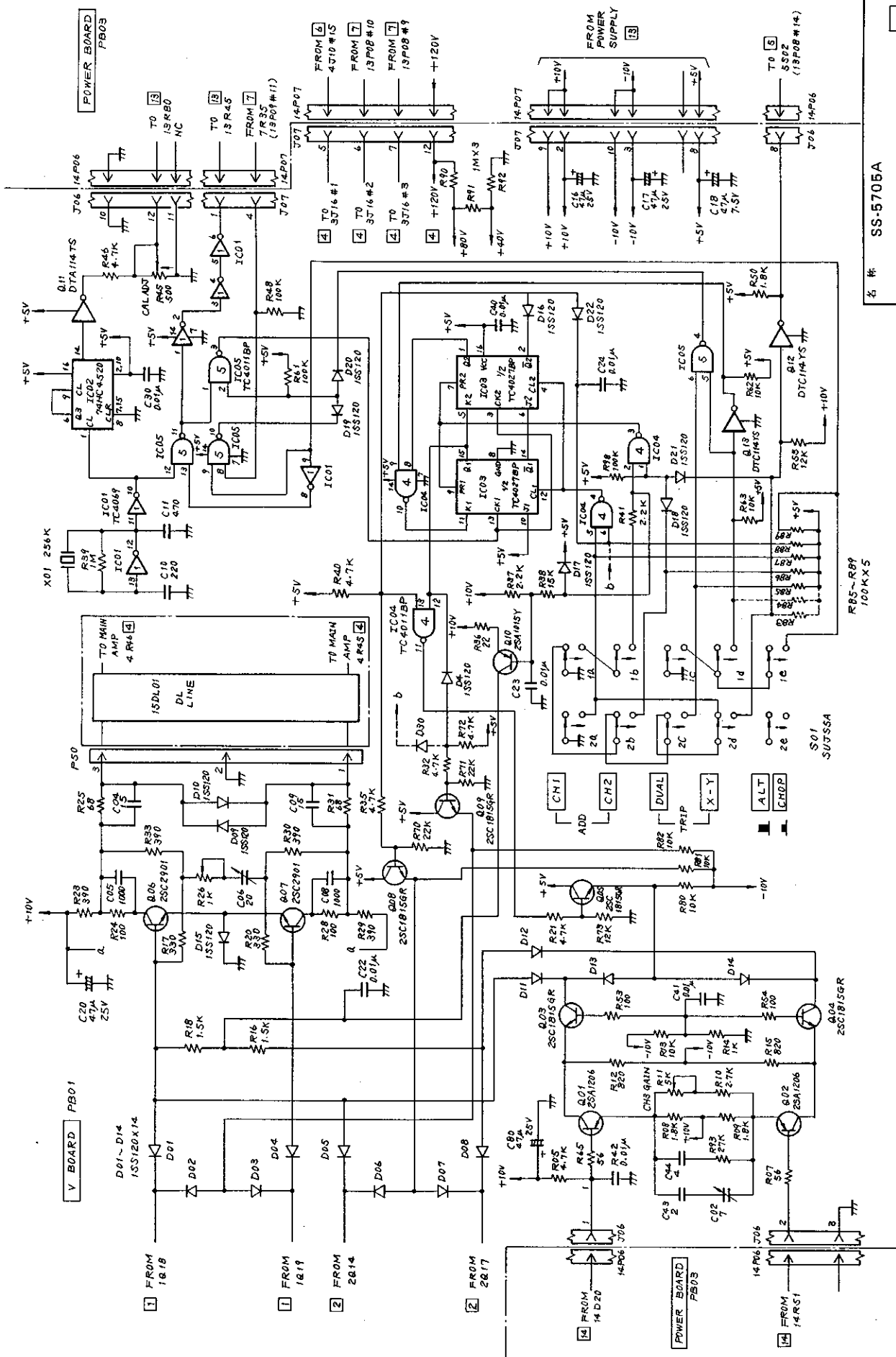
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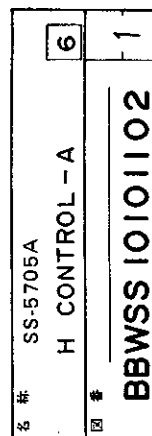
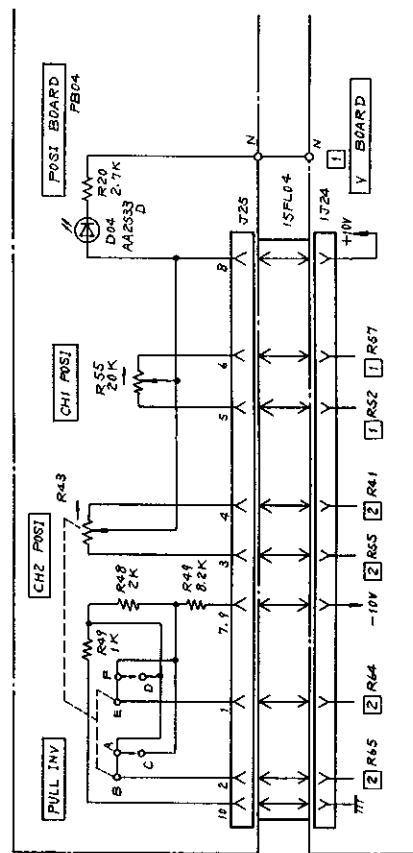
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REVISION	1
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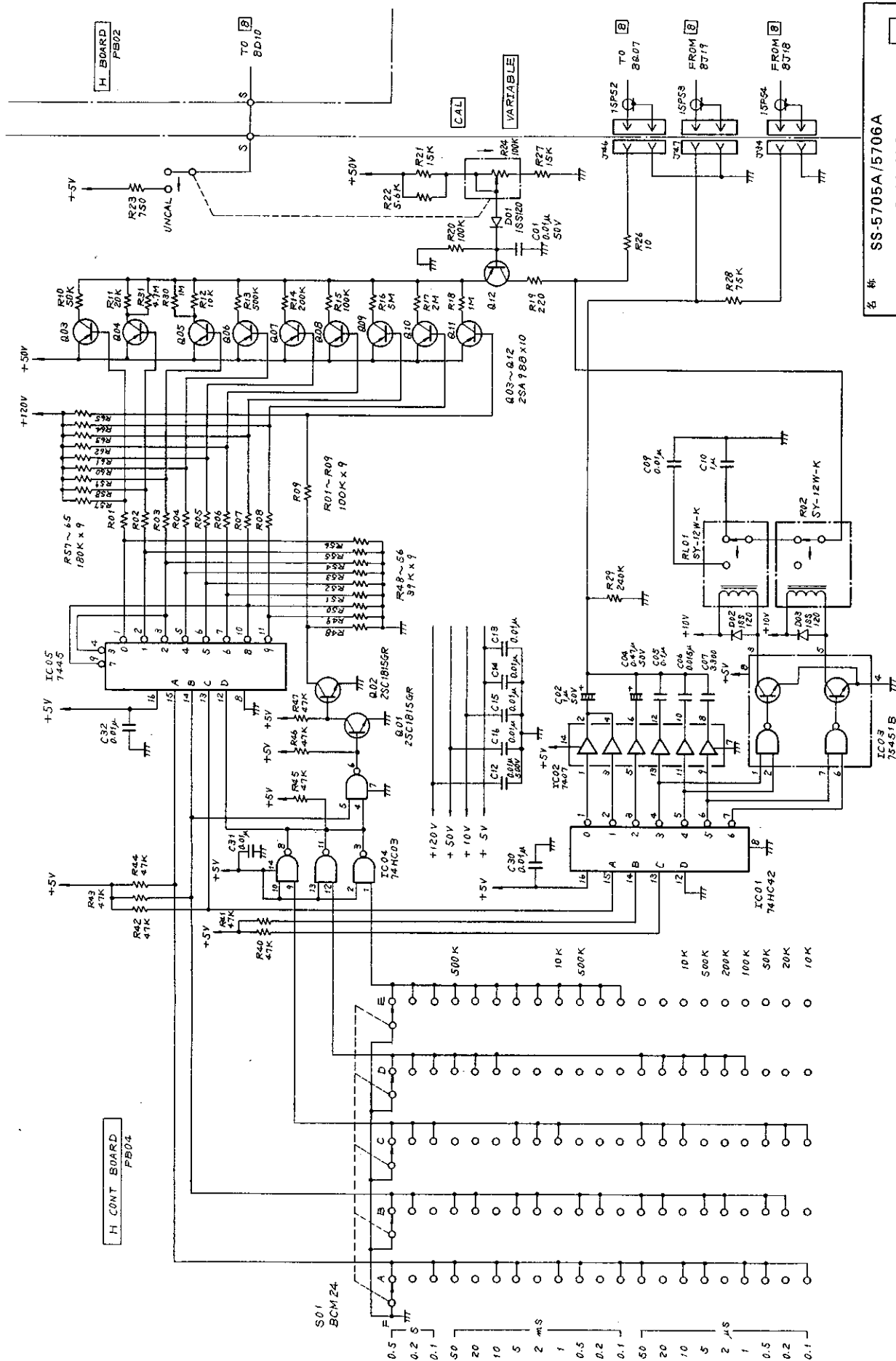


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图 号	BBWSS24297102
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	1



名称	SS-5705A
VERT CONTROL	3
BBWSS 10100102	1



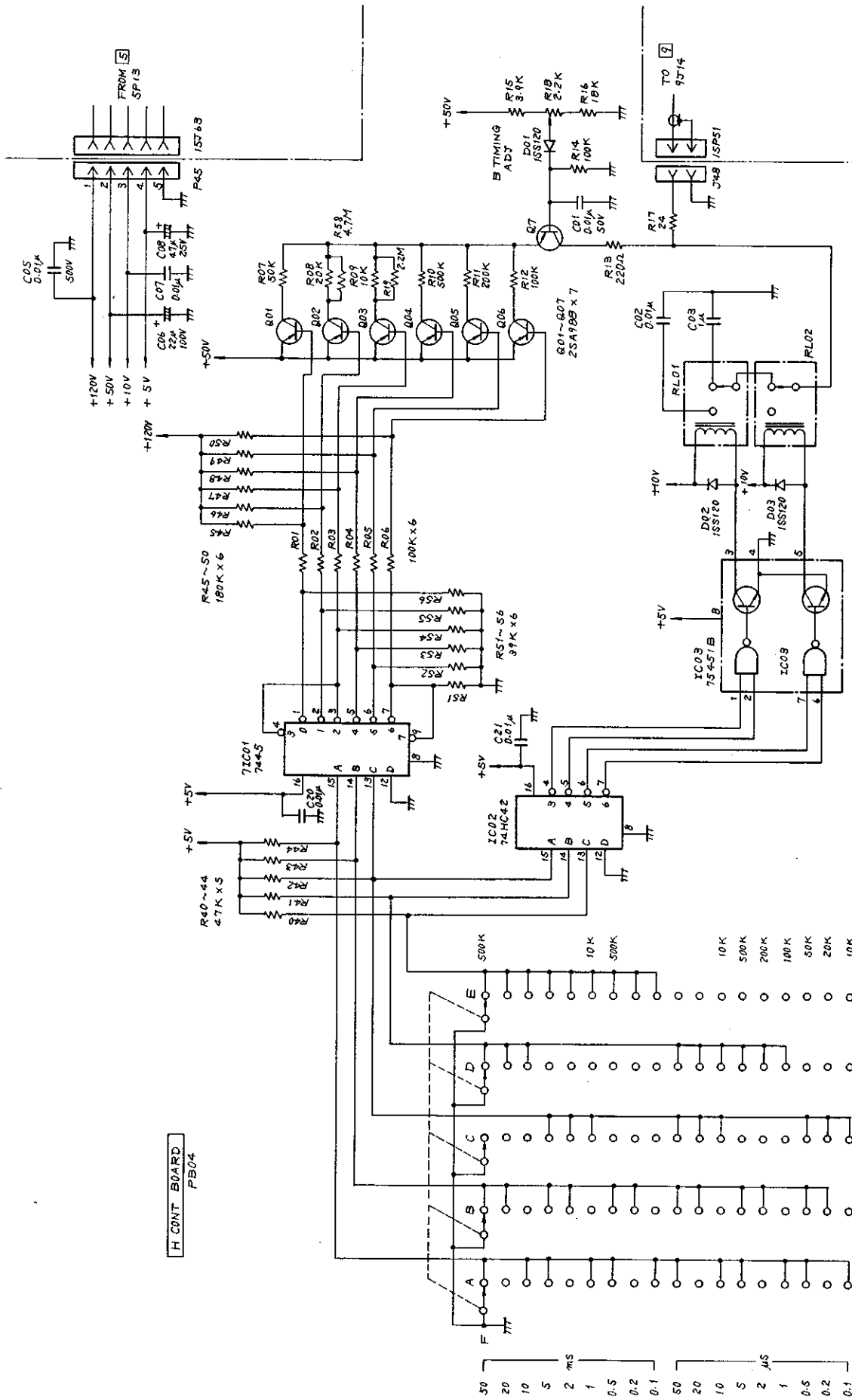


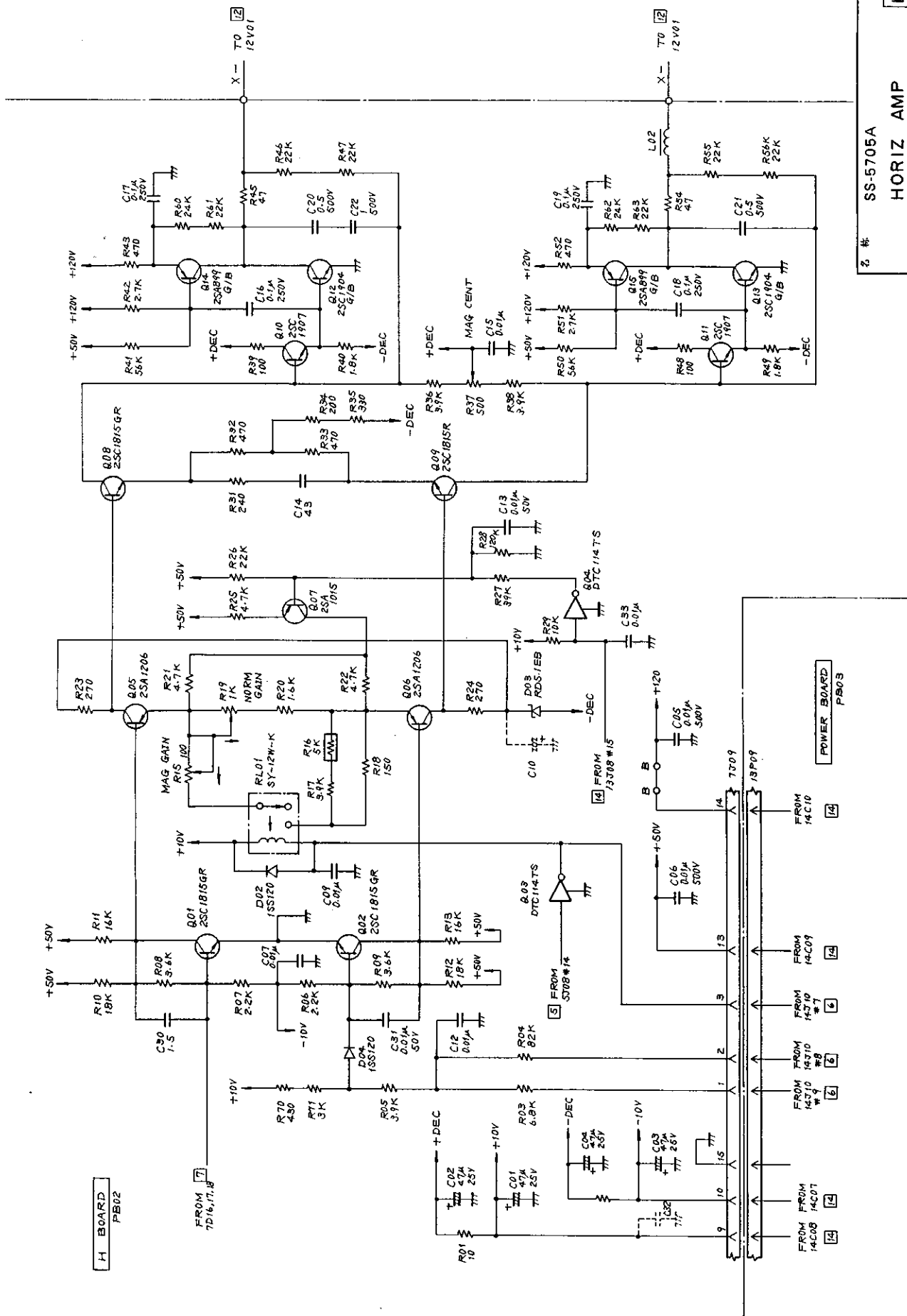
名称 SS-5705A/5706A

A TIMING

图号 BBWSS20I29I02

1





名 称	SS-5705A
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图 号	BBWSS 24298102
图 号	12
图 号	1

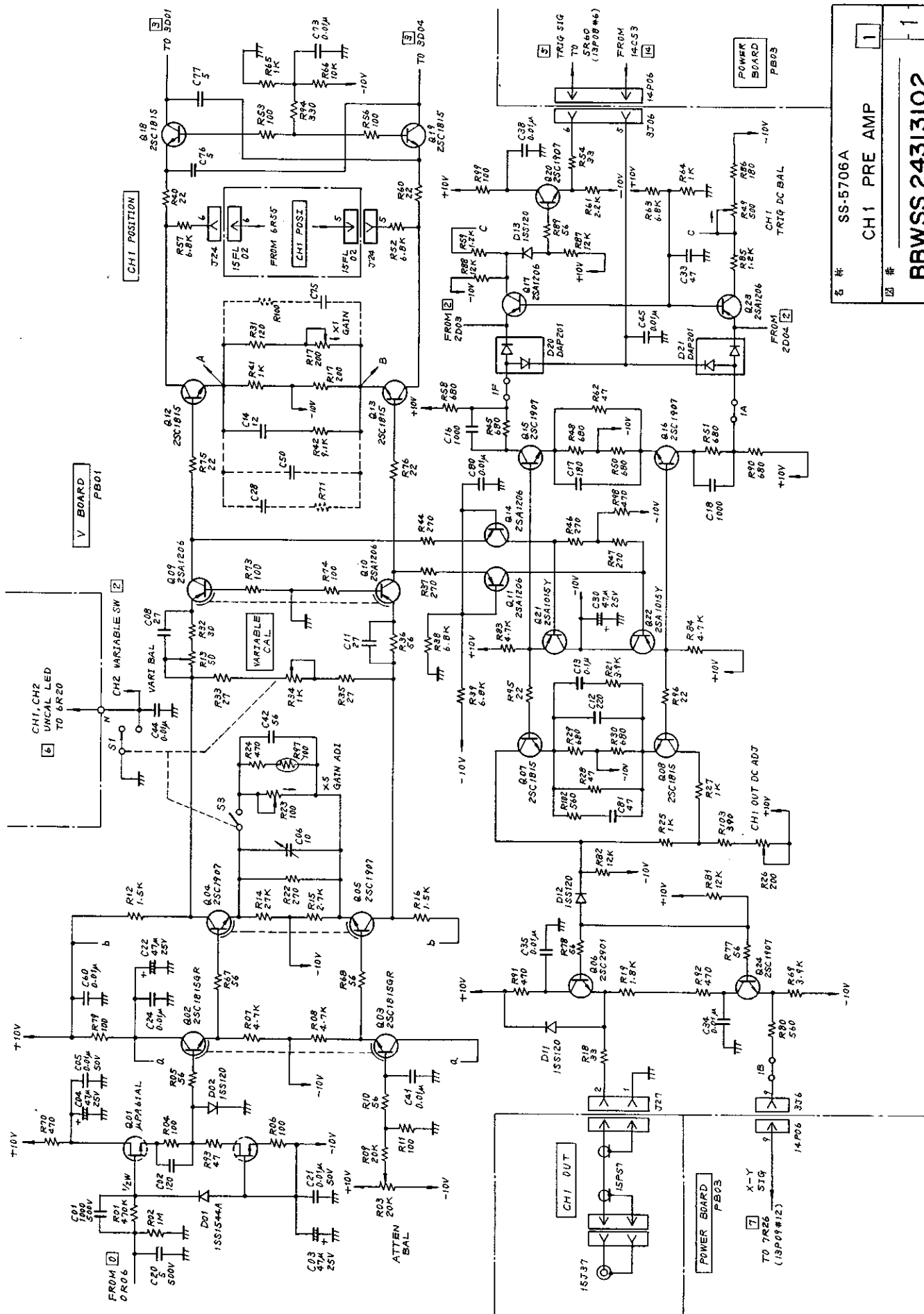
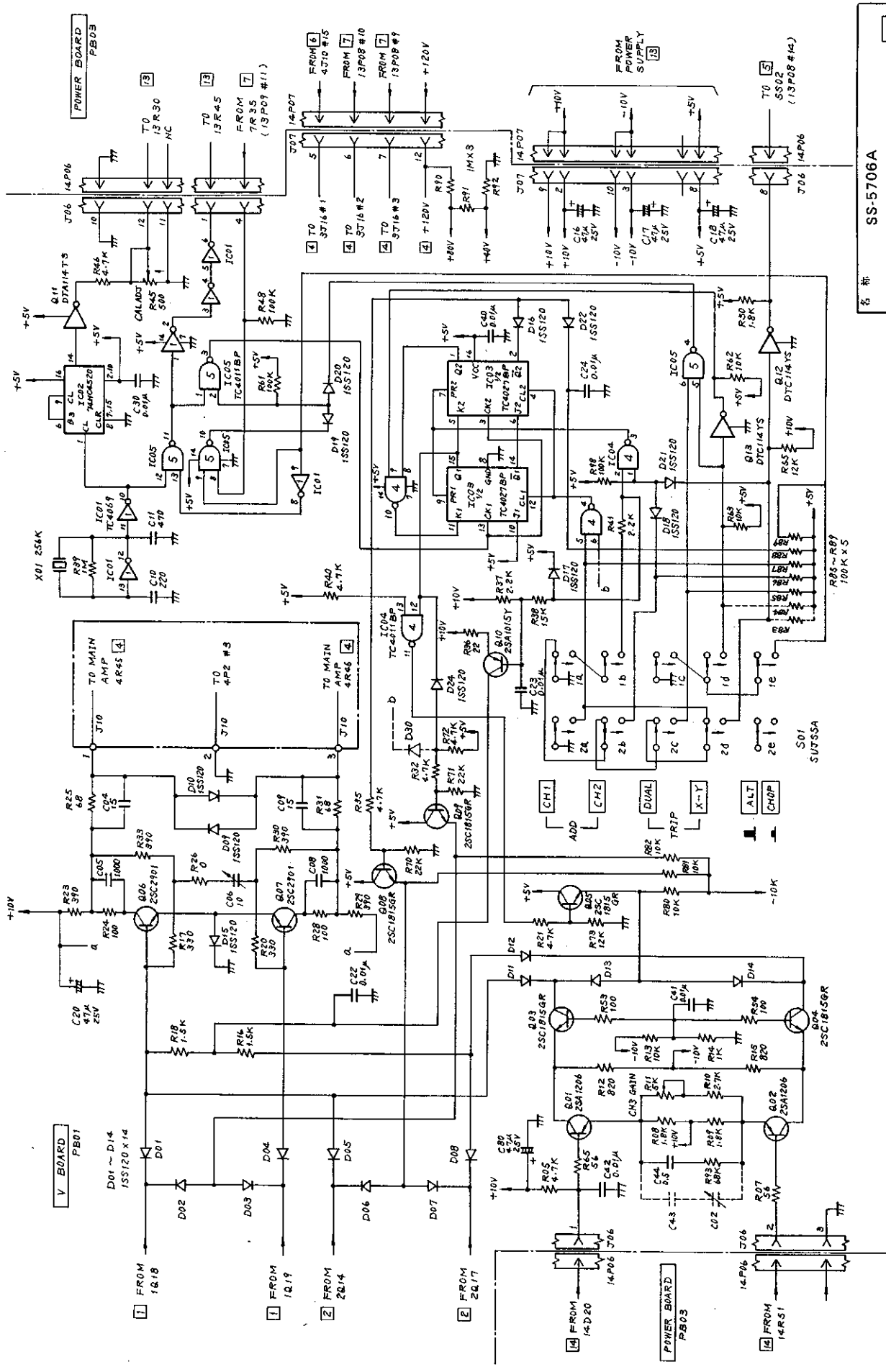


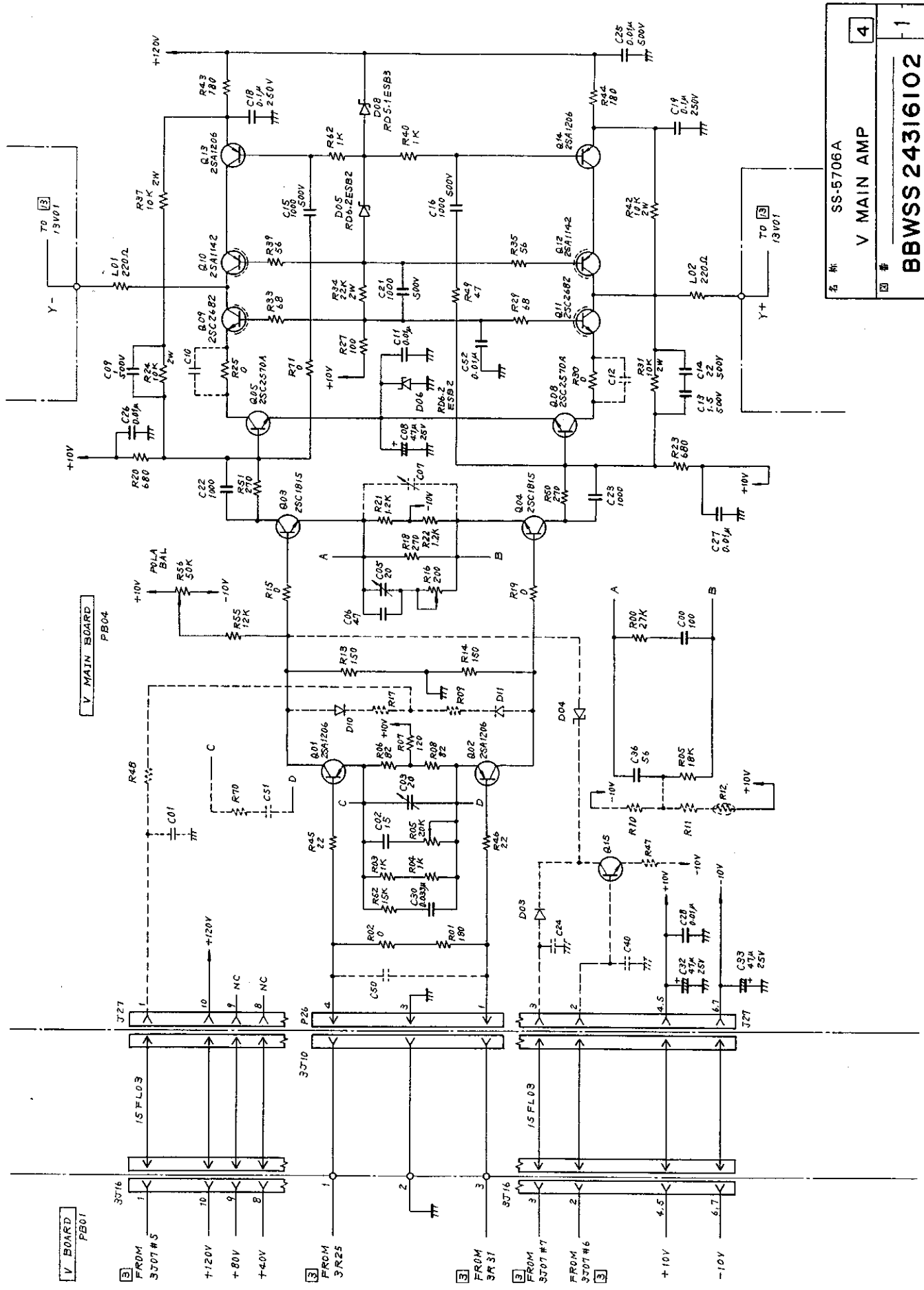
图 号 SS-5706A

图 号 CH1 PRE AMP

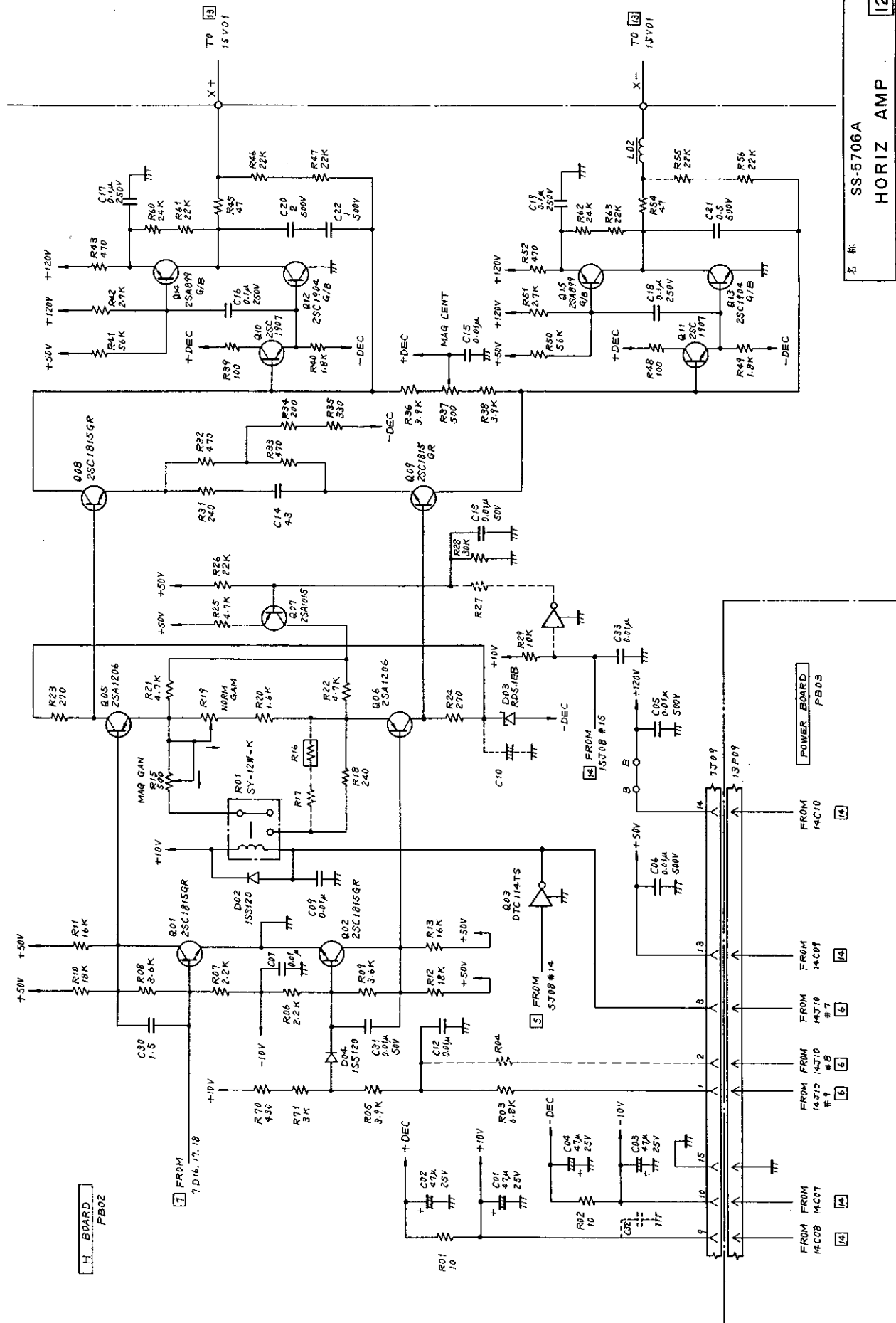
图 号 BBWSS 24313102



名称 SS-5706A
 图号 VERT CONTROL
 3
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 BBWSS10104102



名称	SS-5706A
4	
V MAIN AMP	
BBWSS 24316102	
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名 称 SS-5706A

图 号 HORIZ AMP

1

Section 6 Electrical Parts List

Ordering Information

Replacement parts may be ordered through an IWATSU representative or directly from the factory. To be certain of receiving the proper parts, always include the following information with the order:

- Model Number and serial number of the instrument on which the parts will be replaced.
- Circuit reference number and subassembly name, if applicable for which the part is replaced. If the part does not have a circuit reference, the description from the parts list should be used.
- Iwatsu part number.

For factory repair, contact the IWATSU agent and include the following information:

- Model number and serial number of the instrument on which the work is to be performed.
- Details concerning the nature of the malfunction, or, type of repair desired.

Shipping instructions will be sent to you promptly.

Component locations can be determined from the schematic diagrams, each component appears only once in the parts list. At the beginning of each subsection are listed

Abbreviations

Cap	Capacitor
Cer	Ceramic
Poly	Polyethytl film
Ele	Aluminum electrolytic chemical
Ele. tan	Tan-talum electrolytic chemical
Film	Film

[The symbol F (farad) is omitted]

Res	Resistor
W.W	Wire wound
Comp	Composition
MG	Metal glaze
Mtl	Metal
Crm	Cermet
Var	Variable

[Type symbol Ω (ohm) is omitted]

FET	Field Effect Transistor
IC	Integrated Circuit
Tr	Transistor
Th	Thermister
Conn	Connector
FC	FAIRCHILD
FUJ	FUJITSU SEMMCONDUCTOR
HIT	HITACHI
INT	INTEL
IS	IWATSU
JRC	JAPAN RADIO CO
MIT	MITSUBISHI
MTL	MOTOROLA
NEC	NEC
NS	NATIONAL SEMICONDUCTOR
PMI	PRECISION MONOLITHICS INCORPORATED
REC	RICHO
SGN	SIGNETICS
SIL	SILICONIX
TEX	TEXAS INSTRUMENT

SS-5702A

CH1/CH2 ATT & PRE AMP	1	6-3
V MAIN AMP	2	6-5
TRIG AMP & V CONTROL	3	6-6
TRIG & SWEEP GENERATOR	4	6-6
TIMING & H AMP	5	6-8
CRT & Z AMP	6	6-9
POWER SUPPLY	7	6-10
CRT CONTROL	9	6-10

SS-5705A

CH1/CH2 ATTENUATOR	0	6-15
CH1 PRE AMP	1	6-16
CH2 PRE AMP	2	6-18
VERT CONTROL	3	6-19
V MAIN AMP	4	6-20
TRIG GENERATOR	5	6-21
H CONTROL-A	6	6-22
H CONTROL-B	7	6-22
A SWEEP GENERATOR	8	6-23
B SWEEP GENERATOR	9	6-24
A TIMING	10	6-25
B TIMING	11	6-26
HORIZ AMP	12	6-26
Z AXIS & CRT	13	6-27
POWER SUPPLY	14	6-28

SS-5703A

CH1/CH2 ATT & PRE AMP	1	6-11
Same as SS-5702A	2	
Same as SS-5702A	3	
TRIG & SWEEP GENERATOR	4	6-13
Same as SS-5702A	5	
Same as SS-5702A	6	
POWER SUPPLY	7	6-14
ADDED CIRCUITS	8	6-14
Same as SS-5702A	9	

SS-5706A

Same as SS-5705A	0	
CH1 PRE AMP	1	6-29
CH2 PRE AMP	2	6-31
VERT CONTROL	3	6-32
V MAIN AMP	4	6-33
TRIG GENERATOR	5	6-34
H CONTROL-A	6	6-35
H CONTROL-B	7	6-35
A SWEEP GENERATOR	8	6-36
Same as SS-5705A	9	
Same as SS-5705A	10	
Same as SS-5705A	11	
HORIZ AMP	12	6-37
Same as SS-5705A	13	
POWER SUPPLY	14	6-38

CH1/CH2 ATT & PRE AMP 1

SS-5702A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCF168011	Cap, 0.01u, +/-10%, 400V, Flm	C144	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C2	DCC259121	Cap, 4p, +/-0.25p, 500V, Cer	C145	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C3	DCV019602	Cap, 12p, Var, 250V, Cer	C146	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C4	DCV019612	Cap, 8p, Var, 250V, Cer	C147	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C5	DCC239721	Cap, 82p, +/-5%, 50V, Cer	C148	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C6	DCV019612	Cap, 8p, Var, 250V, Cer	C150	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C7	DCV019602	Cap, 12p, Var, 250V, Cer	P1	DCN990871	Conn, 5267-02A
C8	DCC239151	Cap, 470, +/-5%, 50V, Cer	P3	DCN994241	Conn, 5207-05A
C9	DCV019612	Cap, 8p, Var, 250V, Cer	P101	DCN990871	Conn, 5267-02A
C10	DCV019592	Cap, 20p, Var, 250V, Cer	P103	DCN994241	Conn, 5207-05A
C11	DCF121681	Cap, 4700p, +/-5%, 50V, Flm	Q1	DTR190631	Tr, HA 1127
C12	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	Q2	DTR295361	Tr, uPA61AL
C13	DCE229201	Cap, 47u, +/-20%, 25V, Ele	Q3	DTR119011	Tr, 2SA 1015Y TPER1
C15	DCE229201	Cap, 47u, +/-20%, 25V, Ele	Q4	DTR119011	Tr, 2SA 1015Y TPER1
C16	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	Q5	DTR139011	Tr, 2SC 1815GR TPER1
C17	DCE229201	Cap, 47u, +/-20%, 25V, Ele	Q6	DTR139011	Tr, 2SC 1815GR TPER1
C18	DCC239111	Cap, 18p, +/-5%, 50V, Cer	Q7	DTR139011	Tr, 2SC 1815GR TPER1
C19	DCC239091	Cap, 6p, +/-0.5%, 50V, Cer	Q8	DTR139011	Tr, 2SC 1815GR TPER1
C20	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer	Q9	DTR139011	Tr, 2SC 1815GR TPER1
C21	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	Q10	DTR139011	Tr, 2SC 1815GR TPER1
C22	DCC239751	Cap, 91p, +/-5%, 50V, Cer	Q11	DTR139011	Tr, 2SC 1815GR TPER1
C23	DCC239751	Cap, 91p, +/-5%, 50V, Cer	Q12	DTR139011	Tr, 2SC 1815GR TPER1
C25	DCV019861	Cap, 7p, Var, 100V	Q13	DTR219011	Tr, 2SK 30ATM-0 TPER1
C26	DCF121261	Cap, 3300p, +/-10%, 50V, Flm	Q101	DTR190631	Tr, HA 1127
C27	DCC239041	Cap, 10p, +/-0.5p, 50p, Cer	Q102	DTR295361	Tr, uPA61AL
C28	DCE229201	Cap, 47u, +/-20%, 25V, Ele	Q103	DTR119011	Tr, 2SA 1015Y TPER1
C29	DCE229201	Cap, 47u, +/-20%, 25V, Ele	Q104	DTR119011	Tr, 2SA 1015Y TPER1
C30	DCF121601	Cap, 1000p, +/-5%, 50V, Flm	Q105	DTR139011	Tr, 2SC 1815GR TPER1
C32	DCC239331	Cap, 20p, +/-5%, 50V, Cer	Q106	DTR139011	Tr, 2SC 1815GR TPER1
C40	DCC239301	Cap, 5p, +/-0.25p, 50V, Cer	Q107	DTR139011	Tr, 2SC 1815GR TPER1
C44	DCE229201	Cap, 47u, +/-20%, 25V, Ele	Q108	DTR139011	Tr, 2SC 1815GR TPER1
C45	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	Q109	DTR139011	Tr, 2SC 1815GR TPER1
C46	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	Q110	DTR139011	Tr, 2SC 1815GR TPER1
C47	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	Q111	DTR139011	Tr, 2SC 1815GR TPER1
C48	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	Q112	DTR139011	Tr, 2SC 1815GR TPER1
C50	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	Q113	DTR219011	Tr, 2SK 30ATM-0 TPER1
C101	DCF168011	Cap, 0.01u, +/-10%, 400V, Flm	R1	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
C102	DCC259121	Cap, 4p, +/-0.25p, 500V, Cer	R2	DRE139821	Res, 900k, +/-1%, 1/4W, Mtl
C103	DCV019602	Cap, 12p, Var, 250V, Cer	R3	DRE939231	Res, 111K, +/-1%, 1/4W, Mtl
C104	DCV019612	Cap, 8p, Var, 250V, Cer	R4	DRE939261	Res, 990k, +/-1%, 1/4W, Mtl
C105	DCC239721	Cap, 82p, +/-5%, 50V, Cer	R5	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
C106	DCV019612	Cap, 8p, Var, 250V, Cer	R6	DRE939271	Res, 999k, +/-1%, 1/4W, Mtl
C107	DCV019602	Cap, 12p, Var, 250V, Cer	R7	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
C108	DCC239151	Cap, 470, +/-5%, 50V, Cer	R8	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
C109	DCV019612	Cap, 8p, Var, 250V, Cer	R9	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon
C110	DCV019592	Cap, 20p, Var, 250V, Cer	R10	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C111	DCF121681	Cap, 4700p, +/-5%, 50V, Flm	R11	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
C112	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R12	DRD137371	Res, 75, +/-5%, 1/4W, Carbon
C113	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R13	DRV419151	Res, 100, Var, 1/2W, Mtl
C115	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R14	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
C116	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R15	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C117	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R16	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon
C118	DCC239111	Cap, 18p, +/-5%, 50V, Cer	R17	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
C119	DCC239091	Cap, 6p, +/-0.5%, 50V, Cer	R18	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
C120	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer	R19	DRD137461	Res, 180, +/-5%, 1/4W, Carbon
C121	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R20	DRD137691	Res, 1.6K, +/-5%, 1/4W, Carbon
C122	DCC239751	Cap, 91p, +/-5%, 50V, Cer	R21	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
C123	DCC239751	Cap, 91p, +/-5%, 50V, Cer	R22	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
C125	DCV019861	Cap, 7p, Var, 100V	R23	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
C126	DCF121261	Cap, 3300p, +/-10%, 50V, Flm	R24	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
C127	DCC239041	Cap, 10p, +/-0.5p, 50p, Cer	R25	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C128	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R26	DRE137821	Res, 560, +/-1%, 1/4W, Mtl
C129	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R27	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
C130	DCF121601	Cap, 1000p, +/-5%, 50V, Flm	R28	DRE137601	Res, 68, +/-1%, 1/4W, Mtl
C132	DCC239331	Cap, 20p, +/-5%, 50V, Cer	R29	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
C140	DCC239301	Cap, 5p, +/-0.25p, 50V, Cer	R30	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
			R31	DRE137711	Res, 200, +/-1%, 1/4W, Mtl

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R32	DRV147281	Res, 1k, Var	R125	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R33	DRE137711	Res, 200, +/-1%, 1/4W, Mtl	R126	DRE137821	Res, 560, +/-1%, 1/4W, Mtl
R34	DRE137971	Res, 2.4K, +/-1%, 1/4W, Mtl	R127	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R35	DRV419181	Res, 1K, Var, 1/2W, Mtl	R128	DRE137601	Res, 68, +/-1%, 1/4W, Mtl
R36	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl	R129	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R37	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R130	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R38	DRD137541	Res, 390, +/-5%, 1/4W, Carbon	R131	DRE137711	Res, 200, +/-1%, 1/4W, Mtl
R39	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R132	DRV147281	Res, 1k, Var
R40	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl	R133	DRE137711	Res, 200, +/-1%, 1/4W, Mtl
R41	DRV419181	Res, 1K, Var, 1/2W, Mtl	R134	DRE137971	Res, 2.4K, +/-1%, 1/4W, Mtl
R42	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R135	DRV419181	Res, 1K, Var, 1/2W, Mtl
R43	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R136	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
R44	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R137	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R45	DRE137811	Res, 510, +/-1%, 1/4W, Mtl	R138	DRD137541	Res, 390, +/-5%, 1/4W, Carbon
R46	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	R139	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R47	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon	R140	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R48	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon	R141	DRV419181	Res, 1K, Var, 1/2W, Mtl
R49	DRD138151	Res, 130k, +/-5%, 1/4W, Carbon	R142	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R51	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl	R143	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R52	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R144	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R53	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R145	DRE137811	Res, 510, +/-1%, 1/4W, Mtl
R54	DRD137401	Res, 100, +/-5%, 1/4W, Carbon	R146	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R55	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R147	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon
R56	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R148	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon
R57	DRD137401	Res, 100, +/-5%, 1/4W, Carbon	R149	DRD138151	Res, 130k, +/-5%, 1/4W, Carbon
R58	DRV419191	Res, 2K, Var, 1/2W, Mtl	R151	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
R59	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R152	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R60	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl	R153	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R61	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl	R154	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R62	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon	R155	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R63	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon	R156	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R64	DRD137241	Res, 22, +/-5%, 1/4W, Carbon	R157	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R65	DRE138441	Res, 220, +/-1%, 1/4W, Mtl	R158	DRV419191	Res, 2K, Var, 1/2W, Mtl
R66	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl	R159	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R67	DRV419181	Res, 1K, Var, 1/2W, Mtl	R160	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R68	DRD137461	Res, 180, +/-5%, 1/4W, Carbon	R161	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R81	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon	R162	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R82	DRD137501	Res, 270, +/-5%, 1/4W, Carbon	R163	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R83	DRD137441	Res, 150, +/-5%, 1/4W, Carbon	R164	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R84	DRD137351	Res, 62, +/-5%, 1/4W, Carbon	R165	DRE138441	Res, 220, +/-1%, 1/4W, Mtl
R85	DRD137541	Res, 390, +/-5%, 1/4W, Carbon	R166	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R87	DRD137651	Res, 1.1K, +/-5%, 1/4W, Carbon	R167	DRV419181	Res, 1K, Var, 1/2W, Mtl
R89	DRD137321	Res, 47, +/-5%, 1/4W, Carbon	R168	DRD137461	Res, 180, +/-5%, 1/4W, Carbon
R101	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon	R181	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon
R102	DRE139821	Res, 900k, +/-1%, 1/4W, Mtl	R182	DRD137501	Res, 270, +/-5%, 1/4W, Carbon
R103	DRE939231	Res, 111K, +/-1%, 1/4W, Mtl	R183	DRD137441	Res, 150, +/-5%, 1/4W, Carbon
R104	DRE939261	Res, 990k, +/-1%, 1/4W, Mtl	R184	DRD137351	Res, 62, +/-5%, 1/4W, Carbon
R105	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	R185	DRD137541	Res, 390, +/-5%, 1/4W, Carbon
R106	DRE939271	Res, 999k, +/-1%, 1/4W, Mtl	R187	DRD137651	Res, 1.1K, +/-5%, 1/4W, Carbon
R107	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R189	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
R108	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl	S1	DSW014831	Switch SUJ12A
R109	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon	S2	DSW014831	Switch SUJ12A
R110	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	S3	DSW034662	Switch PS22BH3-3-11/1KB
R111	DRD137401	Res, 100, +/-5%, 1/4W, Carbon	S101	DSW014831	Switch SUJ12A
R112	DRD137371	Res, 75, +/-5%, 1/4W, Carbon	S102	DSW014831	Switch SUJ12A
R113	DRV419151	Res, 100, Var, 1/2W, Mtl	S103	DSW034662	Switch PS22BH3-3-11/1KB
R114	DRD137401	Res, 100, +/-5%, 1/4W, Carbon			
R115	DRE137801	Res, 470, +/-1%, 1/4W, Mtl			
R116	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon			
R117	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl			
R118	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl			
R119	DRD137461	Res, 180, +/-5%, 1/4W, Carbon			
R120	DRD137691	Res, 1.6K, +/-5%, 1/4W, Carbon			
R121	DRE137861	Res, 820, +/-1%, 1/4W, Mtl			
R122	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl			
R123	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl			
R124	DRE137861	Res, 820, +/-1%, 1/4W, Mtl			

V MAIN AMP 2

SS-5702A/5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C201	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	Q220	DTR115301	Tr, 2SA1206
C202	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R201	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
C205	DCE229211	Cap, 100u, +/-20%, 25V, Ele	R202	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
C209	DCV019451	Cap, 11p, Var, 100V	R203	DRE137711	Res, 200, +/-1%, 1/4W, Mtl
C211	DCC259101	Cap, 1p, +/-0.25p, 500V, Cer	R204	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
C213	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R205	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
C214	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R206	DRE137711	Res, 200, +/-1%, 1/4W, Mtl
C215	DCC259111	Cap, 2p, +/-0.25p, 500V, Cer	R207	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
C217	DCC153501	Cap, 0.01u, +/-10%, 500V, Cer	R209	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
C218	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R210	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
C219	DCC153501	Cap, 0.01u, +/-10%, 500V, Cer	R211	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
C220	DCC153501	Cap, 0.01u, +/-10%, 500V, Cer	R212	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
C221	DCC239071	Cap, 3p, +/-0.5%, 50V, Cer	R213	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
C222	DCC259151	Cap, 3p, +/-0.25p, 500V, Cer	R214	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
C223	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R215	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
C225	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R216	DRD137431	Res, 130, +/-5%, 1/4W, Carbon
C250	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R217	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
C251	DCC239191	Cap, 1p, 0.25p, 50V, Cer	R218	DRD137691	Res, 1.6K, +/-5%, 1/4W, Carbon
C252	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R219	DRV419171	Res, 500, Var, 1/2W, Mtl
C260	DCV019871	Cap, 20p, Var, 100V	R220	DRD137691	Res, 1.6K, +/-5%, 1/4W, Carbon
C261	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer	R225	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
C262	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R226	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
C263	DCC153501	Cap, 0.01u, +/-10%, 500V, Cer	R229	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
C264	DCE279051	Cap, 4.7u, +/-20%, 250V, Ele	R230	DRS330581	Res, 12k, +/-5%, 2W, Mtl
C265	DCC239161	Cap, 51, +/-5%, 50V, Cer	R233	DRS330581	Res, 12k, +/-5%, 2W, Mtl
C266	DCC239301	Cap, 5p, +/-0.25p, 50V, Cer	R234	DRS320651	Res, 47k, +/-5%, 1W, Mtl
C267	DCC259221	Cap, 20p, +/-5%, 500V, Cer	R235	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
C268	DCC239091	Cap, 6p, +/-0.5%, 50V, Cer	R237	DRS330581	Res, 12k, +/-5%, 2W, Mtl
C270	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R238	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
C271	DCE229211	Cap, 100u, +/-20%, 25V, Ele	R239	DRS330581	Res, 12k, +/-5%, 2W, Mtl
C272	DCC239241	Cap, 27p, +/-5%, 50V, Cer	R240	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
C273	DCC239201	Cap, 4p, +/-0.25p, 50V, Cer	R241	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
C274	DCC239201	Cap, 4p, +/-0.25p, 50V, Cer	R244	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
D201	DDD019071	Diode, 1SS 120	R245	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
D202	DDD019071	Diode, 1SS 120	R246	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
D203	DDD019071	Diode, 1SS 120	R247	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
D204	DDD019071	Diode, 1SS 120	R248	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
D205	DDD019071	Diode, 1SS 120	R250	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
D206	DDD019071	Diode, 1SS 120	R251	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
D207	DDD019071	Diode, 1SS 120	R252	DRD138061	Res, 56K, +/-5%, 1/4W, Carbon
D208	DDD019071	Diode, 1SS 120	R254	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
D209	DDD019071	Diode, 1SS 120	R256	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
D213	DDD038381	Zdiode, RD5.1ESB2	R281	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
D215	DDD038381	Zdiode, RD5.1ESB2	R282	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
D221	DDD019071	Diode, 1SS 120	R283	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
D222	DDD019071	Diode, 1SS 120	R284	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
D231	DDD019071	Diode, 1SS 120	R285	DRD137921	Res, 15K, +/-5%, 1/4W, Carbon
D232	DDD019071	Diode, 1SS 120	R292	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
P201	DCN990881	Conn, 5267-03A	R293	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q201	DTR139011	Tr, 2SC 1815GR TPER1	R294	DRE137851	Res, 750, +/-1%, 1/4W, Mtl
Q202	DTR139011	Tr, 2SC 1815GR TPER1	R295	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q203	DTR139011	Tr, 2SC 1815GR TPER1	R296	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q204	DTR139011	Tr, 2SC 1815GR TPER1	R297	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q205	DTR139011	Tr, 2SC 1815GR TPER1	S201	DSW014831	Switch SUJ12A
Q206	DTR139011	Tr, 2SC 1815GR TPER1			
Q207	DTR115301	Tr, 2SA1206			
Q208	DTR115301	Tr, 2SA1206			
Q209	DTR139011	Tr, 2SC 1815GR TPER1			
Q210	DTR139011	Tr, 2SC 1815GR TPER1			
Q211	DTR137671	Tr, 2SC2570A			
Q214	DTR137671	Tr, 2SC2570A			
Q215	DTR136021	Tr, 2SC2682Q			
Q216	DTR136021	Tr, 2SC2682Q			
Q217	DTR116501	Tr, 2SA1142Q			
Q218	DTR116501	Tr, 2SA1142Q			
Q219	DTR115301	Tr, 2SA1206			

TRIG AMP & V CONTROL [3]

SS-5702A/5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C301	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C302	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C303	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C304	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C305	DCC239041	Cap, 10p, +/-0.5p, 50p, Cer
C306	DCC239121	Cap, 22p, +/-5%, 50V, Cer
C307	DCC239141	Cap, 82p, +/-5%, 50V, Cer
C308	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C309	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C310	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C311	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C312	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C313	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C315	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C316	DCC239031	Cap, 47p, +/-5%, 50V, Cer
C330	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C331	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C332	DCC239041	Cap, 10p, +/-0.5p, 50p, Cer
D301	DDD019071	Diode, 1SS 120
D302	DDD019071	Diode, 1SS 120
D303	DDD019071	Diode, 1SS 120
D304	DDD019071	Diode, 1SS 120
D305	DDD019071	Diode, 1SS 120
D306	DDD019071	Diode, 1SS 120
D307	DDD019071	Diode, 1SS 120
D308	DDD019071	Diode, 1SS 120
D309	DDD038641	Zdiode, RD3.0ESB
D310	DDD019071	Diode, 1SS 120
D312	DDD019071	Diode, 1SS 120
D313	DDD019071	Diode, 1SS 120
D314	DDD019071	Diode, 1SS 120
D315	DDD038811	Diode, RD15ESB/HZS15NB
IC301	DIC623081	IC, uA733CN (TEX)
IC302	DIC410101	IC, CD4011BE
IC303	DIC493051	IC, TC4013BP (TOS)
J301	DCN994561	Connector 5204S-0810
J302	DCN994561	Connector 5204S-0810
Q301	DTR139011	Tr, 2SC 1815GR TPER1
R301	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
R302	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
R303	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
R304	DRV419171	Res, 500, Var, 1/2W, Mtl
R305	DRD137531	Res, 360, +/-5%, 1/4W, Carbon
R307	DRD137451	Res, 160, +/-5%, 1/4W, Carbon
R308	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R309	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R310	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R311	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R312	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
R313	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
R315	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R316	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
R317	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
R318	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R319	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R320	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R321	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R322	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R323	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
R324	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
R325	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R326	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon
S301	DSW045111	Switch B4 SLLR02

TRIG & SWEEP GENERATOR [4]

SS-5702A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C401	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm
C402	DCC259111	Cap, 2p, +/-0.25p, 500V, Cer
C403	DCC259131	Cap, 33p, +/-10%, 500V, Cer
C404	DCC239131	Cap, 39p, +/-5%, 50V, Cer
C406	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C407	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C408	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C409	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C410	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C412	DCE229271	Cap, 22u, +/-20%, 25V, Ele
C413	DCE229271	Cap, 22u, +/-20%, 25V, Ele
C414	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm
C415	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C416	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C417	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C418	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm
C419	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm
C420	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm
C424	DCC239011	Cap, 33p, +/-5%, 50V, Cer
C426	DCF121261	Cap, 3300p, +/-10%, 50V, Flm
C427	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C428	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C429	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C430	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C431	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C432	DCV019871	Cap, 20p, Var, 100V
C433	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C434	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C435	DCC139051	Cap, 1000p, +/-10%, 50V, Cer
C436	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C439	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C440	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C450	DCF121201	Cap, 1000p, +/-5%, 50V, Flm
C451	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
D401	DDD019071	Diode, 1SS 120
D402	DDD019071	Diode, 1SS 120
D403	DDD019071	Diode, 1SS 120
D404	DDD019171	Diode, 1MA700
D405	DDD019071	Diode, 1SS 120
D406	DDD019071	Diode, 1SS 120
D408	DDD019301	Diode, 1SS168
D409	DDD019301	Diode, 1SS168
D410	DDD019071	Diode, 1SS 120
D411	DDD019071	Diode, 1SS 120
D412	DDD019071	Diode, 1SS 120
D413	DDD038951	Zdiode, RD3.0ESB2
IC401	DIC140751	IC, SN 74LS74AN
IC402	DIC410101	IC, CD4011BE
IC403	DIC140051	IC, SN74LS04N
J401	DCN994561	Connector 5204S-0810
P403	DCN990871	Conn, 5267-02A
Q401	DTR139011	Tr, 2SC 1815GR TPER1
Q402	DTR219091	Tr, 2SK30ATM-Y
Q403	DTR139011	Tr, 2SC 1815GR TPER1
Q404	DTR139011	Tr, 2SC 1815GR TPER1
Q405	DTR139011	Tr, 2SC 1815GR TPER1
Q406	DTR139011	Tr, 2SC 1815GR TPER1
Q407	DTR139011	Tr, 2SC 1815GR TPER1
Q408	DTR139011	Tr, 2SC 1815GR TPER1
Q409	DTR139011	Tr, 2SC 1815GR TPER1
Q410	DTR139011	Tr, 2SC 1815GR TPER1
Q411	DTR139011	Tr, 2SC 1815GR TPER1
Q412	DTR139011	Tr, 2SC 1815GR TPER1
Q413	DTR139011	Tr, 2SC 1815GR TPER1
Q414	DTR119011	Tr, 2SA 1015Y TPER1
Q415	DTR199351	Tr, DTC 114ES TP

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
Q416	DTR139011	Tr, 2SC 1815GR TPER1
Q417	DTR119011	Tr, 2SA 1015Y TPER1
Q418	DTR219091	Tr, 2SK30ATM-Y
Q419	DTR139011	Tr, 2SC 1815GR TPER1
Q420	DTR199411	Tr, DTC114ES
Q421	DTR199591	Tr, DTC114TS
R402	DRE138481	Res, 330K, +/-1%, 1/4W, Mtl
R403	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R404	DRE138561	Res, 680k, +/-1%, 1/4W, Mtl
R405	DRE138481	Res, 330K, +/-1%, 1/4W, Mtl
R407	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon
R408	DRV419211	Res, 10K, Var, 1/2W, Mtl
R409	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R410	DRV147571	Res, 10k, Var
R411	DRD137921	Res, 15K, +/-5%, 1/4W, Carbon
R412	DRD137671	Res, 1.3K, +/-5%, 1/4W, Carbon
R413	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R414	DRE138191	Res, 20K, +/-1%, 1/4W, Mtl
R415	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
R416	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R417	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R418	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R419	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R420	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
R423	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
R424	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon
R425	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
R426	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R427	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R428	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R429	DRD137541	Res, 390, +/-5%, 1/4W, Carbon
R430	DRE137821	Res, 560, +/-1%, 1/4W, Mtl
R431	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R432	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon
R433	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
R434	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R435	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
R436	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R437	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
R438	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R440	DRD137891	Res, 11k, +/-5%, 1/4W, Carbon
R441	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R442	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R444	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R447	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
R448	DRE137821	Res, 560, +/-1%, 1/4W, Mtl
R449	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R450	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R451	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R452	DRE138241	Res, 33K, +/-1%, 1/4W, Mtl
R453	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R454	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R455	DRV147591	Res, 20k, 50k, Var
R456	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
R457	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R458	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R459	DRD138101	Res, 82K, +/-5%, 1/4W, Carbon
R460	DRD138151	Res, 130k, +/-5%, 1/4W, Carbon
R463	DRV419171	Res, 500, Var, 1/2W, Mtl
R464	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R465	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
R466	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon
R467	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R468	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
R469	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R470	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R471	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R472	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R476	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
S401	DSW045121	Switch SLLR04
S402	DSW045101	Switch A2 SLLR02
S404	DSW045101	Switch A2 SLLR02

TIMING & H AMP 5

SS-5702A/5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C501	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R536	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
C502	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R537	DRD148021	Res, 39k, +/-5%, 1/4W, Carbon
C503	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm	R538	DRD148021	Res, 39k, +/-5%, 1/4W, Carbon
C504	DCE229271	Cap, 22u, +/-20%, 25V, Ele	R539	DRE137401	Res, 10, +/-1%, 1/4W, Mtl
C505	DCE249321	Cap, 2.2u, +/-20%, 50V, Ele	R540	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
C506	DCF121481	Cap, 0.22u, +/-10%, 50V, Flm	R541	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
C507	DCF132651	Cap, 1u, +/-1%, 100V, Flm	R542	DRV419171	Res, 500, Var, 1/2W, Mtl
C508	DCF125771	Cap, 0.027u, +/-5%, 50V, Flm	R543	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
C509	DCC239721	Cap, 82p, +/-5%, 50V, Cer	R544	DRD137851	Res, 7.5K, +/-5%, 1/4W, Carbon
C510	DCV019871	Cap, 20p, Var, 100V	R545	DDD080241	Thermistor 112501-2
C511	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R546	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
C512	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R550	DRD148031	Res, 43k, +/-5%, 1/4W, Carbon
C513	DCC250401	Cap, 1p, +/-0.25p, 500v, Cer	R551	DRD148031	Res, 43k, +/-5%, 1/4W, Carbon
C514	DCC259101	Cap, 1p, +/-0.25p, 500V, Cer	S501	DSW034672	SW PS22BH(24)3-5-19/10KB
C516	DCE229201	Cap, 47u, +/-20%, 25V, Ele			
D501	DDD019071	Diode, 1SS 120			
D502	DDD019071	Diode, 1SS 120			
D503	DDD019071	Diode, 1SS 120			
D504	DDD019071	Diode, 1SS 120			
D505	DDD019071	Diode, 1SS 120			
D506	DDD019071	Diode, 1SS 120			
D508	DDD019071	Diode, 1SS 120			
D509	DDD019071	Diode, 1SS 120			
D510	DDD038701	Diode, RD5.1ESB/HZS5.1NB			
D511	DDD038701	Diode, RD5.1ESB/HZS5.1NB			
D512	DDD019071	Diode, 1SS 120			
Q501	DTR119011	Tr, 2SA 1015Y TPER1			
Q502	DTR139011	Tr, 2SC 1815GR TPER1			
Q503	DTR139011	Tr, 2SC 1815GR TPER1			
Q504	DTR139461	Tr, 2SC3063			
Q505	DTR139461	Tr, 2SC3063			
Q506	DTR139461	Tr, 2SC3063			
Q507	DTR139461	Tr, 2SC3063			
Q508	DTR139011	Tr, 2SC 1815GR TPER1			
Q509	DTR139011	Tr, 2SC 1815GR TPER1			
R501	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon			
R502	DRV147291	Res, 10k, Var			
R503	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl			
R504	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl			
R505	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl			
R506	DRE939241	Res, 600k, +/-1%, 1/4W, Mtl			
R507	DRE138431	Res, 200K, +/-1%, 1/4W, Mtl			
R508	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl			
R509	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl			
R510	DRV419171	Res, 500, Var, 1/2W, Mtl			
R511	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl			
R512	DRV419171	Res, 500, Var, 1/2W, Mtl			
R513	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R515	DRD137971	Res, 24K, +/-5%, 1/4W, Carbon			
R516	DRD137281	Res, 33, +/-5%, 1/4W, Carbon			
R517	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl			
R518	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl			
R519	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R520	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl			
R524	DRV419151	Res, 100, Var, 1/2W, Mtl			
R525	DRE137811	Res, 510, +/-1%, 1/4W, Mtl			
R526	DRV419171	Res, 500, Var, 1/2W, Mtl			
R527	DRE137851	Res, 750, +/-1%, 1/4W, Mtl			
R528	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R529	DRE138281	Res, 74, +/-1%, 1/4W, Mtl			
R530	DRE138281	Res, 74, +/-1%, 1/4W, Mtl			
R531	DRS330661	Res, 56k, +/-5%, 2W, Mtl			
R532	DRE138281	Res, 74, +/-1%, 1/4W, Mtl			
R533	DRE138281	Res, 74, +/-1%, 1/4W, Mtl			
R534	DRS330661	Res, 56k, +/-5%, 2W, Mtl			
R535	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl			

CRT & Z AMP 6

SS-5702A/5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C601	DCC239151	Cap,470,+/-5%,50V,Cer	R626	DRE137801	Res,470,+/-1%,1/4W,Mtl
C602	DCC239041	Cap,10p,+/-0.5p,50p,Cer	R627	DRE137961	Res,2.2K,+/-1%,1/4W,Mtl
C604	DCC153501	Cap,0.01u,+/-10%,500V,Cer	R628	DRE137941	Res,1.8K,+/-1%,1/4W,Mtl
C605	DCE269011	Cap,1u,+/-20%,160V,Ele	R629	DRD137161	Res,3.9,+/-5%,1/4W,Carbon
C606	DCC173501	Cap,0.01u,+80/-20%,Cer	R630	DRE138361	Res,100K,+/-1%,1/4W,Mtl
C607	DCC150701	Cap,220p,+/-10%,500V,Cer	R631	DRE137961	Res,2.2K,+/-1%,1/4W,Mtl
C608	DCC171831	Cap,1000p,+/-20%,3kV,Cer	R632	DRV419231	Res,50K,Var,1/2W,Mtl
C609	DCC173501	Cap,0.01u,+80/-20%,Cer	R633	DRE138451	Res,240k,+/-1%,1/4W,Mtl
C610	DCC173501	Cap,0.01u,+80/-20%,Cer	R635	DRD138021	Res,39K,+/-5%,1/4W,Carbon
C611	DCC173501	Cap,0.01u,+80/-20%,Cer	R636	DRD138031	Res,43k,+/-5%,1/4W,Carbon
C612	DCC173501	Cap,0.01u,+80/-20%,Cer	R639	DRG940291	Res,16M,Var,1/2W,MG
C614	DCF121221	Cap,1500p,+/-10%,50V,F1m	R640	DRG940581	Res,3M,Var,MG
C615	DCE229201	Cap,47u,+/-20%,25V,Ele	R644	DRD137761	Res,3.3K,+/-5%,1/4W,Carbon
C616	DCE229201	Cap,47u,+/-20%,25V,Ele	R645	DRD137401	Res,100,+/-5%,1/4W,Carbon
C617	DCC171861	Cap,1000p,+/-10%,3KV,Cer	R650	DRE138361	Res,100K,+/-1%,1/4W,Mtl
C618	DCF121421	Cap,5600p,+/-10%,50V,F1m			
C619	DCC153501	Cap,0.01u,+/-10%,500V,Cer			
C620	DCC153501	Cap,0.01u,+/-10%,500V,Cer			
C621	DCE223251	Cap,1000u,+/-20%,25V,Ele			
D601	DDD019071	Diode,1SS 120			
D602	DDD038691	Diode,RD4.7ESB/HZS4,7NB			
D603	DDD019291	Diode,1SS83			
D604	DDD019291	Diode,1SS83			
D605	DDD019071	Diode,1SS 120			
D606	DDD021451	Diode,SHV-06			
D607	DDD021451	Diode,SHV-06			
D608	DDD021541	Diode,SHV-02			
D609	DDD021541	Diode,SHV-02			
D610	DDD021541	Diode,SHV-02			
D611	DDD021541	Diode,SHV-02			
D612	DDD019071	Diode,1SS 120			
D613	DDD019071	Diode,1SS 120			
D614	DDD019071	Diode,1SS 120			
J601	DCN994561	Connector 5204S-0810			
J602	DCN994561	Connector 5204S-0810			
P604	DCN990881	Conn,5267-03A			
P605	DCN990871	Conn,5267-02A			
P606	DCN994241	Conn,5207-05A			
P607	DCN990881	Conn,5267-03A			
Q601	DTR145381	Tr,2SD668AC			
Q602	DTR145381	Tr,2SD668AC			
Q603	DTR145831	Tr,2SD 1266P			
Q604	DTR119011	Tr,2SA 1015Y TPER1			
Q605	DTR139011	Tr,2SC 1815GR TPER1			
Q606	DTR145381	Tr,2SD668AC			
R601	DRD137961	Res,22K,+/-5%,1/4W,Carbon			
R602	DRE138041	Res,4.7K,+/-1%,1/4W,Mtl			
R603	DRD137961	Res,22K,+/-5%,1/4W,Carbon			
R605	DRD137931	Res,16K,+/-5%,1/4W,Carbon			
R606	DRD137781	Res,3.9K,+/-5%,1/4W,Carbon			
R607	DRE138361	Res,100K,+/-1%,1/4W,Mtl			
R608	DRD138041	Res,47K,+/-5%,1/4W,Carbon			
R609	DRE138281	Res,74,+/-1%,1/4W,Mtl			
R610	DRD138041	Res,47K,+/-5%,1/4W,Carbon			
R611	DRD137781	Res,3.9K,+/-5%,1/4W,Carbon			
R614	DRV419251	Res,200k,Var			
R615	DRE138191	Res,20K,+/-1%,1/4W,Mtl			
R616	DRD138171	Res,160k,+/-5%,1/4W,Carbon			
R617	DRV419251	Res,200k,Var			
R618	DRE138361	Res,100K,+/-1%,1/4W,Mtl			
R619	DRE138451	Res,240k,+/-1%,1/4W,Mtl			
R620	DRE138121	Res,10K,+/-1%,1/4W,Mtl			
R621	DRG940341	Res,22M,Var,1/2W,MG			
R622	DRD137311	Res,43,+/-5%,1/4W,Carbon			
R623	DRD137251	Res,24,+/-5%,1/4W,Carbon			
R625	DRD137191	Res,13,+/-5%,1/4W,Carbon			

POWER SUPPLY 7

SS-5702A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
0	DSK060211	Fuse holder PFC5000-0301
C701	DCE253171	Cap, 33u, +/-20%, 25V, Ele
C702	DCE270731	Cap, 47u, +/-20%, 250V, Ele
C703	DCE270731	Cap, 47u, +/-20%, 250V, Ele
C704	DCE279051	Cap, 4.7u, +/-20%, 250V, Ele
C705	DCE223261	Cap, 2200u, +/-20%, 25V, Ele
C706	DCE223261	Cap, 2200u, +/-20%, 25V, Ele
C707	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C708	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C709	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C710	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C711	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C712	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C713	DCE229201	Cap, 47u, +/-20%, 25V, Ele
D701	DDD019071	Diode, 1SS 120
D702	DDD038791	Zdiode, RD12ESB
D703	DDD038381	Zdiode, RD5.1ESB2
D704	DDD038791	Zdiode, RD12ESB
D705	DDD019071	Diode, 1SS 120
D706	DDD021031	Diode, 1G4B1
D707	DDD021031	Diode, 1G4B1
D708	DDD021181	Bridge diode, S1VB10
F702	DFU020141	Fuse, FSA-1
F703	DFU010131	Fuse FA-0.2
IC701	DIC613771	IC, 4558
IC702	DIC659011	IC, TA 78L005AP TPE5
P704	DCN120191	Connector 5267-11A
Q701	DTR139471	Tr, 2SC3946
Q702	DTR139471	Tr, 2SC3946
Q703	DTR139011	Tr, 2SC 1815GR TPER1
Q704	DTR145381	Tr, 2SD668AC
Q705	DTR145851	Tr, 2SD 1266P/Q
Q706	DTR139011	Tr, 2SC 1815GR TPER1
Q707	DTR119011	Tr, 2SA 1015Y TPER1
Q708	DTR125451	Tr, 2SB941P/Q
R702	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R703	DRE138441	Res, 220, +/-1%, 1/4W, Mtl
R704	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R705	DRS270841	Res, 2.4k
R706	DRD137121	Res, 6.8, +/-5%, 1/4W, Carbon
R707	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R708	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R709	DRE138441	Res, 220, +/-1%, 1/4W, Mtl
R710	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R712	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon
R713	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R714	DRS320661	Res, 56k, +/-5%, 1W, Mtl
R715	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
R716	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R717	DRV419191	Res, 2K, Var, 1/2W, Mtl
R718	DRE138081	Res, 6.8K, +/-1%, 1/4W, Mtl
R719	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R720	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon
R721	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R722	DRE138191	Res, 20K, +/-1%, 1/4W, Mtl
R723	DRE138191	Res, 20K, +/-1%, 1/4W, Mtl
R728	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R729	DRE138451	Res, 240k, +/-1%, 1/4W, Mtl

CRT CONTROL 9

SS-5702A/5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C901	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C902	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C903	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
D901	DDD071911	LED, TLG144
J901	DCN994401	Connector 52044-0810
P902	DCN034751	Connector MM33-03-30-134P
P903	DCN034751	Connector MM33-03-30-134P
Q901	DTR149011	Tr, 2SD 571K/L TRB
Q902	DTR129011	Tr, 2SB 605K/L TRB
R901	DRV147541	Res, 10k, Var
R902	DRV147561	Res, 50k, Var
R903	DRV147551	Res, 20k, Var
R904	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R905	DRD147431	Res, 130, +/-5%, 1/4W, Carbon
R906	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl

CH1/CH2 ATT & PRE AMP **1**

SS-5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCF168011	Cap, 0.01u, +/-10%, 400V, Flm
C2	DCC259121	Cap, 4p, +/-0.25p, 500V, Cer
C3	DCV019602	Cap, 12p, Var, 250V, Cer
C4	DCV019612	Cap, 8p, Var, 250V, Cer
C5	DCC239721	Cap, 82p, +/-5%, 50V, Cer
C6	DCV019612	Cap, 8p, Var, 250V, Cer
C7	DCV019602	Cap, 12p, Var, 250V, Cer
C8	DCC239151	Cap, 470, +/-5%, 50V, Cer
C9	DCV019612	Cap, 8p, Var, 250V, Cer
C10	DCV019592	Cap, 20p, Var, 250V, Cer
C11	DCF121681	Cap, 4700p, +/-5%, 50V, Flm
C12	DCC159011	Cap, 1000p, +/-10%, 500V, Cer
C13	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C15	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C16	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C17	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C18	DCC239111	Cap, 18p, +/-5%, 50V, Cer
C19	DCC239091	Cap, 6p, +/-0.5%, 50V, Cer
C20	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer
C21	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C22	DCC239751	Cap, 91p, +/-5%, 50V, Cer
C23	DCC239751	Cap, 91p, +/-5%, 50V, Cer
C25	DCV019861	Cap, 7p, Var, 100V
C26	DCF121261	Cap, 3300p, +/-10%, 50V, Flm
C27	DCC239041	Cap, 10p, +/-0.5p, 50p, Cer
C28	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C29	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C30	DCF121601	Cap, 1000p, +/-5%, 50V, Flm
C32	DCC239331	Cap, 20p, +/-5%, 50V, Cer
C40	DCC239301	Cap, 5p, +/-0.25p, 50V, Cer
C43	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C44	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C45	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C46	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C47	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C48	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C50	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C101	DCF168011	Cap, 0.01u, +/-10%, 400V, Flm
C102	DCC259121	Cap, 4p, +/-0.25p, 500V, Cer
C103	DCV019602	Cap, 12p, Var, 250V, Cer
C104	DCV019612	Cap, 8p, Var, 250V, Cer
C105	DCC239721	Cap, 82p, +/-5%, 50V, Cer
C106	DCV019612	Cap, 8p, Var, 250V, Cer
C107	DCV019602	Cap, 12p, Var, 250V, Cer
C108	DCC239151	Cap, 470, +/-5%, 50V, Cer
C109	DCV019612	Cap, 8p, Var, 250V, Cer
C110	DCV019592	Cap, 20p, Var, 250V, Cer
C111	DCF121681	Cap, 4700p, +/-5%, 50V, Flm
C112	DCC159011	Cap, 1000p, +/-10%, 500V, Cer
C113	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C115	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C116	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C117	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C118	DCC239111	Cap, 18p, +/-5%, 50V, Cer
C119	DCC239091	Cap, 6p, +/-0.5%, 50V, Cer
C120	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer
C121	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C122	DCC239751	Cap, 91p, +/-5%, 50V, Cer
C123	DCC239751	Cap, 91p, +/-5%, 50V, Cer
C125	DCV019861	Cap, 7p, Var, 100V
C126	DCF121261	Cap, 3300p, +/-10%, 50V, Flm
C127	DCC239041	Cap, 10p, +/-0.5p, 50p, Cer
C128	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C129	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C130	DCF121601	Cap, 1000p, +/-5%, 50V, Flm
C132	DCC239331	Cap, 20p, +/-5%, 50V, Cer

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C133	DCC239061	Cap, 2p, +/-0.25p, 50V, Cer
C140	DCC239301	Cap, 5p, +/-0.25p, 50V, Cer
C143	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C144	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C145	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C146	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C147	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C148	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C150	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
P1	DCN990871	Conn, 5267-02A
P3	DCN994241	Conn, 5207-05A
P101	DCN990871	Conn, 5267-02A
P103	DCN994241	Conn, 5207-05A
Q1	DTR190631	Tr, HA 1127
Q2	DTR295361	Tr, uPA61AL
Q3	DTR119011	Tr, 2SA 1015Y TPER1
Q4	DTR119011	Tr, 2SA 1015Y TPER1
Q5	DTR139011	Tr, 2SC 1815GR TPER1
Q6	DTR139011	Tr, 2SC 1815GR TPER1
Q7	DTR139011	Tr, 2SC 1815GR TPER1
Q8	DTR139011	Tr, 2SC 1815GR TPER1
Q9	DTR139011	Tr, 2SC 1815GR TPER1
Q10	DTR139011	Tr, 2SC 1815GR TPER1
Q11	DTR139011	Tr, 2SC 1815GR TPER1
Q12	DTR139011	Tr, 2SC 1815GR TPER1
Q13	DTR219011	Tr, 2SK 30ATM-0 TPER1
Q101	DTR190631	Tr, HA 1127
Q102	DTR295361	Tr, uPA61AL
Q103	DTR119011	Tr, 2SA 1015Y TPER1
Q104	DTR119011	Tr, 2SA 1015Y TPER1
Q105	DTR139011	Tr, 2SC 1815GR TPER1
Q106	DTR139011	Tr, 2SC 1815GR TPER1
Q107	DTR139011	Tr, 2SC 1815GR TPER1
Q108	DTR139011	Tr, 2SC 1815GR TPER1
Q109	DTR139011	Tr, 2SC 1815GR TPER1
Q110	DTR139011	Tr, 2SC 1815GR TPER1
Q111	DTR139011	Tr, 2SC 1815GR TPER1
Q112	DTR139011	Tr, 2SC 1815GR TPER1
Q113	DTR219011	Tr, 2SK 30ATM-0 TPER1
R1	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R2	DRE139821	Res, 900k, +/-1%, 1/4W, Mtl
R3	DRE939231	Res, 111K, +/-1%, 1/4W, Mtl
R4	DRE939261	Res, 990k, +/-1%, 1/4W, Mtl
R5	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R6	DRE939271	Res, 999k, +/-1%, 1/4W, Mtl
R7	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R8	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R9	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon
R10	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R11	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R12	DRD137371	Res, 75, +/-5%, 1/4W, Carbon
R13	DRV419151	Res, 100, Var, 1/2W, Mtl
R14	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R15	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R16	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon
R17	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R18	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R19	DRD137461	Res, 180, +/-5%, 1/4W, Carbon
R20	DRD137691	Res, 1.6K, +/-5%, 1/4W, Carbon
R21	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
R22	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R23	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R24	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
R25	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R26	DRE137821	Res, 560, +/-1%, 1/4W, Mtl
R27	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R28	DRE137601	Res, 68, +/-1%, 1/4W, Mtl

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R29	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R122	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R30	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R123	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R31	DRE137711	Res, 200, +/-1%, 1/4W, Mtl	R124	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
R32	DRV147281	Res, 1k, Var	R125	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R33	DRE137711	Res, 200, +/-1%, 1/4W, Mtl	R126	DRE137821	Res, 560, +/-1%, 1/4W, Mtl
R34	DRE137971	Res, 2.4K, +/-1%, 1/4W, Mtl	R127	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R35	DRV419181	Res, 1K, Var, 1/2W, Mtl	R128	DRE137601	Res, 68, +/-1%, 1/4W, Mtl
R36	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl	R129	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R37	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R130	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R38	DRD137541	Res, 390, +/-5%, 1/4W, Carbon	R131	DRE137711	Res, 200, +/-1%, 1/4W, Mtl
R39	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R132	DRV147281	Res, 1k, Var
R40	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl	R133	DRE137711	Res, 200, +/-1%, 1/4W, Mtl
R41	DRV419181	Res, 1K, Var, 1/2W, Mtl	R134	DRE137971	Res, 2.4K, +/-1%, 1/4W, Mtl
R42	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R135	DRV419181	Res, 1K, Var, 1/2W, Mtl
R43	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R136	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
R44	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R137	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R45	DRE137811	Res, 510, +/-1%, 1/4W, Mtl	R138	DRD137541	Res, 390, +/-5%, 1/4W, Carbon
R46	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	R139	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R47	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon	R140	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R48	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon	R141	DRV419181	Res, 1K, Var, 1/2W, Mtl
R49	DRD138151	Res, 130k, +/-5%, 1/4W, Carbon	R142	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R51	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl	R143	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R52	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R144	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R53	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R145	DRE137811	Res, 510, +/-1%, 1/4W, Mtl
R54	DRD137401	Res, 100, +/-5%, 1/4W, Carbon	R146	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R55	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R147	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon
R56	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R148	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon
R57	DRD137401	Res, 100, +/-5%, 1/4W, Carbon	R149	DRD138151	Res, 130k, +/-5%, 1/4W, Carbon
R58	DRV419191	Res, 2K, Var, 1/2W, Mtl	R151	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
R59	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl	R152	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R60	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl	R153	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R61	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl	R154	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R62	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon	R155	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R63	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon	R156	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R64	DRD137241	Res, 22, +/-5%, 1/4W, Carbon	R157	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R65	DRE138441	Res, 220, +/-1%, 1/4W, Mtl	R158	DRV419191	Res, 2K, Var, 1/2W, Mtl
R66	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl	R159	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R67	DRV419181	Res, 1K, Var, 1/2W, Mtl	R160	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R68	DRD137461	Res, 180, +/-5%, 1/4W, Carbon	R161	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R81	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon	R162	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R82	DRD137501	Res, 270, +/-5%, 1/4W, Carbon	R163	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R83	DRD137441	Res, 150, +/-5%, 1/4W, Carbon	R164	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R84	DRD137351	Res, 62, +/-5%, 1/4W, Carbon	R165	DRE138441	Res, 220, +/-1%, 1/4W, Mtl
R85	DRD137541	Res, 390, +/-5%, 1/4W, Carbon	R166	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R87	DRD137651	Res, 1.1K, +/-5%, 1/4W, Carbon	R167	DRV419181	Res, 1K, Var, 1/2W, Mtl
R89	DRD137321	Res, 47, +/-5%, 1/4W, Carbon	R168	DRD137461	Res, 180, +/-5%, 1/4W, Carbon
R101	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon	R181	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon
R102	DRE139821	Res, 900k, +/-1%, 1/4W, Mtl	R182	DRD137501	Res, 270, +/-5%, 1/4W, Carbon
R103	DRE939231	Res, 111K, +/-1%, 1/4W, Mtl	R183	DRD137441	Res, 150, +/-5%, 1/4W, Carbon
R104	DRE939261	Res, 990k, +/-1%, 1/4W, Mtl	R184	DRD137351	Res, 62, +/-5%, 1/4W, Carbon
R105	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	R185	DRD137541	Res, 390, +/-5%, 1/4W, Carbon
R106	DRE939271	Res, 999k, +/-1%, 1/4W, Mtl	R187	DRD137651	Res, 1.1K, +/-5%, 1/4W, Carbon
R107	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R188	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
R108	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl	R189	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
R109	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon	S1	DSW014831	Switch SUJ12A
R110	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	S2	DSW014831	Switch SUJ12A
R111	DRD137401	Res, 100, +/-5%, 1/4W, Carbon	S3	DSW034662	Switch PS22BH3-3-11/1KB
R112	DRD137371	Res, 75, +/-5%, 1/4W, Carbon	S101	DSW014831	Switch SUJ12A
R113	DRV419151	Res, 100, Var, 1/2W, Mtl	S102	DSW014831	Switch SUJ12A
R114	DRD137401	Res, 100, +/-5%, 1/4W, Carbon	S103	DSW034662	Switch PS22BH3-3-11/1KB
R115	DRE137801	Res, 470, +/-1%, 1/4W, Mtl			
R116	DRD137781	Res, 3.9K, +/-5%, 1/4W, Carbon			
R117	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl			
R118	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl			
R119	DRD137461	Res, 180, +/-5%, 1/4W, Carbon			
R120	DRD137691	Res, 1.6K, +/-5%, 1/4W, Carbon			
R121	DRE137861	Res, 820, +/-1%, 1/4W, Mtl			

TRIG & SWEEP GENERATOR 4

SS-5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C401	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm	Q419	DTR139011	Tr, 2SC 1815GR TPER1
C403	DCC259161	Cap, 27p, +/-10%, 500V, Cer	Q420	DTR199411	Tr, DTC114ES
C404	DCC239121	Cap, 22p, +/-5%, 50V, Cer	Q421	DTR199591	Tr, DTC114TS
C406	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R402	DRE138481	Res, 330K, +/-1%, 1/4W, Mtl
C407	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R403	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C408	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R404	DRE138561	Res, 680k, +/-1%, 1/4W, Mtl
C409	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R407	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon
C410	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R408	DRV419211	Res, 10K, Var, 1/2W, Mtl
C412	DCE229271	Cap, 22u, +/-20%, 25V, Ele	R409	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C413	DCE229271	Cap, 22u, +/-20%, 25V, Ele	R410	DRV147571	Res, 10k, Var
C415	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R412	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
C416	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R413	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C417	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R414	DRE138191	Res, 20K, +/-1%, 1/4W, Mtl
C418	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm	R415	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
C419	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm	R416	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
C420	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm	R417	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
C424	DCC239011	Cap, 33p, +/-5%, 50V, Cer	R418	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
C426	DCF121261	Cap, 3300p, +/-10%, 50V, Flm	R419	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C427	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R420	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
C428	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R423	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
C429	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R424	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon
C430	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R426	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C431	DCE229211	Cap, 100u, +/-20%, 25V, Ele	R427	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
C433	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R428	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
C434	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R429	DRD137541	Res, 390, +/-5%, 1/4W, Carbon
C435	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R430	DRE137821	Res, 560, +/-1%, 1/4W, Mtl
C436	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R431	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
C439	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R432	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon
C440	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R433	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
C450	DCF121201	Cap, 1000p, +/-5%, 50V, Flm	R434	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
C451	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R435	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
D401	DDD019071	Diode, 1SS 120	R436	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
D402	DDD019071	Diode, 1SS 120	R437	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
D403	DDD019071	Diode, 1SS 120	R438	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
D404	DDD019101	Diode, 1SS 97 TA21R	R440	DRD137891	Res, 11k, +/-5%, 1/4W, Carbon
D405	DDD019071	Diode, 1SS 120	R441	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
D406	DDD019071	Diode, 1SS 120	R441	DRD137931	Res, 16K, +/-5%, 1/4W, Carbon
D408	DDD019301	Diode, 1SS168	R442	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
D409	DDD019301	Diode, 1SS168	R444	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
D410	DDD019071	Diode, 1SS 120	R447	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
D411	DDD019071	Diode, 1SS 120	R448	DRE137821	Res, 560, +/-1%, 1/4W, Mtl
D412	DDD019071	Diode, 1SS 120	R449	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
D413	DDD038951	Zdiode, RD3.0ESB2	R450	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
IC401	DIC140751	IC, SN 74LS74AN	R451	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
IC402	DIC410101	IC, CD4011BE	R452	DRE138241	Res, 33K, +/-1%, 1/4W, Mtl
IC403	DIC140051	IC, SN74LS04N	R453	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
J401	DCN994561	Connector 5204S-0810	R454	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
P403	DCN990871	Conn, 5267-02A	R455	DRV147591	Res, 20k, 50k, Var
Q401	DTR139011	Tr, 2SC 1815GR TPER1	R456	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
Q402	DTR219091	Tr, 2SK30ATM-Y	R457	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
Q403	DTR139011	Tr, 2SC 1815GR TPER1	R458	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
Q404	DTR139011	Tr, 2SC 1815GR TPER1	R459	DRD138101	Res, 82K, +/-5%, 1/4W, Carbon
Q405	DTR139011	Tr, 2SC 1815GR TPER1	R460	DRD138151	Res, 130k, +/-5%, 1/4W, Carbon
Q406	DTR139011	Tr, 2SC 1815GR TPER1	R463	DRV419171	Res, 500, Var, 1/2W, Mtl
Q407	DTR139011	Tr, 2SC 1815GR TPER1	R464	DRE137951	Res, 2.0K, +/-1%, 1/4W, Mtl
Q408	DTR139011	Tr, 2SC 1815GR TPER1	R465	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
Q409	DTR139011	Tr, 2SC 1815GR TPER1	R466	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon
Q410	DTR139011	Tr, 2SC 1815GR TPER1	R467	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
Q411	DTR139011	Tr, 2SC 1815GR TPER1	R468	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
Q412	DTR139011	Tr, 2SC 1815GR TPER1	R469	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
Q413	DTR139011	Tr, 2SC 1815GR TPER1	R470	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
Q414	DTR119011	Tr, 2SA 1015Y TPER1	R471	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
Q415	DTR199351	Tr, DTC 114ES TP	R472	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
Q416	DTR139011	Tr, 2SC 1815GR TPER1	R476	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
Q417	DTR119011	Tr, 2SA 1015Y TPER1	S401	DSW045121	Switch SLLR04
Q418	DTR219091	Tr, 2SK30ATM-Y	S402	DSW045101	Switch A2 SLLR02
			S404	DSW045101	Switch A2 SLLR02

POWER SUPPLY 7

SS-5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
0	DSK060211	Fuse holder PFC5000-0301
C701	DCE253171	Cap, 33u, +/-20%, 25V, Ele
C702	DCE270731	Cap, 47u, +/-20%, 250V, Ele
C703	DCE270731	Cap, 47u, +/-20%, 250V, Ele
C704	DCE279051	Cap, 4.7u, +/-20%, 250V, Ele
C705	DCE223261	Cap, 2200u, +/-20%, 25V, Ele
C706	DCE223261	Cap, 2200u, +/-20%, 25V, Ele
C707	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C708	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C709	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C710	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C711	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C712	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C713	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C720	DCE910071	Cap, 10u, +/-0.5%, 6.3V, Ele
D701	DDD019071	Diode, 1SS 120
D702	DDD038791	Zdiode, RD12ESB
D703	DDD038381	Zdiode, RD5.1ESB2
D704	DDD038791	Zdiode, RD12ESB
D705	DDD019071	Diode, 1SS 120
D706	DDD021031	Diode, 1G4B1
D707	DDD021031	Diode, 1G4B1
D708	DDD021181	Bridge diode, S1VB10
F702	DFU020141	Fuse, FSA-1
F703	DFU010131	Fuse FA-0.2
IC701	DIC613771	IC, 4558
IC702	DIC659011	IC, TA 78L005AP TPE5
P704	DCN120191	Connector 5267-11A
Q701	DTR139471	Tr, 2SC3946
Q702	DTR139471	Tr, 2SC3946
Q703	DTR139011	Tr, 2SC 1815GR TPER1
Q704	DTR145381	Tr, 2SD668AC
Q705	DTR145851	Tr, 2SD 1266P/Q
Q706	DTR139011	Tr, 2SC 1815GR TPER1
Q707	DTR119011	Tr, 2SA 1015Y TPER1
Q708	DTR125451	Tr, 2SB941P/Q
R702	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R703	DRE138441	Res, 220, +/-1%, 1/4W, Mtl
R704	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R705	DRS270841	Res, 2.4k
R706	DRD137121	Res, 6.8, +/-5%, 1/4W, Carbon
R707	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R708	DRD137401	Res, 100, +/-5%, 1/4W, Carbon
R709	DRE138441	Res, 220, +/-1%, 1/4W, Mtl
R710	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R712	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon
R713	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R714	DRS320661	Res, 56k, +/-5%, 1W, Mtl
R715	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
R716	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R717	DRV419191	Res, 2K, Var, 1/2W, Mtl
R718	DRE138081	Res, 6.8K, +/-1%, 1/4W, Mtl
R719	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R720	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon
R721	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R722	DRE138191	Res, 20K, +/-1%, 1/4W, Mtl
R723	DRE138191	Res, 20K, +/-1%, 1/4W, Mtl
R728	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R729	DRE138451	Res, 240k, +/-1%, 1/4W, Mtl
R730	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl

ADDED CIRCUITS 8

SS-5703A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C823	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C824	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C833	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C834	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C851	DCC239191	Cap, 1p, 0.25p, 50V, Cer
C852	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C853	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C856	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
D851	DDD019071	Diode, 1SS 120
D852	DDD019071	Diode, 1SS 120
D853	DDD038711	Diode, RD5.6ESB/HZS5.6NB
D854	DDD038691	Diode, RD4.7ESB/HZS4.7NB
IC851	DIC613421	IC, MB3501M(FUJ)
P851	DCN994241	Conn, 5207-05A
Q851	DTR139011	Tr, 2SC 1815GR TPER1
Q852	DTR139011	Tr, 2SC 1815GR TPER1
Q853	DTR139011	Tr, 2SC 1815GR TPER1
R851	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R852	DRE138031	Res, 4.3K, +/-1%, 1/4W, Mtl
R853	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
R854	DRV419191	Res, 2K, Var, 1/2W, Mtl
R855	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
R856	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
R857	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
R859	DRV419201	Res, 5K, Var, 1/2W, Mtl
R860	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R861	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
R862	DRD137571	Res, 510, +/-5%, 1/4W, Carbon

CH1/CH2 ATTENUATOR 0

SS-5705A/5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C801	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm	C1	DCF168011	Cap, 0.01u, +/-10%, 400V, Flm
C802	DCV019871	Cap, 20p, Var, 100V	C4	DCV019592	Cap, 20p, Var, 250V, Cer
C804	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	C5	DCV019602	Cap, 12p, Var, 250V, Cer
C805	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	C6	DCV019592	Cap, 20p, Var, 250V, Cer
C806	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm	C7	DCV019602	Cap, 12p, Var, 250V, Cer
C808	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm	C8	DCV019592	Cap, 20p, Var, 250V, Cer
C809	DCC239051	Cap, 100p, +/-5%, 50V, Cer	C9	DCV019602	Cap, 12p, Var, 250V, Cer
C810	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	C10	DCC239311	Cap, 68p, +/-5%, 50V, Cer
C812	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm	C12	DCV019592	Cap, 20p, Var, 250V, Cer
C813	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	C13	DCV019612	Cap, 8p, Var, 250V, Cer
C820	DCE229201	Cap, 47u, +/-20%, 25V, Ele	C14	DCC239151	Cap, 470, +/-5%, 50V, Cer
C821	DCE229201	Cap, 47u, +/-20%, 25V, Ele	C16	DCV019592	Cap, 20p, Var, 250V, Cer
C822	DCE229201	Cap, 47u, +/-20%, 25V, Ele	C17	DCV019612	Cap, 8p, Var, 250V, Cer
C830	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	C19	DCF121651	Cap, 2700p, +/-5%, 50V, Flm
C831	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	C21	DCF168011	Cap, 0.01u, +/-10%, 400V, Flm
C832	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	C24	DCV019592	Cap, 20p, Var, 250V, Cer
D801	DDD019071	Diode, 1SS 120	C25	DCV019602	Cap, 12p, Var, 250V, Cer
D802	DDD073231	LED, MAA3371X	C26	DCV019592	Cap, 20p, Var, 250V, Cer
IC801	DIC440011	IC, MC 74HC00N	C27	DCV019602	Cap, 12p, Var, 250V, Cer
IC802	DIC410591	IC, CD4066BE	C28	DCV019592	Cap, 20p, Var, 250V, Cer
IC803	DIC410101	IC, CD4011BE	C29	DCV019602	Cap, 12p, Var, 250V, Cer
P801	DCN994241	Conn, 5207-05A	C30	DCC239311	Cap, 68p, +/-5%, 50V, Cer
P802	DCN990871	Conn, 5267-02A	C32	DCV019592	Cap, 20p, Var, 250V, Cer
P803	DCN990871	Conn, 5267-02A	C33	DCV019612	Cap, 8p, Var, 250V, Cer
P805	DCN990931	Connector 5267-12A	C34	DCC239151	Cap, 470, +/-5%, 50V, Cer
Q801	DTR139011	Tr, 2SC 1815GR TPER1	C36	DCV019592	Cap, 20p, Var, 250V, Cer
Q802	DTR219091	Tr, 2SK30ATM-Y	C37	DCV019612	Cap, 8p, Var, 250V, Cer
Q803	DTR119011	Tr, 2SA 1015Y TPER1	C39	DCF121651	Cap, 2700p, +/-5%, 50V, Flm
R801	DRE138481	Res, 330K, +/-1%, 1/4W, Mtl	C40	DCC259211	Cap, 5p, +/-0.25p, 500V, Cer
R802	DRD137761	Res, 3.3K, +/-5%, 1/4W, Carbon	C41	DCC259211	Cap, 5p, +/-0.25p, 500V, Cer
R803	DRV419211	Res, 10K, Var, 1/2W, Mtl	C42	DCC259181	Cap, 8p, +/-0.5%, 500V, Cer
R805	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	C43	DCC259181	Cap, 8p, +/-0.5%, 500V, Cer
R806	DRD137401	Res, 100, +/-5%, 1/4W, Carbon	R1	DRD134351	Res, 10, +/-5%, 1/4W, Carbon
R807	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl	R2	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R808	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R3	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R809	DRE137761	Res, 330, +/-1%, 1/4W, Mtl	R5	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R810	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	R6	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R811	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	R12	DRE938071	Res, 500, +/-0.5%, 1/4W, Mtl
R812	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R13	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R815	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon	R14	DRE138571	Res, 750K, +/-1%, 1/4W, Mtl
R816	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl	R15	DRE938061	Res, 333k, +/-0.5%, 1/4W, Mtl
R817	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon	R16	DRE938081	Res, 900k, +/-0.5%, 1/4W, Mtl
R819	DRD138141	Res, 120k, +/-5%, 1/4W, Carbon	R17	DRE938341	Res, 111K, +/-0.5%, 1/4W, Mtl
R820	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon	R18	DRE938091	Res, 990k, +/-0.5%, 1/4W, Mtl
R821	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl	R19	DRE938311	Res, 10.1k, +/-0.5%, 1/4W, Mtl
R822	DRE137761	Res, 330, +/-1%, 1/4W, Mtl	R20	DRE137731	Res, 240, +/-1%, 1/4W, Mtl
R824	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	R21	DRD137181	Res, 12, +/-5%, 1/4W, Carbon
R825	DRD137481	Res, 220, +/-5%, 1/4W, Carbon	R22	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R826	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl	R23	DRE931101	Res, 999k, +/-0.5%, 1/4W, Mtl
R827	DRE137761	Res, 330, +/-1%, 1/4W, Mtl	R24	DRE938011	Res, 1.001k, +/-0.5%, 1/4W, Mtl
S801	DSW014831	Switch SUJ12A	R25	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
S802	DSW014831	Switch SUJ12A	R26	DRD137061	Res, 3.9, +/-5%, 1/4W, Carbon
S803	DSW014841	Switch SUJ12A	R28	DRE137621	Res, 82, +/-1%, 1/4W, Mtl
S804	DSW014831	Switch SUJ12A	R29	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
S805	DSW014831	Switch SUJ12A	R30	DRD137331	Res, 51, +/-5%, 1/4W, Carbon
			R31	DRD134351	Res, 10, +/-5%, 1/4W, Carbon
			R32	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
			R33	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
			R35	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
			R36	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
			R42	DRE938071	Res, 500, +/-0.5%, 1/4W, Mtl
			R43	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
			R44	DRE138571	Res, 750K, +/-1%, 1/4W, Mtl
			R45	DRE938061	Res, 333k, +/-0.5%, 1/4W, Mtl
			R46	DRE938081	Res, 900k, +/-0.5%, 1/4W, Mtl
			R47	DRE938341	Res, 111K, +/-0.5%, 1/4W, Mtl

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CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R48	DRE938091	Res, 990k, +/-0.5%, 1/4W, Mtl	0	DTA012141	Terminal FT-E-15
R49	DRE938311	Res, 10.1k, +/-0.5%, 1/4W, Mtl	C1	DCC151801	Cap, 1000p, +/-10%, 500V, Cer
R50	DRE137721	Res, 220, +/-1%, 1/4W, Mtl	C2	DCC239261	Cap, 120p, +/-5%, 50V, Cer
R51	DRD137181	Res, 12, +/-5%, 1/4W, Carbon	C3	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R52	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon	C4	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R53	DRE938101	Res, 999k, +/-0.5%, 1/4W, Mtl	C5	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
R54	DRE938011	Res, 1.001k, +/-0.5%, 1/4W, Mtl	C6	DCV019861	Cap, 7p, Var, 100V
R55	DRE137791	Res, 430, +/-1%, 1/4W, Mtl	C8	DCC239241	Cap, 27p, +/-5%, 50V, Cer
R56	DRD137111	Res, 6.2, +/-5%, 1/4W, Carbon	C11	DCC239241	Cap, 27p, +/-5%, 50V, Cer
R58	DRE137621	Res, 82, +/-1%, 1/4W, Mtl	C12	DCC239171	Cap, 220p, +/-5%, 50V, Cer
R59	DRD137261	Res, 27, +/-5%, 1/4W, Carbon	C13	DCF121421	Cap, 5600p, +/-10%, 50V, Flm
R60	DRD137261	Res, 27, +/-5%, 1/4W, Carbon	C14	DCC239011	Cap, 33p, +/-5%, 50V, Cer
S1	DSW014831	Switch SUJ12A	C16	DCC139051	Cap, 1000p, +/-10%, 50V, Cer
S2	DSW014831	Switch SUJ12A	C17	DCC239171	Cap, 220p, +/-5%, 50V, Cer
S3	DSW034713	Switch PS22BH4-5-11/1KA	C18	DCC139051	Cap, 1000p, +/-10%, 50V, Cer
S4	DSW014831	Switch SUJ12A	C20	DCC251101	Cap, 7p, +/-0.5%, 500V, Cer
S5	DSW014831	Switch SUJ12A	C21	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
S6	DSW034713	Switch PS22BH4-5-11/1KA	C22	DCE229201	Cap, 47u, +/-20%, 25V, Ele
			C24	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C30	DCE229201	Cap, 47u, +/-20%, 25V, Ele
			C33	DCC239031	Cap, 47p, +/-5%, 50V, Cer
			C34	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C35	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C38	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C41	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C42	DCC239251	Cap, 56p, +/-5%, 50V, Cer
			C44	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C45	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C50	DCC239211	Cap, 8p, +/-0.5%, 50V, Cer
			C60	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C73	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C75	DCC239301	Cap, 5p, +/-0.25p, 50V, Cer
			C76	DCC239061	Cap, 2p, +/-0.25p, 50V, Cer
			C77	DCC239061	Cap, 2p, +/-0.25p, 50V, Cer
			C80	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
			C81	DCF121261	Cap, 3300p, +/-10%, 50V, Flm
			D1	DDD010801	Diode, 1S1544A
			D2	DDD019071	Diode, 1SS 120
			D11	DDD019071	Diode, 1SS 120
			D12	DDD019071	Diode, 1SS 120
			D13	DDD019071	Diode, 1SS 120
			D20	DDD991081	Diode array DAP201
			D21	DDD991081	Diode array DAP201
			J24	DCN994571	Conn, 52045-1010
			Q1	DTR295361	Tr, uPA61AL
			Q2	DTR139011	Tr, 2SC 1815GR TPER1
			Q3	DTR139011	Tr, 2SC 1815GR TPER1
			Q4	DTR139061	Tr, 2SC 1907 TR
			Q5	DTR139061	Tr, 2SC 1907 TR
			Q6	DTR139351	Tr, 2SC2901-T
			Q7	DTR139061	Tr, 2SC 1907 TR
			Q8	DTR139061	Tr, 2SC 1907 TR
			Q9	DTR119041	Tr, 2SA 1206 TRC
			Q10	DTR119041	Tr, 2SA 1206 TRC
			Q11	DTR119041	Tr, 2SA 1206 TRC
			Q12	DTR139061	Tr, 2SC 1907 TR
			Q13	DTR139061	Tr, 2SC 1907 TR
			Q14	DTR119041	Tr, 2SA 1206 TRC
			Q15	DTR139061	Tr, 2SC 1907 TR
			Q16	DTR139061	Tr, 2SC 1907 TR
			Q17	DTR119041	Tr, 2SA 1206 TRC
			Q18	DTR139061	Tr, 2SC 1907 TR
			Q19	DTR139061	Tr, 2SC 1907 TR
			Q20	DTR139061	Tr, 2SC 1907 TR
			Q21	DTR119011	Tr, 2SA 1015Y TPER1
			Q22	DTR119011	Tr, 2SA 1015Y TPER1

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
Q23	DTR119041	Tr, 2SA 1206 TRC	R68	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q24	DTR139061	Tr, 2SC 1907 TR	R69	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
R1	DRD148281	Res, 470k, +/-5%, 1/4W, Carbon	R70	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R2	DRE930221	Res, 1M, +/-0.5%, 1/4W, Mtl	R73	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R3	DRV419221	Res, 20K, Var, 1/2W, Mtl	R74	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R4	DRE137641	Res, 100, +/-1%, 1/4W, Mtl	R75	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R5	DRD137341	Res, 56, +/-5%, 1/4W, Carbon	R76	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R6	DRE137641	Res, 100, +/-1%, 1/4W, Mtl	R77	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R7	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R78	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R8	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	R79	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R9	DRD137951	Res, 20k, +/-5%, 1/4W, Carbon	R80	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
R10	DRD137341	Res, 56, +/-5%, 1/4W, Carbon	R81	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R11	DRE137641	Res, 100, +/-1%, 1/4W, Mtl	R82	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R12	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl	R83	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R13	DRV419281	Res, 50, Var	R84	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R14	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl	R85	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
R15	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl	R86	DRE137701	Res, 180, +/-1%, 1/4W, Mtl
R16	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl	R87	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R17	DRV419161	Res, 200, Var, 1/2W, Mtl	R88	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R18	DRD137281	Res, 33, +/-5%, 1/4W, Carbon	R89	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R19	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl	R90	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R21	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl	R91	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R22	DRE137741	Res, 270, +/-1%, 1/4W, Mtl	R92	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R23	DRV419151	Res, 100, Var, 1/2W, Mtl	R93	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
R24	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	R94	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R25	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R95	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R26	DRV419161	Res, 200, Var, 1/2W, Mtl	R96	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R27	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl	R97	DDD080331	Th, 112101-2
R28	DRE137561	Res, 47, +/-1%, 1/4W, Mtl	R98	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R29	DRE137841	Res, 680, +/-1%, 1/4W, Mtl	R99	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R30	DRE137841	Res, 680, +/-1%, 1/4W, Mtl	R100	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R31	DRE137661	Res, 120, +/-1%, 1/4W, Mtl	R102	DRE138011	Res, 3.6K, +/-1%, 1/4W, Mtl
R32	DRD137271	Res, 30, +/-5%, 1/4W, Carbon	R103	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
R33	DRD137261	Res, 27, +/-5%, 1/4W, Carbon			
R34	DRV145891	Res, 1k, Var			
R35	DRD137261	Res, 27, +/-5%, 1/4W, Carbon			
R36	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			
R37	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			
R38	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon			
R39	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon			
R40	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			
R41	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl			
R42	DRD137791	Res, 4.3K, +/-5%, 1/4W, Carbon			
R43	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl			
R44	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			
R45	DRE137841	Res, 680, +/-1%, 1/4W, Mtl			
R46	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			
R47	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			
R48	DRE137841	Res, 680, +/-1%, 1/4W, Mtl			
R49	DRV419171	Res, 500, Var, 1/2W, Mtl			
R50	DRE137841	Res, 680, +/-1%, 1/4W, Mtl			
R51	DRE137841	Res, 680, +/-1%, 1/4W, Mtl			
R52	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon			
R53	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R54	DRD137281	Res, 33, +/-5%, 1/4W, Carbon			
R56	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R57	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon			
R58	DRE137841	Res, 680, +/-1%, 1/4W, Mtl			
R59	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl			
R60	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			
R61	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R62	DRE137561	Res, 47, +/-1%, 1/4W, Mtl			
R63	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon			
R64	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon			
R65	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon			
R66	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon			
R67	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			

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CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
0	DTA012141	Terminal FT-E-15	R19	DRV419151	Res, 100, Var, 1/2W, Mtl
0	KBA372811	49 Case B	R20	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C1	DCC151801	Cap, 1000p, +/-10%, 500V, Cer	R21	DRD137271	Res, 30, +/-5%, 1/4W, Carbon
C2	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R22	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
C3	DCC239261	Cap, 120p, +/-5%, 50V, Cer	R23	DRV145891	Res, 1k, Var
C4	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R24	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
C5	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R25	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
C6	DCV019861	Cap, 7p, Var, 100V	R26	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
C8	DCC239241	Cap, 27p, +/-5%, 50V, Cer	R27	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
C11	DCC239241	Cap, 27p, +/-5%, 50V, Cer	R28	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C12	DCC239011	Cap, 33p, +/-5%, 50V, Cer	R29	DRV419181	Res, 1K, Var, 1/2W, Mtl
C14	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R30	DRD137791	Res, 4.3K, +/-5%, 1/4W, Carbon
C15	DCC239171	Cap, 220p, +/-5%, 50V, Cer	R31	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
C16	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R32	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C18	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R33	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R34	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C21	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R35	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C22	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R36	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C23	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R37	DRV419171	Res, 500, Var, 1/2W, Mtl
C24	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R38	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
C31	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R39	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
C32	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R40	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
C41	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R41	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
C42	DCC239131	Cap, 39p, +/-5%, 50V, Cer	R42	DRE137661	Res, 120, +/-1%, 1/4W, Mtl
C50	DCV019471	Cap, 10p, Var, 100V	R45	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
C51	DCV019602	Cap, 12p, Var, 250V, Cer	R46	DRE137561	Res, 47, +/-1%, 1/4W, Mtl
C80	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R50	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D1	DDD010801	Diode, 1S1544A	R51	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D2	DDD019071	Diode, 1SS 120	R52	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D3	DDD991081	Diode array DAP201	R53	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D4	DDD991081	Diode array DAP201	R54	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
Q1	DTR295361	Tr, uPA61AL	R55	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
Q2	DTR139011	Tr, 2SC 1815GR TPER1	R56	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q3	DTR139011	Tr, 2SC 1815GR TPER1	R57	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q4	DTR139061	Tr, 2SC 1907 TR	R58	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
Q5	DTR139061	Tr, 2SC 1907 TR	R59	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
Q6	DTR119041	Tr, 2SA 1206 TRC	R60	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q7	DTR119041	Tr, 2SA 1206 TRC	R61	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q8	DTR119041	Tr, 2SA 1206 TRC	R64	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
Q9	DTR139061	Tr, 2SC 1907 TR	R65	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
Q10	DTR139061	Tr, 2SC 1907 TR	R70	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
Q11	DTR119041	Tr, 2SA 1206 TRC	R71	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q12	DTR139061	Tr, 2SC 1907 TR	R72	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
Q13	DTR139061	Tr, 2SC 1907 TR	R73	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
Q14	DTR139061	Tr, 2SC 1907 TR	R74	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
Q15	DTR139061	Tr, 2SC 1907 TR	R75	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q16	DTR139061	Tr, 2SC 1907 TR	R76	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q17	DTR139061	Tr, 2SC 1907 TR	R77	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R1	DRD148281	Res, 470k, +/-5%, 1/4W, Carbon	R78	DDD080331	Th, 112101-2
R2	DRE930221	Res, 1M, +/-0.5%, 1/4W, Mtl			
R3	DRV419221	Res, 20K, Var, 1/2W, Mtl			
R4	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R5	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			
R6	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R7	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R8	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R9	DRD137951	Res, 20k, +/-5%, 1/4W, Carbon			
R10	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			
R11	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R12	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl			
R13	DRV419281	Res, 50, Var			
R14	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl			
R15	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl			
R16	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl			
R17	DRV419161	Res, 200, Var, 1/2W, Mtl			
R18	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			

VERT CONTROL 3

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C2	DCV019861	Cap, 7p, Var, 100V
C4	DCC239221	Cap, 15p, +/-5%, 50V, Cer
C5	DCC139051	Cap, 1000p, +/-10%, 50V, Cer
C6	DCV019871	Cap, 20p, Var, 100V
C8	DCC139051	Cap, 1000p, +/-10%, 50V, Cer
C9	DCC239221	Cap, 15p, +/-5%, 50V, Cer
C10	DCC239171	Cap, 220p, +/-5%, 50V, Cer
C11	DCC239151	Cap, 470, +/-5%, 50V, Cer
C16	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C17	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C18	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C20	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C22	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C23	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C24	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C30	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C40	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C41	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C42	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C43	DCC230101	Cap, 0.5p, +/-0.25p, 50V, Cer
C44	DCC239201	Cap, 4p, +/-0.25p, 50V, Cer
C80	DCE229201	Cap, 47u, +/-20%, 25V, Ele
D1	DDD019071	Diode, 1SS 120
D2	DDD019071	Diode, 1SS 120
D3	DDD019071	Diode, 1SS 120
D4	DDD019071	Diode, 1SS 120
D5	DDD019071	Diode, 1SS 120
D6	DDD019071	Diode, 1SS 120
D7	DDD019071	Diode, 1SS 120
D8	DDD019071	Diode, 1SS 120
D9	DDD019071	Diode, 1SS 120
D10	DDD019071	Diode, 1SS 120
D11	DDD019071	Diode, 1SS 120
D12	DDD019071	Diode, 1SS 120
D13	DDD019071	Diode, 1SS 120
D14	DDD019071	Diode, 1SS 120
D15	DDD019071	Diode, 1SS 120
D16	DDD019071	Diode, 1SS 120
D17	DDD019071	Diode, 1SS 120
D18	DDD019071	Diode, 1SS 120
D19	DDD019071	Diode, 1SS 120
D20	DDD019071	Diode, 1SS 120
D21	DDD019071	Diode, 1SS 120
D22	DDD019071	Diode, 1SS 120
D24	DDD019071	Diode, 1SS 120
IC1	DIC420621	IC, TC4069UBP (TOS)
IC2	DIC494711	IC, TC74HC4520P (TOS)
IC3	DIC420261	IC, TC4027BAP (TOS)
IC4	DIC410101	IC, CD4011BE
IC5	DIC410101	IC, CD4011BE
J6	DCN990621	Connector 5124-12BHPB
J7	DCN990621	Connector 5124-12BHPB
J16	DCN994571	Conn, 52045-1010
P50	DCN034651	Conn, M33-03-30-114P
Q1	DTR119041	Tr, 2SA 1206 TRC
Q2	DTR119041	Tr, 2SA 1206 TRC
Q3	DTR139011	Tr, 2SC 1815GR TPER1
Q4	DTR139011	Tr, 2SC 1815GR TPER1
Q5	DTR139011	Tr, 2SC 1815GR TPER1
Q6	DTR139351	Tr, 2SC2901-T
Q7	DTR139351	Tr, 2SC2901-T
Q8	DTR139011	Tr, 2SC 1815GR TPER1
Q9	DTR139011	Tr, 2SC 1815GR TPER1
Q10	DTR119011	Tr, 2SA 1015Y TPER1
Q11	DTR199491	Tr, DTA114TS
Q12	DTR199021	Tr, DTC114YS

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
Q13	DTR199021	Tr, DTC114YS
R5	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R7	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R8	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
R9	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
R10	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
R11	DRV419201	Res, 5K, Var, 1/2W, Mtl
R12	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
R13	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R14	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R15	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
R16	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R17	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R18	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R20	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R21	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R23	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
R24	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R25	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
R26	DRV419181	Res, 1K, Var, 1/2W, Mtl
R28	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R29	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
R30	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
R31	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
R32	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R33	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
R35	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R36	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R37	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R38	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl
R39	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R40	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R41	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R45	DRV419171	Res, 500, Var, 1/2W, Mtl
R46	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R48	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R50	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
R53	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R54	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R55	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R61	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R62	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R63	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R65	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R70	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
R71	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
R72	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R73	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R80	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R81	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R82	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R85	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R86	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R87	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R88	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R89	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R90	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R91	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R92	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R93	DRE138221	Res, 27K, +/-1%, 1/4W, Mtl
R98	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
S1	DSW014731	Switch SUJ55A
X1	DHF990271	Ceramic OSC CSB256D

V MAIN AMP 4

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C0	DCC239261	Cap, 120p, +/-5%, 50V, Cer	R8	DRE137621	Res, 82, +/-1%, 1/4W, Mtl
C1	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R9	DRD137181	Res, 12, +/-5%, 1/4W, Carbon
C2	DCC239041	Cap, 10p, +/-0.5p, 50p, Cer	R10	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
C3	DCV019471	Cap, 10p, Var, 100V	R11	DRD137861	Res, 8.2K, +/-5%, 1/4W, Carbon
C5	DCV019871	Cap, 20p, Var, 100V	R12	DDD080431	Th, 112103-2
C7	DCV019471	Cap, 10p, Var, 100V	R13	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
C8	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R14	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
C9	DCC250101	Cap, 0.5p, +/-0.25p, 500V, Cer	R15	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C10	DCC239031	Cap, 47p, +/-5%, 50V, Cer	R16	DRV419181	Res, 1K, Var, 1/2W, Mtl
C11	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R17	DRD137181	Res, 12, +/-5%, 1/4W, Carbon
C12	DCC239031	Cap, 47p, +/-5%, 50V, Cer	R18	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C13	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer	R19	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C14	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer	R20	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
C15	DCC159021	Cap, 2200p, +/-10%, 500V, Cer	R21	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
C16	DCC159021	Cap, 2200p, +/-10%, 500V, Cer	R22	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
C18	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm	R23	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
C19	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm	R24	DRS330571	Res, 10k, +/-5%, 2W, Mtl
C21	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R25	DRD137281	Res, 33, +/-5%, 1/4W, Carbon
C22	DCC239241	Cap, 27p, +/-5%, 50V, Cer	R27	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C23	DCC239241	Cap, 27p, +/-5%, 50V, Cer	R29	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
C24	DCC239051	Cap, 100p, +/-5%, 50V, Cer	R30	DRD137281	Res, 33, +/-5%, 1/4W, Carbon
C25	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer	R31	DRS330571	Res, 10k, +/-5%, 2W, Mtl
C26	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R33	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
C27	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R34	DRS330611	Res, 22k, +/-5%, 2W, Mtl
C28	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R35	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
C30	DCF121381	Cap, 3300p, +/-10%, 50V, Flm	R37	DRS330571	Res, 10k, +/-5%, 2W, Mtl
C32	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R39	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
C33	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R40	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
C36	DCC239111	Cap, 18p, +/-5%, 50V, Cer	R42	DRS330571	Res, 10k, +/-5%, 2W, Mtl
C40	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R43	DRE137701	Res, 180, +/-1%, 1/4W, Mtl
C50	DCC239061	Cap, 2p, +/-0.25p, 50V, Cer	R44	DRE137701	Res, 180, +/-1%, 1/4W, Mtl
C51	DCC239171	Cap, 220p, +/-5%, 50V, Cer	R45	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
C52	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R46	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
D3	DDD019071	Diode, 1SS 120	R47	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
D4	DDD019071	Diode, 1SS 120	R48	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
D5	DDD019011	Diode, 1SV69 TA21R	R50	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
D6	DDD038401	Zdiode, RD6.2ESB2	R51	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
D7	DDD038401	Zdiode, RD6.2ESB2	R52	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl
D8	DDD038921	Diode, RD5.1ESB1 TA21R	R55	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
D10	DDD019071	Diode, 1SS 120	R56	DRV419231	Res, 50K, Var, 1/2W, Mtl
D11	DDD019071	Diode, 1SS 120	R62	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
J27	DCN994571	Conn, 52045-1010	R70	DRE138111	Res, 9.1K, +/-1%, 1/4W, Mtl
L1	DCL111331	Choke Coil 82007			
L2	DCL111331	Choke Coil 82007			
P26	DCN034651	Conn, M33-03-30-114P			
Q1	DTR119041	Tr, 2SA 1206 TRC			
Q2	DTR119041	Tr, 2SA 1206 TRC			
Q3	DTR139061	Tr, 2SC 1907 TR			
Q4	DTR139061	Tr, 2SC 1907 TR			
Q5	DTR137671	Tr, 2SC2570A			
Q8	DTR137671	Tr, 2SC2570A			
Q9	DTR137331	Tr, 2SC4001L/K			
Q10	DTR116421	Tr, 2SA1546L/K			
Q11	DTR137331	Tr, 2SC4001L/K			
Q12	DTR116421	Tr, 2SA1546L/K			
Q13	DTR119041	Tr, 2SA 1206 TRC			
Q14	DTR119041	Tr, 2SA 1206 TRC			
Q15	DTR139011	Tr, 2SC 1815GR TPER1			
R0	DRE138281	Res, 74, +/-1%, 1/4W, Mtl			
R1	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R2	DRE137631	Res, 91, +/-1%, 1/4W, Mtl			
R3	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl			
R4	DDD080331	Th, 112101-2			
R5	DRV419211	Res, 10K, Var, 1/2W, Mtl			
R6	DRE137621	Res, 82, +/-1%, 1/4W, Mtl			
R7	DRE137661	Res, 120, +/-1%, 1/4W, Mtl			

TRIG GENERATOR 5

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCF168011	Cap, 0.01u, +/-10%, 400V, Flm	R11	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
C2	DCF121221	Cap, 1500p, +/-10%, 50V, Flm	R12	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
C3	DCF121201	Cap, 1000p, +/-5%, 50V, Flm	R13	DRD138321	Res, 680k, +/-5%, 1/4W, Carbon
C4	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R14	DRE938371	Res, 1M, +/-0.5%, 1/4W, Mtl
C5	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R15	DRD137081	Res, 4.7, +/-5%, 1/4W, Carbon
C6	DCC239031	Cap, 47p, +/-5%, 50V, Cer	R16	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
C7	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R17	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C8	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R18	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C9	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R19	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C10	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R20	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
C11	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R21	DRD137301	Res, 39, +/-5%, 1/4W, Carbon
C12	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R22	DRV419151	Res, 100, Var, 1/2W, Mtl
C13	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm	R23	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
C14	DCC239181	Cap, 330p, +/-5%, 50V, Cer	R24	DRE137981	Res, 2.7, +/-1%, 1/4W, Mtl
C15	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R25	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
C16	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R26	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
C17	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm	R27	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
C18	DCC259221	Cap, 20p, +/-5%, 500V, Cer	R28	DRD138321	Res, 680k, +/-5%, 1/4W, Carbon
C19	DCF121361	Cap, 2200p, +/-10%, 50V, Flm	R29	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R30	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C21	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R31	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl
C22	DCC239721	Cap, 20p, +/-5%, 50V, Cer	R32	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
C23	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R33	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
C24	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R34	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C25	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R36	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
C26	DCC139251	Cap, 0.1u, +/-80/-20%, 50V, Cer	R37	DRD137281	Res, 33, +/-5%, 1/4W, Carbon
C50	DCE249321	Cap, 2.2u, +/-20%, 50V, Ele	R38	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
C51	DCE229271	Cap, 22u, +/-20%, 25V, Ele	R39	DRE137721	Res, 220, +/-1%, 1/4W, Mtl
C52	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R40	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C53	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R41	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
C55	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R42	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
D1	DDD019171	Diode, MA700	R43	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
D2	DDD019071	Diode, 1SS 120	R44	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
D3	DDD019071	Diode, 1SS 120	R45	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D4	DDD019071	Diode, 1SS 120	R46	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon
D5	DDD019071	Diode, 1SS 120	R47	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
D6	DDD010801	Diode, 1S1544A	R48	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
IC1	DIC493541	IC, TC74HC4066P(TOS)	R49	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
J8	DCN990631	Connector 5124-15BHPB	R51	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
P13	DCN994241	Conn, 5207-05A	R52	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon
P32	DCN990871	Conn, 5267-02A	R53	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
Q1	DTR139011	Tr, 2SC 1815GR TPER1	R54	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q2	DTR199021	Tr, DTC114YS	R55	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q3	DTR139011	Tr, 2SC 1815GR TPER1	R56	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q5	DTR139011	Tr, 2SC 1815GR TPER1	R57	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q6	DTR295361	Tr, uPA61AL	R58	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
Q7	DTR119011	Tr, 2SA 1015Y TPER1	R60	DRE138061	Res, 5.6K, +/-1%, 1/4W, Mtl
Q8	DTR139201	Tr, 2SC982TM	R61	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
Q9	DTR139061	Tr, 2SC 1907 TR	R62	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q10	DTR119011	Tr, 2SA 1015Y TPER1	R63	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q11	DTR139061	Tr, 2SC 1907 TR	RL1	DKD027781	Relay, SY-12W-K
Q12	DTR139061	Tr, 2SC 1907 TR	S1	DSW045091	Switch SLR024
Q13	DTR139351	Tr, 2SC2901-T	S2	DSW045091	Switch SLR024
Q14	DTR139351	Tr, 2SC2901-T	S3	DSW014831	Switch SUJ12A
Q15	DTR219091	Tr, 2SK30ATM-Y			
Q17	DTR139061	Tr, 2SC 1907 TR			
Q18	DTR219091	Tr, 2SK30ATM-Y			
Q19	DTR199021	Tr, DTC114YS			
R1	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R2	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl			
R3	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R6	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R7	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R8	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon			
R9	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl			
R10	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon			

H CONTROL-A [6]

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C5	DCC139051	Cap,1000p,+/-10%,50V,Cer
C21	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C22	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C23	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C25	DCC239021	Cap,150p,+/-5%,50V,Cer
C30	DCE249301	Cap,47u,+/-20%,25V,Ele
C31	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C32	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C33	DCE229201	Cap,47u,+/-20%,25V,Ele
D1	DDD071121	LED,TLG206
D2	DDD073221	LED,AA2533D
D4	DDD073221	LED,AA2533D
D16	DDD071911	LED,TLG144
IC1	DIC440111	IC,MC74HC10N
J17	DCN994461	Connector 52044-2010
J22	DCN994441	Connector 52044-1610
J25	DCN994571	Conn,52045-1010
P23	DCN034651	Conn,M33-03-30-114P
Q1	DTR199591	Tr,DTC114TS
Q5	DTR139011	Tr,2SC 1815GR TPER1
Q7	DTR119011	Tr,2SA 1015Y TPER1
R1	DRV146951	Res,20k,Var
R2	DRD137861	Res,8.2K,+/-5%,1/4W,Carbon
R3	DRE137841	Res,680,+/-1%,1/4W,Mtl
R4	DRE138201	Res,22K,+/-1%,1/4W,Mtl
R5	DRV419391	Res,50k,Var
R6	DRE138601	Res,1.0M,+/-1%,1/4W,Mtl
R7	DRE137761	Res,330,+/-1%,1/4W,Mtl
R9	DRD137641	Res,1.0K,+/-5%,1/4W,Carbon
R12	DRE138011	Res,3.6K,+/-1%,1/4W,Mtl
R13	DRV419351	Res,2k,Var
R14	DRV147411	Res,10k,Var
R15	DRV419351	Res,2k,Var
R16	DRE137901	Res,1.2K,+/-1%,1/4W,Mtl
R17	DRV146981	Res,20k,Var
R18	DRV350301	Res,50k,Var
R19	DRE137941	Res,1.8K,+/-1%,1/4W,Mtl
R20	DRE137981	Res,2.7K,+/-1%,1/4W,Mtl
R21	DRV147421	Res,10k,Var
R28	DRS330171	Res,4.7k,+/-5%,2W,Mtl
R33	DRE137921	Res,1.5K,+/-1%,1/4W,Mtl
R35	DRS320351	Res,150,+/-5%,1W,Mtl
R40	DRV146961	Res,50k,Var
R43	DRV146951	Res,20k,Var
R47	DRD137641	Res,1.0K,+/-5%,1/4W,Carbon
R48	DRD137711	Res,20K,+/-5%,1/4W,Carbon
R49	DRD137861	Res,8.2K,+/-5%,1/4W,Carbon
R50	DRE138281	Res,74,+/-1%,1/4W,Mtl
R51	DRE138281	Res,74,+/-1%,1/4W,Mtl
R52	DRE138281	Res,74,+/-1%,1/4W,Mtl
R53	DRD137641	Res,1.0K,+/-5%,1/4W,Carbon
R55	DRV146981	Res,20k,Var
R58	DRV146842	Res,10k,50k,Var
R60	DRE138281	Res,74,+/-1%,1/4W,Mtl
R61	DRE138281	Res,74,+/-1%,1/4W,Mtl
R62	DRE138281	Res,74,+/-1%,1/4W,Mtl
S1	DSW014701	Switch SUJ50A
S2	DSW014721	Switch SUJ45A

H CONTROL-B [7]

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C6	DCC239021	Cap,150p,+/-5%,50V,Cer
C8	DCC239191	Cap,1p,0.25p,50V,Cer
C9	DCE229201	Cap,47u,+/-20%,25V,Ele
C10	DCE229201	Cap,47u,+/-20%,25V,Ele
C11	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C12	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C13	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C14	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C20	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C21	DCE229201	Cap,47u,+/-20%,25V,Ele
C30	DCC139251	Cap,0.1u,+80/-20%,50V,Cer
C31	DCC139251	Cap,0.1u,+80/-20%,50V,Cer
C32	DCC929031	Cap,0.01u,+/-5%,50V,Cer
C33	DCC139251	Cap,0.1u,+80/-20%,50V,Cer
C34	DCC239021	Cap,150p,+/-5%,50V,Cer
C35	DCC239031	Cap,47p,+/-5%,50V,Cer
D3	DDD038791	Zdiode,RD12ESB
D4	DDD019071	Diode,1SS 120
D5	DDD019071	Diode,1SS 120
D6	DDD019071	Diode,1SS 120
D7	DDD019071	Diode,1SS 120
D8	DDD019071	Diode,1SS 120
D9	DDD019071	Diode,1SS 120
D10	DDD019071	Diode,1SS 120
D11	DDD019071	Diode,1SS 120
D12	DDD019071	Diode,1SS 120
D13	DDD019071	Diode,1SS 120
D14	DDD019071	Diode,1SS 120
D15	DDD019071	Diode,1SS 120
D16	DDD019071	Diode,1SS 120
D17	DDD019071	Diode,1SS 120
D18	DDD019071	Diode,1SS 120
IC2	DIC440061	IC,MC74HC05N
IC3	DIC440011	IC,MC 74HC00N
IC4	DIC451131	IC,TC74HC112P(TOS)
J9	DCN990631	Connector 5124-15BHPB
J12	DCN994461	Connector 52044-2010
Q2	DTR139011	Tr,2SC 1815GR TPER1
Q3	DTR139011	Tr,2SC 1815GR TPER1
Q4	DTR119011	Tr,2SA 1015Y TPER1
Q5	DTR199021	Tr,DTC114YS
Q6	DTR199021	Tr,DTC114YS
R17	DRE137981	Res,2.7K,+/-1%,1/4W,Mtl
R18	DRE137921	Res,1.5K,+/-1%,1/4W,Mtl
R19	DRE138281	Res,74,+/-1%,1/4W,Mtl
R20	DRD138001	Res,33K,+/-5%,1/4W,Carbon
R21	DRE138221	Res,27K,+/-1%,1/4W,Mtl
R22	DRD137641	Res,1.0K,+/-5%,1/4W,Carbon
R23	DRD137581	Res,560,+/-5%,1/4W,Carbon
R24	DRE138111	Res,9.1K,+/-1%,1/4W,Mtl
R25	DRE138111	Res,9.1K,+/-1%,1/4W,Mtl
R26	DRE138051	Res,5.1K,+/-1%,1/4W,Mtl
R27	DRV419201	Res,5K,Var,1/2W,Mtl
R28	DRV419181	Res,1K,Var,1/2W,Mtl
R29	DRE137991	Res,3.0K,+/-1%,1/4W,Mtl
R30	DRE138051	Res,5.1K,+/-1%,1/4W,Mtl
R31	DRE138051	Res,5.1K,+/-1%,1/4W,Mtl
R32	DRD137161	Res,3.9,+/-5%,1/4W,Carbon
R34	DRE138281	Res,74,+/-1%,1/4W,Mtl
R35	DRD137641	Res,1.0K,+/-5%,1/4W,Carbon
R36	DRD137941	Res,18K,+/-5%,1/4W,Carbon
R38	DRE138041	Res,4.7K,+/-1%,1/4W,Mtl
R39	DRE138041	Res,4.7K,+/-1%,1/4W,Mtl
R60	DRE138041	Res,4.7K,+/-1%,1/4W,Mtl
R61	DRE138041	Res,4.7K,+/-1%,1/4W,Mtl
R62	DRE138041	Res,4.7K,+/-1%,1/4W,Mtl
R63	DRD137641	Res,1.0K,+/-5%,1/4W,Carbon

A SWEEP GENERATOR 8

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R18	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
C3	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R19	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
C4	DCC239261	Cap, 120p, +/-5%, 50V, Cer	R20	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
C7	DCC239221	Cap, 15p, +/-5%, 50V, Cer	R21	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
C8	DCC239311	Cap, 68p, +/-5%, 50V, Cer	R22	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C9	DCV019871	Cap, 20p, Var, 100V	R23	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C10	DCC239761	Cap, 56p, +/-5%, 50V, Cer	R24	DRE138151	Res, 13K, +/-1%, 1/4W, Mtl
C12	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R25	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
C13	DCC239051	Cap, 100p, +/-5%, 50V, Cer	R26	DRE137721	Res, 220, +/-1%, 1/4W, Mtl
C14	DCC239271	Cap, 180p, +/-5%, 50V, Cer	R29	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
C15	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R32	DRD137951	Res, 20k, +/-5%, 1/4W, Carbon
C16	DCC239051	Cap, 100p, +/-5%, 50V, Cer	R33	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
C17	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R34	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
C18	DCF121221	Cap, 1500p, +/-10%, 50V, Flm	R35	DRD137281	Res, 33, +/-5%, 1/4W, Carbon
C19	DCE249321	Cap, 2.2u, +/-20%, 50V, Ele	R36	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R37	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
C21	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R38	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C22	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R40	DRV146931	Res, 500k, 20k, Var
C23	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R50	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C25	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
C26	DCE229201	Cap, 47u, +/-20%, 25V, Ele			
C27	DCC239151	Cap, 470, +/-5%, 50V, Cer			
C28	DCE229201	Cap, 47u, +/-20%, 25V, Ele			
C29	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
C30	DCC239031	Cap, 47p, +/-5%, 50V, Cer			
C31	DCC239021	Cap, 150p, +/-5%, 50V, Cer			
C32	DCC239021	Cap, 150p, +/-5%, 50V, Cer			
C33	DCC239201	Cap, 4p, +/-0.25p, 50V, Cer			
C40	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
D1	DDD019071	Diode, 1SS 120			
D2	DDD019101	Diode, 1SS 97 TA21R			
D3	DDD038711	Diode, RD5.6ESB/HZS5.6NB			
D4	DDD038861	Diode, RD24ESB/HZ24NB			
D6	DDD019171	Diode, MA700			
D7	DDD019171	Diode, MA700			
D8	DDD019171	Diode, MA700			
D10	DDD073221	LED, AA2533D			
IC1	DIC310051	IC, F10107DC			
IC2	DIC495711	IC, TC74HC123AP (TOS)			
IC3	DIC170511	IC, SN74S112N			
IC4	DIC493421	IC, TC74HC14P (TOS)			
L1	DCL119361	Coil BLO2RN2-R62			
Q1	DTR119041	Tr, 2SA 1206 TRC			
Q2	DTR119041	Tr, 2SA 1206 TRC			
Q3	DTR139351	Tr, 2SC2901-T			
Q4	DTR139351	Tr, 2SC2901-T			
Q5	DTR219091	Tr, 2SK30ATM-Y			
Q6	DTR119041	Tr, 2SA 1206 TRC			
Q7	DTR219091	Tr, 2SK30ATM-Y			
Q8	DTR139011	Tr, 2SC 1815GR TPER1			
Q9	DTR119011	Tr, 2SA 1015Y TPER1			
Q10	DTR139011	Tr, 2SC 1815GR TPER1			
Q11	DTR119011	Tr, 2SA 1015Y TPER1			
R1	DRE137721	Res, 220, +/-1%, 1/4W, Mtl			
R2	DRD137581	Res, 560, +/-5%, 1/4W, Carbon			
R3	DRD137581	Res, 560, +/-5%, 1/4W, Carbon			
R4	DRE137701	Res, 180, +/-1%, 1/4W, Mtl			
R5	DRE137701	Res, 180, +/-1%, 1/4W, Mtl			
R6	DRD137581	Res, 560, +/-5%, 1/4W, Carbon			
R11	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R12	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R13	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R14	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R15	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl			
R16	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl			
R17	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			

B SWEEP GENERATOR 9

SS-5705A/5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R31	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
C2	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R32	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C3	DCE229201	Cap, 47u, +/-20%, 25V, Ele			
C8	DCC239051	Cap, 100p, +/-5%, 50V, Cer			
C9	DCC239221	Cap, 15p, +/-5%, 50V, Cer			
C10	DCC239311	Cap, 68p, +/-5%, 50V, Cer			
C11	DCV019871	Cap, 20p, Var, 100V			
C12	DCC239761	Cap, 56p, +/-5%, 50V, Cer			
C14	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer			
C15	DCC239051	Cap, 100p, +/-5%, 50V, Cer			
C16	DCC239271	Cap, 180p, +/-5%, 50V, Cer			
C17	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
C18	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
C19	DCC239051	Cap, 100p, +/-5%, 50V, Cer			
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
C21	DCC239121	Cap, 22p, +/-5%, 50V, Cer			
C30	DCC239051	Cap, 100p, +/-5%, 50V, Cer			
D1	DDD038671	Zdiode, RD3.9ESB			
D2	DDD038621	Zdiode, RD2.4ESB			
D3	DDD019101	Diode, 1SS 97 TA21R			
D4	DDD038711	Diode, RD5.6ESB/HZS5.6NB			
D5	DDD038861	Diode, RD24ESB/HZ24NB			
D6	DDD019071	Diode, 1SS 120			
IC1	DIC440111	IC, MC74HC10N			
IC2	DIC141111	IC, SN74LS112N			
IC3	DIC630731	IC, TL810CP(TEX)			
IC4	DIC440051	IC, MC 74HC04N			
Q1	DTR139011	Tr, 2SC 1815GR TPER1			
Q2	DTR139011	Tr, 2SC 1815GR TPER1			
Q3	DTR139351	Tr, 2SC2901-T			
Q4	DTR139351	Tr, 2SC2901-T			
Q5	DTR219091	Tr, 2SK30ATM-Y			
Q6	DTR119041	Tr, 2SA 1206 TRC			
Q7	DTR219091	Tr, 2SK30ATM-Y			
Q8	DTR139011	Tr, 2SC 1815GR TPER1			
Q9	DTR119011	Tr, 2SA 1015Y TPER1			
Q10	DTR139011	Tr, 2SC 1815GR TPER1			
R1	DRE138111	Res, 9.1K, +/-1%, 1/4W, Mtl			
R2	DRE138111	Res, 9.1K, +/-1%, 1/4W, Mtl			
R3	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon			
R4	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon			
R5	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl			
R6	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl			
R7	DRE138281	Res, 74, +/-1%, 1/4W, Mtl			
R8	DRE137721	Res, 220, +/-1%, 1/4W, Mtl			
R9	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R10	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R11	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R12	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R13	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl			
R14	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R15	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl			
R16	DRE137721	Res, 220, +/-1%, 1/4W, Mtl			
R17	DRV419171	Res, 500, Var, 1/2W, Mtl			
R18	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl			
R19	DRE137781	Res, 390, +/-1%, 1/4W, Mtl			
R20	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R21	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R22	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl			
R23	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl			
R24	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R25	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon			
R26	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl			
R27	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R28	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl			
R30	DRE137761	Res, 330, +/-1%, 1/4W, Mtl			

A TIMING 10

SS-5705A/5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R30	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
C2	DCE249311	Cap, 1u, +/-20%, 50V, Ele	R31	DRD139831	Res, 2.2M, +/-5%, 1/4W, Carbon
C4	DCE249301	Cap, 47u, +/-20%, 25V, Ele	R40	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
C5	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm	R41	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
C6	DCF121341	Cap, 1500p, +/-10%, 50V, Flm	R42	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
C7	DCF121261	Cap, 3300p, +/-10%, 50V, Flm	R43	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
C9	DCF125771	Cap, 0.027u, +/-5%, 50V, Flm	R44	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
C10	DCF132651	Cap, 1u, +/-1%, 100V, Flm	R45	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
C11	DCF121281	Cap, 4700p, +/-10%, 50V, Flm	R46	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
C12	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer	R47	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
C13	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R48	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
C14	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R49	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
C15	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R50	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
C16	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer	R51	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
C30	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R52	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
C31	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R53	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
C32	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R54	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
C65	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon	R55	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
D1	DDD019071	Diode, 1SS 120	R56	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
D2	DDD019071	Diode, 1SS 120	R57	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
D3	DDD019071	Diode, 1SS 120	R58	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
IC1	DIC440431	IC, MC74HC42N	R59	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
IC2	DIC110081	IC, SN7407N	R60	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
IC3	DIC195011	IC, SN75451BP	R61	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
IC4	DIC440041	IC, MC74HC03N	R62	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
IC5	DIC120461	IC, HD7445P(HIT)	R63	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
Q1	DTR139011	Tr, 2SC 1815GR TPER1	R64	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
Q2	DTR139011	Tr, 2SC 1815GR TPER1	RL1	DKD027781	Relay, SY-12W-K
Q3	DTR119051	Tr, 2SA 988EA/FA TRB	RL2	DKD027781	Relay, SY-12W-K
Q4	DTR119051	Tr, 2SA 988EA/FA TRB	S1	DSW033421	Switch S32P(24)2-3-20
Q5	DTR119051	Tr, 2SA 988EA/FA TRB			
Q6	DTR119051	Tr, 2SA 988EA/FA TRB			
Q7	DTR119051	Tr, 2SA 988EA/FA TRB			
Q8	DTR119051	Tr, 2SA 988EA/FA TRB			
Q9	DTR119051	Tr, 2SA 988EA/FA TRB			
Q10	DTR119051	Tr, 2SA 988EA/FA TRB			
Q11	DTR119051	Tr, 2SA 988EA/FA TRB			
Q12	DTR119051	Tr, 2SA 988EA/FA TRB			
R1	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R2	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R3	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R4	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R5	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R6	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R7	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R8	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R9	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R10	DRE938041	Res, 50k, +/-0.5%, 1/4W, Mtl			
R11	DRE938321	Res, 20k, +/-0.5%, 1/4W, Mtl			
R12	DRE938301	Res, 10k, +/-0.5%, 1/4W, Mtl			
R13	DRE938071	Res, 500, +/-0.5%, 1/4W, Mtl			
R14	DRE938351	Res, 200k, +/-0.5%, 1/4W, Mtl			
R15	DRE938331	Res, 100k, +/-0.5%, 1/4W, Mtl			
R16	DRE948051	Res, 5M, +/-0.5%, 1/2W, Mtl			
R17	DRE938381	Res, 2M, +/-0.5%, 1/4W, Mtl			
R18	DRE938371	Res, 1M, +/-0.5%, 1/4W, Mtl			
R19	DRE137721	Res, 220, +/-1%, 1/4W, Mtl			
R20	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R21	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl			
R22	DRE138061	Res, 5.6K, +/-1%, 1/4W, Mtl			
R23	DRD137611	Res, 750, +/-5%, 1/4W, Carbon			
R24	DRV147431	Res, 100k, Var			
R26	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon			
R27	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl			
R28	DRD138091	Res, 75K, +/-5%, 1/4W, Carbon			
R29	DRD138211	Res, 240K, +/-5%, 1/4W, Carbon			

B TIMING 11

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C2	DCF125771	Cap, 0.027u, +/-5%, 50V, Flm
C3	DCF132651	Cap, 1u, +/-1%, 100V, Flm
C4	DCF121281	Cap, 4700p, +/-10%, 50V, Flm
C5	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer
C6	DCE243311	Cap, 22u, +/-20%, 63V, Ele
C7	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C8	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C21	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
D1	DDD019071	Diode, 1SS 120
D2	DDD019071	Diode, 1SS 120
D3	DDD019071	Diode, 1SS 120
IC2	DIC440431	IC, MC74HC42N
IC3	DIC195011	IC, SN75451BP
IC4	DIC120461	IC, HD7445P (HIT)
P45	DCN994241	Conn, 5207-05A
Q1	DTR119051	Tr, 2SA 988EA/FA TRB
Q2	DTR119051	Tr, 2SA 988EA/FA TRB
Q3	DTR119051	Tr, 2SA 988EA/FA TRB
Q4	DTR119051	Tr, 2SA 988EA/FA TRB
Q5	DTR119051	Tr, 2SA 988EA/FA TRB
Q6	DTR119051	Tr, 2SA 988EA/FA TRB
Q7	DTR119051	Tr, 2SA 988EA/FA TRB
R1	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R2	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R3	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R4	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R5	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R6	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R7	DRE938041	Res, 50k, +/-0.5%, 1/4W, Mtl
R8	DRE938321	Res, 20k, +/-0.5%, 1/4W, Mtl
R9	DRE938301	Res, 10k, +/-0.5%, 1/4W, Mtl
R10	DRE938071	Res, 500, +/-0.5%, 1/4W, Mtl
R11	DRE938351	Res, 200k, +/-0.5%, 1/4W, Mtl
R12	DRE938331	Res, 100k, +/-0.5%, 1/4W, Mtl
R13	DRE137721	Res, 220, +/-1%, 1/4W, Mtl
R14	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
R15	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
R16	DRE138181	Res, 18K, +/-1%, 1/4W, Mtl
R17	DRD137251	Res, 24, +/-5%, 1/4W, Carbon
R18	DRV430581	Res, 2.2K, Var
R19	DRD139831	Res, 2.2M, +/-5%, 1/4W, Carbon
R40	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R41	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R42	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R43	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R44	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R45	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
R46	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
R47	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
R48	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
R49	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
R50	DRD138181	Res, 180k, +/-5%, 1/4W, Carbon
R51	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
R52	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
R53	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
R54	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
R55	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
R56	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon
RL1	DKD027781	Relay, SY-12W-K
RL2	DKD027781	Relay, SY-12W-K

HORIZ AMP 12

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C2	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C3	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C4	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C5	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer
C6	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer
C7	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C9	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C12	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C13	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C14	DCC239291	Cap, 43p, +/-5%, 50V, Cer
C15	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C16	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm
C17	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm
C18	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm
C19	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm
C20	DCC250101	Cap, 0.5p, +/-0.25p, 500V, Cer
C21	DCC250101	Cap, 0.5p, +/-0.25p, 500V, Cer
C22	DCC259101	Cap, 1p, +/-0.25p, 500V, Cer
C30	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer
C31	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C33	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
D2	DDD019071	Diode, 1SS 120
D3	DDD038701	Diode, RD5.1ESB/HZS5.1NB
D4	DDD019071	Diode, 1SS 120
L2	DCL119361	Coil BLO2RN2-R62
Q1	DTR139011	Tr, 2SC 1815GR TPER1
Q2	DTR139011	Tr, 2SC 1815GR TPER1
Q3	DTR199591	Tr, DTC114TS
Q4	DTR199591	Tr, DTC114TS
Q5	DTR119041	Tr, 2SA 1206 TRC
Q6	DTR119041	Tr, 2SA 1206 TRC
Q7	DTR119011	Tr, 2SA 1015Y TPER1
Q8	DTR139011	Tr, 2SC 1815GR TPER1
Q9	DTR139011	Tr, 2SC 1815GR TPER1
Q10	DTR139061	Tr, 2SC 1907 TR
Q11	DTR139061	Tr, 2SC 1907 TR
Q12	DTR137051	Tr, 2SA 1904G/B
Q13	DTR137051	Tr, 2SA 1904G/B
Q14	DTR115691	Tr, 2SA 899G/B
Q15	DTR115691	Tr, 2SA 899G/B
R1	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R2	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R3	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
R4	DRD138101	Res, 82K, +/-5%, 1/4W, Carbon
R5	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
R6	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R7	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R8	DRE138011	Res, 3.6K, +/-1%, 1/4W, Mtl
R9	DRE138011	Res, 3.6K, +/-1%, 1/4W, Mtl
R10	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon
R11	DRD137931	Res, 16K, +/-5%, 1/4W, Carbon
R12	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon
R13	DRD137931	Res, 16K, +/-5%, 1/4W, Carbon
R15	DRV419151	Res, 100, Var, 1/2W, Mtl
R16	DDD080191	Thermistor 112502-2
R17	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
R18	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
R19	DRV419181	Res, 1K, Var, 1/2W, Mtl
R20	DRE137931	Res, 1.6K, +/-1%, 1/4W, Mtl
R21	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R22	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R23	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
R24	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
R25	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R26	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl

Z AXIS & CRT 13

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R27	DRD138021	Res, 39K, +/-5%, 1/4W, Carbon	C2	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R28	DRE138381	Res, 120K, +/-1%, 1/4W, Mtl	C4	DCC239121	Cap, 22p, +/-5%, 50V, Cer
R29	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	C5	DCC173501	Cap, 0.01u, +80/-20%, Cer
R31	DRE137731	Res, 240, +/-1%, 1/4W, Mtl	C6	DCC152901	Cap, 4700p, +/-10%, 500V, Cer
R32	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	C8	DCF150271	Cap, 0.022u, +/-10%, 400V, Flm
R33	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	C9	DCC159011	Cap, 1000p, +/-10%, 500V, Cer
R34	DRE137731	Res, 240, +/-1%, 1/4W, Mtl	C10	DCC173501	Cap, 0.01u, +80/-20%, Cer
R35	DRE137751	Res, 300, +/-1%, 1/4W, Mtl	C11	DCC173501	Cap, 0.01u, +80/-20%, Cer
R36	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl	C12	DCC171831	Cap, 1000p, +/-20%, 3kV, Cer
R37	DRV419171	Res, 500, Var, 1/2W, Mtl	C13	DCC173501	Cap, 0.01u, +80/-20%, Cer
R38	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl	C14	DCC173501	Cap, 0.01u, +80/-20%, Cer
R39	DRE137641	Res, 100, +/-1%, 1/4W, Mtl	C15	DCC171831	Cap, 1000p, +/-20%, 3kV, Cer
R40	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl	C16	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm
R41	DRD138061	Res, 56K, +/-5%, 1/4W, Carbon	C17	DCC159011	Cap, 1000p, +/-10%, 500V, Cer
R42	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl	C18	DCC239221	Cap, 15p, +/-5%, 50V, Cer
R43	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	C19	DCC239221	Cap, 15p, +/-5%, 50V, Cer
R45	DRD137321	Res, 47, +/-5%, 1/4W, Carbon	C21	DCC239071	Cap, 3p, +/-0.5%, 50V, Cer
R46	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	C22	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R47	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	C23	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R48	DRE137641	Res, 100, +/-1%, 1/4W, Mtl	C24	DCC239221	Cap, 15p, +/-5%, 50V, Cer
R49	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl	C25	DCF121481	Cap, 0.22u, +/-10%, 50V, Flm
R50	DRD138061	Res, 56K, +/-5%, 1/4W, Carbon	C30	DCC250401	Cap, 1p, +/-0.25p, 500v, Cer
R51	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl	C31	DCC250401	Cap, 1p, +/-0.25p, 500v, Cer
R52	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	C41	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
R54	DRD137321	Res, 47, +/-5%, 1/4W, Carbon	C45	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R55	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	C46	DCF121481	Cap, 0.22u, +/-10%, 50V, Flm
R56	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	C50	DCC239011	Cap, 33p, +/-5%, 50V, Cer
R60	DRD137971	Res, 24K, +/-5%, 1/4W, Carbon	D1	DDD019071	Diode, 1SS 120
R61	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	D2	DDD019071	Diode, 1SS 120
R62	DRD137971	Res, 24K, +/-5%, 1/4W, Carbon	D3	DDD019071	Diode, 1SS 120
R63	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	D4	DDD019071	Diode, 1SS 120
R70	DRE137791	Res, 430, +/-1%, 1/4W, Mtl	D5	DDD019071	Diode, 1SS 120
R71	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl	D6	DDD019071	Diode, 1SS 120
RL1	DKD027781	Relay, SY-12W-K	D7	DDD019071	Diode, 1SS 120
			D9	DDD019071	Diode, 1SS 120
			D10	DDD019071	Diode, 1SS 120
			D11	DDD019071	Diode, 1SS 120
			D12	DDD038711	Diode, RD5.6ESB/HZS5.6NB
			D13	DDD021541	Diode, SHV-02
			D14	DDD021451	Diode, SHV-06
			D15	DDD021451	Diode, SHV-06
			D16	DDD038881	Zdiode, RD30ESB
			D17	DDD021541	Diode, SHV-02
			D18	DDD021541	Diode, SHV-02
			D19	DDD021541	Diode, SHV-02
			D20	DDD019071	Diode, 1SS 120
			D21	DDD019071	Diode, 1SS 120
			D22	DDD019071	Diode, 1SS 120
			D23	DDD038791	Zdiode, RD12ESB
			IC1	DIC613031	IC, NJM 4558D(JRC)
			M1	DES050601	H V block MR4A-12F
			NE1	DLP025171	Neon Lamp, nl-235D
			P2	DCN120191	Connector 5267-11A
			P3	DCN990881	Conn, 5267-03A
			P4	DCN034851	Conn, M36-02-30-114P
			P8	DCN991161	Connector 5243-15C
			P9	DCN991161	Connector 5243-15C
			Q1	DTR119011	Tr, 2SA 1015Y TPER1
			Q2	DTR139011	Tr, 2SC 1815GR TPER1
			Q4	DTR139011	Tr, 2SC 1815GR TPER1
			Q6	DTR145381	Tr, 2SD668AC
			Q8	DTR125191	Tr, 2SB648AC
			R1	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
			R2	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
			R3	DRE138061	Res, 5.6K, +/-1%, 1/4W, Mtl
			R4	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon

POWER SUPPLY 14

SS-5705A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R5	DRD138001	Res, 33K, +/-5%, 1/4W, Carbon	0	DSK060211	Fuse holder PFC5000-0301
R6	DRE137841	Res, 680, +/-1%, 1/4W, Mtl	C1	DCE223261	Cap, 2200u, +/-20%, 25V, Ele
R7	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon	C2	DCE223261	Cap, 2200u, +/-20%, 25V, Ele
R8	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon	C3	DCE253221	Cap, 470u, +/-20%, 100V, Ele
R10	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl	C4	DCE260821	Cap, 100u, +/-20%, 160V, Ele
R11	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	C5	DCE223161	Cap, 4700u, +/-20%, 16V, Ele
R12	DRD137621	Res, 820, +/-5%, 1/4W, Carbon	C6	DCE229271	Cap, 22u, +/-20%, 25V, Ele
R13	DRD137651	Res, 1.1K, +/-5%, 1/4W, Carbon	C7	DCE229211	Cap, 100u, +/-20%, 25V, Ele
R14	DRE138281	Res, 74, +/-1%, 1/4W, Mtl	C8	DCE229211	Cap, 100u, +/-20%, 25V, Ele
R15	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl	C9	DCE259111	Cap, 47u, +/-20%, 100V, Ele
R16	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	C10	DCE260801	Cap, 22u, +/-20%, 160V, Ele
R17	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl	C11	DCE229211	Cap, 100u, +/-20%, 25V, Ele
R18	DRV419221	Res, 20K, Var, 1/2W, Mtl	C12	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R19	DRE138281	Res, 74, +/-1%, 1/4W, Mtl	C30	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R20	DRE137761	Res, 330, +/-1%, 1/4W, Mtl	C31	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R22	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon	C32	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm
R23	DRD138201	Res, 220K, +/-5%, 1/4W, Carbon	C33	DCF121401	Cap, 0.047u, +/-10%, 50V, Flm
R24	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl	C34	DCE229271	Cap, 22u, +/-20%, 25V, Ele
R25	DRD138291	Res, 510K, +/-5%, 1/4W, Carbon	C35	DCF139011	Cap, 0.01u, +/-10%, 100V, Flm
R26	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl	C36	DCF139011	Cap, 0.01u, +/-10%, 100V, Flm
R27	DRE137841	Res, 680, +/-1%, 1/4W, Mtl	C37	DCF150271	Cap, 0.022u, +/-10%, 400V, Flm
R28	DRD138061	Res, 56K, +/-5%, 1/4W, Carbon	C50	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R29	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon	C51	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R30	DRE137701	Res, 180, +/-1%, 1/4W, Mtl	C52	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R31	DRV419241	Res, 100k, Var	C53	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R32	DRE138281	Res, 74, +/-1%, 1/4W, Mtl	C54	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R33	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon	C55	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R34	DRD137181	Res, 12, +/-5%, 1/4W, Carbon	C56	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R36	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon	C58	DCC239321	Cap, 12p, +/-5%, 50V, Cer
R37	DRV430611	Res, 220k, Var	C59	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R38	DRG940341	Res, 22M, Var, 1/2W, MG	C60	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R41	DRG940411	Res, 6.2M, Var, 1/2W, MG	D1	DDD021011	Diode, 1B4B1
R42	DRG950151	Res, 12M, Var, 1/2W, MG	D2	DDD021021	Diode, 1D4B1
R44	DRD147881	Res, 10k, +/-5%, 1/4W, Carbon	D3	DDD021021	Diode, 1D4B1
R45	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl	D4	DDD021011	Diode, 1B4B1
R46	DRE137641	Res, 100, +/-1%, 1/4W, Mtl	D5	DDD038751	Zdiode, RD8.2ESB
R47	DRD138061	Res, 56K, +/-5%, 1/4W, Carbon	D6	DDD038381	Zdiode, RD5.1ESB2
R49	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl	D7	DDD038751	Zdiode, RD8.2ESB
R50	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	D8	DDD038861	Diode, RD24ESB/HZ24NB
R51	DRE138221	Res, 27K, +/-1%, 1/4W, Mtl	D9	DDD038861	Diode, RD24ESB/HZ24NB
R52	DRD138001	Res, 33K, +/-5%, 1/4W, Carbon	D10	DDD038861	Diode, RD24ESB/HZ24NB
R61	DRE138281	Res, 74, +/-1%, 1/4W, Mtl	D11	DDD038851	Zdiode, RD22ESB
R62	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	D12	DDD019071	Diode, 1SS 120
R63	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	D13	DDD019071	Diode, 1SS 120
R64	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	D14	DDD019071	Diode, 1SS 120
R65	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	D15	DDD020091	Diode, V06E
R80	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon	D17	DDD020091	Diode, V06E
R81	DRE137641	Res, 100, +/-1%, 1/4W, Mtl	D20	DDD019071	Diode, 1SS 120
R82	DRE137641	Res, 100, +/-1%, 1/4W, Mtl	F1	DFU020141	Fuse, FSA-1
T1	DCL220371	H V Trance HVT-3D3616	IC1	DIC613031	IC, NJM 4558D(JRC)
			IC2	DIC613031	IC, NJM 4558D(JRC)
			J10	DCN994441	Connector 52044-1610
			P1	DCN120191	Connector 5267-11A
			P6	DCN991151	Connector 5243-12C
			P7	DCN991151	Connector 5243-12C
			P15	DCN990881	Conn, 5267-03A
			P31	DCN119951	Connector 5267-13A
			Q1	DTR219091	Tr, 2SK30ATM-Y
			Q2	DTR119011	Tr, 2SA 1015Y TPER1
			Q3	DTR119011	Tr, 2SA 1015Y TPER1
			Q6	DTR139011	Tr, 2SC 1815GR TPER1
			Q8	DTR139011	Tr, 2SC 1815GR TPER1
			Q20	DTR139011	Tr, 2SC 1815GR TPER1
			R1	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
			R2	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
			R4	DRD138201	Res, 220K, +/-5%, 1/4W, Carbon

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CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R5	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl	0	DTA012141	Terminal FT-E-15
R6	DRE137801	Res, 470, +/-1%, 1/4W, Mtl	C1	DCC151801	Cap, 1000p, +/-10%, 500V, Cer
R7	DRD137021	Res, 2.7, +/-5%, 1/4W, Carbon	C2	DCC239261	Cap, 120p, +/-5%, 50V, Cer
R8	DRD137021	Res, 2.7, +/-5%, 1/4W, Carbon	C3	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R9	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon	C4	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R10	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	C5	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
R11	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	C6	DCV019471	Cap, 10p, Var, 100V
R12	DRD137021	Res, 2.7, +/-5%, 1/4W, Carbon	C8	DCC239241	Cap, 27p, +/-5%, 50V, Cer
R13	DRD137021	Res, 2.7, +/-5%, 1/4W, Carbon	C11	DCC239241	Cap, 27p, +/-5%, 50V, Cer
R14	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	C12	DCC239171	Cap, 220p, +/-5%, 50V, Cer
R15	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	C13	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm
R16	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl	C14	DCC239321	Cap, 12p, +/-5%, 50V, Cer
R17	DRS320571	Res, 10k, +/-5%, 1W, Mtl	C16	DCC139051	Cap, 1000p, +/-10%, 50V, Cer
R18	DRS320571	Res, 10k, +/-5%, 1W, Mtl	C17	DCC239271	Cap, 180p, +/-5%, 50V, Cer
R19	DRD137041	Res, 3.3, +/-5%, 1/4W, Carbon	C18	DCC139051	Cap, 1000p, +/-10%, 50V, Cer
R20	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl	C20	DCC251101	Cap, 7p, +/-0.5%, 500V, Cer
R21	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	C21	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
R22	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	C22	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R23	DRE137681	Res, 150, +/-1%, 1/4W, Mtl	C24	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R24	DRE137761	Res, 330, +/-1%, 1/4W, Mtl	C30	DCE229201	Cap, 47u, +/-20%, 25V, Ele
R25	DRE138381	Res, 120K, +/-1%, 1/4W, Mtl	C33	DCC239031	Cap, 47p, +/-5%, 50V, Cer
R26	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl	C34	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R30	DRS320571	Res, 10k, +/-5%, 1W, Mtl	C35	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R31	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl	C38	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R35	DRD139831	Res, 2.2M, +/-5%, 1/4W, Carbon	C41	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R36	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon	C42	DCC239251	Cap, 56p, +/-5%, 50V, Cer
R37	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	C44	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R50	DRE137841	Res, 680, +/-1%, 1/4W, Mtl	C45	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R51	DRD137581	Res, 560, +/-5%, 1/4W, Carbon	C60	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R52	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon	C73	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R53	DRD137341	Res, 56, +/-5%, 1/4W, Carbon	C76	DCC239301	Cap, 5p, +/-0.25p, 50V, Cer
R54	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon	C77	DCC239301	Cap, 5p, +/-0.25p, 50V, Cer
R55	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl	C80	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
R60	DRV419181	Res, 1K, Var, 1/2W, Mtl	C81	DCC239031	Cap, 47p, +/-5%, 50V, Cer
			D1	DDD010801	Diode, 1S1544A
			D2	DDD019071	Diode, 1SS 120
			D11	DDD019071	Diode, 1SS 120
			D12	DDD019071	Diode, 1SS 120
			D13	DDD019071	Diode, 1SS 120
			D20	DDD991081	Diode array DAP201
			D21	DDD991081	Diode array DAP201
			J24	DCN994571	Conn, 52045-1010
			Q1	DTR295361	Tr, uPA61AL
			Q2	DTR139011	Tr, 2SC 1815GR TPER1
			Q3	DTR139011	Tr, 2SC 1815GR TPER1
			Q4	DTR139061	Tr, 2SC 1907 TR
			Q5	DTR139061	Tr, 2SC 1907 TR
			Q6	DTR139351	Tr, 2SC2901-T
			Q7	DTR139011	Tr, 2SC 1815GR TPER1
			Q8	DTR139011	Tr, 2SC 1815GR TPER1
			Q9	DTR119041	Tr, 2SA 1206 TRC
			Q10	DTR119041	Tr, 2SA 1206 TRC
			Q11	DTR119041	Tr, 2SA 1206 TRC
			Q12	DTR139011	Tr, 2SC 1815GR TPER1
			Q13	DTR139011	Tr, 2SC 1815GR TPER1
			Q14	DTR119041	Tr, 2SA 1206 TRC
			Q15	DTR139061	Tr, 2SC 1907 TR
			Q16	DTR139061	Tr, 2SC 1907 TR
			Q17	DTR119041	Tr, 2SA 1206 TRC
			Q18	DTR139011	Tr, 2SC 1815GR TPER1
			Q19	DTR139011	Tr, 2SC 1815GR TPER1
			Q20	DTR139061	Tr, 2SC 1907 TR
			Q21	DTR119011	Tr, 2SA 1015Y TPER1
			Q22	DTR119011	Tr, 2SA 1015Y TPER1
			Q23	DTR119041	Tr, 2SA 1206 TRC
			Q24	DTR139061	Tr, 2SC 1907 TR

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R1	DRD148281	Res, 470k, +/-5%, 1/4W, Carbon
R2	DRE930221	Res, 1M, +/-0.5%, 1/4W, Mtl
R3	DRV419221	Res, 20K, Var, 1/2W, Mtl
R4	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R5	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R6	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R7	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R8	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R9	DRD137951	Res, 20k, +/-5%, 1/4W, Carbon
R10	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R11	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R12	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R13	DRV419281	Res, 50, Var
R14	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
R15	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
R16	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R17	DRV419161	Res, 200, Var, 1/2W, Mtl
R18	DRD137281	Res, 33, +/-5%, 1/4W, Carbon
R19	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
R21	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
R22	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
R23	DRV419151	Res, 100, Var, 1/2W, Mtl
R24	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R25	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R26	DRV419161	Res, 200, Var, 1/2W, Mtl
R27	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R28	DRE137561	Res, 47, +/-1%, 1/4W, Mtl
R29	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R30	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R31	DRE137661	Res, 120, +/-1%, 1/4W, Mtl
R32	DRD137271	Res, 30, +/-5%, 1/4W, Carbon
R33	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
R34	DRV145891	Res, 1k, Var
R35	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
R36	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R37	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
R38	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
R39	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
R40	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R41	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R42	DRE138111	Res, 9.1K, +/-1%, 1/4W, Mtl
R43	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
R44	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
R45	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R46	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
R47	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
R48	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R49	DRV419171	Res, 500, Var, 1/2W, Mtl
R50	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R51	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R52	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
R53	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R54	DRD137281	Res, 33, +/-5%, 1/4W, Carbon
R56	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R57	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
R58	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R59	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
R60	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R61	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R62	DRE137561	Res, 47, +/-1%, 1/4W, Mtl
R63	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
R64	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R65	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R66	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R67	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R68	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R69	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R70	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R73	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R74	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R75	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R76	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R77	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R78	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R79	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R80	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
R81	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R82	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R83	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R84	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R85	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
R86	DRE137701	Res, 180, +/-1%, 1/4W, Mtl
R87	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R88	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
R89	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R90	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R91	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R92	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R93	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
R94	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R95	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R96	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
R97	DDD080331	Th, 112101-2
R98	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R99	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R102	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
R103	DRE137791	Res, 430, +/-1%, 1/4W, Mtl

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CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
0	DTA012141	Terminal FT-E-15	R21	DRD137271	Res, 30, +/-5%, 1/4W, Carbon
C1	DCC151801	Cap, 1000p, +/-10%, 500V, Cer	R22	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
C2	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R23	DRV145891	Res, 1k, Var
C3	DCC239261	Cap, 120p, +/-5%, 50V, Cer	R24	DRD137261	Res, 27, +/-5%, 1/4W, Carbon
C4	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R25	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
C5	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R26	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
C6	DCV019471	Cap, 10p, Var, 100V	R27	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
C8	DCC239241	Cap, 27p, +/-5%, 50V, Cer	R28	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C11	DCC239241	Cap, 27p, +/-5%, 50V, Cer	R29	DRV419181	Res, 1K, Var, 1/2W, Mtl
C12	DCC239321	Cap, 12p, +/-5%, 50V, Cer	R30	DRE138111	Res, 9.1K, +/-1%, 1/4W, Mtl
C14	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R31	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl
C15	DCC239271	Cap, 180p, +/-5%, 50V, Cer	R32	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C16	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R33	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
C18	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R34	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R35	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C21	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R36	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C22	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R37	DRV419171	Res, 500, Var, 1/2W, Mtl
C23	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R38	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
C24	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R39	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
C31	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R40	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
C32	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R41	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
C41	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R42	DRE137661	Res, 120, +/-1%, 1/4W, Mtl
C42	DCC239131	Cap, 39p, +/-5%, 50V, Cer	R45	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
C51	DCV019602	Cap, 12p, Var, 250V, Cer	R46	DRE137561	Res, 47, +/-1%, 1/4W, Mtl
C80	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R50	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D1	DDD010801	Diode, 1S1544A	R51	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D2	DDD019071	Diode, 1SS 120	R52	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D3	DDD991081	Diode array DAP201	R53	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D4	DDD991081	Diode array DAP201	R54	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
Q1	DTR295361	Tr, uPA61AL	R55	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon
Q2	DTR139011	Tr, 2SC 1815GR TPER1	R56	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q3	DTR139011	Tr, 2SC 1815GR TPER1	R57	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q4	DTR139061	Tr, 2SC 1907 TR	R58	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
Q5	DTR139061	Tr, 2SC 1907 TR	R59	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
Q6	DTR119041	Tr, 2SA 1206 TRC	R60	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q7	DTR119041	Tr, 2SA 1206 TRC	R61	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q8	DTR119041	Tr, 2SA 1206 TRC	R64	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
Q9	DTR139011	Tr, 2SC 1815GR TPER1	R65	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
Q10	DTR139011	Tr, 2SC 1815GR TPER1	R70	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
Q11	DTR119041	Tr, 2SA 1206 TRC	R71	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q12	DTR139061	Tr, 2SC 1907 TR	R72	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
Q13	DTR139061	Tr, 2SC 1907 TR	R73	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
Q14	DTR139011	Tr, 2SC 1815GR TPER1	R74	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
Q15	DTR139011	Tr, 2SC 1815GR TPER1	R75	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
Q16	DTR139011	Tr, 2SC 1815GR TPER1	R76	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
Q17	DTR139011	Tr, 2SC 1815GR TPER1	R77	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R1	DRD148281	Res, 470k, +/-5%, 1/4W, Carbon	R78	DDD080331	Th, 112101-2
R2	DRE930221	Res, 1M, +/-0.5%, 1/4W, Mtl			
R3	DRV419221	Res, 20K, Var, 1/2W, Mtl			
R4	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R5	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			
R6	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R7	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R8	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R9	DRD137951	Res, 20k, +/-5%, 1/4W, Carbon			
R10	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			
R11	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R12	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl			
R13	DRV419281	Res, 50, Var			
R14	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl			
R15	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl			
R16	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl			
R17	DRV419161	Res, 200, Var, 1/2W, Mtl			
R18	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			
R19	DRV419151	Res, 100, Var, 1/2W, Mtl			
R20	DRE137801	Res, 470, +/-1%, 1/4W, Mtl			

VERT CONTROL 3

SS-5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C4	DCC239221	Cap, 15p, +/-5%, 50V, Cer	R8	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
C5	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R9	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
C6	DCV019471	Cap, 10p, Var, 100V	R10	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
C8	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R11	DRV419201	Res, 5K, Var, 1/2W, Mtl
C9	DCC239221	Cap, 15p, +/-5%, 50V, Cer	R12	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
C10	DCC239171	Cap, 220p, +/-5%, 50V, Cer	R13	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
C11	DCC239151	Cap, 470, +/-5%, 50V, Cer	R14	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
C16	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R15	DRE137861	Res, 820, +/-1%, 1/4W, Mtl
C17	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R16	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
C18	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R17	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
C20	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R18	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
C22	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R20	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
C23	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R21	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C24	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R23	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
C30	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R24	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C40	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R25	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
C41	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R28	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C42	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R29	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
C44	DCC239061	Cap, 2p, +/-0.25p, 50V, Cer	R30	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
C80	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R31	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
D1	DDD019071	Diode, 1SS 120	R32	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
D2	DDD019071	Diode, 1SS 120	R33	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
D3	DDD019071	Diode, 1SS 120	R35	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
D4	DDD019071	Diode, 1SS 120	R36	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
D5	DDD019071	Diode, 1SS 120	R37	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
D6	DDD019071	Diode, 1SS 120	R38	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl
D7	DDD019071	Diode, 1SS 120	R39	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
D8	DDD019071	Diode, 1SS 120	R40	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
D9	DDD019071	Diode, 1SS 120	R41	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
D10	DDD019071	Diode, 1SS 120	R45	DRV419171	Res, 500, Var, 1/2W, Mtl
D11	DDD019071	Diode, 1SS 120	R46	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
D12	DDD019071	Diode, 1SS 120	R48	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
D13	DDD019071	Diode, 1SS 120	R50	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
D14	DDD019071	Diode, 1SS 120	R53	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D15	DDD019071	Diode, 1SS 120	R54	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D16	DDD019071	Diode, 1SS 120	R55	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
D17	DDD019071	Diode, 1SS 120	R61	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
D18	DDD019071	Diode, 1SS 120	R62	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
D19	DDD019071	Diode, 1SS 120	R63	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
D20	DDD019071	Diode, 1SS 120	R65	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
D21	DDD019071	Diode, 1SS 120	R70	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
D22	DDD019071	Diode, 1SS 120	R71	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
D24	DDD019071	Diode, 1SS 120	R72	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
IC1	DIC420621	IC, TC4069UBP(TOS)	R73	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
IC2	DIC494711	IC, TC74HC4520P(TOS)	R80	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
IC3	DIC420261	IC, TC4027BAP(TOS)	R81	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
IC4	DIC410101	IC, CD4011BE	R82	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
IC5	DIC410101	IC, CD4011BE	R85	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
J6	DCN990621	Connector 5124-12BHPB	R86	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
J7	DCN990621	Connector 5124-12BHPB	R87	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
J16	DCN994571	Conn, 52045-1010	R88	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
Q1	DTR119041	Tr, 2SA 1206 TRC	R89	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
Q2	DTR119041	Tr, 2SA 1206 TRC	R90	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
Q3	DTR139011	Tr, 2SC 1815GR TPER1	R91	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
Q4	DTR139011	Tr, 2SC 1815GR TPER1	R92	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
Q5	DTR139011	Tr, 2SC 1815GR TPER1	R93	DRD138081	Res, 68K, +/-5%, 1/4W, Carbon
Q6	DTR139351	Tr, 2SC2901-T	R98	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
Q7	DTR139351	Tr, 2SC2901-T	S1	DSW014731	Switch SUJ55A
Q8	DTR139011	Tr, 2SC 1815GR TPER1	X1	DHF990271	Ceramic OSC CSB256D
Q9	DTR139011	Tr, 2SC 1815GR TPER1			
Q10	DTR119011	Tr, 2SA 1015Y TPER1			
Q11	DTR199491	Tr, DTA114TS			
Q12	DTR199021	Tr, DTC114YS			
Q13	DTR199021	Tr, DTC114YS			
R5	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R7	DRD137341	Res, 56, +/-5%, 1/4W, Carbon			

V MAIN AMP 4

SS-5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C0	DCC239051	Cap, 100p, +/-5%, 50V, Cer	R33	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
C2	DCC239221	Cap, 15p, +/-5%, 50V, Cer	R34	DRS330611	Res, 22k, +/-5%, 2W, Mtl
C3	DCV019871	Cap, 20p, Var, 100V	R35	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
C5	DCV019871	Cap, 20p, Var, 100V	R37	DRS330571	Res, 10k, +/-5%, 2W, Mtl
C6	DCC239031	Cap, 47p, +/-5%, 50V, Cer	R39	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
C8	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R40	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
C9	DCC259101	Cap, 1p, +/-0.25p, 500V, Cer	R42	DRS330571	Res, 10k, +/-5%, 2W, Mtl
C11	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R43	DRE137701	Res, 180, +/-1%, 1/4W, Mtl
C13	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer	R44	DRE137701	Res, 180, +/-1%, 1/4W, Mtl
C14	DCC252401	Cap, 22p, +/-10%, 500V, Cer	R45	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
C15	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R46	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
C16	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R50	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C18	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm	R51	DRE137741	Res, 270, +/-1%, 1/4W, Mtl
C19	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm	R52	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl
C21	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R55	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl
C22	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R56	DRV419231	Res, 50K, Var, 1/2W, Mtl
C23	DCC139051	Cap, 1000p, +/-10%, 50V, Cer	R62	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
C25	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer			
C26	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
C27	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
C28	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
C30	DCF121381	Cap, 3300p, +/-10%, 50V, Flm			
C32	DCE229201	Cap, 47u, +/-20%, 25V, Ele			
C33	DCE229201	Cap, 47u, +/-20%, 25V, Ele			
C36	DCC239251	Cap, 56p, +/-5%, 50V, Cer			
C52	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer			
D5	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon			
D6	DDD038401	Zdiode, RD6.2ESB2			
D7	DDD038401	Zdiode, RD6.2ESB2			
D8	DDD038921	Diode, RD5.1ESB1 TA21R			
J27	DCN994571	Conn, 52045-1010			
L1	DRD137481	Res, 220, +/-5%, 1/4W, Carbon			
L2	DRD137481	Res, 220, +/-5%, 1/4W, Carbon			
P26	DCN990891	Conn, 5267-04A			
Q1	DTR119041	Tr, 2SA 1206 TRC			
Q2	DTR119041	Tr, 2SA 1206 TRC			
Q3	DTR139011	Tr, 2SC 1815GR TPER1			
Q4	DTR139011	Tr, 2SC 1815GR TPER1			
Q5	DTR137671	Tr, 2SC2570A			
Q8	DTR137671	Tr, 2SC2570A			
Q9	DTR136021	Tr, 2SC2682Q			
Q10	DTR116501	Tr, 2SA1142Q			
Q11	DTR136021	Tr, 2SC2682Q			
Q12	DTR116501	Tr, 2SA1142Q			
Q13	DTR119041	Tr, 2SA 1206 TRC			
Q14	DTR119041	Tr, 2SA 1206 TRC			
R0	DRD137981	Res, 27K, +/-5%, 1/4W, Carbon			
R1	DRE137701	Res, 180, +/-1%, 1/4W, Mtl			
R3	DRE137881	Res, 1.0K, +/-1%, 1/4W, Mtl			
R4	DDD080331	Th, 112101-2			
R5	DRV419221	Res, 20K, Var, 1/2W, Mtl			
R6	DRE137621	Res, 82, +/-1%, 1/4W, Mtl			
R7	DRE137661	Res, 120, +/-1%, 1/4W, Mtl			
R8	DRE137621	Res, 82, +/-1%, 1/4W, Mtl			
R13	DRE137681	Res, 150, +/-1%, 1/4W, Mtl			
R14	DRE137681	Res, 150, +/-1%, 1/4W, Mtl			
R16	DRV419161	Res, 200, Var, 1/2W, Mtl			
R18	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			
R20	DRE137841	Res, 680, +/-1%, 1/4W, Mtl			
R21	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl			
R22	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl			
R23	DRE137841	Res, 680, +/-1%, 1/4W, Mtl			
R24	DRS330571	Res, 10k, +/-5%, 2W, Mtl			
R27	DRE137641	Res, 100, +/-1%, 1/4W, Mtl			
R29	DRD137361	Res, 68, +/-5%, 1/4W, Carbon			
R31	DRS330571	Res, 10k, +/-5%, 2W, Mtl			

TRIG GENERATOR 5

SS-5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCF168011	Cap, 0.01u, +/-10%, 400V, Flm	R13	DRD138321	Res, 680k, +/-5%, 1/4W, Carbon
C2	DCF121221	Cap, 1500p, +/-10%, 50V, Flm	R14	DRE938371	Res, 1M, +/-0.5%, 1/4W, Mtl
C3	DCF121201	Cap, 1000p, +/-5%, 50V, Flm	R15	DRD137081	Res, 4.7, +/-5%, 1/4W, Carbon
C4	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R16	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
C5	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R17	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C6	DCC239261	Cap, 120p, +/-5%, 50V, Cer	R18	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C7	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R19	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C8	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R20	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
C9	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R21	DRD137301	Res, 39, +/-5%, 1/4W, Carbon
C10	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R22	DRV419151	Res, 100, Var, 1/2W, Mtl
C11	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R23	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
C12	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R24	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
C13	DCF121441	Cap, 0.1u, +/-10%, 50V, Flm	R25	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
C14	DCC239181	Cap, 330p, +/-5%, 50V, Cer	R26	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
C15	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R27	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
C16	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R28	DRD138321	Res, 680k, +/-5%, 1/4W, Carbon
C18	DCC259221	Cap, 20p, +/-5%, 500V, Cer	R29	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
C19	DCF121361	Cap, 2200p, +/-10%, 50V, Flm	R30	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R31	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl
C21	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R32	DRD137241	Res, 22, +/-5%, 1/4W, Carbon
C22	DCC239721	Cap, 82p, +/-5%, 50V, Cer	R33	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
C23	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R34	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C24	DCC159011	Cap, 1000p, +/-10%, 500V, Cer	R36	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon
C26	DCC139251	Cap, 0.1u, +/-20%, 50V, Cer	R37	DRD137281	Res, 33, +/-5%, 1/4W, Carbon
C50	DCE249321	Cap, 2.2u, +/-20%, 50V, Ele	R38	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
C52	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R39	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
C53	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R40	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
C55	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R41	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
D1	DDD019171	Diode, MA700	R42	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
D2	DDD019071	Diode, 1SS 120	R43	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
D3	DDD019071	Diode, 1SS 120	R44	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
D4	DDD019071	Diode, 1SS 120	R45	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
D5	DDD019071	Diode, 1SS 120	R46	DRD137001	Res, 2.2, +/-5%, 1/4W, Carbon
D6	DDD010801	Diode, 1S1544A	R47	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
IC1	DIC493541	IC, TC74HC4066P(TOS)	R48	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
IC51	DCE229271	Cap, 22u, +/-20%, 25V, Ele	R49	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
J8	DCN990631	Connector 5124-15BHPB	R51	DRD137361	Res, 68, +/-5%, 1/4W, Carbon
P13	DCN994241	Conn, 5207-05A	R52	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon
P32	DCN990871	Conn, 5267-02A	R53	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
Q1	DTR139011	Tr, 2SC 1815GR TPER1	R54	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q2	DTR199021	Tr, DTC114YS	R55	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q3	DTR139011	Tr, 2SC 1815GR TPER1	R56	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
Q5	DTR139011	Tr, 2SC 1815GR TPER1	R57	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q6	DTR295361	Tr, uPA61AL	R58	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
Q7	DTR119011	Tr, 2SA 1015Y TPER1	R60	DRE138061	Res, 5.6K, +/-1%, 1/4W, Mtl
Q8	DTR139201	Tr, 2SC982TM	R61	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
Q9	DTR139061	Tr, 2SC 1907 TR	R62	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q10	DTR119011	Tr, 2SA 1015Y TPER1	R63	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
Q11	DTR139011	Tr, 2SC 1815GR TPER1	S1	DSW045091	Switch SLR024
Q12	DTR139011	Tr, 2SC 1815GR TPER1	S2	DSW045091	Switch SLR024
Q13	DTR139351	Tr, 2SC2901-T	S3	DSW014831	Switch SUJ12A
Q14	DTR139351	Tr, 2SC2901-T			
Q15	DTR219091	Tr, 2SK30ATM-Y			
Q17	DTR139061	Tr, 2SC 1907 TR			
Q18	DTR219091	Tr, 2SK30ATM-Y			
Q19	DTR199021	Tr, DTC114YS			
R1	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R2	DRE138001	Res, 3.3K, +/-1%, 1/4W, Mtl			
R3	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R6	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R7	DRD138121	Res, 100K, +/-5%, 1/4W, Carbon			
R8	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon			
R9	DRE138141	Res, 12K, +/-1%, 1/4W, Mtl			
R10	DRD138281	Res, 470k, +/-5%, 1/4W, Carbon			
R11	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R12	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			

H CONTROL-A [6]

SS-5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C5	DCC139051	Cap, 1000p, +/-10%, 50V, Cer
C21	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C22	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C23	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C25	DCC239021	Cap, 150p, +/-5%, 50V, Cer
C30	DCE249301	Cap, 47u, +/-20%, 25V, Ele
C31	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C32	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C33	DCE229201	Cap, 47u, +/-20%, 25V, Ele
D1	DDD071121	LED, TLG206
D2	DDD073221	LED, AA2533D
D4	DDD073221	LED, AA2533D
D16	DDD071911	LED, TLG144
IC1	DIC440111	IC, MC74HC10N
J17	DCN994461	Connector 52044-2010
J22	DCN994441	Connector 52044-1610
J25	DCN994571	Conn, 52045-1010
P23	DCN034651	Conn, M33-03-30-114P
Q1	DTR199591	Tr, DTC114TS
Q5	DTR139011	Tr, 2SC 1815GR TPER1
Q7	DTR119011	Tr, 2SA 1015Y TPER1
R1	DRV146951	Res, 20k, Var
R2	DRD137861	Res, 8.2K, +/-5%, 1/4W, Carbon
R3	DRE137841	Res, 680, +/-1%, 1/4W, Mtl
R6	DRE138601	Res, 1.0M, +/-1%, 1/4W, Mtl
R7	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R9	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R10	DRD137961	Res, 22K, +/-5%, 1/4W, Carbon
R11	DRV419391	Res, 50k, Var
R12	DRE138011	Res, 3.6K, +/-1%, 1/4W, Mtl
R13	DRV419351	Res, 2k, Var
R14	DRV147411	Res, 10k, Var
R15	DRV419351	Res, 2k, Var
R16	DRE137901	Res, 1.2K, +/-1%, 1/4W, Mtl
R17	DRV146981	Res, 20k, Var
R18	DRV350301	Res, 50k, Var
R19	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
R20	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
R21	DRV146971	Res, 10k, Var
R28	DRS330171	Res, 4.7k, +/-5%, 2W, Mtl
R33	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R35	DRS320351	Res, 150, +/-5%, 1W, Mtl
R40	DRV146961	Res, 50k, Var
R43	DRV146951	Res, 20k, Var
R47	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R48	DRD137711	Res, 20K, +/-5%, 1/4W, Carbon
R49	DRD137861	Res, 8.2K, +/-5%, 1/4W, Carbon
R50	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R51	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R52	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R53	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R55	DRV146981	Res, 20k, Var
R58	DRV146951	Res, 20k, Var
R60	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R61	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R62	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
S1	DSW014701	Switch SUJ50A
S2	DSW014721	Switch SUJ45A

H CONTROL-B [7]

SS-5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C6	DCC239021	Cap, 150p, +/-5%, 50V, Cer
C8	DCC239191	Cap, 1p, 0.25p, 50V, Cer
C9	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C10	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C11	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C12	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C13	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C14	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C21	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C30	DCC139251	Cap, 0.1u, +80/-20%, 50V, Cer
C31	DCC139251	Cap, 0.1u, +80/-20%, 50V, Cer
C32	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C33	DCC139251	Cap, 0.1u, +80/-20%, 50V, Cer
C34	DCC239021	Cap, 150p, +/-5%, 50V, Cer
D3	DDD038791	Zdiode, RD12ESB
D4	DDD019071	Diode, 1SS 120
D5	DDD019071	Diode, 1SS 120
D6	DDD019071	Diode, 1SS 120
D10	DDD019071	Diode, 1SS 120
D11	DDD019071	Diode, 1SS 120
D13	DDD019071	Diode, 1SS 120
D14	DDD019071	Diode, 1SS 120
D15	DDD019071	Diode, 1SS 120
D16	DDD019071	Diode, 1SS 120
D17	DDD019071	Diode, 1SS 120
D18	DDD019071	Diode, 1SS 120
IC2	DIC440061	IC, MC74HC05N
IC3	DIC440011	IC, MC 74HC00N
IC4	DIC451131	IC, TC74HC112P (TOS)
J9	DCN990631	Connector 5124-15BHPB
J12	DCN994461	Connector 52044-2010
Q2	DTR139011	Tr, 2SC 1815GR TPER1
Q5	DTR199021	Tr, DTC114YS
Q6	DTR199021	Tr, DTC114YS
R17	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
R18	DRE137921	Res, 1.5K, +/-1%, 1/4W, Mtl
R19	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R24	DRE138111	Res, 9.1K, +/-1%, 1/4W, Mtl
R25	DRE138111	Res, 9.1K, +/-1%, 1/4W, Mtl
R26	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
R27	DRV419201	Res, 5K, Var, 1/2W, Mtl
R28	DRV419181	Res, 1K, Var, 1/2W, Mtl
R29	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
R30	DRE138051	Res, 5.1K, +/-1%, 1/4W, Mtl
R31	DRE138051	Res, 5.1K, +/-1%, 1/4W, Mtl
R32	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R34	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R35	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R38	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R39	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R60	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R61	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R62	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R63	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon

A SWEEP GENERATOR 8

SS-5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C3	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C4	DCC239261	Cap, 120p, +/-5%, 50V, Cer
C7	DCC239221	Cap, 15p, +/-5%, 50V, Cer
C8	DCC239311	Cap, 68p, +/-5%, 50V, Cer
C9	DCV019871	Cap, 20p, Var, 100V
C10	DCC239761	Cap, 56p, +/-5%, 50V, Cer
C12	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer
C13	DCC239051	Cap, 100p, +/-5%, 50V, Cer
C14	DCC239271	Cap, 180p, +/-5%, 50V, Cer
C15	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C16	DCC239051	Cap, 100p, +/-5%, 50V, Cer
C17	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C18	DCF121221	Cap, 1500p, +/-10%, 50V, Flm
C19	DCE249321	Cap, 2.2u, +/-20%, 50V, Ele
C20	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C21	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C22	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C23	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C25	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C26	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C28	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C29	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C30	DCC239031	Cap, 47p, +/-5%, 50V, Cer
C31	DCC239021	Cap, 150p, +/-5%, 50V, Cer
C32	DCC239021	Cap, 150p, +/-5%, 50V, Cer
C33	DCC239201	Cap, 4p, +/-0.25p, 50V, Cer
C40	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
D1	DDD019071	Diode, 1SS 120
D2	DDD019101	Diode, 1SS 97 TA21R
D3	DDD038711	Diode, RD5.6ESB/HZS5.6NB
D4	DDD038861	Diode, RD24ESB/HZ24NB
D6	DDD019171	Diode, MA700
D7	DDD019171	Diode, MA700
D8	DDD019171	Diode, MA700
D10	DDD073221	LED, AA2533D
IC1	DIC310051	IC, F10107DC
IC2	DIC495711	IC, TC74HC123AP(TOS)
IC3	DIC170511	IC, SN74S112N
IC4	DIC493421	IC, TC74HC14P(TOS)
L1	DCL119361	Coil BL02RN2-R62
Q1	DTR119041	Tr, 2SA 1206 TRC
Q2	DTR119041	Tr, 2SA 1206 TRC
Q3	DTR139351	Tr, 2SC2901-T
Q4	DTR139351	Tr, 2SC2901-T
Q5	DTR219091	Tr, 2SK30ATM-Y
Q6	DTR119041	Tr, 2SA 1206 TRC
Q7	DTR219091	Tr, 2SK30ATM-Y
Q8	DTR139011	Tr, 2SC 1815GR TPER1
Q9	DTR119011	Tr, 2SA 1015Y TPER1
Q10	DTR139011	Tr, 2SC 1815GR TPER1
Q11	DTR119011	Tr, 2SA 1015Y TPER1
R1	DRD137481	Res, 220, +/-5%, 1/4W, Carbon
R2	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
R3	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
R4	DRE137701	Res, 180, +/-1%, 1/4W, Mtl
R5	DRE137701	Res, 180, +/-1%, 1/4W, Mtl
R6	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
R11	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R12	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R13	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
R14	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R15	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl
R16	DRE138161	Res, 15K, +/-1%, 1/4W, Mtl
R17	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
R18	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R19	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
R20	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
R21	DRE137781	Res, 390, +/-1%, 1/4W, Mtl
R22	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R23	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
R24	DRE138151	Res, 13K, +/-1%, 1/4W, Mtl
R25	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
R26	DRE137721	Res, 220, +/-1%, 1/4W, Mtl
R29	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R32	DRD137951	Res, 20k, +/-5%, 1/4W, Carbon
R33	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
R34	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon
R35	DRD137281	Res, 33, +/-5%, 1/4W, Carbon
R37	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
R38	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R40	DRV146141	Res, 500k, Var

HORIZ AMP 12

SS-5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION	CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
C1	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R33	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C2	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R34	DRE137731	Res, 240, +/-1%, 1/4W, Mtl
C3	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R35	DRE137751	Res, 300, +/-1%, 1/4W, Mtl
C4	DCE229201	Cap, 47u, +/-20%, 25V, Ele	R36	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
C5	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer	R37	DRV419171	Res, 500, Var, 1/2W, Mtl
C6	DCC153561	Cap, 0.01u, +/-10%, 500V, Cer	R38	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl
C7	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R39	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C9	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R40	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
C12	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R41	DRD138061	Res, 56K, +/-5%, 1/4W, Carbon
C13	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R42	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
C14	DCC239291	Cap, 43p, +/-5%, 50V, Cer	R43	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C15	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R45	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
C16	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm	R46	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
C17	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm	R47	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
C18	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm	R48	DRE137641	Res, 100, +/-1%, 1/4W, Mtl
C19	DCF168221	Cap, 0.1u, +/-10%, 250V, Flm	R49	DRE137941	Res, 1.8K, +/-1%, 1/4W, Mtl
C20	DCC250101	Cap, 0.5p, +/-0.25p, 500V, Cer	R50	DRD138061	Res, 56K, +/-5%, 1/4W, Carbon
C21	DCC250101	Cap, 0.5p, +/-0.25p, 500V, Cer	R51	DRE137981	Res, 2.7K, +/-1%, 1/4W, Mtl
C22	DCC259101	Cap, 1p, +/-0.25p, 500V, Cer	R52	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
C30	DCC239741	Cap, 1.5p, +/-0.25p, 50V, Cer	R54	DRD137321	Res, 47, +/-5%, 1/4W, Carbon
C31	DCC139501	Cap, 0.01u, +/-10%, 500V, Cer	R55	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
C33	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer	R56	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
D2	DDD019071	Diode, 1SS 120	R60	DRD137971	Res, 24K, +/-5%, 1/4W, Carbon
D3	DDD038701	Diode, RD5.1ESB/HZS5.1NB	R61	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
D4	DDD019071	Diode, 1SS 120	R62	DRD137971	Res, 24K, +/-5%, 1/4W, Carbon
L2	DCL119361	Coil BLO2RN2-R62	R63	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
Q1	DTR139011	Tr, 2SC 1815GR TPER1	R70	DRE137791	Res, 430, +/-1%, 1/4W, Mtl
Q2	DTR139011	Tr, 2SC 1815GR TPER1	R71	DRE137991	Res, 3.0K, +/-1%, 1/4W, Mtl
Q3	DTR199591	Tr, DTC114TS	RL1	DKD027781	Relay, SY-12W-K
Q5	DTR119041	Tr, 2SA 1206 TRC			
Q6	DTR119041	Tr, 2SA 1206 TRC			
Q7	DTR119011	Tr, 2SA 1015Y TPER1			
Q8	DTR139011	Tr, 2SC 1815GR TPER1			
Q9	DTR139011	Tr, 2SC 1815GR TPER1			
Q10	DTR139061	Tr, 2SC 1907 TR			
Q11	DTR139061	Tr, 2SC 1907 TR			
Q12	DTR137051	Tr, 2SA 1904G/B			
Q13	DTR137051	Tr, 2SA 1904G/B			
Q14	DTR115691	Tr, 2SA 899G/B			
Q15	DTR115691	Tr, 2SA 899G/B			
R1	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon			
R2	DRD137161	Res, 3.9, +/-5%, 1/4W, Carbon			
R3	DRD137841	Res, 6.8K, +/-5%, 1/4W, Carbon			
R5	DRE138021	Res, 3.9K, +/-1%, 1/4W, Mtl			
R6	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R7	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl			
R8	DRE138011	Res, 3.6K, +/-1%, 1/4W, Mtl			
R9	DRE138011	Res, 3.6K, +/-1%, 1/4W, Mtl			
R10	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon			
R11	DRD137931	Res, 16K, +/-5%, 1/4W, Carbon			
R12	DRD137941	Res, 18K, +/-5%, 1/4W, Carbon			
R13	DRD137931	Res, 16K, +/-5%, 1/4W, Carbon			
R15	DRV419171	Res, 500, Var, 1/2W, Mtl			
R18	DRE137731	Res, 240, +/-1%, 1/4W, Mtl			
R19	DRV419181	Res, 1K, Var, 1/2W, Mtl			
R20	DRE137931	Res, 1.6K, +/-1%, 1/4W, Mtl			
R21	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R22	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R23	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			
R24	DRE137741	Res, 270, +/-1%, 1/4W, Mtl			
R25	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl			
R26	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl			
R28	DRD137991	Res, 30K, +/-5%, 1/4W, Carbon			
R29	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon			
R31	DRE137731	Res, 240, +/-1%, 1/4W, Mtl			
R32	DRE137801	Res, 470, +/-1%, 1/4W, Mtl			

POWER SUPPLY 14

SS-5706A

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
0	DSK060211	Fuse holder PFC5000-0301
C1	DCE223261	Cap, 2200u, +/-20%, 25V, Ele
C2	DCE223261	Cap, 2200u, +/-20%, 25V, Ele
C3	DCE253221	Cap, 470u, +/-20%, 100V, Ele
C4	DCE260821	Cap, 100u, +/-20%, 160V, Ele
C5	DCE223161	Cap, 4700u, +/-20%, 16V, Ele
C6	DCE229271	Cap, 22u, +/-20%, 25V, Ele
C7	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C8	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C9	DCE259111	Cap, 47u, +/-20%, 100V, Ele
C10	DCE260801	Cap, 22u, +/-20%, 160V, Ele
C11	DCE229211	Cap, 100u, +/-20%, 25V, Ele
C12	DCE229201	Cap, 47u, +/-20%, 25V, Ele
C30	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C31	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C32	DCF121321	Cap, 0.01u, +/-10%, 50V, Flm
C33	DCF121401	Cap, 0.047u, +/-10%, 50V, Flm
C34	DCE229271	Cap, 22u, +/-20%, 25V, Ele
C35	DCF139011	Cap, 0.01u, +/-10%, 100V, Flm
C36	DCF139011	Cap, 0.01u, +/-10%, 100V, Flm
C37	DCF150271	Cap, 0.022u, +/-10%, 400V, Flm
C50	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C51	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C52	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C53	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C54	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C55	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C56	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C58	DCC239091	Cap, 6p, +/-0.5%, 50V, Cer
C59	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
C60	DCC929031	Cap, 0.01u, +/-5%, 50V, Cer
D1	DDD021011	Diode, 1B4B1
D2	DDD021021	Diode, 1D4B1
D3	DDD021021	Diode, 1D4B1
D4	DDD021011	Diode, 1B4B1
D5	DDD038751	Zdiode, RD8.2ESB
D6	DDD038381	Zdiode, RD5.1ESB2
D7	DDD038751	Zdiode, RD8.2ESB
D8	DDD038861	Diode, RD24ESB/HZ24NB
D9	DDD038861	Diode, RD24ESB/HZ24NB
D10	DDD038861	Diode, RD24ESB/HZ24NB
D11	DDD038851	Zdiode, RD22ESB
D12	DDD019071	Diode, 1SS 120
D13	DDD019071	Diode, 1SS 120
D14	DDD019071	Diode, 1SS 120
D15	DDD020091	Diode, V06E
D17	DDD020091	Diode, V06E
D20	DDD019071	Diode, 1SS 120
F1	DFU020141	Fuse, FSA-1
IC1	DIC613031	IC, NJM 4558D(JRC)
IC2	DIC613031	IC, NJM 4558D(JRC)
J10	DCN994441	Connector 52044-1610
P1	DCN120191	Connector 5267-11A
P6	DCN991151	Connector 5243-12C
P7	DCN991151	Connector 5243-12C
P15	DCN990881	Conn, 5267-03A
P31	DCN119951	Connector 5267-13A
Q1	DTR219091	Tr, 2SK30ATM-Y
Q2	DTR119011	Tr, 2SA 1015Y TPER1
Q3	DTR119011	Tr, 2SA 1015Y TPER1
Q6	DTR139011	Tr, 2SC 1815GR TPER1
Q8	DTR139011	Tr, 2SC 1815GR TPER1
Q20	DTR139011	Tr, 2SC 1815GR TPER1
R1	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R2	DRE138281	Res, 74, +/-1%, 1/4W, Mtl
R4	DRD138201	Res, 220K, +/-5%, 1/4W, Carbon

CIRCUIT REFERENCE	IWATSU PART NO.	DESCRIPTION
R5	DRE138201	Res, 22K, +/-1%, 1/4W, Mtl
R6	DRE137801	Res, 470, +/-1%, 1/4W, Mtl
R7	DRD137021	Res, 2.7, +/-5%, 1/4W, Carbon
R8	DRD137021	Res, 2.7, +/-5%, 1/4W, Carbon
R9	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R10	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R11	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R12	DRD137021	Res, 2.7, +/-5%, 1/4W, Carbon
R13	DRD137021	Res, 2.7, +/-5%, 1/4W, Carbon
R14	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R15	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R16	DRE138041	Res, 4.7K, +/-1%, 1/4W, Mtl
R17	DRS320571	Res, 10k, +/-5%, 1W, Mtl
R18	DRS320571	Res, 10k, +/-5%, 1W, Mtl
R19	DRD137041	Res, 3.3, +/-5%, 1/4W, Carbon
R20	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R21	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R22	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R23	DRE137681	Res, 150, +/-1%, 1/4W, Mtl
R24	DRE137761	Res, 330, +/-1%, 1/4W, Mtl
R25	DRE138381	Res, 120K, +/-1%, 1/4W, Mtl
R26	DRE138121	Res, 10K, +/-1%, 1/4W, Mtl
R30	DRS320571	Res, 10k, +/-5%, 1W, Mtl
R31	DRE138361	Res, 100K, +/-1%, 1/4W, Mtl
R35	DRD139831	Res, 2.2M, +/-5%, 1/4W, Carbon
R36	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R37	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R50	DRD137571	Res, 510, +/-5%, 1/4W, Carbon
R51	DRD137581	Res, 560, +/-5%, 1/4W, Carbon
R52	DRD137881	Res, 10K, +/-5%, 1/4W, Carbon
R53	DRD137341	Res, 56, +/-5%, 1/4W, Carbon
R54	DRD137641	Res, 1.0K, +/-5%, 1/4W, Carbon
R55	DRE137961	Res, 2.2K, +/-1%, 1/4W, Mtl
R60	DRV419181	Res, 1K, Var, 1/2W, Mtl

Section 7 Mechanical Parts List and Board Locations

Mechanical Parts List (SS-5702A/5703A) 7-2
Figure 7-1. Mechanical Drawing (SS-5702A/5703A) . 7-3
Mechanical Parts List (SS-5705A/5706A) 7-4
Figure 7-2. Mechanical Drawing (SS-5705A/5706A) . 7-5

5702A/5703A

KEY NO.	DESCRIPTION	Q'ty	IWATU PART NO.
1	Cover, upper		KBA718621
2	Foot, urbbber 13φ		AGM001311
3	Rubber foot stopper		ACM001311
4	Handle THA246 no. 3		KAS091811
5	KT (+) 3 x 6B		MKT230062
6	KT (+) 3 x 6B		MKT230062
7	Bezel, B762		KCM1224421
8	Filter BN		KPL097031
9	MKT (+) 3 x 8B		MKT230082
10	Panel front (SS5702A) (SS5703A)		KPA201941 KPA202031
11	Knob K141360SW		KCM124111
12	Knob N111230SGP		KCM123511
13	Knob 181660DSW		KCM124321
14	HL — 3 x 8S		MHL130039
15	Knob N101220SG		KCM123411
16	Knob S181580DWA		KCM123711
17	Knob 221960DSW		KCM123321
18	HL — 4 x 4S		MHL140049
19	Knob K141360SW		KCM124111
20	Knob K1431360SWP		KCM123911
21	Frame front panel		KCM120211
22	Button PS D7		KCM120321
23	Button PS D8		KCM120421
24	Knob LS W		KCM123611
25	Button PS F2		KCM125311
26	Panel front SUB		KBA702431
27	CRT support		KBA487221
28	H chassis		KBA487431
29	V chassis		KBA497011
30	Heat sink		KBA525421
31	Transformer plate 80		KBA718811
32	Panel rear		KBA204111
33	Hangger of power code 76		KCM124211
34	Rivet RH — 4 x 8A		MSQ930251
35	Cover lower		KBA718711
36	KT (+) 3 x 6B		MKT230062
37	Stand bail type		KBA487931
38	Leg E type		KCM057421

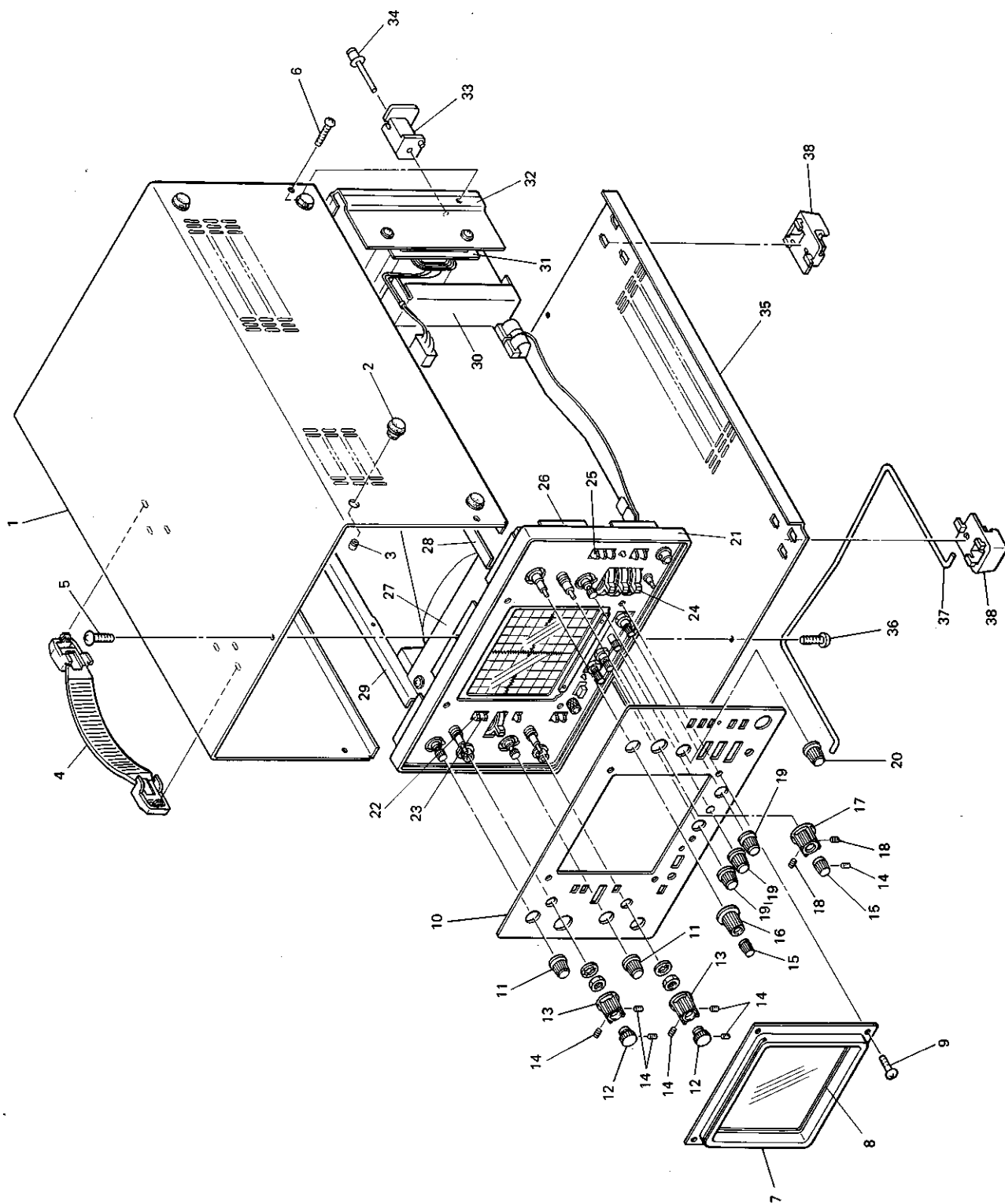


Figure 7-1. Mechanical Drawing (SS-5702A/5703A)

5705A/5706A

KEY NO.	DESCRIPTION	Q'ty	IWATU PART NO.
1	Cover, upper		KBA719421
2	Foot, rubber 13φ		AGM001311
3	Rubber foot stopper		ACM001311
4	Handle THA246 no. 3		KAS091811
5	KH (+) 3 x 6SNIP		KSQ003211
6	KH (+) 3 x 6SNIP		KSQ003211
7	Bezel, B765		KCM124721
8	Filter B2		KPL102821
9	Panel front (SS5706A) (SS5705A)		KPA201841 KPA201741
10	Knob N111230SGP		KCM123511
11	Knob A301760DWC		KCM124611
12	Knob K141360SW		KCM124111
13	Knob S181580DWC		KCM123811
14	Knob S181580DWA		KCM123711
15	Knob N101220SG		KCM123411
16	Knob A301540DWC		KCM124511
17	Knob A471561DWC		KCM124911
18	Knob K1431360SWP		KCM123911
19	HL — 3 x 3S		MHL130039
21	Frame front panel		KCM120211
22	Button PS D7		KCM120321
23	Button PS D8		KCM120421
24	Timing panel support B		KCM061811
25	Chassis left		KBA546911
26	Chassis right		KBA546811
27	Panel rear SUB		KBA719511
28	Panel rear W		KCM124811
30	KT (+) 3 x 10B		MKT230102
31	Cover lower		KBA547131
32	KT (+) 3 x 6B		MKT230062
33	Stand bail type		KMM209711
34	Leg E type		KCM057421

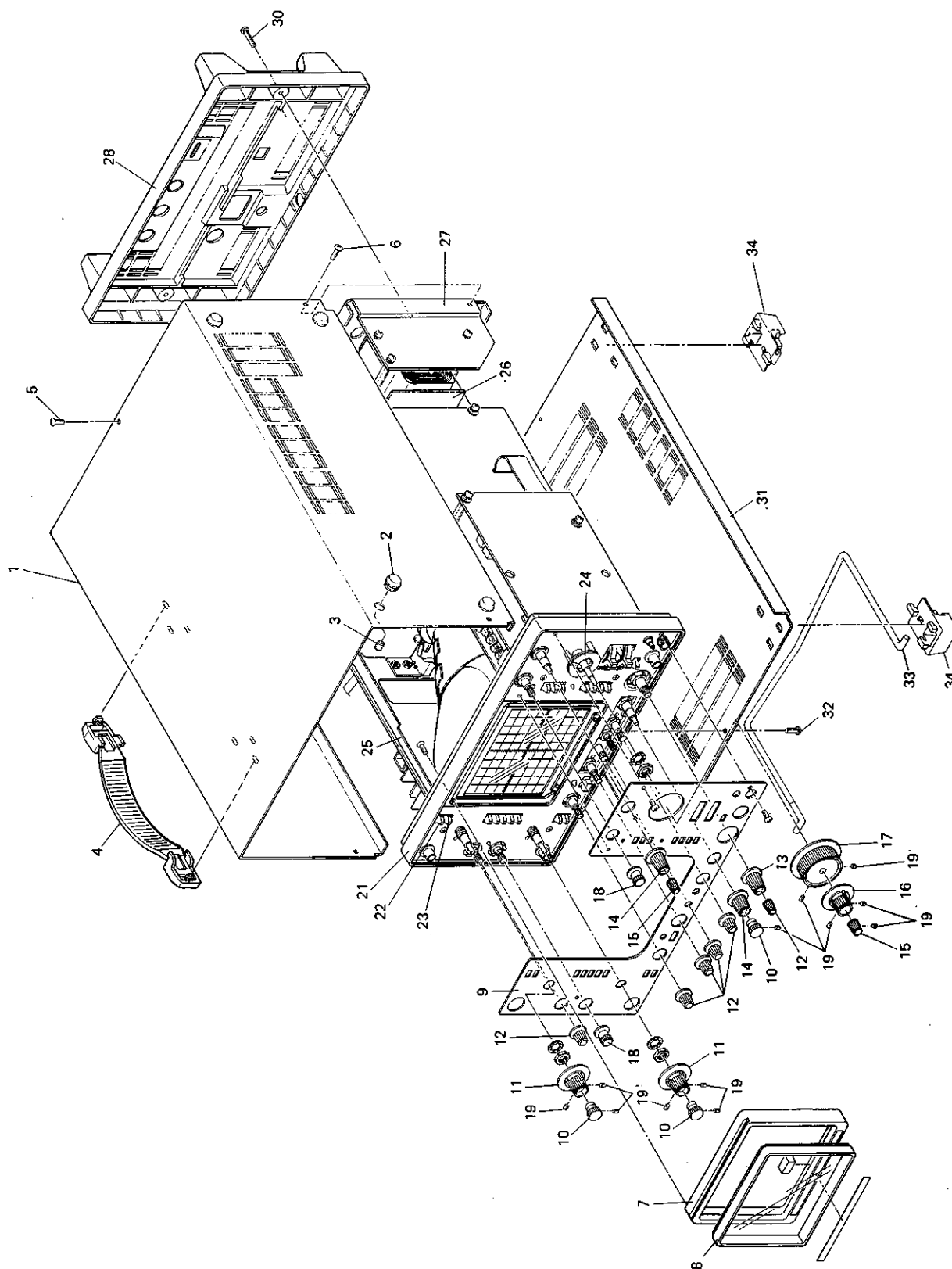


Figure 7-2. Mechanical Drawing (SS-5705A/5706A)



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