ICOM

SERVICE MANUAL

MARINE RADAR

MR-61

Icom Inc.

INTRODUCTION

This service manual describes the latest information for the **MR-61** MARINE RADAR at the time of publication.

DANGER

HIGH VOLTAGE WARNING

High voltages of up to hundreds of thousands of volts are used in this unit. BEWARE of high voltage when removing the outer cover of the unit. When working on the interior, avoid direct contact with the high voltage circuitry especially on the CRT unit and the transmit circuit.

Electric shock of 1000 volts or more causes instant electrocution and death; and, even an electric shock of only 100 volts can kill you.

ELECTRIC SHOCK

PREVENTING ELECTRIC SHOCK

Before opening the display unit cover, wait more than 1 min. from disconnecting the DC power cable in order to discharge the capacitor inside the unit.

FIRST AID IN CASE OF ELECTRIC SHOCK

A stable foothold is essential to prevent more extensive or additional injuries. When injured by electric shock, disinfect the burn completely and begin first aid as soon as possible. To avoid electric shock, all adjustments should be made using an insulated turning tool.

DISPLAY UNIT

SCANNER UNIT

ORDERING PARTS

Be sure to include the following four points when ordering replacement parts:

1. 10-digit order numbers
2. Component part number and name
3. Equipment model name and unit name
4. Quantity required

<SAMPLE ORDER>

1140004220	IC	HD64180R1P6	MR-61	MAIN UNIT	5 pieces
8810001280	Screw	PH M5 x 20 SUS	MR-61	FRONT UNIT	8 pieces

Addresses are provided on the inside back cover for your convenience.

REPAIR NOTES

1. Make sure a problem is internal before disassembling the unit.
2. **DO NOT** open the unit until the unit is disconnected from the power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits of electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the unit is defective.
8. **READ** the instructions of the test equipment thoroughly before connecting equipment to the unit.

TABLE OF CONTENTS

SECTION 1 SPECIFICATIONS

■ General

- Minimum range : 25 m ; 82 ft (when measurement range is 1/8 nm)
- Maximum range : 24 nm (when measurement range is 24 nm)
- Measurement range :

RANGE (nm)	1/8	1/4	1/2	3/4	1.5	3.0	6.0	12	24
FIXED RING (nm)	1/16	1/8	1/4	1/4	1/4	1/2	1.0	2.0	4.0
NUMBER	2	2	2	3	6	6	6	6	6

- Preheat time : 2 min.
- Connection length between display and antenna : 10 m ; 32.8 ft. (standard), 15 m ; 49.2 ft. (USA-1), 30 m ; 98.4 ft. (optional)

■ Scanner unit

- Type : Center feed slot array
- Revolution speed : Approx. 24 r.p.m.
- Beam width : Horizontal beam 4° at –3 dB point
  : Vertical beam 22° at –3 dB point
- Side lobe : –25 dB
- Polarization : Horizontal
- Transmission frequency : 9410 MHz ±30 MHz (X band)
- Peak output power : 3 kW
- Pulse width :

RANGE (NM)	NORMAL PULSE	LONG PULSE
1/8	0.08 µsec./1800 Hz	
1/4, 2/1	0.08 µsec./1800 Hz	0.2 µsec./900 Hz
3/4, 1.5	0.2 µsec./900 Hz	0.4 µsec./900 Hz
3	0.4 µsec./900 Hz	0.75 µsec./600 Hz
6, 12, 24	0.75 µsec./600 Hz	

- Modulation system : FET switching
- Transmit/receive switching : Circulator
- Tuning system : Automatic/manual selectable
- Intermediate frequency : 60 MHz
- IF passband width : 2, 4 or 8 MHz
- IF circuit characteristics : Linear
- Dimensions : 607 (d) x 243 (H) mm ; 24 (d) x 9.6 (H) in
- Usable temperature range : –10°C to +60°C ; +14°F to +140°F
- Weight : 8 kg ; 17.6 lb (Not including the cable's weight)

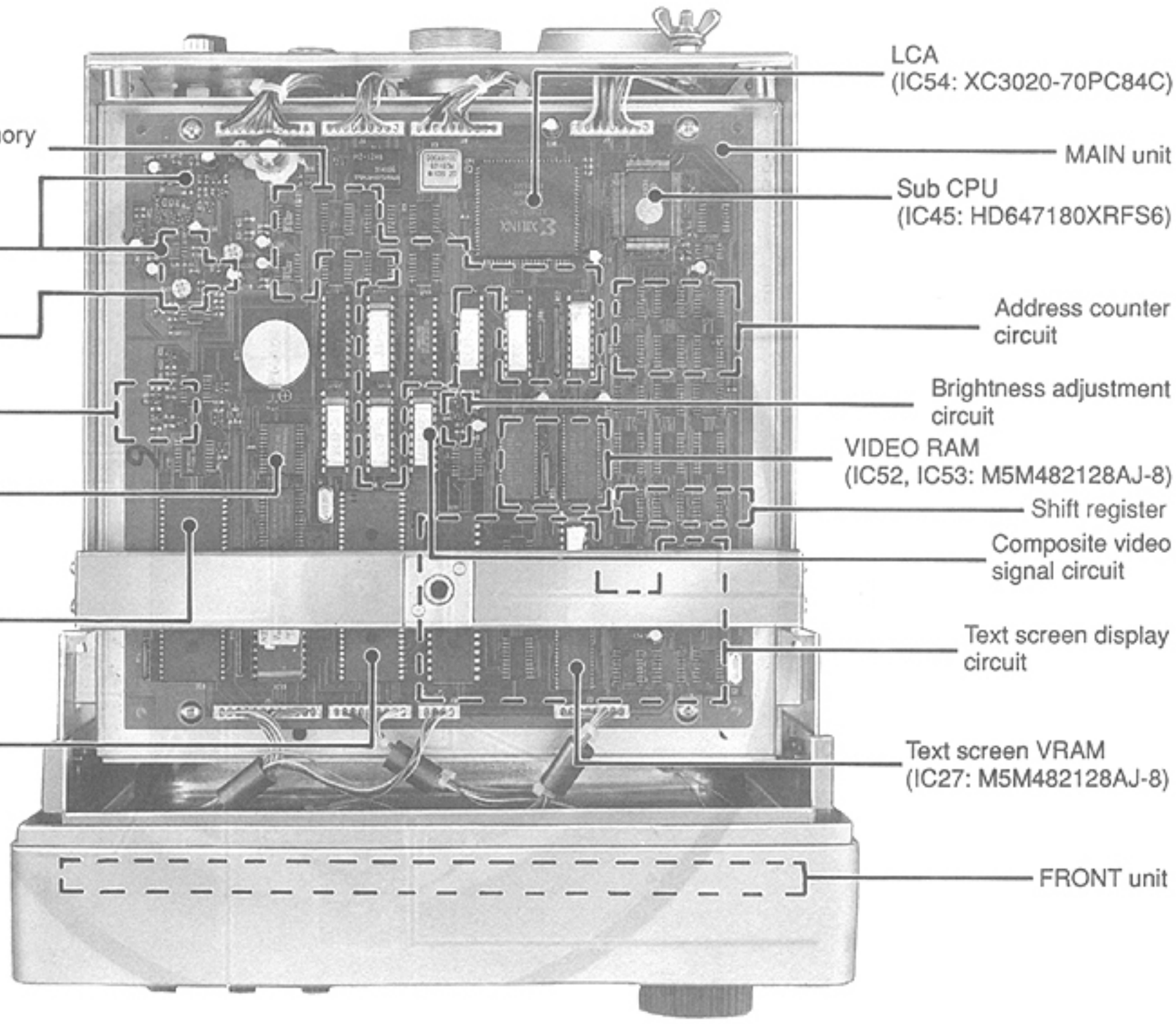
■ Display unit

- System : Raster scan method
- CRT display : 9-inch green display
- Pixels : 640 x 512 dots (327,680 pixels)
- CRT mounting : Vertical
- Input : NMEA0182 or NMEA0183 format (for navigation receiver)
  N+1 Data format (flux gate compass sensor)
- Output : Alarm zone output (relay)
- Power supply requirement : 11 to 40 V DC
- Power consumption : Approx. 50 W
- External alarm current : Less than 1 A (24 V DC)
- Usable temperature range : 0°C to +55°C ; +32°F to +131°F
- Relative humidity : Less than 95% at +35°C (+95°F)
- Dimensions : 250 (W) x 250 (H) x 288 (D) mm ; 9.8 (W) x 9.8 (H) in x 11.3 (D) in
- Weight : 6.7 kg ; 14.8 lb

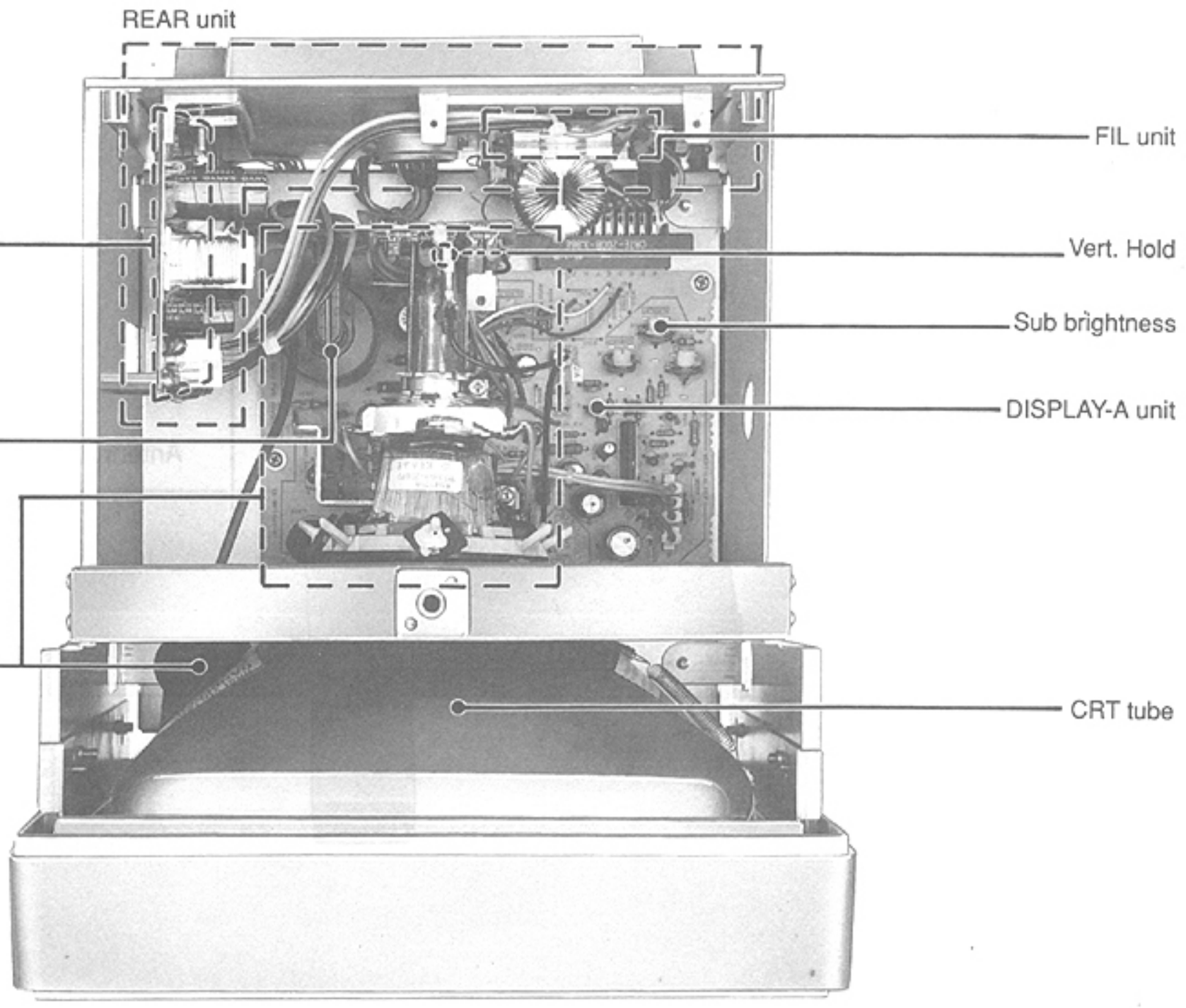
SECTION 2 INSIDE VIEWS

2-1 DISPLAY UNIT

• MAIN UNIT



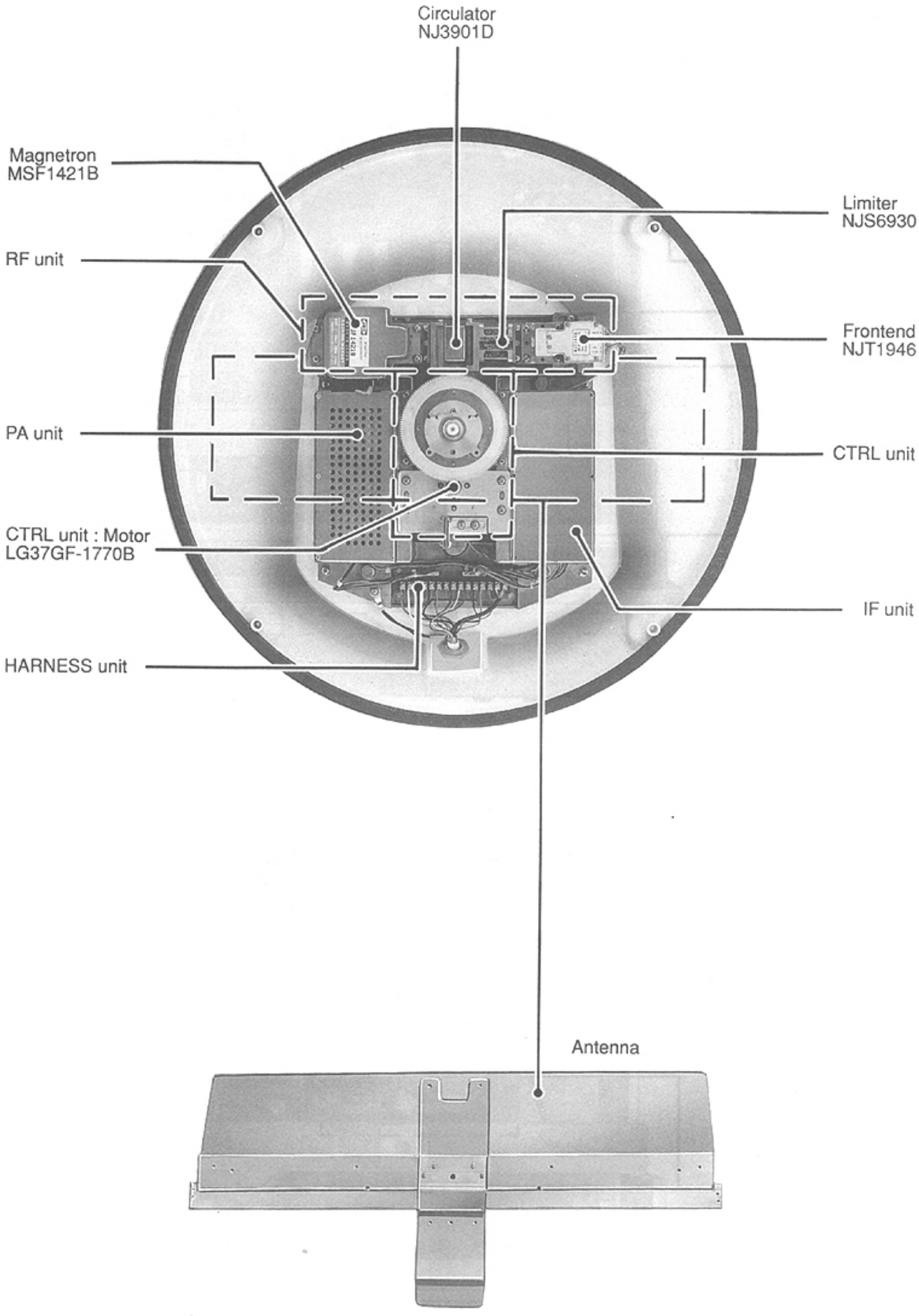
• DISPLAY-A UNIT



⚠ DANGER HIGH VOLTAGE

NEVER touch these parts while DC power cable is connected.

2-2 SCANNER UNIT



SECTION 3 CIRCUIT DESCRIPTION

3-1 RECEIVER CIRCUIT

3-1-1 RF CIRCUIT (RF UNIT)

The RF circuit amplifies the received signal and converts it to a 60 MHz IF signal.

The received microwave signal is switched at a circulator (EP3) to be applied to the diode limiter (EP4). The limiter contains a pin diode to protect the front-end amplifier (EP2) from excessively strong signals.

The signal is then amplified at a front-end amplifier and mixed with a local oscillator. The front-end box (EP2) which contains the amplifier, local oscillator and mixer, outputs a 60 MHz IF signal. The output frequency is compensated by the auto-tuning circuit.

3-1-2 IF CIRCUIT (IF UNIT)

The IF circuit amplifies the front-end output signal and detects it for conversion to a video signal. The video signal exits the SCANNER UNIT and is then applied to the DISPLAY UNIT.

The signal from the front-end (J6, pin 2) is amplified at the IF amplifiers (Q19 IC3, IC4). Bandwidth filters (L2/C4/D29, L3/C56/D28) are used between these amplifiers for IF bandwidth selection. The amplified gain of IC3 and IC4 are controlled by the STC/gain control circuit.

The amplified signal is applied to the video detector (IC5). The video signal from the detector is amplified at the video amplifier (Q17, Q18, Q20) and is then applied to the DISPLAY UNIT.

3-1-3 AUTO TUNING AND TUNING LEVEL CIRCUITS (IF UNIT)

A portion of the IF signals from the front-end (J6, pin 2) is amplified at Q7 and Q1 and is then applied to the 58 MHz detector (L8, Q3, D6, D9) and 62 MHz detector (L7, Q4, D5, D8). The detected voltages are compared at IC7a and IC7b to obtain a 60 MHz drifted value. The drifted value is passed through the voltage adder (IC11b) and is then applied to the front-end (EP2) to control the oscillating frequency.

The amplified signal from Q7 and Q1 is also applied to the 60 MHz detector (L6, Q2, D4, D7) to obtain the 60 MHz IF signal level for the tuning level indicator.

Q10 and Q11 stop the 58 and 62 MHz detector for manual tuning operation.

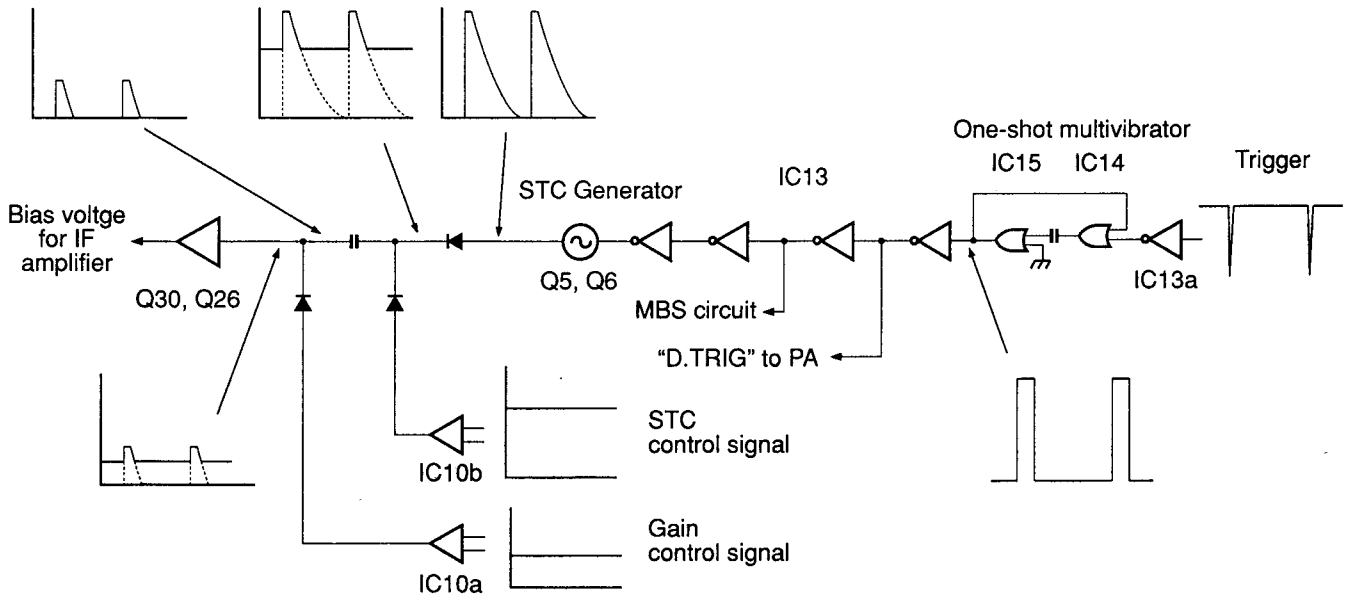
3-1-4 STC/GAIN CIRCUIT (IF UNIT)

The STC control circuit reduces the IF amplifier gain after power is transmitted for a while. The gain control circuit controls the IF amplifier gain constantly.

The gain control signal from IC10a is applied to the buffer amplifier (Q26, Q30) via the diode adder (D24, D27, D33). The amplified signal is applied to the IF amplifiers (IC3, IC4) as a bias voltage.

The STC control signal from IC10b is added to an STC curve signal which comes from the STC generator circuit (Q5, Q6, C29–C31, R142–R145). A coupling condenser (C87) passes pulse height, therefore, the passed signal level is increased when the STC control signal level is reduced. The STC control signal is added to the gain control signal and is then applied to the IF amplifiers (IC3, IC4).

• **STC/GAIN CIRCUIT**



The STC generator circuit produces the STC curve signal from the STC pulse signal. A trigger pulse signal from the DISPLAY UNIT is converted to an STC pulse signal at the one-shot multivibrator (IC14, IC15, C83, R148).

3-1-5 MBS CIRCUIT (IF UNIT)

The receiver circuit operates even while transmitting, therefore, the MBS circuit prevents saturation at the first stage of the IF amplifier (Q19).

The STC pulse signal made at the one-shot multivibrator (IC14, IC15, C83, R148) is applied to the MBS circuit (Q8, Q9). The MBS circuit decreases gate 2 voltage of Q19 while transmitting.

3-1-6 FTC CIRCUIT (MAIN UNIT)

The FTC circuit removes echo signals caused by snow or rain. These echo signals are a low-resolution signals which do not pass a differential circuit.

The video signal from the SCANNER UNIT enters the MAIN unit in the DISPLAY UNIT and is then applied to the FTC circuit (D11, R79). The FTC circuit forms a variable differential circuit using a variable diode (D11) as a coupling condenser. The capacitance of D11 is determined by the FTC control circuit (IC30b).

3-1-7 PPI VIDEO PROCESSING CIRCUIT (MAIN UNIT)

The video signal from the FTC circuit is converted to a digital signal at the high-speed comparator (IC57, IC58) and the digitalizer (IC55, IC64). The signal is then applied to the sampling circuit (IC59). The sampling circuit samples the signal at each transmit pulse and applies this to the sampling memory (IC37). The sampled memory is converted to an X–Y axis at IC54 and is then displayed on the CRT screen via the PPI video memory (IC53).

3-2 TRANSMITTER CIRCUIT

3-2-1 TRIGGER PULSE GENERATOR CIRCUIT (MAIN UNIT)

The sub CPU (IC45) generates trigger pulses corresponding to the selected range and antenna bearing. The trigger signal's pulse width is adjusted at IC50, buffer-amplified at IC28e and is then applied to the SCANNER UNIT.

The antenna bearing is counted in the IF unit. The bearing pulses (FG signal) are generated at the antenna motor and are multiplied 5 times at the PLL circuit (IC6, IC8, Q22) to obtain 1800 pulses/1 antenna rotation. The bearing signal is combined with the heading marker signal (SHM) at Q24 and Q25 and then enters the MAIN unit.

3-2-2 ONE-SHOT MULTIVIBRATOR (IF UNIT)

The trigger signal from the DISPLAY UNIT (MAIN unit) is applied to the one-shot multivibrator (IC14, IC15, C83, R148) where the pulse width of the trigger signal is adjusted (approx. 6 μsec.). The pulse adjusted signal is inverted at IC13b and is then applied to the PA unit (D.TRIG signal).

3-2-3 PULSE WIDTH CONTROL CIRCUIT (PA UNIT)

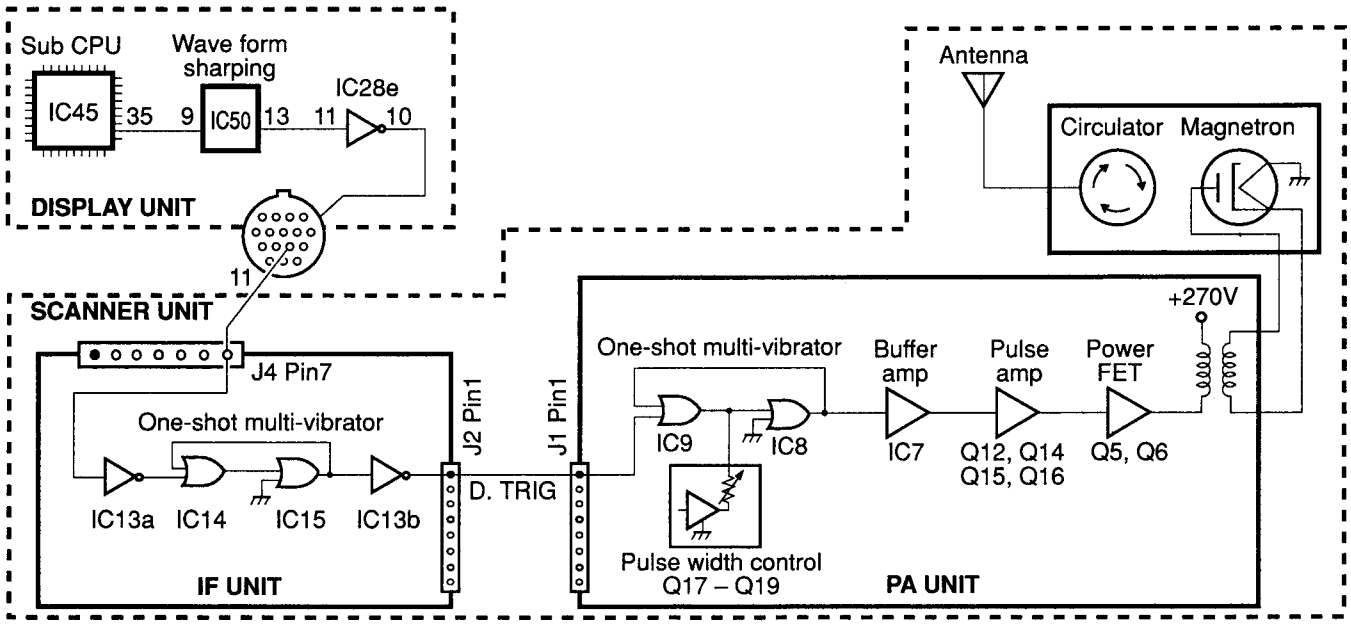
The trigger signal from the IF unit is applied to the pulse width control circuit (IC1, IC9, Q17–Q19) where the same pulse width as for transmitting is obtained. The pulse width is determined by the selected range and normal/long pulse selection is via the PL1–PL3 signals. Refer to Table 3 – 1.

• PULSE WIDTH CONTROL SIGNAL

PULSE WIDTH	CONTROL SIGNAL			ADJUST POT
	PL1	PL2	PL3	
S (80 ns)	H	L	L	R49
M1 (200 ns)	L	H	L	R50
M2 (400 ns)	L	L	H	R51
L (750 ns)	L	L	L	R52

Table 3 – 1

• TRANSMITTER CIRCUIT



3-2-4 POWER SWITCHING CIRCUIT (PA UNIT)

The pulse width controlled signal is amplified at the buffer amplifier (IC7a–IC7f) and pulse amplifier (Q12, Q14, Q15, Q16) and is then applied to the power switching circuit (Q5, Q6). The power switching circuit, used power MOS FET, applies high voltage (270 V) to the primary terminal of the pulse transformer (T1) at the received pulse signal periods. The pulse transformer (T1) boosts the high voltage and applies this to the magnetron.

The 270 V of high voltage is produced at the DC-DC converter (IC2, Q9, Q10) and is adjusted by R24. The protection circuit (D7, R3, C41, R62) protects the power FET (Q5, Q6) from abnormal oscillation of the magnetron.

3-3 REGULATOR CIRCUIT

3-3-1 REGULATOR CIRCUIT (REG UNIT)

The regulator produces +5 V, –5 V, +12 V and 12 V of CRT power via a wide range of inputs from a 12–24 V power source.

The input power source is passed through a line filter in the FIL unit and is then applied to the REG unit. The switching circuit (Q1–Q4) generates alternations current from the power source input and applies it to the power transformer (T1). +12 V and +5 V are obtained from the secondary terminals of the transformer and rectified at D4 and D6 respectively.

The +12 V regulator (Q12, Q17, Q18) and CRT power regulator (12 V; Q13, Q15, Q16) produce the desired voltage using a +5 V regulator output as a reference voltage.

The +5 V regulator adopts a variable shunt-type regulator IC (IC2). IC2 has 2.5 V of reference voltage which regulates to the desired voltage using a dividing ratio (determined R17 and R19).

–5 V is obtained by rectifying the transformer output at D5 and D9 and is then applied to the MAIN unit.

3-3-2 ON/OFF CIRCUIT (MAIN UNIT)

The power ⊕ voltage is applied to the Q9 collector. When the [POWER] switch is pushed at power off, ⊕ voltage is applied to Q9 base; Q9 applies the power voltage to IC4. IC4 sets RL1 to turn ON via Q11. When the [POWER] switch is pushed for 1 sec. while power on, IC4 resets RL1 to turn OFF.

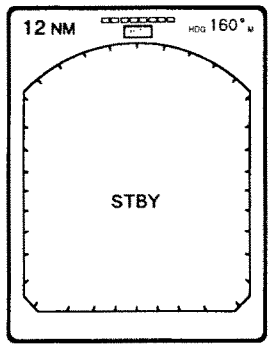
RL1 is a latching relay which retains its condition until receiving a set or reset signal.

SECTION 4 ADJUSTMENTS via FRONT PANEL

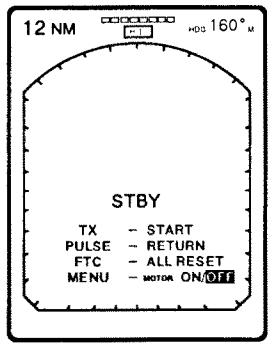
4-1 SELECTING SERVICE MODE

The radar has a pre-set mode called "service mode." Slight adjustment of the automatic tuning function can be performed without removing and opening the scanner unit. Select the service mode as follows.

① Push [POWER] to turn power ON and wait 2 min.
- Standby mode is selected.
- Push [TX] when the PPI screen has been selected.

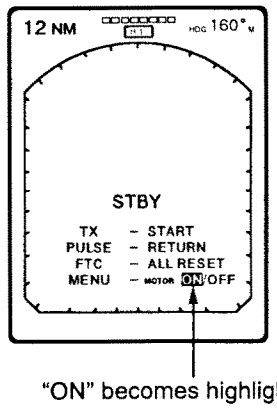


② While pushing [EBL1] and [VRM1], push [H.M OFF] to select the service mode.



③ If the backup battery on the MAIN unit is replaced, push and hold [FTC] for 2 sec. to reset memory contents.
- A beep tone sounds for verification.

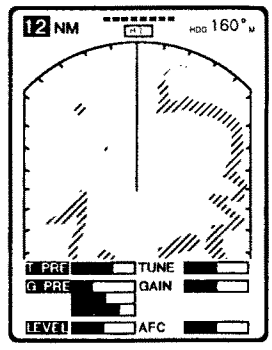
④ Push [MENU] to select the scanner motor ON.
- If you perform any maintenance without scanner motor rotation, skip this step.



"ON" becomes highlighted.

⑤ Push [TX] to enter the service mode setting condition and start adjustment.
- If you have skipped step ④, targets are shown as circles in the display.
- Controls act as follows:

CONTROL	Alternates by pushing [STC] / Alternates by pushing [TUNE]		
[TUNE]	T.PRE	TUNE	Deactivate
[GAIN]	G.PRE	GAIN	GAIN
[STC]	LEVEL		AFC
[DIAL]	Range selection		

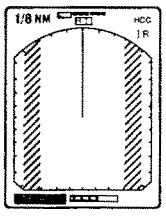


⑥ Perform the adjustments on the next page.
⑦ Push [TX] to exit the setting condition.
⑧ Push [PULSE] to exit the service mode and return to Standby mode.

4-2 SERVICE MODE SETTINGS

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
TUNING LEVEL INDICATOR PRE-SETTING	1	• Service mode • Select 12 nm range using [DIAL].	Display unit	Screen	Maximum resolution of blips	Front panel	[TUNE] control (T.PRE)
GAIN PRE-SETTING	2	• "GAIN" indicator : Maximum (Push [TUNE], rotate [GAIN] clockwise and then push [TUNE].)			2 clicks counter-clockwise from maximum noise level		[GAIN] control (G.PRE)
	3	• "GAIN" indicator : Center (Push [TUNE], rotate [GAIN] and then push [TUNE].)			Verify the noise level.		Verify
	4	• Select 6.0 nm range using [DIAL].			Same noise level as step 3		[GAIN] control (G.PRE)
	5	• Select 1.5 nm range using [DIAL].			Same noise level as step 3		[GAIN] control (G.PRE)
TUNING LEVEL INDICATOR (AUTOMATIC TUNING CORREC-TION)	6	• Select 12 nm range using [DIAL].			Maximum resolution of blips		[TUNE] control (TUNE)
	7			Tuning level indicator 	Maximum (Center position of the full scale range)		[STC] control (LEVEL)
AFC (AUTOMATIC TUNING CORREC-TION)	8	• Auto tuning : ON (Push [STC]. "AUTO" appears.)		Screen	Maximum resolution of blips		[STC] control (AFC)

4-3 CABLE LENGTH CORRECTION

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
CABLE LENGTH CORREC-TION	1	• Navigation mode • Display a straight target. • Range : 1/8 nm • Push and hold [MENU] until "H.M. ADJ." appears; then, push [MENU] again. ("LINE ADJ." appears.)	Display unit	Screen	Adjust the target blip so it is straight. 	Front panel	[DIAL]

SECTION 5 INTERNAL ADJUSTMENT

5-1 PREPARATION BEFORE SERVICING

■SCANNER UNIT REMOVEMENT

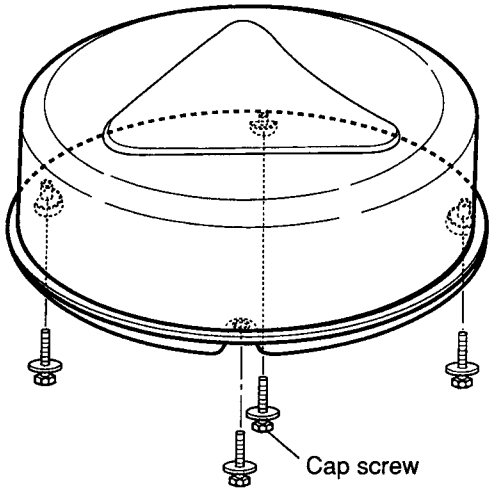


Fig. 5-1

① Remove 4 cap screws to open the top cover.

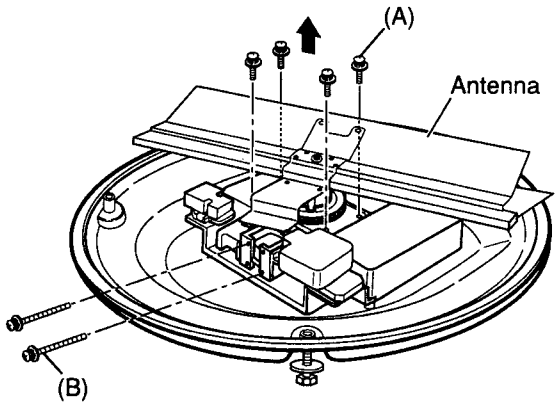


Fig. 5-2

② Remove 4 screws (A), (silver 12 mm). When the screws are hidden by the antenna, rotate the antenna.

③ Remove 2 screws (B), (silver 65 mm), to remove* the motor unit with the antenna.

* Pull out to the direction of the arrow.

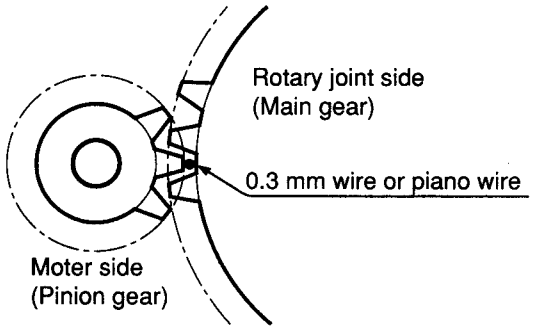


Fig. 5-3

AFTER REPAIR:
Keep the gear clearance 0.3 mm. To keep the clealance, insert a 0.3 mm thick wire or a piano wire between the both gears temporary.

■REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 11 – 40 V DC Current capacity : 5 A or more	Standard signal generator (SSG) (Antenna unit adjustment and sensitivity check only)	Frequency range : 1.0 – 10 GHz Output level : 1.0 μV – 32 mV (– 107 to – 17 dBm)
Directional coupler	Power attenuation : 20 dB Capacity : 10 W or more		
Sweep generator	Frequency range : 20 – 100 MHz Sweep bandwidth : At least 30 MHz Output impedance : 50 Ω	Spectrum analyzer (Antenna unit adjustment only)	Frequency range : At least 10 GHz Spectrum bandwidth : ± 100 MHz or more
AC milli-voltmeter	Measuring range : 10 mV–10 V	Terminator	Resistance : 50 Ω Peak power level : At least 6 kW Average power level : At least 5 W
Oscilloscope	Frequency range : DC – 20 MHz Measuring range : 0.01 – 10 V		
Frequency counter	Frequency range : 0.1 – 200 kHz Frequency accuracy : ± 1 ppm or better Sensitivity : 100 mV or better	Attenuator	Power attenuation : 20, 23 and 50 dB Peak power level : At least 6 kW Average power level : At least 5 W
Crystal detector	Input frequency : At least 10 GHz Peak input level : At least 1 W Average input level : At least 100 mW	DC voltmeter	Measuring range : 0 – 300 V Input impedance : At least 5 KΩ/DC or better

■CONNECTION

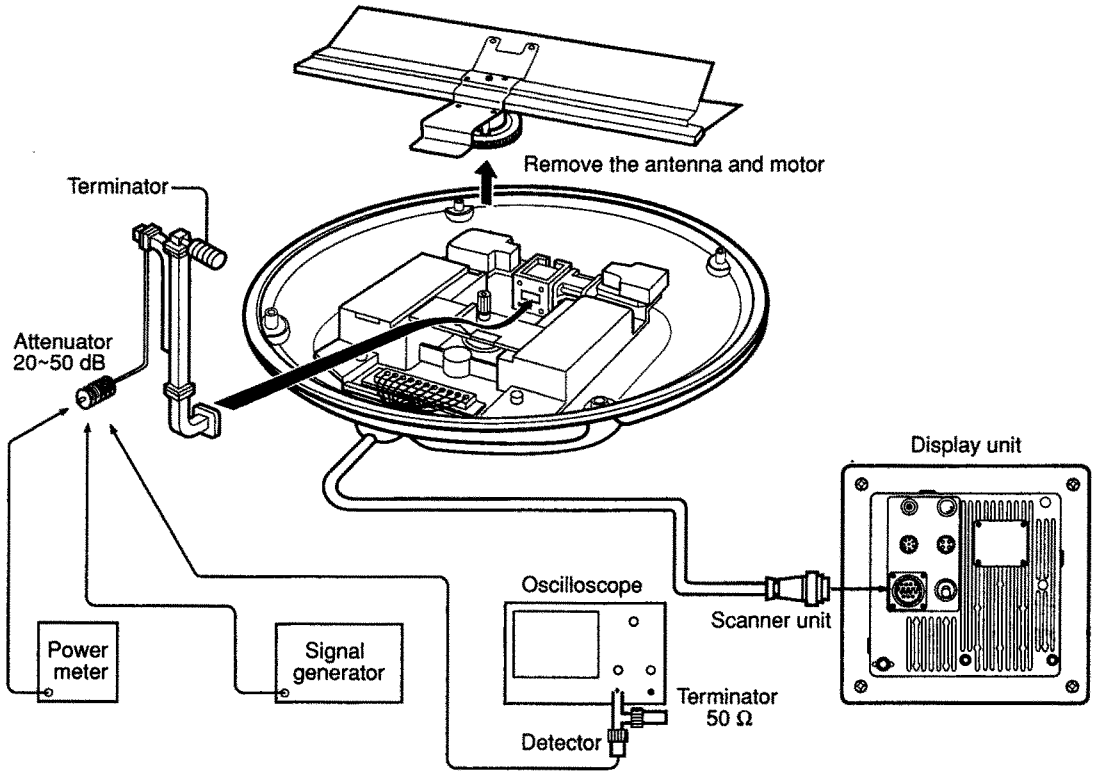


Fig. 5-4

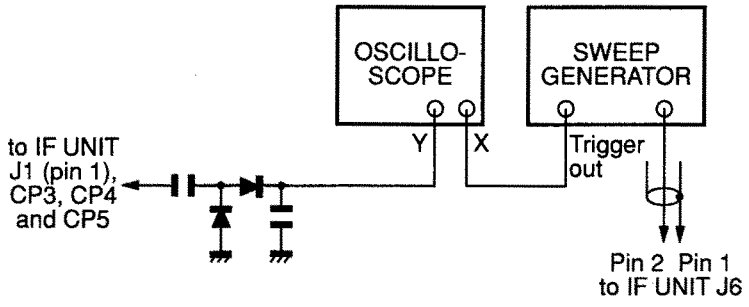


Fig. 5-5 For bandpass filter adjustment

5-2 MAJOR RECEIVER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
BANDPASS FILTER	1	●Connect the sweep generator to J6, pins 1 and 2 (IF unit) as shown in Fig 5-5 and set as: Center frequency : 60 MHz Level : 71 μV : (– 70 dBm) ●Range : 12 nm ●Navigation mode ●Adjust [GAIN], if required.	IF	Connect the oscilloscope to J1 pin 1.	Maximum waveform	IF	L1 – L4
	2	●Range : 1/8,1.5 or 3, 12 nm			Verify that the waveform has changed from the above adjustment on both ranges.		Verify
AUTOMATIC TUNING		NOTE: Using service mode, slight adjustment can also be performed without removing and opening the scanner unit.					
	1	Preset the following settings to center using "Service mode." (p. 4 – 1) ●"LEVEL" indicator : Center (Rotate [STC] control.) ●"AFC" indicator : Center (Push [STC] then rotate [STC] control.)					
	2	●Connect the sweep generator to J6, pins 1 and 2 (IF unit) ; and set as: Center frequency : 60 MHz Level : 71 mV (– 10 dBm) ●Navigation mode	IF	Connect the oscilloscope to CP3.	Maximum waveform	IF	L6
	3	●Set the sweep generator: Center frequency : 62 MHz		Connect the oscilloscope to CP4.	Maximum waveform		L7
	4	●Set the sweep generator: Center frequency : 58 MHz		Connect the oscilloscope to CP5.	Maximum waveform		L8
		NOTE: Verify this adjustment from step 2.					
ANTENNA ROTATION	1	●Set the frequency counter. Gate time : 1 sec. ●Navigation mode	IF	Connect the frequency counter to J4 pin 5 and pin 4 (GND)	1800 Hz	IF	R184
SUB BRIGHT-NESS	1	●Navigation mode	Display unit	Screen	Adjust the retrace line until it disappears.	MAIN	R2
NOTE: After these adjustments, perform "Adjustment via front panel" on p. 4 – 1.							

• **IF UNIT**

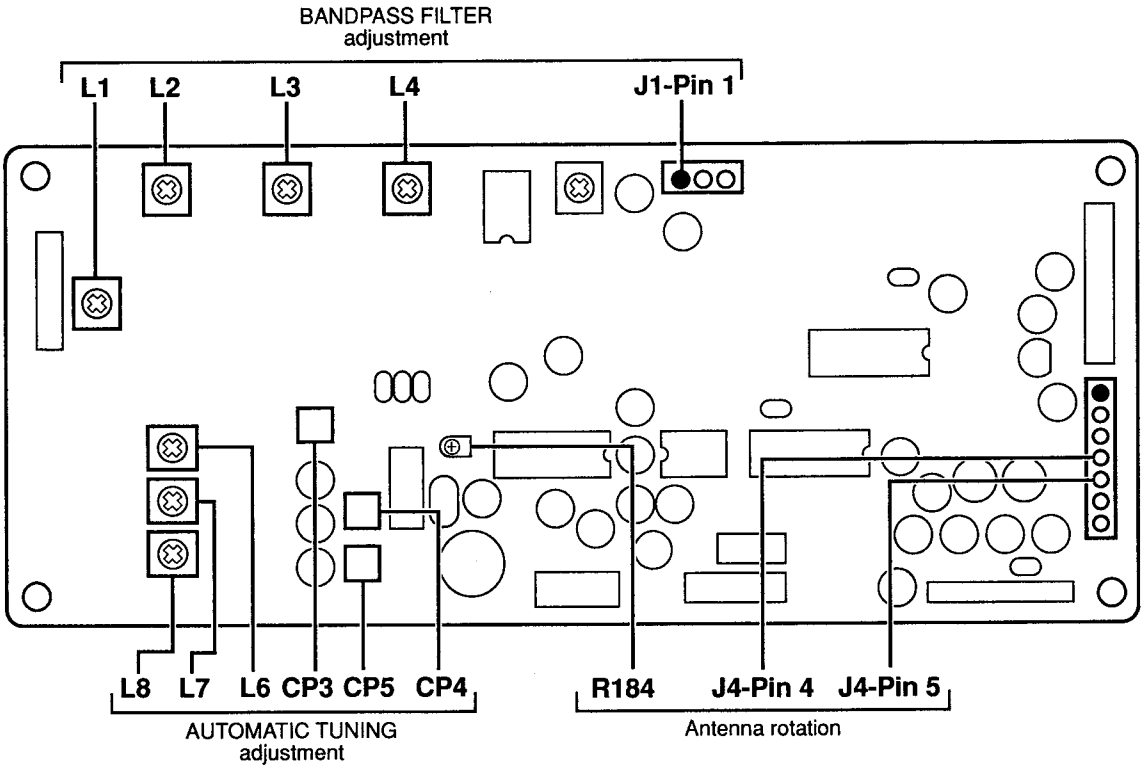


Fig. 5-6

• **MAIN UNIT**

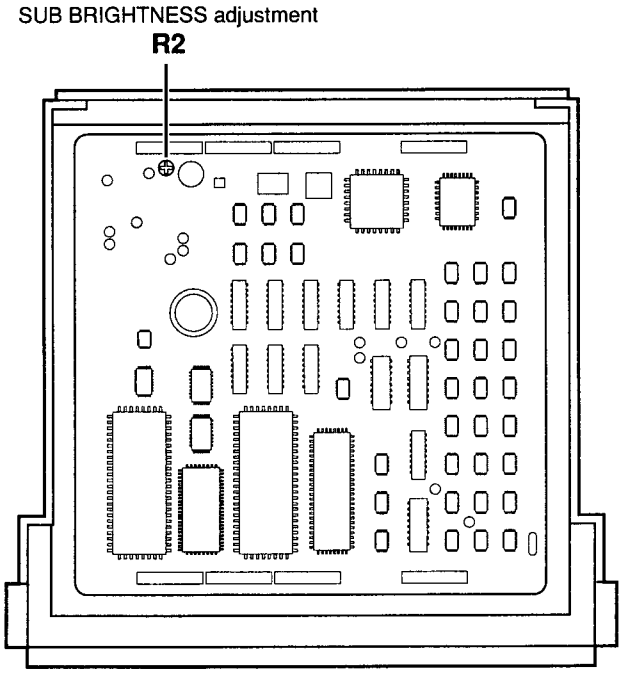


Fig. 5-7

5-3 RECEIVER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
ANTENNA UNIT TUNING	1	• Set the signal generator as : Frequency : 9.41GHz • Set the spectrum analyzer as: Center frequency : 9.41 GHz Span : 200 MHz	ANTENNA	Connect the signal generator and spectrum analyzer to the directional coupler as shown in Fig 5-9.	Preset the waveform to 0 dBm.	SSG	SSG output level
	2	• Do not place any object within 5 meters. (Place a wave absorber on the front of the scanner radiator.)		Connect the spectrum analyzer to the antenna unit as shown in Fig 5-10.	Minimum level	Antenna	Adj. 1 Adj. 2 Adj. 3
SENSITIVITY CHECK	1	• Range : 12 nm • [GAIN] control : Maximum • STC function : OFF • Connect the signal generator to the circulator via the 20 dB attenuator as shown in Fig 5-4 ; and set as: Frequency : 9.41 GHz Level : 0.22 mV (– 60 dBm) • Navigation mode	HARNESS	Connect the AC milli-voltmeter to EP1 as shown in Fig 5-8	Minimum level	Front panel	[TUNE] control
	2	• Set the signal generator: OFF			Maximum noise level (0 dB)		[GAIN] control
	3	• Set the signal generator: ON			10 dB lower than the level displayed on the AC milli-voltmeter in step 2 above.	SSG	SSG output level
		NOTE: Verify that the signal generator output level, in step 3 above, plus the insertion loss is less than – 65 dBm					
NOTE: After these adjustments, perform "Adjustment via front panel" on p. 4 – 1 or proceed to the transmitter adjustment on the next page.							

• HARNESS UNIT

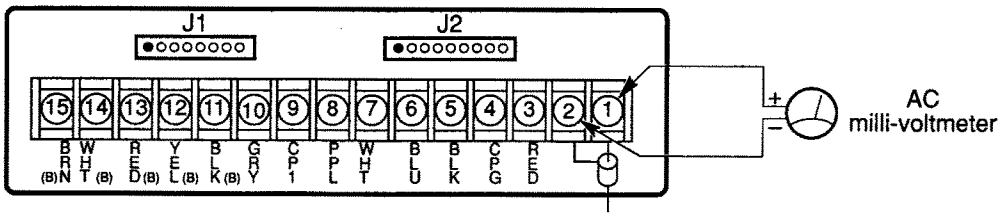


Fig. 5-8

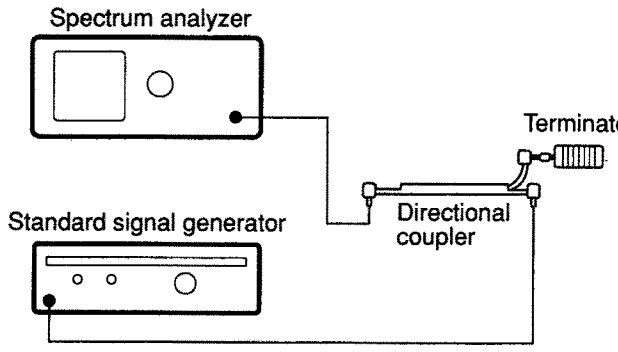


Fig. 5-9

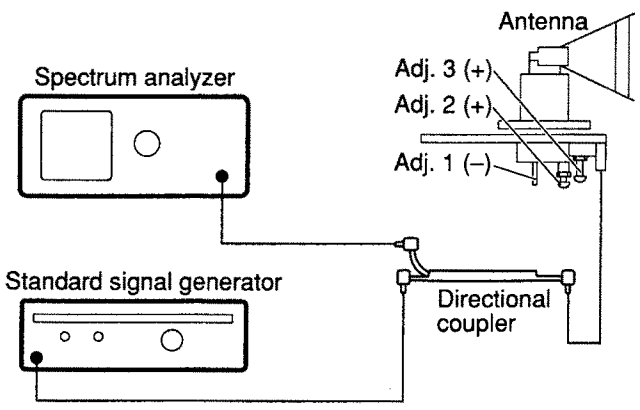


Fig. 5-10

5-4 TRANSMITTER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
MAGNE-TRON CURRENT	1	●R49 (PA) : Center ●R50 (PA) : Center ●R51 (PA) : Center ●R52 (PA) : Max. CCW	PA	Connect the Digital multi-meter to CP2.	7.6 V DC (± 0.6 V)	PA	Verify
	2			Connect the Digital multi-meter to the cathode of D6.	260 V DC		R24
	3	●Range : 12 nm ●Navigation mode		Connect the oscil-loscope to the magnetron lead through a current probe.	3.2 A at 400 nsec. after the current rises.		R24
PULSE WIDTH		NOTE: In this adjustment, pulse width is measured when the detector output voltage is more than 70% of the maximum.					
	1	●Range : 12 nm ●Pulse width : Normal ●Navigation mode	PA	Connect the oscil-loscope to the cir-culator through the detector.	Adjust for 750 nsec. pulse width	PA	R52
	2	●Range : 3 nm			Adjust for 400 nsec. pulse width		R51
	3	●Range : 1.5 nm			Adjust for 200 nsec. pulse width		R50
	4	●Range : 1/8 nm			Adjust for 80 nsec. pulse width		R49
		NOTE: Verify this adjustment from step 1 .					
NOTE: After these adjustments, perform "Adjustment via front panel" on p. 4 – 1 .							

CW: Clockwise CCW: Counterclockwise

• PA UNIT

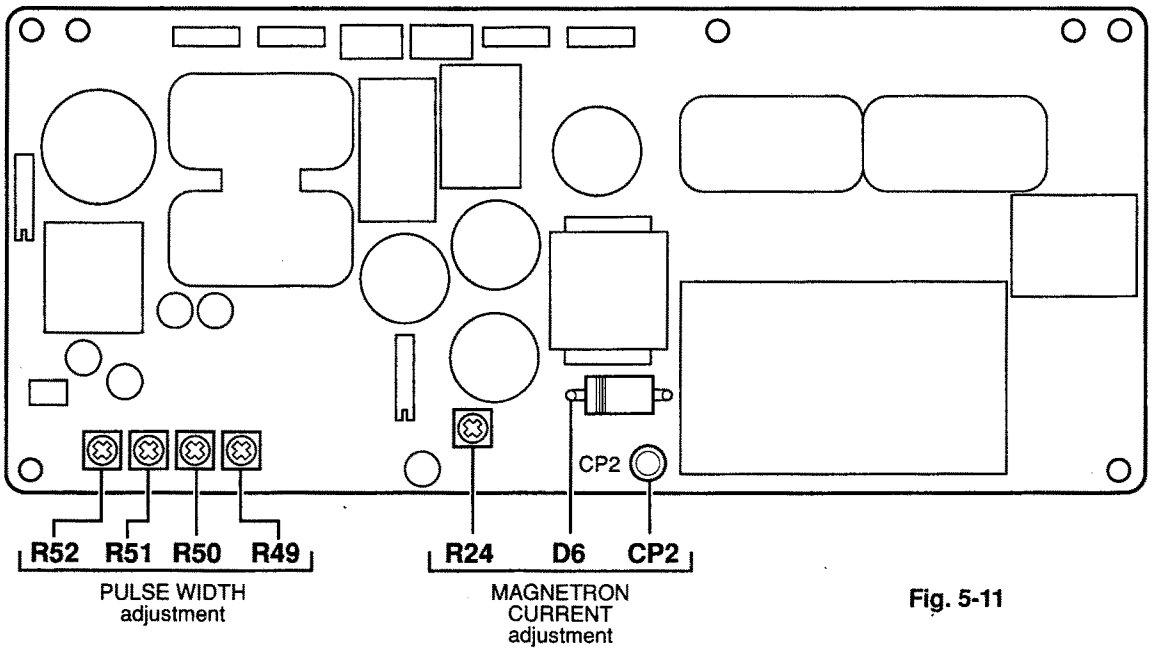


Fig. 5-11

SECTION 6 PARTS LIST

6-1 DISPLAY UNIT

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
IC1	1120002390	S.IC	TC74AC166F
IC2	1120002390	S.IC	TC74AC166F
IC3	1130005290	S.IC	TC74HC14AF
IC4	1130005250	S.IC	TC74HC08AF
IC5	1120002300	S.IC	TC74AC04F
IC6	1170000180	IC	PC817D
IC7	1110001500	S.IC	S-8054ALR-LN-T1
IC8	1130005770	S.IC	MB4052PF-G-BND-TR
IC9	1140000940	IC	TMP82C255AN-2-Z
IC10	1140001220	IC	HD64180R1P6
IC11	1130005510	IC	µPD72020C-8
IC12	1130006010	S.IC	HM6264ALFP15LD
IC13	1140003121	IC	SC-1234-1 (NM27C256BQ150)
IC14	1140003020	IC	SC-1226
IC15	1120002330	S.IC	TC74AC573F
IC16	1120002330	S.IC	TC74AC573F
IC17	1140003030	IC	SC-1227
IC18	1130005120	S.IC	TC74HC74AF (TP1)
IC19	1120002310	S.IC	TC74AC161F
IC20	1120002380	S.IC	TC74AC175F
IC21	1130005740	S.IC	TC74AC74F
IC22	1130005740	S.IC	TC74AC74F
IC23	1130005420	S.IC	TC74HC175AF
IC24	1140003520	IC	SC-1250
IC25	1140002320	S.IC	µPD6325G
IC26	1140002240	S.IC	TMP82C54M-2
IC27	1130006790	S.IC	M5M482128AJ-8
IC28	1120002370	S.IC	HD74LS06FP
IC29	1110001240	S.IC	µPC358G2-T1
IC30	1110001240	S.IC	µPC358G2-T1
IC31	1130005430	S.IC	TC74HC191AF
IC32	1130005430	S.IC	TC74HC191AF
IC33	1130005430	S.IC	TC74HC191AF
IC34	1130005430	S.IC	TC74HC191AF
IC35	1130005430	S.IC	TC74HC191AF
IC36	1130005430	S.IC	TC74HC191AF
IC37	1110003210	IC	MCM6268P25
IC38	1130005550	S.IC	µPD74HC123AGS
IC39	1120002390	S.IC	TC74AC166F
IC40	1120002390	S.IC	TC74AC166F
IC41	1120002390	S.IC	TC74AC166F
IC42	1130005380	S.IC	TC74HC161AF
IC43	1130005380	S.IC	TC74HC161AF
IC44	1140003040	IC	SC-1228
IC45	1140003140	S.IC	HD647180X0FS6
IC46	1140003080	IC	SC-1229
IC47	1140003100	IC	SC-1232
IC48	1140003130	IC	SC-1235
IC49	1140003050	IC	SC-1230
IC50	1130005550	S.IC	µPD74HC123AGS
IC51	1120002320	S.IC	TC74AC245F
IC52	1130006790	S.IC	M5M482128AJ-8
IC53	1130006790	S.IC	M5M482128AJ-8
IC54	1110003040	S.IC	XC3020-70PC84C
IC55	1130005740	S.IC	TC74AC74F
IC56	1130005380	S.IC	TC74HC161AF
IC57	1110003120	S.IC	NE521D
IC58	1110003120	S.IC	NE521D
IC59	1140003110	IC	SC-1233
IC60	1110003130	S.IC	MC14577 BF
IC61	1110001240	S.IC	µPC358G2-T1
IC62	1120002330	S.IC	TC74AC573F
IC63	1120002330	S.IC	TC74AC573F

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
IC64	1130005740	S.IC	TC74AC74F
IC65	1130005740	S.IC	TC74AC74F
IC66	1130003830	S.IC	TC7S04F (TE85R)
IC67	1130005120	S.IC	TC74HC74AF (TP1)
IC68	1130006440	S.IC	TC7S08F (TE85R)
IC69	1110002070	IC	TA78L08S
Q1	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q2	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q3	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q4	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q5	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q6	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q7	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q8	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q9	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q10	1590000480	S.TRANSISTOR	RN2402 (TE85R)
D1	1750000060	S.DIODE	1SS196 (TE85R)
D2	1750000060	S.DIODE	1SS196 (TE85R)
D3	1750000060	S.DIODE	1SS196 (TE85R)
D4	1750000060	S.DIODE	1SS196 (TE85R)
D5	1750000060	S.DIODE	1SS196 (TE85R)
D6	1750000060	S.DIODE	1SS196 (TE85R)
D7	1750000060	S.DIODE	1SS196 (TE85R)
D8	1750000020	S.DIODE	1SS184 (TE85R)
D9	1750000060	S.DIODE	1SS196 (TE85R)
D10	1750000060	S.DIODE	1SS196 (TE85R)
D11	1720000030	VARICAP	1SV149C
D12	1730000730	S.ZENER	RD6.2M-T2B2
D13	1750000060	S.DIODE	1SS196 (TE85R)
D14	1750000060	S.DIODE	1SS196 (TE85R)
D15	1750000060	S.DIODE	1SS196 (TE85R)
D16	1750000060	S.DIODE	1SS196 (TE85R)
D17	1750000060	S.DIODE	1SS196 (TE85R)
X1	6050008310	XTAL	DOC-492 12.288 MHz
X2	6050008320	XTAL	DOC-49S2 40.000 MHz
X3	6050008330	XTAL	DOC-431CC 62.160 MHz
R1	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R2	7310000800	TRIMMER	RH0651CJ5J01A (224)
R3	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R4	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R5	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R6	7030000340	S.RESISTOR	MCR10EZHJ 470 Ω (471)
R7	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R8	7030000400	S.RESISTOR	MCR10EZHJ 1.5 KΩ (152)
R9	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R10	7030000340	S.RESISTOR	MCR10EZHJ 470 Ω (471)
R11	7030000400	S.RESISTOR	MCR10EZHJ 1.5 KΩ (152)
R12	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R13	7410000070	ARRAY	RMX- 4 472K
R14	7410000050	ARRAY	RMX- 4 103K
R15	7410000210	ARRAY	RMX- 8 472K
R16	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R17	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R18	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R19	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R20	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)

S. = Surface mount

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
R21	7030000510	S.RESISTOR	MCR10EZHJ 12 KΩ (123)
R22	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R23	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R24	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R25	7030000140	S.RESISTOR	MCR10EZHJ 10 Ω (100)
R26	7030000690	S.RESISTOR	MCR10EZHJ 390 KΩ (394)
R27	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R28	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R29	7030000640	S.RESISTOR	MCR10EZHJ 150 KΩ (154)
R30	7030000600	S.RESISTOR	MCR10EZHJ 68 KΩ (683)
R31	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R32	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R33	7030000590	S.RESISTOR	MCR10EZHJ 56 KΩ (563)
R34	7030000510	S.RESISTOR	MCR10EZHJ 12 KΩ (123)
R35	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R36	7030000590	S.RESISTOR	MCR10EZHJ 56 KΩ (563)
R37	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R38	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R39	7030000520	S.RESISTOR	MCR10EZHJ 15 KΩ (153)
R40	7030000700	S.RESISTOR	MCR10EZHJ 470 KΩ (474)
R41	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R42	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R43	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R44	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R45	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R46	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R47	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R49	7030000400	S.RESISTOR	MCR10EZHJ 1.5 KΩ (152)
R50	7030000400	S.RESISTOR	MCR10EZHJ 1.5 KΩ (152)
R51	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R52	7410000210	ARRAY	RMX- 8 472K
R53	7410000070	ARRAY	RMX- 4 472K
R54	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R55	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R56	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R57	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R58	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R59	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R60	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R61	7030000340	S.RESISTOR	MCR10EZHJ 470 Ω (471)
R62	7030000370	S.RESISTOR	MCR10EZHJ 820 Ω (821)
R67	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R68	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R69	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R72	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R73	7030000640	S.RESISTOR	MCR10EZHJ 150 KΩ (154)
R74	7030000640	S.RESISTOR	MCR10EZHJ 150 KΩ (154)
R75	7030000400	S.RESISTOR	MCR10EZHJ 1.5 KΩ (152)
R76	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R77	7030000430	S.RESISTOR	MCR10EZHJ 2.7 KΩ (272)
R78	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R79	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R80	7410000070	ARRAY	RMX- 4 472K
R81	7410000070	ARRAY	RMX- 4 472K
R82	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R84	7030000330	S.RESISTOR	MCR10EZHJ 390 Ω (391)
R85	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R86	7030000590	S.RESISTOR	MCR10EZHJ 56 KΩ (563)
R88	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R89	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R91	7030000490	S.RESISTOR	MCR10EZHJ 8.2 KΩ (822)
R92	7030000600	S.RESISTOR	MCR10EZHJ 68 KΩ (683)
R93	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R94	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R95	7030000470	S.RESISTOR	MCR10EZHJ 5.6 KΩ (562)
R96	7030000470	S.RESISTOR	MCR10EZHJ 5.6 KΩ (562)
R97	7030000020	S.RESISTOR	MCR10EZHJ 1 Ω (010)
R98	7030000370	S.RESISTOR	MCR10EZHJ 820 Ω (821)
R100	7030000430	S.RESISTOR	MCR10EZHJ 2.7 KΩ (272)
R101	7030000400	S.RESISTOR	MCR10EZHJ 1.5 KΩ (152)
R102	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
R104	7030000480	S.RESISTOR	MCR10EZHJ 6.8 KΩ (682)
R105	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R106	7030000740	S.RESISTOR	MCR10EZHJ 1 MΩ (105)
R107	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R108	7030000160	S.RESISTOR	MCR10EZHJ 15 Ω (150)
C1	4030008960	S.CERAMIC	C2012 JB 1C 104K-T-A
C2	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C3	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C4	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C5	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C6	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C7	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C8	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C9	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C10	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C11	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C12	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C13	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C14	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C15	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C16	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C17	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C18	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C19	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C20	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C21	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C22	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C23	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C24	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C25	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C26	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C27	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C28	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C29	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C30	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C31	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C32	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C33	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C34	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C35	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C36	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C37	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C38	4510004990	ELECTROLYTIC	16 MV 100 HC
C39	4510003910	ELECTROLYTIC	16 MV 47 HW
C40	4510003890	ELECTROLYTIC	16 MV 10 HW
C41	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C42	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C43	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C44	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C45	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C46	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C47	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C48	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C49	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C50	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C51	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C52	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C53	4510003910	ELECTROLYTIC	16 MV 47 HW
C54	4510004490	ELECTROLYTIC	25 MV 22 HW
C55	4510004610	ELECTROLYTIC	16 MV 1000 AG
C56	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C57	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C58	4510003910	ELECTROLYTIC	16 MV 47 HW
C59	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C60	4510004830	ELECTROLYTIC	50 MV 1 NPDW
C61	4030004730	S.CERAMIC	C2012 JB 1H 222K-T-A
C63	4030004730	S.CERAMIC	C2012 JB 1H 222K-T-A
C64	4510003960	ELECTROLYTIC	50 MV 1 HW
C65	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A

S. = Surface mount

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
C66	4510003910	ELECTROLYTIC	16 MV 47 HW
C67	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C68	4510003890	ELECTROLYTIC	16 MV 10 HW
C69	4030004710	S.CERAMIC	C2012 JB 1H 471K-T-A
C70	4030005030	S.CERAMIC	C2012 CH 1H 221J-T-A
C71	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C72	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C73	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C74	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C75	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C76	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C77	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C78	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C79	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C80	4030009340	S.CERAMIC	C2012 JF 1H 472Z-T-A
C81	4030009340	S.CERAMIC	C2012 JF 1H 472Z-T-A
C82	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C83	4510003900	ELECTROLYTIC	16 MV 22 HW
C85	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C96	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C97	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C98	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C99	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C100	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C101	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C102	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C103	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C104	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C105	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C106	4030009340	S.CERAMIC	C2012 JF 1H 472Z-T-A
C107	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C108	4510003910	ELECTROLYTIC	16 MV 47 HW
C109	4510003910	ELECTROLYTIC	16 MV 47 HW
C110	4510003960	ELECTROLYTIC	50 MV 1 HW
C111	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C112	4030002280	S.CERAMIC	GRM40 SH 151J 50PT
C113	4030009340	S.CERAMIC	C2012 JF 1H 472Z-T-A
C114	4030004750	S.CERAMIC	C2012 JB 1H 103K-T-A
C115	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C116	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C118	4510003890	ELECTROLYTIC	16 MV 10 HW
C119	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C120	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C121	4510003910	ELECTROLYTIC	16 MV 47 HW
C122	4510003910	ELECTROLYTIC	16 MV 47 HW
C123	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C124	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C125	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C127	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C128	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C129	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C130	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C131	4030004950	S.CERAMIC	C2012 CH 1H 470J-T-A
C132	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C133	4030005030	S.CERAMIC	C2012 CH 1H 221J-T-A
C134	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C135	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
RL1	6330000180	RELAY	MZ-12HG
BT1	3020000070	LITHIUM BATTERY	BR2032-1HF
J1	6510003450	CONNECTOR	B09B-EH-S
J2	6510003400	CONNECTOR	B04B-EH-S
J3	6510003440	CONNECTOR	B08B-EH-S
J4	6510003450	CONNECTOR	B09B-EH-S
J5	6510003480	CONNECTOR	B12B-EH-S
J6	6510003470	CONNECTOR	B11B-EH-S

[MAIN UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
J7	6510003450	CONNECTOR	B09B-EH-S
J8	6510003460	CONNECTOR	B10B-EH-S
J9	2610000200	CONNECTOR	ICC05-028 360T
EP1	0910036054	PCB	B 3514D

[VR UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
S1	7600000140	ENCODER	SW-144 (RK09710HL)
S2	7600000150	ENCODER	SW-145 (RK09710HH)
S3	7600000140	ENCODER	SW-144 (RK09710HL)
WS1	8600030430	PLUG CONNECTOR	P01*02*J01*02*o3*04VR
EP1	0910035432	PCB	B 3517B

[SENSOR UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
S1	2250000020	ENCODER	SRB18100 25KC
EP1	0910035441	PCB	B 3518A

[SW UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
Q1	1590000340	TRANSISTOR	RN1202
Q2	1530000100	TRANSISTOR	2SC2458-Y
D1	1710000160	DIODE	1SS133
D2	1710000160	DIODE	1SS133
D3	1710000160	DIODE	1SS133
D4	1710000160	DIODE	1SS133
D5	1710000160	DIODE	1SS133
D6	1710000160	DIODE	1SS133
D7	1710000160	DIODE	1SS133
D8	1710000160	DIODE	1SS133
D9	1710000160	DIODE	1SS133
D10	1710000160	DIODE	1SS133
D11	1710000160	DIODE	1SS133
D12	1710000160	DIODE	1SS133
D13	1710000160	DIODE	1SS133
R1	7010004190	RESISTOR	R20J 1 KΩ
R3	7010004140	RESISTOR	R20J 390 Ω
R4	7010004090	RESISTOR	R20J 150 Ω
R5	7010004090	RESISTOR	R20J 150 Ω
R6	7010003350	RESISTOR	ELR20J 390 Ω
DS1	5040001750	LED	TLRC160
DS2	5040000820	LED	SLN-210MC
DS3	5040000820	LED	SLN-210MC
DS4	5040000820	LED	SLN-210MC

S. = Surface mount

[SW UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
S1	2260000851	SWITCH	SKHQFA018B
S2	2260000861	SWITCH	SKHQFB015B
S3	2260000861	SWITCH	SKHQFB015B
S4	2260000861	SWITCH	SKHQFB015B
S5	2260000861	SWITCH	SKHQFB015B
S6	2260000861	SWITCH	SKHQFB015B
S7	2260000861	SWITCH	SKHQFB015B
S8	2260000861	SWITCH	SKHQFB015B
S9	2260000861	SWITCH	SKHQFB015B
S10	2260000861	SWITCH	SKHQFB015B
S11	2260000861	SWITCH	SKHQFB015B
S12	2260000861	SWITCH	SKHQFB015B
S13	2260000861	SWITCH	SKHQFB015B
S14	2260000861	SWITCH	SKHQFB015B
SP1	2520000070	PIEZO BUZZER	EFBRQ38C01
WS1	8600030440	PLUG CONNECTOR	P01*J01SW
WS2	8600030450	PLUG CONNECTOR	P02*J02*SW
EP1	0910035462	PCB	B 3516B

[REAR UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
F2	5210000070	FUSE	FGB 10A
WS1	8600030460	PLUG CONNECTOR	P01*02RE

[REG UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
IC1	1110001950	IC	μPC494C
IC2	1110002260	IC	μPC1093J
IC3	1170000180	IC	PC817D
IC4	1130000050	IC	TC4013BP
Q1	1510000070	TRANSISTOR	2SA1048-Y
Q2	1560000600	FET	2SK740
Q3	1560000600	FET	2SK740
Q4	1510000070	TRANSISTOR	2SA1048-Y
Q5	1510000720	TRANSISTOR	2SA1428-Y
Q6	1510000070	TRANSISTOR	2SA1048-Y
Q7	1530000100	TRANSISTOR	2SC2458-Y
Q9	1540000150	TRANSISTOR	2SD1225M R
Q10	1590000350	TRANSISTOR	RN1204
Q11	1590000350	TRANSISTOR	RN1204
Q12	1520000230	TRANSISTOR	2SB909M Q
Q13	1520000290	TRANSISTOR	2SB1015-Y
Q14	1510000070	TRANSISTOR	2SA1048-Y
Q15	1530000100	TRANSISTOR	2SC2458-Y
Q16	1530000100	TRANSISTOR	2SC2458-Y
Q17	1530000100	TRANSISTOR	2SC2458-Y
Q18	1530000100	TRANSISTOR	2SC2458-Y
D1	1710000040	DIODE	1S953
D2	1710000040	DIODE	1S953
D4	1790000740	DIODE	MA693

[REG UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
D5	1790000760	DIODE	RG-2A
D6	1790000740	DIODE	MA693
D8	1730000250	ZENER	RD12E B2
D9	1790000760	DIODE	RG-2A
D10	1710000160	DIODE	1SS133
D11	1710000160	DIODE	1SS133
D12	1710000160	DIODE	1SS133
D13	1710000160	DIODE	1SS133
D14	1710000160	DIODE	1SS133
D15	1710000160	DIODE	1SS133
D16	1730001830	ZENER	RD10E B1
D17	1710000160	DIODE	1SS133
D18	1710000160	DIODE	1SS133
D19	1790000700	DIODE	DSA3A1
D20	1790000700	DIODE	DSA3A1
L1	6190000640	COIL	TF2528S-102Y5R0-01
L2	6190000810	COIL	HP-012Z
L3	6190000800	COIL	HP-011Z
L4	6170000140	COIL	LW-15
R2	7010003980	RESISTOR	R20J 18 Ω
R3	7010003400	RESISTOR	ELR20J 1 KΩ
R4	7010003400	RESISTOR	ELR20J 1 KΩ
R5	7010003980	RESISTOR	R20J 18 Ω
R6	7010004840	RESISTOR	R50XJ 39 Ω
R7	7010004840	RESISTOR	R50XJ 39 Ω
R8	7010003490	RESISTOR	ELR20J 5.6 KΩ
R9	7010003350	RESISTOR	ELR20J 390 Ω
R10	7010003530	RESISTOR	ELR20J 10 KΩ
R11	7010003420	RESISTOR	ELR20J 1.5 KΩ
R12	7010003540	RESISTOR	ELR20J 12 KΩ
R13	7010003440	RESISTOR	ELR20J 2.2 KΩ
R15	7010003400	RESISTOR	ELR20J 1 KΩ
R16	7010003400	RESISTOR	ELR20J 1 KΩ
R17	7080000260	RESISTOR	CRB25FX 4.7 KΩ
R19	7080000260	RESISTOR	CRB25FX 4.7 KΩ
R21	7010003530	RESISTOR	ELR20J 10 KΩ
R22	7010003580	RESISTOR	ELR20J 22 KΩ
R23	7010003580	RESISTOR	ELR20J 22 KΩ
R24	7010003400	RESISTOR	ELR20J 1 KΩ
R25	7010003700	RESISTOR	ELR20J 220 KΩ
R26	7010003400	RESISTOR	ELR20J 1 KΩ
R27	7010003530	RESISTOR	ELR20J 10 KΩ
R28	7010003660	RESISTOR	ELR20J 100 KΩ
R29	7010003680	RESISTOR	ELR20J 150 KΩ
R30	7010003480	RESISTOR	ELR20J 4.7 KΩ
R31	7010003620	RESISTOR	ELR20J 47 KΩ
R32	7010003280	RESISTOR	ELR20J 100 Ω
R33	7010003490	RESISTOR	ELR20J 5.6 KΩ
R34	7540000060	ABSORBER	ERZ-C05DK 560
R35	7540000060	ABSORBER	ERZ-C05DK 560
R36	7010003400	RESISTOR	ELR20J 1 KΩ
R37	7010003400	RESISTOR	ELR20J 1 KΩ
R38	7010003360	RESISTOR	ELR20J 470 Ω
R39	7010003490	RESISTOR	ELR20J 5.6 KΩ
R40	7010003510	RESISTOR	ELR20J 6.8 KΩ
R41	7070000220	RESISTOR	CRH100X R-02J 470 Ω (471)
R42	7010004090	RESISTOR	R20J 150 Ω
R43	7010004210	RESISTOR	R20J 1.5 KΩ
R44	7010003410	RESISTOR	ELR20J 1.2 KΩ
R45	7010003530	RESISTOR	ELR20J 10 KΩ
R46	7010003380	RESISTOR	ELR20J 680 Ω
R47	7010003530	RESISTOR	ELR20J 10 KΩ
C1	4510004770	ELECTROLYTIC	50 MV 1000 EZ
C2	4010004130	CERAMIC	DD09 B 222K 500V
C3	4010004130	CERAMIC	DD09 B 222K 500V

S. = Surface mount

[REG UNIT]

REF. NO.	PARTS NO.	DESCRIPTION
C4	4510003970	ELECTROLYTIC 50 MV 2R2 HW
C5	4510003910	ELECTROLYTIC 16 MV 47 HW
C6	4510003960	ELECTROLYTIC 50 MV 1 HW
C7	4510003960	ELECTROLYTIC 50 MV 1 HW
C8	4310000330	MYLAR 50 F2D 102J
C9	4310000330	MYLAR 50 F2D 102J
C10	4510004490	ELECTROLYTIC 25 MV 22 HW
C11	4510003910	ELECTROLYTIC 16 MV 47 HW
C12	4510003960	ELECTROLYTIC 50 MV 1 HW
C13	4510004750	ELECTROLYTIC 25 MV 470 AG
C14	4510005030	ELECTROLYTIC 10 MV 1000 AG
C15	4510005060	ELECTROLYTIC 25 MV 220 HW
C16	4510003940	ELECTROLYTIC 25 MV 4R7 HW
C17	4510005260	ELECTROLYTIC 25 MV 10 HW
C18	4510004490	ELECTROLYTIC 25 MV 22 HW
C19	4510003960	ELECTROLYTIC 50 MV 1 HW
C20	4510005260	ELECTROLYTIC 25 MV 10 HW
C21	4510005260	ELECTROLYTIC 25 MV 10 HW
C22	4510004490	ELECTROLYTIC 25 MV 22 HW
C23	4010000560	CERAMIC DD106 F 103Z 50V
C24	4010000560	CERAMIC DD106 F 103Z 50V
C25	4010000560	CERAMIC DD106 F 103Z 50V
C26	4510005570	ELECTROLYTIC 50 MV 330 HW
C27	4510004940	ELECTROLYTIC 50 MV 33 NPDW
C28	4510004940	ELECTROLYTIC 50 MV 33 NPDW
C29	4010000560	CERAMIC DD106 F 103Z 50V
C30	4010000560	CERAMIC DD106 F 103Z 50V
C31	4010000560	CERAMIC DD106 F 103Z 50V
C32	4510004610	ELECTROLYTIC 16 MV 1000 AG
C33	4510003910	ELECTROLYTIC 16 MV 47 HW
C34	4010004840	CERAMIC DD305 F 104Z 12V
C35	4510004490	ELECTROLYTIC 25 MV 22 HW
C36	4010000330	CERAMIC DD105 SL 101J 50V
T1	5920000530	TRANSFOMER TO-33
RL1	6330000940	RELAY G6EK-134P-1-US DC9V
WS1	8600030470	PLUG CONNECTOR P01*J03RE
J1	6510011430	CONNECTOR B3P-VH
J2	6510011440	CONNECTOR B4P-VH
EP1	0910038423	PCB B 3507C

[FIL UNIT]

REF. NO.	PARTS NO.	DESCRIPTION
L1	6180002940	COIL TF3233S-102Y10R0-01
L2	6910000670	COIL BT01RN1-A61-001
L3	6910000670	COIL BT01RN1-A61-001
C1	4510004940	ELECTROLYTIC 50 MV 33 NPDW
C2	4510005570	ELECTROLYTIC 50 MV 330 HW
C3	4510004940	ELECTROLYTIC 50 MV 33 NPDW
C4	4010000590	CERAMIC DD110 F 473Z 50V
C5	4010000590	CERAMIC DD110 F 473Z 50V
C6	4010000590	CERAMIC DD110 F 473Z 50V
C7	4010000590	CERAMIC DD110 F 473Z 50V
C8	4010000590	CERAMIC DD110 F 473Z 50V
C9	4010000560	CERAMIC DD106 F 103Z 50V
C10	4010000560	CERAMIC DD106 F 103Z 50V

[FIL UNIT]

REF. NO.	PARTS NO.	DESCRIPTION
F1	5210000060	FUSE FGB 5A
F2	5220000020	HOLDER S-N5051
WS1	8600030480	PLUG CONNECTOR P01FI
WS2	8970020180	PLUG CONNECTOR J Lead set/FI
J1	6510003390	CONNECTOR B03B-EH-S
EP1	0910036541	PCB B 3630A

[DISP-A UNIT]

REF. NO.	PARTS NO.	DESCRIPTION
DS1	5070000080	CRT MG981F-IC

S. = Surface mount

6-2 SCANNER UNIT

[IF UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
IC1	1130006950	IC	µPD6326C
IC2	1130006350	S.IC	TC4094BF (TP1)
IC3	1110002590	S.IC	MC1350 D
IC4	1110002590	S.IC	MC1350 D
IC5	1110002300	IC	MC1330 AP
IC6	1130005010	IC	HD14046BP
IC7	1110001200	S.IC	µPC324G2
IC8	1130005380	S.IC	TC74HC161AF
IC9	1110000240	IC	BA222-V
IC10	1110001240	S.IC	µPC358G2-T1
IC11	1110001240	S.IC	µPC358G2-T1
IC12	1180000010	IC	TA78L005AP
IC13	1130002760	S.IC	µPD4584BG-T1
IC14	1130003710	S.IC	TC4S71F (TE85R)
IC15	1130003710	S.IC	TC4S71F (TE85R)
IC16	1120001740	IC	LB1609
IC17	1110001070	IC	µPC393C
Q1	1530002030	S.TRANSISTOR	2SC3772-3-TA
Q2	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q3	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q4	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q5	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q6	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q7	1530002030	S.TRANSISTOR	2SC3772-3-TA
Q8	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q9	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q10	1590000520	S.FET	2SJ106-GR (TE85R)
Q11	1590000520	S.FET	2SJ106-GR (TE85R)
Q12	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q13	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q14	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q15	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q16	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q17	1510000110	S.TRANSISTOR	2SA1162-Y (TE85R)
Q18	1510000110	S.TRANSISTOR	2SA1162-Y (TE85R)
Q19	1580000390	S.FET	3SK131K-T1
Q20	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q21	1590000480	S.TRANSISTOR	RN2402 (TE85R)
Q22	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q24	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q25	1590000480	S.TRANSISTOR	RN2402 (TE85R)
Q26	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q27	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q28	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q29	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q30	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q31	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q32	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q33	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q34	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q35	1510000110	S.TRANSISTOR	2SA1162-Y (TE85R)
Q36	1520000020	TRANSISTOR	2SB596-O(Z)
Q37	1590000460	S.TRANSISTOR	RN1402 (TE85R)
D1	1720000220	S.VARICAP	1SV166-T2B
D2	1720000220	S.VARICAP	1SV166-T2B
D3	1720000220	S.VARICAP	1SV166-T2B
D4	1750000060	S.DIODE	1SS196 (TE85R)
D5	1750000060	S.DIODE	1SS196 (TE85R)
D6	1750000060	S.DIODE	1SS196 (TE85R)
D7	1750000060	S.DIODE	1SS196 (TE85R)
D8	1750000060	S.DIODE	1SS196 (TE85R)
D9	1750000060	S.DIODE	1SS196 (TE85R)
D10	1750000060	S.DIODE	1SS196 (TE85R)
D11	1750000060	S.DIODE	1SS196 (TE85R)

[IF UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
D12	1750000060	S.DIODE	1SS196 (TE85R)
D13	1750000060	S.DIODE	1SS196 (TE85R)
D14	1790000960	S.DIODE	1SS317-T
D15	1750000060	S.DIODE	1SS196 (TE85R)
D16	1750000060	S.DIODE	1SS196 (TE85R)
D17	1750000060	S.DIODE	1SS196 (TE85R)
D18	1750000060	S.DIODE	1SS196 (TE85R)
D19	1750000060	S.DIODE	1SS196 (TE85R)
D20	1750000060	S.DIODE	1SS196 (TE85R)
D21	1750000040	S.DIODE	1SS190 (TE85R)
D22	1750000060	S.DIODE	1SS196 (TE85R)
D23	1750000060	S.DIODE	1SS196 (TE85R)
D24	1750000060	S.DIODE	1SS196 (TE85R)
D25	1750000060	S.DIODE	1SS196 (TE85R)
D26	1730000730	S.ZENER	RD6.2M-T2B2
D27	1750000060	S.DIODE	1SS196 (TE85R)
D28	1790000960	S.DIODE	1SS317-T
D29	1790000960	S.DIODE	1SS317-T
D30	1790000960	S.DIODE	1SS317-T
D31	1750000060	S.DIODE	1SS196 (TE85R)
D32	1750000060	S.DIODE	1SS196 (TE85R)
D33	1750000060	S.DIODE	1SS196 (TE85R)
D34	1750000070	S.DIODE	1SS226 (TE85R)
D35	1750000070	S.DIODE	1SS226 (TE85R)
D36	1750000060	S.DIODE	1SS196 (TE85R)
D37	1750000070	S.DIODE	1SS226 (TE85R)
D38	1730000510	S.ZENER	RD3.9M-T2B2
D39	1710000350	DIODE	1N4002
L1	6150002430	COIL	LS-254
L2	6150002430	COIL	LS-254
L3	6150002430	COIL	LS-254
L4	6150002430	COIL	LS-254
L5	6150002430	COIL	LS-254
L6	6150002430	COIL	LS-254
L7	6150002430	COIL	LS-254
L8	6150002430	COIL	LS-254
L9	6180000690	COIL	LAL 03NA R22M
R1	7030000740	S.RESISTOR	MCR10EZHJ 1 MΩ (105)
R2	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R3	7030000300	S.RESISTOR	MCR10EZHJ 220 Ω (221)
R4	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R5	7030000470	S.RESISTOR	MCR10EZHJ 5.6 KΩ (562)
R6	7030000660	S.RESISTOR	MCR10EZHJ 220 KΩ (224)
R7	7030000340	S.RESISTOR	MCR10EZHJ 470 Ω (471)
R8	7030000530	S.RESISTOR	MCR10EZHJ 18 KΩ (183)
R9	7030000530	S.RESISTOR	MCR10EZHJ 18 KΩ (183)
R10	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R11	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R12	7030000340	S.RESISTOR	MCR10EZHJ 470 Ω (471)
R13	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R14	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R15	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R16	7030000320	S.RESISTOR	MCR10EZHJ 330 Ω (331)
R17	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R18	7030000450	S.RESISTOR	MCR10EZHJ 3.9 KΩ (392)
R19	7030000450	S.RESISTOR	MCR10EZHJ 3.9 KΩ (392)
R20	7030000140	S.RESISTOR	MCR10EZHJ 10 Ω (100)
R21	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R22	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R23	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)
R24	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R25	7030000300	S.RESISTOR	MCR10EZHJ 220 Ω (221)
R26	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R27	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R28	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R29	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R30	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)

S. = Surface mount

[IF UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
R31	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R32	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R33	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R34	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R35	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R36	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R37	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R38	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R39	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R40	7030000640	S.RESISTOR	MCR10EZHJ 150 KΩ (154)
R41	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R42	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R43	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R44	7030000480	S.RESISTOR	MCR10EZHJ 6.8 KΩ (682)
R45	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R46	7030000480	S.RESISTOR	MCR10EZHJ 6.8 KΩ (682)
R47	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R48	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R49	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R50	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R51	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R52	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R53	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R54	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R55	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R56	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R57	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R58	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R59	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R60	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R62	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R64	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R65	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R66	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R67	7030000740	S.RESISTOR	MCR10EZHJ 1 MΩ (105)
R68	7030000630	S.RESISTOR	MCR10EZHJ 120 KΩ (124)
R69	7030000630	S.RESISTOR	MCR10EZHJ 120 KΩ (124)
R70	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R71	7030000560	S.RESISTOR	MCR10EZHJ 33 KΩ (333)
R72	7030000220	S.RESISTOR	MCR10EZHJ 47 Ω (470)
R73	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R74	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R75	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R76	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R77	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R79	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R80	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R81	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R82	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R83	7030000450	S.RESISTOR	MCR10EZHJ 3.9 KΩ (392)
R84	7030000490	S.RESISTOR	MCR10EZHJ 8.2 KΩ (822)
R85	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R86	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R88	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R89	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R90	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R92	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R93	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R94	7030000490	S.RESISTOR	MCR10EZHJ 8.2 KΩ (822)
R96	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R97	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R98	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R99	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R100	7030000340	S.RESISTOR	MCR10EZHJ 470 Ω (471)
R101	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R102	7030000340	S.RESISTOR	MCR10EZHJ 470 Ω (471)
R103	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R104	7030000490	S.RESISTOR	MCR10EZHJ 8.2 KΩ (822)
R105	7030000430	S.RESISTOR	MCR10EZHJ 2.7 KΩ (272)
R106	7030000490	S.RESISTOR	MCR10EZHJ 8.2 KΩ (822)
R107	7030000430	S.RESISTOR	MCR10EZHJ 2.7 KΩ (272)

[IF UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
R108	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R109	7030000490	S.RESISTOR	MCR10EZHJ 8.2 KΩ (822)
R110	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R111	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R112	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R113	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R114	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R115	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R116	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R117	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R118	7030000480	S.RESISTOR	MCR10EZHJ 6.8 KΩ (682)
R119	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R120	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R121	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R122	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R124	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R125	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R126	7030000450	S.RESISTOR	MCR10EZHJ 3.9 KΩ (392)
R127	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R130	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R131	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R132	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R133	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R134	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R135	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R136	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R137	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R138	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R139	7030000300	S.RESISTOR	MCR10EZHJ 220 Ω (221)
R140	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R142	7030000140	S.RESISTOR	MCR10EZHJ 10 Ω (100)
R143	7030000430	S.RESISTOR	MCR10EZHJ 2.7 KΩ (272)
R144	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R145	7030000490	S.RESISTOR	MCR10EZHJ 8.2 KΩ (822)
R146	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R147	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R148	7030000650	S.RESISTOR	MCR10EZHJ 180 KΩ (184)
R149	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R150	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R152	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R153	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R154	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R155	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R156	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R157	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R158	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R159	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R160	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R161	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R162	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R163	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R164	7030000640	S.RESISTOR	MCR10EZHJ 150 KΩ (154)
R165	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R166	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R167	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R168	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R169	7030000360	S.RESISTOR	MCR10EZHJ 680 Ω (681)
R170	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R171	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R172	7030000460	S.RESISTOR	MCR10EZHJ 4.7 KΩ (472)
R173	7030000430	S.RESISTOR	MCR10EZHJ 2.7 KΩ (272)
R174	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R175	7030000490	S.RESISTOR	MCR10EZHJ 8.2 KΩ (822)
R176	7030000400	S.RESISTOR	MCR10EZHJ 1.5 KΩ (152)
R177	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R178	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R179	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R180	7030000650	S.RESISTOR	MCR10EZHJ 180 KΩ (184)
R181	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R182	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R183	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)

S. = Surface mount

[IF UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
R184	7310001840	TRIMMER	RH0421CS3J08A (472)
R185	7030000370	S.RESISTOR	MCR10EZHJ 820 Ω (821)
R186	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R187	7070000250	RESISTOR	CRH200 R-02J 4.7 Ω (4R7)
R188	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R189	7030000140	S.RESISTOR	MCR10EZHJ 10 Ω (100)
R190	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R191	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
C1	4030004840	S.CERAMIC	C2012 CH 1H 070D-T-A
C2	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C3	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C4	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C5	4030004470	S.CERAMIC	C2012 SL 1H 100D-T-A
C6	4030004470	S.CERAMIC	C2012 SL 1H 100D-T-A
C7	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C8	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C9	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C10	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C11	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C12	4030004580	S.CERAMIC	C2012 SL 1H 560J-T-A
C13	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C14	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C15	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C16	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C17	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C18	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C19	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C20	4030009640	S.CERAMIC	C2012 CH 1H 300J-T-A
C21	4030009640	S.CERAMIC	C2012 CH 1H 300J-T-A
C22	4030009640	S.CERAMIC	C2012 CH 1H 300J-T-A
C23	4030006450	S.CERAMIC	C2012 JF 1H 103Z-T-A
C24	4030006450	S.CERAMIC	C2012 JF 1H 103Z-T-A
C25	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C26	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C27	4310000360	MYLAR	50 F2D 103J
C28	4510003890	ELECTROLYTIC	16 MV 10 HW
C29	4310000610	MYLAR	50 F2D 472J
C30	4310000610	MYLAR	50 F2D 472J
C31	4310000590	MYLAR	50 F2D 332J
C33	4030004630	S.CERAMIC	C2012 SL 1H 151J-T-A
C34	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C35	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C36	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C37	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C38	4030006450	S.CERAMIC	C2012 JF 1H 103Z-T-A
C39	4510003890	ELECTROLYTIC	16 MV 10 HW
C40	4310000360	MYLAR	50 F2D 103J
C41	4510005530	ELECTROLYTIC	50 MV 10 EZ
C42	4510005200	ELECTROLYTIC	25 MV 47 HW (6.3X11)
C43	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C44	4510004990	ELECTROLYTIC	16 MV 100 HC
C45	4510003910	ELECTROLYTIC	16 MV 47 HW
C46	4510005200	ELECTROLYTIC	25 MV 47 HW (6.3X11)
C47	4510005200	ELECTROLYTIC	25 MV 47 HW (6.3X11)
C48	4510005530	ELECTROLYTIC	50 MV 10 EZ
C49	4510005530	ELECTROLYTIC	50 MV 10 EZ
C50	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C51	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C52	4030004610	S.CERAMIC	C2012 SL 1H 101J-T-A
C54	4030004570	S.CERAMIC	C2012 SL 1H 470J-T-A
C55	4030004810	S.CERAMIC	C2012 CH 1H 040C-T-A
C56	4030004810	S.CERAMIC	C2012 CH 1H 040C-T-A
C57	4030004810	S.CERAMIC	C2012 CH 1H 040C-T-A
C58	4030004810	S.CERAMIC	C2012 CH 1H 040C-T-A
C59	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C60	4510003890	ELECTROLYTIC	16 MV 10 HW
C61	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C62	4510003890	ELECTROLYTIC	16 MV 10 HW
C63	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A

[IF UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
C64	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C65	4510003910	ELECTROLYTIC	16 MV 47 HW
C66	4510003910	ELECTROLYTIC	16 MV 47 HW
C67	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C68	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C69	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C70	4030004420	S.CERAMIC	C2012 SL 1H 050C-T-A
C71	4030004420	S.CERAMIC	C2012 SL 1H 050C-T-A
C72	4030004420	S.CERAMIC	C2012 SL 1H 050C-T-A
C73	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C74	4510003940	ELECTROLYTIC	25 MV 4R7 HW
C76	4030004580	S.CERAMIC	C2012 SL 1H 560J-T-A
C77	4030004580	S.CERAMIC	C2012 SL 1H 560J-T-A
C78	4030004470	S.CERAMIC	C2012 SL 1H 100D-T-A
C80	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C81	4510003890	ELECTROLYTIC	16 MV 10 HW
C82	4510003890	ELECTROLYTIC	16 MV 10 HW
C83	4010000880	CERAMIC	DD106 CH 560J 50V
C84	4510004990	ELECTROLYTIC	16 MV 100 HC
C85	4510003890	ELECTROLYTIC	16 MV 10 HW
C86	4510003890	ELECTROLYTIC	16 MV 10 HW
C87	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C88	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C89	4030006460	S.CERAMIC	C2012 SL 1H 102J-T-A
C90	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C91	4030004750	S.CERAMIC	C2012 JB 1H 103K-T-A
C92	4030004750	S.CERAMIC	C2012 JB 1H 103K-T-A
C93	4030004750	S.CERAMIC	C2012 JB 1H 103K-T-A
C94	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C95	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C96	4510003900	ELECTROLYTIC	16 MV 22 HW
C97	4510003900	ELECTROLYTIC	16 MV 22 HW
C98	4030004750	S.CERAMIC	C2012 JB 1H 103K-T-A
C99	4010000500	CERAMIC	DD104 B 102K 50V
C100	4510003720	ELECTROLYTIC	50 SS 0R1UF
C101	4510003940	ELECTROLYTIC	25 MV 4R7 HW
C102	4510003960	ELECTROLYTIC	50 MV 1 HW
C103	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C104	4510005260	ELECTROLYTIC	25 MV 10 HW
C105	4510003930	ELECTROLYTIC	16 MV 470 HW
C106	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C107	4510005260	ELECTROLYTIC	25 MV 10 HW
C108	4030004720	S.CERAMIC	C2012 JB 1H 102K-T-A
C109	4310000480	MYLAR	50 F2D 104J
C110	4510005260	ELECTROLYTIC	25 MV 10 HW
WS1	8600030410	PLUG CONNECTOR	P02*03*J04IF
J1	6510003390	CONNECTOR	B03B-EH-S
J2	6510003440	CONNECTOR	B08B-EH-S
J3	6510003390	CONNECTOR	B03B-EH-S
J5	6510003410	CONNECTOR	B05B-EH-S
J6	6510003420	CONNECTOR	B06B-EH-S
EP1	0910037952	PCB	B 3751B

S. = Surface mount

[PA UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
IC1	1130003710	S.IC	TC4S71F (TE85R)
IC2	1110003070	S.IC	μPC494GS
IC3	1110001820	S.IC	μPC1093T
IC4	1170000180	IC	PC817D
IC5	1180000450	IC	NJM7812A
IC6	1110003070	S.IC	μPC494GS
IC7	1130000580	S.IC	μPD4050BG
IC8	1170000190	IC	TLP521-1(BL)
IC9	1130003710	S.IC	TC4S71F (TE85R)
Q1	1510000110	S.TRANSISTOR	2SA1162-Y (TE85R)
Q2	1560000600	FET	2SK740
Q3	1560000600	FET	2SK740
Q4	1510000110	S.TRANSISTOR	2SA1162-Y (TE85R)
Q5	1560000700	FET	2SK1449
Q6	1560000700	FET	2SK1449
Q7	1510000720	TRANSISTOR	2SA1428-Y
Q8	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q9	1510000110	S.TRANSISTOR	2SA1162-Y (TE85R)
Q10	1560000600	FET	2SK740
Q11	1510000110	S.TRANSISTOR	2SA1162-Y (TE85R)
Q12	1530002790	S.TRANSISTOR	2SC2859-Y (TE85R)
Q13	1520000200	S.TRANSISTOR	2SB798-T2 DK
Q14	1520000200	S.TRANSISTOR	2SB798-T2 DK
Q15	1540000250	S.TRANSISTOR	2SD999-T2 CK
Q16	1510000610	S.TRANSISTOR	2SA1182-Y (TE85R)
Q17	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q18	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q19	1590000460	S.TRANSISTOR	RN1402 (TE85R)
D1	1750000060	S.DIODE	1SS196 (TE85R)
D2	1750000060	S.DIODE	1SS196 (TE85R)
D3	1790000740	DIODE	MA693
D4	1730001000	S.ZENER	RD16M-T2B2
D6	1790000760	DIODE	RG-2A
D7	1790000760	DIODE	RG-2A
D8	1750000070	S.DIODE	1SS226 (TE85R)
D9	1790000740	DIODE	MA693
D10	1750000060	S.DIODE	1SS196 (TE85R)
D11	1750000070	S.DIODE	1SS226 (TE85R)
D12	1750000060	S.DIODE	1SS196 (TE85R)
D13	1730001000	S.ZENER	RD16M-T2B2
L1	6190000800	COIL	HP-011Z
L2	6190000810	COIL	HP-012Z
L3	6140000700	COIL	LR-92
L4	6140000700	COIL	LR-92
R1	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R2	7030001110	S.RESISTOR	MCR50JZHJ 68 Ω (680)
R3	7070000530	RESISTOR	CRH200 R-02J 33 Ω (330)
R4	7030000140	S.RESISTOR	MCR10EZHJ 10 Ω (100)
R5	7030000140	S.RESISTOR	MCR10EZHJ 10 Ω (100)
R6	7010005140	RESISTOR	R50XJ 1 Ω
R7	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)
R8	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)
R9	7030001080	S.RESISTOR	MCR50JZHJ 39 Ω (390)
R10	7030001080	S.RESISTOR	MCR50JZHJ 39 Ω (390)
R11	7030000470	S.RESISTOR	MCR10EZHJ 5.6 KΩ (562)
R12	7030000470	S.RESISTOR	MCR10EZHJ 5.6 KΩ (562)
R13	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R14	7030000510	S.RESISTOR	MCR10EZHJ 12 KΩ (123)
R15	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R16	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R17	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R18	7030002800	S.RESISTOR	MCR10EZHFX 2.7 KΩ (272)
R19	7030000470	S.RESISTOR	MCR10EZHJ 5.6 KΩ (562)

[PA UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
R20	7030000470	S.RESISTOR	MCR10EZHJ 5.6 KΩ (562)
R21	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R22	7030000550	S.RESISTOR	MCR10EZHJ 27 KΩ (273)
R23	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R24	4610001620	TRIMMER	EVM-MSGA01 B13
R25	7030001540	S.RESISTOR	MCR50JZHJ 180 KΩ (184)
R26	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R27	7030000620	S.RESISTOR	MCR10EZHJ 100 KΩ (104)
R28	7070000270	RESISTOR	CRH100X R-02J 100 Ω (101)
R29	7030000170	S.RESISTOR	MCR10EZHJ 18 Ω (180)
R30	7030000340	S.RESISTOR	MCR10EZHJ 470 Ω (471)
R31	7030000440	S.RESISTOR	MCR10EZHJ 3.3 KΩ (332)
R33	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R34	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R35	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R36	7030000580	S.RESISTOR	MCR10EZHJ 47 KΩ (473)
R37	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R38	7030000380	S.RESISTOR	MCR10EZHJ 1 KΩ (102)
R39	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R40	7030000330	S.RESISTOR	MCR10EZHJ 390 Ω (391)
R41	7030002830	S.RESISTOR	MCR10EZHFX 4.7 KΩ (472)
R42	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R44	7100000010	RESISTOR	SRW1P 0R1 Ω (0R1)
R45	7030000400	S.RESISTOR	MCR10EZHJ 1.5 KΩ (152)
R46	7030000470	S.RESISTOR	MCR10EZHJ 5.6 KΩ (562)
R47	7030000510	S.RESISTOR	MCR10EZHJ 12 KΩ (123)
R48	7030000540	S.RESISTOR	MCR10EZHJ 22 KΩ (223)
R49	4610001630	TRIMMER	EVM-MSGA01 B23
R50	4610001640	TRIMMER	EVM-MSGA01 B53
R51	4610001660	TRIMMER	EVM-MSGA01 B24
R52	4610001650	TRIMMER	EVM-MSGA01 B14
R53	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R55	7030002890	S.RESISTOR	MCR10EZHFX 15 KΩ (153)
R56	7030001540	S.RESISTOR	MCR50JZHJ 180 KΩ (184)
R57	7030000420	S.RESISTOR	MCR10EZHJ 2.2 KΩ (222)
R58	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R59	7030000260	S.RESISTOR	MCR10EZHJ 100 Ω (101)
R60	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R61	7030000500	S.RESISTOR	MCR10EZHJ 10 KΩ (103)
R62	7030001010	S.RESISTOR	MCR50JZHJ 10 Ω (100)
R65	7030000140	S.RESISTOR	MCR10EZHJ 10 Ω (100)
R66	7030000140	S.RESISTOR	MCR10EZHJ 10 Ω (100)
C1	4310000440	MYLAR	50 F2D 473J
C2	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C3	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C4	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C5	4310000910	MYLAR	ECW F4105KZ
C6	4310000910	MYLAR	ECW F4105KZ
C7	4560000010	CERAMIC	D55X5T 1H 104M51
C8	4510004770	ELECTROLYTIC	50 MV 1000 EZ
C9	4010004130	CERAMIC	DD09 B 222K 500V
C10	4010004130	CERAMIC	DD09 B 222K 500V
C11	4510003970	ELECTROLYTIC	50 MV 2R2 HW
C12	4510005200	ELECTROLYTIC	25 MV 47 HW (6.3X11)
C13	4510003900	ELECTROLYTIC	16 MV 22 HW
C14	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C15	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C16	4310000330	MYLAR	50 F2D 102J
C17	4510005470	ELECTROLYTIC	25 MV 1000 AG
C18	4510004310	ELECTROLYTIC	450 TWS 10 μF (12.5X25)
C19	4510005470	ELECTROLYTIC	25 MV 1000 AG
C20	4510005470	ELECTROLYTIC	25 MV 1000 AG
C21	4010004100	CERAMIC	DD14 SL 331K 500V
C23	4030009240	S.CERAMIC	GRM40 CH 102J 50PT
C24	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C25	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C26	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C27	4310000440	MYLAR	50 F2D 473J
C28	4510003910	ELECTROLYTIC	16 MV 47 HW

S. = Surface mount

[PA UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
C29	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C30	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C31	4560000010	CERAMIC	D55X5T 1H 104M51
C32	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C33	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C34	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C35	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C37	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C38	4030004970	S.CERAMIC	C2012 CH 1H 680J-T-A
C39	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C40	4030004750	S.CERAMIC	C2012 JB 1H 103K-T-A
C41	4010004130	CERAMIC	DD09 B 222K 500V
C43	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C44	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C45	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C46	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C47	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C48	4030008550	S.CERAMIC	C2012 JF 1H 473Z-T-A
C49	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C50	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C51	4510004140	ELECTROLYTIC	50 MV 10 HW
F1	5210000230	FUSE	MC 2 1/2
T1	5920000560	TRANSFORMER	TO-37
T2	5920000510	TRANSFORMER	TO-26
T3	5920000540	TRANSFORMER	TO-34
WS1	8600030390	PLUG CONNECTOR	P01*J01PA
WS2	8600030400	PLUG CONNECTOR	P02*J02PA
J4	2610000340	CONNECTOR	ST-A2
J5	2610000340	CONNECTOR	ST-A2
EP1	0910038413	PCB	B 3505C

[RF UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
EP1	6910004880	MAGNETRON	MSF1421B
EP2	6910004870	FRONTEND	NJT1946
EP3	6910004860	CIRCULATOR	NJC3901D
EP4	6910004850	LIMITER	NJS6930
WS1	8600030421	PLUG CONNECTOR	P01RF-1

[CTRL UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
S1	2260001300	FRS-1-NO-3P	SWITCH
MF1	2710000430	LC37GF-177VB	MOTOR

S. = Surface mount

[HARNESS UNIT]

REF. NO.	PARTS NO.	DESCRIPTION	
J1	6510003440	CONNECTOR	B08B-EH-S
J2	6510003450	CONNECTOR	B09B-EH-S
EP1	6910004890	TERMINAL	15P
EP2	0910037971	PCB	B 3750A

ANTENNA UNIT

REF. NO.	PARTS NO.	DESCRIPTION
EP1	6910005090	FM-102 (Magnet)

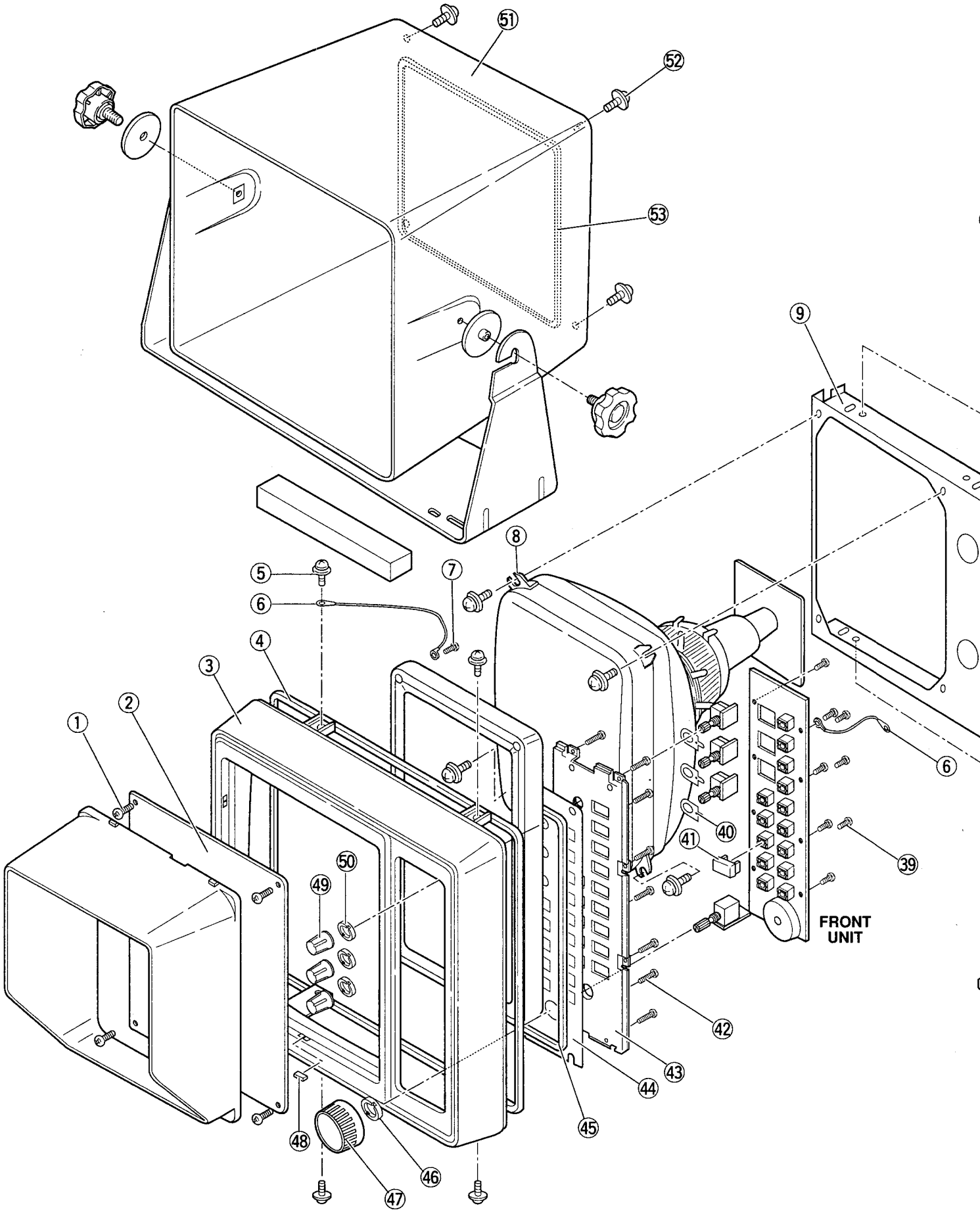
SECTION 7 MECHANICAL PARTS AND DISASSEMBLY

7-1 DISPLAY UNIT

LABEL NO.	ORDER NO.	DESCRIPTION	QTY.
①	8820000740	Spacer screw	4
②	8010010631	749 Screen-1	1
③	8210008050	749 Front panel-1	1
④	8930019211	Front seal rubber-1	1
⑤	8810003390	Set screw (C) 4 x 8	4
⑥	8900003970	OPC-379	5
⑦	8810003960	Set screw (A) 2.6 x 5	4
⑧	8900002890	CRT harness	1
⑨	8010010420	749 Sub chassis	1
⑩	8010010340	749 Bracket holder	2
⑪	8810003360	Set screw (C) 3 x 6	18
⑫	8010010400	Top side chassis	1
⑬	8810003760	Icom screw (C) 10	4
⑭	5210000060	Fuse FGB 5A	1
⑮	8930006070	Half thread spacer (B)	4
⑯	6510003390	Connector B03B-EH-S	1
⑰	8810002510	Screw FH M3 x 6 SUS	4
⑱	5220000140	Fuse holder FH-042	1
⑲	5210000070	Fuse FGB 10A	1
⑳	6510007560	Connector FM14-4S	1
㉑	6510011420	Connector 31 - 10	1
㉒	6510012160	Connector FM214-8S	1
㉓	8810006360	Set screw (A) 3 x 8 SUS	4
㉔	8900003880	Connector OPC-378	1
㉕	8010006350	Set screw (A) 3 x 20 SUS	2
㉖	8830000370	Wing nut M5 SUS	1
㉗	8850000180	Flat washer M5 SUS	2

LABEL NO.	ORDER NO.	DESCRIPTION	QTY.
㉘	8830000250	Nut M5 SUS	1
㉙	8850000500	Spring washer M5 SUS	1
㉚	8010010181	749 Rear panel-1	1
㉛	8850000600	Star washer M5 SUS	1
㉜	8810000700	Screw (PH) M5 x 20 SUS	1
㉝	8010010440	Right side chassis	1
㉞	8930019310	Radiator sheet	1
㉟	8930001410	TR sponge (L)	1
㊱	8930019390	FET-holder	1
㊲	8010010381	Bottom side chassis-1	1
㊳	8930000520	Thread spacer (B)	2
㊴	8810001280	Tapping screw (PH) B1 2.6 x 6	8
㊵	8860000820	1188 Grounding lug	3
㊶	8610004260	Knob-110	1
㊷	8810001290	Tapping screw (PH) B1 2.6 x 8	8
㊸	8010014150	1188 Switch board panel	1
㊹	8310026930	1188 Switch sheet	1
㊺	8930019240	Key board seal rubber	1
㊻	883000050	VR nut (B)	1
㊼	8610006810	Knob-63 (B)	1
㊽	8930026900	Rubber sheet	1
㊾	8610008320	Knob-163 (A)	3
㊿	8830000550	VR nut (E)	3
(51)	8010010610	749 case	1
(52)	8810006320	Set screw (C) 4 x 10 SUS	4
(53)	8930019200	Rear panel seal	1

Screw abbreviations PH : Pan head FH : Flat head
SUS : Stainless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FRONT
UNIT
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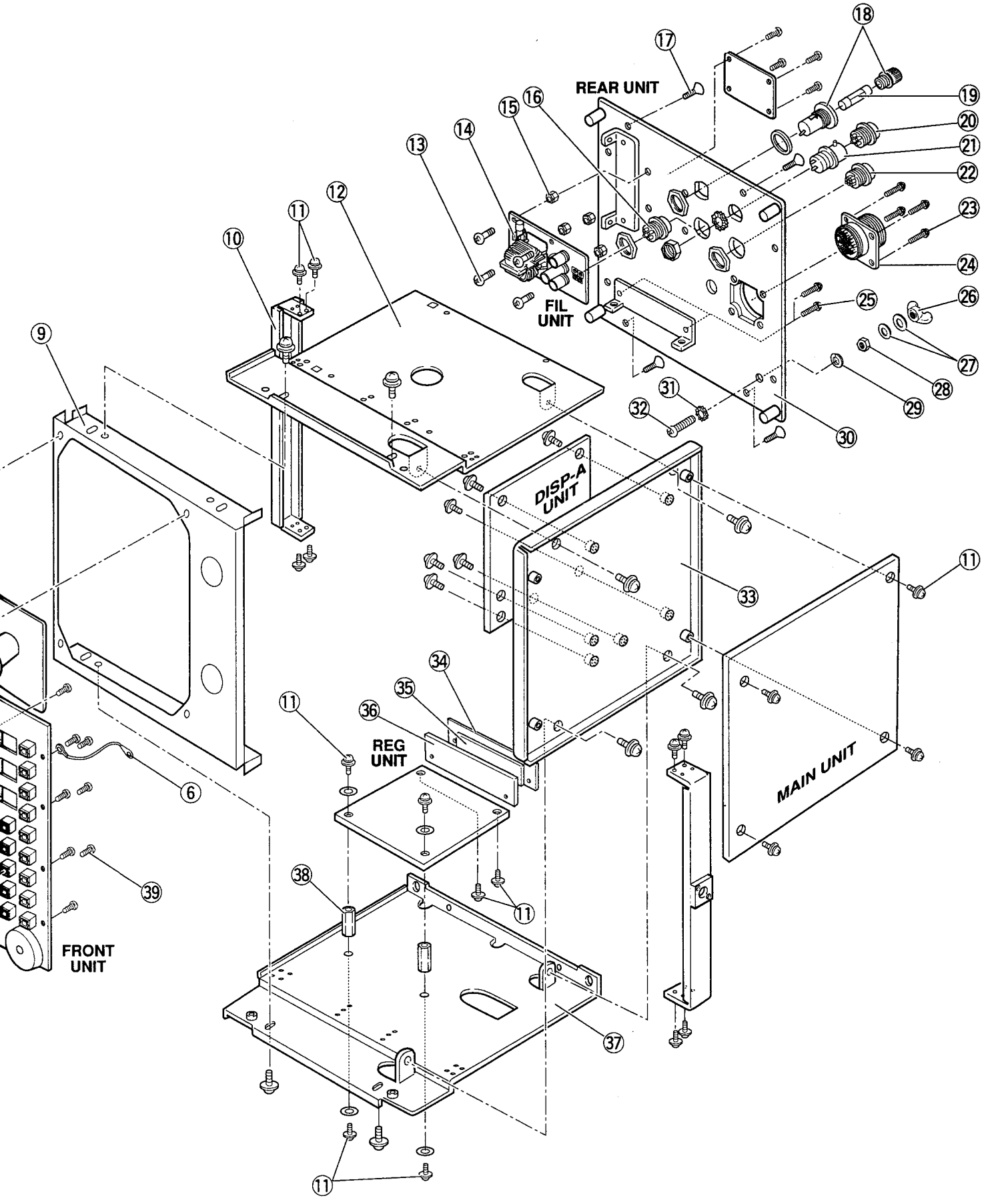
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FIL UNIT
DISP-A UNIT
REG UNIT
MAIN UNIT
FRONT UNIT
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7-2 SCANNER UNIT

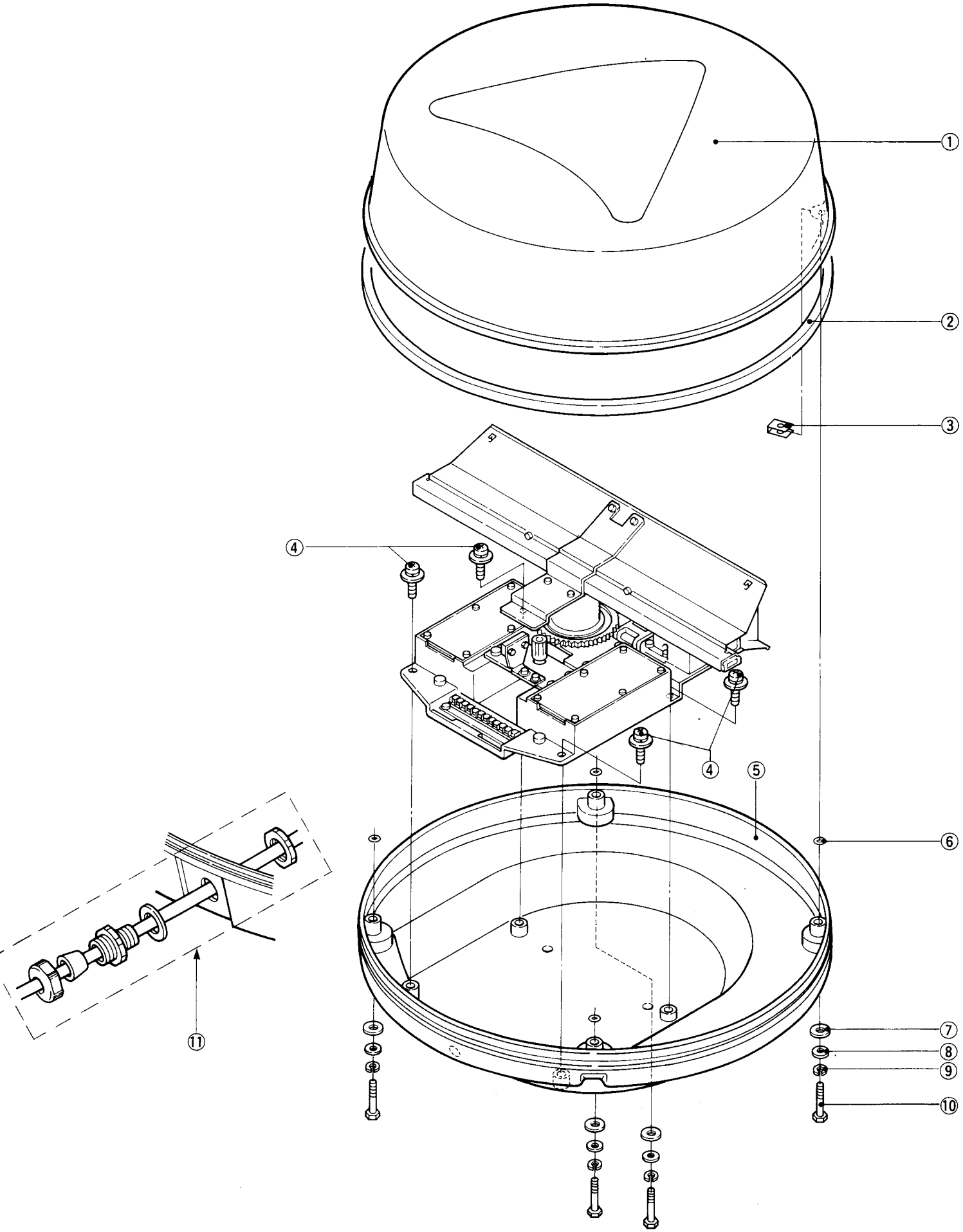
LABEL NO.	ORDER NO.	DESCRIPTION	QTY.
①	8010014300	Radome top cover	1
②	8930027640	Radome rubber seal	1
③	8930019560	Rack nut RAC-M5-C40	4
④	8810006440	Setscrew (C) M 5 x 12 SUS	4
⑤	8010014311	Radome bottom cover	1
⑥	9830019720	O ring SO-015-5	4
⑦	8930019230	Sealing washer (F)	4
⑧	8850000180	Flat washer M 5 SUS	4
⑨	8850000500	Spring washer M 5 SUS	4
⑩	8810006400	Radome mounting screw	4
⑪	6910005010	SGL-14B	1
⑫	8010010330	Reflector	1
⑬	8930019330	Reflector stay	3
⑭	8010010350	Grating filter	1
⑮	8010010320	F slot array	1
⑯	8010010310	R slot array	1
⑰	8010010210	Slot array short	2
⑱	8930019340	Slot array holder	2
⑲	8810006270	Screw PH B1 M 2.6 x 5 SUS	10
⑳	8810000570	Screw PH M 2.6 x 5 SUS	8
㉑	8810001520	Screw PH B1 M 2.6 x 6 SUS	6
㉒	8510006780	Balancer	1
㉓	8810006320	Setscrew (C) M 4 x 10	29
㉔	8010010200	Sleeve	1
㉕	8010010520	Sleeve gear	1
㉖	8930019360	Insulator	1
㉗	8930019350	Center conductor	1
㉘	8010010230	Feeder waveguide	1
㉙	8810006310	Setscrew (C) M 4 x 16 SUS	8
㉚	8810006240	Screw PH M 4 x 65 SUS	2
㉛	8850000490	Spring washer M 4 SUS	2
㉜	8850000170	Spring washer	2
㉝	8930019430	Sleeve stopper	2
㉞	8010010250	L-Corner waveguide	1
㉟	8010010240	S-Corner waveguide	1
㊱	8810006250	Screw PH M 4 x 45 SUS	4
㊲	8810001530	Screw PH B1 M 3 x 6 SUS	4
㊳	8930019370	Motor bracket	1
㊴	8830000230	Nut M 3 SUS	2
㊵	8810006290	Setscrew (C) M 3 x 12 SUS	2
㊶	8930019420	HM SW bracket	1

LABEL NO.	ORDER NO.	DESCRIPTION	QTY.
㊷	8010010150	Chassis	1
㊸	8510006790	Shield case cover	1
㊹	8810006370	Setscrew (A) M 3 x 6 SUS	13
㊺	8810006430	Screw bind M 2 6 x 5 SUS	4
㊻	8410001850	1188 PA heat sink	1
㊼	8810006300	Setscrew (C) M 3 x 8 SUS	21
㊽	8930026000	A-sheet	1
㊾	6910000281	Isolating bush B24	3
㊿	8810006360	Setscrew (A) M 3 x 8 SUS	3
(51)	8810007780	Setscrew (C) M 3 x 10 SUS	2
(52)	8930026010	B-sheet	1
(53)	8510007960	1280 Shield case cover	1

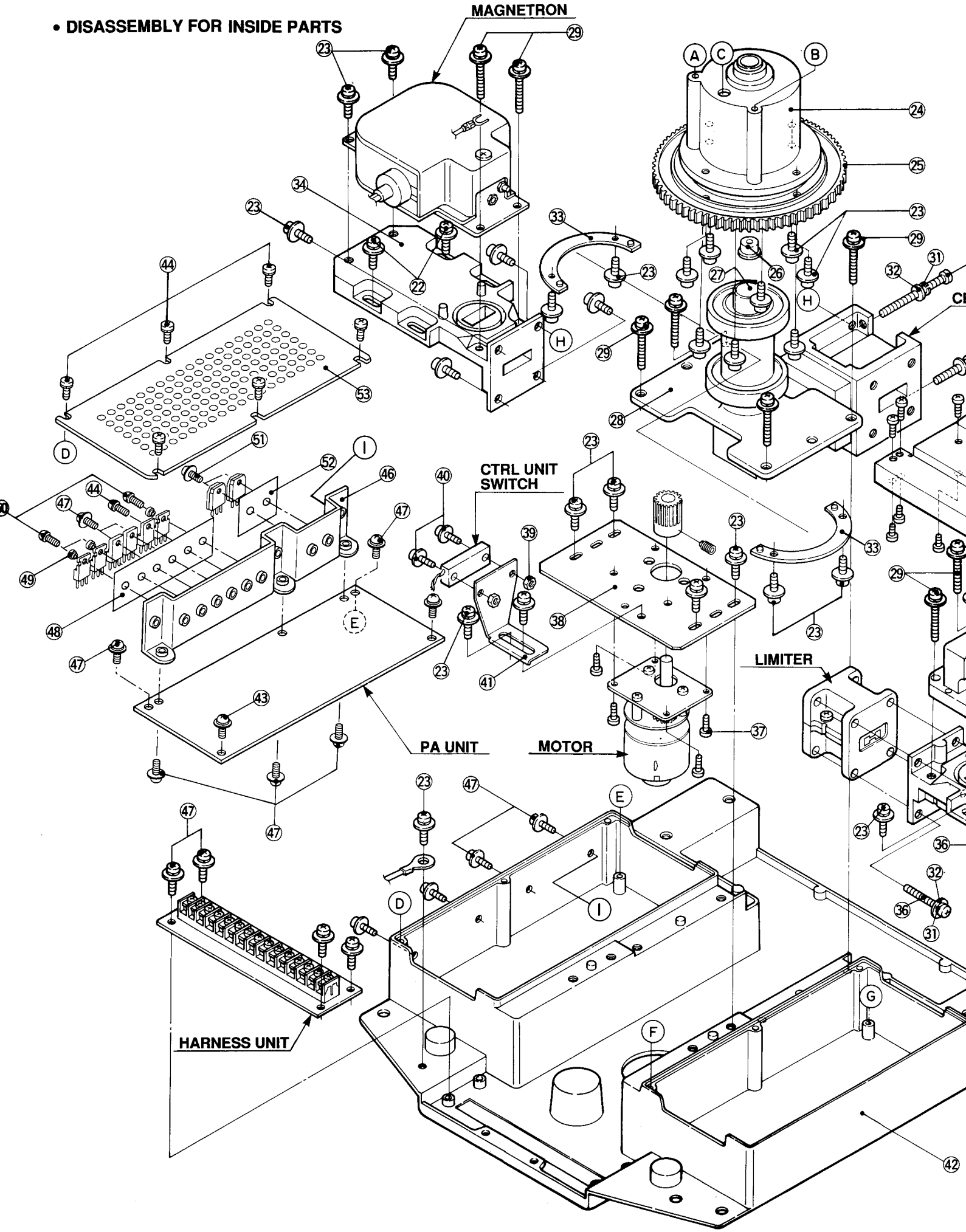
SCREW ABBREVIATIONS

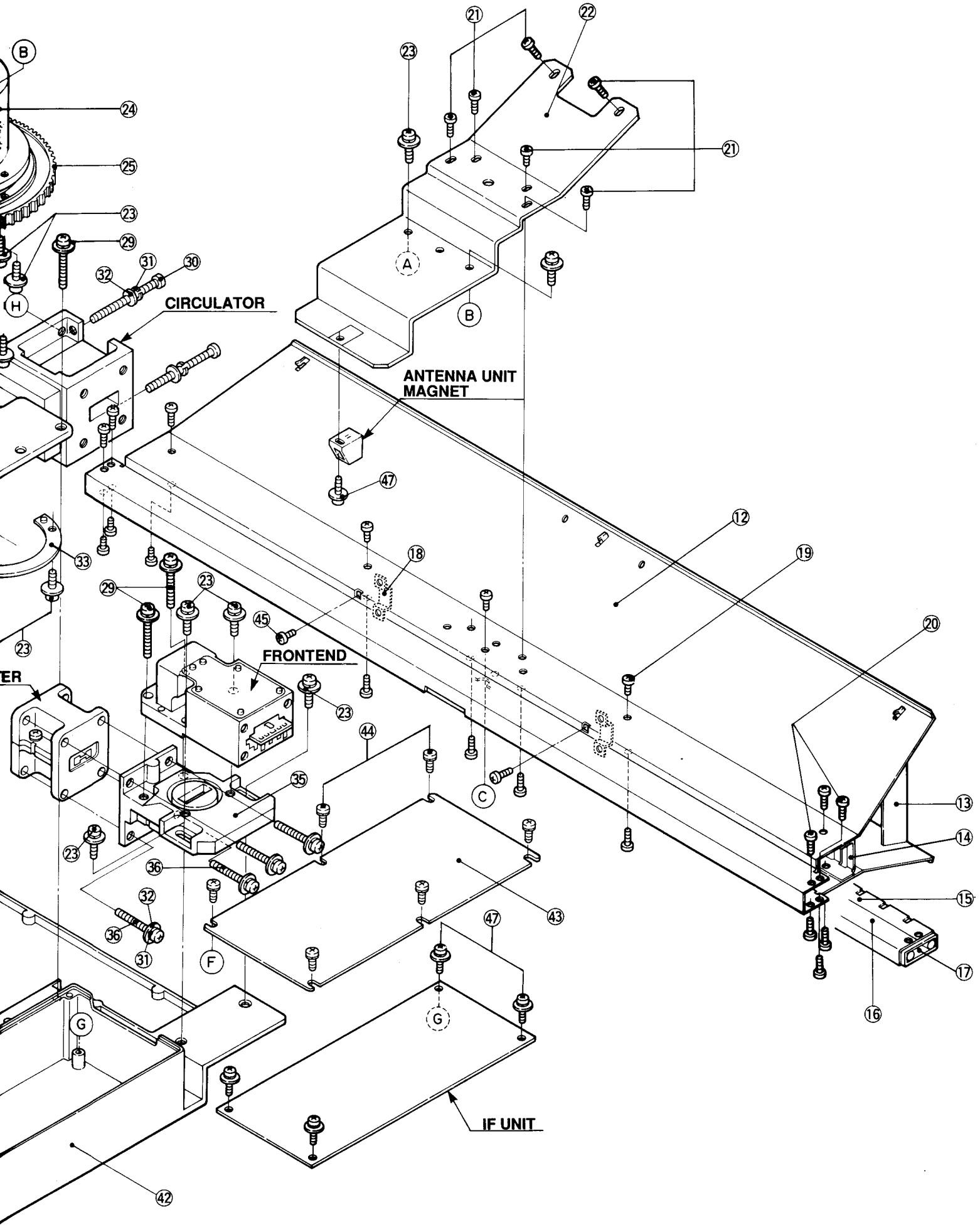
PH : Pan head FH : Flat head BI : Self-tapping screw
SUS : Stainless NI : Nickel BS : Brass

• **DISASSEMBLY FOR COVER**

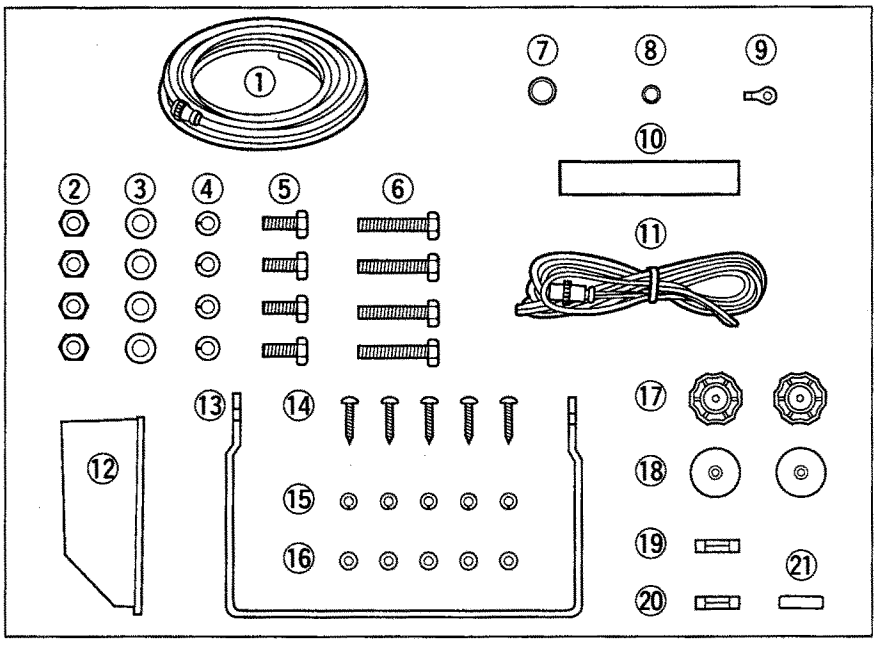


• **DISASSEMBLY FOR INSIDE PARTS**




CIRCULATOR
ANTENNA UNIT
MAGNET
FRONTEND
IF UNIT

7-3 SUPPLIED ACCESSORIES



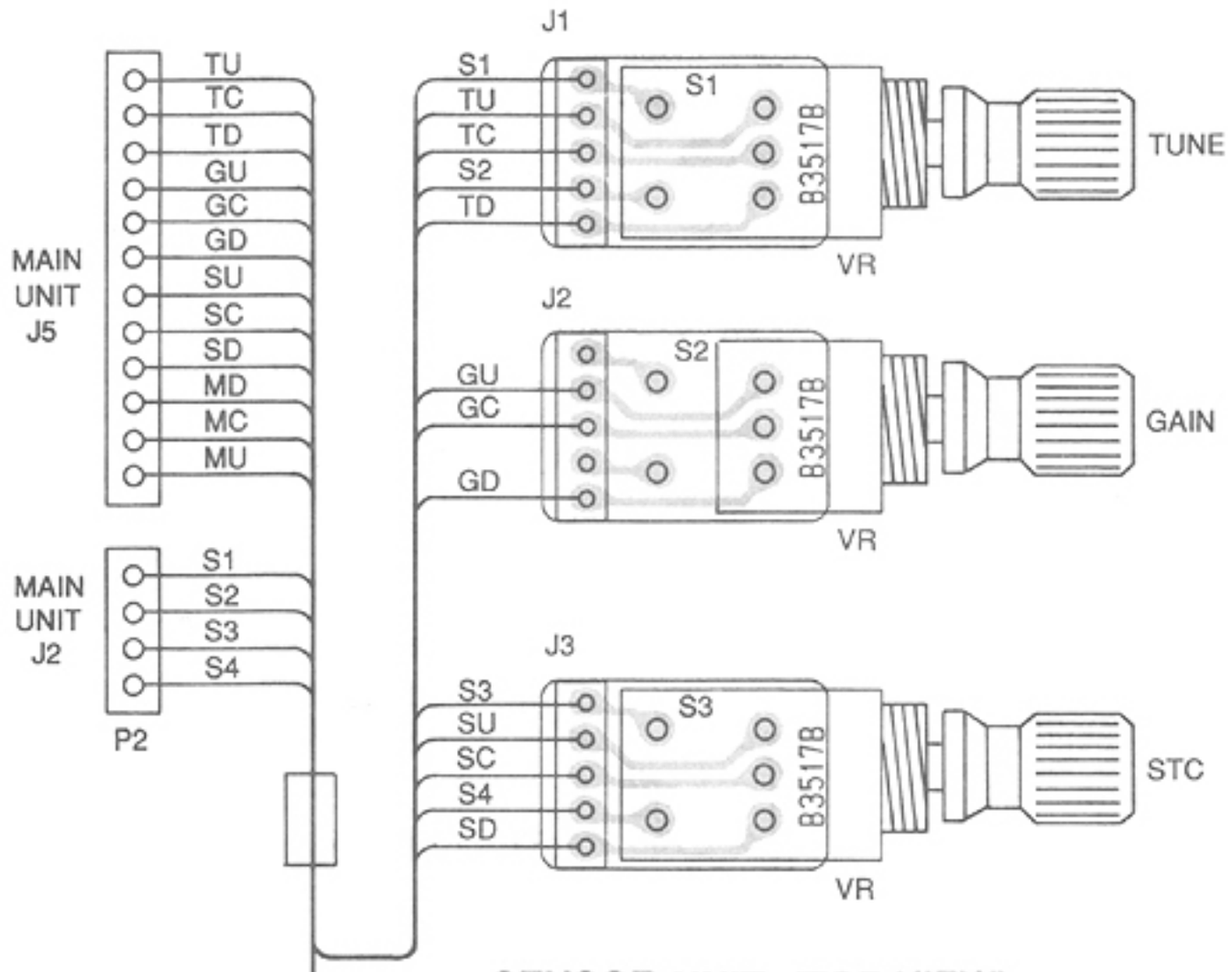
LABEL NO.	ORDER NO.	DESCRIPTION	QTY.
①	8900002820	OPC-279 system cable (General)	1
	8900003870	OPC-377 system cable (USA-1)	
②	8830000270	Nut M 10 SUS	4
③	8850001150	Flat washer M 10 SUS	4
④	8850001140	Spring washer M 10 SUS	4
⑤	8810006420	Hexagon bolt M 10 x 25 SUS	4
⑥	8810006380	Hexagon bolt M 10 x 50 SUS	4
⑦	8930010000	Connector cover	1
⑧	8930019500	BNC-R connector cap	1
⑨	6510012870	Cable lug R5.5-6	1
⑩	8930019690	Sponge (CK)	1
⑪	8900002810	OPC-275 DC power cable	1
⑫	8010010601	749 hood-1	1
⑬	8010010390	Bracket	1
⑭	8810001500	Self-tapping screw PH M 6 x 30 SUS	5
⑮	8850000510	Spring washer M 6 SUS	5
⑯	8850000190	Flat washer M 6 (6 x 13 x 1.0) SUS	5
⑰	8820000610	Mounting screw knob G2-6-20	2
⑱	8930015280	Bracket rubber	1
⑲	5210000070	Fuse FGB 10A	1
⑳	5210000060	Fuse FGB 5A	1
㉑	8930026900	Rubber sheet	1

SCREW ABBREVIATIONS
PH: Pan head SUS: Stainless

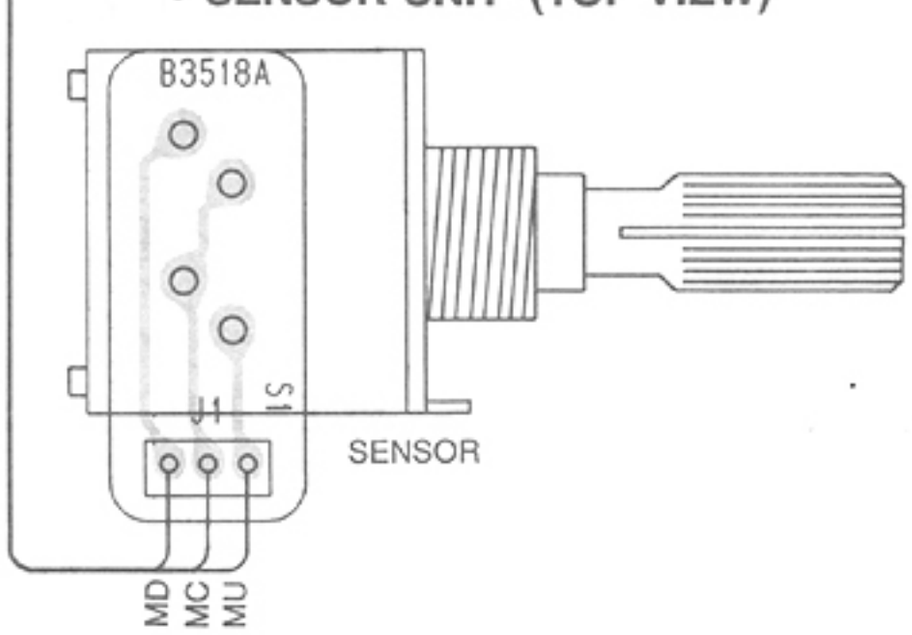
SECTION 8 BOARD LAYOUTS

8-1 DISPLAY UNIT

• **VR UNIT (TOP VIEW)**

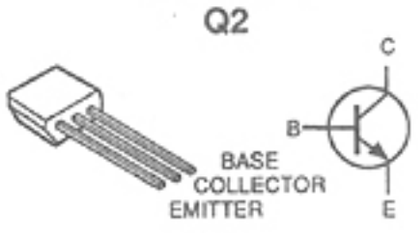


• **SENSOR UNIT (TOP VIEW)**

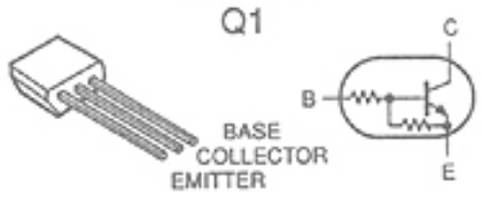


• **SW UNIT (TOP VIEW)**

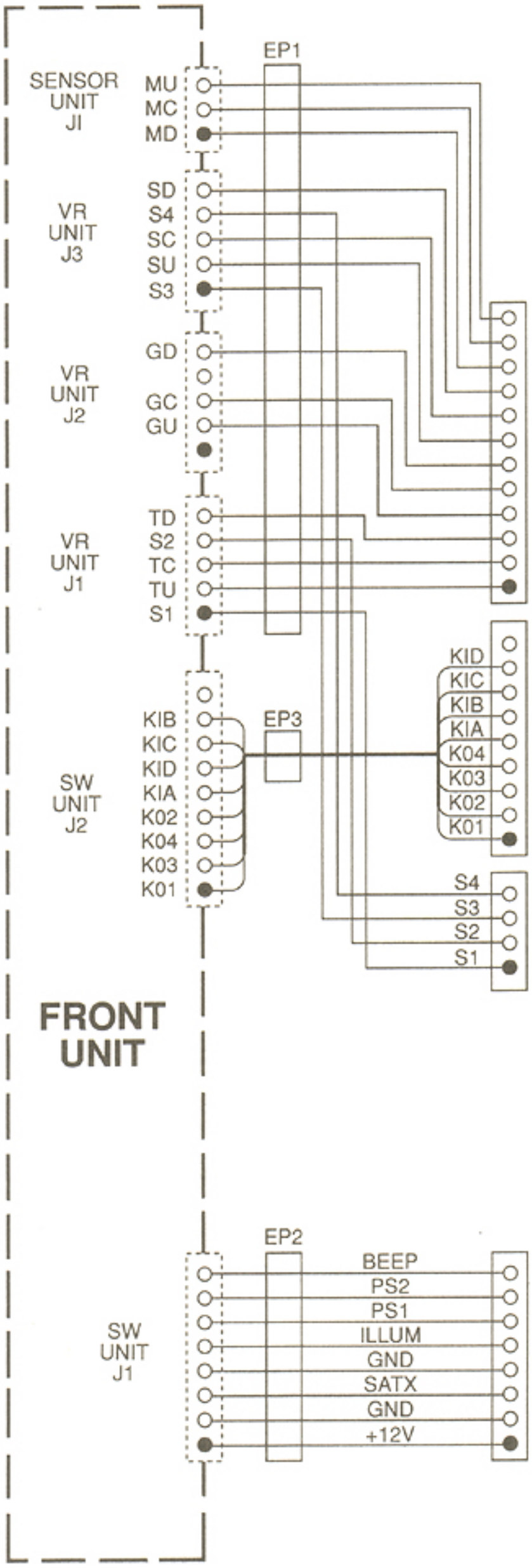
2SC2458-Y
Q2

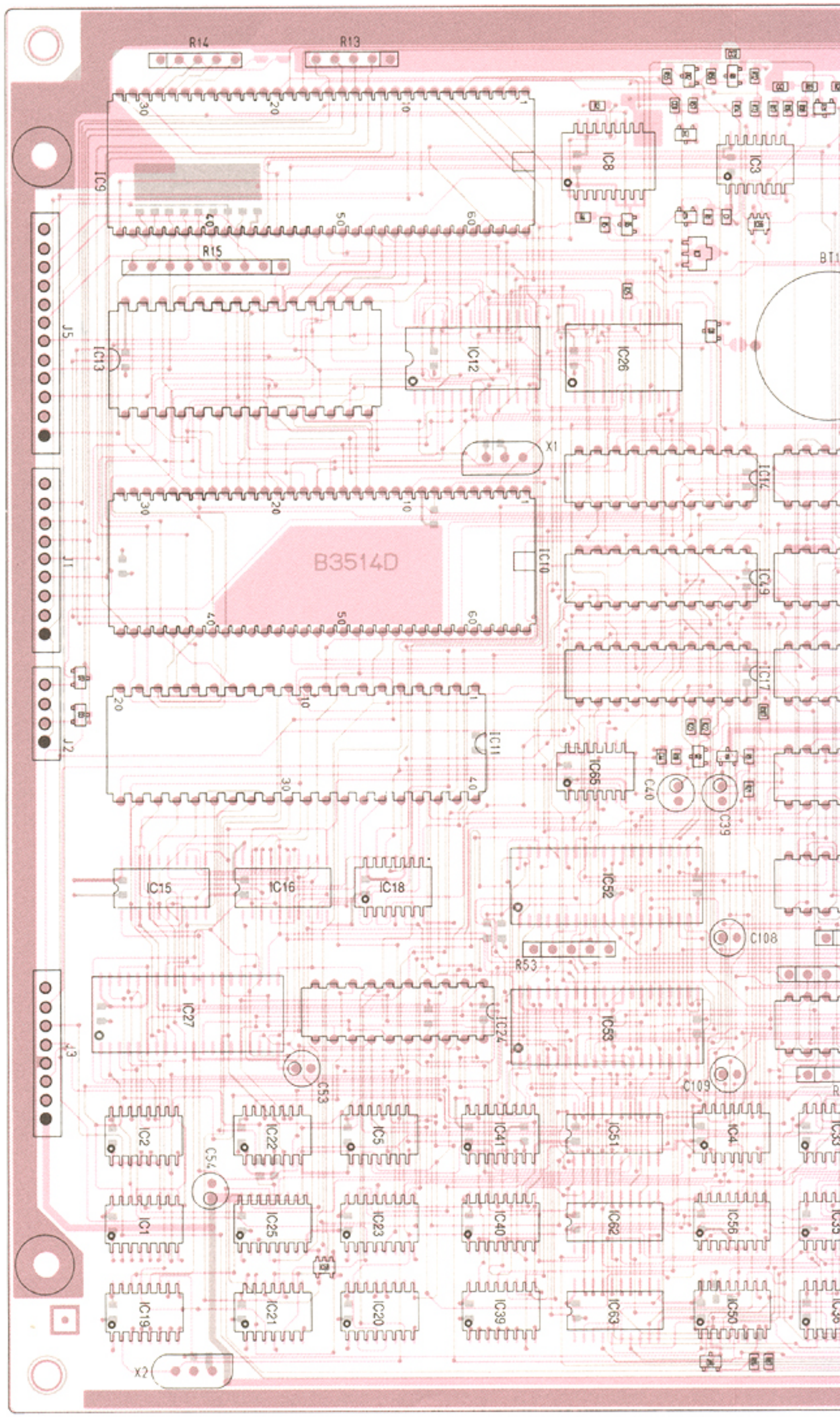


RN1202
Q1

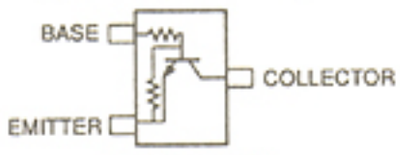


• MAIN UNIT (TOP VIEW)



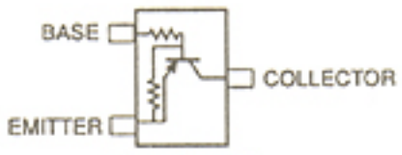


RN1404
Q3 ~ Q5, Q7 ~ Q9



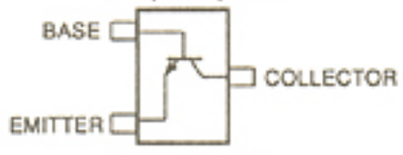
Symbol: XD

RN2402
Q10



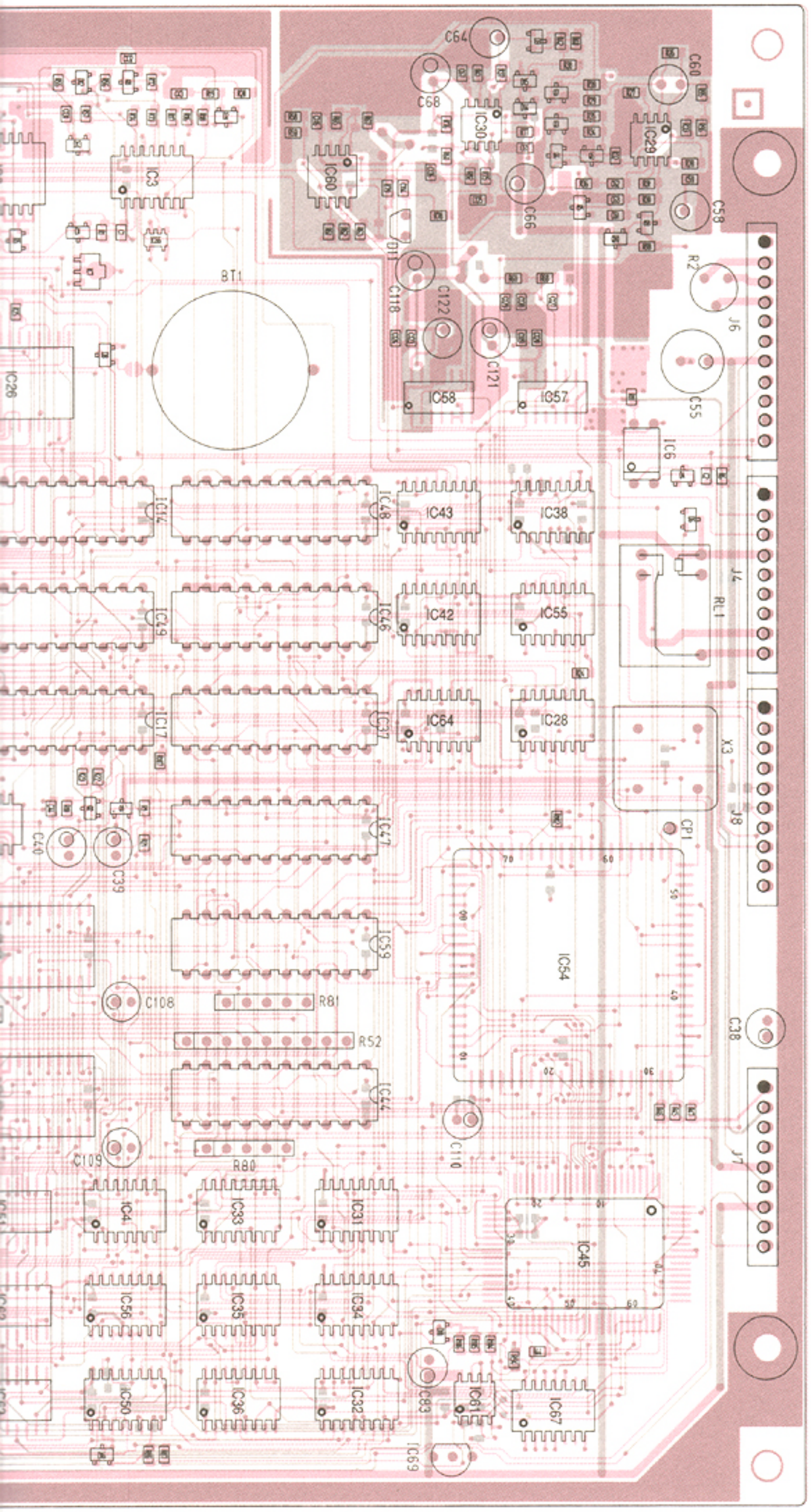
Symbol: YB

2SC2712-Y
Q1, Q2, Q6

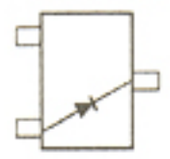


Symbol: LY

The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.

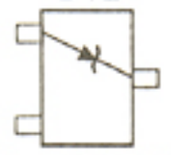


1SS196
D1~D7, D9, D10, D13~D16



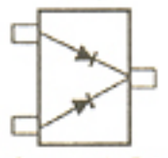
Symbol: G3

RD6.2M-T2B2
D12

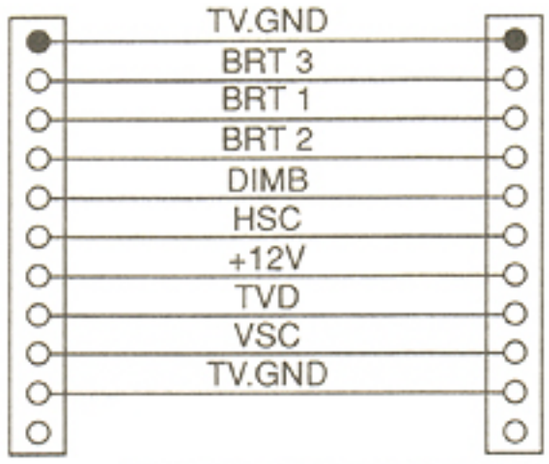


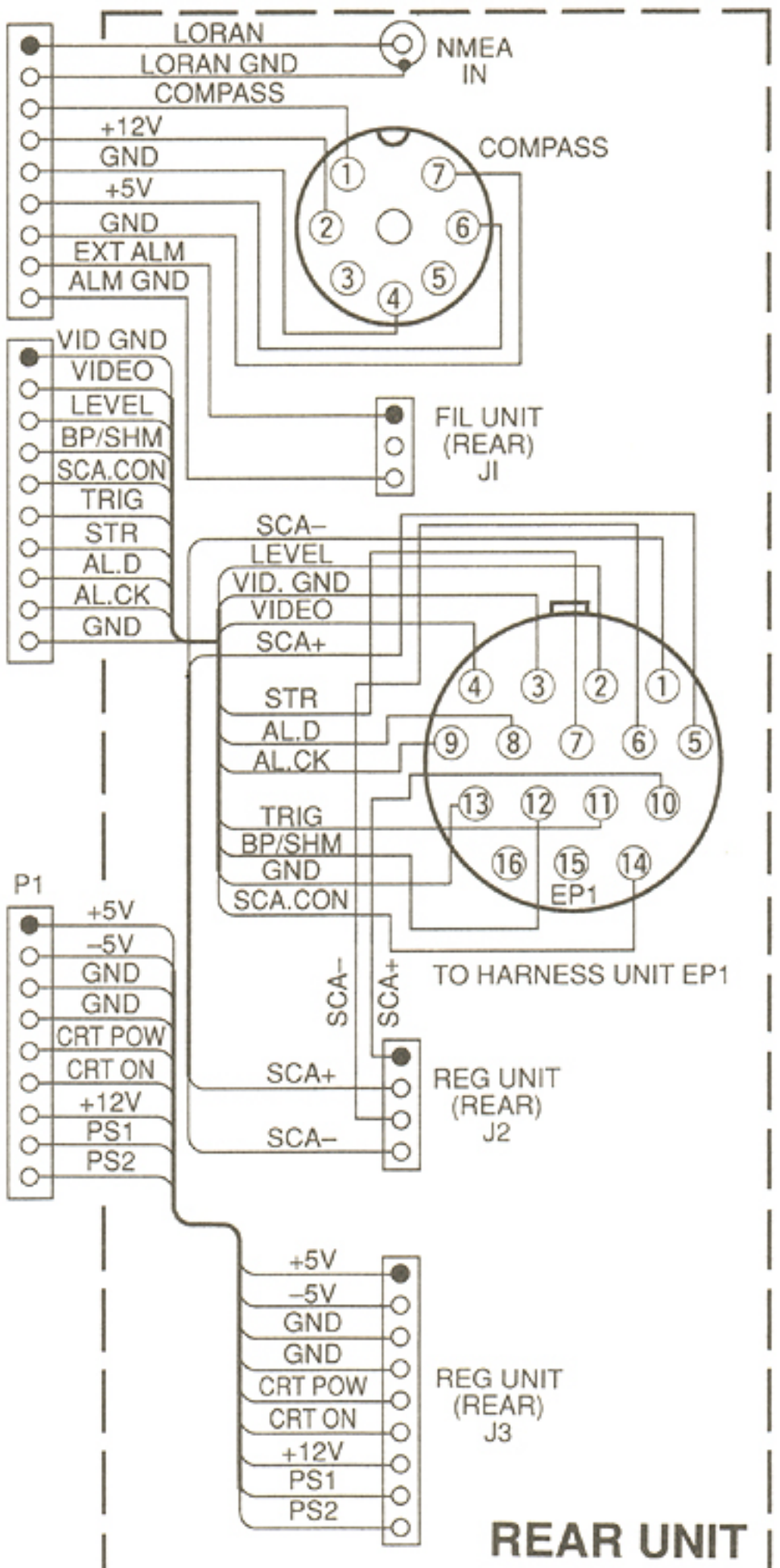
Symbol: 622

1SS184
D8

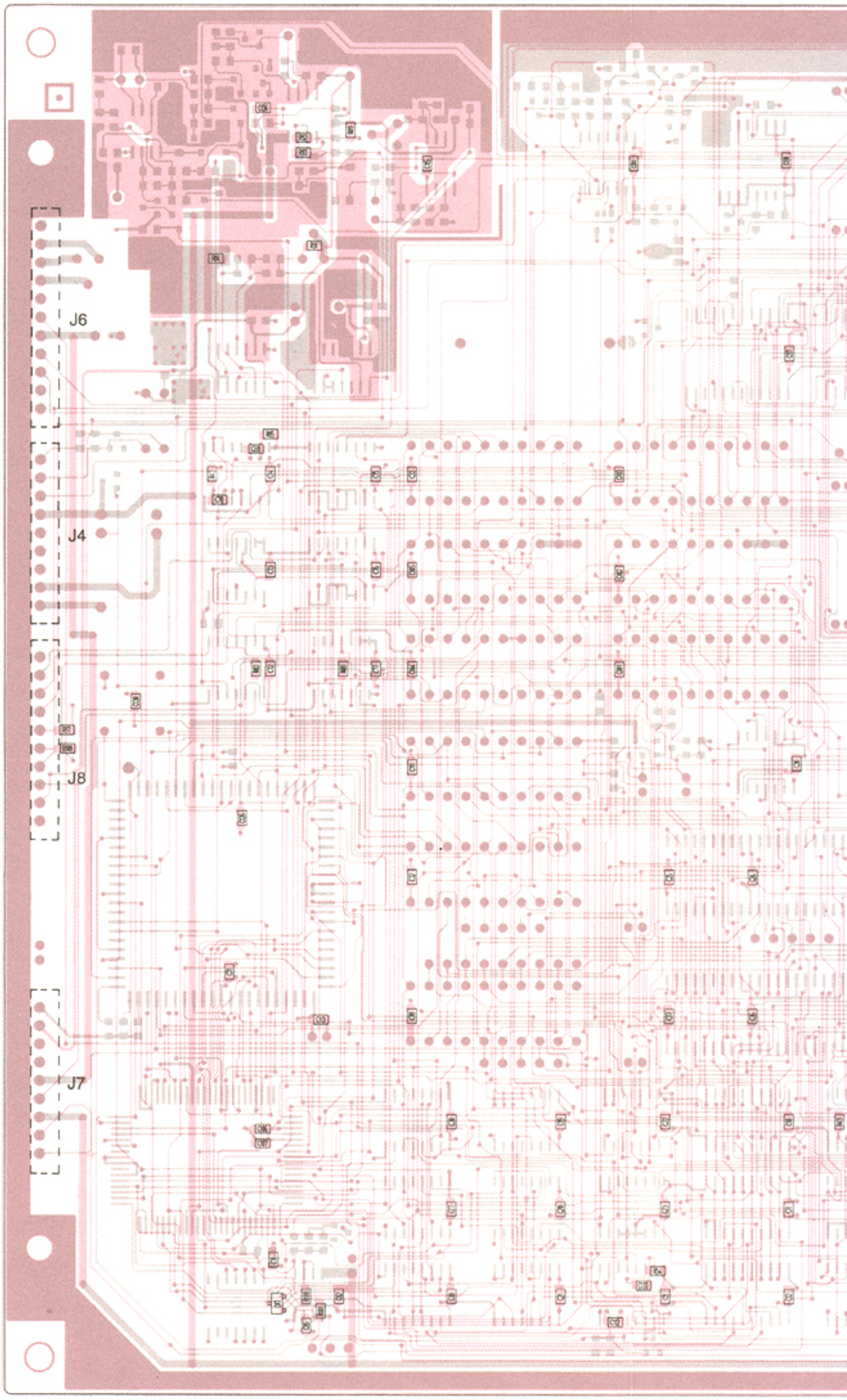


Symbol: B3

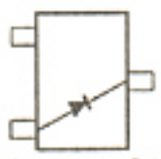




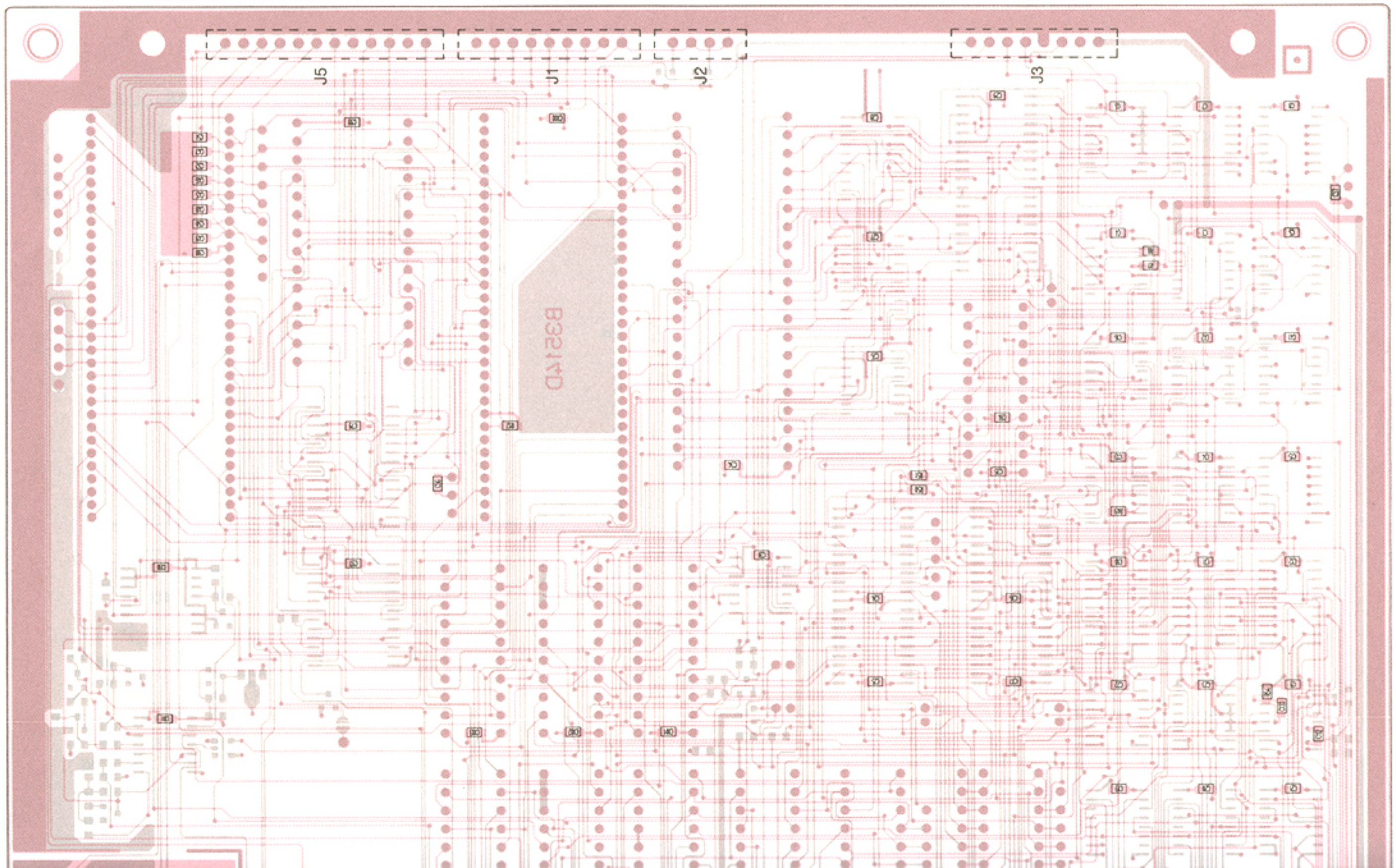
• MAIN UNIT (BOTTOM VIEW)



1SS196
D17

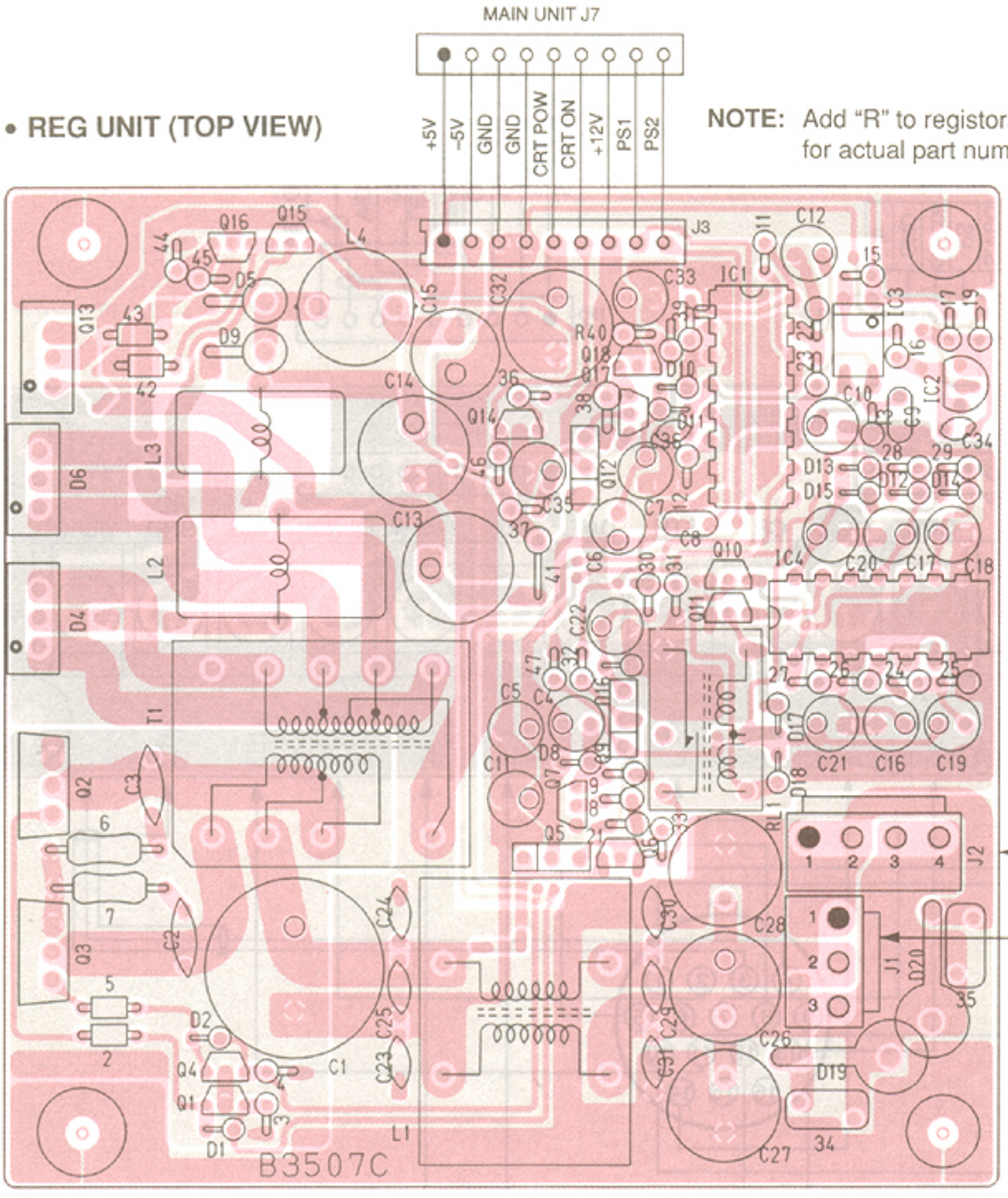


Symbol: G3


J5
J1
J2
J3
B321KD

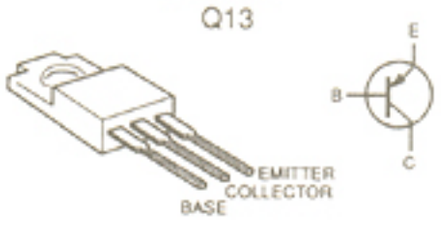
• REG UNIT (TOP VIEW)

NOTE: Add "R" to registors to the indicated number for actual part number. [eg. 15 → R15]

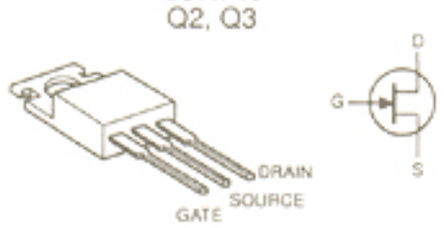


MA693
D4, D6

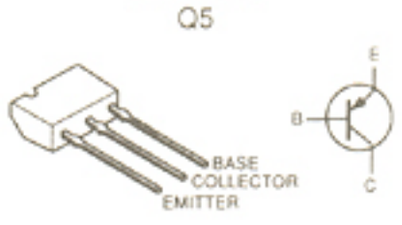
2SB1015
Q13



2SK740
Q2, Q3



2SA1428-Y
Q5



2SD1225M R
Q9

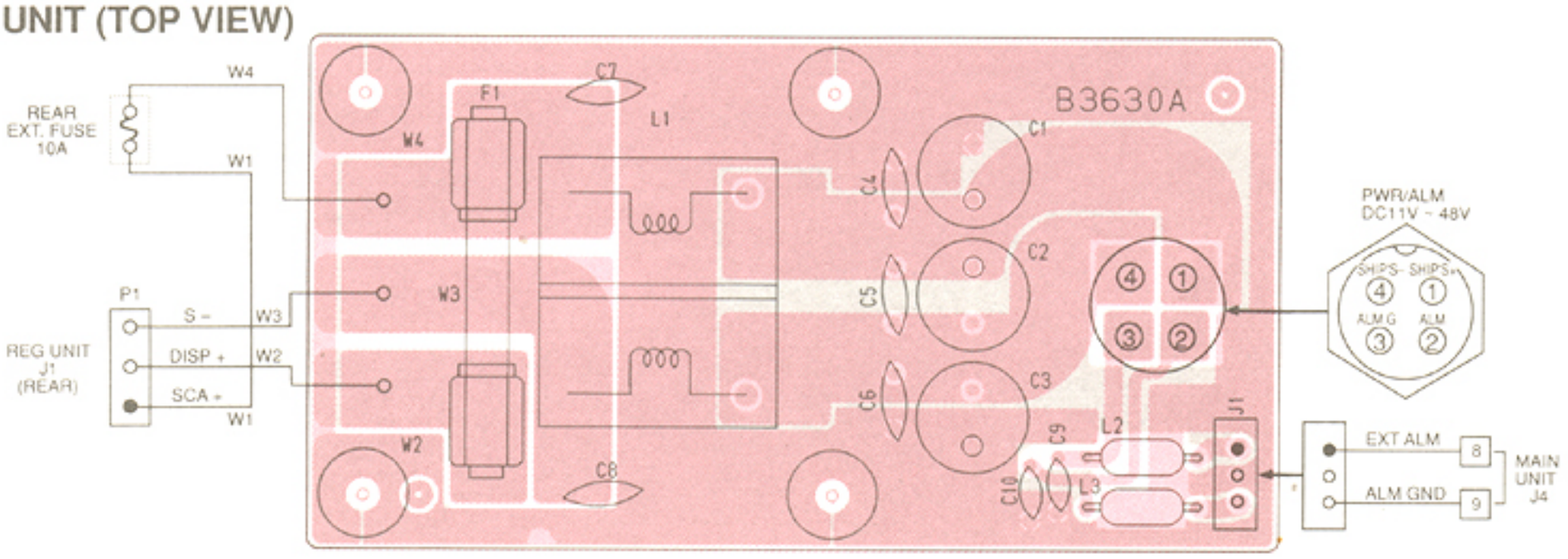
2SB909M Q
Q12

2SC2458-Y
Q7, Q15 ~ Q18

RN1204
Q10, Q11

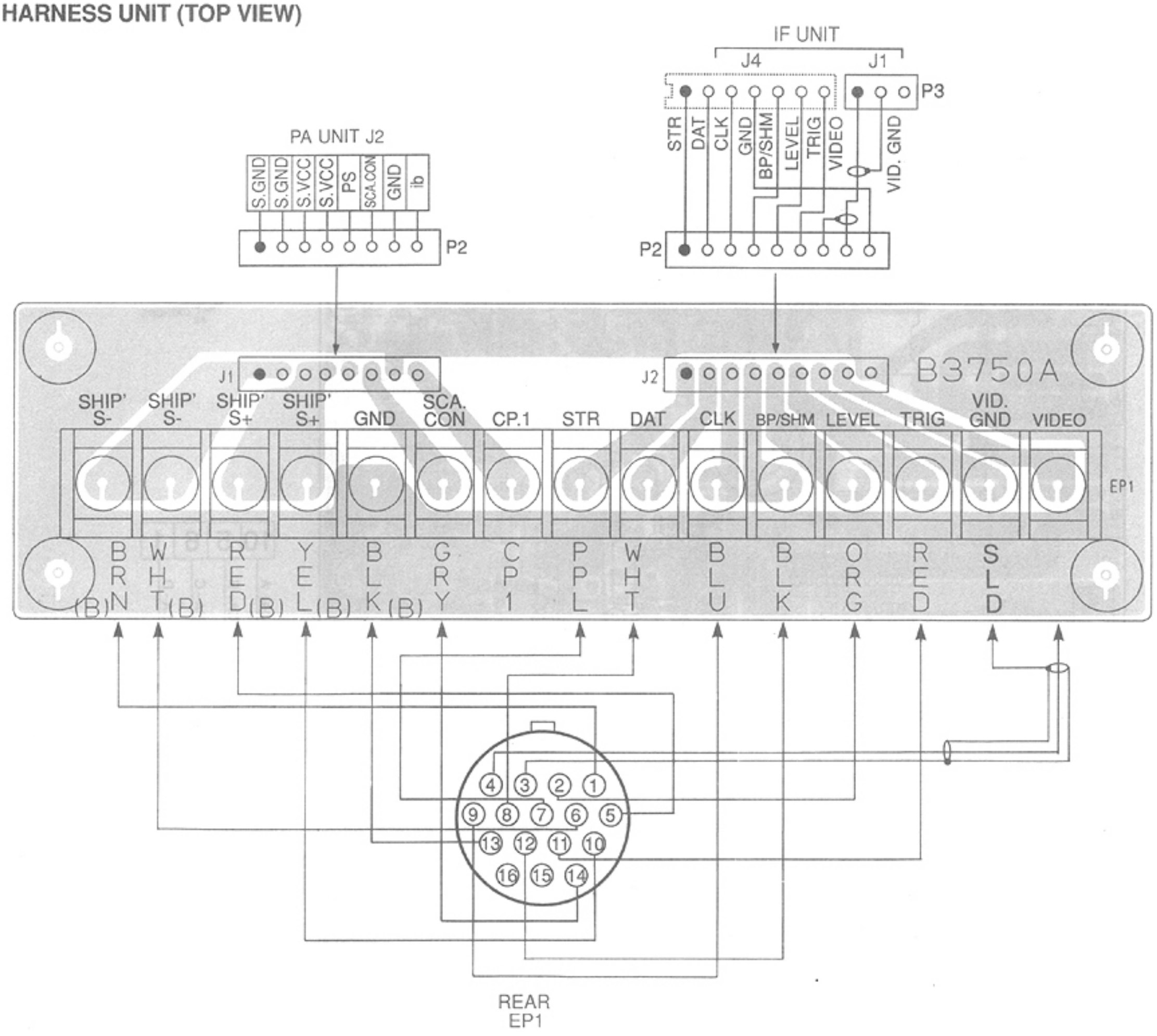
2SA1048-Y
Q1, Q4, Q6, Q14

• FILL UNIT (TOP VIEW)

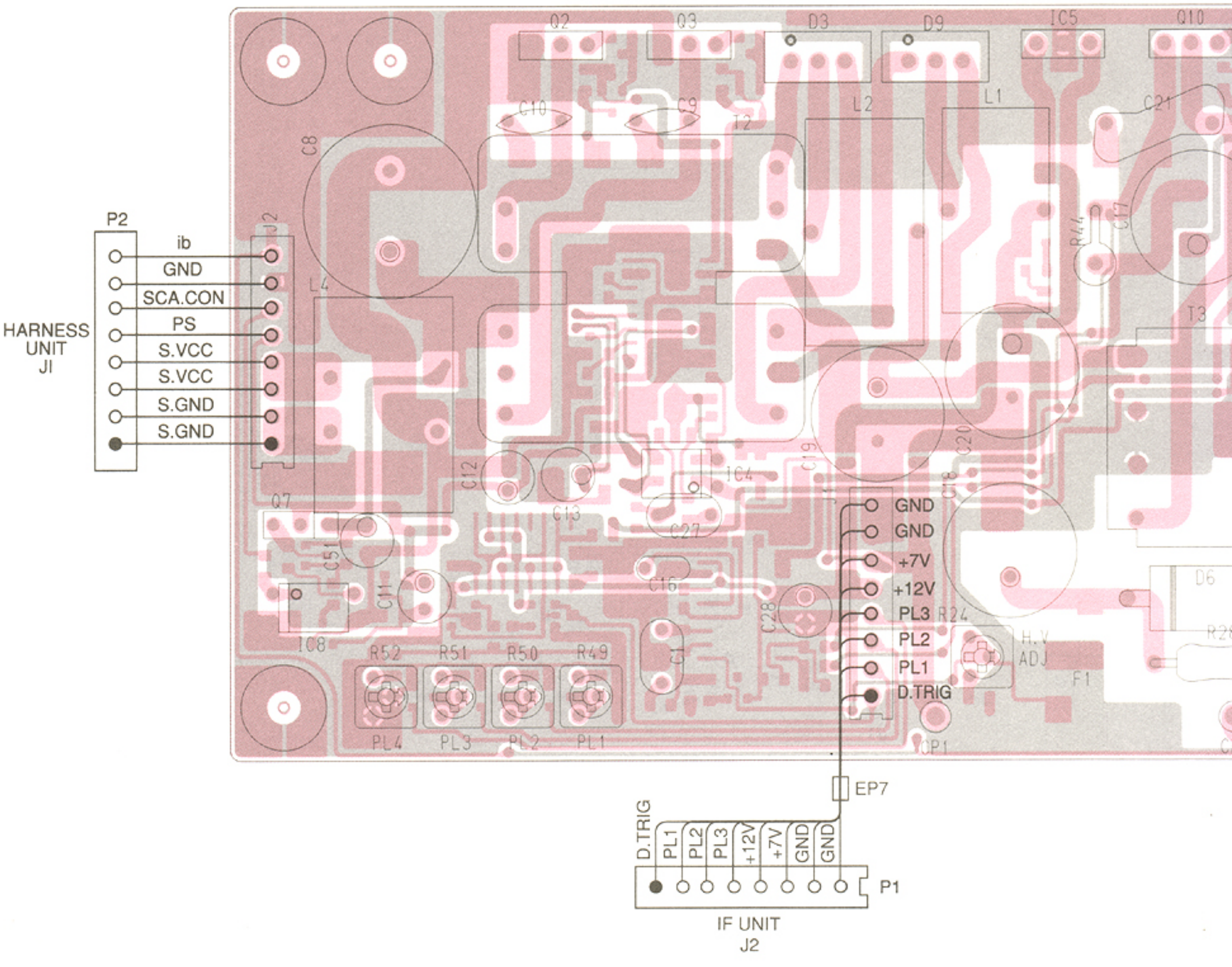


8-2 SCANNER UNIT

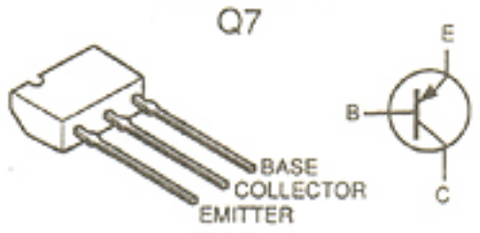
• HARNESS UNIT (TOP VIEW)



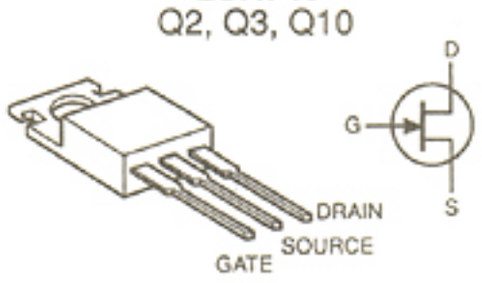
- **PA UNIT (TOP VIEW)**



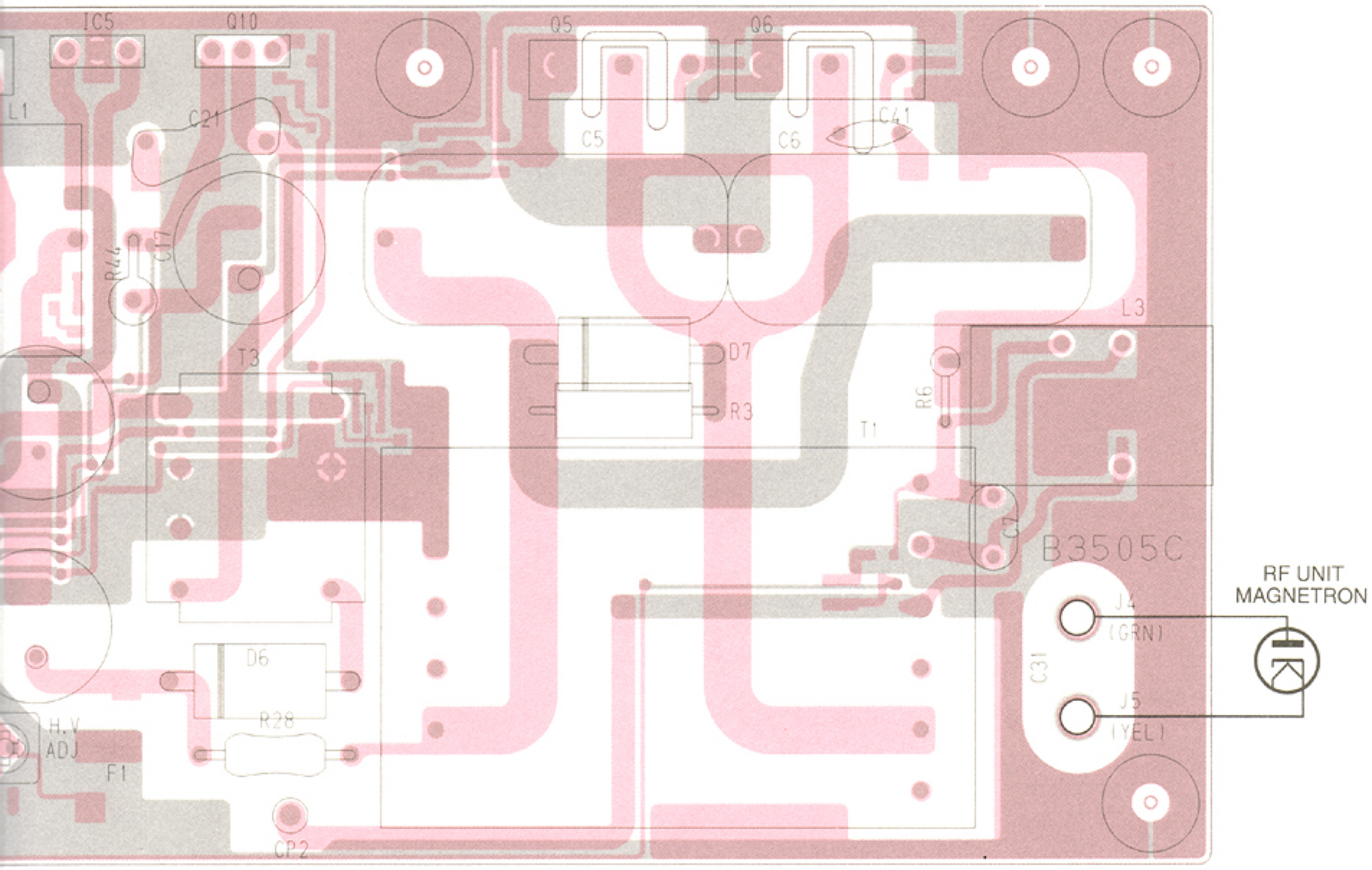
2SA1428-Y
Q7



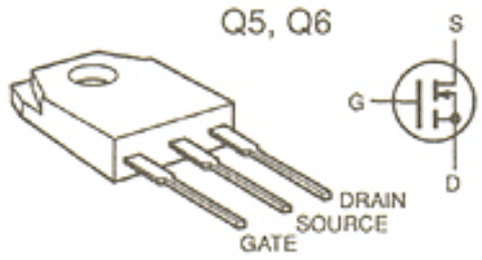
2SK740
Q2, Q3, Q10



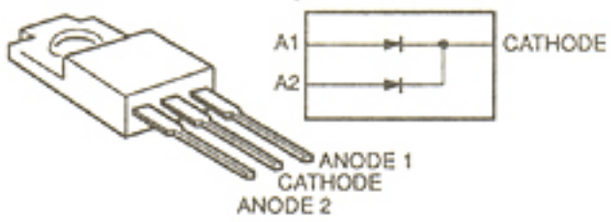
The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.



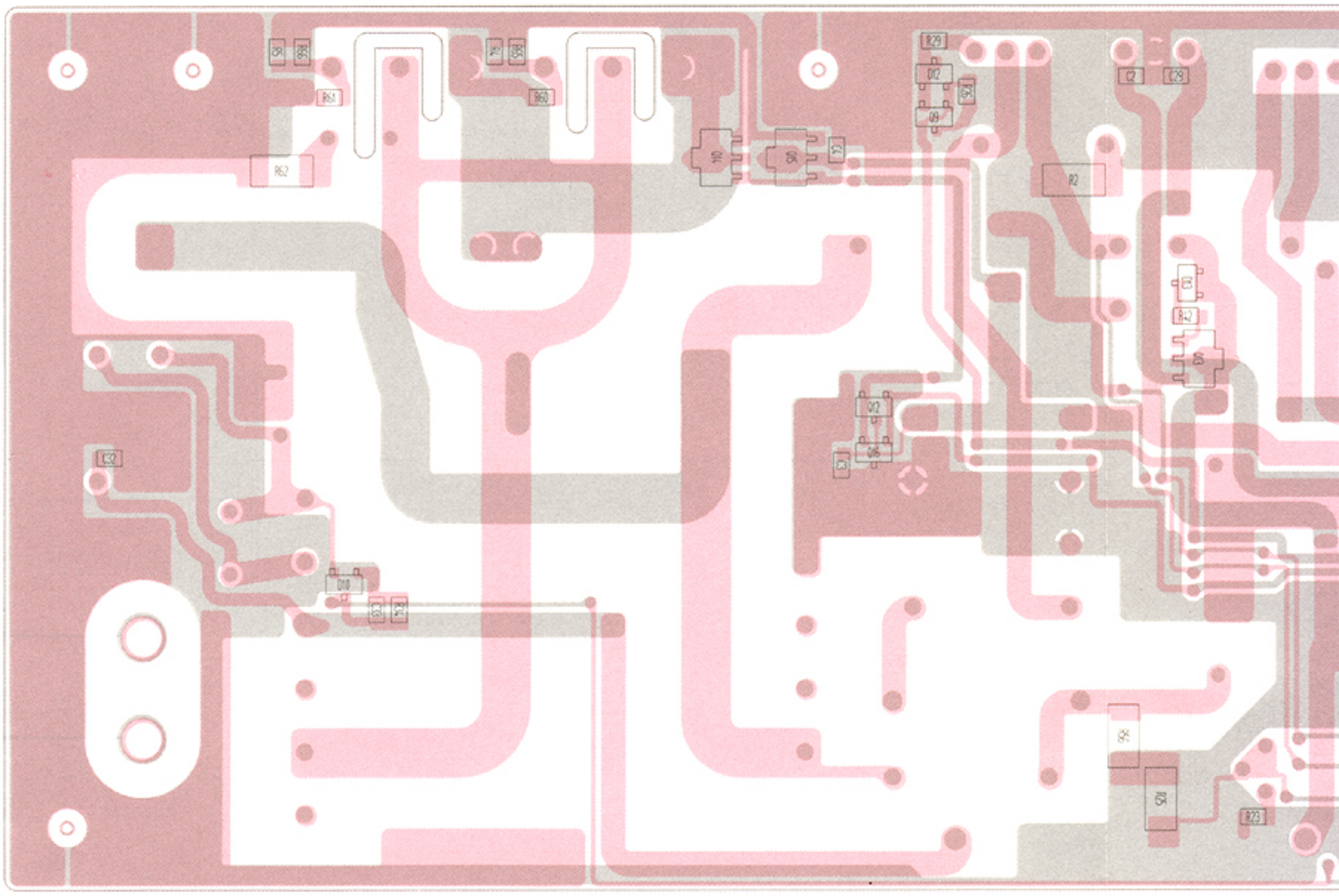
2SK1449
Q5, Q6



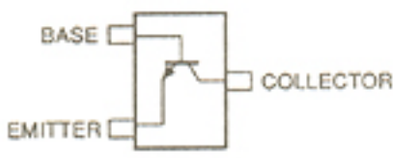
MA693
D3, D9



• PA UNIT (BOTTOM VIEW)



2SC2712-Y
Q8

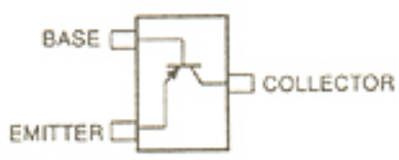


Symbol: LY

2SC2859-Y
Q12

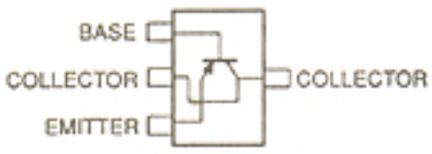
Symbol: WY

2SA1162-Y
Q1, Q4, Q9, Q11



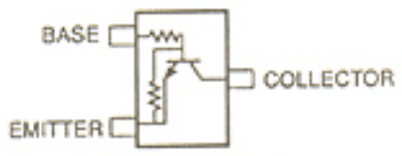
Symbol: SY

2SB798-T2
Q13, Q14



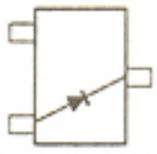
Symbol: DK

RN1402
Q17 ~ Q19



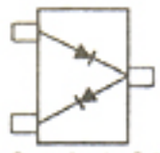
Symbol: XB

1SS196
D1, D2, D10, D12

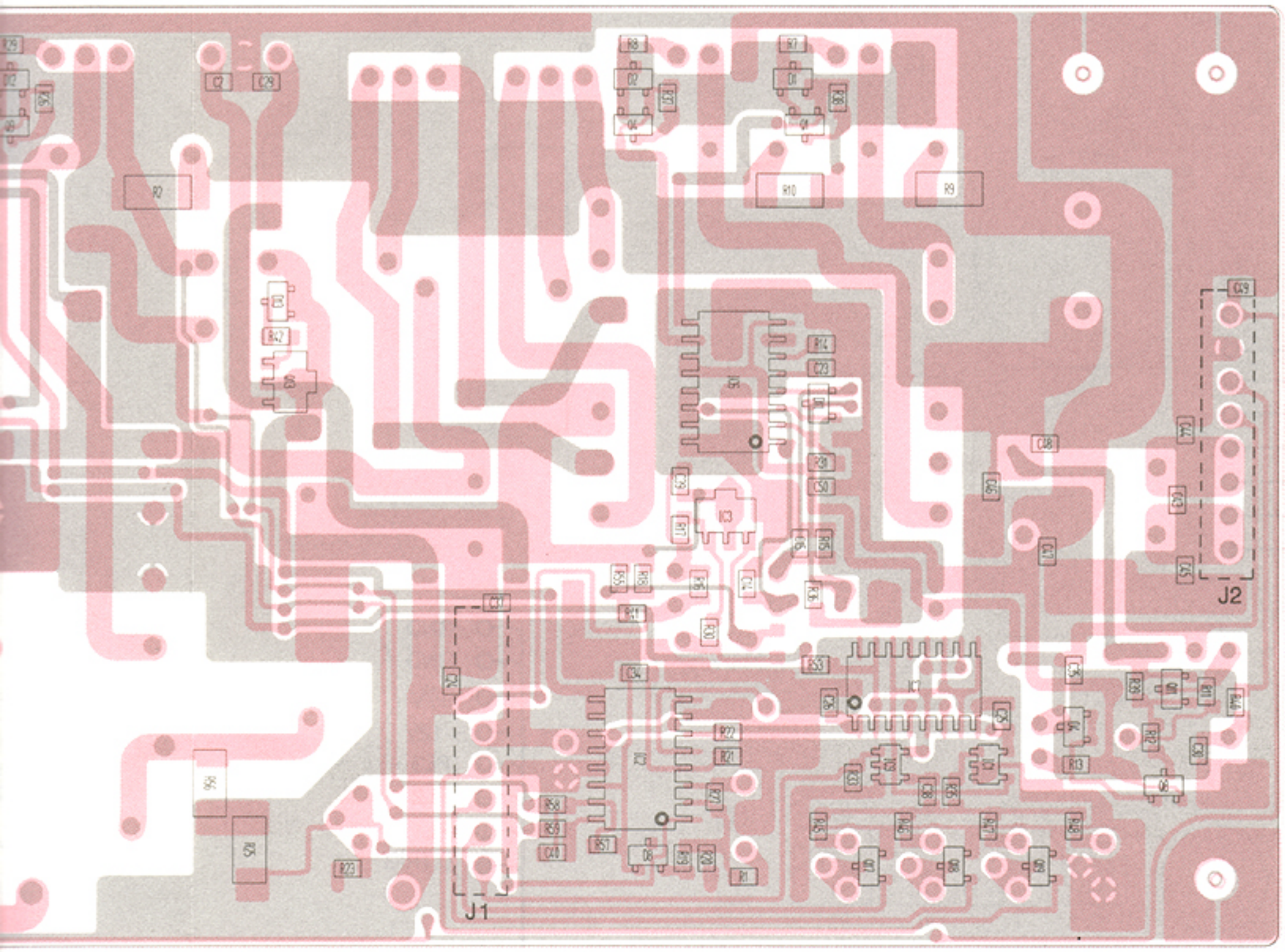


Symbol: G3

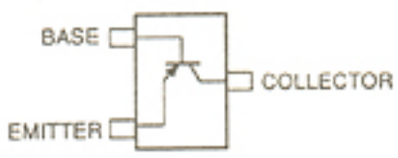
1SS226
D8, D11



Symbol: C3

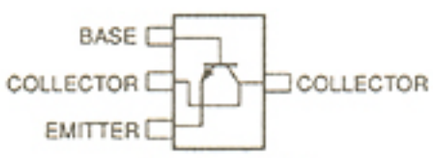


2SA1162-Y
Q1, Q4, Q9, Q11



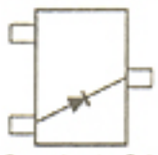
Symbol: SY

2SD999-T2
Q15



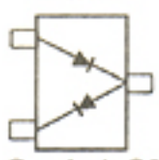
Symbol: CK

1SS196
D1, D2, D10, D12



Symbol: G3

1SS226
D8, D11

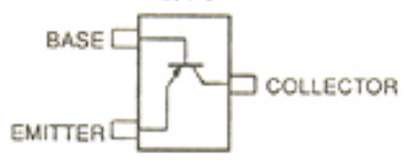


Symbol: C3

RD16M
D4, D13

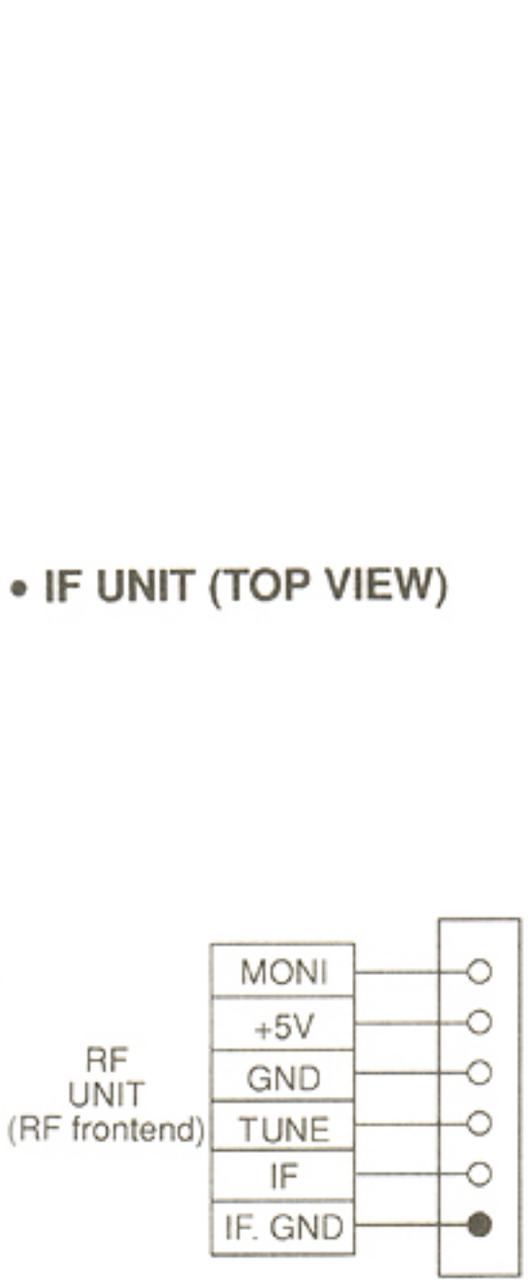
Symbol:162

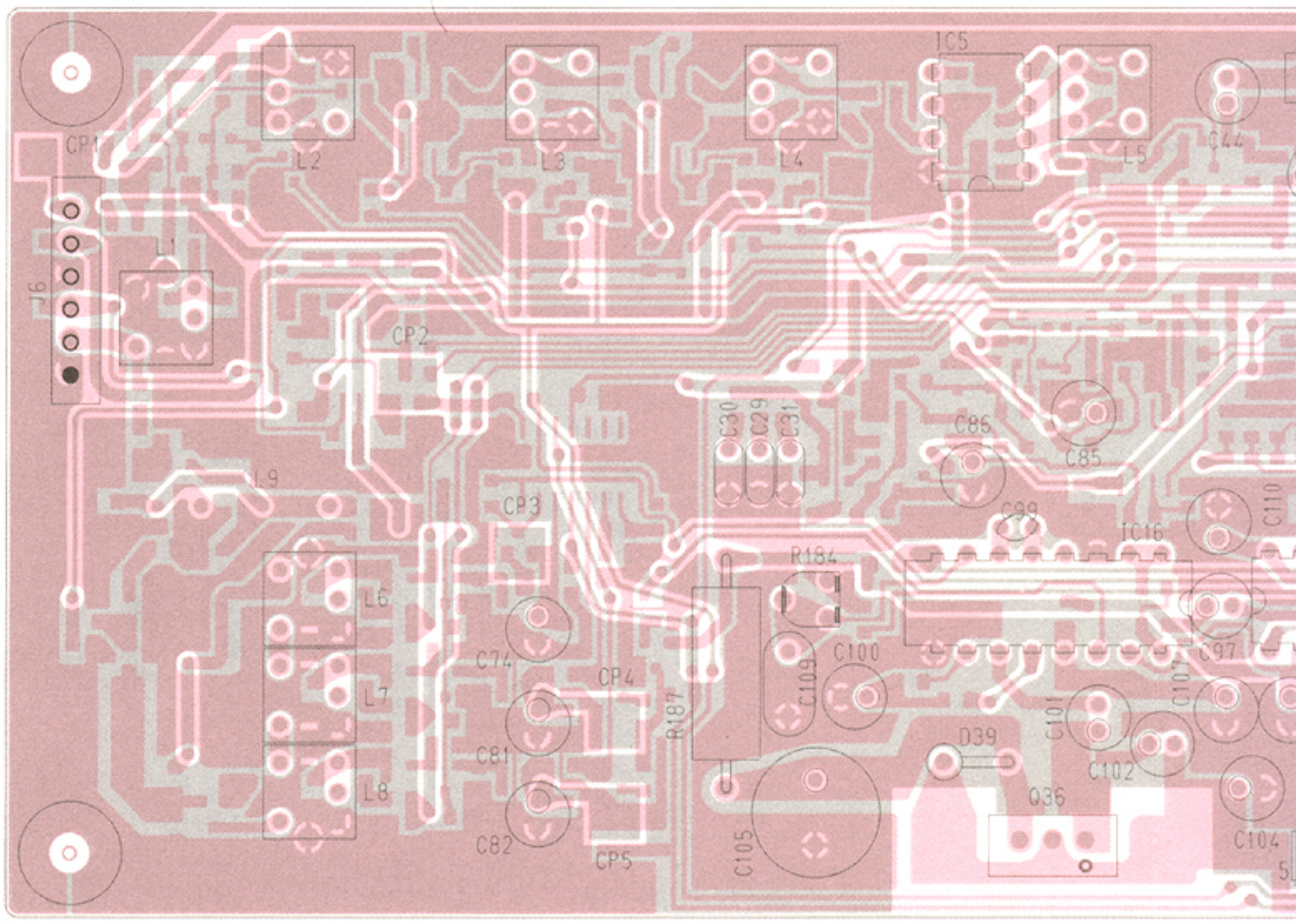
2SA1182-Y
Q16



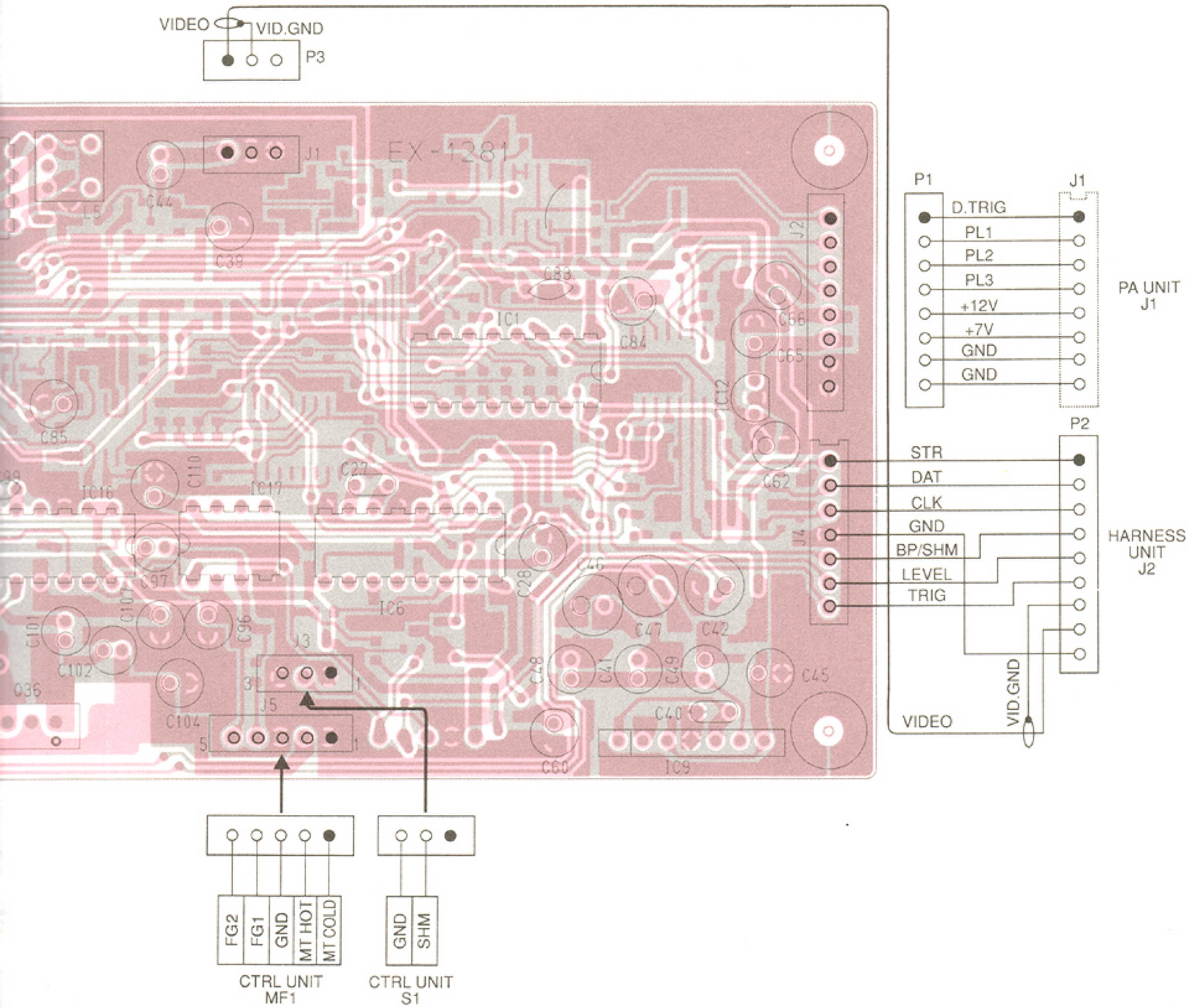
Symbol: ?

• IF UNIT (TOP VIEW)

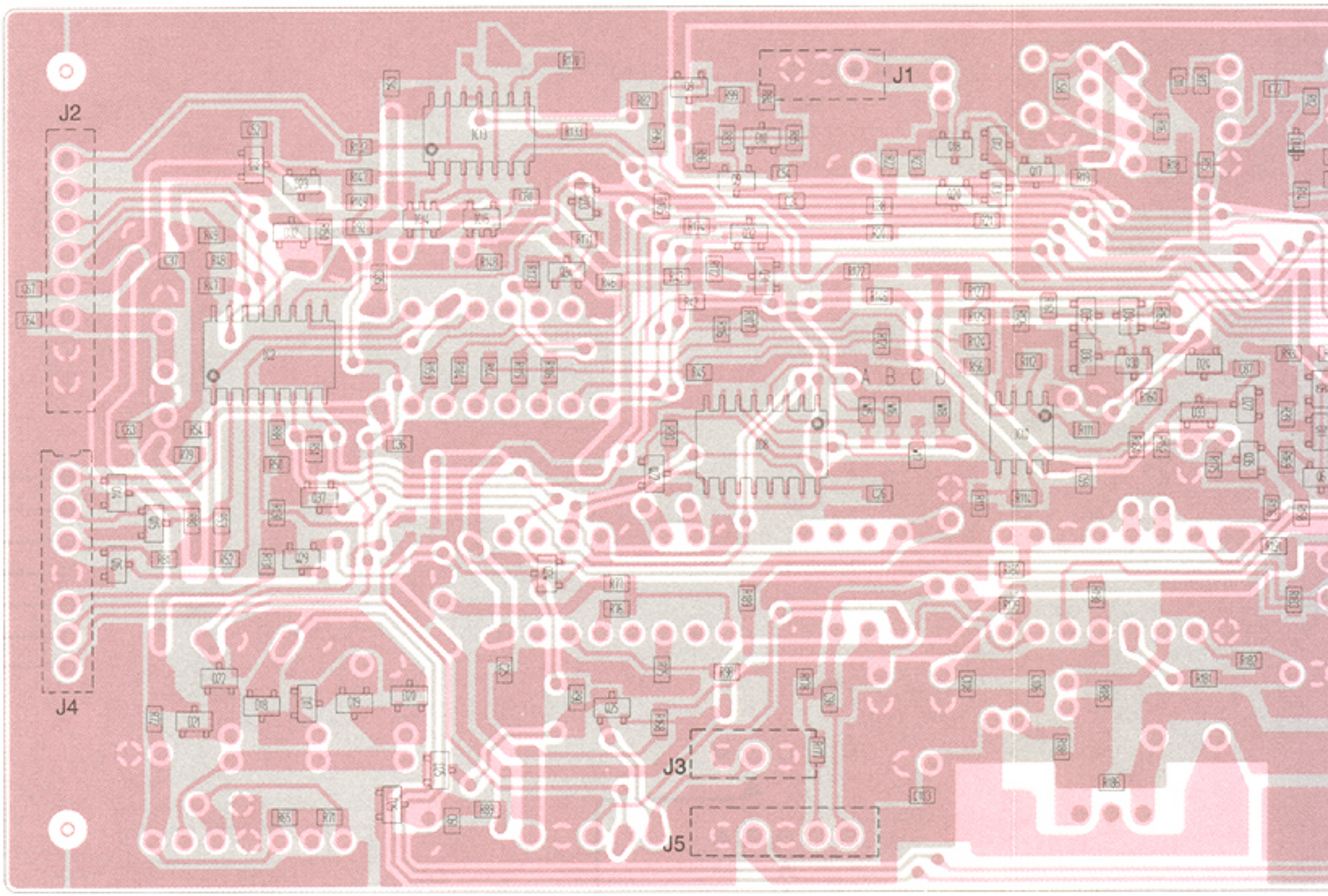




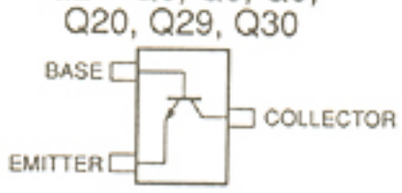
The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.



• **IF UNIT (BOTTOM VIEW)**

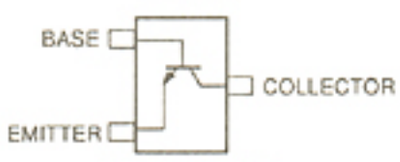


2SC2712-Y
Q2 ~ Q6, Q8, Q9,
Q20, Q29, Q30



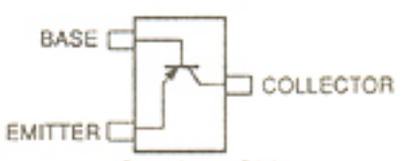
Symbol: LY

2SC3772-3-TA
Q1, Q7



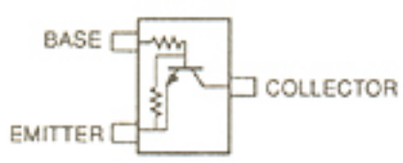
Symbol: LY3

2SA1162-Y
Q17, Q18, Q35



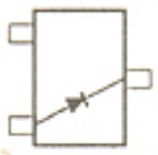
Symbol: SY

RN1402
Q12 ~ Q16, Q22, Q24,
Q27, Q28, Q31 ~ Q34, Q37



Symbol: XB

1SS196
D4~D13, D15 ~ D20,
D22 ~ D25, D27,
D31 ~ D33, D36

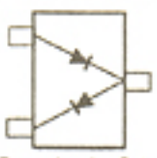


Symbol: G3

1SS190
D21

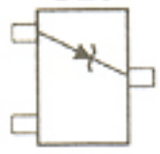
Symbol: E3

1SS226
D34, D35, D37

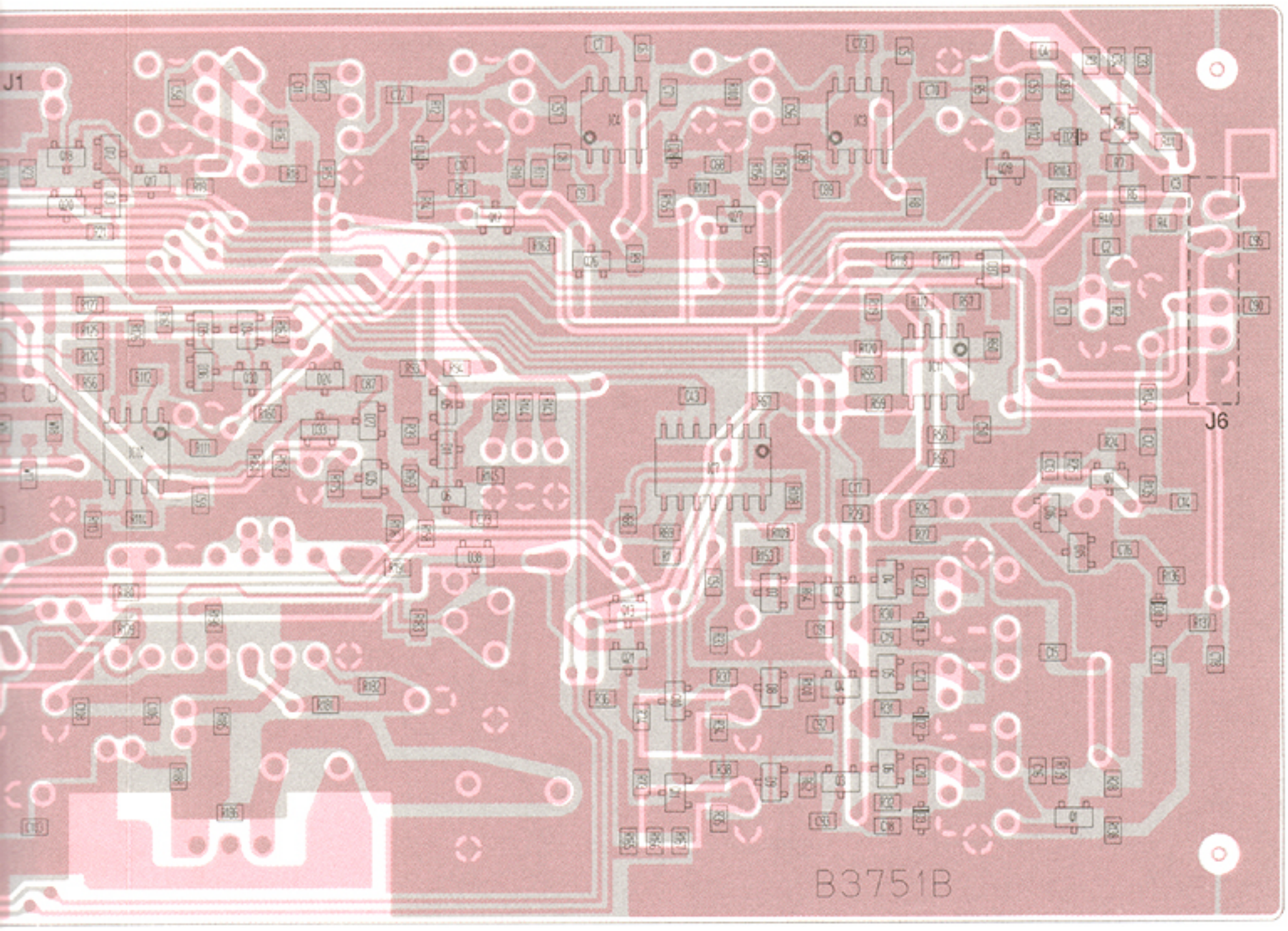


Symbol: C3

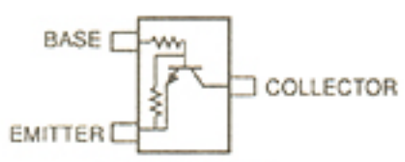
RD6.2M-T2B
D26



Symbol: 622

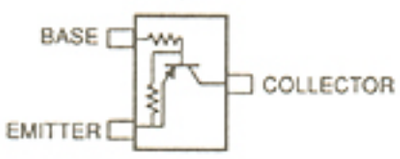


RN1402
Q12 ~ Q16, Q22, Q24,
Q27, Q28, Q31 ~ Q34, Q37



Symbol: XB

RN2402
Q21, Q25



Symbol: YB

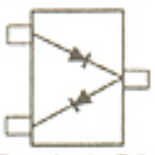
2SJ106-GR
Q10, Q11

Symbol: VG

3SK131K-T1
Q19

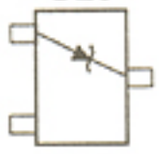
Symbol: V13

1SS226
D34, D35, D37



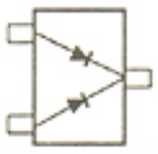
Symbol: C3

RD6.2M-T2B2
D26



Symbol: 622

RD3.9M-T2B2
D38

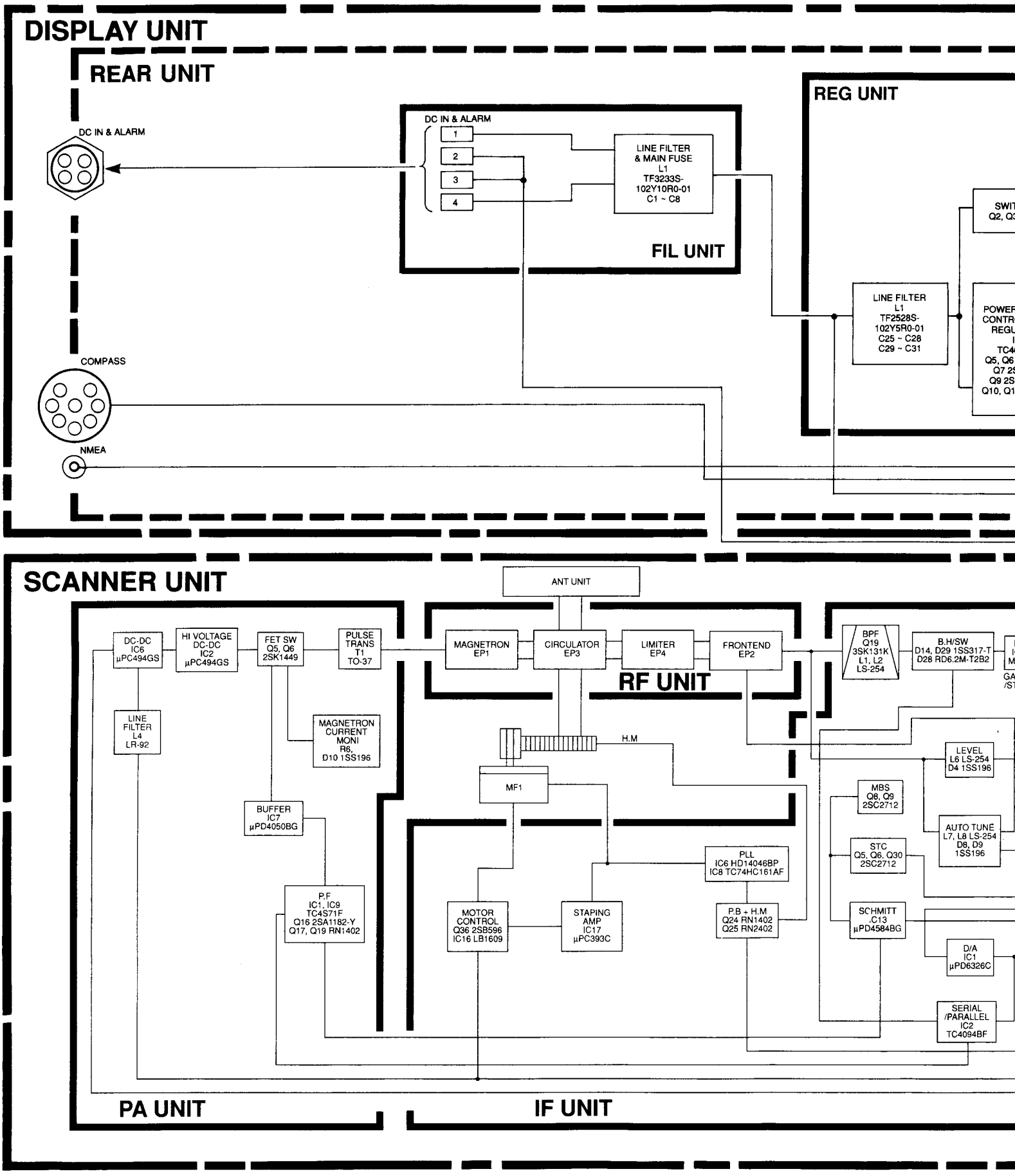


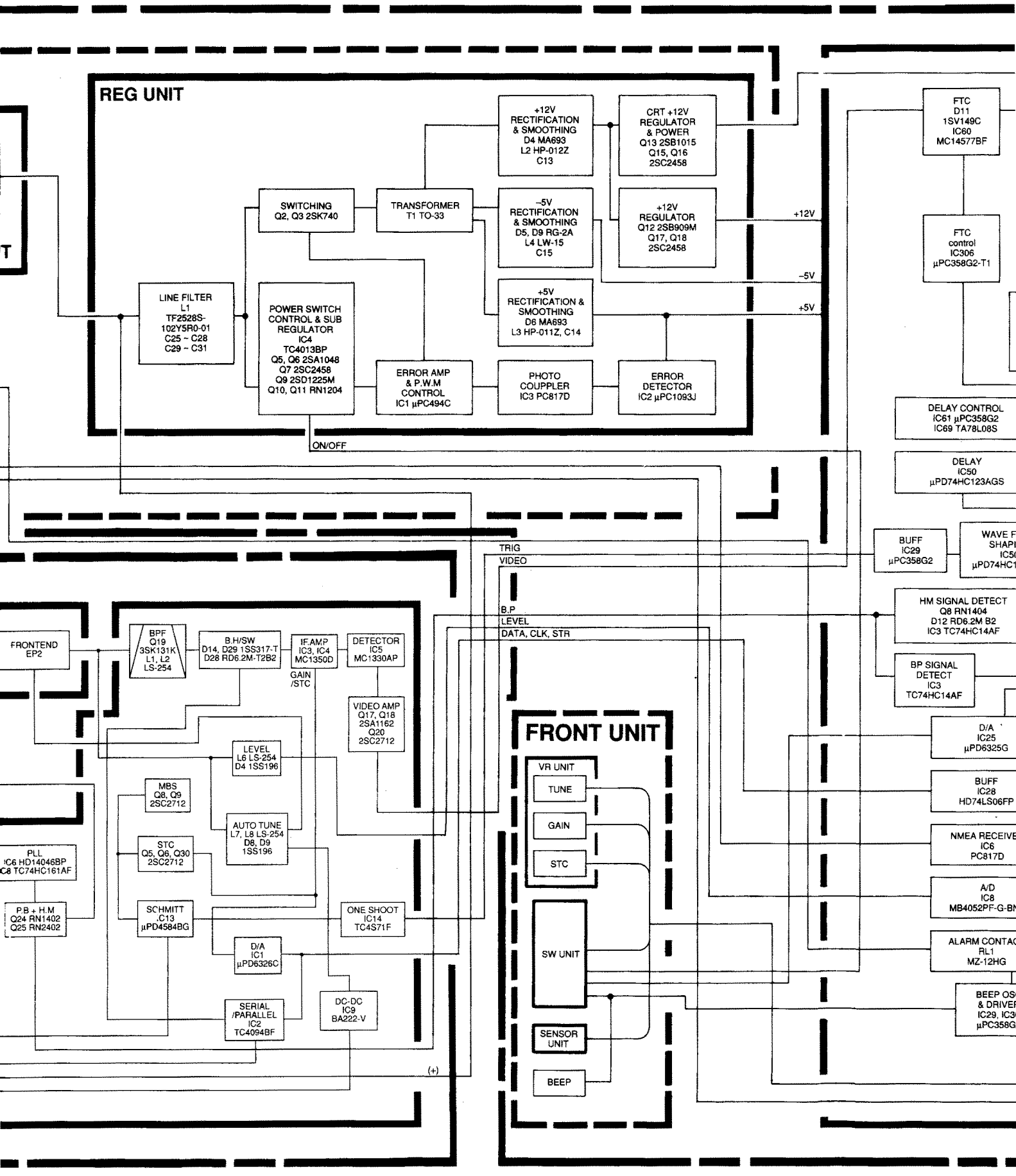
Symbol: 392

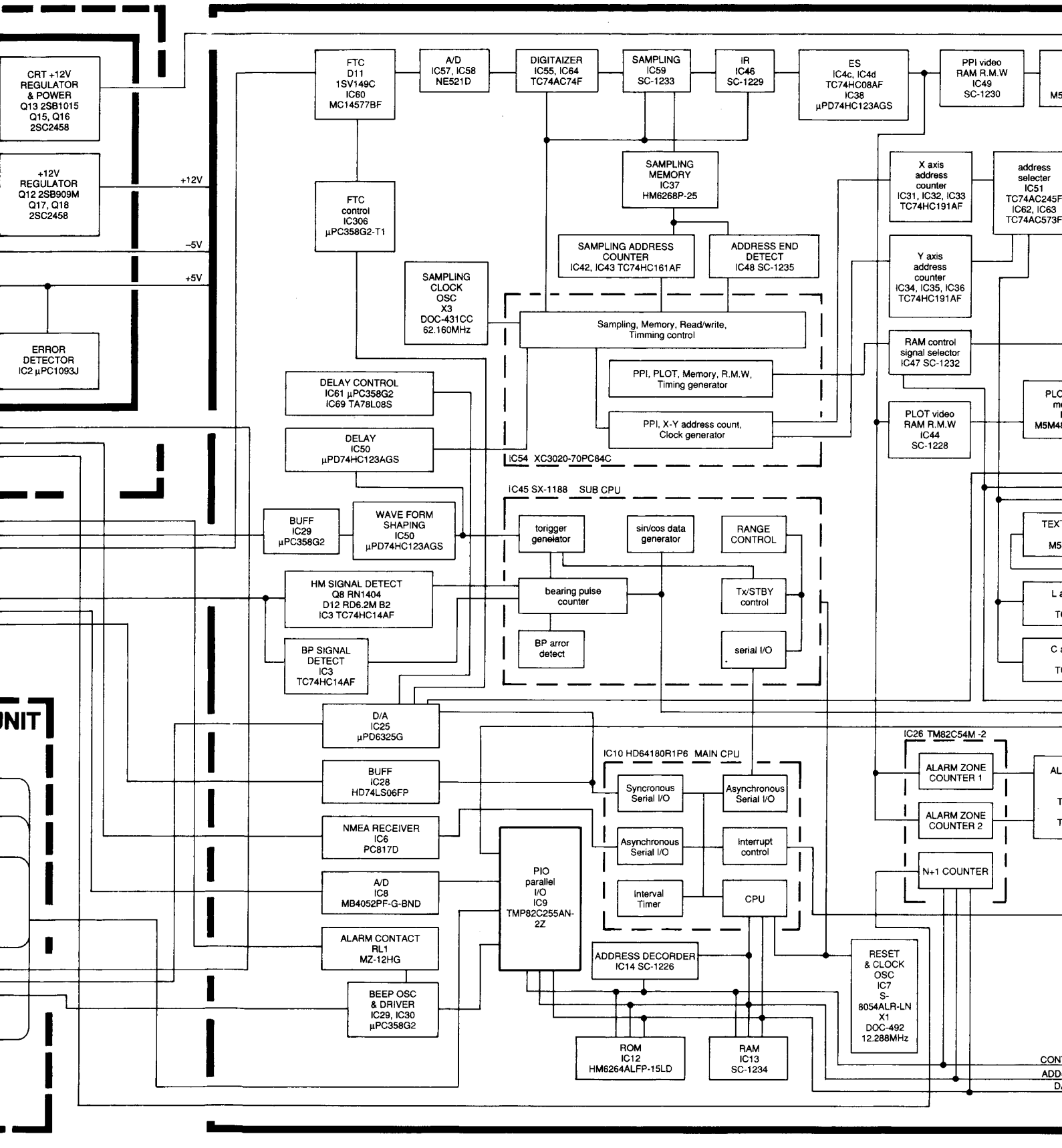
1SV166-T2B
D1 ~ D3

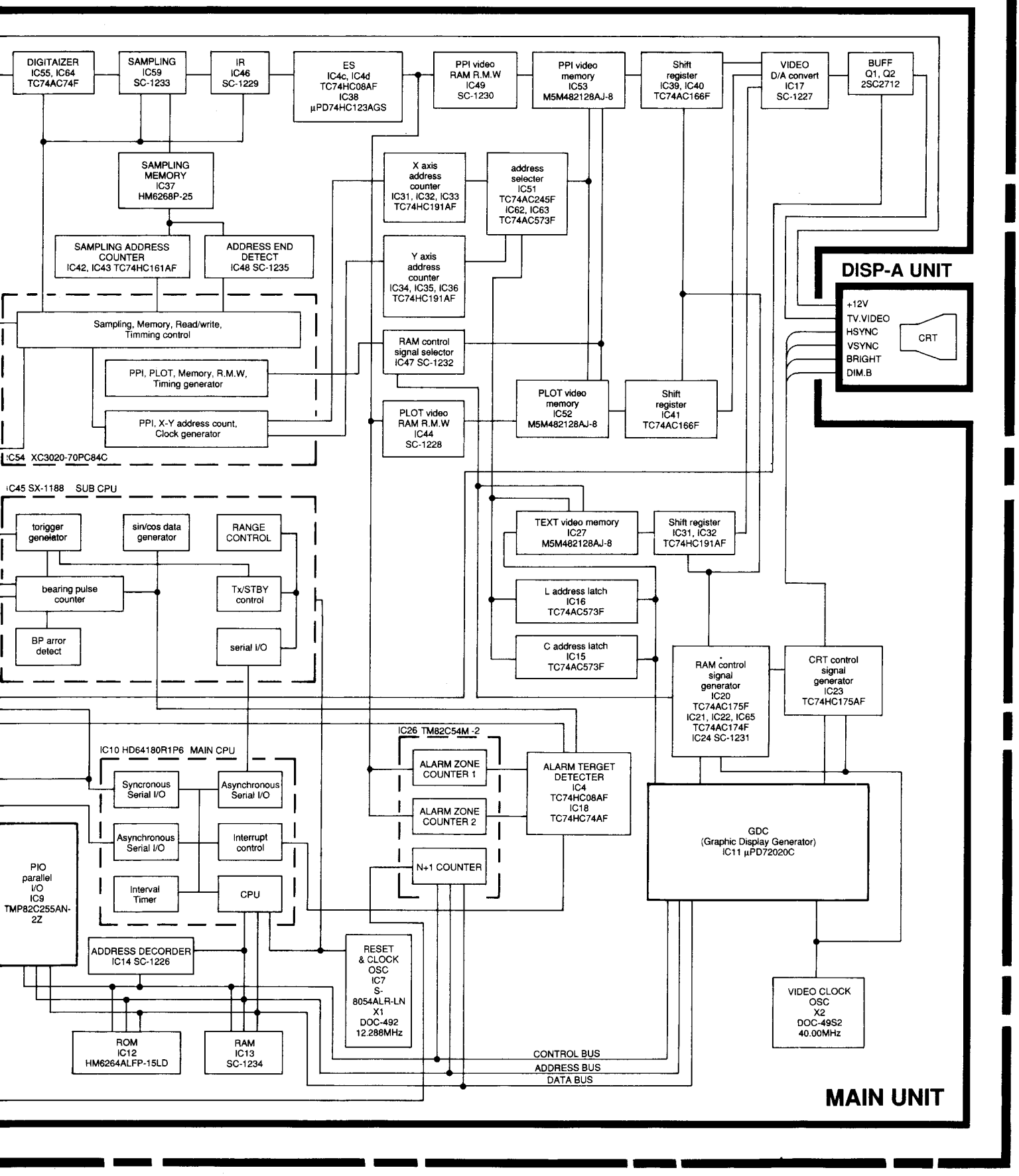
NO symbol,
yellow mark

SECTION 9 BLOCK DIAGRAM



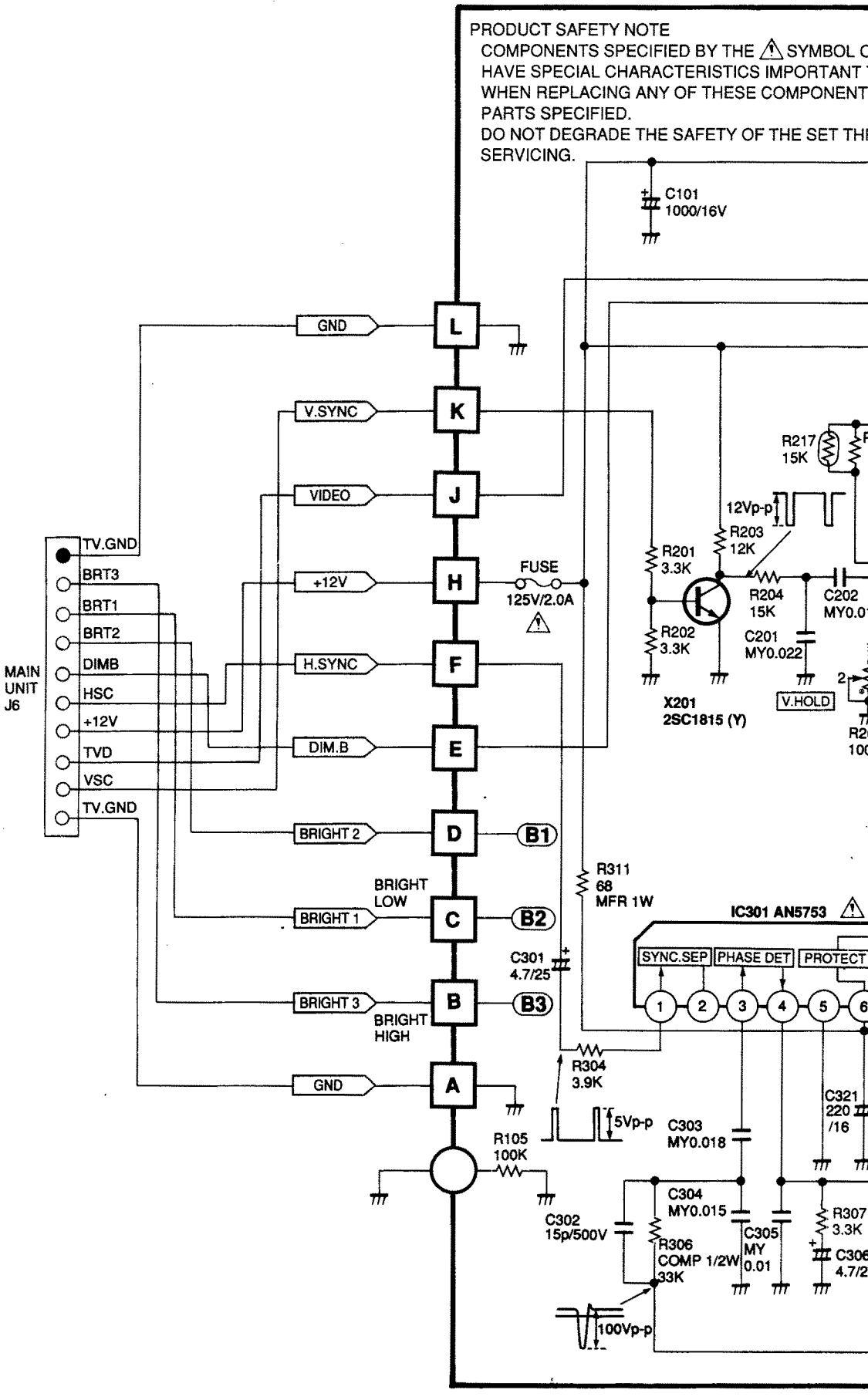

REG UNIT
LINE FILTER
L1
TF2528S-
102Y5R0-01
C25 ~ C28
C29 ~ C31
POWER SWITCH
CONTROL & SUB
REGULATOR
IC4
TC4013BP
Q5, Q6 2SA1048
Q7 2SC2458
Q9 2SD1225M
Q10, Q11 RN1204
SWITCHING
Q2, Q3 2SK740
TRANSFORMER
T1 TO-33
+12V
RECTIFICATION
& SMOOTHING
D4 MA693
L2 HP-012Z
C13
–5V
RECTIFICATION
& SMOOTHING
D5, D9 RG-2A
L4 LW-15
C15
+5V
RECTIFICATION &
SMOOTHING
D6 MA693
L3 HP-011Z, C14
CRT +12V
REGULATOR
& POWER
Q13 2SB1015
Q15, Q16
2SC2458
+12V
REGULATOR
Q12 2SB909M
Q17, Q18
2SC2458
ERROR AMP
& P.W.M
CONTROL
IC1 µPC494C
PHOTO
COUPPLER
IC3 PC817D
ERROR
DETECTOR
IC2 µPC1093J
+12V
–5V
+5V
ON/OFF
FTC
D11
1SV149C
IC60
MC14577BF
FTC
control
IC306
µPC358G2-T1
DELAY CONTROL
IC61 µPC358G2
IC69 TA78L08S
DELAY
IC50
µPD74HC123AGS
BUFF
IC29
µPC358G2
TRIG
VIDEO
B.P
LEVEL
DATA, CLK, STR
HM SIGNAL DETECT
Q8 RN1404
D12 RD6.2M B2
IC3 TC74HC14AF
BP SIGNAL
DETECT
IC3
TC74HC14AF
D/A
IC25
µPD6325G
BUFF
IC28
HD74LS06FP
NMEA RECEIVE
IC6
PC817D
A/D
IC8
MB4052PF-G-BN
ALARM CONTAC
RL1
MZ-12HG
BEEP OS
& DRIVE
IC29, IC3
µPC358G
FRONTEND
EP2
BPF
Q19
3SK131K
L1, L2
LS-254
B.H/SW
D14, D29 1SS317-T
D28 RD6.2M-T2B2
IF.AMP
IC3, IC4
MC1350D
GAIN
/STC
DETECTOR
IC5
MC1330AP
VIDEO AMP
Q17, Q18
2SA1162
Q20
2SC2712
LEVEL
L6 LS-254
D4 1SS196
MBS
Q8, Q9
2SC2712
AUTO TUNE
L7, L8 LS-254
D8, D9
1SS196
STC
Q5, Q6, Q30
2SC2712
SCHMITT
,C13
µPD4584BG
ONE SHOOT
IC14
TC4S71F
D/A
IC1
µPD6326C
SERIAL
/PARALLEL
IC2
TC4094BF
DC-DC
IC9
BA222-V
PLL
IC6 HD14046BP
C8 TC74HC161AF
P.B + H.M
Q24 RN1402
Q25 RN2402
(+)
FRONT UNIT
VR UNIT
TUNE
GAIN
STC
SW UNIT
SENSOR
UNIT
BEEP

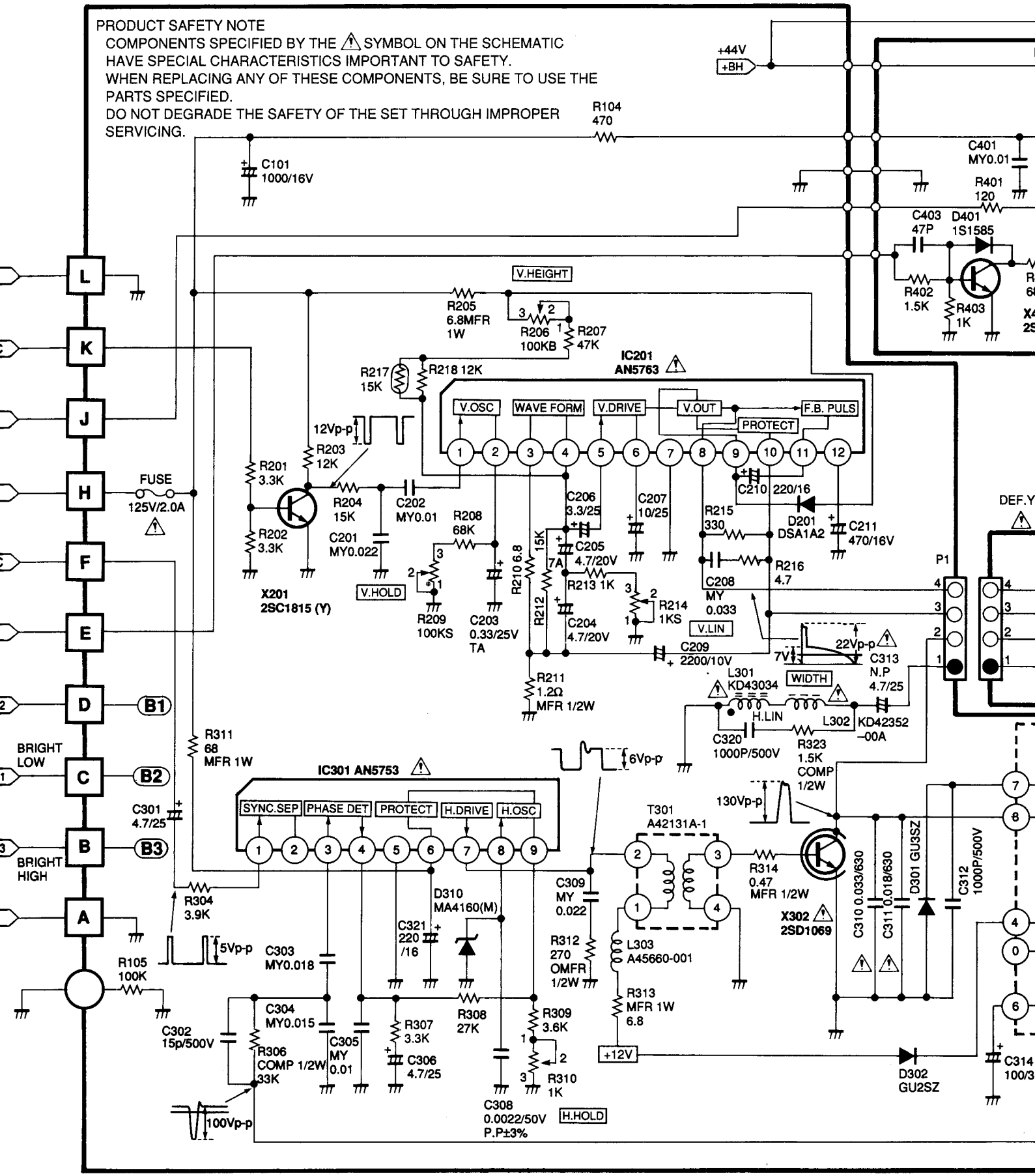

CRT +12V REGULATOR & POWER Q13 2SB1015 Q15, Q16 2SC2458
+12V REGULATOR Q12 2SB909M Q17, Q18 2SC2458
+12V
-5V
+5V
ERROR DETECTOR IC2 µPC1093J
FTC D11 1SV149C IC60 MC14577BF
A/D IC57, IC58 NE521D
DIGITAIZER IC55, IC64 TC74AC74F
SAMPLING IC59 SC-1233
IR IC46 SC-1229
ES IC4c, IC4d TC74HC08AF IC38 µPD74HC123AGS
PPI video RAM R.M.W IC49 SC-1230
FTC control IC306 µPC358G2-T1
SAMPLING MEMORY IC37 HM6268P-25
SAMPLING ADDRESS COUNTER IC42, IC43 TC74HC161AF
ADDRESS END DETECT IC48 SC-1235
X axis address counter IC31, IC32, IC33 TC74HC191AF
address selecter IC51 TC74AC245F IC62, IC63 TC74AC573F
Y axis address counter IC34, IC35, IC36 TC74HC191AF
SAMPLING CLOCK OSC X3 DOC-431CC 62.160MHz
Sampling, Memory, Read/write, Timming control
RAM control signal selector IC47 SC-1232
PPI, PLOT, Memory, R.M.W, Timing generator
PPI, X-Y address count, Clock generator
PLOT video RAM R.M.W IC44 SC-1228
DELAY CONTROL IC61 µPC358G2 IC69 TA78L08S
DELAY IC50 µPD74HC123AGS
IC54 XC3020-70PC84C
IC45 SX-1188 SUB CPU
BUFF IC29 µPC358G2
WAVE FORM SHAPING IC50 µPD74HC123AGS
torigger genelator
sin/cos data generator
RANGE CONTROL
HM SIGNAL DETECT Q8 RN1404 D12 RD6.2M B2 IC3 TC74HC14AF
bearing pulse counter
Tx/STBY control
BP SIGNAL DETECT IC3 TC74HC14AF
BP arror detect
serial I/O
D/A IC25 µPD6325G
IC26 TM82C54M -2
IC10 HD64180R1P6 MAIN CPU
BUFF IC28 HD74LS06FP
Syncronous Serial I/O
Asynchronous Serial I/O
ALARM ZONE COUNTER 1
ALARM ZONE COUNTER 2
NMEA RECEIVER IC6 PC817D
Asynchronous Serial I/O
Interrupt control
N+1 COUNTER
A/D IC8 MB4052PF-G-BND
PIO parallel I/O IC9 TMP82C255AN-2Z
Interval Timer
CPU
ALARM CONTACT RL1 MZ-12HG
ADDRESS DECORDER IC14 SC-1226
RESET & CLOCK OSC IC7 S-8054ALR-LN X1 DOC-492 12.288MHz
BEEP OSC & DRIVER IC29, IC30 µPC358G2
ROM IC12 HM6264ALFP-15LD
RAM IC13 SC-1234

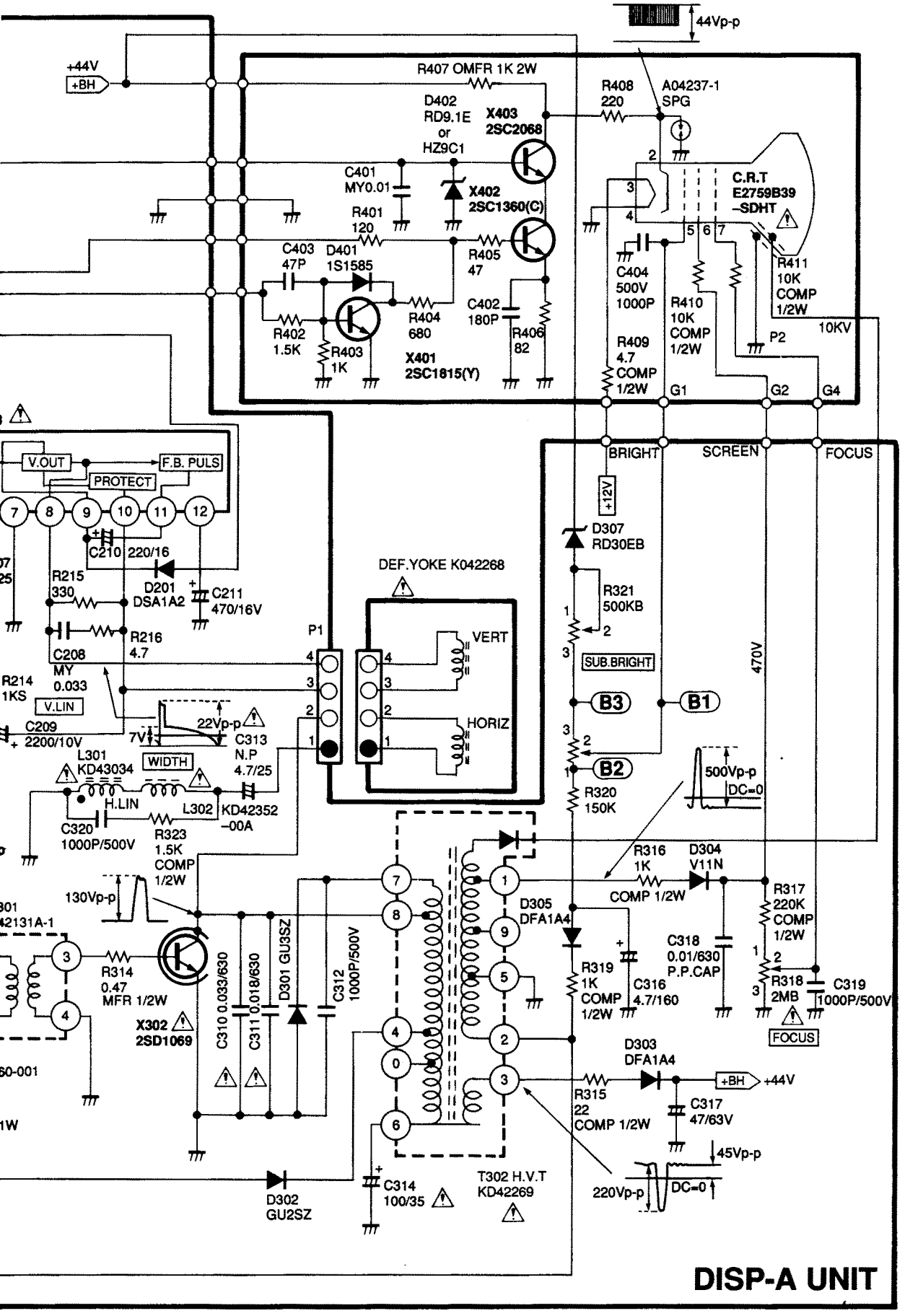

DIGITAIZER IC55, IC64 TC74AC74F
SAMPLING IC59 SC-1233
IR IC46 SC-1229
ES IC4c, IC4d TC74HC08AF IC38 µPD74HC123AGS
PPI video RAM R.M.W IC49 SC-1230
PPI video memory IC53 M5M482128AJ-8
Shift register IC39, IC40 TC74AC166F
VIDEO D/A convert IC17 SC-1227
BUFF Q1, Q2 2SC2712
SAMPLING MEMORY IC37 HM6268P-25
X axis address counter IC31, IC32, IC33 TC74HC191AF
address selecter IC51 TC74AC245F IC62, IC63 TC74AC573F
SAMPLING ADDRESS COUNTER IC42, IC43 TC74HC161AF
ADDRESS END DETECT IC48 SC-1235
Y axis address counter IC34, IC35, IC36 TC74HC191AF
DISP-A UNIT
+12V
TV.VIDEO
HSYNC
VSYNC
BRIGHT
DIM.B
CRT
Sampling, Memory, Read/write, Timming control
RAM control signal selector IC47 SC-1232
PPI, PLOT, Memory, R.M.W, Timing generator
PLOT video memory IC52 M5M482128AJ-8
Shift register IC41 TC74AC166F
PPI, X-Y address count, Clock generator
PLOT video RAM R.M.W IC44 SC-1228
IC54 XC3020-70PC84C
IC45 SX-1188 SUB CPU
torigger genelator
sin/cos data generator
RANGE CONTROL
TEXT video memory IC27 M5M482128AJ-8
Shift register IC31, IC32 TC74HC191AF
bearing pulse counter
Tx/STBY control
L address latch IC16 TC74AC573F
BP arror detect
serial I/O
C address latch IC15 TC74AC573F
RAM control signal generator IC20 TC74AC175F IC21, IC22, IC65 TC74AC174F IC24 SC-1231
CRT control signal generator IC23 TC74HC175AF
IC26 TM82C54M-2
IC10 HD64180R1P6 MAIN CPU
ALARM ZONE COUNTER 1
ALARM TERGET DETECTER IC4 TC74HC08AF IC18 TC74HC74AF
Syncronous Serial I/O
Asynchronous Serial I/O
ALARM ZONE COUNTER 2
Asynchronous Serial I/O
Interrupt control
GDC (Graphic Display Generator) IC11 µPD72020C
N+1 COUNTER
PIO parallel I/O IC9 TMP82C255AN-2Z
Interval Timer
CPU
ADDRESS DECORDER IC14 SC-1226
RESET & CLOCK OSC IC7 S-8054ALR-LN X1 DOC-492 12.288MHz
VIDEO CLOCK OSC X2 DOC-49S2 40.00MHz
ROM IC12 HM6264ALFP-15LD
RAM IC13 SC-1234
CONTROL BUS
ADDRESS BUS
DATA BUS
MAIN UNIT

SECTION 10 VOLTAGE DIAGRAMS

10-1 DISPLAY-A UNIT

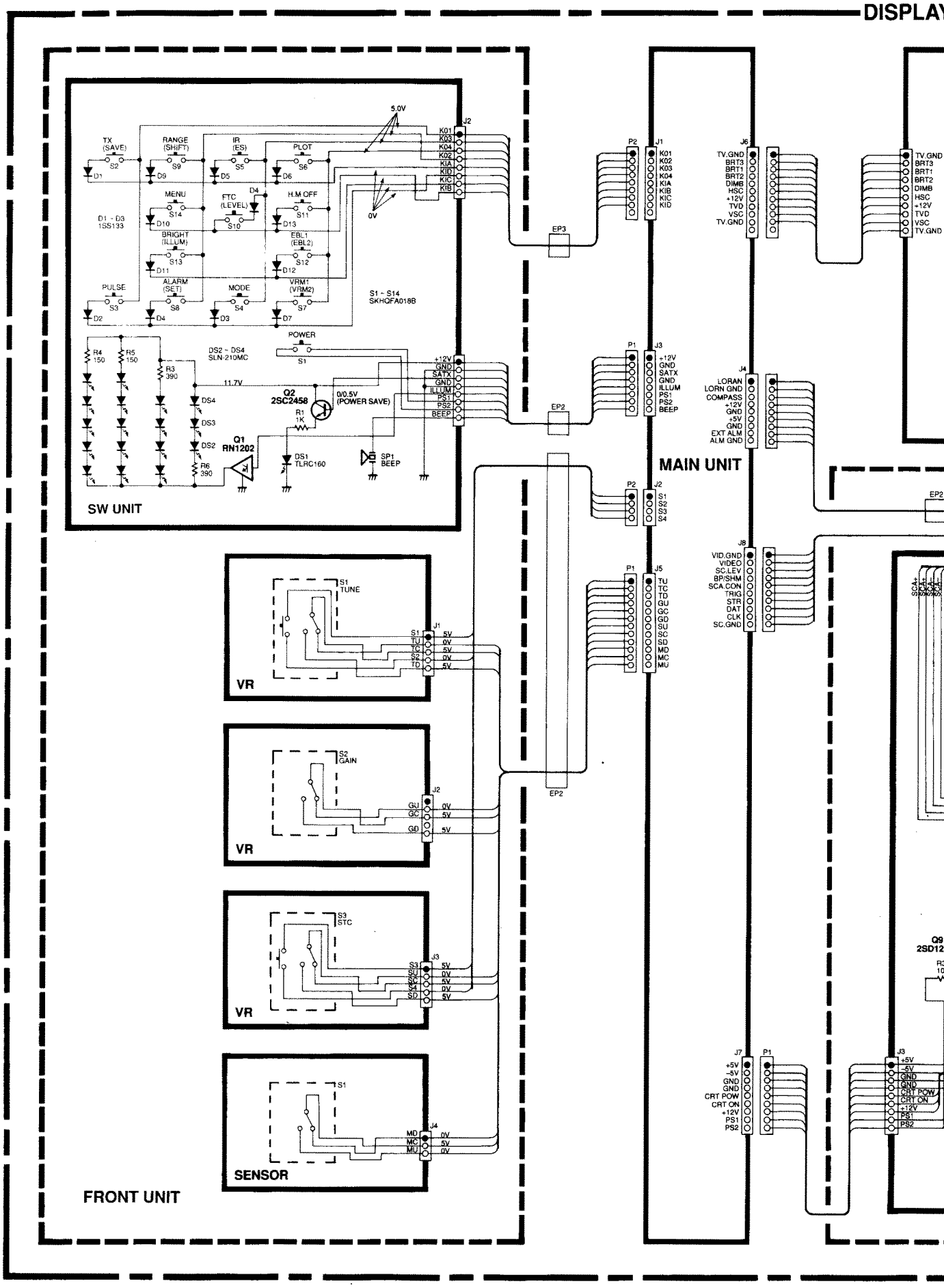


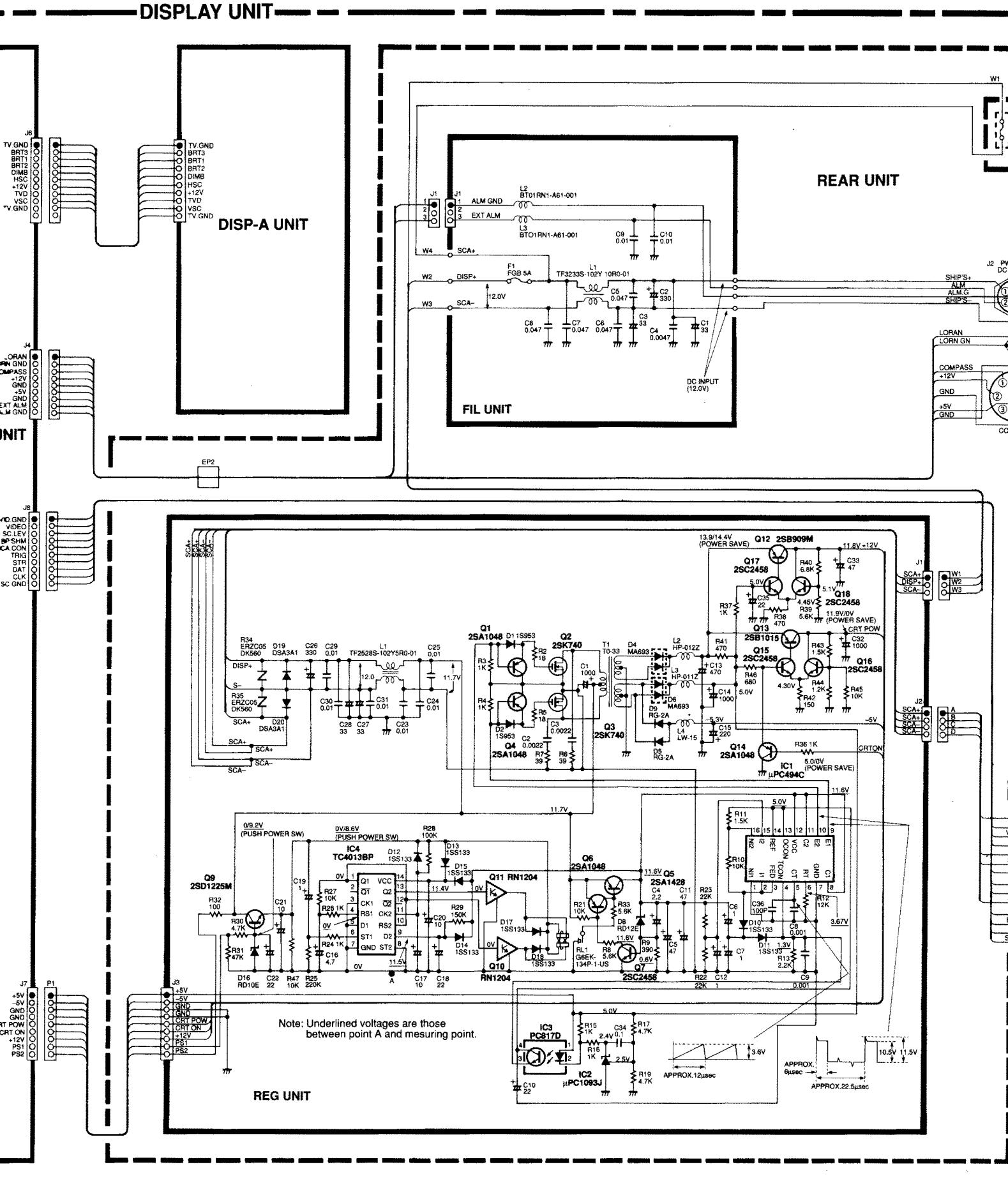

PRODUCT SAFETY NOTE
COMPONENTS SPECIFIED BY THE ⚠ SYMBOL ON THE SCHEMATIC HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, BE SURE TO USE THE PARTS SPECIFIED.
DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.
+44V
+BH
R104 470
C101 1000/16V
C401 MY0.01
R401 120
C403 47P
D401 1S1585
R402 1.5K
R403 1K
V.HEIGHT
R205 6.8MFR 1W
R206 100KB
R207 47K
IC201 AN5763
R217 15K
R218 12K
V.OSC
WAVE FORM
V.DRIVE
V.OUT
F.B. PULS
PROTECT
12Vp-p
R203 12K
R201 3.3K
R202 3.3K
FUSE 125V/2.0A
R204 15K
C202 MY0.01
C201 MY0.022
V.HOLD
R208 68K
R209 100KS
C203 0.33/25V TA
X201 2SC1815 (Y)
C206 3.3/25
C205 4.7/20V
R210 6.8
15K
7A
R212
C204 4.7/20V
R213 1K
R214 1KS
V.LIN
C207 10/25
C210 220/16
R215 330
D201 DSA1A2
C211 470/16V
C208 MY 0.033
R216 4.7
C209 2200/10V
7V
22Vp-p
C313 N.P 4.7/25
L301 KD43034
WIDTH
H.LIN
L302
KD42352 -00A
C320 1000P/500V
R323 1.5K COMP 1/2W
R211 1.2Ω MFR 1/2W
P1
DEF.Y
BRIGHT LOW
BRIGHT HIGH
R311 68 MFR 1W
IC301 AN5753
SYNC.SEP
PHASE DET
PROTECT
H.DRIVE
H.OSC
6Vp-p
130Vp-p
T301 A42131A-1
C301 4.7/25
R304 3.9K
5Vp-p
R105 100K
C303 MY0.018
D310 MA4160(M)
C321 220 /16
C309 MY 0.022
R312 270 OMFR 1/2W
L303 A45660-001
R313 MFR 1W 6.8
R314 0.47 MFR 1/2W
X302 2SD1069
C310 0.033/630
C311 0.018/630
D301 GU3SZ
C312 1000P/500V
C304 MY0.015
C302 15p/500V
R306 COMP 1/2W 33K
C305 MY 0.01
R307 3.3K
C306 4.7/25
R308 27K
R309 3.6K
R310 1K
C308 0.0022/50V P.P±3%
H.HOLD
100Vp-p
+12V
D302 GU2SZ
C314 100/3

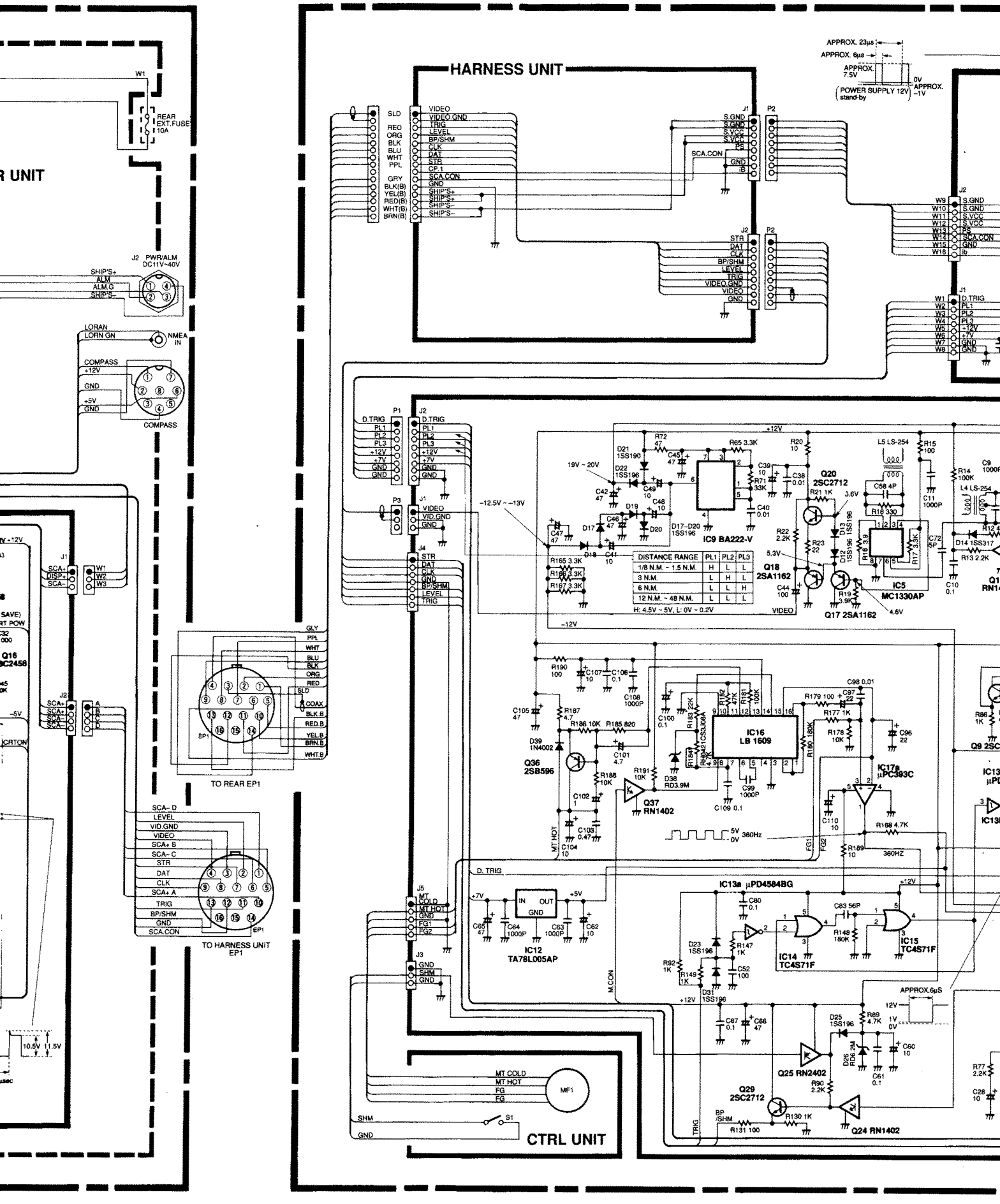

44Vp-p
+44V
+BH
R407 OMFR 1K 2W
D402
RD9.1E
or
HZ9C1
X403
2SC2068
R408
220
A04237-1
SPG
C401
MY0.01
X402
2SC1360(C)
R401
120
C403
47P
D401
1S1585
R405
47
C.R.T
E2759B39
-SDHT
C404
500V
1000P
R410
10K
COMP
1/2W
R411
10K
COMP
1/2W
10KV
P2
R402
1.5K
R403
1K
R404
680
C402
180P
R406
82
X401
2SC1815(Y)
R409
4.7
COMP
1/2W
G1
G2
G4
BRIGHT
SCREEN
FOCUS
+12V
D307
RD30EB
R321
500KB
SUB.BRIGHT
B3
B1
B2
R320
150K
500Vp-p
DC=0
470V
V.OUT
F.B. PULS
PROTECT
C210 220/16
D201
DSA1A2
C211
470/16V
R215
330
R216
4.7
C208
MY
0.033
V.LIN
C209
2200/10V
7V
22Vp-p
C313
N.P
4.7/25
L301
KD43034
WIDTH
H.LIN
L302
KD42352
-00A
C320
1000P/500V
R323
1.5K
COMP
1/2W
P1
DEF.YOKE K042268
VERT
HORIZ
130Vp-p
R316
1K
COMP 1/2W
D304
V11N
D305
DFA1A4
R317
220K
COMP
1/2W
C318
0.01/630
P.P.CAP
R319
1K
COMP
1/2W
C316
4.7/160
R318
2MB
C319
1000P/500V
FOCUS
R314
0.47
MFR 1/2W
X302
2SD1069
C310 0.033/630
C311 0.018/630
D301 GU3SZ
C312
1000P/500V
D303
DFA1A4
+BH
+44V
R315
22
COMP 1/2W
C317
47/63V
45Vp-p
220Vp-p
DC=0
D302
GU2SZ
C314
100/35
T302 H.V.T
KD42269

DISP-A UNIT

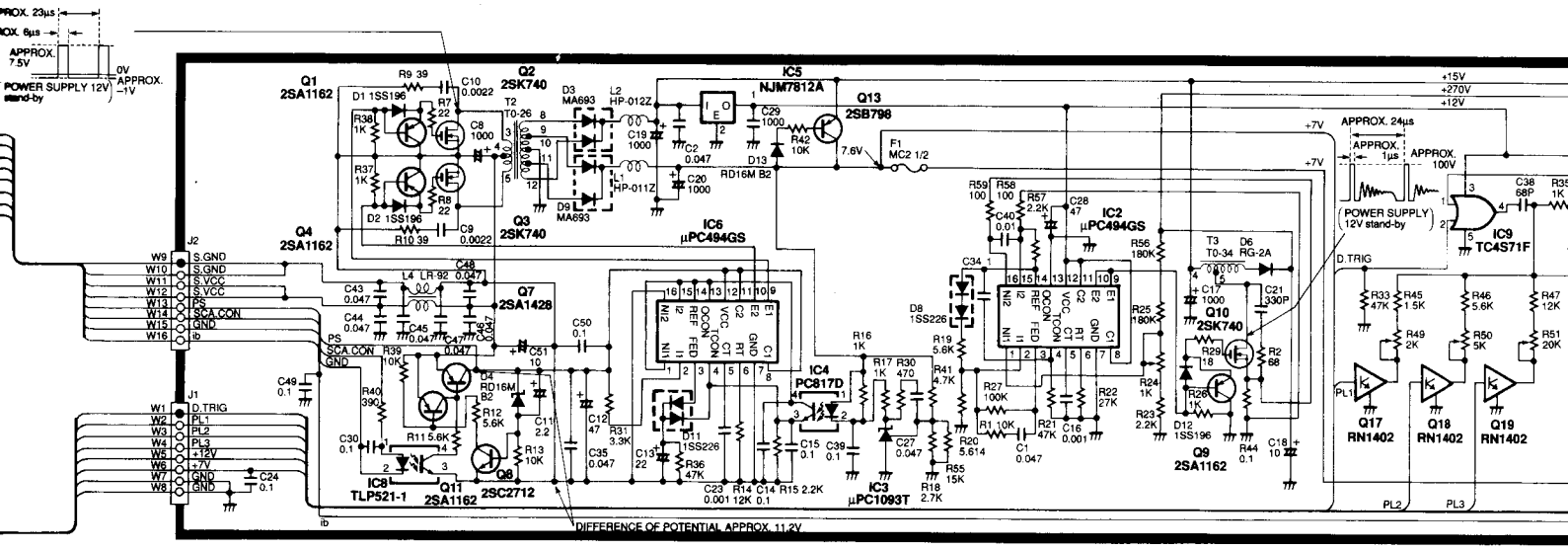
10-2 WHOLE CIRCUIT DIAGRAM

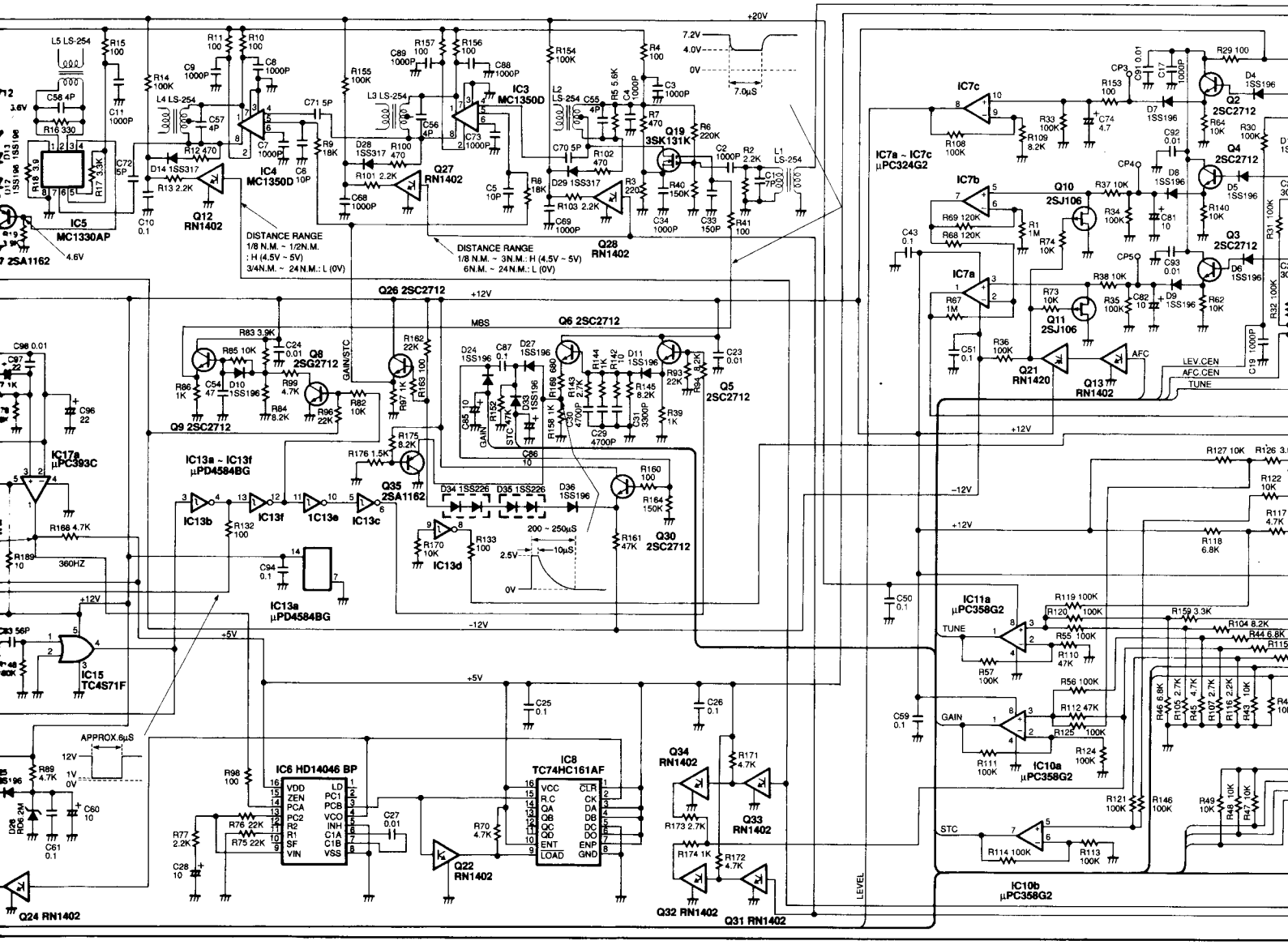


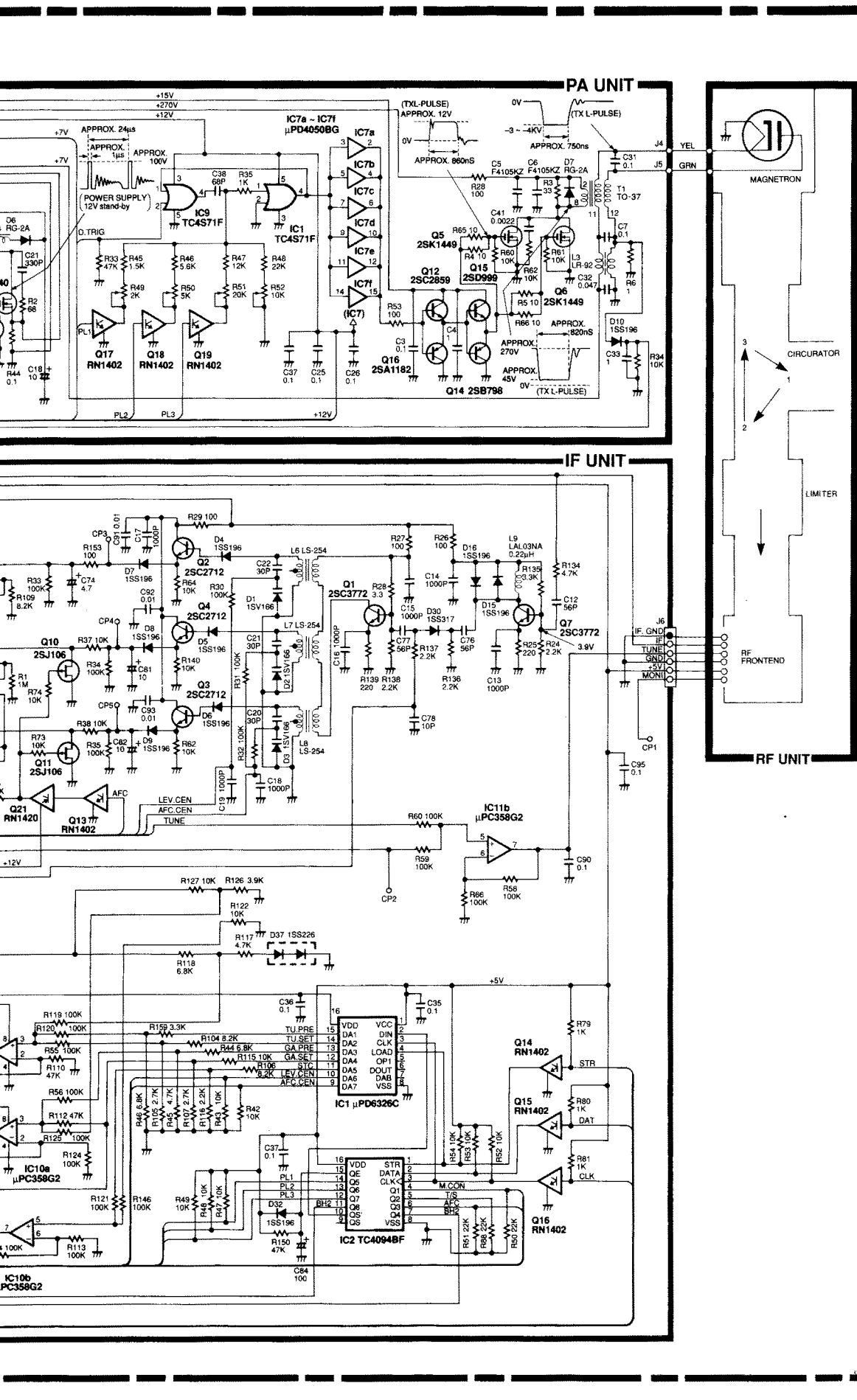

DISPLAY UNIT
DISP-A UNIT
REAR UNIT
FIL UNIT
REG UNIT
J6
J4
J8
J7
P1
J3
J1
J2
W1
W2
W3
W4
EP2
TV.GND
BRT3
BRT1
BRT2
DIMB
HSC
+12V
TVD
VSC
ALM GND
EXT ALM
SCA+
DISP+
SCA–
F1
FGB 5A
TF3233S-102Y 10R0-01
L1
L2
BT01RN1-A61-001
L3
BTO1RN1-A61-001
12.0V
DC INPUT
(12.0V)
SHIP'S+
ALM
ALM.G
SHIP'S-
LORAN
LORN GN
COMPASS
GND
+5V
Q1 2SA1048
Q2 2SK740
Q3 2SK740
Q4 2SA1048
Q5 2SA1428
Q6 2SA1048
Q7 2SC2458
Q9 2SD1225M
Q10 RN1204
Q11 RN1204
Q12 2SB909M
Q13 2SB1015
Q14 2SA1048
Q15 2SC2458
Q16 2SC2458
Q17 2SC2458
Q18 2SC2458
IC1 µPC494C
IC2 µPC1093J
IC3 PC817D
IC4 TC4013BP
13.9/14.4V (POWER SAVE)
11.8V +12V
5.0V/0V (POWER SAVE)
CRT POW
CRTON
0V/9.2V (PUSH POWER SW)
0V/8.6V (PUSH POWER SW)
11.7V
11.6V
11.4V
3.67V
APPROX.12µsec
APPROX.22.5µsec
APPROX. 6µsec
10.5V 11.5V
Note: Underlined voltages are those between point A and mesuring point.


HARNESS UNIT
W1
REAR EXT.FUSE 10A
J2 PWR/ALM DC11V~40V
SHIP'S+
ALM
ALM G
SHIP'S-
LORAN
LORN GN
NMEA IN
COMPASS
+12V
GND
+5V
GND
COMPASS
TO REAR EP1
TO HARNESS UNIT EP1
SCA- D
LEVEL
VID.GND
VIDEO
SCA+ B
SCA- C
STR
DAT
CLK
SCA+ A
TRIG
BP/SHM
GND
SCA.CON
SLD
REO
ORG
BLK
BLU
WHT
PPL
GRY
BLK(B)
YEL(B)
RED(B)
WHT(B)
BRN(B)
VIDEO
VIDEO.GND
TRIG
LEVEL
BP/SHM
CLK
DAT
STR
CP.1
SCA.CON
GND
SHIP'S+
SHIP'S+
SHIP'S-
SHIP'S-
S.GND
S.GND
S.VCC
S.VCC
PS
SCA.CON
GND
IB
APPROX. 23µs
APPROX. 6µs
APPROX. 7.5V
0V
APPROX. -1V
POWER SUPPLY 12V stand-by
D.TRIG
PL1
PL2
PL3
+12V
+7V
GND
GND
VIDEO
VID.GND
GND
STR
DAT
CLK
GND
BP/SHM
LEVEL
TRIG
-12.5V ~ -13V
19V ~ 20V
IC9 BA222-V
Q20 2SC2712
Q18 2SA1162
Q17 2SA1162
IC5 MC1330AP
DISTANCE RANGE
1/8 N.M. ~ 1.5 N.M.
3 N.M.
6 N.M.
12 N.M. ~ 48 N.M.
H: 4.5V ~ 5V, L: 0V ~ 0.2V
IC16 LB 1609
Q36 2SB596
Q37 RN1402
IC17a µPC393C
IC13a µPD4584BG
IC12 TA78L005AP
IC14 TC4S71F
IC15 TC4S71F
Q25 RN2402
Q29 2SC2712
Q24 RN1402
360Hz
360HZ
APPROX.6µS
MT COLD
MT HOT
FG
FG
MF1
SHM
GND
S1
CTRL UNIT
10.5V
11.5V

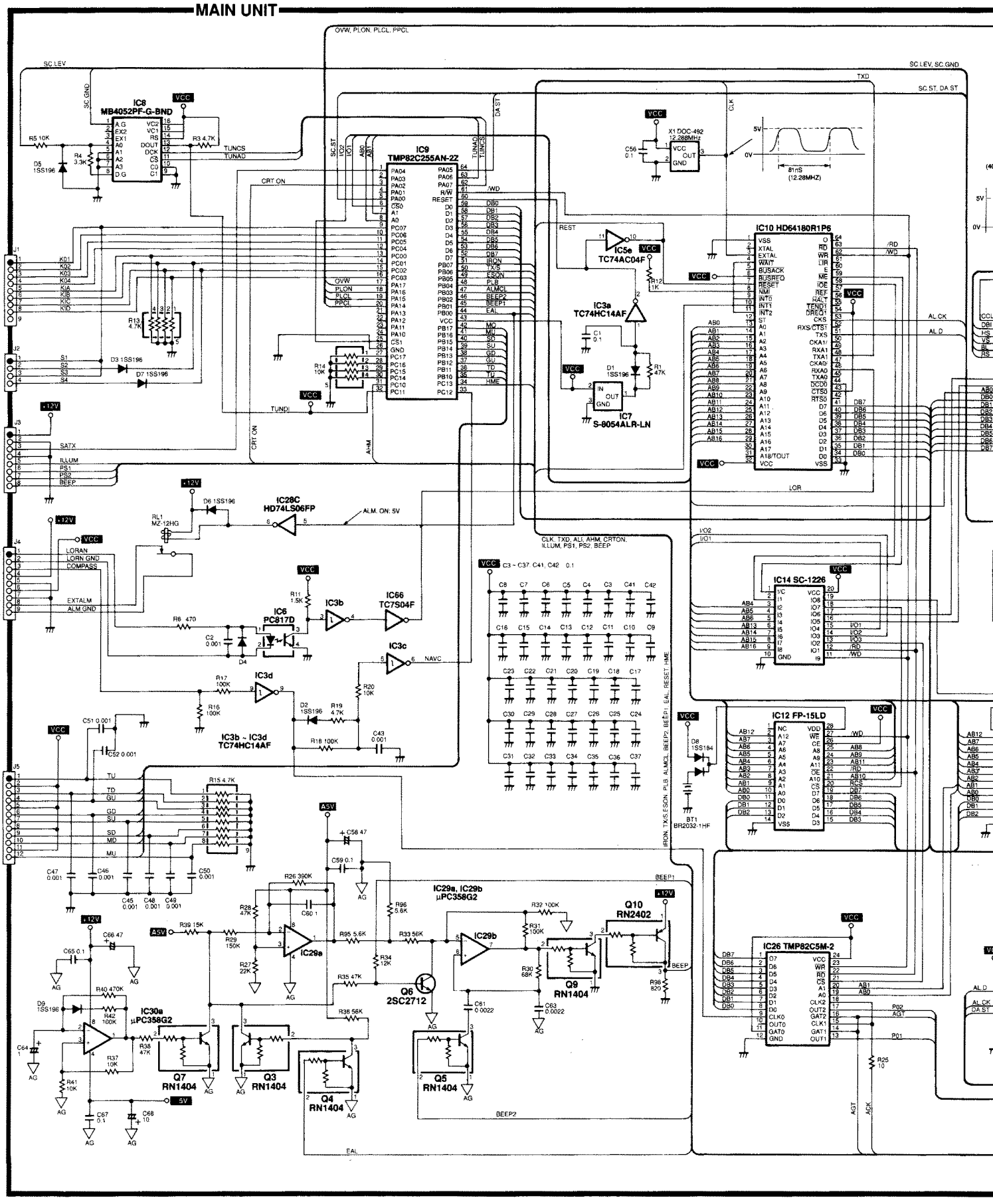
SCANNER UNIT

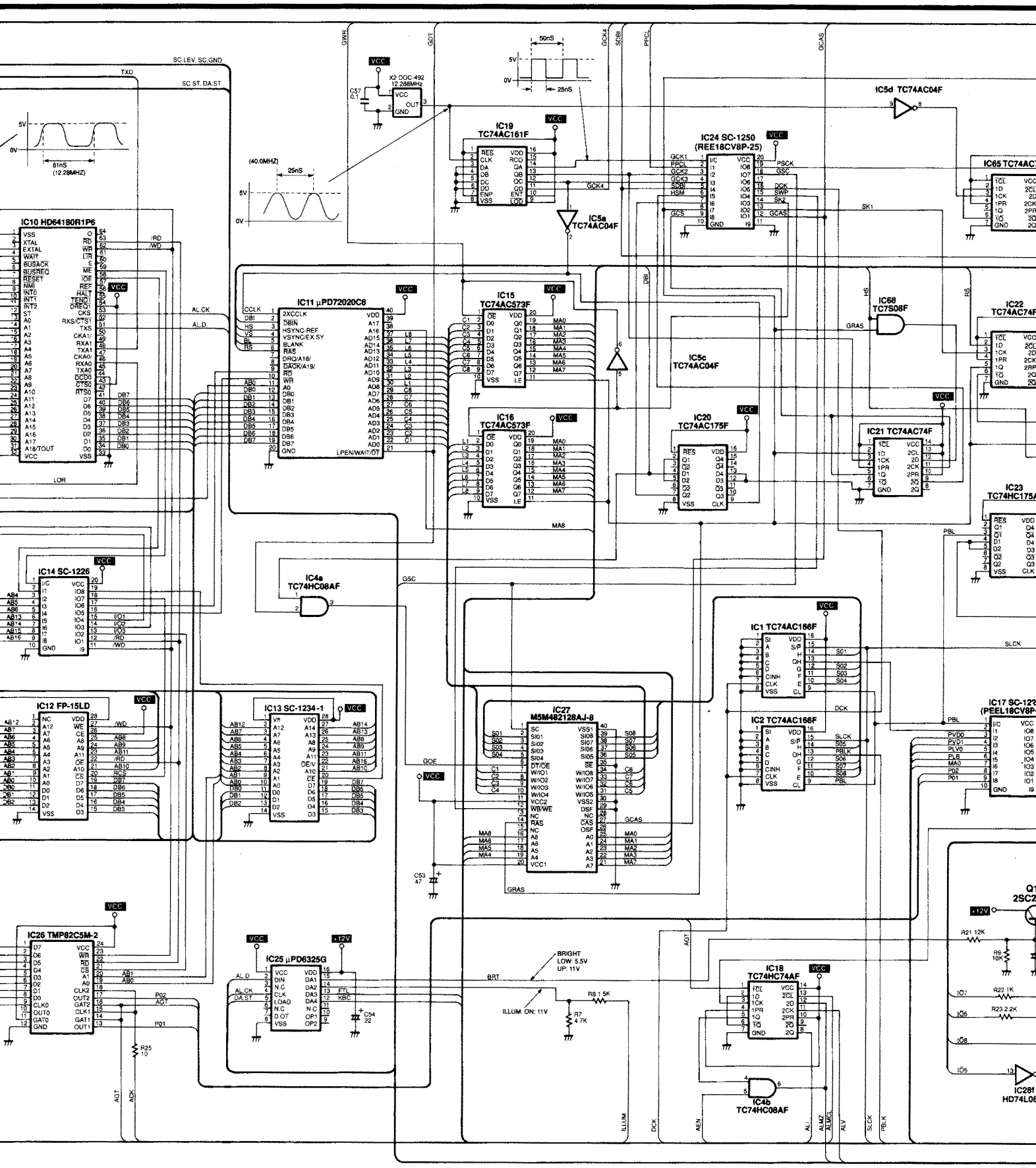


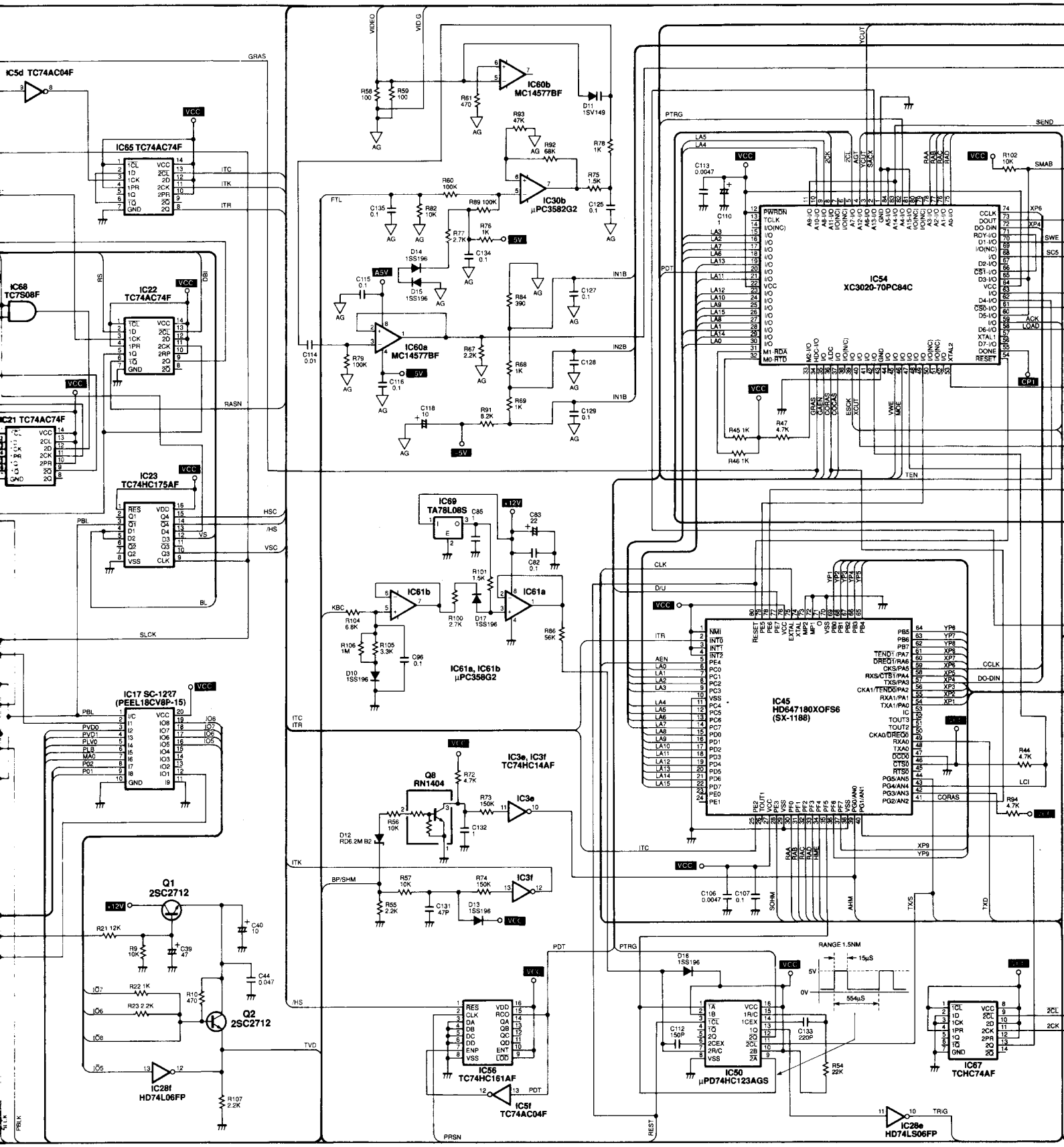


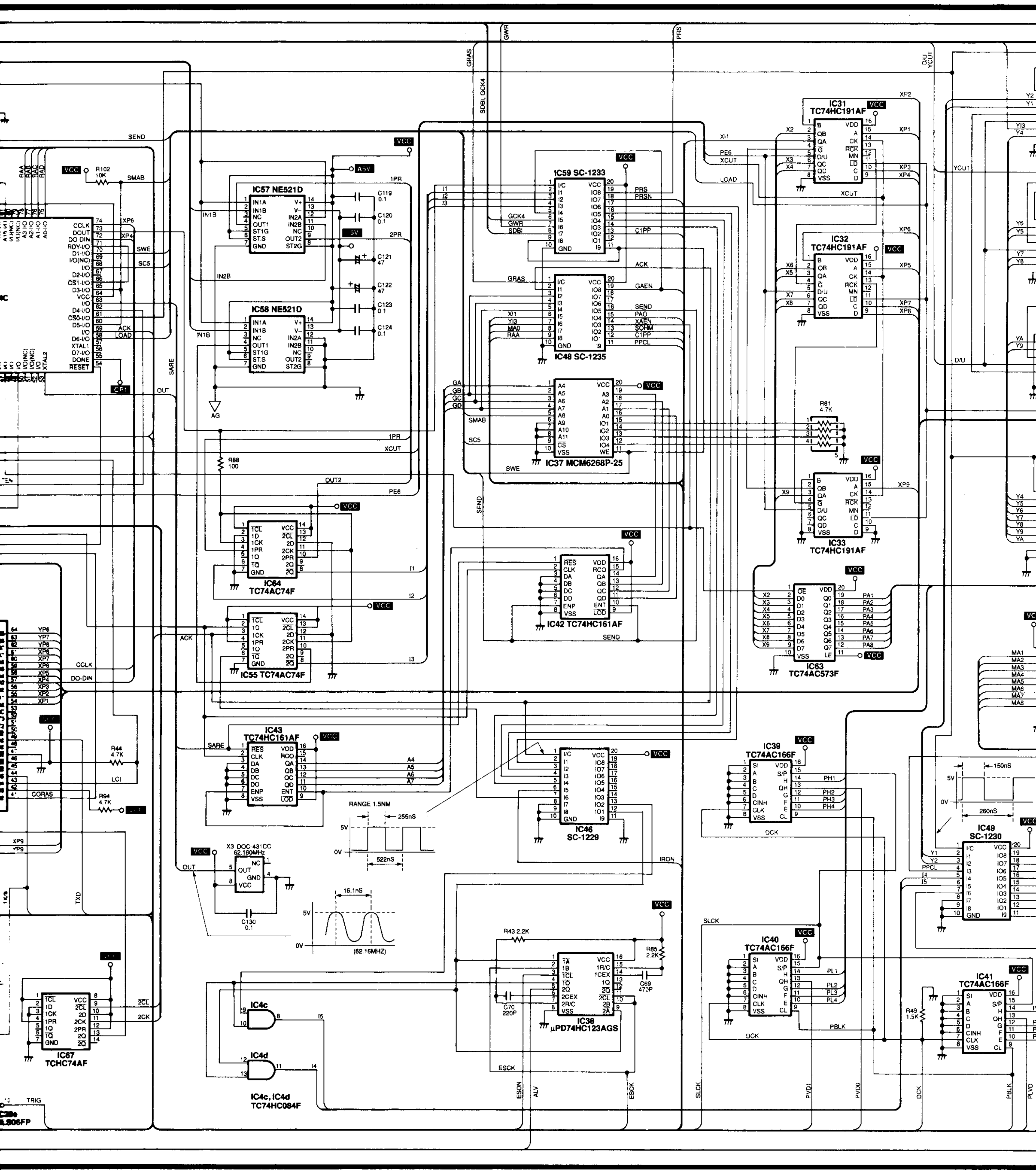

PA UNIT
IF UNIT
RF UNIT
MAGNETRON
CIRCURATOR
LIMITER
RF FRONTEND
IC1 µPD6326C
IC2 TC4094BF
IC7a ~ IC7f µPD4050BG
IC9 TC4S71F
IC1 TC4S71F
IC10a µPC358G2
IC10b µPC358G2
IC11b µPC358G2
Q1 2SC3772
Q2 2SC2712
Q3 2SC2712
Q4 2SC2712
Q5 2SK1449
Q6 2SK1449
Q7 2SC3772
Q10 2SJ106
Q11 2SJ106
Q12 2SC2859
Q13 RN1402
Q14 2SB798
Q14 RN1402
Q15 2SD999
Q15 RN1402
Q16 2SA1182
Q16 RN1402
Q17 RN1402
Q18 RN1402
Q19 RN1402
Q21 RN1420
POWER SUPPLY 12V stand-by
(TXL-PULSE) APPROX. 12V
(TX L-PULSE)
APPROX. 750ns
APPROX. 860nS
APPROX. 820nS
APPROX. 270V
APPROX. 45V
APPROX. 24µs
APPROX. 100V
D.TRIG
PL1
PL2
PL3
+15V
+270V
+12V
+7V
+5V
0V
J4 YEL
J5 GRN
J6 IF. GND IF TUNE GND +5V MONI
CP1
CP2
CP3
CP4
CP5
LEV.CEN
AFC.CEN
TUNE
AFC
STR
DAT
CLK
M.CON
T/S
AFC
BH2
TU.PRE
TU.SET
GA.PRE
GA.SET
STC
T1 TO-37
L3 LR-92
L6 LS-254
L7 LS-254
L8 LS-254
L9 LAL03NA 0.22µH

10-3 MAIN UNIT

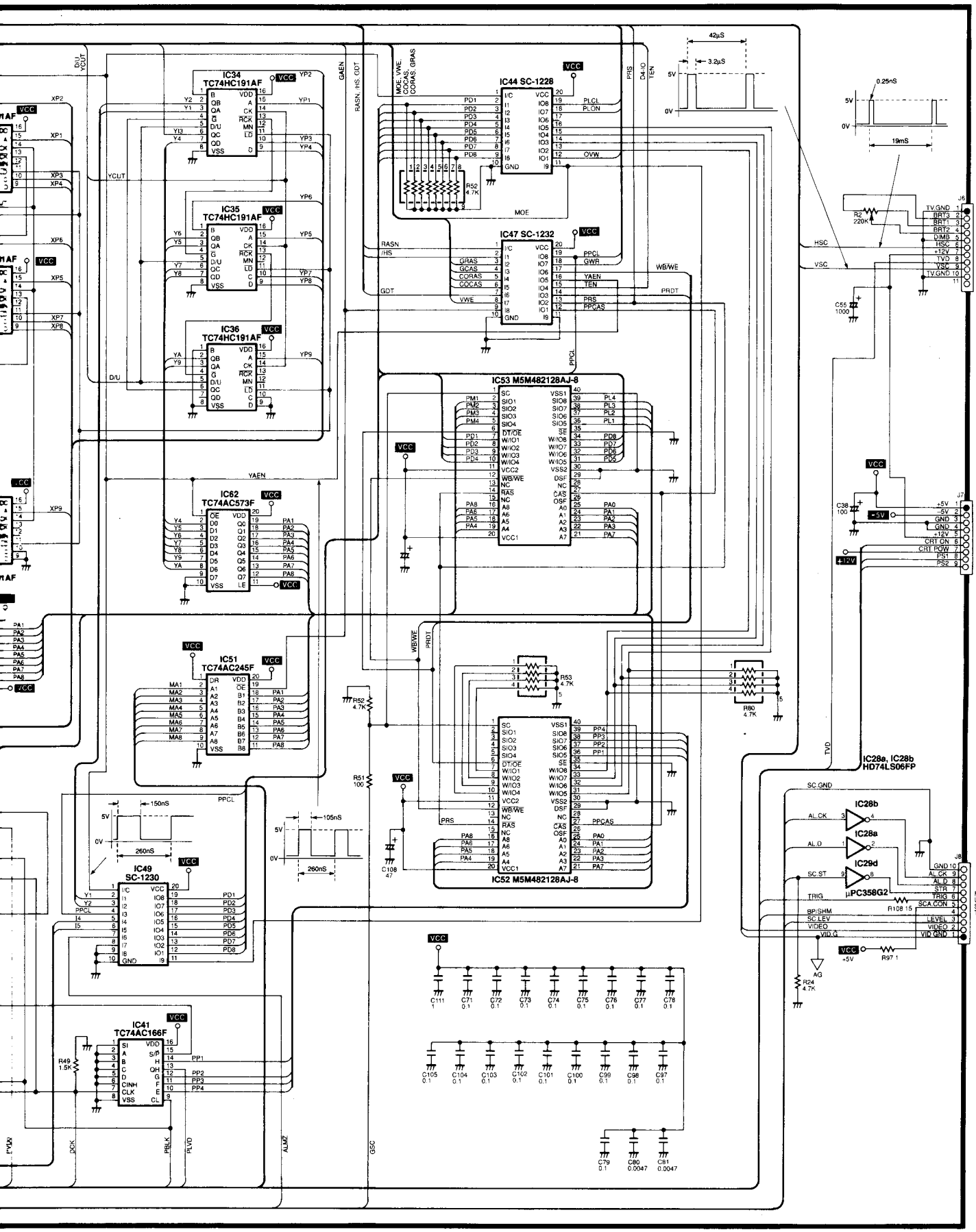



IC10 HD64180R1P6
IC11 µPD72020C8
IC14 SC-1226
IC12 FP-15LD
IC13 SC-1234-1
IC26 TMP82C5M-2
IC25 µPD6325G
IC15 TC74AC573F
IC16 TC74AC573F
IC19 TC74AC161F
IC24 SC-1250 (REE18CV8P-25)
IC27 M5M482128AJ-8
IC1 TC74AC166F
IC2 TC74AC166F
IC18 TC74HC74AF
IC20 TC74AC175F
IC21 TC74AC74F
IC22 TC74AC74F
IC23 TC74HC175A
IC5a TC74AC04F
IC5c TC74AC04F
IC5d TC74AC04F
IC4a TC74HC08AF
IC4b TC74HC08AF
IC68 TC7S08F
IC65 TC74AC
X2 DOC-492 12.288MHz
SC.LEV, SC.GND
SC.ST, DA.ST
TXD
LOR
AL.CK
AL.D
/RD
/WD
GWR
GDT
GCK4
SDB
PPCL
GCAS
DBI
HS
RS
GRAS
SK1
GSC
GOE
SLCK
DCK
PBL
AGT
ACK
BRT
BRIGHT LOW: 5.5V UP: 11V
ILLUM. ON: 11V
ILLUM
AEN
ALU
ALMZ
ALMCL
ALV
PBLK
+12V
VCC
50nS
25nS
81nS (12.28MHZ)
(40.0MHZ)


IC5d TC74AC04F
IC65 TC74AC74F
IC68 TC7S08F
IC22 TC74AC74F
IC21 TC74AC74F
IC23 TC74HC175AF
IC17 SC-1227 (PEEL18CV8P-15)
IC60b MC14577BF
IC30b µPC3582G2
IC60a MC14577BF
IC69 TA78L08S
IC61b
IC61a
IC61a, IC61b µPC358G2
IC3e, IC3f TC74HC14AF
IC3e
IC3f
Q8 RN1404
Q1 2SC2712
Q2 2SC2712
IC28f HD74L06FP
IC56 TC74HC161AF
IC5f TC74AC04F
IC54 XC3020-70PC84C
IC45 HD647180XOFS6 (SX-1188)
IC50 µPD74HC123AGS
IC67 TCHC74AF
IC28e HD74LS06FP
VCC
GRAS
RASN
HSC
/HS
VSC
VS
BL
SLCK
PBL
ITC
ITK
ITR
BP/SHM
TVD
/HS
PDT
PTRG
PRSN
REST
TRIG
SEND
SMAB
SWE
SCS
ACK
LOAD
TEN
CCLK
DO-DIN
CORAS
LCI
RANGE 1.5NM
15µS
554µS
5V
0V



IC57 NE521D
IC58 NE521D
IC59 SC-1233
IC48 SC-1235
IC37 MCM6268P-25
IC31 TC74HC191AF
IC32 TC74HC191AF
IC33 TC74HC191AF
IC64 TC74AC74F
IC55 TC74AC74F
IC42 TC74HC161AF
IC63 TC74AC573F
IC43 TC74HC161AF
IC46 SC-1229
IC39 TC74AC166F
IC40 TC74AC166F
IC41 TC74AC166F
IC49 SC-1230
IC38 µPD74HC123AGS
IC4c
IC4d
IC4c, IC4d TC74HC084F
IC67 TCHC74AF
X3 DOC-431CC 62.160MHz
RANGE 1.5NM
255nS
522nS
16.1nS
(62.16MHZ)
150nS
260nS
R102 10K
R88 100
R81 4.7K
R44 4.7K
R94 4.7K
R43 2.2K
R85 2.2K
R49 1.5K
C119 0.1
C120 0.1
C121 47
C122 47
C123 0.1
C124 0.1
C130 0.1
C69 470P
C70 220P
VCC
A5V
5V
AG
SEND
SMAB
SWE
SC5
ACK
LOAD
CP1
OUT
SARE
1PR
2PR
XCUT
PE6
OUT2
IN1B
IN2B
GRAS
GWR
SDBI, GCK4
PRS
PRSN
C1PP
GAEN
XAEN
SOHM
PPCL
CCLK
DO-DIN
LCI
CORAS
TXD
TRIG
IRON
SLCK
DCK
PBLK
ESCK
ESON
ALV
PVD1
PVD0
PLVD
YCUT
D/U


IC34 TC74HC191AF
IC35 TC74HC191AF
IC36 TC74HC191AF
IC44 SC-1228
IC47 SC-1232
IC53 M5M482128AJ-8
IC62 TC74AC573F
IC51 TC74AC245F
IC49 SC-1230
IC41 TC74AC166F
IC52 M5M482128AJ-8
IC28a, IC28b HD74LS06FP
IC28b
IC28a
IC29d
μPC358G2
VCC
GND
42μS
3.2μS
5V
0V
0.25nS
19mS
150nS
260nS
105nS
MOE
GAEN
RASN
/HS
GDT
VWE
PPCL
PRS
PRDT
WB/WE
YAEN
YCUT
D/U
HSC
VSC
TVD
DISP-A UNIT
REAR UNIT (REG UNIT) J3
REAR UNIT SCAN TERMINAL
R52 4.7K
R53 4.7K
R80 4.7K
R51 100
R2 220K
R49 1.5K
R24 4.7K
R108 15
R97 1
C55 1000
C38 100
C108 47
C111 1
C71 0.1
C72 0.1
C73 0.1
C74 0.1
C75 0.1
C76 0.1
C77 0.1
C78 0.1
C105 0.1
C104 0.1
C103 0.1
C102 0.1
C101 0.1
C100 0.1
C99 0.1
C98 0.1
C97 0.1
C79 0.1
C80 0.0047
C81 0.0047

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