

# FURUNO

## SERVICE MANUAL

COLOR VIDEO SOUNDER

MODEL FCV-360/361/362/363



**FURUNO ELECTRIC CO., LTD.**  
NISHINOMIYA, JAPAN

© FURUNO ELECTRIC CO., LTD.

9-52, Ashihara-cho,  
Nishinomiya, Japan 662

Telephone: 0798-65-2111  
Telefax: 0798-65-4200

Your Local Agent/Dealer

All rights reserved. Printed in Japan

FIRST EDITION : AUG 1989

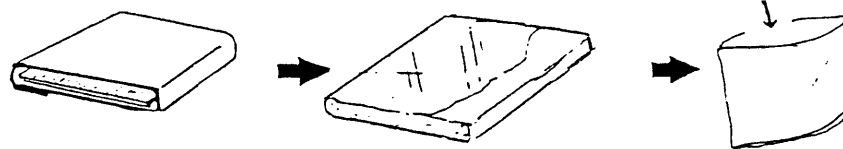
(MAUS)

PUB. No. SME-23200-A  
FCV-360 SERIES

**N O T E !!**

As the memory back-up battery is used on the DSP board, utmost care should be taken to prevent the components from being damaged due to accidental shortcircuit for transportation of the board, it is recommended to pack it in the following methods.

Method A

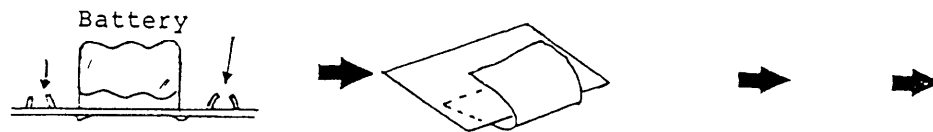


Cover the board completely with thick paper like carton. (To avoid short-circuit)

Wrap with aluminum foil. (To protect from electrostatic charge)

Put into plastic bag for transportation.

Method B



Disconnect battery by cutting a jumper wire at both side of the battery.

Cover around the battery with carton.

Wrap with aluminum foil.

Put into plastic bag.

# CONTENT

|  |                    |
|--|--------------------|
| <b>SPECIFICATIONS</b> .....                                  | <b>0-1 to 0-5</b>  |
| <b>CHAPTER 1. CIRCUIT DESCRIPTION</b> .....                  | <b>1-1 to 1-13</b> |
| <b>1.1 System Overview</b> .....                             | <b>1-1</b>         |
| <b>1.2 Transmission</b> .....                                | <b>1-7</b>         |
| 1.2.1 Keying Pulse (KP) Generation.....                      | 1-7                |
| 1.2.2 Transmitter Circuit .....                              | 1-8                |
| <b>1.3 Reception</b> .....                                   | <b>1-8</b>         |
| 1.3.1 Receiver Circuit.....                                  | 1-8                |
| 1.3.2 Detector/AD Converter Circuit .....                    | 1-9                |
| 1.3.3 Echo Data Acquisition .....                            | 1-10               |
| 1.3.4 Processing and Presentation .....                      | 1-11               |
| <b>1.4 Power Supply Circuit</b> .....                        | <b>1-12</b>        |
| 1.4.1 Power On/Off .....                                     | 1-12               |
| 1.4.2 Starting Switching Regulator.....                      | 1-12               |
| 1.4.3 Voltage Regulation .....                               | 1-13               |
| 1.4.4 Overvoltage and Overcurrent Protection.....            | 1-13               |
| 1.4.5 Power Sync Circuit .....                               | 1-13               |
| <b>CHAPTER 2. ADJUSTMENT AND CHECK</b> .....                 | <b>2-1 to 2-7</b>  |
| <b>2.1 Power Supply Circuit (PWR 02P6048)</b> .....          | <b>2-1</b>         |
| 2.1.1 Frequency Adjustment (R24) .....                       | 2-1                |
| 2.1.2 Line Voltage Adjustment and Check.....                 | 2-1                |
| <b>2.2 DSP Board (02P6070)</b> .....                         | <b>2-2</b>         |
| 2.2.1 Offset Adjustment .....                                | 2-2                |
| <b>2.3 Color Monitor</b> .....                               | <b>2-2</b>         |
| 2.3.1 Picture Size Adjustment .....                          | 2-2                |
| <b>2.4 Transceiver Board 02P6049 (for FCV-361/362)</b> ..... | <b>2-3</b>         |
| 2.4.1 Transmitter Output Voltage .....                       | 2-3                |
| 2.4.2 Frequency Check.....                                   | 2-4                |
| 2.4.3 Receiver.....  | 2-4                |
| 2.4.4 Other Adjustable Pots.....                             | 2-4                |
| <b>2.5 Transceiver Board 02P6073 (For FCV-363)</b> .....     | <b>2-5</b>         |
| 2.5.1 Transmitter Output Voltage .....                       | 2-5                |
| 2.5.2 TX Frequency Adjustment .....                          | 2-5                |
| 2.5.3 STC Adjustment (R14) .....                             | 2-5                |
| 2.5.4 TVG Effective Depth (R6).....                          | 2-6                |
| 2.5.5 Other Adjustable Pots.....                             | 2-6                |

**CHAPTER 3. CHANGE OF INTERNAL SETTING/  
MODIFICATION . . . . . 3-1 to 3-3**

    3.1 DIP Switch Setting..... 3-1

    3.2 Frequency/Output Power Alternation..... 3-2

    3.3 Remarks on Handling the pc board..... 3-3

**CHAPTER 4. FUNCTION CHECK . . . . . 4-1 to 4-7**

    4.1 System Diagnosis ..... 4-1

    4.2 DSP Board (02P6070) Check ..... 4-2

    4.3 Color Monitor Check ..... 4-2

    4.4 Transducer Check..... 4-3

**CHAPTER 5. TECHNICAL DATA . . . . . 5-1 to 5-7**

    5.1 LED Status ..... 5-1

    5.2 Board/Block compatibility ..... 5-2

    5.3 Wave form Chart ..... 5-3

**CHAPTER 6. TROUBLESHOOTING . . . . . 6-1 to 6-5**

    6.1 Finding Faulty Block (PC Board) ..... 6-2

    6.2 Power Supply Board (PWR 02P6072)..... 6-3

    6.3 Transceiver Board (TXA 02P6049/ES 02P6073) ..... 6-5

**CHAPTER 7. PARTS LOCATION . . . . . 7-1 to 7-5**

**ELECTROLYCAL PARTS LIST . . . . . P-1 to P-10**

**INTERCONNECTION DIAGRAMS . . . . . D-1 to D-4**

**SCHEMATIC DIAGRAMS . . . . . S-1 to S-10**

## SPECIFICATIONS

### 1. Display Range

Each basic range listed below can be phased in 1m (Ft,Fa,P/B) steps.

| Setting | 1  | 2  | 3   | 4   | 5   | 6    |
|---------|----|----|-----|-----|-----|------|
| Meters  | 10 | 20 | 40  | 80  | 150 | 300  |
| Feet    | 30 | 60 | 120 | 250 | 500 | 1000 |
| Fathoms | 5  | 10 | 20  | 40  | 80  | 160  |
| P/B     | 6  | 12 | 25  | 50  | 100 | 200  |

P: PASSI B:  
BRAZA

Value of each range can be operator-reprogramed in the ranges up to 2000m.  
(6000 Ft, 1000 Fathom, 1200 P/B)

### 2. Bottom-Lock Range

| Setting | 1   | 2   | 3  | 4  | 5   | 6   |
|---------|-----|-----|----|----|-----|-----|
| Meters  | 2.5 | 5   | 10 | 20 | 40  | 80  |
| Feet    | 10  | 20  | 40 | 80 | 160 | 300 |
| Fathoms | 1.2 | 2.5 | 5  | 10 | 20  | 40  |
| P/B     | 2.5 | 5   | 10 | 20 | 40  | 80  |

### 3. Automatic Bottom Tracking

Bottom tracking feature automatically phases the range so that the bottom is always displayed on the lower portion of the screen.

### 4. Display

12" rectangular color CRT. Echoes are displayed in 7 colors and the display background color is changeable in three steps.

### 5. Presentation Mode

#### Echo Sounder Picture

L or H : Normal (single frequency)

LH : Normal (dual frequency)

LB or HB : Normal & Bottom-Lock Expansion, (2/3 & 1/3)

MX : Normal & Frequency Mixed, (1/2 & 1/2)

#### Graph Picture

GRAPH : Normal & Graphic Data Logging of Water Temperature, (2/3 & 1/3)

*NOTE: Combination display of echo sounder & graph or echo sounder & memory pictures is also available.*

### 6. Picture Recording

One page of picture can be stored and recalled anytime.

### 7. Picture Advance Speed of Echo Sounder Picture

| Setting                    | 0      | 1   | 2   | 3   | 4   |
|----------------------------|--------|-----|-----|-----|-----|
| Scan Line/<br>Transmission | FREEZE | 1/6 | 1/4 | 1/2 | 1/1 |

## 8. Alarm

Either bottom alarm, fish alarm or water temperature alarm

## 9. Pulselength/Repetition Rate

Pulselength: Automatically changed from 0.2ms to 5.0ms according to display-end depth and pulse repetition rate.

Repetition Rate: Automatically changed according to display-end depth. Manual change is also possible in 11 steps.

## 10. Interference Rejection

Rejection intensity is adjustable in 3 steps.

## 11. Built-in Transceiver (for FCV-361/362/363)

Frequency: Two frequencies from 28, 50, 68, 88 and 200kHz

Output Power: 1kW (FCV-361), 2kw (FCV-362), 3kw (FVC-363)

## 12. Input/Output Data (CIF or NMEA format)

Input Data: Ship's position in L/L, ship's speed, water temperature

Output Data: Depth

## 13. Power Supply

20 to 40vdc, 120W. For AC ship's mains, optional rectifier RU-3423 is required.

## COMPLETE SET

| No | Name         | Type       | Code No.    | Q'ty | Remarks         |
|----|--------------|------------|-------------|------|-----------------|
| 1  | Display Unit |            |             | 1    |                 |
| 2  | Accessories  | FP02-02500 | 000-024-951 | 1    |                 |
| 3  | Installation | CP02-03500 | 000-024-792 |      | FCV-360         |
|    | Materials    | CP02-03700 | 000-024-794 | 1    | FCV-361/362/363 |
| 4  | Spare Parts  | SP02-02800 | 000-024-735 | 1    |                 |

## ACCESSORIES

| No. | Name       | Type        | Code No.    | Q'ty | Remarks |
|-----|------------|-------------|-------------|------|---------|
| 1   | 12" Filter | 02-083-1601 | 100-103-560 | 1    |         |
| 2   | Hood Assy  | FP-02500    | 008-223-520 | 1    |         |

## INSTALLATION MATERIALS

| No. | Name              | Type         | Code No.    | Q'ty | Remarks |
|-----|-------------------|--------------|-------------|------|---------|
| 1   | Connector         | NCS-254-P    | 000-506-505 | 2    |         |
| 2   | Connector         | NJC-203-PF   | 000-506-703 | 1    |         |
| 3   | Connector         | SRCN6A16-10P | 000-508-663 | 1    |         |
| 4   | Connector         | SRCN6A25-24P | 000-508-676 | 2    |         |
| 5   | Copper Strap      | WEA-1004     | 500-310-040 | 1    |         |
| 6   | FM Connector Assy | 80-0041      | 001-411-600 | 1    | Option  |
| 7   | Connector         | FM-143P      | 000-511-405 | 1    | Option  |

*Note: Items 6 and 7 are for connection of 200 pulses/mile speed signal.*

## TRANSDUCER & HULL BOTTOM INSTALLATION MATERIALS (OPTION)

### FCV-361

| Frequency (kHz) | Transducer (Code No.)                               | Hull Bottom Installation |                 |                              |
|-----------------|---|--------------------------|-----------------|------------------------------|
|                 |   | Ship's Hull              | Tank (Code No.) | Thru-hull Pipe (Code No.)    |
| 28/50           | 28F-8<br>(000-015-003)<br>50B-9B<br>(000-015-065)   | Steel                    | T-656           | TFB-7000(2)<br>(000-015-209) |
| 28/88           | 28F-8<br>(000-015-003)<br>88B-8<br>(000-015-024)    | Steel                    | T-657           | TFB-7000(2)<br>(000-015-209) |
| 28/200          | 28F-8<br>(000-015-003)<br>200B-8B<br>(000-015-032)  | Steel                    | T-657           | TFB-7000(2)<br>(000-015-209) |
| 50/88           | 50B-9B<br>(000-015-065)<br>88B-8<br>(000-015-024)   | Steel                    | T-658           | TFB-7000(2)<br>(000-015-209) |
| 50/200          | 50B-9B<br>(000-015-065)<br>200B-8B<br>(000-015-032) | Steel                    | T-658           | TFB-7000(2)<br>(000-015-209) |
| 88/200          | 88B-8<br>(000-015-024)<br>200B-8B<br>(000-015-032)  | Steel                    | T-659           | TFB-7000(2)<br>(000-015-209) |

### FCV-362

| Frequency (kHz) | Transducer (Code No.)                                | Hull Bottom Installation |                          |                              |
|-----------------|--|--------------------------|--------------------------|------------------------------|
|                 |  | Ship's Hull              | Tank (Code No.)          | Thru-hull Pipe (Code No.)    |
| 28/50           | 28F-18<br>(000-015-004)<br>50B-12<br>(000-015-053)   | Steel                    | T-634<br>(000-015-810)   | TFB-7000(2)<br>(000-015-209) |
|                 |  | FRP                      | T-634-F<br>(000-015-811) | TRB-1100(2)<br>(000-015-218) |
| 28/88           | 28F-18<br>(000-015-004)<br>88B-10<br>(000-015-025)   | Steel                    | T-636<br>(000-015-813)   | TFB-7000(2)<br>(000-015-209) |
|                 |  | FRP                      | T-636-F<br>(000-015-814) | TRB-1100(2)<br>(000-015-218) |
| 28/200          | 28F-18<br>(000-015-004)<br>200B-8B<br>(000-015-032)  | Steel                    | T-638<br>(000-015-818)   | TFB-7000(2)<br>(000-015-209) |
|                 |  | FRP                      | T-638-F<br>(000-015-819) | TRB-1100(2)<br>(000-015-218) |
| 50/88           | 50B-12<br>(000-015-053)<br>88B-10<br>(000-015-025)   | Steel                    | T-643<br>(000-015-821)   | TFB-7000(2)<br>(000-015-209) |
|                 |  | FRP                      | T-643-F<br>(000-015-822) | TRB-1100(2)<br>(000-015-218) |
| 50/200          | 50B-12<br>(000-015-053)<br>200B-8B<br>(000-015-032)  | Steel                    | T-645<br>(000-015-826)   | TFB-7000(2)<br>(000-015-209) |
|                 |  | FRP                      | T-645-F<br>(000-015-827) | TRB-1100(2)<br>(000-015-218) |
| 68/200          | 68F-30H<br>(000-015-073)<br>200B-8B<br>(000-015-032) | Steel                    | T-647<br>(000-015-831)   | TFB-7000(2)<br>(000-015-209) |
|                 |  | FRP                      | T-647-F<br>(000-015-832) | TRB-1100(2)<br>(000-015-218) |
| 88/200          | 88B-10<br>(000-015-025)<br>200B-8B<br>(000-015-032)  | Steel                    | T-649<br>(000-015-833)   | TFB-7000(2)<br>(000-015-209) |
|                 |  | FRP                      | T-649-F<br>(000-015-834) | TRB-1100(2)<br>(000-015-218) |
|                 |  | Wood                     | T-649-W<br>(000-015-835) | TWB-3000(2)<br>(000-015-201) |



FCV-363

| Frequency<br>(kHz) | Transducer<br>(Code No.)                               | Hull Bottom Installation |  |  |
|--------------------|--|--------------------------|--|--|
|                    |  | Ship's<br>Hull           | Tank<br>(Code No.)                                   | Thru-hull Pipe<br>(Code No.)                 |
| 28/50              | 28F-24H<br>(000-015-075)<br>50F-24H<br>(000-015-077)   | Steel                    | T-681<br>(000-015-849)                               | TFB-7000(2)<br>(000-015-209)                 |
|                    |  | FRP                      | T-681-F<br>(000-015-850)                             | TRB-1100(2)<br>(000-015-218)                 |
| 28/68              | 28F-24H<br>(000-015-075)<br>68F-30H<br>(000-015-073)   | Steel                    | T-616<br>(000-015-843)<br>T-614<br>(000-015-839)     | TFB-5000<br>(000-015-701)<br>(2PCS required) |
|                    |  | FRP                      | T-616-F<br>(000-015-844)<br>T-614-F<br>(000-015-840) | TRB-1000<br>(000-015-215)<br>(2PCS required) |
| 28/88              | 28F-24H<br>(000-015-075)<br>88F-126H<br>(000-015-068)  | Steel                    | T-682<br>(000-015-851)                               | TFB-7000(2)<br>(000-015-209)                 |
|                    |  | FRP                      | T-682-F<br>(000-015-852)                             | TRB-1100(2)<br>(000-015-218)                 |
| 28/200             | 28F-24H<br>(000-015-075)<br>200B-12H<br>(000-015-069)  | Steel                    | T-683<br>(000-015-853)                               | TFB-7000(2)<br>(000-015-209)                 |
|                    |  | FRP                      | T-683-F<br>(000-015-854)                             | TRB-1100(2)<br>(000-015-218)                 |
| 50/88              | 50F-24H<br>(000-015-077)<br>88F-126H<br>(000-015-073)  | Steel                    | T-682<br>(000-015-851)                               | TFB-7000(2)<br>(000-015-209)                 |
|                    |  | FRP                      | T-682-F<br>(000-015-852)                             | TRB-1100(2)<br>(000-015-218)                 |
| 50/200             | 50F-24H<br>(000-015-077)<br>200B-12H<br>(000-015-069)  | Steel                    | T-683<br>(000-015-853)                               | TFB-7000(2)<br>(000-015-209)                 |
|                    |  | FRP                      | T-683-F<br>(000-015-854)                             | TRB-1100(2)<br>(000-015-218)                 |
| 68/200             | 68F-30H<br>(000-015-073)<br>200B-12H<br>(000-015-069)  | Steel                    | T-646<br>(000-015-829)                               | TFB-7000(2)<br>(000-015-209)                 |
|                    |  | FRP                      | T-646-F<br>(000-015-830)                             | TRB-1100(2)<br>(000-015-218)                 |
| 88/200             | 88F-126H<br>(000-015-068)<br>200B-12H<br>(000-015-069) | Steel                    | T-685<br>(000-015-855)                               | TFB-7000(2)<br>(000-015-209)                 |
|                    |  | FRP                      | T-685-F<br>(000-015-856)                             | TRB-1100(2)<br>(000-015-218)                 |

## TRANSCEIVER UNIT (OPTION) FOR FCV-360

| Type                 | Output | Frequency | Transducer |
|----------------------|--------|-----------|------------|
| ETR-2D               | 2KW    | 15kHz     | 15F-10     |
|                      |        | 28kHz     | 28F-18     |
|                      |        | 45kHz     | 45F-6H     |
|                      |        | 50kHz     | 50B-12     |
|                      |        | 68kHz     | 68F-30H    |
|                      |        | 88kHz     | 88B-10     |
|                      |        | 150kHz    | 150B-12H   |
|                      |        | 200kHz    | 200B-8B    |
| ETR-3D               | 3KW    | 15kHz     | 15F-10x2   |
|                      |        | 28kHz     | 28F-24H    |
|                      |        | 45kHz     | 45F-12H    |
|                      |        | 50kHz     | 50F-24H*   |
|                      |        | 68kHz     | 68F-30H    |
|                      |        | 88kHz     | 88F-126H   |
|                      |        | 150kHz    | 150B-12H   |
|                      |        | 200kHz    | 200B-12H   |
| ETR-5D1<br>ETR-5D2   | 5KW    | 15kHz     | 15F-10x2   |
|                      |        | 28kHz     | 28F-38M    |
|                      |        | 50kHz     | 50F-38     |
|                      |        | 88kHz     | 88F-126H   |
|                      |        | 200kHz    | 200B-12H   |
| ETR-10D1<br>ETR-10D2 | 10KW   | 15kHz     | 15F-10x2   |
|                      |        | 28kHz     | 28F-72     |
|                      |        | 50kHz     | 50F-70     |
|                      |        | 88kHz     | 88F-126H   |
|                      |        | 200kHz    | 200B-12H   |

\* Matching box MB-3 is required to use the ground discrimination transducer 50F-8G.

## CHAPTER 1. CIRCUIT DESCRIPTION

### 1.1 System Overview

The FCV-360 series color video sounders are composed of major blocks shown in the system diagram on page 1-2. The four models, FCV-360/361/362/363, differs only in the echo sounder block, and one model can be converted to another model by simply replacing it. The echo sounder blocks in the FCV-361 (1kW) and FCV-362 (2kW) are compatible with the ones used in the FCV-251/261 (1kW) and FCV-252/262 (2kW) respectively.

The DSP board incorporates two microcomputers, SUB and MAIN, for enhanced processing speed. The SUB computer is a single chip MCU (Micro Computer Unit) which has built-in ROM and RAM. Its major functions are reading operator's command from the panel keys, acquiring ship's speed data and communicating with external navigation equipment in the Furuno CIF or NMEA format. It also backs up the setting data, while the equipment is off, in the built-in RAM by utilizing its low power consumption mode. The MAIN CPU incorporates 256 byte RAM but no ROM. It uses the external ROM. The main function is arithmetic processing of echo data and writing the resulting data into the video RAM via the gate array.

The video RAM has three picture pages, being processed in parallel mode. This enables instant switchover of picture pages and combined display of two picture pages.

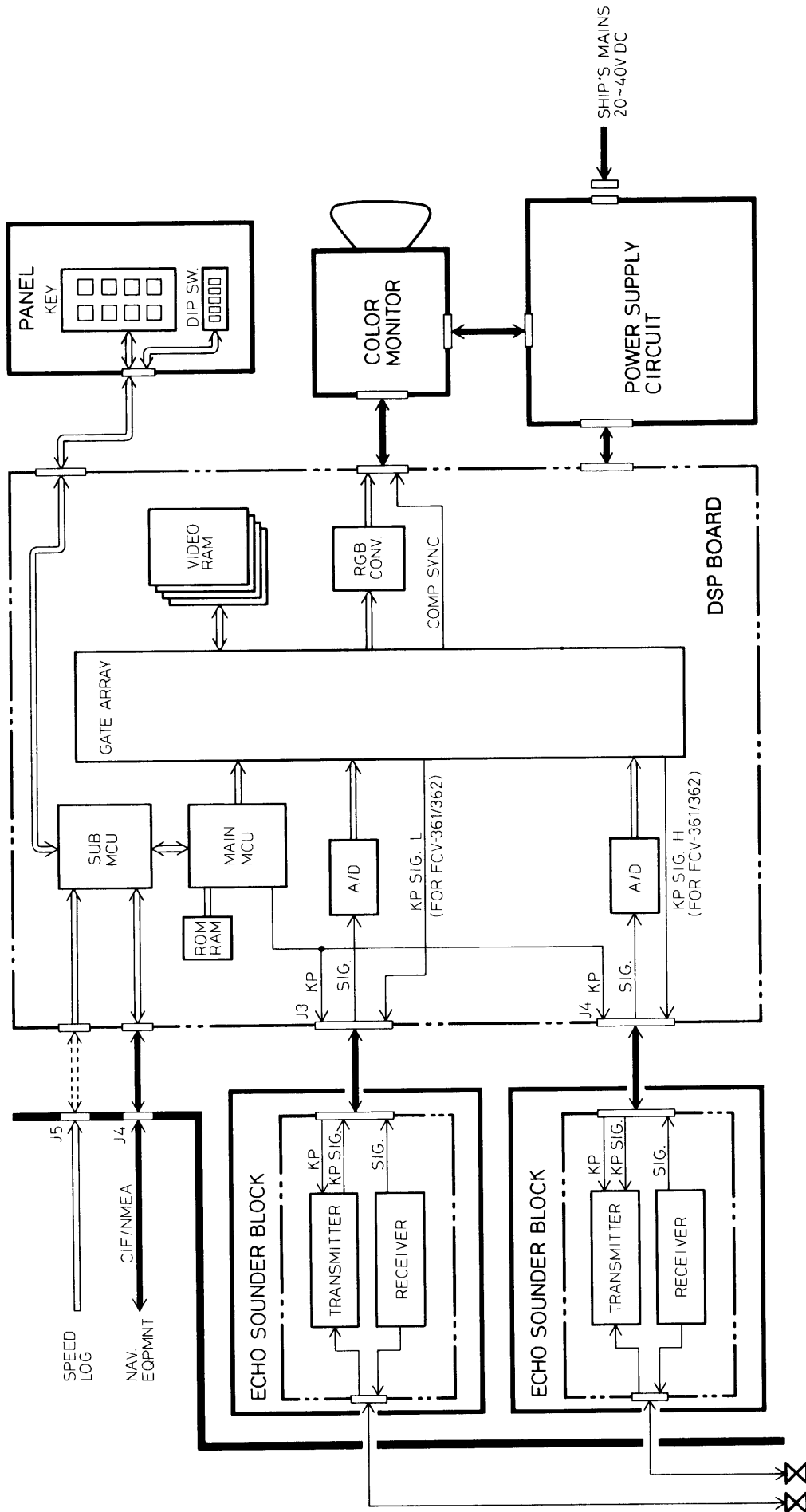


Fig.1.1 FCV-360 Series System Diagram

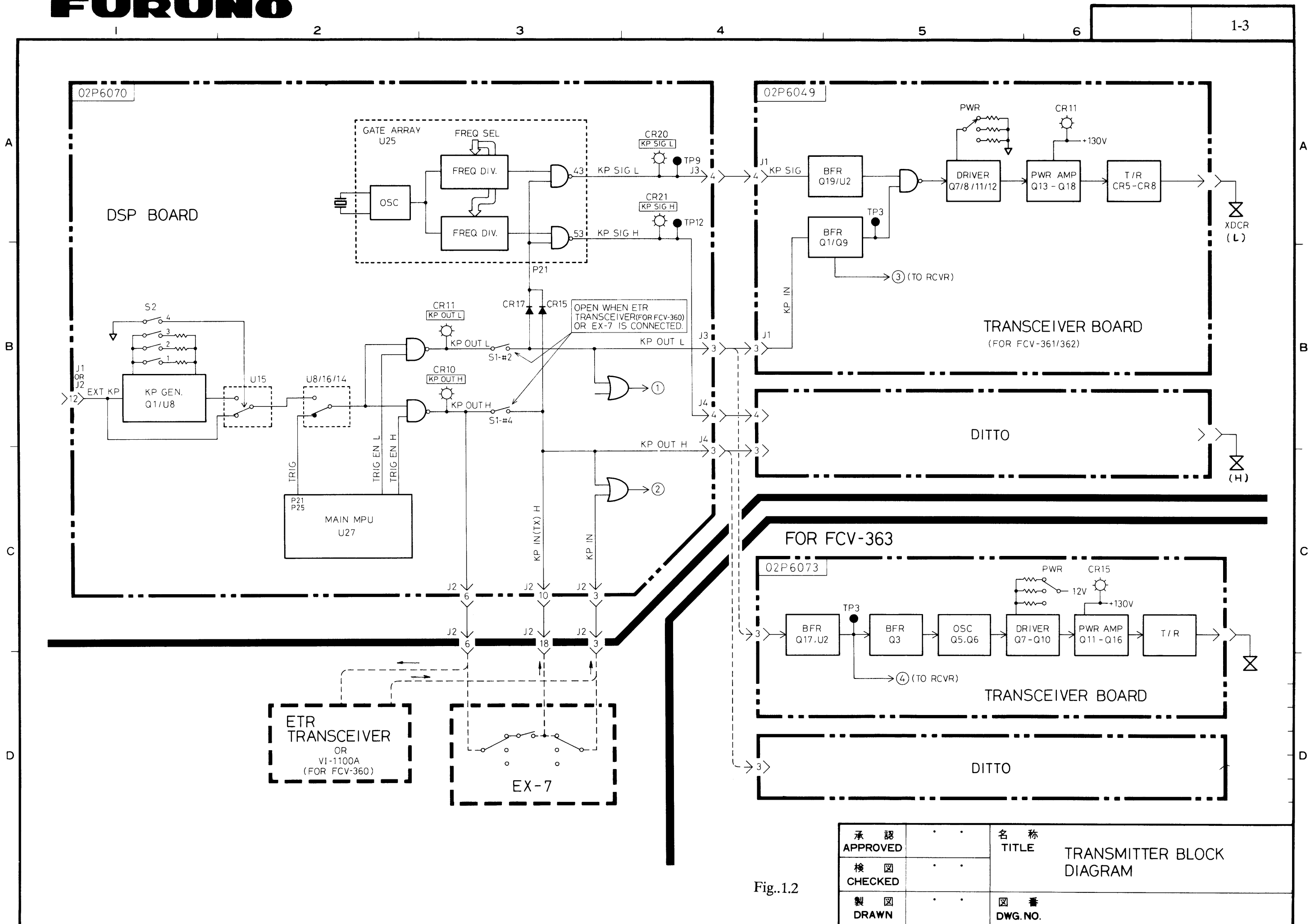


Fig..1.2

|                |   |                |                              |
|----------------|---|----------------|------------------------------|
| 承認<br>APPROVED | ・ | 名称<br>TITLE    | TRANSMITTER BLOCK<br>DIAGRAM |
| 検図<br>CHECKED  | ・ | 図番<br>DWG. NO. |                              |
| 製図<br>DRAWN    | ・ |                |                              |

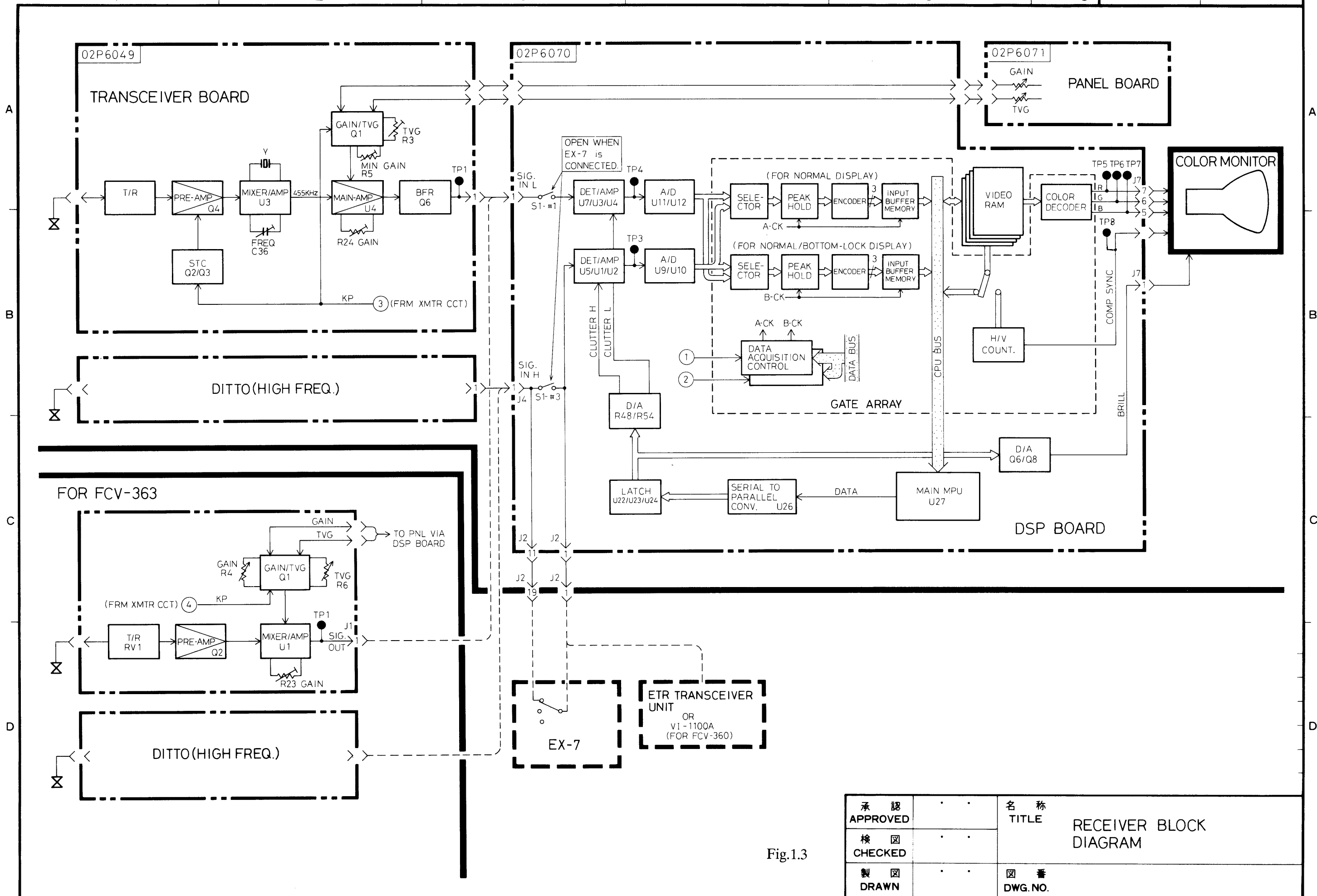


Fig.1.3

|                |   |                |                           |
|----------------|---|----------------|---------------------------|
| 承認<br>APPROVED | . | 名称<br>TITLE    | RECEIVER BLOCK<br>DIAGRAM |
| 検図<br>CHECKED  | . | 図番<br>DWG. NO. |                           |
| 製図<br>DRAWN    | . |                |                           |

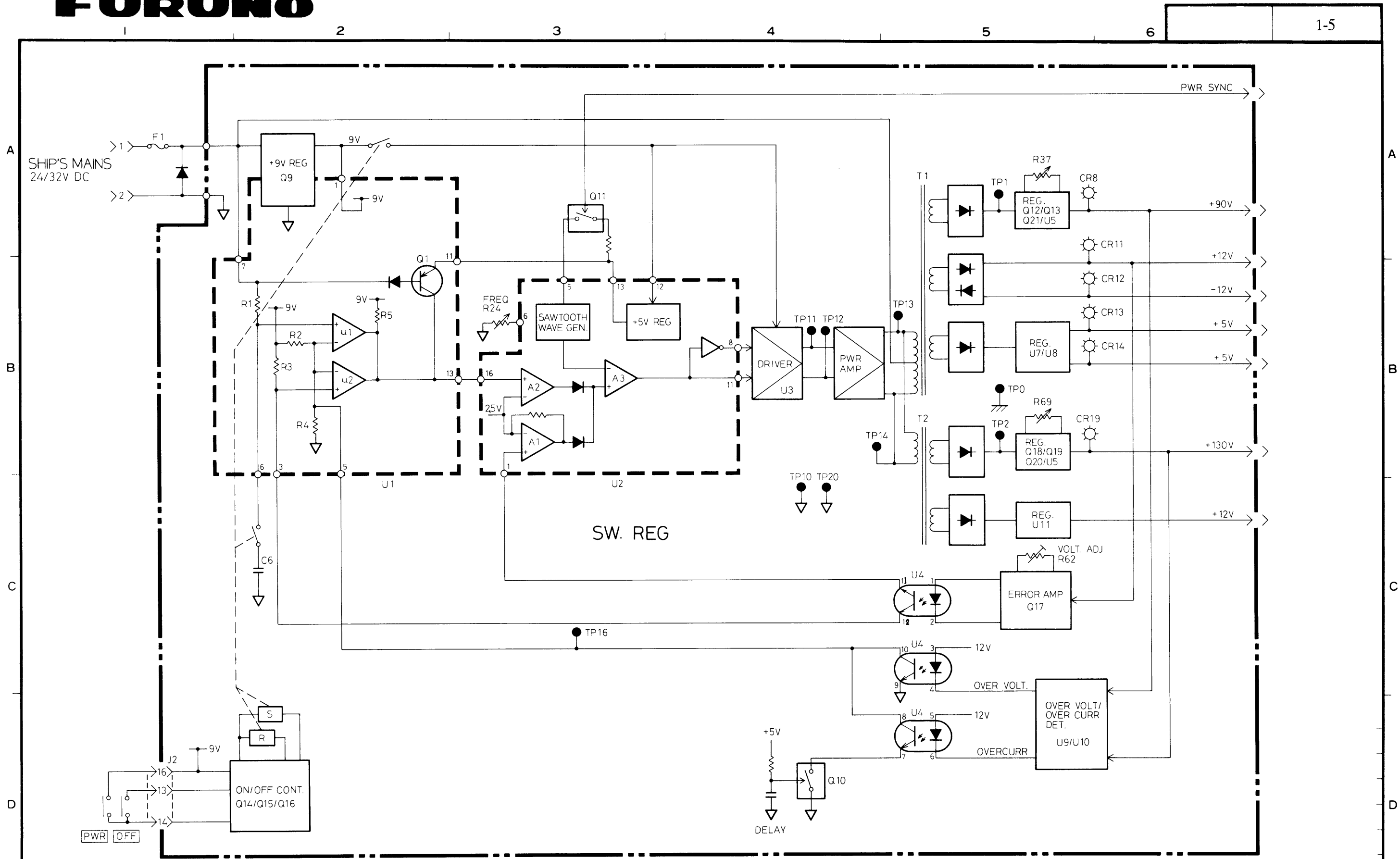


Fig.1.4

|                |     |                |                                       |
|----------------|-----|----------------|---------------------------------------|
| 承認<br>APPROVED | · · | 名称<br>TITLE    | POWER SUPPLY CIRCUIT<br>BLOCK DIAGRAM |
| 検図<br>CHECKED  | · · | 図番<br>DWG. NO. |                                       |
| 製図<br>DRAWN    | · · |                |                                       |

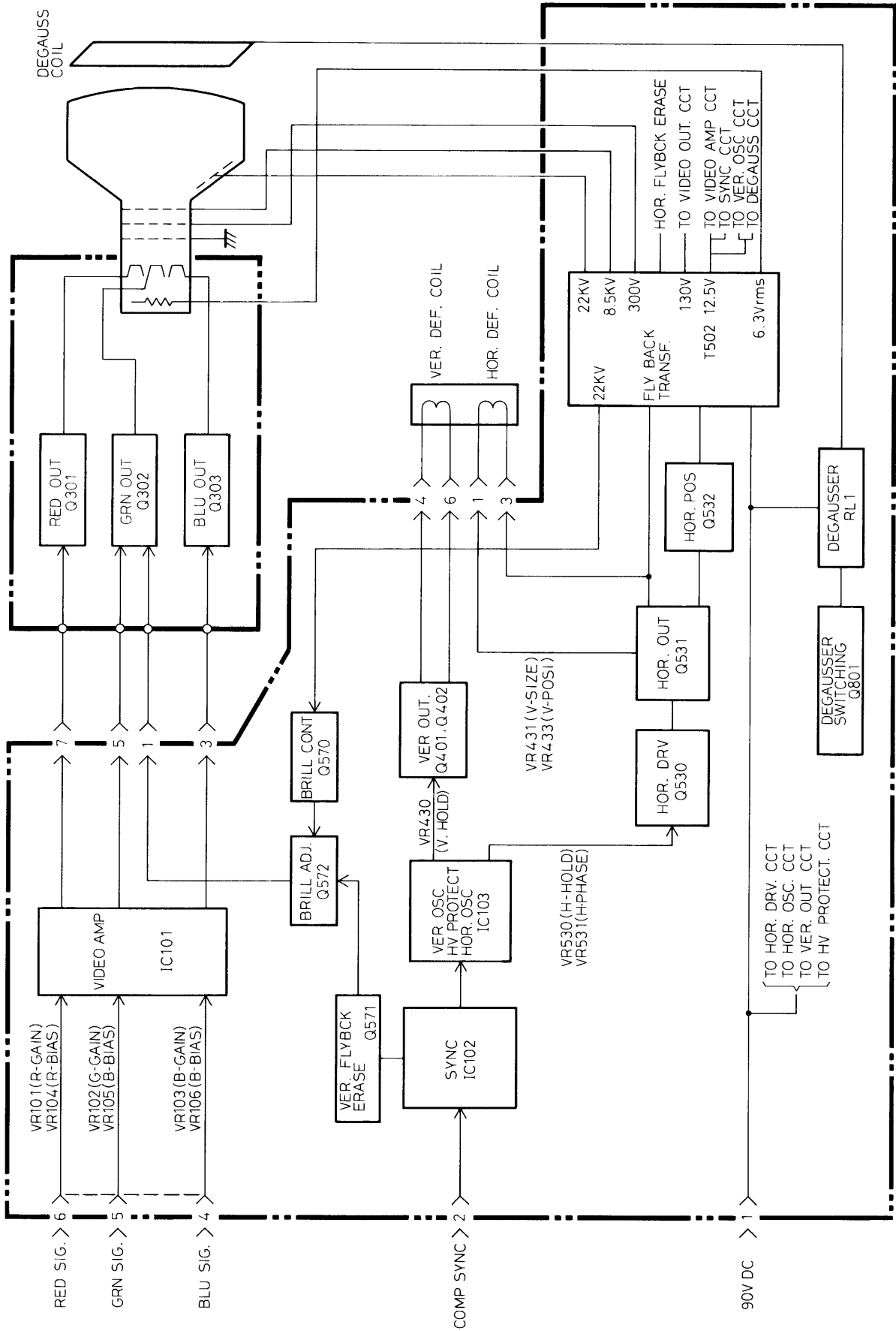


Fig. 1.5 Color Monitor Block Diagram



## 1.2 Transmission

See block diagram on page 1-3.

### 1.2.1 Keying Pulse (KP) Generation

The KP to drive the transmitter circuit is generated by the timer incorporated in the MAIN MPU U27 as soon as the echo data processing for the preceding transmission is completed. The output ports of the KP are P21/P25 and the signal is named TRIG. U8, U16 and U14 compose a switching circuit between the external KP and the internal KP. They automatically\* selects the external KP whenever it is connected.

\* In the schematic diagram on page S-2, the pulselength of U8 output is 4 seconds at maximum which are longer than the maximum interval of TRIG signal in the deepest range. This means that the Q output of U6 is kept at "H" and the external KP passes through U4.

The "TRIG EN L" and "TRIG EN H" signal determine the transmitter circuit to be activated, depending on the presentation mode. If, for example, the high frequency mode is selected, only the "TRIG EN H" goes "H" and the "KP OUT H" is output. The "KP OUT L" and "KP OUT H" signals are directly applied to the transmitter circuit. However, in case of the FCV-361/362, they are also applied to U25, in which they are used to pass transmission carrier signals. The transmission carrier signals are generated in the gate array and applied to the transmitter as a KP SIG. Note that the "KP OUT L" and "KP OUT H" are used to enable or disable the transmitter circuit, in accordance with the presentation mode being used.

Operation of the external KP circuit composed of U8 and U5 changes with the setting of S2-#4. With S2-#4 at ON, the external KP passes through U5 and, with S2-#4 at OFF, output of KP GEN circuit which is triggered at the leading edge of the external KP passes. The pulselength of the KP GEN output changes as follows with S2-#2 to S2-#4.

| S2      | 1   | 2   | 3   | 4   | PL  |
|---------|-----|-----|-----|-----|-----|
| Setting | ON  | OFF | OFF | OFF | 4ms |
|         | OFF | ON  | OFF | OFF | 2ms |
|         | OFF | OFF | ON  | OFF | 1ms |

PL: Pulse Length

*Note: Do not set all S2-#1 to S2-#4 to off, or the pulselength becomes extremely long, causing damage of the set.*

## 1.2.2 Transmitter Circuit

In the FCV-361/362, KP SIG generated in the gate array is amplified and applied to the transducer.

Division factor of the frequency-divider in the gate array is automatically set by the MAIN MPU so that the output frequency may agree with the specified transmission frequency.

The frequency information for this operation is sent from the transceiver board (jumper JP0 to JP2) to the MAIN MPU via SUB MPU as shown below, and therefore, if the transceiver board is changed, the frequency of the KP SIG is automatically changed for the new transceiver board.

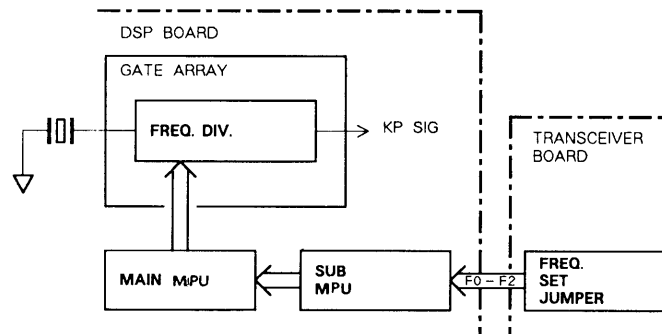


Fig. 1.7

In the FCV-363, the oscillator on the transceiver board operates for the period of KP OUT signal applied from the DSP board and the oscillator output is amplified and then applied to the transducer.

The power reduction switch controls the transmitter output power in 10dB steps.

## 1.3 Reception

### 1.3.1 Receiver Circuit

Received echoes are amplified up to 11Vpp max. in the receiver circuit on the transceiver board. In case of the FCV-361/362, the gain of each stage is 20dB for pre-amplifier in the first stage, 70dB for the mixer and main amplifier and 10dB for the buffer. For FCV-363, it is 20dB for the pre-amplifier and 80dB for the mixer and main amplifier. The adjustable range of gain with the GAIN knob on the front panel is 60dB approximately. Frequency of echo signal is 455kHz in the output of the receiver circuit.

The STC circuit has been disabled at the factory but can be enabled and adjusted for an effective depth of up to 15m in the field with R15 for FCV-361/362 and R4 for FCV-363. The TVG circuit has been set for an adjustable range of 100m with the front panel TVG control.

**1.3.2 Detector/AD Converter Circuit**

The echo signals are, on the DSP board, first converted to dc signals with detector composed of U17/U4 and then amplified in U3. The circuit configuration of amplifier U3 is shown in Fig. 1.8, where the gain potentiometer (AF gain) employed in the input line can adjust the signal amplitude by 10dB.

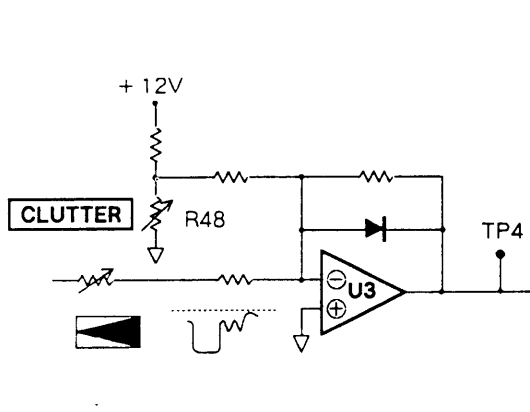


Fig. 1.8 Clutter/AF Gain Circuit

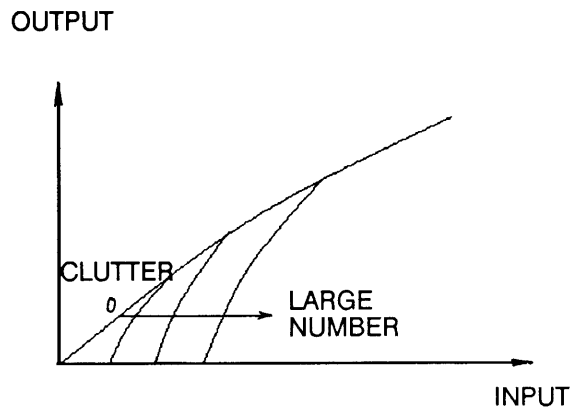


Fig. 1.9 Input-Output characteristics of U3

The CLUTTER control is used to reject noise due to impurity of water and microorganisms. Its characteristics with respect to input/output of U3 is shown in Fig. 1.9. R48 is a resistor array (shown as an D/A converter in the block diagram on page 1-4.) whose resistance value is controlled by the MAIN MCU. Unlike potentiometers, employment of resistor array enables fine adjustment of the clutter function.

The level of U3 output signal is 11V max. at TP4. This signal is level-analyzed in 6dB steps to 7 data for the portion below 8V in the succeeding A/D converter. This implies that the signals with amplitude above 8V are displayed in reddish brown on the CRT and those below 0.125V in the background color.

**1.3.3 Echo Data Acquisition**

The digital echo data in the output of the A/D converter are peak-held at regular intervals, encoded in the gate array and the resultant data are stored into the input buffer memory.

1) Peak-hold ----- In the peak-hold processing, the peak level of signal is detected at regular intervals. If for example, there is a signal shown in Fig. 1.10 and if the signal is sampled at regular intervals, the level "A" is taken out in the period "1" and level "B" in the period "2" in order to prevent the signal from being missed due to a low signal level at a sampling point.

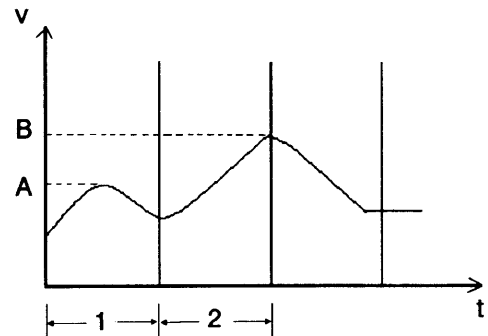


Fig. 1.10

The sampling rate is determined by the number of pixcells on the CRT, the depth range in use and the presentation mode. If the depth range in use is 200m with a single frequency presentation mode, the sampling rate is every 0.8m since the number of pixcells of the CRT is 240.

2) Encode ----- 7 bit echo data are converted into three bit binary echo data.

The data acquisition control circuit determines how to store echo data considering depth range and range shift setting. With the range shift set at "0", the data acquisition is initiated with the KP IN signal. With the range shift set other than "0", the data acquisition start timing is delayed by the time equivalent to the shifted range.

For the bottom-lock expansion picture, the start depth from which the echo data is stored in the memory is determined by referring to the seabed depth data obtained in the previous cycle. If the depth and the depth range selection of the bottom-lock picture is known, the start depth is given by

$$\text{Acquisition start depth of bottom-lock expansion picture echo} = \left( \text{Bottom depth obtain in the last transmission} \right) - \left( \text{Bottom-lock expansion range} \right)$$

When the input buffer memory is full with data down to the desired depth, all data are transferred to the main memory of the MAIN MPU for further processing.

### 1.3.4 Processing and Presentation

The echo data transferred to the main memory of the MAIN MPU are processed further as follows.

#### A. Seabed Recognition

To recognize the seabed, the MAIN MPU examines echo data 3 bit by 3 bit from the surface to the end of data, looking for the echo with level of 111 (reddish brown) and 110 (red). There will be a lot of 111 and 110 data. In the second step, it measures the duration of 111 and 110 data and recognizes the echo as seabed when it is the longest in the duration of 111 and 110 data.

Once the seabed is captured, the MCU creates a narrow bottom-tracking window covering several meters above and below the seabed depth. And in the next transmission cycle, echoes within this window are examined. Position of the bottom tracking window is shifted in every transmission so that the newly recognized depth is placed in the center of the window. When the seabed echo is absent within the window over several transmissions, the MPU searches it again from the surface.

#### B. Interference Rejection

The interference/noise have a nature to be received at random while echo signal is received consecutively at the same depth. To eliminate interference/noise components, the CPU correlates the new data string with previous ones for 2 to 4 successive transmission cycles.

#### C. Longitudinal Peak Hold Processing

If, for example, the display advance speed is at "2", the picture advances one line every four transmissions and therefore one string of echo data is necessary every four transmissions. The computer compares the each data in the same depth for four transmission cycles and selects the one with the peak level.

After all necessary processings have been performed, the echo data are transferred into the video RAM where all data are stored in the form and order ready for display on the screen.

Data in the video RAM are read out successively by the H/V counter in the gate array that operates independently of the MPU, converted to the RGB signals and then sent to the color monitor display.

## 1-4. Power Supply Circuit

See the block diagram on page 1-5.

### 1.4.1 Power On/Off

The power supply circuit is turned on/off in the following sequence. Refer to schematic diagram on page S-9.

#### 1) Power-on

When the PWR key is pressed:

Q15 ON → C33 discharges → Current flows thru → K1 closes,  
thru Q16 (Q16 ON) "S" coil of K1.

#### 2) Power-off

When the PWR and OFF keys are pressed simultaneously:

Q14 ON → Current flows → K1 opens contact.  
thru "R" coil of K1.  
↙  
C33 discharges thru → Q16 remains off even if  
CR29/Q14. Q15 turns ON.

*Note: K1 is a latching relay whose contacts trips only when current flows in "s" or "R" coil.*

### 1.4.2 Starting Switching Regulator

After relay K1 is activated, the switching regulator is started in the following sequence.

- 1) Voltage at "+" input of u2 is +9V since U4 is off and that at "-" input is below 9V because the 9V is divided by R2 and R4. Thus u2 output is "H".
- 2) As for u1 output, it is "L" since its "+" input remains in a lower voltage than the "-" input until C6 is charged up.
- 3) 1) and 2) lead to that #16 terminal of U2 goes "L" and the switching regulator starts to operate.

#16 terminal: Current Limiter Terminal

The switching regulator stops when this terminal goes above 2.5V.

- 4) Once the switching regulator operates, "+" input of u2 goes lower than the "-" input in voltage and U2 continues operation even after C6 has been fully charged.

**1.4.3 Voltage Regulation**

The dc output voltage is stabilized by monitoring + 12V line voltage. If the + 12V line voltage changes, the voltage at “+” input of comparator A3 in U2 changes, resulting that the slice level of the sawtooth wave moves as below.

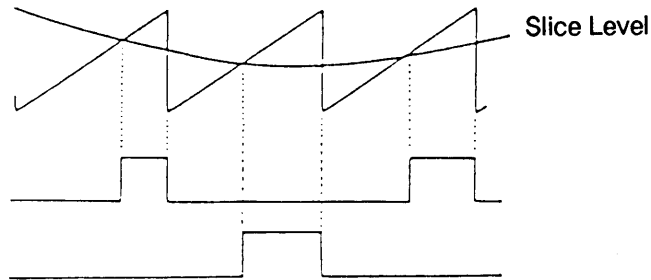


Fig.1.11

**1.4.4 Overvoltage and Overcurrent Protection**

The overvoltage and overcurrent protector operate when the + 130V or + 90V line exceeds or drops below the voltage shown in the table.

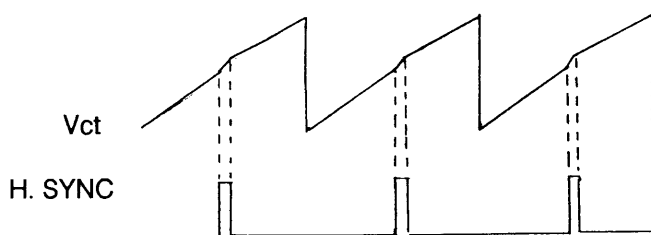
|           | Overvoltage | Overcurrent |
|-----------|-------------|-------------|
| 130V Line | 140 to 160V | 70V         |
| 90V Line  | 95V         | 60V         |

If U9/U10 detect the overvoltage or overcurrent, photo coupler U4 conducts and “+” inputs of comparators U1/U2 are grounded, causing #16 terminal of U2 to exceed 2.5v at which the switching regulator is disabled.

Q10 remains off for a while after power-on in order to prevent the overcurrent protection operates before the line voltages become normal.

**1.4.5 Power Sync Circuit**

The power sync circuit synchronizes the frequency of the sawtooth wave with that of horizontal sweep of the CRT to prevent harmonics of two frequencies from interfering the picture on the screen. Q11 turns on with the horizontal sync signal.



## CHAPTER 2. ADJUSTMENT AND CHECK

The FCV-360 series color sounder normally requires no adjustment in the field. This can be applied to pc boards supplied as maintenance parts as well. Do the following adjustment when detuning is found or the equipment is overhauled.

### 2.1 Power Supply Circuit (PWR 02P6072)

#### 2.1.1 Frequency Adjustment (R24)

| Condition      | Rated Value                     | Test Point     | Waveform |
|----------------|---------------------------------|----------------|----------|
| PWR SYNC "OFF" | $T = 18.0 \pm 0.5\mu\text{sec}$ | TP15-TP20(GND) |          |
| PWR SYNC "ON"  | $T = 16.0 \pm 0.1\mu\text{sec}$ |                |          |

- 1) Jump pin #1 of U12 to the ground to disable the PWR SYNC function.
- 2) Connect the oscilloscope between TP15 and TP20 (GND) and adjust R24 for the rated wavelength.
- 3) Remove jumper wire from U12 and check that the wavelength is  $16.0 \pm 0.1\mu\text{sec}$ . If not, touch up the setting of R24.

#### 2.1.2 Line Voltage Adjustment and Check

| Item  | Pot. | Rated Value             | Test Point     |
|-------|------|-------------------------|----------------|
| +12V  | R62  | $12.0 \pm 0.02\text{V}$ | J2 #6/#7-TP0   |
| -12V  |      | $-12.0 \pm 0.5\text{V}$ | J2 #8-TP0      |
| +5V   |      | $5.0 \pm 0.25\text{V}$  | J2 #10/#11-TP0 |
| +90V  | R37  | $90.0 \pm 0.1\text{V}$  | J1 #1-TP0      |
| +130V | R69  | $120 \pm 10\text{V}$    | J2 #1-TP0      |

*Note: +12V line should be adjusted first of all with the mains voltage set to  $24 \pm 1\text{V}$ .*



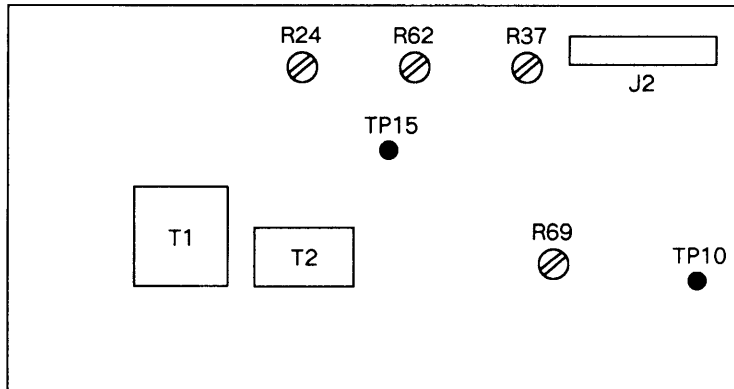


Fig. 2.1 Power Supply Board 02P6072

## 2.2 DSP Board (02P6070)

### 2.2.1 Offset Adjustment

| Panel Setting  | Pot. | Test Point | Condition  | Rated Value                       |
|--|------|------------|--|-----------------------------------|
| RANGE.....80m<br>MODE .....LH<br>GAIN ..... 10<br>TVG..... 0<br>CLUTTER..... 0 | R16  | TP4        | Transmission disabled by unplugging J4 and J3 on DSP board | 0.00V to 0.25Vdc on oscilloscope. |
|  | R15  | TP3        |  |                                   |

## 2.3 Color Monitor

### 2.3.1 Picture Size Adjustment

- 1) Set the background color of the picture to blue on the menu screen
- 2) Turn off the unit.
- 3) Display the self-check page by pressing the **PWR** and SHIFT **+** (or **-**) keys simultaneously.
- 4) Adjust V-SIZE, V-POS, H-POS and H-SIZE potentiometers for the picture size as shown in Fig. 2-2.

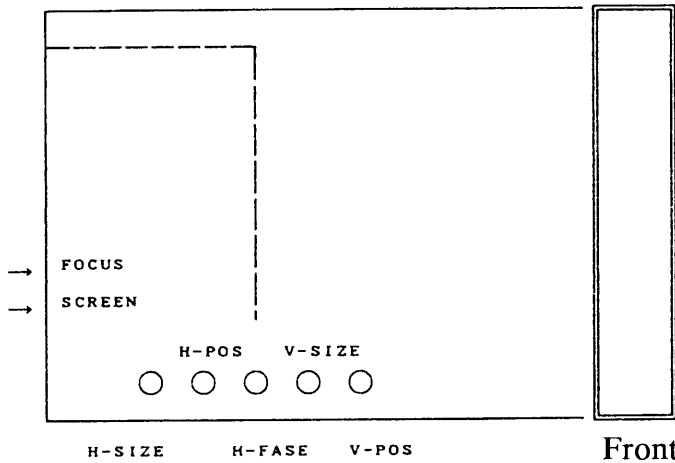


Fig. 2-2 Display Unit Left Side View

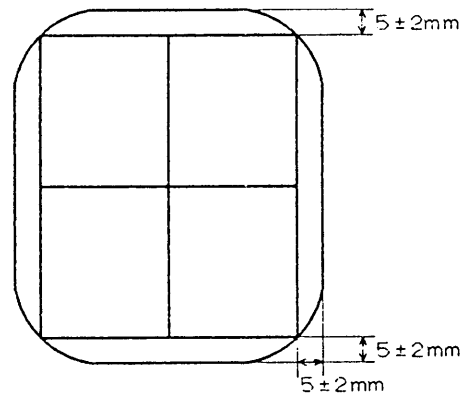


Fig. 2-3 Picture Size of Self-check page.

## 2.4 Transceiver Board 02P6049 (for FCV-361/362)

### 2.4.1 Transmitter Output Voltage

Connect the transducer and check that the output voltage across J2 #1-#5 is as tabulated below.

| Freq.                                    | Typical Voltage with Power Reduction "4" (max) |                           |
|--|--|---------------------------|
|  | FCV-361 (1kW output)                           | FCV-362 (2kW output)      |
| 28kHz (28F-8)<br>(28F-18)                | 1150Vpp typical<br>—                           | —<br>1500Vpp typical      |
| 50kHz (50B-6)<br>(50B-9)<br>(50B-12)     | 1200Vpp typical<br>800Vpp typical<br>—         | —<br>—<br>2000Vpp typical |
| 68kHz (68F-8H)<br>(68F-30H)              | 800Vpp typical<br>—                            | —<br>1500Vpp typical      |
| 88kHz (88B-8)<br>(88B-10)                | 1500Vpp typical<br>—                           | —<br>2000Vpp typical      |
| 200kHz (200B-5S)<br>(200B-8)<br>(200B-8) | 1500Vpp typical<br>1200Vpp typical<br>—        | —<br>—<br>1900Vpp typical |

*Note: In case that the voltage deviates more than  $\pm 20\%$  from the rated value, the checkings of transmitter or transducer is required.*

## 2.4.2 Frequency Check

Expand the TX signal and check that the wavelength is as tabulated right.

| Freq.  | Wavelength        |
|--------|-------------------|
| 28kHz  | 34.7msec typical  |
| 50kHz  | 20.0msec typical  |
| 68kHz  | 14.7msec typical  |
| 88kHz  | 11.36msec typical |
| 200kHz | 5.0msec typical   |

## 2.4.3 Receiver

### STC Effective Depth (R15)

R15 adjusts the effective depth of the STC up to 15m. It is used to suppress surface noise by reducing receiver gain in shallow water.

### TVG Effective Depth (JP4 and R3)

JP4 is jumpered in the factory (effective depth is fixed at 100m approximately). If the adjustment is needed in the field, cut JP4 and adjust R3. The adjustable range is 0-300m approximately.

## 2.4.4 Other Adjustable Pots

| Pots | Items                      | Descriptions  |
|------|----------------------------|---|
| R24  | Total Gain                 | adjusted for the total gain as follows between transducer terminal and TP1<br><br>28kHz .. 95dB<br>50kHz .. 100dB<br>68kHz .. 100dB<br>88kHz .. 100dB<br>200kHz . 110dB |
| R5   | Gain Control Range         | adjusts range of gain control of the GAIN knob.<br><br>28/50/68/88kHz ...60dB<br>200kHz .....40dB<br>Do not change setting locally.                                     |
| C36  | Local Oscillator Frequency | adjusted for a signal frequency of 455.6 ± 0.1kHz at TP1.<br>(for 50kHz set only)   |

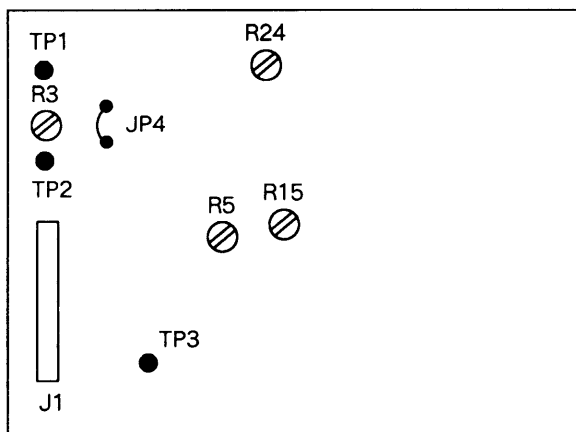


Fig. 2.4 Transceiver Board (02P6049)

## 2.5 Transceiver Board 02P6073 (For FCV-363)

### 2.5.1 Transmitter Output Voltage

Connect the transducer and check that the output signal across J2 #1-#5 is as tabulated below.

| Freq.  | Out put Voltage |
|--------|-----------------|
| 28kHz  | 1400-1800Vpp    |
| 50kHz  | 1400-1800Vpp    |
| 68kHz  | 1400-1800Vpp    |
| 88kHz  | 1400-1800Vpp    |
| 200kHz | 1400-1800Vpp    |

### 2.5.2 TX Frequency Adjustment

- 1) Short pin #1 and #2 of J4.
- 2) Connect the frequency counter to TP4.
- 3) Adjust T3 for the specified frequency shown on the table below.

| Freq.  | Rated Value    |
|--------|----------------|
| 28kHz  | 28.66-28.94kHz |
| 50kHz  | 49.75-50.25kHz |
| 68kHz  | 67.66-68.34kHz |
| 88kHz  | 87.56-88.44kHz |
| 200kHz | 199.0-201.0kHz |

**2.5.3 STC Adjustment (R11)**

R14 adjusts the effective depth of the STC up to 15m. It may be adjusted to suppress surface noise, reducing receiver gain in shallow waters. The factory setting is in full clockwise turned position where the STC function is disabled.

**2.5.4 TVG Effective Depth (R6)**

R6 is set to fully clockwise position for 200kHz and fully counter clockwise position for the other frequencies at the factory, where the TVG works up to 50m for 200kHz and 100m for the other frequencies. However the setting can be changed locally if needed. The adjustable range of the TVG effective depth with R6 is 50 to 100m approximately.

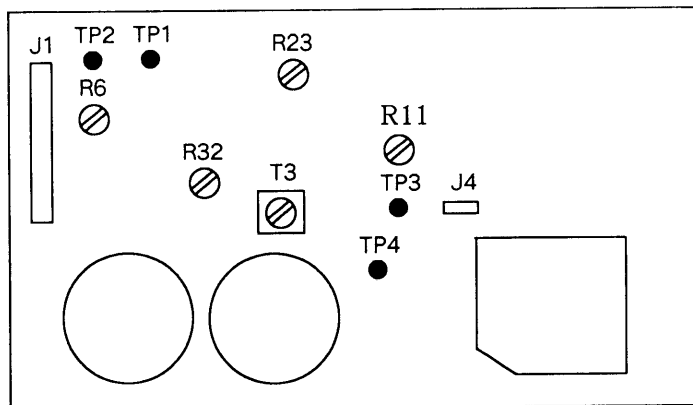


Fig. 2.5 Transceiver Board (02P6073)

**2.5.5 Other Adjustable Pots.**

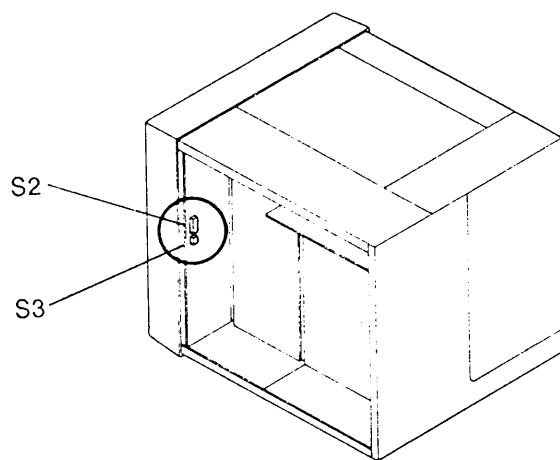
| Pots    | Items            | Descriptions  |
|---------|------------------|---|
| R23     | Total Gain       | <p>adjusted for the total gain between the transducer terminals and TP1 as follows.</p> <p>28kHz . . . .95dB<br/>                     50kHz . . . .100dB<br/>                     68kHz . . . .100dB<br/>                     88kHz . . . .100dB<br/>                     200kHz . . .110dB</p> |
| R4      | Gain Cont. Range | <p>adjusts range of gain control with the GAIN knob.</p> <p>28kHz . . . . .55dB<br/>                     50/68/88/200kHz . . .60dB<br/>                     Do not change setting in the field</p>  |
| R29/R32 | Bandwidth        | <p>Fixed at the fully counterclockwise position.<br/>                     Do not change setting.</p>  |

## CHAPTER 3. CHANGE OF INTERNAL SETTING/MODIFICAION

### 3.1 DIP Switch Setting

Change of the internal setting is required;

- 1) when taking the ship's position data in NMEA format .
- 2) when taking the ship's speed data from a speed log. Note that modification inside unit is required to connect the speed log.
- 3) when changing the display specification.



S2 on PNL Board 02P6071

| No. | Items                            | Setting |    | Remarks     |
|-----|----------------------------------|---------|----|-------------|
|     |                                  | OFF     | ON |             |
| 1   | Unused                           |         |    |             |
| 2   | Unused                           |         |    |             |
| 3   | Ship's Speed Data from Speed Log | LOG     |    | See note 2. |
| 4   | Screen Division                  | DIVIDE  |    |             |
| 5   | Temperature range                | RNG TMP |    |             |
| 6   | Temperature Unit                 | UNT TMP |    |             |
| 7   | Ship's Speed Unit                | UNT SPD |    |             |
| 8   | Navigational Data Input          | NAV-S   |    |             |
| 9   | Memory Back-up                   | BU      |    |             |
| 10  | Language on Menu Screen          | MENU    |    |             |

Note: 1.  shows the factory setting.

2. The item LOG should be set to "ON" when 200 pulses/mile speed signal is entered from J5 (option) on the rear panel. It is set to "OFF" when the speed data is entered thru CIF or NMEA data line.

## S3 on PNL Board 02P6071

| No. | Item                 |           | Setting |       | Remarks |
|-----|----------------------|-----------|---------|-------|---------|
|     |                      |           | OFF     | ON    |         |
| 1   | AF Gain (High Freq.) | AF Gain H | OPEN    | SHORT |         |
| 2   | AF Gain (Low Freq.)  | AF Gain L | OPEN    | SHORT |         |

Note: 1. Factory setting

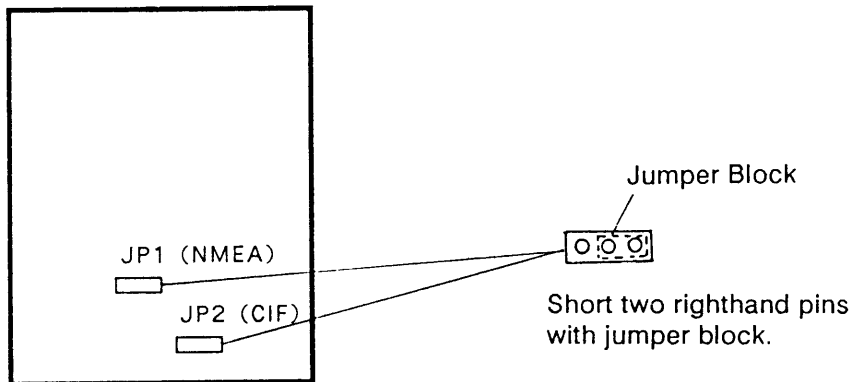
FCV-360 ..... "OFF" for both #1 and #2

FCV-361/362/363 ..... "ON" for both #1 and #2

2. In the ON position, the AF gain control circuit is disabled. When the FCV-361/362/363 is used also as a monitor display of other echo sounders via EX-7 and VI-1100A, the corresponding switch of S2 should be set to OFF, S2-#1 when EX-7 is connected to J4 (EXT-H) and S2-#2 when connected to J3 (EXT-L).

## JP1/JP2 on DSP Board 02P6070

Move the jumper block from JP1 to JP2 or vice versa according to the format (CIF of NMEA) of data fed from the navigation equipment, if connected.



DSP Board 02P6070

## 3.2 Frequency/Output Power Alternation

The FCV-361/362/363 incorporate 1kW, 2kW and 3kW transceivers respectively for both high and low frequencies. However, it will become necessary to locally change the output power or frequency in order to utilize the transducer already fitted on board. This can be accomplished by simply replacing the Echo Sounder Block.

The echo sounder blocks for respective frequency and output powers are shown in the following table.



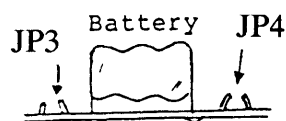
| Freq & Output                           | Echo Sounder Block<br>(Code Number) | Transducer             |                  |
|---|-------------------------------------|------------------------|------------------|
|   |                                     | Type & Code Number     | Beamwidth (-3dB) |
| 28kHz, 1kW<br>2kW<br>3kW                | 002-264-400                         | 28F-8 (000-015-003)    | 31° × 34°        |
|   | 002-264-470                         | 28F-18 (000-015-004)   | 17° × 18°        |
|   | 001-411-480                         | 28F-24H (000-015-075)  | 18° × 24°        |
| 50kHz, 1kW<br><br>1kW<br><br>2kW<br>3kW | 002-264-410                         | 50B-6 (000-015-042)    | 28°              |
|   |                                     | 50B-6B (000-015-043)   | 28°              |
|   | 002-264-420                         | 50B-9 (000-015-064)    | 12° × 28°        |
|   |                                     | 50B-9B (000-015-065)   | 12° × 28°        |
|   | 002-264-480                         | 50B-12 (000-015-053)   | 12° × 12°        |
|   | 001-411-490                         | 50F-24H (000-015-077)  | 9° × 13°         |
| 68kHz, 1kW<br>2kW<br>3kW                | 002-264-430                         | 68F-8H (000-015-067)   | 18° × 25°        |
|   | 002-264-490                         | 68F-30H (000-015-073)  | 13° × 14°        |
|   | 001-411-500                         | 68F-30H (000-015-073)  | 13° × 16°        |
| 88kHz, 1kW<br>2kW<br>3kW                | 002-264-440                         | 88B-8 (000-015-024)    | 11°              |
|   | 002-264-500                         | 88B-10 (000-015-025)   | 8°               |
|   | 001-411-510                         | 88F-126H (000-015-068) | 4° × 5°          |
| 200kHz, 1kW<br>1kW<br>2kW<br><br>3kW    | 002-264-450                         | 200B-5S (000-015-029)  | 8.5°             |
|   | 002-264-460                         | 200B-8 (000-015-030)   | 5.4°             |
|   | 002-264-510                         | 200B-8 (000-015-030)   | 5.4°             |
|   |                                     | 200B-8B (000-015-032)  | 5.4°             |
|   | 001-411-520                         | 200B-12H (000-015-069) | 4°               |

-B type: 15m cable length

### 3.3 Remarks on Handling the pc board

When sending the DSP board for repair, take the following care.

- 1) Cut the jumper wires (JP3 and JP4) connected to the both leads of the battery to prevent shortcircuit.



## CHAPTER 4. FUNCTION CHECK

### 4.1 System Diagnosis

The unit is provided with the self-check facilities which may be initiated by the following operation.

- 1) Turn off the power by pressing the PWR and OFF keys simultaneously.
- 2) Press the PWR key again while pressing the SHIFT [ + ] or [ - ] key a few seconds.

In a few seconds, the self-check page is displayed on the screen as follows.

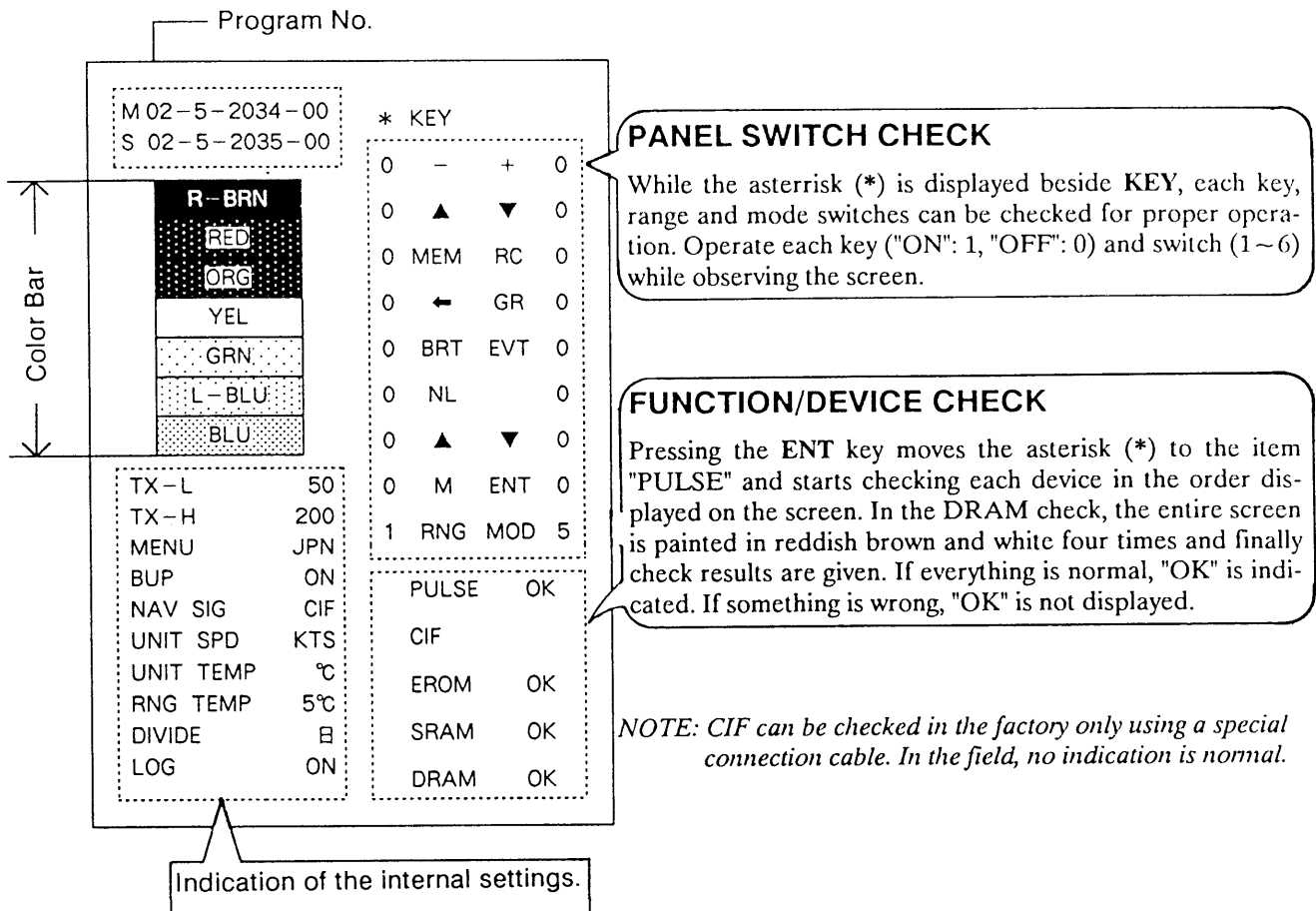


Fig. 4.1

- 3) To terminate the system diagnosis, turn off the power by pressing the PWR and OFF keys simultaneously.

### 4.2 DSP Board (02P6070) Check

The diagnostic self-check described in section 4.1 allows checking of computer portions of the set but the signal acquisition circuits on the DSP board are left unchecked. Use the following method to check the signal acquisition circuits.

- 1) Make dummy connectors as follows.

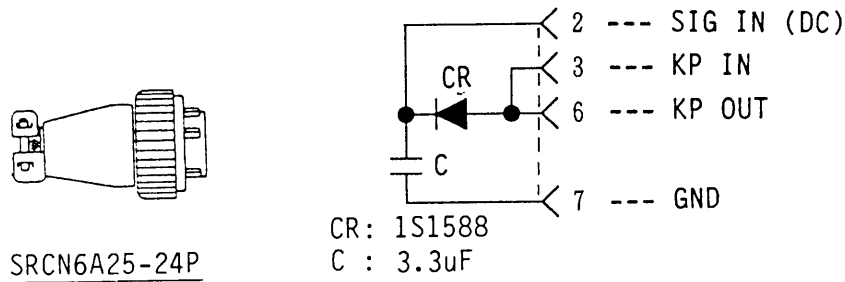


Fig. 4.2 Dummy Connector

- 2) Isolate the built-in transceivers by disconnecting plugs from J3 and J4 on the DSP board.
- 3) Set DIP switch S1-#1/#2/#3/#4 to off.
- 4) Connect the dummy connectors to EXT-L (J3) and EXT-H (J4) jacks on the rear panel.

- 5) Set the unit as follows.
  - Depth Range ..... 80m
  - Presentation Mode ..... LH
  - Gain ..... 10
  - TVG ..... 0

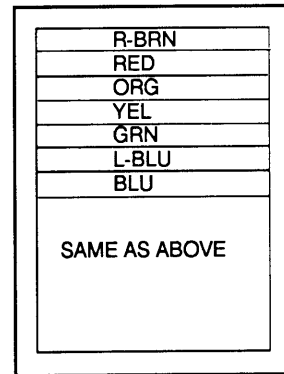


Fig.4.3

- 6) Check that the color pattern of 7 colors appears on both upper and lower screens.

### 4.3 Color Monitor Check

To check the color monitor independently, use the following procedure.

1. Turn off the set and unplug P8 (7P plug connected to the color monitor) on the DSP board.
2. Turn on the set.

3. Set the multimeter to  $\times 1$  ohm range and connected the (+) lead to P8-#4 (GND) and P8-#7 (RED). The whole screen should become red.

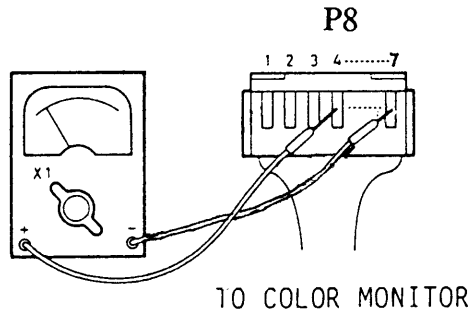


Fig. 4.4

4. In the same way, connect the (-) lead to P8-#6 and then to P8-#5 to check that the screen becomes green and then blue.

#### 4.4 Transducer Check

The transducer units mainly consists of the vibrating element and the cable. The “B” type transducers such as 50B-6 and 50B-12 are made of barium titanate ( $BaTiO_3$ ), whilst the “F” type transducers such as 28F-18 and 88F-126H are made of ferrite core. The former is electrostriction type, and the latter is magnetostriction type.

Judgement on whether the transducer is good to use or not can be accomplished by the following tests.

##### (A) Barium Titanate Transducer check

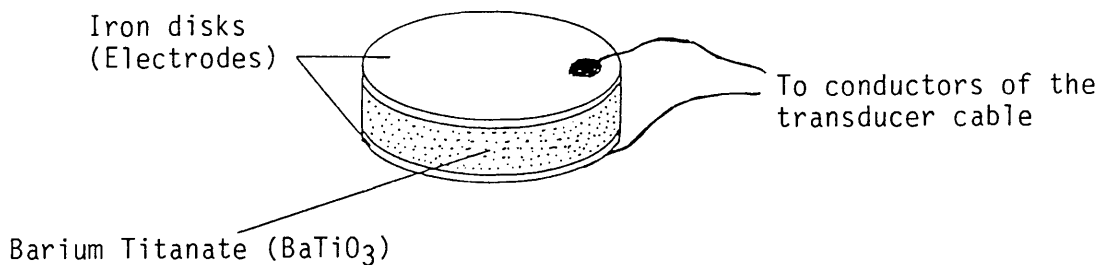


Fig. 4.5 Construction of Transducer

## 1. Insulation Test

The insulation resistance between the shield and each conductor is cardinal check to determine whether the transducer is defective or not. A megger (500Vdc) is used for this check.

Rated Value: 10 megohms or more

## 2. Capacitance Measurement

This method is based on the fact that the above transducers are equivalent to the capacitor electrically. Therefore the checking method is same as the capacitor check using the capacitance meter or the multimeter with capacitance measurement function.

If the transducer itself is not faulty, there still remains an important matter to be checked; if the cable is cut off on the way or not. This also can be checked by measuring the capacitance.

The normal capacitance for each transducer is given below.

| <u>Transducer</u> | <u>Normal Capacitance</u> | (between two conductors)      |
|-------------------|---------------------------|-------------------------------|
| 50B-6             | 7500pF $\pm$ 15%          | Including 10m Cable (100pF/m) |
| 50B-9             | 15500pF $\pm$ 10%         | Including 15m Cable (100pF/m) |
| 50B-12            | 8250pF $\pm$ 10%          | Including 15m Cable (100pF/m) |
| 88B-8             | 3300pF $\pm$ 15%          | Including 10m Cable (100pF/m) |
| 88B-10            | 5200pF $\pm$ 15%          | Including 10m Cable (100pF/m) |
| 200B-5S           | 2560pF $\pm$ 15%          | Including 10m Cable (100pF/m) |
| 200B-8            | 5500pF $\pm$ 20%          | Including 15m Cable (100pF/m) |

If no capacitance meter is available, use the popular multimeter as below.

Prepare a multimeter and two kinds of capacitors which have the equivalent value to the above capacitance. Set the multimeter to resistance range of more than “ $\times 1k$ ”.

Refer to the figure below. Read the multimeter deflection when the leads of multimeter touch across the prepared capacitor. Do the same for the transducer and compare the deflections. The normal transducer cable indicates nearly the same deflection as the capacitor.

If water soaks into the transducer, the multimeter swings to zero or some value.

If the cable is cut off on the way, the multimeter does not swing at all or swings little.

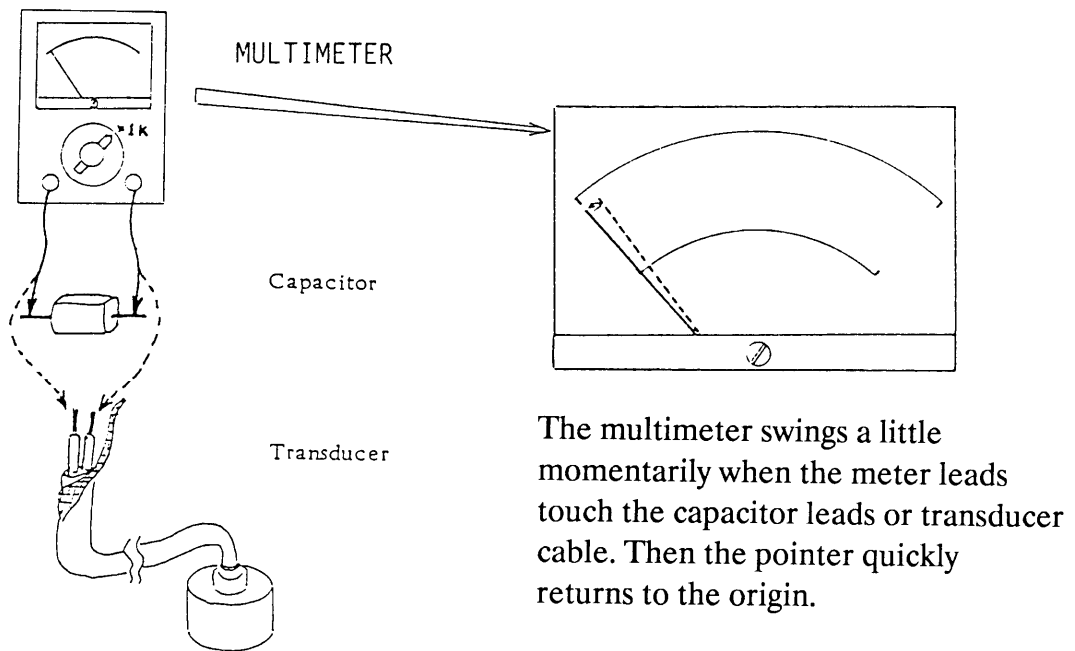


Fig. 4.6 Capacitance Test

3. Impedance Test

In order to check the transducer in the field without taking it out from ship's hull, the following method is also available. Refer to figure below.

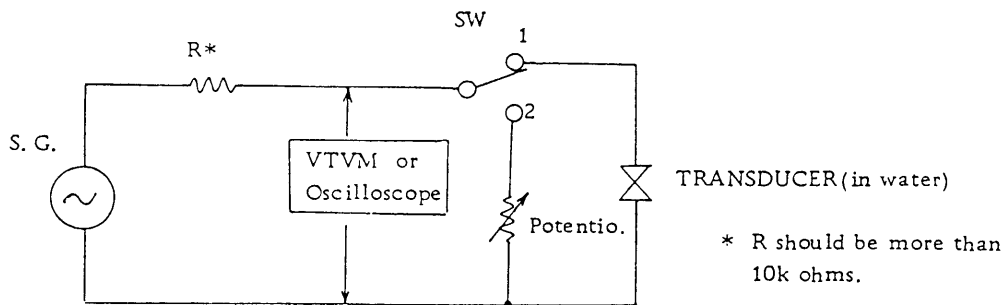


Fig. 4.7 Impedance Test

- 1) Set the switch to "1".
- 2) Set the output frequency of signal generator at a certain frequency (adjacent to resonant frequency), and measure the voltage across the transducer with a precision voltmeter or oscilloscope.

- 3) Turn the switch to "2" and adjust the potentiometer so that the V.V. or oscilloscope may indicate the same voltage as above, then measure the resistance of potentiometer. This resistance may be considered as the impedance of transducer at the above frequency.
- 4) Do the same at the other different frequencies, then plot the measured resistance.

Thus the resistance curve is obtained and the typical one is shown in the figure below. Compare it with the other typical one for judgement. The important point is the ratio of A to B.

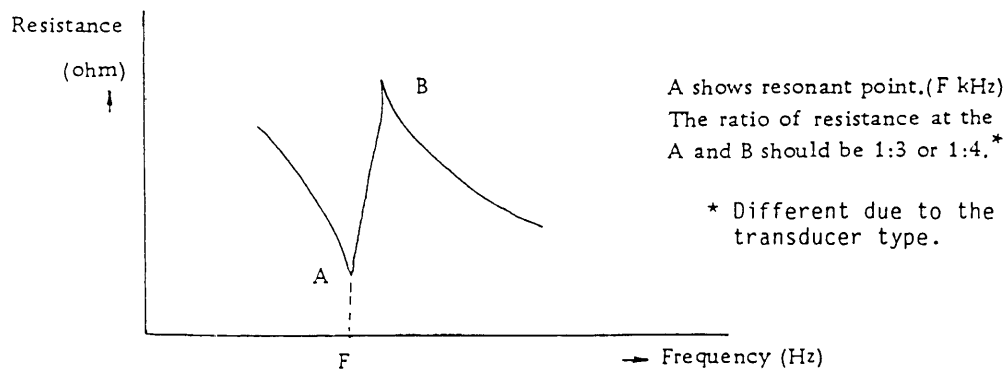


Fig.4.8 Characteristic Curve

(B) Ferrite Transducer Check

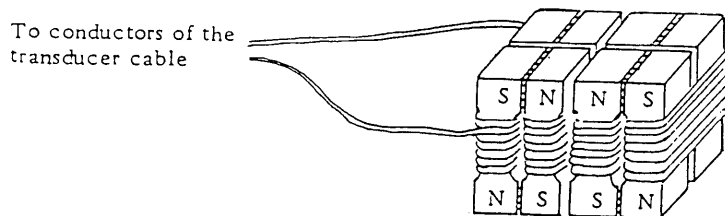


Fig. 4.9 Construction

## 1. Insulation Test

Do the same test as mentioned above on barium titanate type transducer check. Refer to page 6.11.

## 2. Conduction Test

The ferrite core type transducer is not regarded as capacitor because the ferrite core is wound by the lead wire. Conduction test, therefore, is carried out instead of capacitance test.

Prepare a multimeter, and measure the resistance between conductors of transducer cable. The resistance should be approximately one ohm.

### (C) "H" Type Ferrite Transducer Check

The "H" type ferrite transducer such as 28F-24H and 68F-30H has a resonance capacitor connected to the transducer element in parallel.

The impedance of this transducer, therefore, becomes purely resistive at each resonant (operating) frequency. Measure the resistance at the resonant frequency in the same manner as Impedance Test on the page 6.13, and check if the resistance is within the allowance; 100 ohms  $\pm$  30%.

As for other check items (Insulation Test and Conduction Test for ferrite transducers), they can be conducted in the same manner.

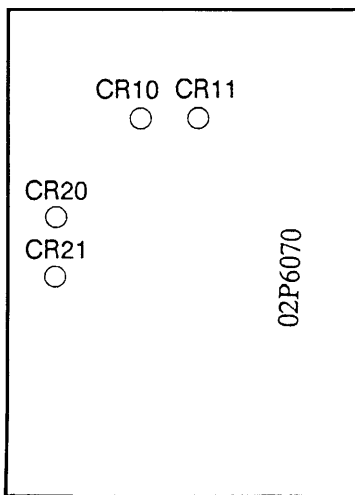


## CHAPTER 5. TECHNICAL DATA

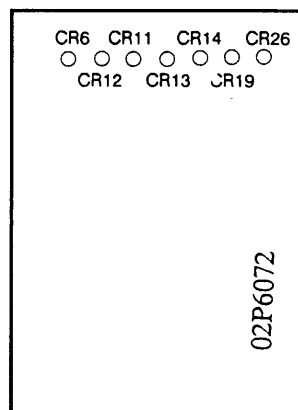
### 5.1 LED Status

○ : Light      ◐ : Flicker      ● : Off

| PC Board       | LED  |           | Status | Remarks  |
|----------------|------|-----------|--------|--|
|                | No.  | Sig. Name |        |  |
| DSP<br>02P6070 | CR10 | KPOH      | ◐      | Flickers while high frequency picture is selected for display on the screen. |
|                | CR11 | KPOL      | ◐      | Flickers while low frequency picture is selected for display on the screen.  |
|                | CR20 | KP SIG L  | ◐      | Transmission signal<br>Used in FCV-361/362 only                              |
|                | CR21 | KP SIG H  | ◐      |  |
| TXA<br>02P6049 | CR11 | + 130V    | ○      | + 130V for the power amplifier   |
| ES<br>02P6073  | CR15 | + 130V    | ○      | + 130V for the power amplifier   |
| PWR<br>02P6072 | CR8  | + 90V     | ○      | + 90V line for color monitor   |
|                | CR11 | + 12V     | ○      | + 12V line   |
|                | CR12 | - 12V     | ○      | - 12V line   |
|                | CR13 | + 5V      | ○      | + 5V line  |
|                | CR14 | + 5V      | ○      | + 5V line for external echo sounder  |
|                | CR19 | + 130V    | ○      | + 130V line  |
|                | CR26 | + 12V     | ○      | + 12V line for blower  |



DSP Board 02P6070



PWR Board 02P6072

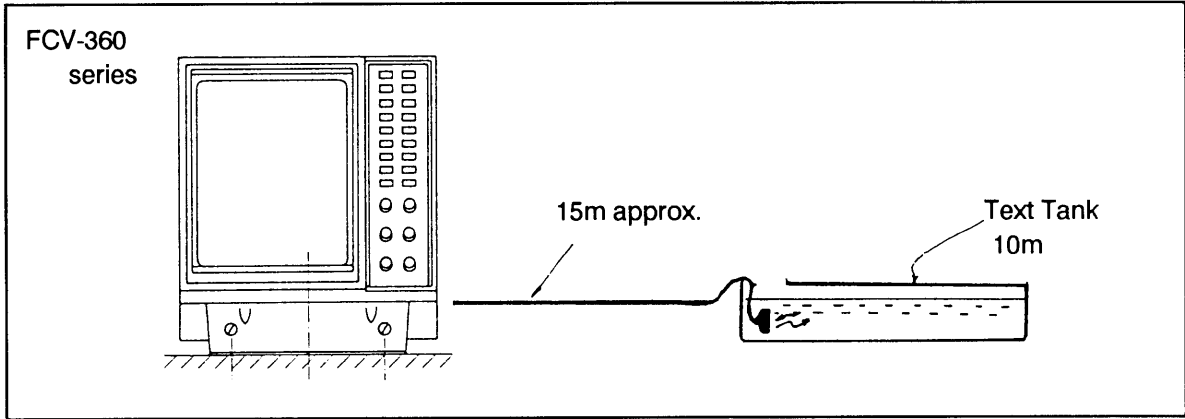
## 5.2 Board/Block compatibility

The board/block compatibilities among FCV-360 series sounders and those with FCV-250/260 series are shown in the following table.

| Block/Board        |             |             | Equipment Model (FCV- ) |     |     |     |             |             |
|--------------------|-------------|-------------|-------------------------|-----|-----|-----|-------------|-------------|
| Name               | Type        | Code No.    | 360                     | 361 | 362 | 363 | 251/<br>261 | 252/<br>262 |
| Power Supply Block |             |             | ○                       | ○   | ○   | ○   |             |             |
| DSP Board          | 02P6070     |             | ○                       | ○   | ○   | ○   |             |             |
| Color Monitor      | MD1219FR    |             | ○                       | ○   | ○   | ○   |             |             |
| Panel Assy         |             |             | ○                       | ○   | ○   | ○   |             |             |
| Echo Sounder Block | 1kW, 28kHz  | 002-264-400 |                         | ○   |     |     | ○           |             |
|                    | 1kW, 50kHz  | 002-264-420 |                         | ○   |     |     | ○           |             |
|                    | 1kW, 68kHz  | 002-264-430 |                         | ○   |     |     | ○           |             |
|                    | 1kW, 200kHz | 002-264-460 |                         | ○   |     |     | ○           |             |
|                    | 2kW, 28kHz  | 002-264-470 |                         |     | ○   |     |             | ○           |
|                    | 2kW, 50kHz  | 002-264-480 |                         |     | ○   |     |             | ○           |
|                    | 2kW, 68kHz  | 002-264-490 |                         |     | ○   |     |             | ○           |
|                    | 2kW, 88kHz  | 002-264-500 |                         |     | ○   |     |             | ○           |
|                    | 2kW, 200kHz | 002-264-510 |                         |     | ○   |     |             | ○           |

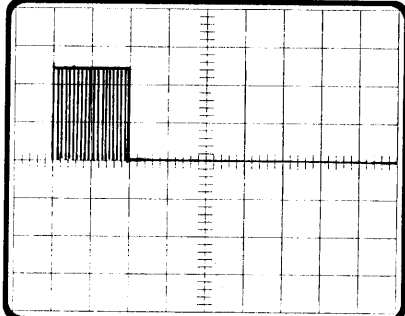
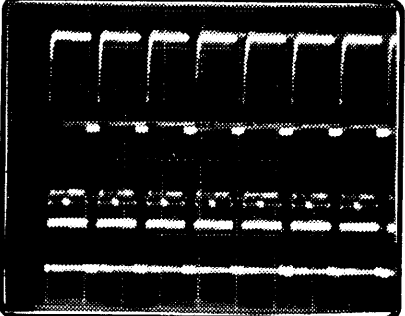
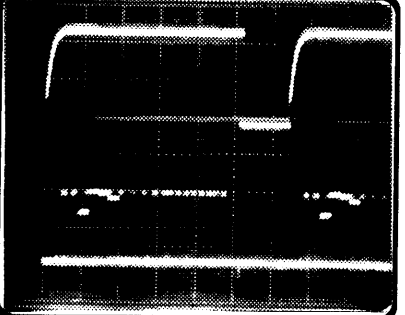

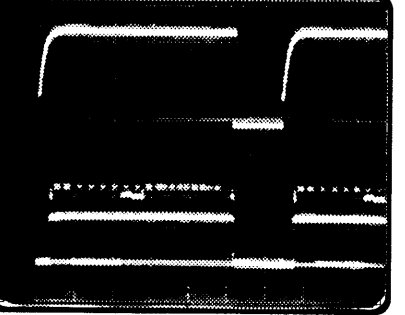
## 5.3 Wave form Chart

Receiver waveforms listed here are observed under the following conditions.

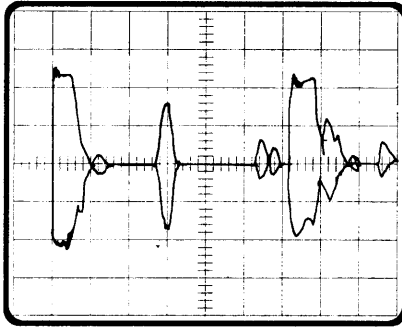
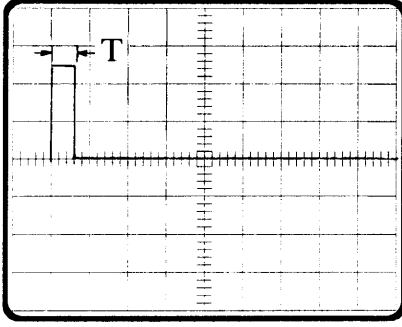
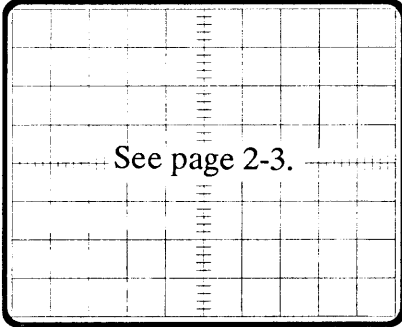
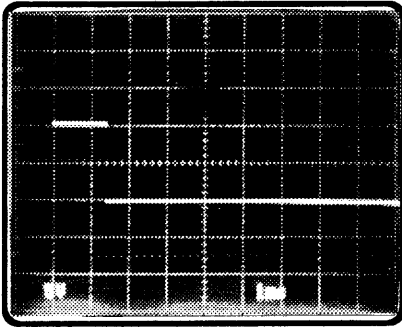
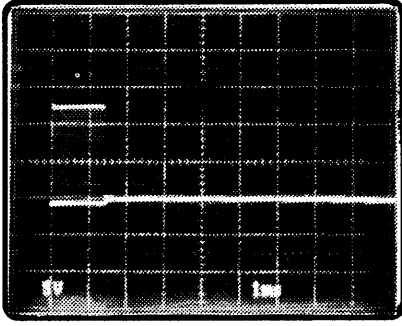


|                              |  |  |
|------------------------------|--|--|
| <p>DSB Board<br/>02P6070</p> |  | <p>U6 #16 KPOL (U6 #17 KPOH)</p> <hr/> <p>Trigger : Internal<br/> X-scale :       s/div.<br/> Y-scale :       5 v/div.</p> <p>T : Pulselength (0.2–3.6ms)<br/> depends on range setting.</p> |
|                              |  | <p>TP1 KPIN L (TP2 KPIN H)</p> <hr/> <p>Trigger : Internal<br/> X-scale :       s/div.<br/> Y-scale :       2 v/div.</p> <p>T : Pulselength (0.2–3.6ms)<br/> depends on range setting.</p>   |
|                              |  | <p>TP3 SIG H (TP4 SIG L)</p> <hr/> <p>Trigger :<br/> X-scale :       5 ms/div.<br/> Y-scale :       5 v/div.</p>   |

UNIT/BLOCK :

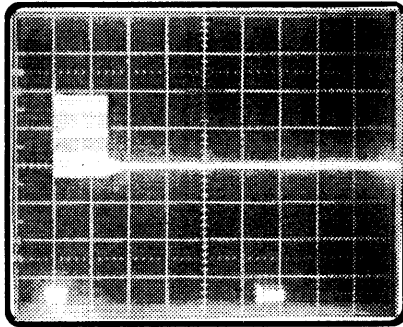
|           |   |   |
|-----------|---|---|
| DSB Board |    | <p><u>TP9 KPSIG L · (TP12 KPSIG H)</u></p> <p>Trigger : Internal<br/> X-scale :        s/div.<br/> Y-scale :        2 v/div.</p> <p>(For FCV-361/362 only)<br/> T : Pulselength (0.2-3.6ms)<br/>      depends on range setting.</p> |
|           |    | <p><u>CH1 : TP8 (SYNC) CH2 : TP7 (B)</u></p> <p>Trigger : TP8<br/> X-scale :    50 us/div.<br/> Y-scale :    2 v/div.</p> <p>X-scale :    50 s/div.<br/> Y-scale :    1 v/div.</p> <p>Self-check screen displayed.</p>              |
|           |  | <p><u>CH1 : TP8 (SYNC) CH2 : TP5 (R)</u></p> <p>Trigger : TP8<br/> X-scale :    10 us/div.<br/> Y-scale :    2 v/div.</p> <p>X-scale :    10 us/div.<br/> Y-scale :    1 v/div.</p> <p>Self-check screen displayed.</p>             |
|           |  | <p><u>CH1 : TP8 (SYNC) CH2 : TP6 (G)</u></p> <p>Trigger : TP8<br/> X-scale :    10 us/div.<br/> Y-scale :    2 v/div.</p> <p>X-scale :    10 us/div.<br/> Y-scale :    1 v/div.</p> <p>Self-check screen displayed.</p>             |
|           |  | <p><u>CH1 : TP8 (SYNC) CH2 : TP7 (B)</u></p> <p>Trigger : TP8<br/> X-scale :    10 us/div.<br/> Y-scale :    2 v/div.</p> <p>X-scale :    10 us/div.<br/> Y-scale :    1 v/div.</p> <p>Self-check screen displayed.</p>             |

UNIT/BLOCK :

|   |   |   |
|---|---|---|
| <p>TXA Board<br/>02P6049<br/>(For FCV-361<br/>/362)</p> |    | <p>TP1 (SIG OUT)</p> <hr/> <p>Trigger : TP3 (KP)<br/>X-scale : 2 ms/div.<br/>Y-scale : 2 v/div.</p>   |
|   |    | <p>TP3 (KPIN)</p> <hr/> <p>Trigger : Internal<br/>X-scale : s/div.<br/>Y-scale : 2 v/div.</p> <p>T : Pulselength (0.2-3.6ms)<br/>depends on range setting</p> |
|   |  | <p>J2 #1-#5 (TX OUTPUT)</p> <hr/> <p>Trigger :<br/>X-scale : s/div.<br/>Y-scale : v/div.</p>  |
| <p>ES Board<br/>02P6073<br/>(For<br/>FCV-363)</p>       |  | <p>TP3 (KP)</p> <hr/> <p>Trigger : Internal<br/>X-scale : 1 ms/div.<br/>Y-scale : 5 v/div.</p> <p>Range : 300m</p>  |
|   |  | <p>TP4 (TX OSC OUTPUT)</p> <hr/> <p>Trigger : Internal<br/>X-scale : 1 ms/div.<br/>Y-scale : 5 v/div.</p> <p>Range : 300m</p>                                 |

UNIT/BLOCK :

ES Board  
02P6073  
(For  
FCV-363)

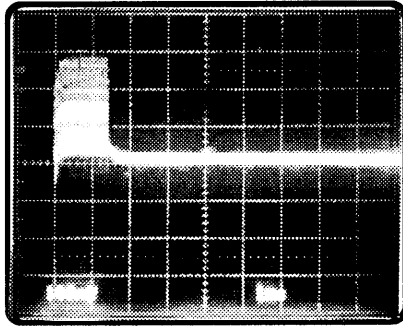


### Q7 Emitter

Trigger : Internal  
X-scale : 1 ms/div.  
Y-scale : 5 v/div.

#### AC Coupling

Freq. : 28kHz PWR : Max.  
Range : 300m

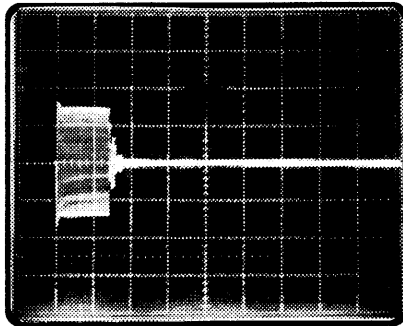


### Q11 To Q16 Drain

Trigger : Internal  
X-scale : 1 ms/div.  
Y-scale : 100 mv/div.

#### AC Coupling

Freq. : 28kHz PWR : Max.  
Range : 300m

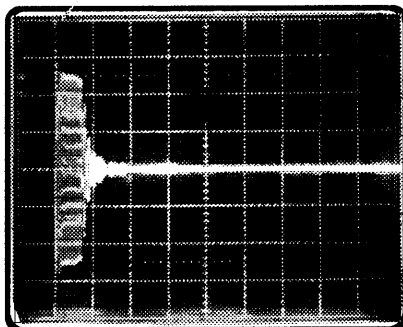


### J2 #1-#5 (TX OUTPUT)

Trigger : Internal  
X-scale : 1 ms/div.  
Y-scale : 500 v/div.

#### AC Coupling

Freq. : 28kHz PWR : 4 (Max.)  
Range : 300m

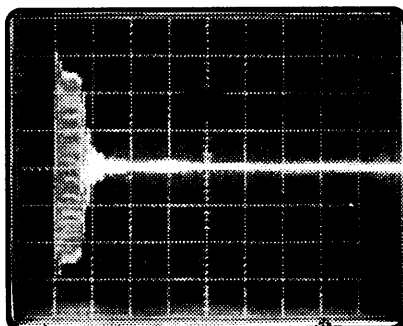


### J2 #1-#5 (TX OUTPUT)

Trigger : Internal  
X-scale : 2 ms/div.  
Y-scale : 50 v/div.

#### AC Coupling

Freq. : 28kHz PWR : 3  
Range : 300m



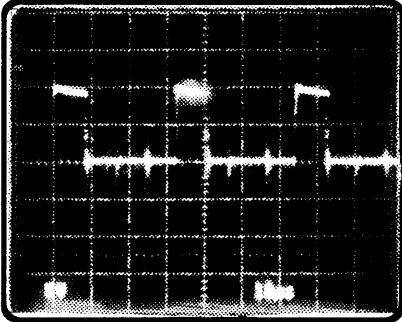
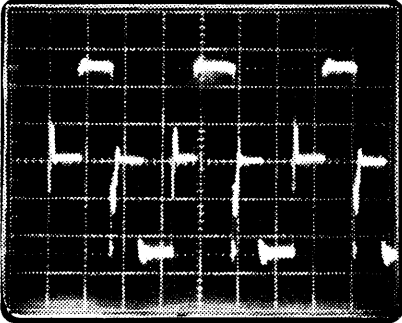
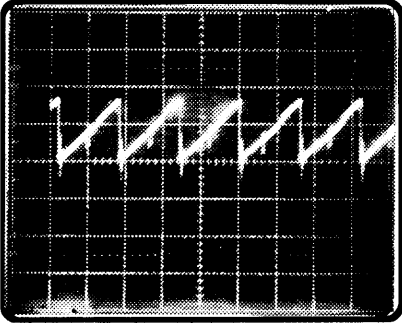
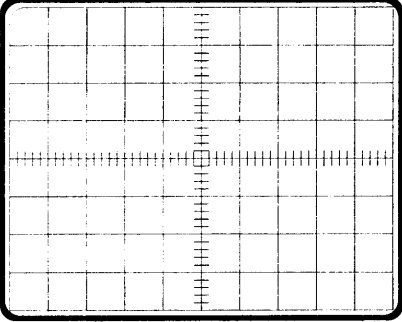
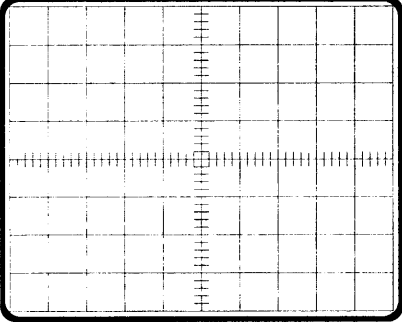
### J2 #1-#5 (TX OUTPUT)

Trigger : Internal  
X-scale : 2 ms/div.  
Y-scale : 20 v/div.

#### AC Coupling

Freq. : 28kHz PWR : 2  
Range : 300m

UNIT/BLOCK :

|                                       |   |   |
|---------------------------------------|---|---|
| <p>Power Supply Board<br/>02P6072</p> |    | <p>TP11 (TP12) - TP20</p> <hr/> <p>Trigger : Internal<br/>X-scale : . 10 us/div.<br/>Y-scale : 5 v/div.</p> |
|                                       |    | <p>TP13 - TP14</p> <hr/> <p>Trigger : Internal<br/>X-scale : 10 us/div.<br/>Y-scale : 20 v/div.</p>         |
|                                       |  | <p>TP15</p> <hr/> <p>Trigger : Internal<br/>X-scale : 10 us/div.<br/>Y-scale : 2 v/div.</p>                 |
|                                       |  | <hr/> <p>Trigger :<br/>X-scale : s/div.<br/>Y-scale : v/div.</p>  |
|                                       |  | <hr/> <p>Trigger :<br/>X-scale : s/div.<br/>Y-scale : v/div.</p>  |

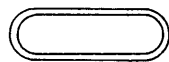
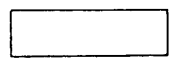
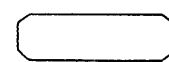

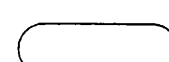
## CHAPTER 6. TROUBLESHOOTING

This chapter provides the guide for finding the faulty pc board first and proceeding to the troubleshooting on each pc board. The table below shows the main functions on each pc board.

| Printed Circuit Board<br>Function  | DSP | TXA<br>ES | PWR | PNL | Color<br>Monitor |
|--|-----|-----------|-----|-----|------------------|
| Power Supply to all circuits   |     |           | ○   |     |                  |
| Transmission/reception   |     | ○         |     |     |                  |
| Setting of operating conditions<br>(keyboard and DIP switch)   |     |           |     | ○   |                  |
| ADC/sig. processing for CRT display  | ○   |           |     |     |                  |
| Echo display   |     |           |     |     | ○                |
| Generating KP and other control<br>signals for single/dual frequency<br>operation                                  | ○   |           |     |     |                  |
| Generating clutter control voltage   | ○   |           |     |     |                  |
| Generating CRT brilliance voltage  | ○   |           |     |     |                  |
| Data Read from PNL setting condition<br>/freq. setting/speed and temperature<br>sensor/CIF/NMEA communication line | ○   |           |     |     |                  |

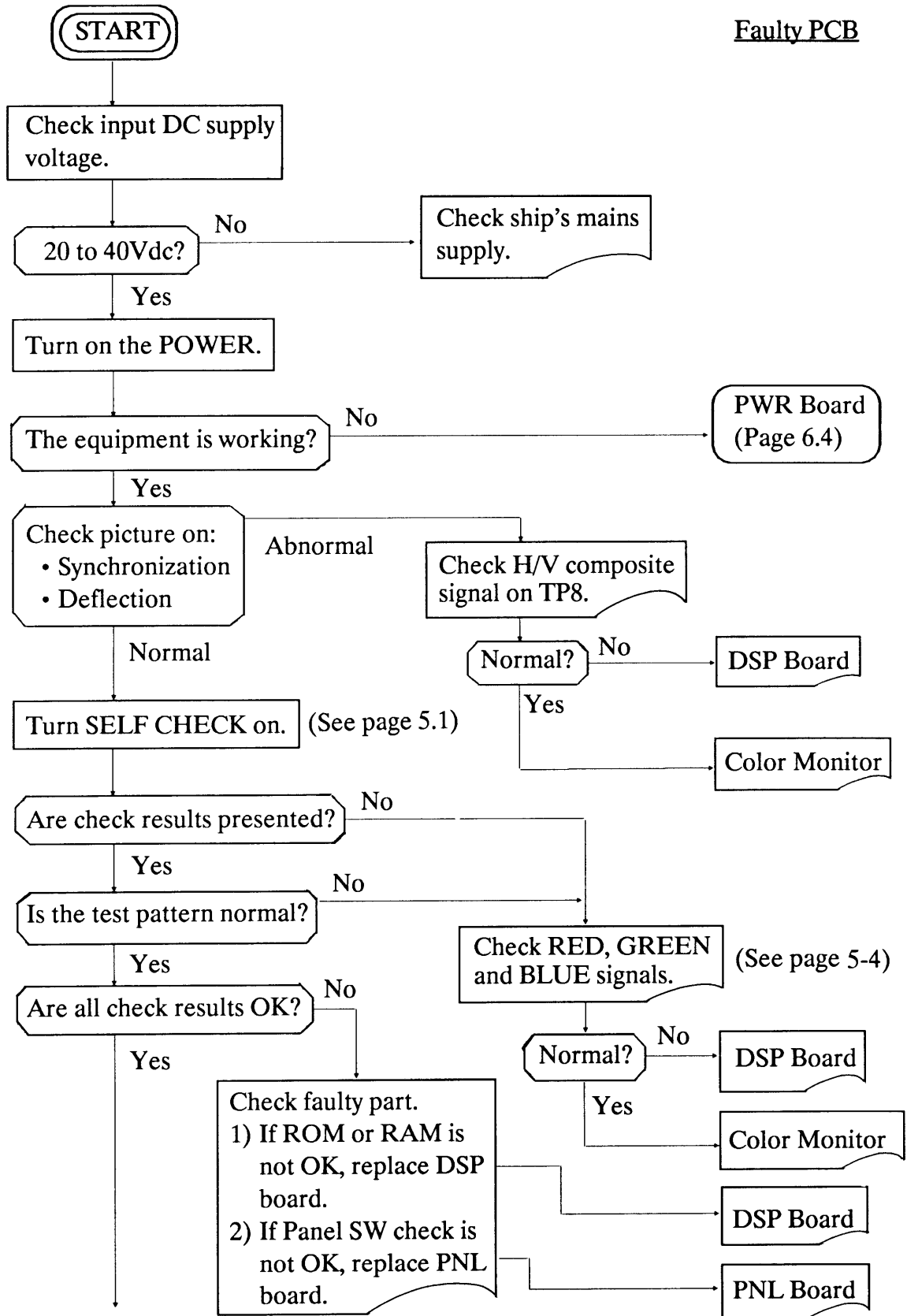
When the Display (DSP) Board is found to be faulty, especially the parts related with MCU's, replace the whole board and return it to the factory taking the note on page 0.1. Troubles on the other pc boards may be cleared tracking the voltages and waveforms.

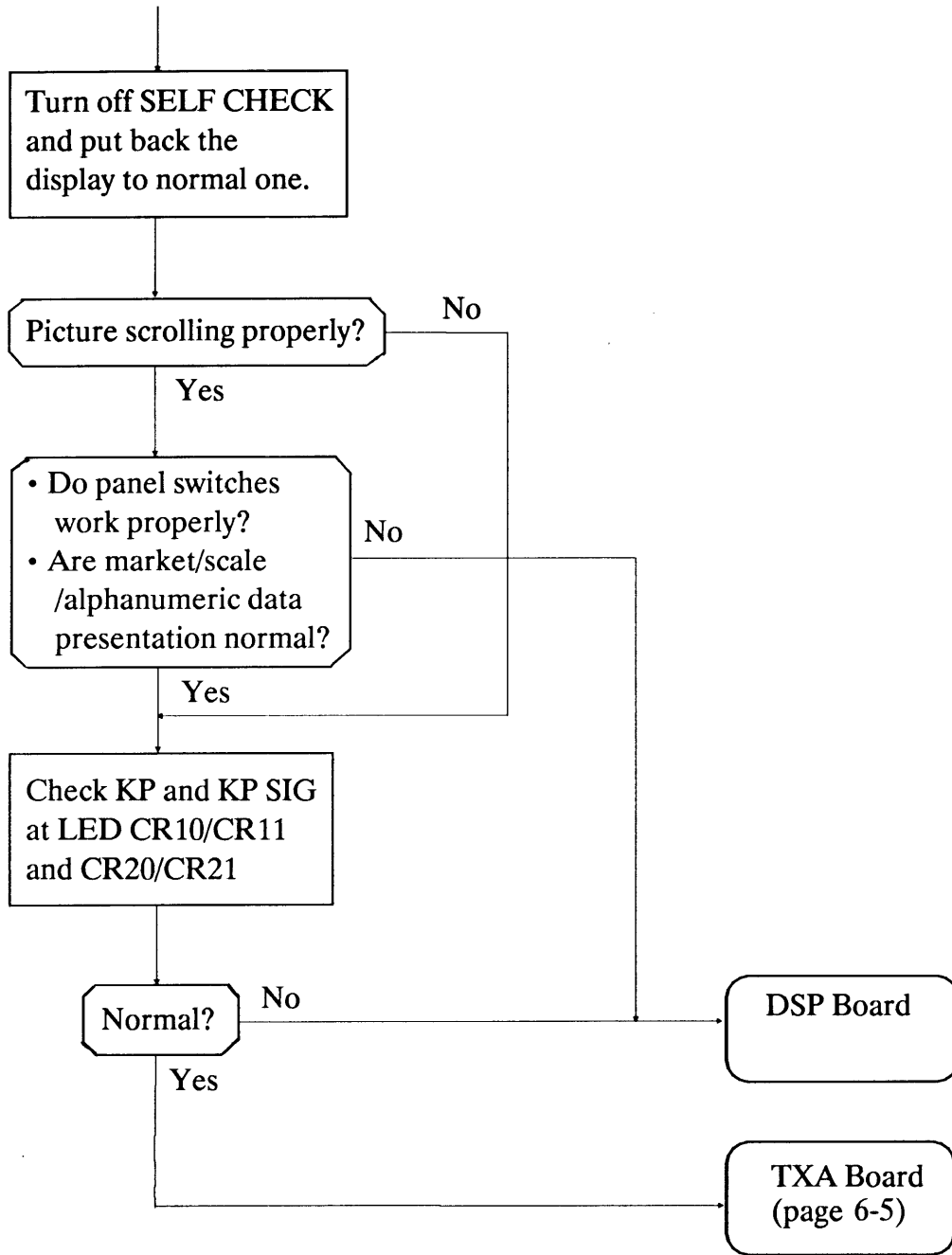
The following symbols are employed in the troubleshooting flow charts.

-  : Start Point
-  : Checking
-  : Judgement
-  : Diagnosis
-  : Jump to Other Flow Chart



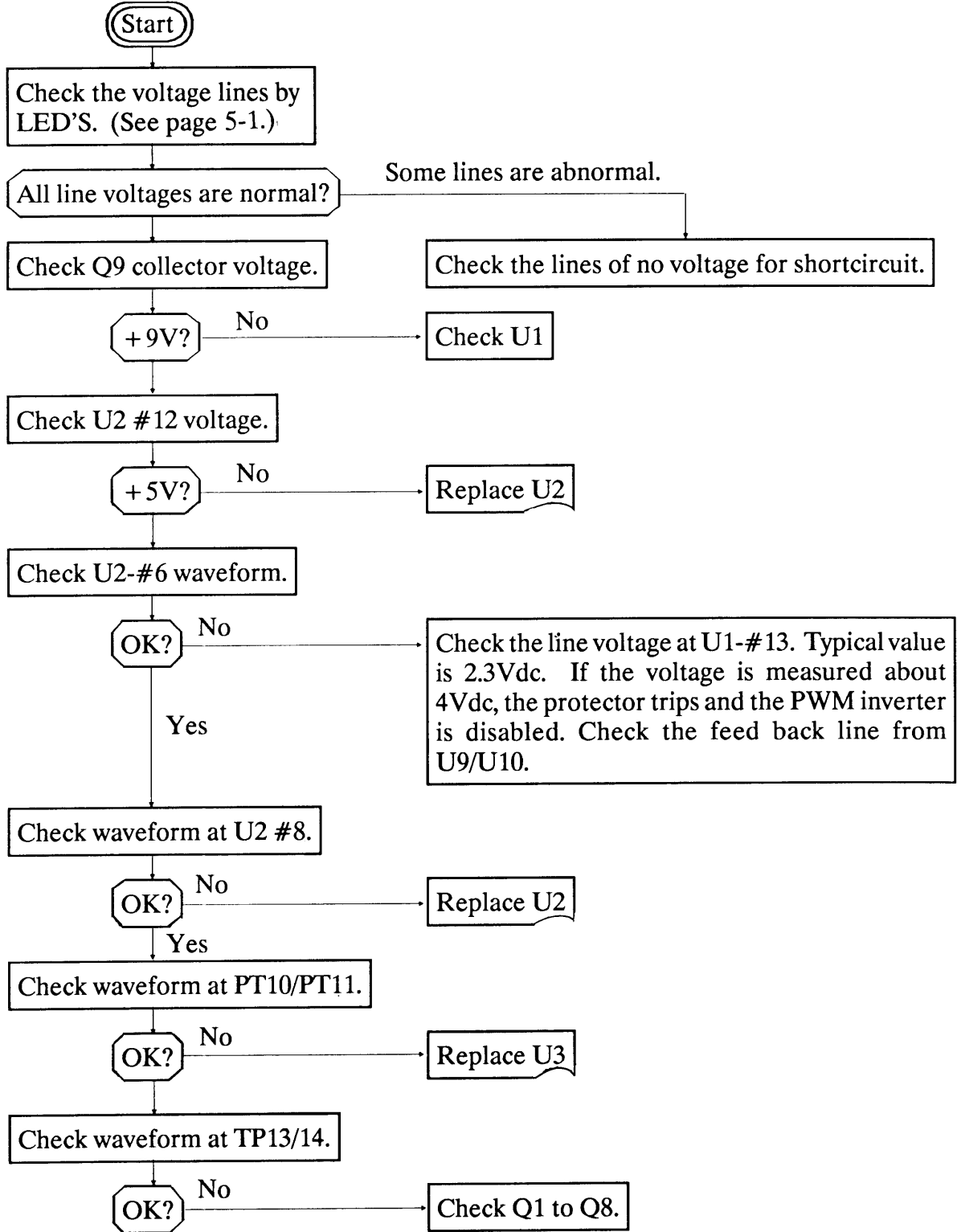
## 6.1 Finding Faulty Block (PC Board)



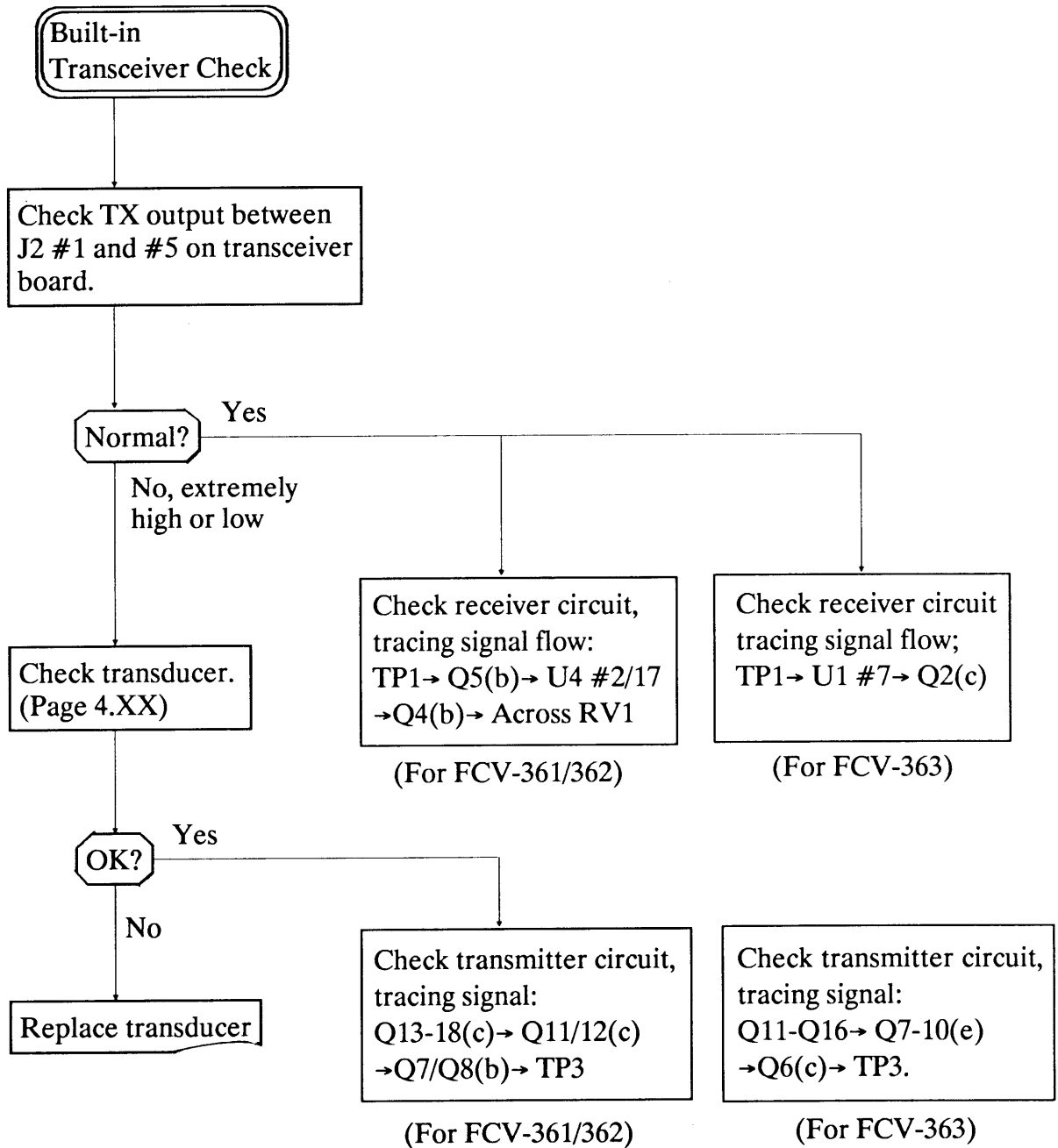


### 6.2 Power Supply Board (PWR 02P6072)

When checking the power supply board after isolating from other circuits, connect a dummy resistor of 60 ohms 10W across + 12V line and ground at the output jack J2, J3 or J4. Otherwise the PWM inverter does not function because the overvoltage protector operates.

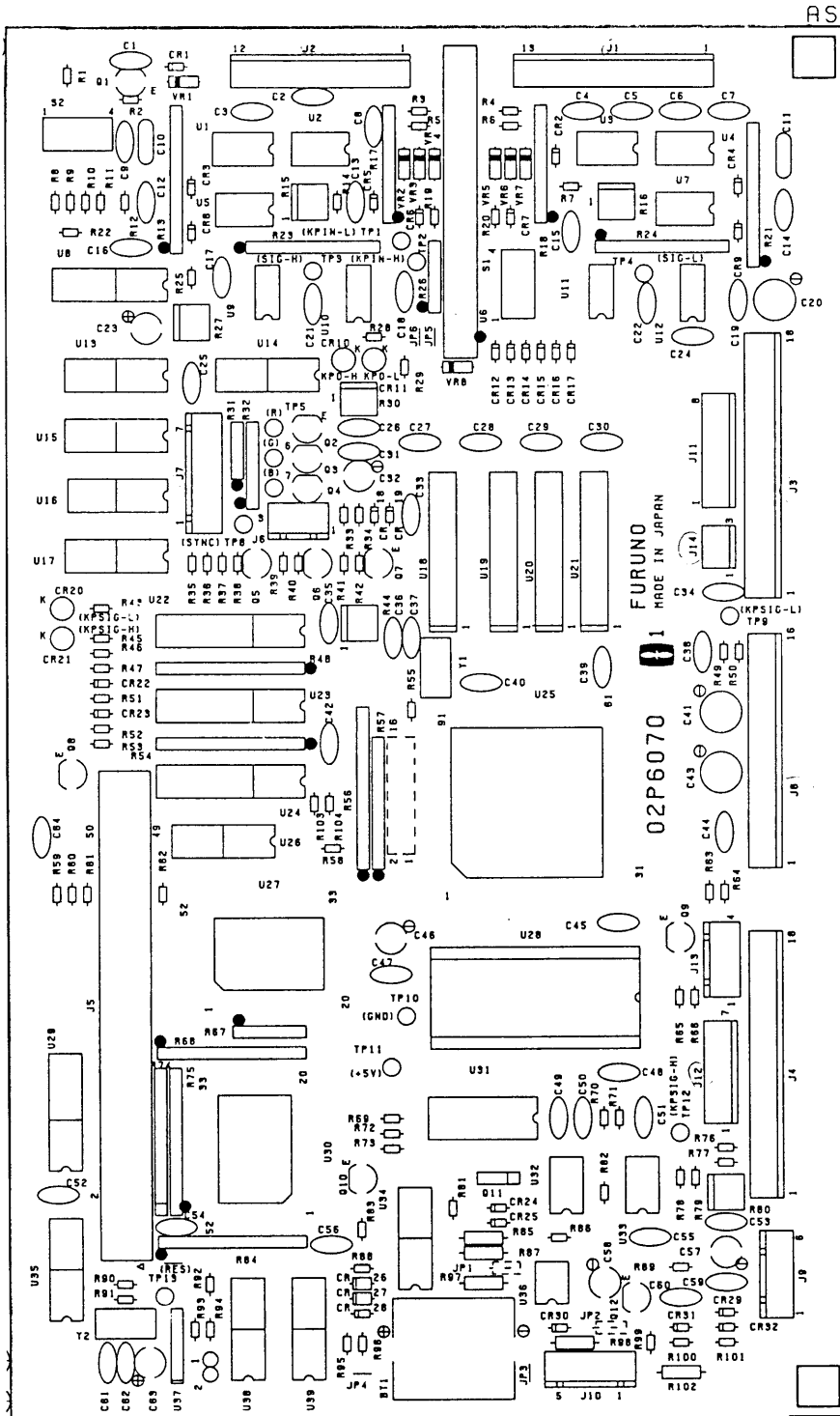


**6.3 Transceiver Board (TXA 02P6049/ES 02P6073)**

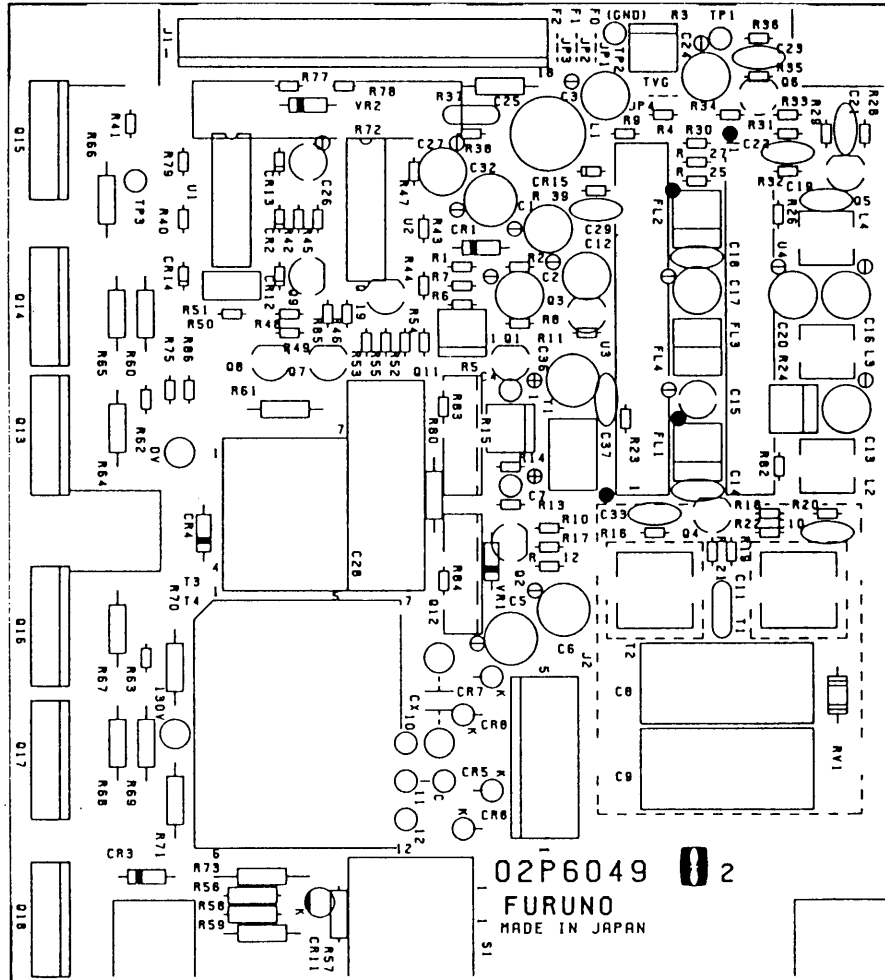


# CHAPTER 7 PARTS LOCATION

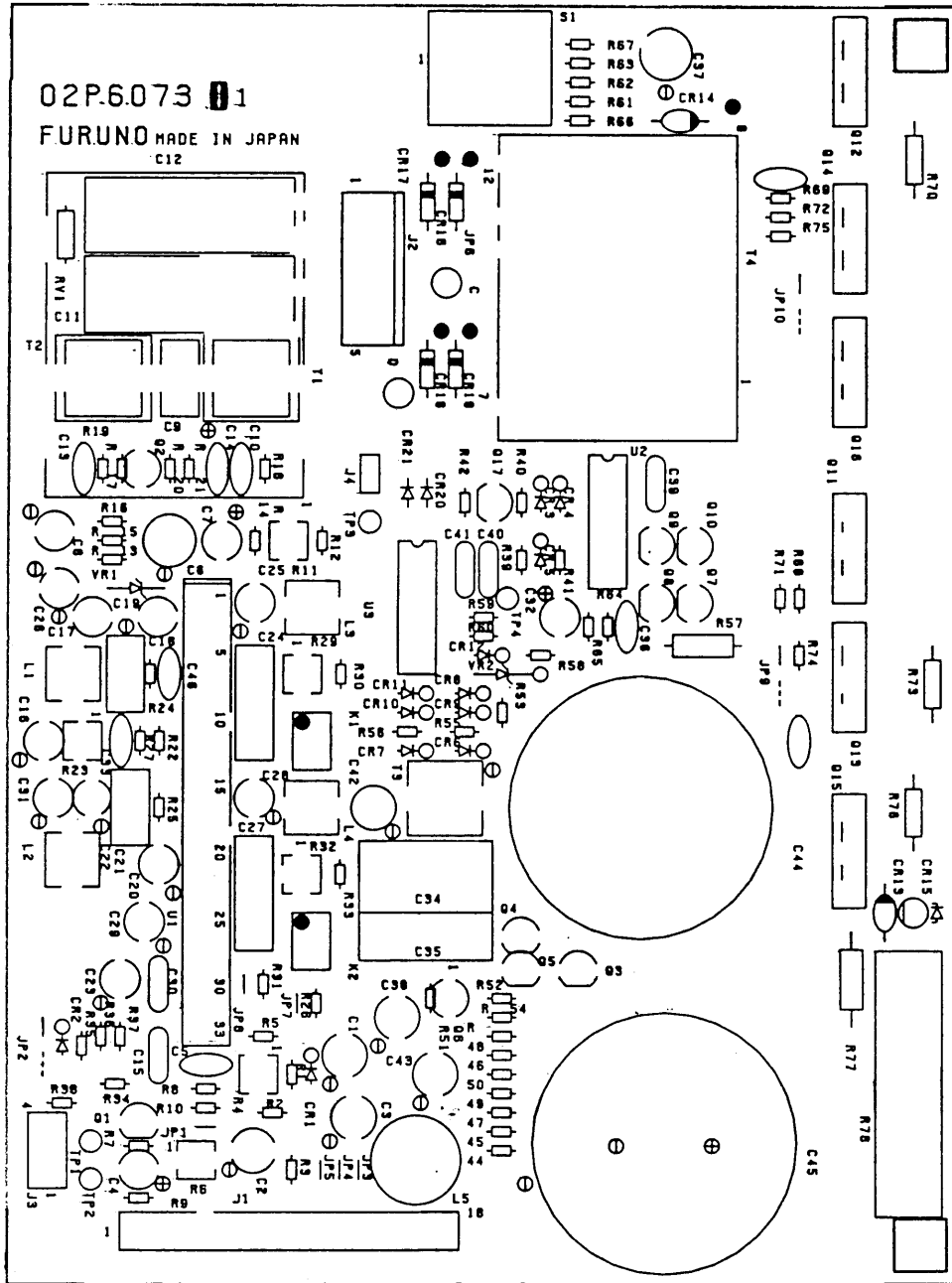
## 7.1 DSP Board (02P6070) Parts Location



**7.2 TXA Board (02P6049) Parts Location (For FCV-361/362)**

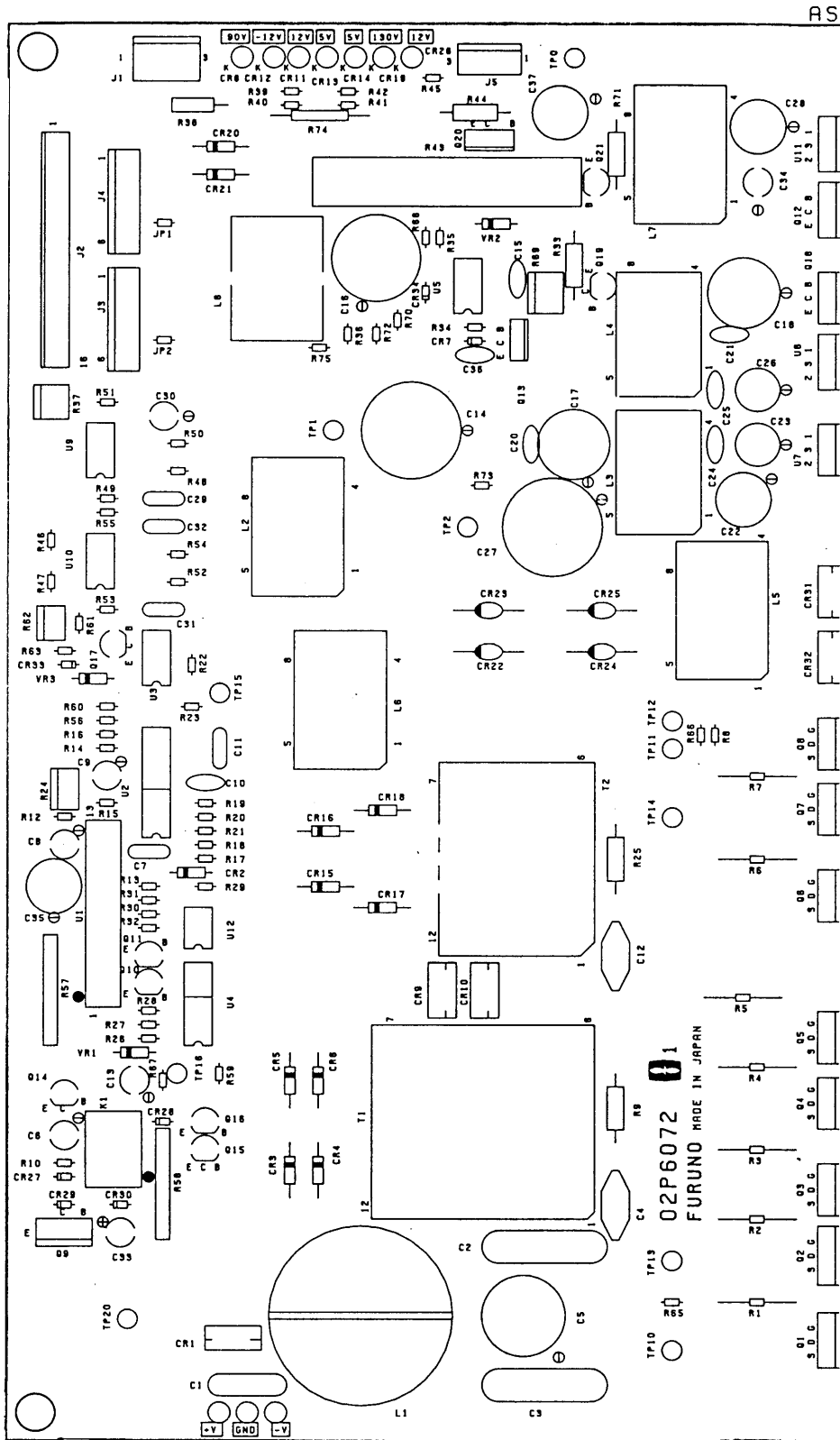


**7.3 ES Board (02P6073) Parts Location (For FCV-363)**



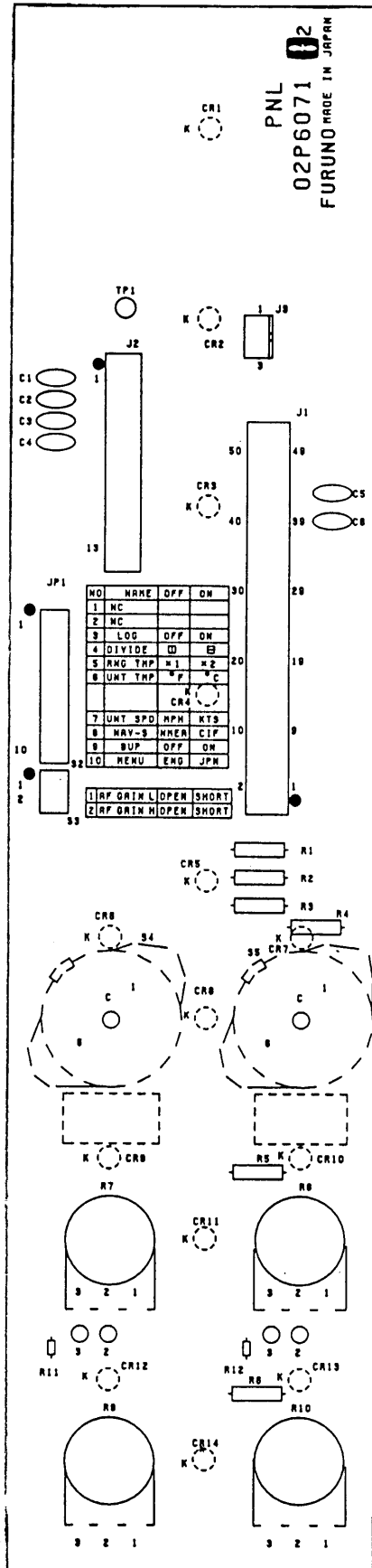
RS

## 7.4 PWR Board (02P6072) Parts Location





**7.5 PNL Board (02P6071) Parts Location**





| SYMBOL | TYPE | SPECIFICATIONS                                      | CODE NO.        | REMARKS     | SYMBOL | TYPE | SPECIFICATIONS    | CODE NO.    | REMARKS     |
|--------|------|---|-----------------|-------------|--------|------|-------------------|-------------|-------------|
| 記号     | 型名   | 規格  | コード番号           | 備考          | 記号     | 型名   | 規格                | コード番号       | 備考          |
| CR     | 10   | TLUY163   | 000-135-85d     |             | CR     | 10   | CTU-24R           | 000-132-450 |             |
| CR     | 11   | TLUY163   | 000-135-85d     |             | CR     | 11   | LN28 RPH          | 000-108-071 |             |
| CR     | 12   | TLUY163   | 000-135-85d     |             | CR     | 12   | LN28 RPH          | 000-108-071 |             |
| CR     | 13   | TLUY163   | 000-135-85d     |             | CR     | 13   | LN28 RPH          | 000-108-071 |             |
| CR     | 14   | TLUY163   | 000-135-85d     |             | CR     | 14   | LN28 RPH          | 000-108-071 |             |
|        |      | RESISTOR  | 抵抗              |             | CR     | 15   | RU2C              | 000-112-137 |             |
| R      | 1    | ENG-15J471P   | 470             | 000-375-405 | CR     | 16   | RU2C              | 000-112-137 |             |
| R      | 2    | ENG-15J471P   | 470             | 000-375-405 | CR     | 17   | RU2C              | 000-112-137 |             |
| R      | 3    | ENG-15J471P   | 470             | 000-375-405 | CR     | 18   | RU2C              | 000-112-137 |             |
| R      | 4    | ENG-15J471P   | 470             | 000-375-405 | CR     | 19   | LN28 RPH          | 000-108-071 |             |
| R      | 5    | ENG-15J471P   | 470             | 000-375-405 | CR     | 20   | EU2               | 000-108-932 |             |
| R      | 6    | ENG-15J471P   | 470             | 000-375-405 | CR     | 21   | EU2               | 000-108-932 |             |
| R      | 7    | EWK-D2A235052                                       | B 1K/10K        | 000-113-096 | CR     | 22   | U06C              | 000-135-901 |             |
| R      | 8    | EWK-D2A235052                                       | B 1K/10K        | 000-113-096 | CR     | 23   | U06C              | 000-135-901 |             |
| R      | 9    | EVH-17A280B14                                       | B 10K           | 000-113-097 | CR     | 24   | U06C              | 000-135-901 |             |
| R      | 10   | EVH-17A280B14                                       | B 10K           | 000-113-097 | CR     | 25   | U06C              | 000-135-901 |             |
| R      | 11   | ERD-16TJ153   | 0.16W 15K       | 000-329-059 | CR     | 26   | LN28 RPH          | 000-108-071 |             |
| R      | 12   | ERD-16TJ153   | 0.16W 15K       | 000-329-059 | CR     | 27   | 1SS133            | 000-103-097 |             |
|        |      | SWITCH  | スイッチ            |             | CR     | 28   | 1SS133            | 000-103-097 |             |
| S      | 1    | 0253884-0   | 0253884-0       | 000-115-492 | CR     | 29   | 1SS133            | 000-103-097 |             |
| S      | 2    | 0253885-0   | 0253885-0       | 000-115-493 | CR     | 30   | 1SS133            | 000-103-097 |             |
| S      | 3    | 51D-1001  | 000-112-085     |             | CR     | 31   | CTU-24R           | 000-132-450 |             |
| S      | 4    | 51D-0201  | 000-108-526     |             | CR     | 32   | CTU-24S           | 000-132-451 |             |
| S      | 5    | SRM-1026  | 0258090-0       | 000-460-275 | CR     | 33   | 1SS133            | 000-103-097 |             |
| S      | 5    | SRM-1026  | 0258090-0       | 000-460-275 | CR     | 34   | 1SS133            | 000-103-097 |             |
|        |      | Block No. 1 B 4                                     |                 |             |        |      | FUSE              | ヒューズ        |             |
|        |      | 電源回路<br>POWER SUPPLY BLOCK<br>Ref. Dwg. C2320-K06-A |                 |             | F      | 1    | FGBO 7A AC125V    | 0050080-0   | 000-549-013 |
|        |      | MOTOR   | モーター            |             |        |      | FILTER            | フィルタ        |             |
| B      | 1    | MMF-06B12DM-R                                       | 000-116-801     |             | FL     | 1    | GE-2100           | 000-112-894 |             |
|        |      | CAPACITOR   | コンデンサ           |             |        |      | RELAY             | リレー         |             |
| C      | 1    | MDD2-2A-225K  | 2.2UF, 100V     | 000-262-400 | K      | 1    | TQ2-L2-9V         | ATQ0227     | 000-111-781 |
| C      | 2    | MDD2-2A-225K  | 2.2UF, 100V     | 000-262-400 |        |      | COIL              | コイル         |             |
| C      | 3    | MDD2-2A-225K  | 2.2UF, 100V     | 000-262-400 | L      | 1    | SC-10-100         | 000-424-980 |             |
| C      | 4    | ECK-D3A222KBN                                       | 2200PF 1KV      | 000-255-755 | L      | 2    | 02S0992-0 (E1-25) | 02S0992-0   | 000-113-125 |
| C      | 5    | ECE-A2AU221E  | WS.0 220MF 100V | 000-206-124 | L      | 3    | 02S0994-0 (E1-22) | 02S0994-0   | 000-113-127 |
| C      | 6    | ECE-A1CU101E  | 100UF 16V       | 000-206-112 | L      | 4    | 02S0994-0 (E1-22) | 02S0994-0   | 000-113-127 |
| C      | 7    | ECQ-M1H103KVW                                       | 0.01UF 50V      | 000-260-416 | L      | 5    | 02S0993-0 (E1-25) | 02S0993-0   | 000-113-126 |
| C      | 8    | ECE-A1CU100E  | 10UF 16V        | 000-201-672 | L      | 6    | 02S0995-0 (E1-25) | 02S0995-0   | 000-113-128 |
| C      | 9    | ECE-A1CU100E  | 10UF 16V        | 000-201-672 | L      | 7    | 02S0993-0 (E1-25) | 02S0993-0   | 000-113-126 |
| C      | 10   | RPE132F104Z50                                       | 0.1UF 50V       | 000-104-501 | L      | 8    | 02S0952-1         | 02S0993-0   | 000-108-318 |
| C      | 11   | ECC-K1222G7   | 000-115-506     |             |        |      | TRANSISTOR        | トランジスタ      |             |
| C      | 12   | ECK-D3A222KBN                                       | 2200PF 1KV      | 000-255-755 | Q      | 1    | 2SK459 G21        | 000-103-158 |             |
| C      | 13   | ECE-A1AU221E  | 220UF 10V       | 000-206-114 | Q      | 2    | 2SK459 G21        | 000-103-158 |             |
| C      | 14   | ECE-A2E5101   | 100UF, 250V     | 000-201-561 | Q      | 3    | 2SK459 G21        | 000-103-158 |             |
| C      | 15   | ECQ-M1H103KVW                                       | 0.01UF 50V      | 000-260-416 | Q      | 4    | 2SK459 G21        | 000-103-158 |             |
| C      | 16   | ECE-A2CU101   | 100UF, 160V     | 000-110-372 | Q      | 5    | 2SK459 G21        | 000-103-158 |             |
| C      | 17   | ECE-A1HU471E  | 470UF 50V       | 000-201-838 | Q      | 6    | 2SK459 G21        | 000-103-158 |             |
| C      | 18   | ECE-A1HU471E  | 470UF 50V       | 000-201-838 | Q      | 7    | 2SK459 G21        | 000-103-158 |             |
| C      | 19   |   |                 |             | Q      | 8    | 2SK459 G21        | 000-103-158 |             |
| C      | 20   | RPE132F104Z50                                       | 0.1UF 50V       | 000-104-501 | Q      | 9    | 2B5896-Y          | 000-121-102 |             |
| C      | 21   | RPE132F104Z50                                       | 0.1UF 50V       | 000-104-501 | Q      | 10   | 25C1815-Y         | 000-125-631 |             |
| C      | 22   | ECE-A1CU102E  | 1000UF 16V      | 000-201-809 | Q      | 11   | 25A1015-Y         | 000-116-041 |             |
| C      | 23   | ECE-A1CU221E  | 220UF 50V       | 000-201-673 | Q      | 12   | 25A1009A          | 000-116-497 |             |
| C      | 24   | RPE132F104Z50                                       | 0.1UF 50V       | 000-104-501 | Q      | 13   | 25C3588           | 000-115-499 |             |
| C      | 25   | RPE132F104Z50                                       | 0.1UF 50V       | 000-104-501 | Q      | 14   | 25C1815-Y         | 000-125-631 |             |
| C      | 26   | ECE-A1CU221E  | 220UF 50V       | 000-201-673 | Q      | 15   | 25C1815-Y         | 000-125-631 |             |
| C      | 27   | ECE-A2E5101   | 100UF, 250V     | 000-201-561 | Q      | 16   | 25C1815-Y         | 000-125-631 |             |
| C      | 28   | ECQ-M1H0331E  | 330UF, 50V      | 000-201-837 | Q      | 17   | 25C1815-Y         | 000-125-631 |             |
| C      | 29   | ECQ-M1H102KVW                                       | 1000PF 50V      | 000-260-415 | Q      | 18   | 25A1009A          | 000-116-497 |             |
| C      | 30   | ECE-A1AU470E  | 47UF 10V        | 000-206-102 | Q      | 19   | 25A778-K          | 000-117-520 |             |
| C      | 31   | ECQ-M1H102KVW                                       | 1000PF 50V      | 000-260-415 | Q      | 20   | 25C3588           | 000-115-499 |             |
| C      | 32   | ECQ-M1H102KVW                                       | 1000PF 50V      | 000-260-415 | Q      | 21   | 25A778-K          | 000-117-520 |             |
| C      | 33   | ECSF1CE335E   | 00S0114-0       | 000-101-576 |        |      | RESISTOR          | 抵抗          |             |
| C      | 34   | ECE-A1CU101E  | 100UF 16V       | 000-206-112 | R      | 1    | AF1/4S10F         | 02S0942-0   | 000-108-329 |
| C      | 35   | ECE-A1CU471E  | 470UF, 16V      | 000-201-808 | R      | 2    | AF1/4S10F         | 02S0942-0   | 000-108-329 |
| C      | 36   |   |                 |             | R      | 3    | AF1/4S10F         | 02S0942-0   | 000-108-329 |
| C      | 37   | ECEAE5100   | 10UF 250V       | 000-201-560 | R      | 4    | AF1/4S10F         | 02S0942-0   | 000-108-329 |
|        |      | DIODE   | ダイオード           |             | R      | 5    | AF1/4S10F         | 02S0942-0   | 000-108-329 |
| CR     | 1    | CTG-315   | 13-3-5356       | 000-132-438 | R      | 6    | AF1/4S10F         | 02S0942-0   | 000-108-329 |
| CR     | 2    | 1SS98   | SHOTTKY         | 000-114-011 | R      | 7    | AF1/4S10F         | 02S0942-0   | 000-108-329 |
| CR     | 3    | RU2C  | 000-112-137     |             | R      | 8    | AF1/4S10F         | 02S0942-0   | 000-108-329 |
| CR     | 4    | RU2C  | 000-112-137     |             | R      | 9    | ERG-25J101P       | 2W 100      | 000-375-462 |
| CR     | 5    | RU2C  | 000-112-137     |             | R      | 10   | ERD-16TJ103       | 0.16W 10K   | 000-330-802 |
| CR     | 6    | RU2C  | 000-112-137     |             | R      | 11   |                   |             |             |
| CR     | 7    | 1SS133  | 000-103-097     |             | R      | 12   | AF1/4S56K F       | 02S0942-0   | 000-112-396 |
| CR     | 8    | LN28 RPH  | 000-108-071     |             | R      | 13   | ERD-16TJ271       | 0.16W 270   | 000-329-023 |
| CR     | 9    | CTU-24S   | 000-132-451     |             | R      | 14   | ERD-16TJ103       | 0.16W 10K   | 000-330-802 |
|        |      | NOTE:   |                 |             | R      | 15   | ERD-16TJ472       | 0.16W 4.7K  | 000-330-812 |
|        |      | 備考:   |                 |             | R      | 16   | ERD-16TJ472       | 0.16W 4.7K  | 000-330-812 |
|        |      |   |                 |             | R      | 17   | ERD-16TJ472       | 0.16W 4.7K  | 000-330-812 |
|        |      |   |                 |             | R      | 18   | ERD-16TJ472       | 0.16W 4.7K  | 000-330-812 |
|        |      |   |                 |             | R      | 19   | ERD-16TJ564       | 00S0095-0   | 000-329-090 |

# FURUNO

FCV-360/361/362/383

電気部品表

ELECTRICAL PARTS LIST

P-3

| SYMBOL | TYPE | SPECIFICATIONS     | CODE NO.      | REMARKS     | SYMBOL | TYPE   | SPECIFICATIONS | CODE NO. | REMARKS |
|--------|------|--------------------|---------------|-------------|--------|--|----------------|----------|---------|
| 記号     | 型名   | 規格                 | コード番号         | 備考          | 記号     | 型名   | 規格             | コード番号    | 備考      |
| R      | 20   | ERD-16TJ224        | 0.16W 220K    | 000-329-080 |        | Block No. 1 B B<br>送受信部 (FCV-361/362)<br>TRANSCEIVER BLOCK (FCV-361/362)<br>Ref. Dwg. C2307-010-B<br>CAPACITOR      コンデンサ<br>C 1 ECE-A1CU101E 100UF 16V 000-206-112<br>C 2 ECE-A1CU101E 100UF 16V 000-206-112<br>C 3 ECE-A1CU101E 100UF 16V 000-206-112<br>C 4<br>C 5 ECE-A1CU221E 220UF 50V 000-201-673 *<br>C 6 ECE-A1CU221E 220UF 50V 000-201-673<br>C 7 ECSF1EE105 1UF 25V 000-232-660 *<br>C 8<br>C 9<br>C 10<br>C 11<br>C 12 ECE-A1CU101E 100UF 16V 000-206-112<br>C 13 ECE-A1CU101E 100UF 16V 000-206-112<br>C 14 DD106-69CH560J50V 56PF 50V 000-253-774<br>C 15 ECE-A1CU100E 10UF 16V 000-201-672<br>C 16 ECE-A1CU101E 100UF 16V 000-206-112<br>C 17 ECE-A1CU101E 100UF 16V 000-206-112<br>C 18 DD106-69CH560J50V 56PF 50V 000-253-774<br>C 19 DD109CH121J50V 120PF,50V 000-253-145<br>C 20 ECE-A1CU101E 100UF 16V 000-206-112<br>C 21 DD308-69F104Z25 0.1UF 50V 000-103-771<br>C 22 DD308-69F104Z25 0.1UF 50V 000-103-771<br>C 23 DD308-69F104Z25 0.1UF 50V 000-103-771<br>C 24 ECE-A1CU101E 100UF 16V 000-206-112<br>C 25 EC0-MH102KVW 1000PF 50V 000-260-415<br>C 26 ECE-A1CU100E 10UF 16V 000-201-672<br>C 27 ECE-A1CU101E 100UF 16V 000-206-112<br>C 28<br>C 29 DD308-69F104Z25 0.1UF 50V 000-103-771 *<br>C 32 ECE-A1CU221E 220UF 50V 000-201-673 *<br>C 33<br>C 34<br>C 36<br>C 37<br>DIODE      ダイオード<br>CR 1 1S5133 000-103-097<br>CR 2 1S5133 000-103-097<br>CR 3 GY-23 0254624-0 000-132-971<br>CR 4 GY-23 0254624-0 000-132-971<br>CR 5 EU2 000-103-932<br>CR 6 EU2 000-103-932<br>CR 7 EU2 000-103-932<br>CR 8 EU2 000-103-932<br>CR 11 LN28 RPH 000-103-971<br>CR 12 1S5133 000-103-097<br>CR 13 1S5133 000-103-097<br>CR 14 1S5133 000-103-097<br>FILTER      フィルタ<br>FL 1 SFZ455B3 455KHZ 0253635 000-533-312<br>FL 2 SFZ455B3 455KHZ 0253635 000-533-312<br>FL 3 BFU455K2 455KHZ 0253636 000-533-303<br>FL 4 BFU455K2 455KHZ 0253636 000-533-303<br>JACK      ジャック<br>J 1 818P-SHF-1AA-K ZENER 000-107-657<br>J 2 B5P-VH 5P 000-505-823<br>COIL      コイル<br>L 1 0250978 000-110-365<br>L 2 0250680-0, 1MH 000-727-680<br>L 3 0250680-0, 1MH 000-727-680<br>L 4 0250680-0, 1MH 000-727-680<br>TRANSISTOR      トランジスタ<br>Q 1 25C1815-Y 000-125-631<br>Q 2 25C1815-Y 000-125-631<br>Q 3 25A1015-Y 000-118-041<br>Q 4 25C1815-Y 000-125-631<br>Q 5 25C1815-Y 000-125-631<br>Q 6 25C1815-Y 000-125-631<br>Q 7 25C982TH 000-124-463<br>Q 8 25C982TH 000-124-463<br>Q 9 25C982TH 000-124-463<br>Q 11 25C2307 000-126-102<br>Q 12 25C2307 000-126-102<br>Q 13 25C3520 000-126-280<br>Q 14 25C3520 000-126-280<br>Q 15 25C3520 000-126-280<br>Q 16 25C3520 000-126-280<br>Q 17 25C3520 000-126-280<br>Q 18 25C3520 000-126-280<br>Q 19 25C1815-Y 000-125-631 |                |          |         |
| R      | 21   | ERD-16TJ103        | 0.16W 10K     | 000-330-802 |        |  |                |          |         |
| R      | 22   | EKD-16TJ472        | 0.16W 4.7K    | 000-330-812 |        |  |                |          |         |
| R      | 23   | ERD-16TJ472        | 0.16W 4.7K    | 000-330-812 |        |  |                |          |         |
| R      | 24   | EVM-MCGA01B24      | 20K (00S0119) | 000-103-591 |        |  |                |          |         |
| R      | 25   | ERG-25J101P        | 2W 100        | 000-375-462 |        |  |                |          |         |
| R      | 26   | ERD-16TJ103        | 0.16W 10K     | 000-330-802 |        |  |                |          |         |
| R      | 27   | EKD-16TJ153        | 0.16W 15K     | 000-329-059 |        |  |                |          |         |
| R      | 28   | EKD-16TJ473        | 0.16W 47K     | 000-330-814 |        |  |                |          |         |
| R      | 29   | ERD-16TJ153        | 0.16W 15K     | 000-329-059 |        |  |                |          |         |
| R      | 30   | ERD-16TJ103        | 0.16W 10K     | 000-330-802 |        |  |                |          |         |
| R      | 31   | ERD-16TJ102        | 0.16W 1K      | 000-330-801 |        |  |                |          |         |
| R      | 32   | ERD-16TJ332        | 0.16W 3.3K    | 000-329-045 |        |  |                |          |         |
| R      | 33   | ERG-25J822P        | 00S0102-0     | 000-375-486 |        |  |                |          |         |
| R      | 34   | ERD-16TJ393        | 0.16W 39K     | 000-329-066 |        |  |                |          |         |
| R      | 35   | ERD-16TJ102        | 0.16W 1K      | 000-330-801 |        |  |                |          |         |
| R      | 36   | EKD-16TJ823        | 0.16W 82K     | 000-329-073 |        |  |                |          |         |
| R      | 37   | EVM-MCGA01B53      | 5K (00S0119)  | 000-103-631 |        |  |                |          |         |
| R      | 38   | ERG-1ANJ333        | 1W 33K        | 000-371-311 |        |  |                |          |         |
| R      | 39   | ERD-16TJ472        | 0.16W 4.7K    | 000-330-812 |        |  |                |          |         |
| R      | 40   | ERD-16TJ472        | 0.16W 4.7K    | 000-330-812 |        |  |                |          |         |
| R      | 41   | ERD-16TJ222        | 0.16W 2.2K    | 000-330-809 |        |  |                |          |         |
| R      | 42   | ERD-16TJ222        | 0.16W 2.2K    | 000-330-809 |        |  |                |          |         |
| R      | 43   | ERF-10XJ680        |               | 000-113-122 |        |  |                |          |         |
| R      | 44   | ERG-25J393P        | 39K,2W        | 000-112-912 |        |  |                |          |         |
| R      | 45   | ERD-16TJ472        | 0.16W 4.7K    | 000-330-812 |        |  |                |          |         |
| R      | 46   | ERD-16TJ222        | 0.16W 2.2K    | 000-330-809 |        |  |                |          |         |
| R      | 47   | ERD-16TJ222        | 0.16W 2.2K    | 000-330-809 |        |  |                |          |         |
| R      | 48   | AF1/4S220KF        |               | 000-115-501 |        |  |                |          |         |
| R      | 49   | AF1/4S4.7KF        | 02S0942-0     | 000-109-745 |        |  |                |          |         |
| R      | 50   | AF1/4S220KF        |               | 000-115-501 |        |  |                |          |         |
| R      | 51   | AF1/4S2.67KF       |               | 000-115-503 |        |  |                |          |         |
| R      | 52   | AF1/4S220KF        |               | 000-115-501 |        |  |                |          |         |
| R      | 53   | AF1/4S4.12KF       |               | 000-115-504 |        |  |                |          |         |
| R      | 54   | AF1/4S220KF        |               | 000-115-501 |        |  |                |          |         |
| R      | 55   | AF1/4S1.69K F      | 02S0942-0     | 000-113-549 |        |  |                |          |         |
| R      | 56   | ERD-16TJ471        | 0.16W 470     | 000-329-029 |        |  |                |          |         |
| R      | 57   | MKG-C08W22K J      | 02S0943-0     | 000-112-087 |        |  |                |          |         |
| R      | 58   | MKG-C08W22K J      | 02S0943-0     | 000-112-087 |        |  |                |          |         |
| R      | 59   | ERD-16TJ151        | 0.25W 150     | 000-329-017 |        |  |                |          |         |
| R      | 60   | ERD-16TJ102        | 0.16W 1K      | 000-330-801 |        |  |                |          |         |
| R      | 61   | AF1/4S1KF          | 1K,0.25W      | 000-108-328 |        |  |                |          |         |
| R      | 62   | EVM-MCGA01P22      | 200 (00S0119) | 000-103-629 |        |  |                |          |         |
| R      | 63   | AF1/4S649 F        | 02S0942-0     | 000-113-538 |        |  |                |          |         |
| R      | 64   |                    |               |             |        |  |                |          |         |
| R      | 65   | ERD-16TJ103        | 0.16W 10K     | 000-330-802 |        |  |                |          |         |
| R      | 66   | ERD-16TJ103        | 0.16W 10K     | 000-330-802 |        |  |                |          |         |
| R      | 67   | ERD-16TJ103        | 0.16W 10K     | 000-330-802 |        |  |                |          |         |
| R      | 68   | AF1/4S220KF        |               | 000-115-501 |        |  |                |          |         |
| R      | 69   | EVM-MCGA01B24      | 20K (00S0119) | 000-103-591 |        |  |                |          |         |
| R      | 70   | ERD-16TJ124        | 0.16W 120K    | 000-329-076 |        |  |                |          |         |
| R      | 71   | ERG-15J10CP        | 1W 100K       | 000-114-930 |        |  |                |          |         |
| R      | 72   | AF1/4S100K F       | 02S0942-0     | 000-108-330 |        |  |                |          |         |
| R      | 73   | AF1/4S100K F       | 02S0942-0     | 000-108-330 |        |  |                |          |         |
| R      | 74   | ERG-35J101P        | 3W 100        | 000-375-527 |        |  |                |          |         |
| R      | 75   | ERD-16TJ472        | 0.16W 4.7K    | 000-330-812 |        |  |                |          |         |
|        |      | TRANSFORMER        | トランス          |             |        |  |                |          |         |
| T      | 1    | 02S1031-0          | 02S1031-0     | 000-115-507 |        |  |                |          |         |
| T      | 2    | 02S1032-0          | 02S1032-0     | 000-115-503 |        |  |                |          |         |
|        |      | INTEGRATED CIRCUIT | ICチップ         |             |        |  |                |          |         |
| U      | 1    | RC6219             | 03S6219       | 000-104-530 |        |  |                |          |         |
| U      | 2    | M33759M            |               | 000-157-500 |        |  |                |          |         |
| U      | 3    | SN75372            |               | 000-115-497 |        |  |                |          |         |
| U      | 4    | TLPS21-3G3         |               | 000-135-865 |        |  |                |          |         |
| U      | 5    | UPC393C            |               | 000-161-054 |        |  |                |          |         |
| U      | 6    |                    |               |             |        |  |                |          |         |
| U      | 7    | UPC7805H           |               | 000-161-175 |        |  |                |          |         |
| U      | 8    | UPC7805H           |               | 000-161-175 |        |  |                |          |         |
| U      | 9    | MB3761M            |               | 000-157-365 |        |  |                |          |         |
| U      | 10   | M33761M            |               | 000-157-365 |        |  |                |          |         |
| U      | 11   | UPC7812H           |               | 000-161-148 |        |  |                |          |         |
| U      | 12   | PC900V             |               | 000-134-277 |        |  |                |          |         |
|        |      | POTENTIOMETER      | ポテンチオメータ      |             |        |  |                |          |         |
| VR     | 1    | 02BZ2.2            | ZENER         | 000-110-385 |        |  |                |          |         |
| VR     | 2    | 05AZ5.6Y           | ZENER         | 000-103-873 |        |  |                |          |         |
| VR     | 3    | RD5.1EB2           | ZENER         | 000-104-901 |        |  |                |          |         |
|        |      | FUSE HOLDER        | ヒューズホルダ       |             |        |  |                |          |         |
| AF     | 1    | C0-207HH 00S0140   | 6.4MM X 30MM  | 000-519-180 |        |  |                |          |         |

NOTE:

備考:

| SYMBOL<br>記号     | TYPE<br>型名    | SPECIFICATIONS<br>規格 | CODE NO.<br>コード番号 | REMARKS<br>備考   | SYMBOL<br>記号                       | TYPE<br>型名         | SPECIFICATIONS<br>規格 | CODE NO.<br>コード番号 | REMARKS<br>備考 |
|------------------|---------------|----------------------|-------------------|-----------------|------------------------------------|--------------------|----------------------|-------------------|---------------|
| RESISTOR<br>抵抗   |               |                      |                   |                 | TRANSFORMER<br>トランス                |                    |                      |                   |               |
| K 1              | ERD-16TJ122   | 0.16W 1.2K           | 000-329-037       |                 | T 1                                |                    |                      |                   | *             |
| K 2              | ERD-16TJ331   | 0.16W 330            | 000-329-025       |                 | T 2                                |                    |                      |                   | *             |
| K 3              | EVM-MCGA01B24 | 20K (00S0119)        | 000-103-591       |                 | T 3                                |                    |                      |                   | *             |
| K 4              | ERD-16TJ472   | 0.16W 4.7K           | 000-330-812       |                 | T 4                                |                    |                      |                   | *             |
| K 5              | EVM-MCGA01B12 | 100                  | 000-103-628       |                 | INTEGRATED CIRCUIT<br>シムレチカイロ      |                    |                      |                   |               |
| K 6              | ERD-16TJ560   | 0.16W 56             | 000-329-007       |                 | U 1                                | TC4069UBP          |                      | 000-163-265       |               |
| K 7              | ERD-16TJ122   | 0.16W 1.2K           | 000-329-037       |                 | U 2                                | TC4025BP           |                      | 000-163-249       |               |
| K 8              | ERD-16TJ472   | 0.16W 4.7K           | 000-330-812       |                 | U 3                                | EHM3827W79 0254611 | HI-MIC               | 000-164-259       |               |
| K 9              | ERD-16TJ472   | 0.16W 4.7K           | 000-330-812       |                 | U 4                                | EHM3826H42 0254612 | HI-MIC               | 000-164-258       |               |
| K 10             | ERD-16TJ221   | 0.16W 220            | 000-329-021       |                 | ZENER DIODE<br>ツェナーダイオード           |                    |                      |                   |               |
| K 11             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 | VR 1                               | 05AZ8.2Z           | ZENER                | 000-103-892       |               |
| K 12             | ERD-16TJ561   | 0.16W 560            | 000-329-031       |                 | VR 2                               | 05AZ43             | ZENER                | 000-104-414       |               |
| K 13             | ERD-16TJ243   | 0.16W 24K            | 000-329-062       |                 | CRYSTAL<br>クリスタル                   |                    |                      |                   |               |
| K 14             |               |                      |                   |                 | Y 1                                |                    |                      |                   | *             |
| K 15             | EVM-MCGA01B23 | 2K                   | 000-103-630       |                 | 28kHz, 1KW 用<br>For 28kHz, 1KW SET |                    |                      |                   |               |
| K 16             | ERD-16TJ102   | 0.16W 1K             | 000-330-801       |                 | CAPACITOR<br>コンデンサ                 |                    |                      |                   |               |
| K 17             | ERD-16TJ821   | 0.16W 820            | 000-329-034       |                 | C 4                                | ECSF1EE335E        | 3.3UF 50V            | 000-101-582       |               |
| K 18             | ERD-16TJ153   | 0.16W 15K            | 000-329-059       |                 | C 3                                | ECV-M12H602JP      | 0.200PF 1.2KV        | 000-261-970       |               |
| K 19             | ERD-16TJ473   | 0.16W 47K            | 000-330-814       |                 | C 4                                | ECV-M12H602JP      | 0.200PF 1.2KV        | 000-261-970       |               |
| K 20             | ERD-16TJ472   | 0.16W 4.7K           | 000-330-812       |                 | C 10                               | RFPE132F104250     | 0.1UF 50V            | 000-104-501       |               |
| K 21             | ERD-16TJ331   | 0.16W 330            | 000-329-025       |                 | C 11                               | ECG-M1H392KVV      | 3900PF 50V           | 000-250-468       |               |
| K 22             | ERD-16TJ102   | 0.16W 1K             | 000-330-801       |                 | C 28                               | ECW-H10H123JP      | 0.012UF 1000V        | 000-259-596       |               |
| K 23             | ERD-16TJ102   | 0.16W 1K             | 000-330-801       |                 | C 33                               | DD308-69F104225    | 0.1UF 50V            | 000-103-771       |               |
| K 24             | ERD-16TJ102   | 0.16W 1K             | 000-330-801       |                 | RESISTOR<br>抵抗                     |                    |                      |                   |               |
| K 25             | EVM-MCGA01B14 | 10K                  | 000-103-632       |                 | R 14                               | ERD-16TJ562        | 0.16W 5.6K           | 000-329-050       |               |
| K 26             | ERD-16TJ222   | 0.16W 2.2K           | 000-330-809       |                 | R 56                               | ERD-25PJ150        | 0.25W 15             | 000-330-313       |               |
| K 27             | ERD-16TJ153   | 0.16W 15K            | 000-329-059       |                 | R 57                               | ERD-25PJ470        | 0.25W 47             | 000-330-325       |               |
| K 28             | ERD-16TJ392   | 0.16W 3.9K           | 000-329-047       |                 | R 58                               | ERG-12SJ150P       | 15                   | 000-375-325       |               |
| K 29             | ERD-16TJ471   | 0.16W 470            | 000-329-029       |                 | R 62                               | ERD-16TJ190        | 0.16W 1              | 000-330-815       |               |
| K 30             | ERD-16TJ471   | 0.16W 470            | 000-329-029       |                 | R 63                               | ERD-16TJ190        | 0.16W 1              | 000-330-815       |               |
| K 31             | ERD-16TJ221   | 0.16W 220            | 000-329-021       |                 | R 75                               | ERD-16TJ100        | 0.16W 10             | 000-330-839       |               |
| K 32             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 | TRANSFORMER<br>トランス                |                    |                      |                   |               |
| K 33             | ERD-16TJ103   | 0.16W 10K            | 000-329-013       |                 | T 1                                | 02S0826-0          |                      | 000-729-704       |               |
| K 34             | ERD-16TJ470   | 0.16W 47             | 000-329-005       |                 | T 2                                | 02S0829-0          |                      | 000-729-707       |               |
| K 35             | ERD-16TJ331   | 0.16W 330            | 000-329-025       |                 | T 3                                | 02S0786-0          | 28KHZ                | 000-730-133       |               |
| K 36             | ERD-16TJ102   | 0.16W 1K             | 000-330-801       |                 | T 4                                | 02S1001-0          | 02S1001-0            | 000-113-134       |               |
| K 37             | ERG-15J393P   | 1W 39K               | 000-112-088       |                 | CRYSTAL<br>クリスタル                   |                    |                      |                   |               |
| K 38             | ERD-16TJ104   | 0.16W 100K           | 000-330-803       |                 | Y 1                                | CSB484E4 484KHZ    | 02S3642-0            | 000-491-021       |               |
| K 39             | ERD-16TJ101   | 0.16W 100            | 000-329-013       |                 | NOTE:<br>備考:                       |                    |                      |                   |               |
| K 40             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 41             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 42             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 43             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 44             | ERD-16TJ222   | 0.16W 2.2K           | 000-330-809       |                 |                                    |                    |                      |                   |               |
| K 45             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 46             | ERD-16TJ102   | 0.16W 1K             | 000-330-801       |                 |                                    |                    |                      |                   |               |
| K 47             | ERD-16TJ101   | 0.16W 100            | 000-329-013       |                 |                                    |                    |                      |                   |               |
| K 48             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 49             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 50             | ERD-16TJ104   | 0.16W 100K           | 000-330-803       |                 |                                    |                    |                      |                   |               |
| K 51             | D-33A         |                      | 000-180-625       | THERMISTOR      |                                    |                    |                      |                   |               |
| K 52             | ERD-16TJ152   | 0.16W 1.5K           | 000-329-039       |                 |                                    |                    |                      |                   |               |
| K 53             | ERD-16TJ152   | 0.16W 1.5K           | 000-329-039       |                 |                                    |                    |                      |                   |               |
| K 54             | ERD-16TJ100   | 0.16W 10             | 000-330-839       |                 |                                    |                    |                      |                   |               |
| K 55             | ERD-16TJ100   | 0.16W 10             | 000-330-839       |                 |                                    |                    |                      |                   |               |
| K 56             |               |                      |                   | *               |                                    |                    |                      |                   |               |
| K 57             |               |                      |                   | *               |                                    |                    |                      |                   |               |
| K 58             |               |                      |                   | *               |                                    |                    |                      |                   |               |
| K 59             | ERX-15J4R7P   | 4.7,1W               | 000-375-379       |                 |                                    |                    |                      |                   |               |
| K 60             | ERX-15J3R3P   | 3.3,1W               | 000-375-377       |                 |                                    |                    |                      |                   |               |
| K 61             | ERX-15J3R3P   | 3.3,1W               | 000-375-377       |                 |                                    |                    |                      |                   |               |
| K 62             |               |                      |                   | *               |                                    |                    |                      |                   |               |
| K 63             |               |                      |                   | *               |                                    |                    |                      |                   |               |
| K 64             | ERX-15JR22P   | 0.22,1W              | 000-375-362       |                 |                                    |                    |                      |                   |               |
| K 65             | ERX-15JR22P   | 0.22,1W              | 000-375-362       |                 |                                    |                    |                      |                   |               |
| K 66             | ERX-15JR22P   | 0.22,1W              | 000-375-362       |                 |                                    |                    |                      |                   |               |
| K 67             | ERX-15JR22P   | 0.22,1W              | 000-375-362       |                 |                                    |                    |                      |                   |               |
| K 68             | ERX-15JR22P   | 0.22,1W              | 000-375-362       |                 |                                    |                    |                      |                   |               |
| K 69             | ERX-15JR22P   | 0.22,1W              | 000-375-362       |                 |                                    |                    |                      |                   |               |
| K 70             | ERG-15J101P   | 100,1W               | 000-375-397       |                 |                                    |                    |                      |                   |               |
| K 71             | ERG-15J101P   | 100,1W               | 000-375-397       |                 |                                    |                    |                      |                   |               |
| K 72             | ERF-72XJ330   | 33,7W                | 000-113-131       |                 |                                    |                    |                      |                   |               |
| K 73             | ERG-25J393P   | 39K,2W               | 000-112-912       |                 |                                    |                    |                      |                   |               |
| K 74             |               |                      |                   | *               |                                    |                    |                      |                   |               |
| K 75             |               |                      |                   | *               |                                    |                    |                      |                   |               |
| K 77             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 78             | ERD-16TJ103   | 0.16W 10K            | 000-330-802       |                 |                                    |                    |                      |                   |               |
| K 79             | ERD-16TJ472   | 0.16W 4.7K           | 000-330-812       |                 |                                    |                    |                      |                   |               |
| K 80             | ERG-15J102P   | 1W,1K                | 000-375-409       |                 |                                    |                    |                      |                   |               |
| K 82             | ERD-16TJ333   | 0.16W 33K            | 000-329-064       |                 |                                    |                    |                      |                   |               |
| K 83             | ERD-16TJ100   | 0.16W 10             | 000-330-839       |                 |                                    |                    |                      |                   |               |
| K 84             | ERD-16TJ100   | 0.16W 10             | 000-330-839       |                 |                                    |                    |                      |                   |               |
| VARISTOR<br>バリスタ |               |                      |                   |                 | RESISTOR<br>抵抗                     |                    |                      |                   |               |
| RV 1             | VR-6055       |                      | 000-108-309       |                 | R 14                               | ERD-16TJ562        | 0.16W 5.6K           | 000-329-050       |               |
| SWITCH<br>スイッチ   |               |                      |                   |                 | R 56                               | ERD-25PJ150        | 0.25W 15             | 000-330-313       |               |
| S 1              | SBU1024N      |                      | 000-460-135       | POWER REDUCTION | R 57                               | ERD-25PJ470        | 0.25W 47             | 000-330-325       |               |

| SYMBOL                                    | TYPE | SPECIFICATIONS    | CODE NO.       | REMARKS     | SYMBOL                                      | TYPE | SPECIFICATIONS  | CODE NO.       | REMARKS     |
|---|------|-------------------|----------------|-------------|---|------|-----------------|----------------|-------------|
| 記号  | 型名   | 規格                | コード番号          | 備考          | 記号  | 型名   | 規格              | コード番号          | 備考          |
| <b>50kHz, 1kW用<br/>FOR 50kHz, 1kW SET</b> |      |                   |                |             | <b>88kHz, 1kW用<br/>FOR 88kHz, 1kW SET</b>   |      |                 |                |             |
| CAPACITOR                                 |      |                   |                |             | CAPACITOR                                   |      |                 |                |             |
| コンデンサ                                     |      |                   |                |             | コンデンサ                                       |      |                 |                |             |
| C   | 4    | ECSF1EE335E       | 3.3UF 50V      | 000-101-582 | C   | 4    | ECSF1EE335F     | 3.3UF 50V      | 000-101-582 |
| C   | 8    | ECW-H12H332JR     | 3300PF 1.2KV   | 000-101-697 | C   | 8    | ECW-H12H 152JR  | 1500PF 1200WV  | 000-261-967 |
| C   | 9    | ECW-H12H332JR     | 3300PF 1.2KV   | 000-101-697 | C   | 9    | FCW-H12H 152JR  | 1500PF 1200WV  | 000-261-967 |
| C   | 10   | RPE132F104Z50     | 0.1UF 50V      | 000-104-501 | C   | 10   | RPE132F104Z50   | 0.1UF 50V      | 000-104-501 |
| C   | 11   | ECQ-M1H182KVW     | 1800PF 50V     | 000-260-466 | C   | 11   | FCQ-M1H102KVW   | 1000PF 50V     | 000-260-415 |
| C   | 28   | ECW-H10H682JR     | 0.0068UF 1000V | 000-259-610 | C   | 28   | ECW-H10H392JR   | 0.0039UF 1000V | 000-259-573 |
| C   | 33   | DD308-69F104Z25   | 0.1UF 50V      | 000-103-771 | C   | 33   | DD308-69F104Z25 | 0.1UF 50V      | 000-103-771 |
| C   | 36   | T203R121FR169     | 120PF          | 000-110-734 |   |      |                 |                |             |
| C   | 37   | DD105-69CH330J50V | 100PF,50V      | 000-253-805 |   |      |                 |                |             |
| RESISTOR                                  |      |                   |                |             | RESISTOR                                    |      |                 |                |             |
| 抵抗  |      |                   |                |             | 抵抗  |      |                 |                |             |
| R   | 14   | ERD-16TJ562       | 0.16W 5.6K     | 000-329-050 | R   | 14   | ERD-16TJ562     | 0.16W 5.6K     | 000-329-050 |
| R   | 56   | ERD-25PJ180       | 0.25W 18       | 000-330-315 | R   | 56   | ERD-25PJ180     | 0.25W 18       | 000-330-315 |
| R   | 57   | ERD-25PJ180       | 0.25W 18       | 000-330-315 | R   | 57   | ERD-25PJ470     | 0.25W 47       | 000-330-325 |
| R   | 58   | ERG-12SJ100P      | 10             | 000-375-323 | R   | 58   | ERG-12SJ150P    | 15             | 000-375-325 |
| R   | 62   | ERD-16TJ1R2       | 0.16W 1.2      | 000-330-817 | R   | 62   | ERD-16TJ1R2     | 0.16W 1.2      | 000-330-817 |
| R   | 63   | ERD-16TJ1R2       | 0.16W 1.2      | 000-330-817 | R   | 63   | ERD-16TJ1R2     | 0.16W 1.2      | 000-330-817 |
| R   | 75   | ERD-16TJ100       | 0.16W 10       | 000-330-839 | R   | 75   | ERD-16TJ100     | 0.16W 10       | 000-330-839 |
| TRANSFORMER                               |      |                   |                |             | TRANSFORMER                                 |      |                 |                |             |
| トランス                                      |      |                   |                |             | トランス  |      |                 |                |             |
| T   | 1    | 02S0827-0         |                | 000-729-705 | T   | 1    | 02S0872-0       |                | 000-100-101 |
| T   | 2    | 02S0830-0         |                | 000-729-708 | T   | 2    | 02S0875-0       |                | 000-100-102 |
| T   | 3    | 02S0788-0         | 45/50KHZ       | 000-730-134 | T   | 3    | 02S0790-0       | 88KHZ          | 000-730-136 |
| T   | 4    | 02S1002-0         | 02S1002-0      | 000-113-135 | T   | 4    | 02S1005-0       | 02S1005-0      | 000-113-138 |
| CRYSTAL                                   |      |                   |                |             | CRYSTAL                                     |      |                 |                |             |
| 石英  |      |                   |                |             | 石英  |      |                 |                |             |
| Y   | 1    | CSB505 D3         | 02S3668        | 000-109-731 | Y   | 1    | CSR543P2 543KHZ | 02S3647-0      | 000-100-094 |
| <b>68kHz, 1kW用<br/>FOR 68kHz, 1kW SET</b> |      |                   |                |             | <b>200kHz, 1kW用<br/>FOR 200kHz, 1kW SET</b> |      |                 |                |             |
| CAPACITOR                                 |      |                   |                |             | CAPACITOR                                   |      |                 |                |             |
| コンデンサ                                     |      |                   |                |             | コンデンサ                                       |      |                 |                |             |
| C   | 4    | ECSF1EE335E       | 3.3UF 50V      | 000-101-582 | C   | 4    | ECSF1EE225E     | 00S0114-0      | 000-101-581 |
| C   | 8    | ECW-H12H332JR     | 3300PF 1.2KV   | 000-101-697 | C   | 8    | ECW-H12H102JR   | 1000PF 1.2KV   | 000-101-698 |
| C   | 9    | ECW-H12H332JR     | 3300PF 1.2KV   | 000-101-697 | C   | 9    | ECW-H12H102JR   | 1000PF 1.2KV   | 000-101-698 |
| C   | 10   | RPE132F104Z50     | 0.1UF 50V      | 000-104-501 | C   | 10   | ECQ-M1H103KVW   | 0.01UF 50V     | 000-260-416 |
| C   | 11   | ECQ-M1H182KVW     | 1800PF 50V     | 000-260-466 | C   | 11   | ECQ-P1471JZW    | 470PF,50V      | 000-262-815 |
| C   | 28   | ECW-H10H472JR     | 0.0047UF 1000V | 000-259-595 | C   | 28   | ECW-H10H182JR   | 1800PF 1000V   | 000-259-597 |
| C   | 33   | DD308-69F104Z25   | 0.1UF 50V      | 000-103-771 | C   | 33   | ECQ-M1H222KVW   | 2200PF 50V     | 000-260-419 |
| RESISTOR                                  |      |                   |                |             | RESISTOR                                    |      |                 |                |             |
| 抵抗  |      |                   |                |             | 抵抗  |      |                 |                |             |
| R   | 14   | ERD-16TJ562       | 0.16W 5.6K     | 000-329-050 | R   | 14   | ERD-16TJ512     | 0.16W 5.1K     | 000-329-049 |
| R   | 56   | ERD-25PJ130       | 0.25W 13       | 000-330-312 | R   | 56   | ERD-25PJ270     | 0.25W 27       | 000-330-319 |
| R   | 57   | ERD-25PJ101       | 0.25W 100      | 000-330-333 | R   | 57   | ERD-25PJ330     | 0.25W 33       | 000-330-321 |
| R   | 58   | ERG-12SJ180P      | 18             | 000-375-326 | R   | 58   | ERG-12SJ150P    | 15             | 000-375-325 |
| R   | 62   | ERD-16TJ1R5       | 0.16W 1.5      | 000-330-819 | R   | 62   | ERD-16TJ1R5     | 0.16W 1.5      | 000-330-819 |
| R   | 63   | ERD-16TJ1R5       | 0.16W 1.5      | 000-330-819 | R   | 63   | ERD-16TJ1R5     | 0.16W 1.5      | 000-330-819 |
| R   | 75   | ERD-16TJ100       | 0.16W 10       | 000-330-839 | R   | 75   | ERD-16TJ100     | 0.16W 10       | 000-330-839 |
| TRANSFORMER                               |      |                   |                |             | TRANSFORMER                                 |      |                 |                |             |
| トランス                                      |      |                   |                |             | トランス  |      |                 |                |             |
| T   | 1    | 02S0873-0         |                | 000-108-934 | T   | 1    | 02S0828-0       |                | 000-729-706 |
| T   | 2    | 02S0876-0         |                | 000-108-935 | T   | 2    | 02S0831-0       |                | 000-729-709 |
| T   | 3    | 02S0789-0         | 68KHZ          | 000-730-135 | T   | 3    | 02S0792-0       | 200KHZ         | 000-730-137 |
| T   | 4    | 02S1004-0         | 02S1004-0      | 000-113-137 | T   | 4    | 02S1006-0       | 02S1006-0      | 000-113-139 |
| CRYSTAL                                   |      |                   |                |             | CRYSTAL                                     |      |                 |                |             |
| 石英  |      |                   |                |             | 石英  |      |                 |                |             |
| Y   | 1    | CSR523P2 523KHZ   | 02S3637-0      | 000-491-045 | Y   | 1    | CSN655 A3       | 02S3669        | 000-109-730 |

NOTE:  
備考:

| SYMBOL                            | TYPE      | SPECIFICATIONS    | CODE NO.       | REMARKS     | SYMBOL               | TYPE | SPECIFICATIONS  | CODE NO.       | REMARKS     |
|-----------------------------------|-----------|-------------------|----------------|-------------|----------------------|------|-----------------|----------------|-------------|
| 記号                                | 型名        | 規 格               | コード番号          | 備 考         | 記号                   | 型名   | 規 格             | コード番号          | 備 考         |
| 28kHz, 2KW用<br>FOR 28kHz, 2KW SET |           |                   |                |             | TRANSFORMER<br>トランス  |      |                 |                |             |
|                                   | CAPACITOR | コンデンサ             |                |             | T                    | 1    | 02S0827-0       |                | 000-729-705 |
| C                                 | 4         | ECSF1EE335E       | 3.3UF 50V      | 000-101-582 | T                    | 2    | 02S0830-0       |                | 000-729-708 |
| C                                 | 8         | ECW-H12H682JR     | 6800PF 1.2KV   | 000-261-970 | T                    | 3    | 02S0788-0       | 45/50KHZ       | 000-730-134 |
| C                                 | 9         | ECW-H12H682JR     | 6800PF 1.2KV   | 000-261-970 | T                    | 4    | 02S1003-0       | 02S1003-0      | 000-113-136 |
| C                                 | 10        | RPE132F104Z50     | 0.1UF 50V      | 000-104-501 | CRYSTAL<br>クハツル      |      |                 |                |             |
| C                                 | 11        | ECQ-M1H392KVW     | 3900PF 50V     | 000-260-468 | Y                    | 1    | CSB505 D3       | 02S3668        | 000-109-731 |
| C                                 | 28        | ECW-H10H123JR     | 0.012UF 1000V  | 000-259-596 | TRANSISTOR<br>トランジスタ |      |                 |                |             |
| C                                 | 33        | DD308-69F104Z25   | 0.1UF 50V      | 000-103-771 | Q                    | 15   | 2SC3520         |                | 000-126-280 |
| Q                                 | 15        | 2SC3520           |                | 000-126-280 | Q                    | 18   | 2SC3520         |                | 000-126-280 |
| Q                                 | 18        | 2SC3520           |                | 000-126-280 | RESISTOR<br>フィッ      |      |                 |                |             |
| R                                 | 14        | ERD-16TJ562       | 0.16W 5.6k     | 000-329-050 | R                    | 14   | ERD-16TJ562     | 0.16W 5.6K     | 000-329-050 |
| R                                 | 56        | ERD-25PJ160       | 0.25W 16       | 000-330-314 | R                    | 56   | ERD-25PJ470     | 0.25W 47       | 000-330-325 |
| R                                 | 57        | ERD-25PJ820       | 0.25W 82       | 000-330-331 | H                    | 57   | ERD-25PJ101     | 0.25W 100      | 000-330-333 |
| R                                 | 58        | ERG-12SJ180P      | 18             | 000-375-326 | R                    | 58   | ERG-12SJ330P    | 33             | 000-375-329 |
| R                                 | 62        | ERD-16TJ1R5       | 0.16W 1.5      | 000-330-819 | R                    | 66   | ERX-15JH22P     | 0.22,1W        | 000-375-362 |
| R                                 | 63        | ERD-16TJ1R5       | 0.16W 1.5      | 000-330-819 | R                    | 69   | ERX-15JR22P     | 0.22,1W        | 000-375-362 |
| R                                 | 66        | ERX-15JR22P       | 0.22,1W        | 000-375-362 | R                    | 75   | ERD-16TJ100     | 0.16W 10       | 000-330-839 |
| R                                 | 69        | ERX-15JR22P       | 0.22,1W        | 000-375-362 | TRANSFORMER<br>トランス  |      |                 |                |             |
| R                                 | 75        | ERD-16TJ470       | 0.16W 47       | 000-329-005 | T                    | 1    | 02S0873-0       |                | 000-108-934 |
| T                                 | 1         | 02S0826-0         |                | 000-729-704 | T                    | 2    | 02S0876-0       |                | 000-108-935 |
| T                                 | 2         | 02S0829-0         |                | 000-729-707 | T                    | 3    | 02S0789-0       | 68KHZ          | 000-730-135 |
| T                                 | 3         | 02S0786-0         | 28KHZ          | 000-730-133 | T                    | 4    | 02S1004-0       | 02S1004-0      | 000-113-137 |
| T                                 | 4         | 02S1001-0         | 02S1001-0      | 000-113-134 | CRYSTAL<br>クハツル      |      |                 |                |             |
| Y                                 | 1         | CSB484E4 484KHZ   | 02S3642-0      | 000-491-021 | Y                    | 1    | CSB523P2 523KHZ | 02S3637-0      | 000-491-045 |
| 50kHz, 2KW用<br>FOR 50kHz, 2KW SET |           |                   |                |             | CAPACITOR<br>コンデンサ   |      |                 |                |             |
| C                                 | 4         | ECSF1EE335E       | 3.3UF 50V      | 000-101-582 | C                    | 4    | ECSF1EE335E     | 3.3UF 50V      | 000-101-582 |
| C                                 | 8         | ECW-H12H332JR     | 3300PF 1.2KV   | 000-101-697 | C                    | 8    | ECW-H12H 152JR  | 1500PF 1200WV  | 000-261-967 |
| C                                 | 9         | ECW-H12H332JR     | 3300PF 1.2KV   | 000-101-697 | C                    | 9    | ECW-H12H 152JR  | 1500PF 1200WV  | 000-261-967 |
| C                                 | 10        | RPE132F104Z50     | 0.1UF 50V      | 000-104-501 | C                    | 10   | RPE132F104Z50   | 0.1UF 50V      | 000-104-501 |
| C                                 | 11        | ECQ-M1H182KVW     | 1800PF 50V     | 000-260-466 | C                    | 11   | ECQ-M1H102KVW   | 1000PF 50V     | 000-260-415 |
| C                                 | 28        | ECW-H10H682JR     | 0.0068UF 1000V | 000-259-610 | C                    | 28   | ECW-H10H392JR   | 0.0039UF 1000V | 000-259-573 |
| C                                 | 33        | DD308-69F104Z25   | 0.1UF 50V      | 000-103-771 | C                    | 33   | DD308-69F104Z25 | 0.1UF 50V      | 000-103-771 |
| C                                 | 36        | TZ03R121FR169     | 120PF          | 000-110-734 | TRANSISTOR<br>トランジスタ |      |                 |                |             |
| C                                 | 37        | DD105-69CH330J50V | 100PF,50V      | 000-253-805 | Q                    | 15   | 2SC3520         |                | 000-126-280 |
| Q                                 | 15        | 2SC3520           |                | 000-126-280 | Q                    | 18   | 2SC3520         |                | 000-126-280 |
| Q                                 | 18        | 2SC3520           |                | 000-126-280 | RESISTOR<br>フィッ      |      |                 |                |             |
| R                                 | 14        | ERD-16TJ562       | 0.16W 5.6K     | 000-329-050 | R                    | 14   | ERD-16TJ240     | 0.25W 24       | 000-330-318 |
| R                                 | 56        | ERD-25PJ240       | 0.25W 24       | 000-330-318 | R                    | 57   | ERD-25TJ750     | 0.25W 75       | 000-330-330 |
| R                                 | 57        | ERD-25TJ750       | 0.25W 75       | 000-330-330 | R                    | 58   | ERG-12SJ180P    | 18             | 000-375-326 |
| R                                 | 58        | ERG-12SJ180P      | 18             | 000-375-326 | R                    | 62   | ERD-16TJ2R2     | 0.16W 2.2      | 000-330-823 |
| R                                 | 62        | ERD-16TJ2R2       | 0.16W 2.2      | 000-330-823 | R                    | 63   | ERD-16TJ2R2     | 0.16W 2.2      | 000-330-823 |
| R                                 | 63        | ERD-16TJ2R2       | 0.16W 2.2      | 000-330-823 | R                    | 66   | ERX-15JR22P     | 0.22,1W        | 000-375-362 |
| R                                 | 66        | ERX-15JR22P       | 0.22,1W        | 000-375-362 | R                    | 69   | ERX-15JR22P     | 0.22,1W        | 000-375-362 |
| R                                 | 69        | ERX-15JR22P       | 0.22,1W        | 000-375-362 | R                    | 75   | ERD-16TJ120     | 0.16W 12       | 000-330-841 |
| R                                 | 75        | ERD-16TJ120       | 0.16W 12       | 000-330-841 | CAPACITOR<br>コンデンサ   |      |                 |                |             |
| 88kHz, 2KW用<br>FOR 88kHz, 2KW SET |           |                   |                |             | CAPACITOR<br>コンデンサ   |      |                 |                |             |
| C                                 | 4         | ECSF1EE335E       | 3.3UF 50V      | 000-101-582 | C                    | 4    | ECSF1EE335E     | 3.3UF 50V      | 000-101-582 |
| C                                 | 8         | ECW-H12H 152JR    | 1500PF 1200WV  | 000-261-967 | C                    | 8    | ECW-H12H 152JR  | 1500PF 1200WV  | 000-261-967 |
| C                                 | 9         | ECW-H12H 152JR    | 1500PF 1200WV  | 000-261-967 | C                    | 9    | ECW-H12H 152JR  | 1500PF 1200WV  | 000-261-967 |
| C                                 | 10        | RPE132F104Z50     | 0.1UF 50V      | 000-104-501 | C                    | 10   | RPE132F104Z50   | 0.1UF 50V      | 000-104-501 |
| C                                 | 11        | ECQ-M1H102KVW     | 1000PF 50V     | 000-260-415 | C                    | 11   | ECQ-M1H102KVW   | 1000PF 50V     | 000-260-415 |
| C                                 | 28        | ECW-H10H392JR     | 0.0039UF 1000V | 000-259-573 | C                    | 28   | ECW-H10H392JR   | 0.0039UF 1000V | 000-259-573 |
| C                                 | 33        | DD308-69F104Z25   | 0.1UF 50V      | 000-103-771 | C                    | 33   | DD308-69F104Z25 | 0.1UF 50V      | 000-103-771 |
| TRANSISTOR<br>トランジスタ              |           |                   |                |             | TRANSISTOR<br>トランジスタ |      |                 |                |             |
| Q                                 | 15        | 2SC3520           |                | 000-126-280 | Q                    | 15   | 2SC3520         |                | 000-126-280 |
| Q                                 | 18        | 2SC3520           |                | 000-126-280 | Q                    | 18   | 2SC3520         |                | 000-126-280 |

NOTE:  
備考:

| SYMBOL                               | TYPE | SPECIFICATIONS  | CODE NO.     | REMARKS     | SYMBOL | TYPE | SPECIFICATIONS | CODE NO. | REMARKS |
|--------------------------------------|------|-----------------|--------------|-------------|--------|------|----------------|----------|---------|
| 記号                                   | 型名   | 規格              | コード番号        | 備考          | 記号     | 型名   | 規格             | コード番号    | 備考      |
| RESISTOR 抵抗                          |      |                 |              |             |        |      |                |          |         |
| R                                    | 14   | ERD-16TJ562     | 0.16W 5.6K   | 000-329-050 |        |      |                |          |         |
| R                                    | 56   | ERD-25PJ200     | 0.25W 20     | 000-330-316 |        |      |                |          |         |
| R                                    | 57   | ERD-25PJ470     | 0.25W 47     | 000-330-325 |        |      |                |          |         |
| H                                    | 58   | ERG-12SJ150P    | 15           | 000-375-325 |        |      |                |          |         |
| R                                    | 62   | ERD-16TJ1R5     | 0.16W 1.5    | 000-330-819 |        |      |                |          |         |
| R                                    | 63   | ERD-16TJ1R5     | 0.16W 1.5    | 000-330-819 |        |      |                |          |         |
| R                                    | 66   | ERX-15JR22P     | 0.22, 1W     | 000-375-362 |        |      |                |          |         |
| R                                    | 69   | ERX-15JR22P     | 0.22, 1W     | 000-375-362 |        |      |                |          |         |
| R                                    | 75   | ERD-16TJ470     | 0.16W 47     | 000-329-005 |        |      |                |          |         |
| TRANSFORMER トランス                     |      |                 |              |             |        |      |                |          |         |
| T                                    | 1    | 02S0R72-0       |              | 000-100-101 |        |      |                |          |         |
| T                                    | 2    | 02S0R75-0       |              | 000-100-102 |        |      |                |          |         |
| T                                    | 3    | 02S0790-0       | 88KHZ        | 000-730-136 |        |      |                |          |         |
| T                                    | 4    | 02S1005-0       | 02S1005-0    | 000-113-138 |        |      |                |          |         |
| CRYSTAL クリスタル                        |      |                 |              |             |        |      |                |          |         |
| Y                                    | 1    | CSR543P2 543KHZ | 02S3647-0    | 000-100-094 |        |      |                |          |         |
| 200kHz, 2KW 用<br>FOR 200kHz, 2KW SET |      |                 |              |             |        |      |                |          |         |
| CAPACITOR コンデンサ                      |      |                 |              |             |        |      |                |          |         |
| C                                    | 4    | ECSF1EE225E     | 0050114-0    | 000-101-581 |        |      |                |          |         |
| C                                    | 8    | ECW-H12H102JR   | 1000PF 1.2KV | 000-101-698 |        |      |                |          |         |
| C                                    | 9    | ECW-H12H102JR   | 1000PF 1.2KV | 000-101-698 |        |      |                |          |         |
| C                                    | 10   | ECQ-M1H103KVV   | 0.01UF 50V   | 000-260-416 |        |      |                |          |         |
| C                                    | 11   | ECQ-P1471JZW    | 470PF, 50V   | 000-262-815 |        |      |                |          |         |
| C                                    | 28   | ECW-H10H182JR   | 1800PF 1000V | 000-259-597 |        |      |                |          |         |
| C                                    | 33   | ECQ-M1H222KVV   | 2200PF 50V   | 000-260-419 |        |      |                |          |         |
| TRANSISTOR トランジスタ                    |      |                 |              |             |        |      |                |          |         |
| Q                                    | 15   | 2SC3520         |              | 000-126-280 |        |      |                |          |         |
| Q                                    | 18   | 2SC3520         |              | 000-126-280 |        |      |                |          |         |
| RESISTOR 抵抗                          |      |                 |              |             |        |      |                |          |         |
| R                                    | 14   | ERD-16TJ512     | 0.16W 5.1K   | 000-329-049 |        |      |                |          |         |
| R                                    | 56   | ERD-25PJ270     | 0.25W 27     | 000-330-319 |        |      |                |          |         |
| R                                    | 57   | ERD-25PJ560     | 0.25W 56     | 000-330-327 |        |      |                |          |         |
| H                                    | 58   | ERG-12SJ180P    | 18           | 000-375-326 |        |      |                |          |         |
| R                                    | 62   | ERD-16TJ3R3     | 0.16W 3.3    | 000-330-827 |        |      |                |          |         |
| R                                    | 63   | ERD-16TJ3R3     | 0.16W 3.3    | 000-330-827 |        |      |                |          |         |
| R                                    | 66   | ERX-15JR22P     | 0.22, 1W     | 000-375-362 |        |      |                |          |         |
| R                                    | 69   | ERX-15JR22P     | 0.22, 1W     | 000-375-362 |        |      |                |          |         |
| R                                    | 75   | ERD-16TJ100     | 0.16W 10     | 000-330-839 |        |      |                |          |         |
| TRANSFORMER トランス                     |      |                 |              |             |        |      |                |          |         |
| T                                    | 1    | 02S0R28-0       |              | 000-729-706 |        |      |                |          |         |
| T                                    | 2    | 02S0R31-0       |              | 000-729-709 |        |      |                |          |         |
| T                                    | 3    | 02S0792-0       | 200KHZ       | 000-730-137 |        |      |                |          |         |
| T                                    | 4    | 02S1007-0       | 02S1007-0    | 000-113-140 |        |      |                |          |         |
| CRYSTAL クリスタル                        |      |                 |              |             |        |      |                |          |         |
| Y                                    | 1    | CSB655 A3       | 02S3669      | 000-109-730 |        |      |                |          |         |

 NOTE:  
 備考:



| SYMBOL  | TYPE | SPECIFICATIONS    | CODE NO.      | REMARKS     | SYMBOL      | TYPE | SPECIFICATIONS | CODE NO.      | REMARKS     |
|---|------|-------------------|---------------|-------------|-------------|------|----------------|---------------|-------------|
| 記号  | 型名   | 規格                | コード番号         | 備考          | 記号          | 型名   | 規格             | コード番号         | 備考          |
| <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">                     Block No. 1 B B<br/>                     送受信基板 (FCV-363)<br/>                     TRANSCIEVER BOARD (FCV-363)<br/>                     Ref. Dwg. C2320-K02-A/C2320-K03-A                 </div> |      |                   |               |             | RESISTOR 抵抗 |      |                |               |             |
| C   | 1    | ECE-A1CU101E      | 100UF 16V     | 000-206-112 | R           | 1    | ERD-16TJ122    | 0.16W 1.2K    | 000-329-037 |
| C   | 2    | ECE-A1CU101E      | 100UF 16V     | 000-206-112 | R           | 2    | ERD-16TJ331    | 0.16W 330     | 000-329-025 |
| C   | 3    | ECE-A1CU101E      | 100UF 16V     | 000-206-112 | R           | 3    | ERD-16TJ122    | 0.16W 1.2K    | 000-329-037 |
| C   | 5    | DU308-69F104Z25   | 0.1UF 50V     | 000-103-771 | R           | 4    | EVM-MCGA01B12  | 100           | 000-103-625 |
| C   | 5    | ECE-A1CU221E      | 220UF 50V     | 000-201-673 | R           | 5    | ERD-16TJ560    | 0.16W 56      | 000-329-007 |
| C   | 7    | ECE-A1CU101E      | 100UF 16V     | 000-206-112 | R           | 6    | EVM-MCGA01B24  | 20K (00S0119) | 000-103-591 |
| C   | 8    | ECE-A1CU101E      | 100UF 16V     | 000-206-112 | R           | 7    | ERD-16TJ472    | 0.16W 4.7K    | 000-330-812 |
| C   | 10   | DU308-69F104Z25   | 0.1UF 50V     | 000-103-771 | R           | 8    | ERD-16TJ101    | 0.16W 100     | 000-329-013 |
| C   | 13   | DU308-69F104Z25   | 0.1UF 50V     | 000-103-771 | R           | 9    | ERD-16TJ472    | 0.16W 4.7K    | 000-330-812 |
| C   | 15   | DU308-69F104Z25   | 0.1UF 50V     | 000-103-771 | R           | 10   | ERD-16TJ472    | 0.16W 4.7K    | 000-330-812 |
| C   | 16   | ECSF1EE335E       | 3.3UF 50V     | 000-101-582 | R           | 11   | EVM-MCGA01B53  | 5K (00S0119)  | 000-103-631 |
| C   | 19   | ECE-A1CU470E      | 47UF 16V      | 000-206-104 | R           | 13   | ERD-16TJ221    | 0.16W 220     | 000-329-021 |
| C   | 22   | ECE-A1CU470E      | 47UF 16V      | 000-206-104 | R           | 14   | ERD-16TJ243    | 0.16W 24K     | 000-329-062 |
| C   | 23   | ECE-A1CU101E      | 100UF 16V     | 000-206-112 | R           | 15   | ERD-16TJ561    | 0.16W 560     | 000-329-031 |
| C   | 25   | ECE-A1CU470E      | 47UF 16V      | 000-206-104 | R           | 16   | ERD-16TJ821    | 0.16W 820     | 000-329-034 |
| C   | 26   | ECE-A1CU470E      | 47UF 16V      | 000-206-104 | R           | 17   | ERD-16TJ153    | 0.16W 15K     | 000-329-059 |
| C   | 30   | DU308-69F104Z25   | 0.1UF 50V     | 000-103-771 | R           | 19   | ERD-16TJ472    | 0.16W 4.7K    | 000-330-812 |
| C   | 31   | ECE-A1CU101E      | 100UF 16V     | 000-206-112 | R           | 21   | ERD-16TJ102    | 0.16W 1K      | 000-330-201 |
| C   | 32   | ECSF1EE335E       | 3.3UF 50V     | 000-101-582 | R           | 22   | ERD-16TJ223    | 0.16W 22K     | 000-330-610 |
| C   | 33   | DD104-69CH220J50V | 45.0 22PF 50V | 000-253-757 | R           | 23   | EVM-MCGA01B14  | 10K           | 000-103-632 |
| C   | 36   | ECQ-M1H102KVM     | 1000PF 50V    | 000-260-415 | R           | 26   | ERD-16TJ222    | 0.16W 2.2K    | 000-330-809 |
| C   | 37   | ECE-A1CU221E      | 220UF 50V     | 000-201-673 | R           | 29   | EVM-MCGA01B34  | 30K           | 000-103-610 |
| C   | 38   | ECE-A1CU221E      | 220UF 50V     | 000-201-673 | R           | 31   | ERD-16TJ222    | 0.16W 2.2K    | 000-330-809 |
| C   | 39   | DU308-69F104Z25   | 0.1UF 50V     | 000-103-771 | R           | 32   | EVM-MCGA01B34  | 30K           | 000-103-610 |
| C   | 40   | DU308-69F104Z25   | 0.1UF 50V     | 000-103-771 | R           | 33   | ERD-16TJ102    | 0.16W 1K      | 000-330-601 |
| C   | 41   | DU308-69F104Z25   | 0.1UF 50V     | 000-103-771 | R           | 34   | ERD-16TJ102    | 0.16W 1K      | 000-330-601 |
| C   | 42   | ECE-A1CU221E      | 220UF 50V     | 000-201-673 | R           | 35   | ERD-16TJ222    | 0.16W 1.2K    | 000-329-037 |
| C   | 43   | ECE-A1CU221E      | 220UF 50V     | 000-201-673 | R           | 37   | ERD-16TJ103    | 0.16W 10K     | 000-330-602 |
| C   | 44   | SHH160VRS02700    | 2700MF 160V   | 000-116-717 | R           | 38   | ERD-16TJ101    | 0.16W 100     | 000-329-013 |
| C   | 45   | SHH160VRS02700    | 2700MF 160V   | 000-116-717 | R           | 39   | ERD-16TJ103    | 0.16W 10K     | 000-330-602 |
| C   | 46   | DD107-69CH101J50V | 100PF 50V     | 000-109-734 | R           | 40   | ERD-16TJ103    | 0.16W 10K     | 000-330-802 |
| CR  | 1    | 15S133            |               | 000-103-097 | R           | 41   | ERD-16TJ472    | 0.16W 4.7K    | 000-330-812 |
| CR  | 2    | 15S133            |               | 000-103-097 | R           | 42   | ERD-16TJ102    | 0.16W 1K      | 000-330-801 |
| CR  | 3    | 15S133            |               | 000-103-097 | R           | 44   | ERD-16TJ103    | 0.16W 10K     | 000-330-802 |
| CR  | 4    | 15S133            |               | 000-103-097 | R           | 45   | ERD-16TJ102    | 0.16W 1K      | 000-330-801 |
| CR  | 5    | 15S133            |               | 000-103-097 | R           | 46   | ERD-16TJ223    | 0.16W 22K     | 000-330-810 |
| CR  | 6    | 15S133            |               | 000-103-097 | R           | 47   | ERD-16TJ223    | 0.16W 22K     | 000-330-810 |
| CR  | 7    | 15S133            |               | 000-103-097 | R           | 48   | ERD-16TJ562    | 0.16W 5.6K    | 000-329-050 |
| CR  | 8    | 15S133            |               | 000-103-097 | R           | 49   | ERD-16TJ562    | 0.16W 5.6K    | 000-329-050 |
| CR  | 9    | 15S133            |               | 000-103-097 | R           | 50   | ERD-16TJ222    | 0.16W 2.2K    | 000-330-309 |
| CR  | 10   | 15S133            |               | 000-103-097 | R           | 51   | ERD-16TJ102    | 0.16W 1K      | 000-330-801 |
| CR  | 11   | 15S133            |               | 000-103-097 | R           | 52   | ERD-16TJ100    | 0.16W 10      | 000-330-839 |
| CR  | 12   | 15S133            |               | 000-103-097 | R           | 53   | ERD-16TJ100    | 0.16W 10      | 000-330-839 |
| CR  | 13   | GY-23             | 0254624-0     | 000-132-971 | R           | 55   | ERD-16TJ103    | 0.16W 10K     | 000-330-802 |
| CR  | 14   | GY-23             | 0254624-0     | 000-132-971 | R           | 56   | ERD-16TJ103    | 0.16W 10K     | 000-330-802 |
| CR  | 15   | LN28 RPH          |               | 000-108-071 | R           | 57   | ERG-15J93P     | 1W 33K        | 000-112-068 |
| CR  | 16   | EU2               |               | 000-108-932 | R           | 58   | ERD-16TJ164    | 0.16W 100K    | 000-330-603 |
| CR  | 17   | EU2               |               | 000-108-932 | R           | 59   | ERD-16TJ103    | 0.16W 10K     | 000-330-802 |
| CR  | 18   | EU2               |               | 000-108-932 | R           | 60   | ERD-16TJ103    | 0.16W 10K     | 000-330-802 |
| CR  | 19   | EU2               |               | 000-108-932 | R           | 64   | ERD-16TJ103    | 0.16W 10K     | 000-330-802 |
| CR  | 20   | 15S133            |               | 000-103-097 | R           | 67   | ERD-16TJ102    | 0.16W 1K      | 000-330-801 |
| CR  | 21   | 15S133            |               | 000-103-097 | R           | 68   | ERD-16TJ220    | 0.16W 22      | 000-330-347 |
| K   | 1    | AGV221            |               | 000-115-576 | R           | 69   | ERD-16TJ220    | 0.16W 22      | 000-330-347 |
| K   | 2    | AGV221            |               | 000-115-576 | R           | 70   | ERX-15JR22P    | 0.22W 1W      | 000-375-362 |
| L   | 5    | 02S0978           |               | 000-110-365 | R           | 71   | ERD-16TJ220    | 0.16W 22      | 000-330-847 |
| Q   | 1    | 25C1815-Y         |               | 000-125-631 | R           | 72   | ERD-16TJ220    | 0.16W 22      | 000-330-347 |
| Q   | 2    | 25C1815-Y         |               | 000-125-631 | R           | 73   | ERX-15JR22P    | 0.22W 1W      | 000-375-362 |
| Q   | 3    | 25C1815-Y         |               | 000-125-631 | R           | 74   | ERD-16TJ220    | 0.16W 22      | 000-330-847 |
| Q   | 4    | 25C1815-Y         |               | 000-125-631 | R           | 75   | ERD-16TJ220    | 0.16W 22      | 000-330-847 |
| Q   | 5    | 25C1815-Y         |               | 000-125-631 | R           | 76   | ERX-15JR22P    | 0.22W 1W      | 000-375-362 |
| Q   | 6    | 25C1815-Y         |               | 000-125-631 | R           | 77   | ERG-25J93P     | 39K 2W        | 000-112-912 |
| Q   | 7    | 25C1815-Y         |               | 000-125-631 | R           | 78   | ERF-7ZXJ330    | 33W 7W        | 000-113-131 |
| Q   | 8    | 25A1015-Y         |               | 000-118-041 | RV          | 1    | VR-6055        |               | 000-108-309 |
| Q   | 9    | 25A1015-Y         |               | 000-118-041 | S           | 1    | SBU1024N       |               | 000-460-135 |
| Q   | 10   | 25C1815-Y         |               | 000-125-631 | U           | 1    | FRN-2682       | 0254654       | 000-115-562 |
| Q   | 11   | 25K725            |               | 000-115-575 | U           | 2    | TC4069UBP      |               | 000-163-265 |
| Q   | 12   | 25K725            |               | 000-115-575 | U           | 3    | TC4093BP       |               | 000-163-274 |
| Q   | 13   | 25K725            |               | 000-115-575 | VR          | 1    | 05AZR.2Z       | ZENER         | 000-103-392 |
| Q   | 14   | 25K725            |               | 000-115-575 | VR          | 2    | 05AZ43         | ZENER         | 000-104-414 |
| Q   | 15   | 25K725            |               | 000-115-575 |             |      |                |               |             |
| Q   | 16   | 25K725            |               | 000-115-575 |             |      |                |               |             |
| Q   | 17   | 25C1815-Y         |               | 000-125-631 |             |      |                |               |             |

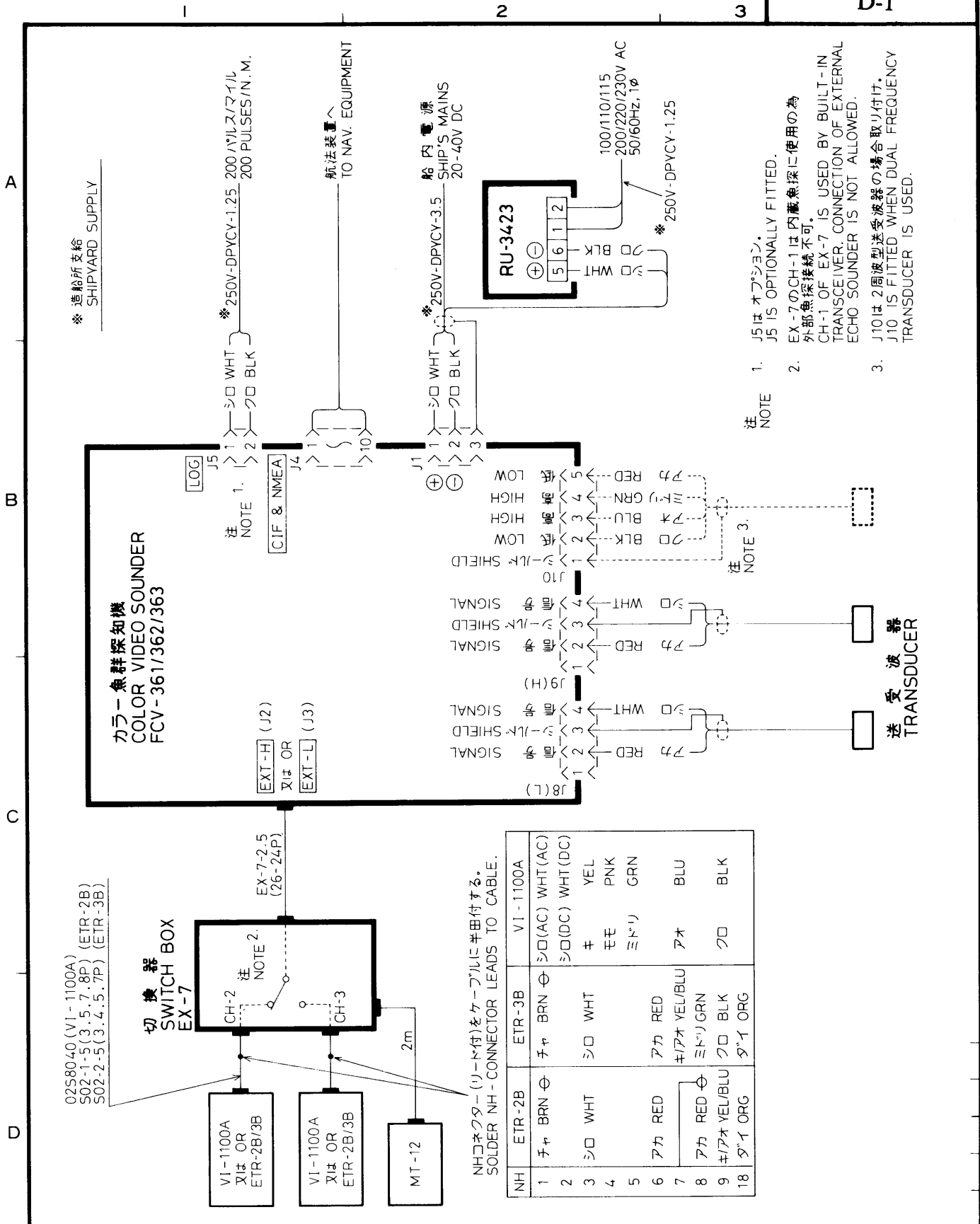
NOTE:  
備考:

| SYMBOL   | TYPE | SPECIFICATIONS  | CODE NO.     | REMARKS     | SYMBOL             | TYPE | SPECIFICATIONS  | CODE NO.     | REMARKS     |
|--|------|-----------------|--------------|-------------|--------------------|------|-----------------|--------------|-------------|
| 記号   | 型名   | 規格              | コード番号        | 備考          | 記号                 | 型名   | 規格              | コード番号        | 備考          |
| <b>28kHz, 3KW 用</b><br><b>For 28kHz, 1KW SET</b> |      |                 |              |             |                    |      |                 |              |             |
| CAPACITOR コンデンサ                                  |      |                 |              |             |                    |      |                 |              |             |
| C  | 4    | ECSF1EE335E     | 3.3UF 50V    | 000-101-582 | R                  | 20   | ERD-16TJ150     | 00S0095-0    | 000-330-843 |
| C  | 9    | ECQ-P1392JZW    | W5.0         | 000-262-826 | R                  | 24   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| C  | 11   | ECW-H12H682JR   | 6800PF 1.2KV | 000-261-970 | R                  | 25   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| C  | 12   | ECW-H12H682JR   | 6800PF 1.2KV | 000-261-970 | R                  | 30   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| C  | 14   | ECSF1VE474E     | 0.47UF 35V   | 000-101-590 | R                  | 33   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| C  | 18   |                 |              |             | R                  | 36   | ERD-16TJ271     | 0.16W 270    | 000-329-023 |
| C  | 21   |                 |              |             | R                  | 54   | ERD-16TJ331     | 0.16W 330    | 000-329-025 |
| C  | 24   | ECQ-P1273JZW    | W5.0         | 000-115-596 | R                  | 61   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| C  | 27   | ECQ-P1273JZW    | W5.0         | 000-115-596 | R                  | 62   | ERD-16TJ202     | 0.16W 2K     | 000-330-807 |
| C  | 34   | ECQ-P1154JZW    | W5.0         | 000-115-597 | R                  | 63   | ERD-16TJ221     | 0.16W 270    | 000-329-021 |
| C  | 35   | ECQ-P1683JZW    | W5.0         | 000-115-598 | R                  | 66   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| COIL コイル   |      |                 |              |             |                    |      |                 |              |             |
| L  | 1    |                 |              |             | R                  | 100  | ERD-16TJ273     | 0.16W 27K    | 000-330-811 |
| L  | 2    |                 |              |             | R                  | 101  | ERD-16TJ273     | 0.16W 27K    | 000-330-811 |
| L  | 3    | 02S0680-0, 1MH  |              | 000-727-680 | R                  | 102  |                 |              |             |
| L  | 4    | 02S0680-0, 1MH  |              | 000-727-680 | TRANSFORMER トランス   |      |                 |              |             |
| RESISTOR 抵抗                                      |      |                 |              |             |                    |      |                 |              |             |
| R  | 12   | ERD-16TJ562     | 0.16W 5.6K   | 000-329-050 | T                  | 1    | 02S0830-0       |              | 000-729-708 |
| R  | 18   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 | T                  | 2    | 02S0827-0       |              | 000-729-705 |
| R  | 20   | ERD-16TJ150     | 00S0095-0    | 000-330-843 | T                  | 3    | 02S1046-0       | 02S1046-0    | 000-115-578 |
| R  | 24   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 | T                  | 4    | 02S1041-0       | 02S1041-0    | 000-115-583 |
| R  | 25   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 | TRANSFORMER トランス   |      |                 |              |             |
| R  | 30   | ERD-16TJ222     | 0.16W 2.2K   | 000-330-809 | 68kHz, 3KW 用       |      |                 |              |             |
| R  | 33   | ERD-16TJ222     | 0.16W 2.2K   | 000-330-809 | For 68kHz, 1KW SET |      |                 |              |             |
| R  | 36   | ERD-16TJ271     | 0.16W 270    | 000-329-023 | CAPACITOR コンデンサ    |      |                 |              |             |
| R  | 54   | ERD-16TJ271     | 0.16W 270    | 000-329-023 | C                  | 4    | ECSF1EE335E     | 3.3UF 50V    | 000-101-582 |
| R  | 61   | ERD-16TJ822     | 0.16W 8.2K   | 000-329-054 | C                  | 9    | ECQ-P1162JZW    | 1800PF       | 000-262-822 |
| R  | 62   | ERD-16TJ392     | 0.16W 3.9K   | 000-329-047 | C                  | 11   | ECW-H12H332JR   | 3300PF 1.2KV | 000-101-697 |
| R  | 63   | ERD-16TJ331     | 0.16W 330    | 000-329-025 | C                  | 12   | ECW-H12H332JR   | 3300PF 1.2KV | 000-101-697 |
| R  | 66   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 | C                  | 14   | DD308-69F104Z25 | 0.1UF 50V    | 000-103-771 |
| R  | 100  | ERD-16TJ273     | 0.16W 27K    | 000-330-811 | C                  | 18   | ECQ-P1562JZW    | W5.0         | 000-262-828 |
| R  | 101  | ERD-16TJ273     | 0.16W 27K    | 000-330-811 | C                  | 21   |                 |              |             |
| R  | 102  |                 |              |             | C                  | 24   | ECQ-P1562JZW    | W5.0         | 000-262-828 |
| TRANSFORMER トランス                                 |      |                 |              |             |                    |      |                 |              |             |
| T  | 1    | 02S0829-0       |              | 000-729-707 | C                  | 27   | ECQ-P1562JZW    | W5.0         | 000-262-828 |
| T  | 2    | 02S0826-0       |              | 000-729-704 | C                  | 34   | ECQ-P1473JZW    | W5.0         | 000-115-599 |
| T  | 3    | 02S1045-0       | 02S1045-0    | 000-115-577 | C                  | 35   | ECQ-P1223JZW    | W5.0         | 000-115-600 |
| T  | 4    | 02S1040-0       | 02S1040-0    | 000-115-582 | COIL コイル           |      |                 |              |             |
| <b>50kHz, 3KW 用</b><br><b>For 50kHz, 1KW SET</b> |      |                 |              |             |                    |      |                 |              |             |
| CAPACITOR コンデンサ                                  |      |                 |              |             |                    |      |                 |              |             |
| C  | 4    | ECSF1EE335E     | 3.3UF 50V    | 000-101-582 | L                  | 1    | 02S0680-0, 1MH  |              | 000-727-680 |
| C  | 9    | ECQ-P1182JZW    | 1800PF       | 000-262-822 | L                  | 2    |                 |              |             |
| C  | 11   | ECW-H12H332JR   | 3300PF 1.2KV | 000-101-697 | L                  | 3    | 02S0680-0, 1MH  |              | 000-727-680 |
| C  | 12   | ECW-H12H332JR   | 3300PF 1.2KV | 000-101-697 | L                  | 4    | 02S0680-0, 1MH  |              | 000-727-680 |
| C  | 14   | DD308-69F104Z25 | 0.1UF 50V    | 000-103-771 | RESISTOR 抵抗        |      |                 |              |             |
| C  | 18   |                 |              |             | R                  | 12   | ERD-16TJ562     | 0.16W 5.6K   | 000-329-050 |
| C  | 21   |                 |              |             | R                  | 18   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| C  | 24   | ECQ-P1103JZW    | W5.0         | 000-262-831 | R                  | 20   | ERD-16TJ150     | 00S0095-0    | 000-330-843 |
| C  | 27   | ECQ-P1103JZW    | W5.0         | 000-262-831 | R                  | 24   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| C  | 34   | ECQ-P1683JZW    | W5.0         | 000-115-598 | R                  | 25   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| C  | 35   | ECQ-P1333JZW    | W5.0         | 000-115-601 | R                  | 30   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| COIL コイル   |      |                 |              |             |                    |      |                 |              |             |
| L  | 1    |                 |              |             | R                  | 33   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| L  | 2    |                 |              |             | R                  | 36   | ERD-16TJ271     | 0.16W 270    | 000-329-023 |
| L  | 3    | 02S0680-0, 1MH  |              | 000-727-680 | R                  | 54   | ERD-16TJ331     | 0.16W 330    | 000-329-025 |
| L  | 4    | 02S0680-0, 1MH  |              | 000-727-680 | R                  | 61   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 |
| RESISTOR 抵抗                                      |      |                 |              |             |                    |      |                 |              |             |
| R  | 12   | ERD-16TJ562     | 0.16W 5.6K   | 000-329-050 | R                  | 62   | ERD-16TJ152     | 0.16W 1.5K   | 000-329-039 |
| R  | 18   | ERD-16TJ332     | 0.16W 3.3K   | 000-329-045 | R                  | 63   | ERD-16TJ151     | 0.25W 150    | 000-329-017 |
| TRANSFORMER トランス                                 |      |                 |              |             |                    |      |                 |              |             |
| T  | 1    | 02S0876-0       |              | 000-108-935 | R                  | 66   | ERD-16TJ202     | 0.16W 2K     | 000-330-807 |
| T  | 2    | 02S0873-0       |              | 000-108-934 | R                  | 100  | ERD-16TJ273     | 0.16W 27K    | 000-330-811 |
| T  | 3    | 02S1047-0       | 02S1047-0    | 000-115-579 | R                  | 101  |                 |              |             |
| T  | 4    | 02S1042-0       | 02S1042-0    | 000-115-584 | R                  | 102  |                 |              |             |

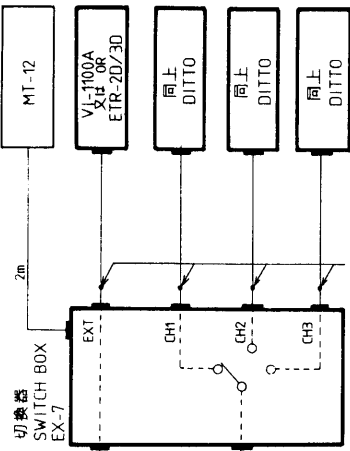
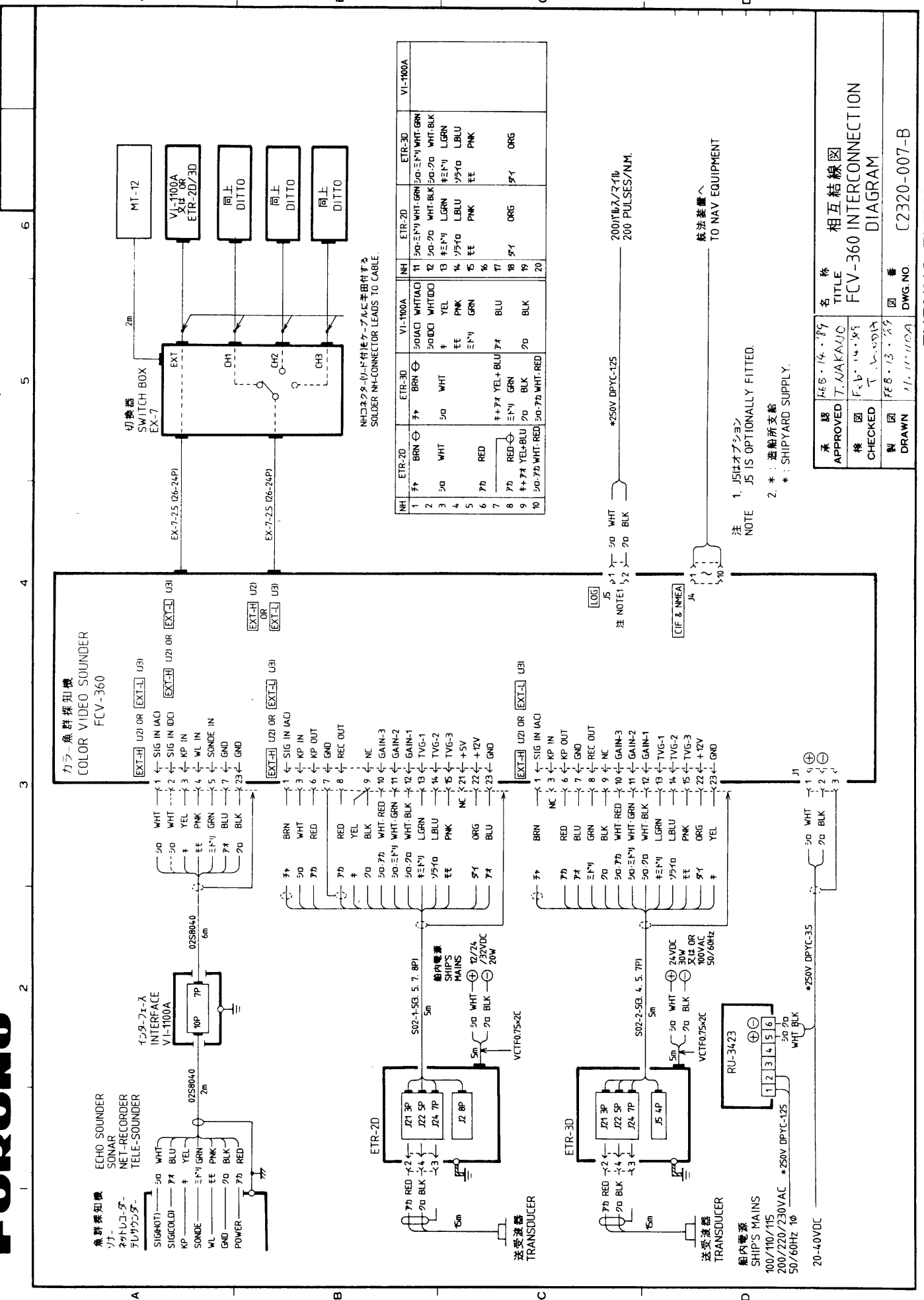
 NOTE:  
 備考:

| SYMBOL                                      | TYPE | SPECIFICATIONS  | CODE NO.      | REMARKS     | SYMBOL  | TYPE | SPECIFICATIONS | CODE NO. | REMARKS |
|---|------|-----------------|---------------|-------------|---|------|----------------|----------|---------|
| 記号  | 型名   | 規格              | コード番号         | 備考          | 記号  | 型名   | 規格             | コード番号    | 備考      |
| <p>88kHz, 3KW 用<br/>For 88kHz, 1KW SET</p>  |      |                 |               |             |   |      |                |          |         |
| CAPACITOR      コンデンサ                        |      |                 |               |             |   |      |                |          |         |
| C   | 4    | ECSF1EE335E     | 3.3UF 50V     | 000-101-582 |   |      |                |          |         |
| C   | 9    | ECQ-P1102JZ     | 1000P         | 000-262-819 |   |      |                |          |         |
| C   | 11   | ECW-H12H 152JR  | 1500PF 1200WV | 000-261-967 |   |      |                |          |         |
| C   | 12   | ECW-H12H 152JR  | 1500PF 1200WV | 000-261-967 |   |      |                |          |         |
| C   | 14   | DD308-69F104Z25 | 0.1UF 50V     | 000-103-771 |   |      |                |          |         |
| C   | 18   | ECQ-P1332JZ     | WS.0          | 000-262-825 |   |      |                |          |         |
| C   | 21   |                 |               |             |   |      |                |          |         |
| C   | 24   | ECQ-P1332JZ     | WS.0          | 000-262-825 |   |      |                |          |         |
| C   | 27   | ECQ-P1332JZ     | WS.0          | 000-262-825 |   |      |                |          |         |
| C   | 34   | ECQ-P1223JZ     | WS.0          | 000-115-600 |   |      |                |          |         |
| C   | 35   | ECQ-P1103JZ     | WS.0          | 000-262-831 |   |      |                |          |         |
| COIL      コイル                               |      |                 |               |             |   |      |                |          |         |
| L   | 1    | 02S0680-0, 1MH  |               | 000-727-680 |   |      |                |          |         |
| L   | 2    |                 |               |             |   |      |                |          |         |
| L   | 3    | 02S0680-0, 1MH  |               | 000-727-680 |   |      |                |          |         |
| L   | 4    | 02S0680-0, 1MH  |               | 000-727-680 |   |      |                |          |         |
| RESISTOR      抵抗                            |      |                 |               |             |   |      |                |          |         |
| R   | 12   | ERD-16TJ562     | 0.16W 5.6K    | 000-329-050 |   |      |                |          |         |
| R   | 18   | ERD-16TJ103     | 0.16W 10K     | 000-330-802 |   |      |                |          |         |
| R   | 20   | ERD-16TJ331     | 0.16W 330     | 000-329-001 |   |      |                |          |         |
| R   | 24   | ERD-16TJ472     | 0.16W 4.7K    | 000-330-812 |   |      |                |          |         |
| R   | 25   | ERD-16TJ472     | 0.16W 4.7K    | 000-330-812 |   |      |                |          |         |
| R   | 30   | ERD-16TJ332     | 0.16W 3.3K    | 000-329-045 |   |      |                |          |         |
| R   | 33   | ERD-16TJ332     | 0.16W 3.3K    | 000-329-045 |   |      |                |          |         |
| R   | 36   | ERD-16TJ271     | 0.16W 270     | 000-329-023 |   |      |                |          |         |
| R   | 54   | ERD-16TJ471     | 0.16W 470     | 000-329-029 |   |      |                |          |         |
| R   | 61   | ERD-16TJ272     | 0.16W 2.7K    | 000-329-043 |   |      |                |          |         |
| R   | 62   | ERD-16TJ122     | 0.16W 1.2K    | 000-329-037 |   |      |                |          |         |
| R   | 63   | ERD-16TJ151     | 0.25W 150     | 000-329-017 |   |      |                |          |         |
| R   | 66   | ERD-16TJ152     | 0.16W 1.5K    | 000-329-039 |   |      |                |          |         |
| R   | 100  | ERD-16TJ273     | 0.16W 27K     | 000-330-811 |   |      |                |          |         |
| R   | 101  |                 |               |             |   |      |                |          |         |
| R   | 102  |                 |               |             |   |      |                |          |         |
| TRANSFORMER      トランス                       |      |                 |               |             |   |      |                |          |         |
| T   | 1    | 02S0875-0       |               | 000-100-102 |   |      |                |          |         |
| T   | 2    | 02S0872-0       |               | 000-100-101 |   |      |                |          |         |
| T   | 3    | 02S1048-0       | 02S1048-0     | 000-115-580 |   |      |                |          |         |
| T   | 4    | 02S1043-0       | 02S1043-0     | 000-115-585 |   |      |                |          |         |
|   |      |                 |               |             | <p>Block No. 1 B 6</p> <p>カラーモニター<br/>COLOR MONITOR<br/>Ref. Dwg. C2320-K09-A</p>   |      |                |          |         |
|   |      |                 |               |             | <p>1B06 0000    5U01699-1    ASSY CRT    000-117-856</p> <p>                 5U01684-1    ASSY PCB MAIN    000-117-855</p>  |      |                |          |         |
|   |      |                 |               |             | <p>INTEGRATED CIRCUIT      システムIC</p> <p>IC 101    ASSY PCB VIDEO (N)    000-117-852</p> <p>IC 102    ASSY PCB SYNC (N)    000-117-853</p> <p>IC 103    ASSY PCB DEF (N)    000-117-854</p> |      |                |          |         |
|   |      |                 |               |             | <p>TRANSFORMER      トランス</p> <p>T 502    MSH1FPT514    T-FBT    000-117-857</p>   |      |                |          |         |
| <p>200kHz, 3KW用<br/>For 200kHz, 1KW SET</p> |      |                 |               |             |   |      |                |          |         |
| CAPACITOR      コンデンサ                        |      |                 |               |             |   |      |                |          |         |
| C   | 4    | ECSF1EE225E     | 00S0114-0     | 000-101-581 |   |      |                |          |         |
| C   | 9    | ECQ-P1471JZ     | 470PF 50V     | 000-262-815 |   |      |                |          |         |
| C   | 11   | ECW-H12H102JR   | 1000PF 1.2KV  | 000-101-698 |   |      |                |          |         |
| C   | 12   | ECW-H12H102JR   | 1000PF 1.2KV  | 000-101-698 |   |      |                |          |         |
| C   | 14   | DD308-69F104Z25 | 0.1UF 50V     | 000-103-771 |   |      |                |          |         |
| C   | 18   | ECQ-P1471JZ     | 470PF 50V     | 000-262-815 |   |      |                |          |         |
| C   | 21   |                 |               |             |   |      |                |          |         |
| C   | 24   | ECQ-P1222JZ     | WS.0          | 000-262-823 |   |      |                |          |         |
| C   | 27   | ECQ-P1222JZ     | WS.0          | 000-262-823 |   |      |                |          |         |
| C   | 34   | ECQ-P1683JZ     | WS.0          | 000-115-598 |   |      |                |          |         |
| C   | 35   | ECQ-P1333JZ     | WS.0          | 000-115-601 |   |      |                |          |         |
| COIL      コイル                               |      |                 |               |             |   |      |                |          |         |
| L   | 1    | 02S0680-0, 1MH  |               | 000-727-680 |   |      |                |          |         |
| L   | 2    |                 |               |             |   |      |                |          |         |
| L   | 3    | 02S1050-0       | 02S1050-0     | 000-115-833 |   |      |                |          |         |
| L   | 4    | 02S1050-0       | 02S1050-0     | 000-115-883 |   |      |                |          |         |

NOTE:  
備考:

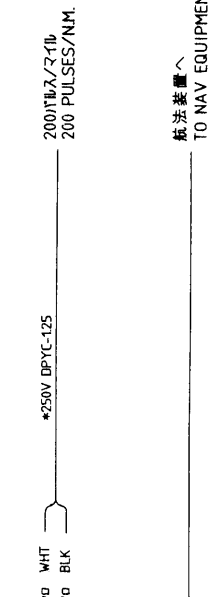


| 品番<br>ITEM     | 品名<br>NAME               | 材質<br>MATERIAL                | 数量<br>Q'TY              | 図番<br>DWG.NO. | 摘要<br>REMARKS                    |
|----------------|--------------------------|-------------------------------|-------------------------|---------------|----------------------------------|
| 承認<br>APPROVED | FEB. 14 '59<br>T. TAKAJI | 三角法<br>THIRD ANGLE PROJECTION | 名称<br>TITLE             |               |                                  |
| 検図<br>CHECKED  | FEB. 14 '59<br>T. KODAI  | 尺度<br>SCALE                   | -361<br>FCV-362<br>-363 |               | 相互結線図<br>INTERCONNECTION DIAGRAM |
| 製図<br>DRAWN    | FEB. 13 '59<br>M. HISUDA | 重量<br>WEIGHT                  | kg                      | 図番<br>DWG.NO. | C2320-008-A                      |



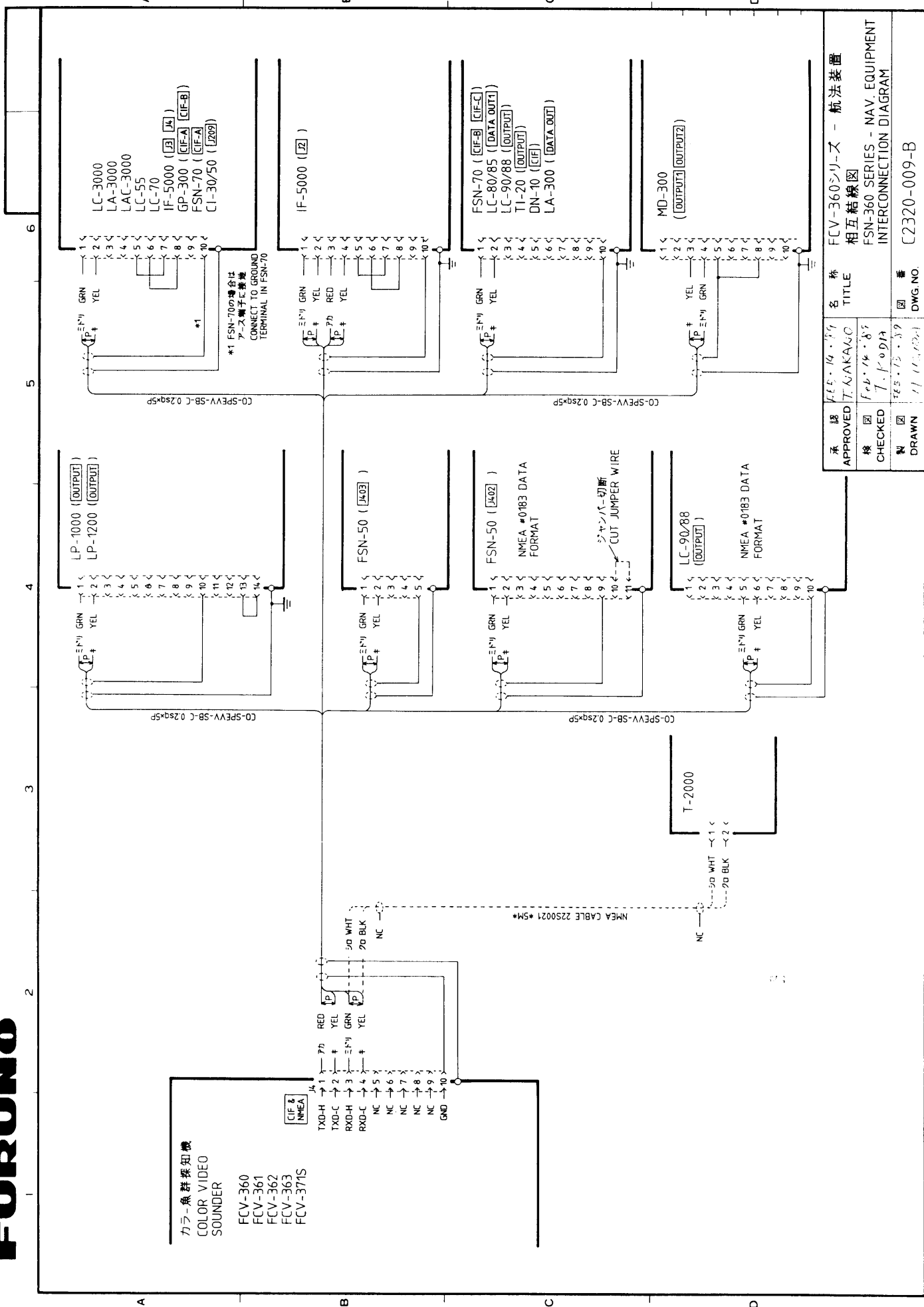
NHコネクタに付いたケーブルを半田付する  
SOLDER NH-CONNECTOR LEADS TO CABLE.

| NH | ETR-2D | ETR-3D | VI-1100A | ETR-2D | ETR-3D | VI-1100A | ETR-2D | ETR-3D | VI-1100A |
|----|--------|--------|----------|--------|--------|----------|--------|--------|----------|
| 1  | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        |
| 2  | 白      | 白      | 白        | 白      | 白      | 白        | 白      | 白      | 白        |
| 3  | 黄      | 黄      | 黄        | 黄      | 黄      | 黄        | 黄      | 黄      | 黄        |
| 4  | 緑      | 緑      | 緑        | 緑      | 緑      | 緑        | 緑      | 緑      | 緑        |
| 5  | 青      | 青      | 青        | 青      | 青      | 青        | 青      | 青      | 青        |
| 6  | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        |
| 7  | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        |
| 8  | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        |
| 9  | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        |
| 10 | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        | 赤      | 赤      | 赤        |

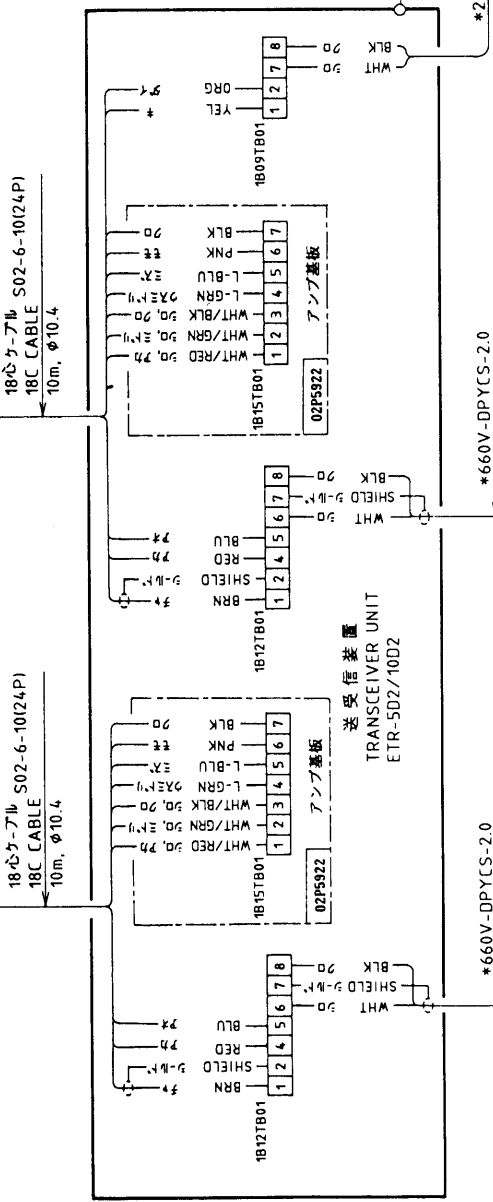
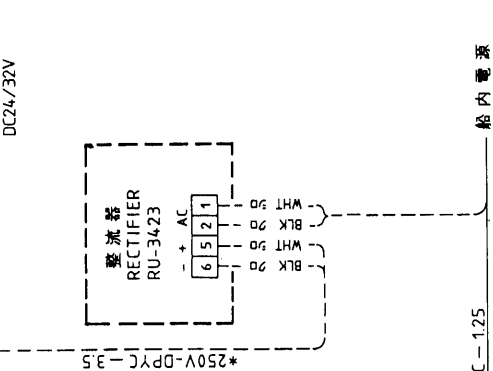
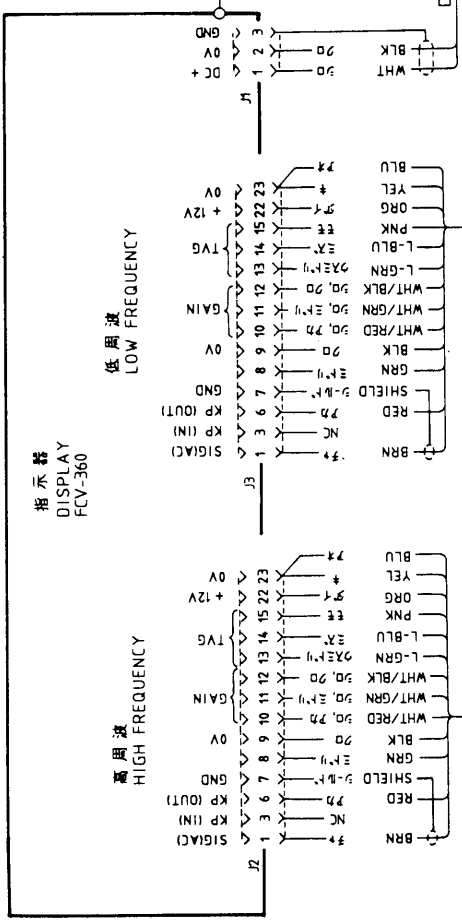
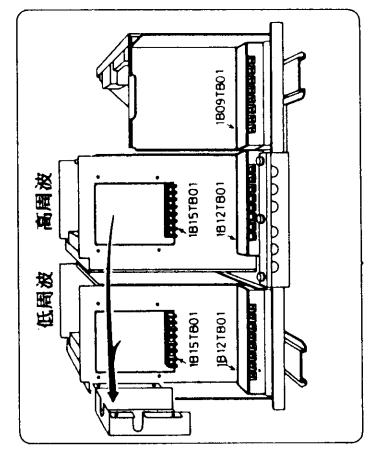


注 1. JSはオプション  
NOTE JS IS OPTIONALLY FITTED.  
2. \* : 造船所支給  
\* : SHIPYARD SUPPLY.

|                |               |             |   |
|----------------|---------------|-------------|---|
| 承認<br>APPROVED | 検査<br>CHECKED | 製図<br>DRAWN | 名称<br>TITLE                                 |
| FE8-14-89      | FE8-14-89     | FE8-13-89   | 相互結線図<br>FCV-360 INTERCONNECTION<br>DIAGRAM |
| T. AKAJIC      | T. AKAJIC     | T. AKAJIC   | 図番<br>DWG. NO                               |
|                |               |             | C2320-007-B                                 |



|                |                         |                |  |
|----------------|-------------------------|----------------|--|
| 承認<br>APPROVED | 14.7.79<br>T. AKAHICO   | 名称<br>TITLE    | FCV-360シリーズ - 航法装置<br>相互結線図            |
| 検図<br>CHECKED  | Feb. 14. 85<br>T. FODPA | 機種<br>MODEL    | FCV-360 SERIES - NAV. EQUIPMENT        |
| 製図<br>DRAWN    | 7.13.89<br>1111021      | 図番<br>DWG. NO. | INTERCONNECTION DIAGRAM<br>C2320-009-B |



船内電源 SHIP'S MAINS DC24/32V

船内電源 SHIP'S MAINS AC100/110/115/220/230V 50/60Hz, 1φ

\*250V-DPYC-1.25

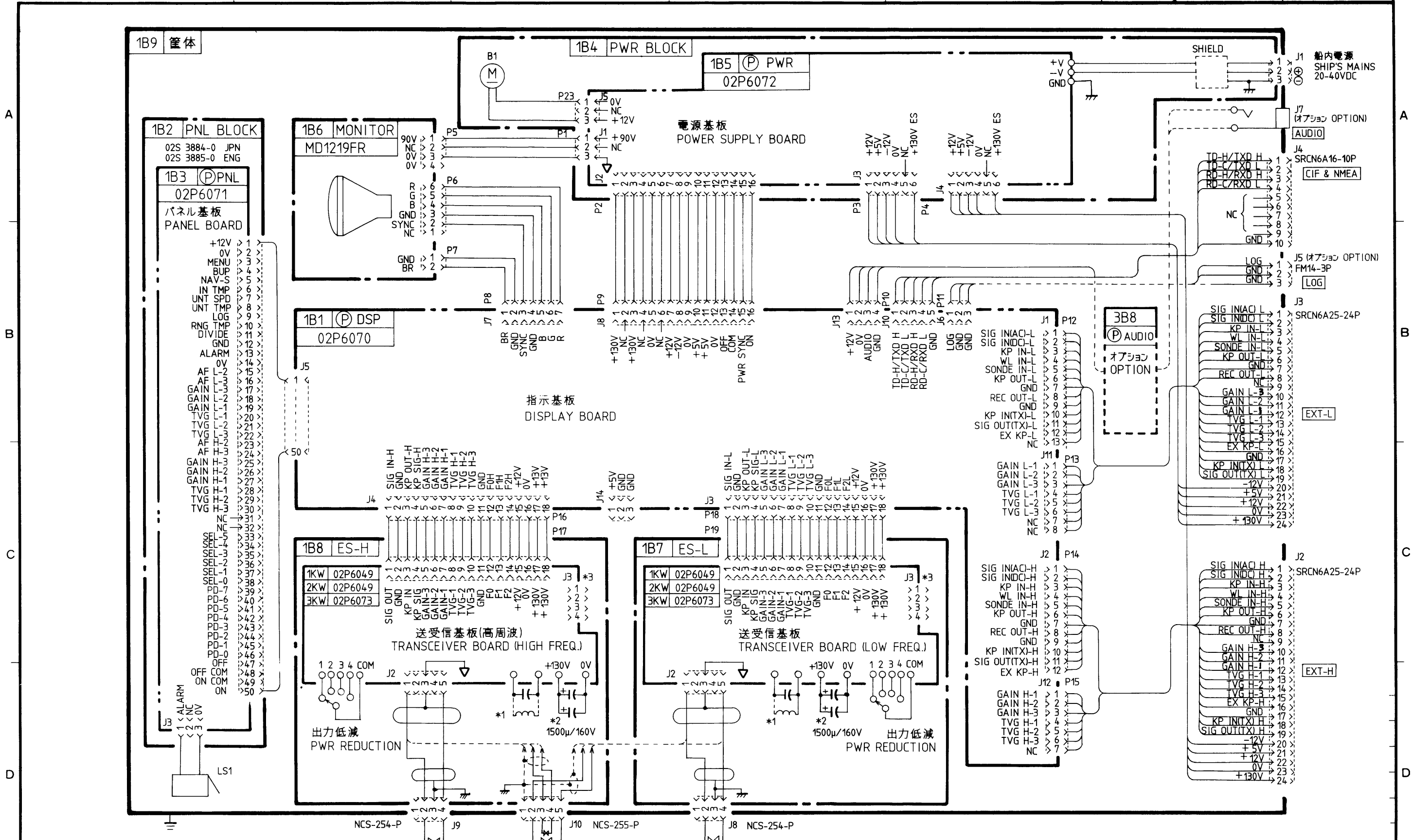
\*250V-DPYC-3.5

\*250V-DPYCS-2.0

\*660V-DPYCS-2.0

\*造船所支給 SHIPYARD SUPPLY

|             |                |       |                 |
|-------------|----------------|-------|-----------------|
| 承認 APPROVED | 署名 JUNE 18 '87 | 名称 船名 | ETR-502/1002    |
| 検閲 CHECKED  | 署名 JUN 18 '87  | 船名    | 相互結線図           |
| 製図 DRAWN    | 署名 JUN 13 '87  | 図番    | INTERCONNECTION |
|             | 署名             | 図番    | C2320-C02-A     |



NOTE  
注

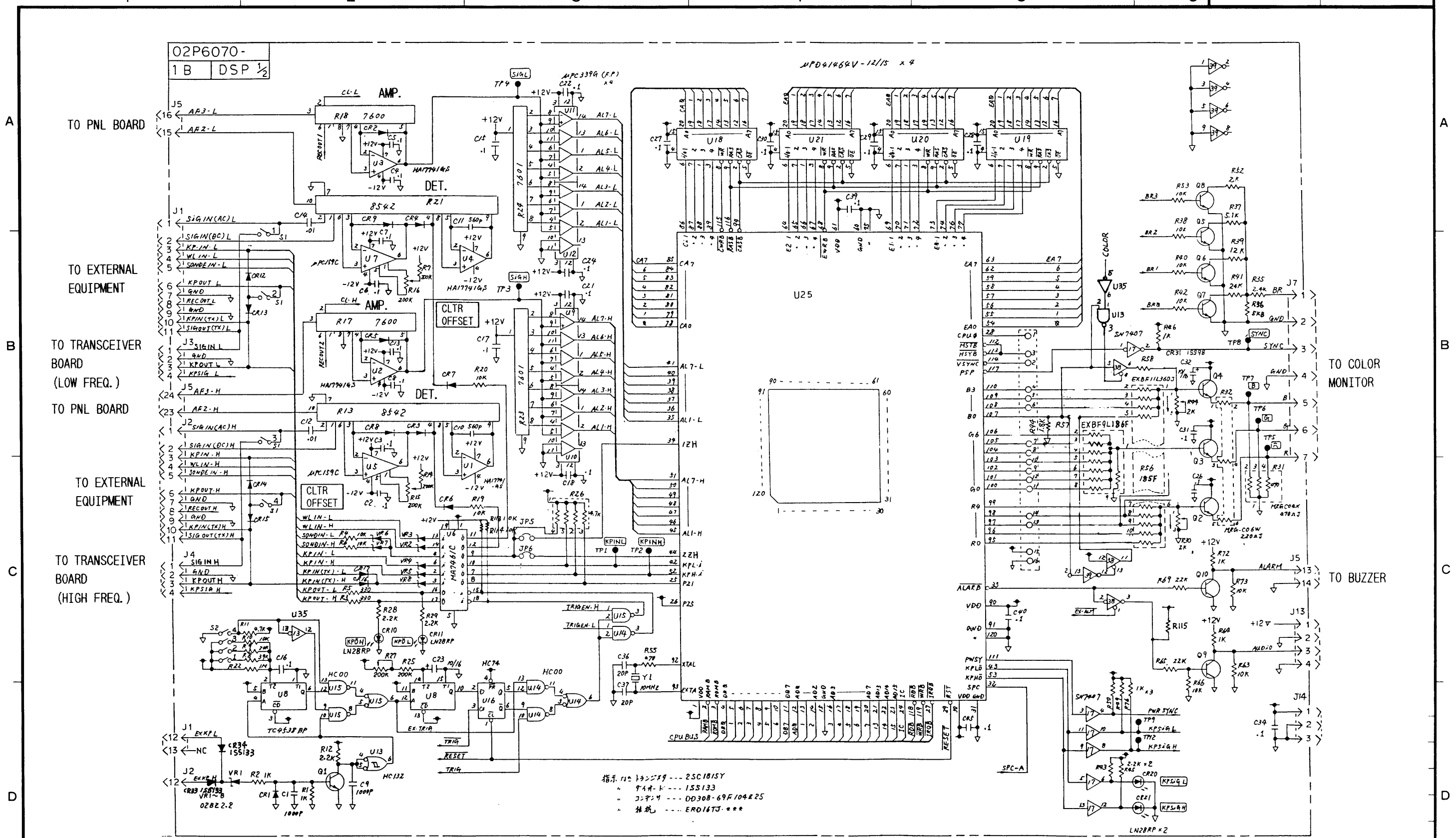
|         | ES-L | ES-H | *1 | *2    | *3 |
|---------|------|------|----|-------|----|
| FCV-360 | X    | X    | X  | X     | X  |
| FCV-361 | 1KW  | 1KW  | X  | 1pc.  | X  |
| FCV-362 | 2KW  | 2KW  | O  | 2pcs. | X  |
| FCV-363 | 3KW  | 3KW  | X  | X     | O  |

送受波器  
XDCR

送受波器  
XDCR

|                |                         |                     |              |
|----------------|-------------------------|---------------------|--------------|
| 承認<br>APPROVED | APR. 3 '89<br>T. UAKAWA | 名称<br>TITLE         | 指示器          |
| 検図<br>CHECKED  | APR. 3 '89<br>T. KODAI  | FCV-360/361/362/363 | DISPLAY UNIT |
| 製図<br>DRAWN    | APR. 3 '89<br>M. USUDA  | 図番<br>DWG. NO.      | C2320-K01-B  |



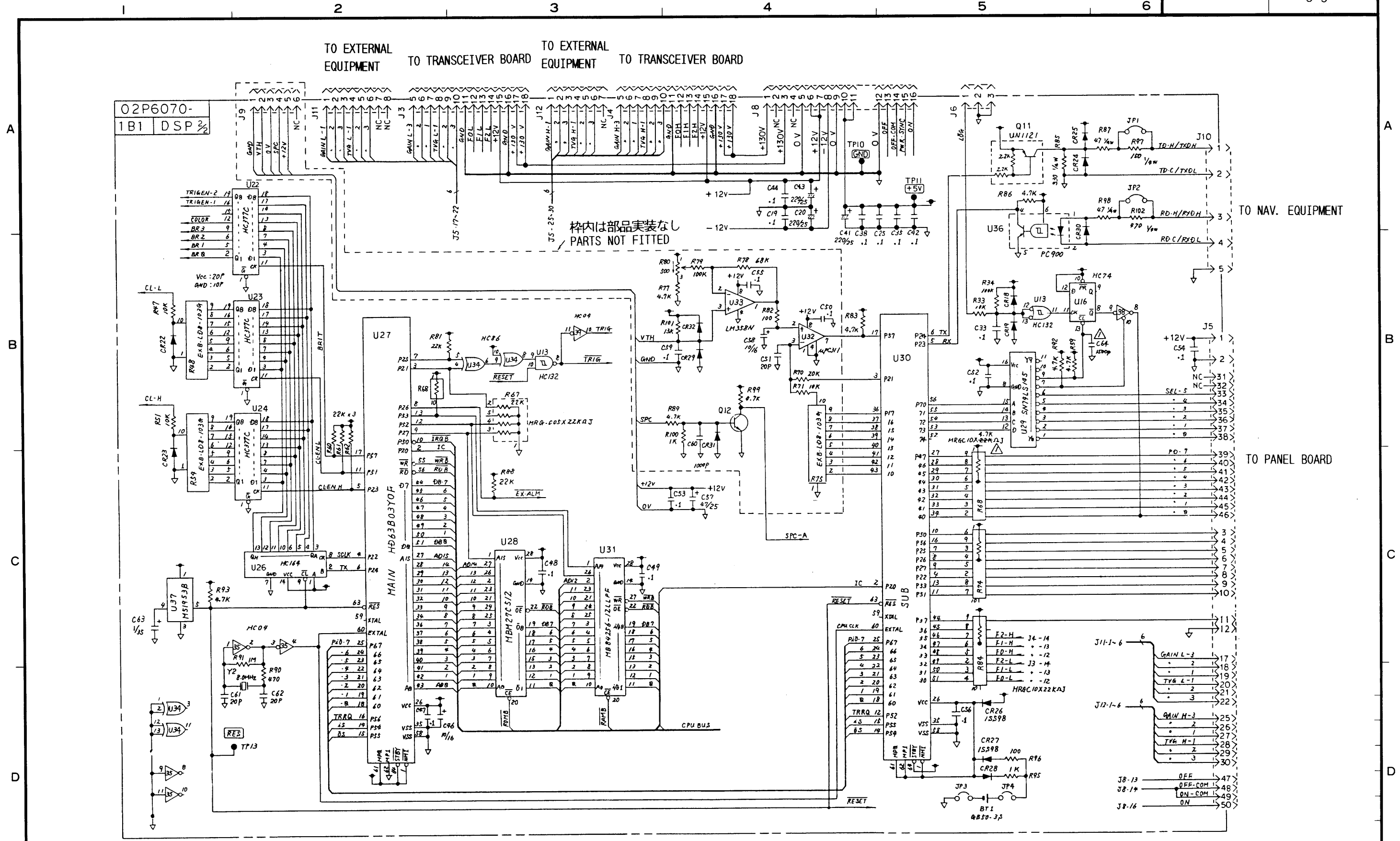


指示はトランジスタ --- 2SC1815Y  
 \* 抵抗 --- 1SS133  
 \* コンデンサ --- DD308-69F104Z25  
 \* 接続 --- ERD16TJ\*\*\*

NOTE: ALL TRANSISTORS, DIODES, CAPACITORS, AND RESISTORS ARE 2SC1815Y, 1SS133, DD308-69F104Z25 AND ERD16TJ\*\*\* RESPECTIVELY UNLESS OTHERWISE NOTED.  
 注 特記なきトランジスタ、ダイオード、コンデンサ、抵抗は、それぞれ2SC1815Y、1SS133、DD308-69F104Z25、ERD16TJ\*\*\*。

|                |                         |             |                     |
|----------------|-------------------------|-------------|---------------------|
| 承認<br>APPROVED | APR. 3. '89<br>T. AKAJO | 名称<br>TITLE | 02P6070 DSP基板 (1/2) |
| 検閲<br>CHECKED  | APR. 3. '89<br>T. OSHI  | 製<br>DRAWN  | DWG.NO. C2320-K04-B |

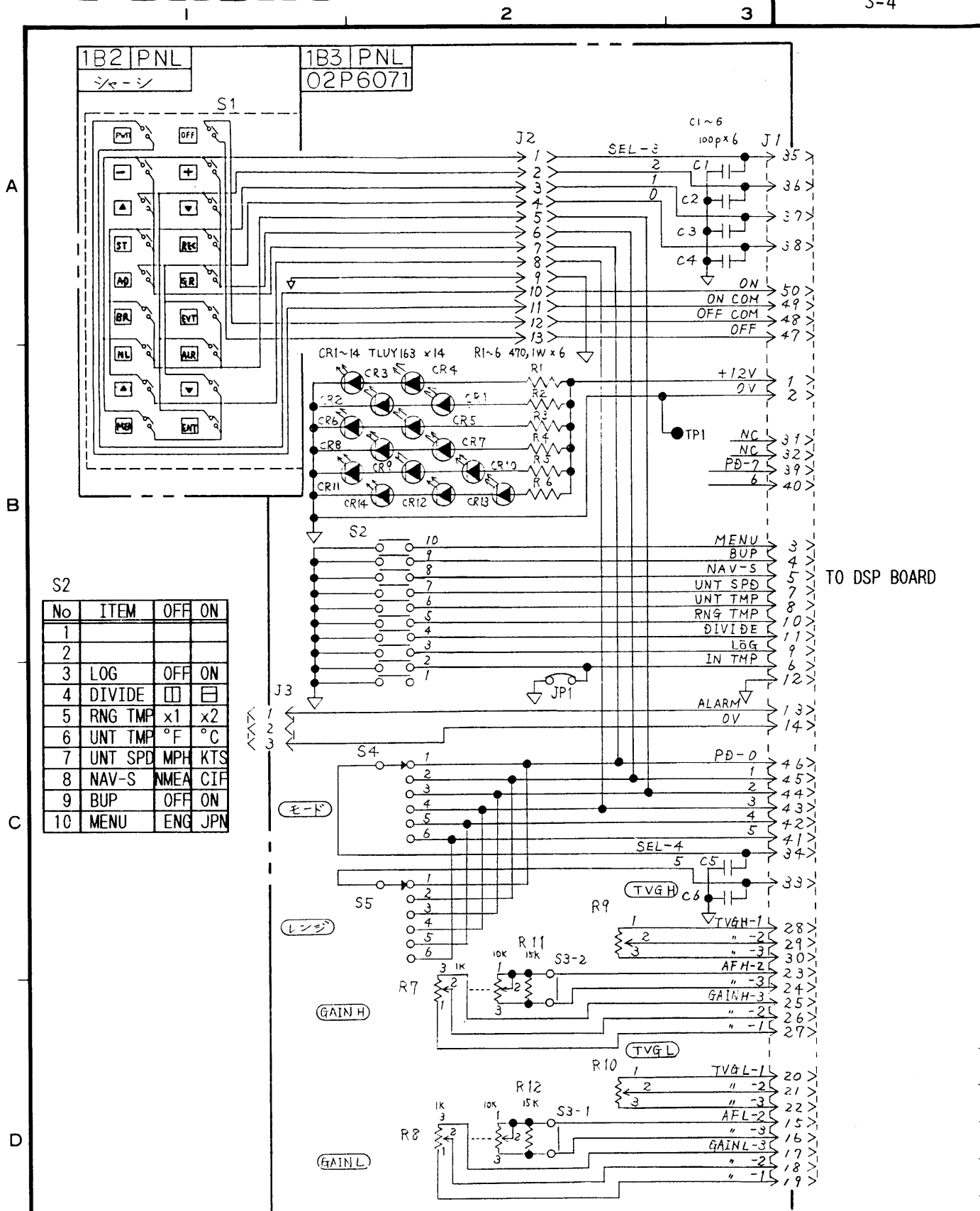
FCV-360/361/362/363/371S



枠内は部品実装なし  
PARTS NOT FITTED

|                |                         |                |                     |
|----------------|-------------------------|----------------|---------------------|
| 承認<br>APPROVED | APR. 3 '89<br>T. WAKAYO | 名称<br>TITLE    | 02P6070 DSP基板 (2/2) |
| 検<br>CHECKED   | APR. 5 '89              | 図番<br>DWG. NO. | C2320-K05-B         |
| 製<br>DRAWN     | APR. 3 '89<br>A. USUDA  |                |                     |

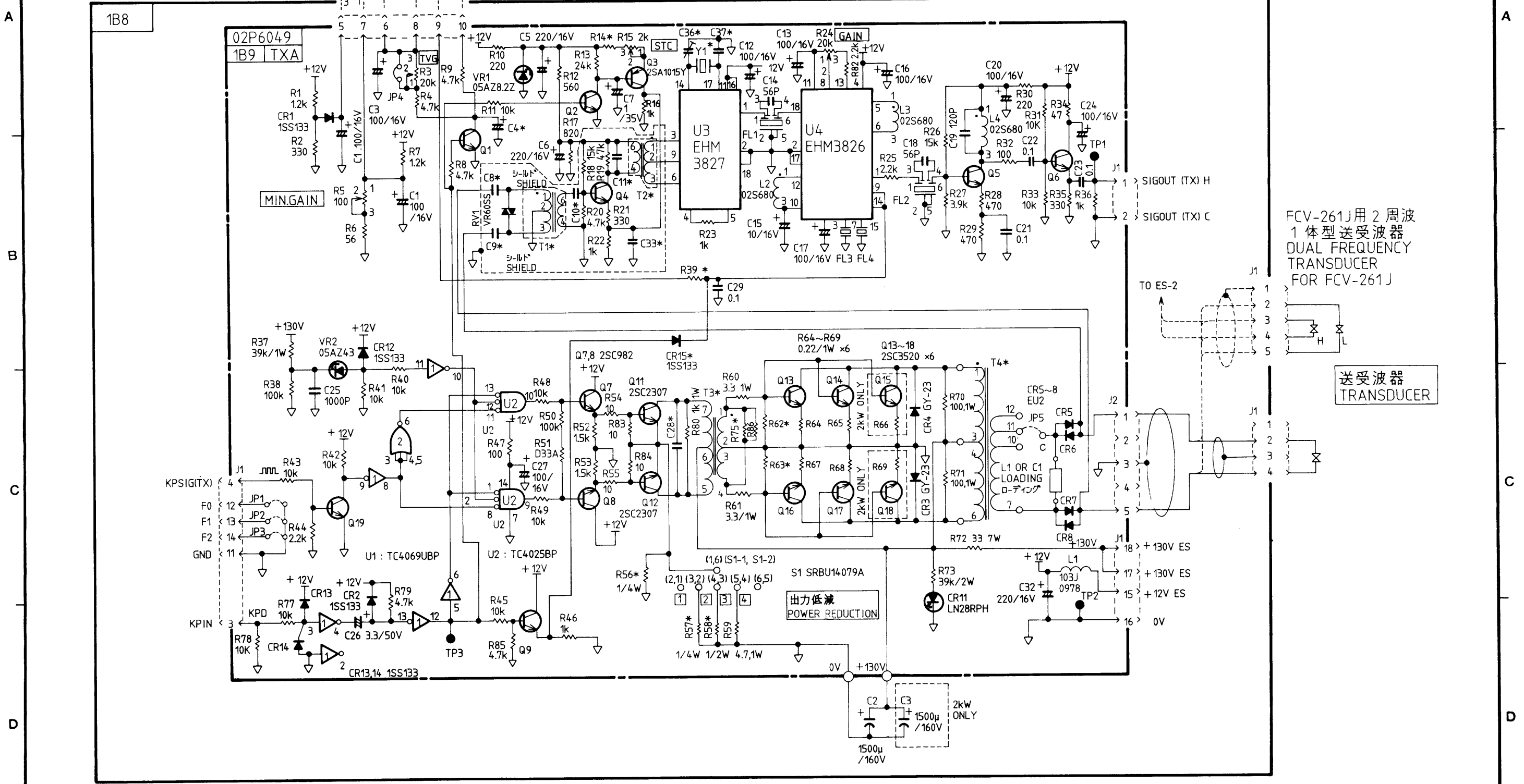
FCV-360



S2

| No | ITEM    | OFF                      | ON                       |
|----|---------|--------------------------|--------------------------|
| 1  |         |                          |                          |
| 2  |         |                          |                          |
| 3  | LOG     | OFF                      | ON                       |
| 4  | DIVIDE  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5  | RNG TMP | x1                       | x2                       |
| 6  | UNT TMP | °F                       | °C                       |
| 7  | UNT SPD | MPH                      | KTS                      |
| 8  | NAV-S   | NMEA                     | CIF                      |
| 9  | BUPE    | OFF                      | ON                       |
| 10 | MENU    | ENG                      | JPN                      |

| FCV-360/361/362/363 |             | 品番<br>ITEM                    | 品名<br>NAME | 材質<br>MATERIAL | 数量<br>Q'TY  | 図番<br>DWG.NO. | 摘要<br>REMARKS        |
|---------------------|-------------|-------------------------------|------------|----------------|-------------|---------------|----------------------|
| 承認<br>APPROVED      | APR. 2. 199 | 三角法<br>THIRD ANGLE PROJECTION |            | 名称<br>TITLE    |             | 02P6071       | パネル基板<br>PANEL BOARD |
| 検図<br>CHECKED       | MAR. 3. 199 | 尺度<br>SCALE                   | /          |                |             |               |                      |
| 製図<br>DRAWN         | APR. 2. 199 | 重量<br>WEIGHT                  | kg         | 図番<br>DWG.NO.  | C2320-K07-A |               |                      |



FCV-261J用 2周波  
1 体型送受波器  
DUAL FREQUENCY  
TRANSDUCER  
FOR FCV-261J

送受波器  
TRANSDUCER

- NOTE 1: 指定なきトランジスタは2SC1815Y.  
ALL TRANSISTORS ARE 2SC1815Y UNLESS NOTED OTHERWISE.
- 2: 指定なき抵抗は1/6W.  
ALL RESISTORS ARE 1/6W UNLESS NOTED OTHERWISE.
- 3: R86は調整抵抗。  
R86: SUBJECT TO ADJUSTMENT.

|                |             |             |                               |
|----------------|-------------|-------------|-------------------------------|
| 承認<br>APPROVED | DEC 10 1977 | 名称<br>TITLE | 送受信部<br>TRANSCEIVER BLOCK 1/2 |
| 検閲<br>CHECKED  | DEC 10 1977 | 製図<br>DRAWN | 番<br>DWG. NO. C2307-010-B     |

FCV-250/260/360

周波数による変更箇所

PARTS DIFFERENT ON SYSTEM FREQ.

|                   |                | 28kHz                       | 50kHz              | 68kHz       | 88kHz       | 200kHz             |
|-------------------|----------------|-----------------------------|--------------------|-------------|-------------|--------------------|
| C4                |                | 3.3 $\mu$ F                 | 3.3 $\mu$ F        | 3.3 $\mu$ F | 3.3 $\mu$ F | 2.2 $\mu$ F        |
| C8, C9            |                | 6800pF                      | 3300pF             | 3300pF      | 1500pF      | 1000pF             |
| C10               |                | 0.1 $\mu$ F                 | 0.1 $\mu$ F        | 0.1 $\mu$ F | 0.1 $\mu$ F | 0.01 $\mu$ F       |
| C11               |                | 3900pF                      | 1800pF             | 1800pF      | 1000pF      | 470pF              |
| C28               |                | 0.012 $\mu$ F               | 6800pF             | 4700pF      | 3900pF      | 1800pF             |
| C33               |                | 0.1 $\mu$ F                 | 0.1 $\mu$ F        | 0.1 $\mu$ F | 0.1 $\mu$ F | 2200pF             |
| C36               |                | —                           | 120pF              | —           | —           | —                  |
| C37               |                | —                           | 33pF               | —           | —           | —                  |
| R14               |                | 5.6K                        | 5.6K               | 5.6K        | 5.6K        | 5.1K               |
| R39               |                | 4.7K                        | 4.7K               | 4.7K        | 4.7K        | 100                |
| R56               | 1KW            | 15                          | 18                 | 13          | 18          | 27                 |
|                   | 2KW            | 16                          | 24                 | 47          | 20          | 27                 |
| R57               | 1KW            | 47                          | 18                 | 100         | 47          | 33                 |
|                   | 2KW            | 82                          | 75                 | 100         | 47          | 56                 |
| R58               | 1KW            | 15                          | 10                 | 18          | 15          | 15                 |
|                   | 2KW            | 18                          | 18                 | 33          | 15          | 18                 |
| R62, R63          | 1KW            | 1                           | 1.2                | 1.5         | 1.2         | 1.5                |
|                   | 2KW            | 1.5                         | 2.2                | —           | 1.5         | 3.3                |
| R75               | 1KW            | 10                          | 10                 | 10          | 10          | 10                 |
|                   | 2KW            | 47                          | 12                 | 10          | 47          | 10                 |
| CR15              |                | 1SS133                      | 1SS133             | 1SS133      | 1SS133      | —                  |
| ローディング<br>LOADING | C1             | 0.068 $\mu$ F<br>5KV, 1.2KW | —                  | —           | —           | —                  |
|                   | L1<br>2KW ONLY | —                           | 02S0779-1          | —           | 02S0781-0   | 02S0783-0          |
| T1                |                | 02S0826                     | 02S0827            | 02S0873     | 02S0872     | 02S0828            |
| T2                |                | 02S0829                     | 02S0830            | 02S0876     | 02S0875     | 02S0831            |
| T3                |                | 02S0786                     | 02S0788            | 02S0789     | 02S0790     | 02S0792            |
| T4                | 1KW            | 02S1001                     | 02S1002<br>02S1003 | 02S1004     | 02S1005     | 02S1006<br>02S1007 |
|                   | 2KW            |                             |                    |             |             |                    |
| Y1                |                | CSB484                      | CSB505             | CSB523      | CSB543      | CSB655             |
| JP1               |                | SHORT                       | OPEN               | SHORT       | OPEN        | SHORT              |
| JP2               |                | SHORT                       | OPEN               | OPEN        | SHORT       | OPEN               |
| JP3               |                | OPEN                        | OPEN               | SHORT       | SHORT       | OPEN               |

送受波器によるタップ選択

TAP CONNECTION OF THE OUTPUT TRANSFORMER DIFFERENT ON TYPE OF XDCR.

| 送受波器<br>Transducer     | タップ Tap<br>Connection | 出力 (KW)<br>OUTPUT |
|------------------------|-----------------------|-------------------|
| * 28F-8                | ◎-①                   | 1                 |
| * 28F-18               | ◎-①                   | 2                 |
| 28F-24H                | ◎-⑩                   | 1/2               |
| * 50B-6B<br>50B-62M    | ◎-①                   | 1                 |
| 50B-6, 6G              | ◎-①                   | 1                 |
| 50B-9, 9B<br>50B-92M   | ◎-⑩                   | 1                 |
| 50F-8G                 | ◎-⑩                   | 1                 |
| * 50B-12               | ◎-①                   | 2                 |
| 50F-24H                | ◎-⑩                   | 2                 |
| * 68F-8H               | ◎-①                   | 1                 |
| * 68F-30H              | ◎-⑫                   | 2                 |
| * 88B-8<br>88B-82M     | ◎-①                   | 1                 |
| * 88B-10               | ◎-⑫                   | 2                 |
| 88F-126H               | ◎-⑩                   | 1/2               |
| * 200B-5S              | ◎-⑫                   | 1                 |
| 200B-5                 | ◎-⑫                   | 1                 |
| * 200B-8B<br>200B-82B  | ◎-①                   | 2                 |
| 200B-8, 8B<br>200B-82M | ◎-①                   | 1/2               |
| 200B-8N                | ◎-⑩                   | 1/2               |
| 200B-12H               | ◎-⑩                   | 2                 |

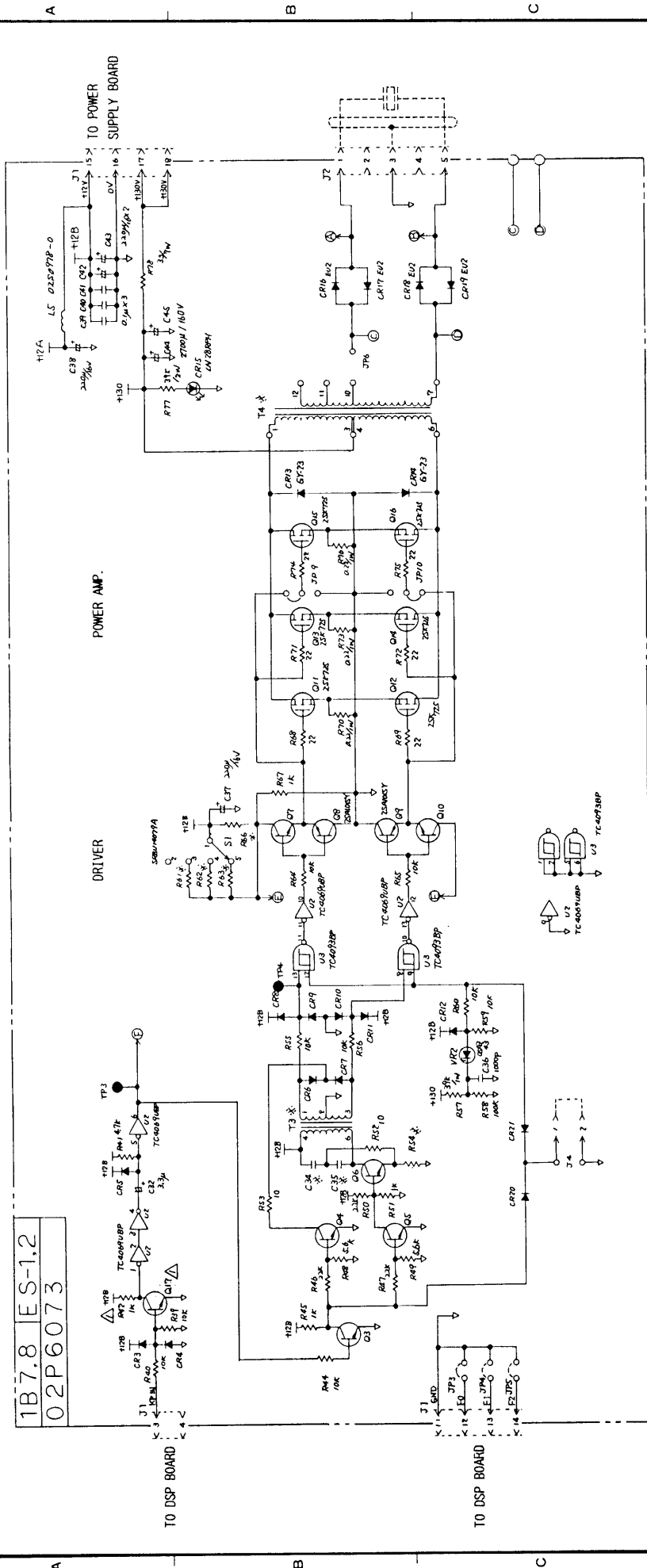
\* 標準出荷品 Standard Supply

F-261J用2周波一体型送受波器

| 送受波器                    | タップ      |          |
|-------------------------|----------|----------|
|                         | ES-1 (L) | ES-2 (H) |
| 28/50-1                 | ◎-①      | ◎-①      |
| 28/88-1                 | ◎-①      | ◎-①      |
| 28/200-1                | ◎-①      | ◎-⑫      |
| 50/88-1                 | ◎-①      | ◎-①      |
| 50/200-1T<br>50/200-12M | ◎-①      | ◎-⑫      |
| 88/200-1                | ◎-①      | ◎-⑫      |

| 品番<br>ITEM | 品名<br>NAME | 材質<br>MATERIAL | 数量<br>Q'TY | 図番<br>DWG. NO. | 摘要<br>REMARKS |
|------------|------------|----------------|------------|----------------|---------------|
|------------|------------|----------------|------------|----------------|---------------|

|                |                          |                               |    |                       |             |
|----------------|--------------------------|-------------------------------|----|-----------------------|-------------|
| 承認<br>APPROVED | AMR. G. J. S.<br>T. OAKA | 三角法<br>THIRD ANGLE PROJECTION |    | 名称<br>TITLE TXA 基板定数表 |             |
| 検図<br>CHECKED  | MAR. 3. 88<br>T. OAKA    | 尺度<br>SCALE                   | /  | TRANSCEIVER BLOCK 2/2 |             |
| 製図<br>DRAWN    | MAR. 3. 88<br>T. OAKA    | 重量<br>WEIGHT                  | kg | 図番<br>DWG. NO.        | C2307-013-D |



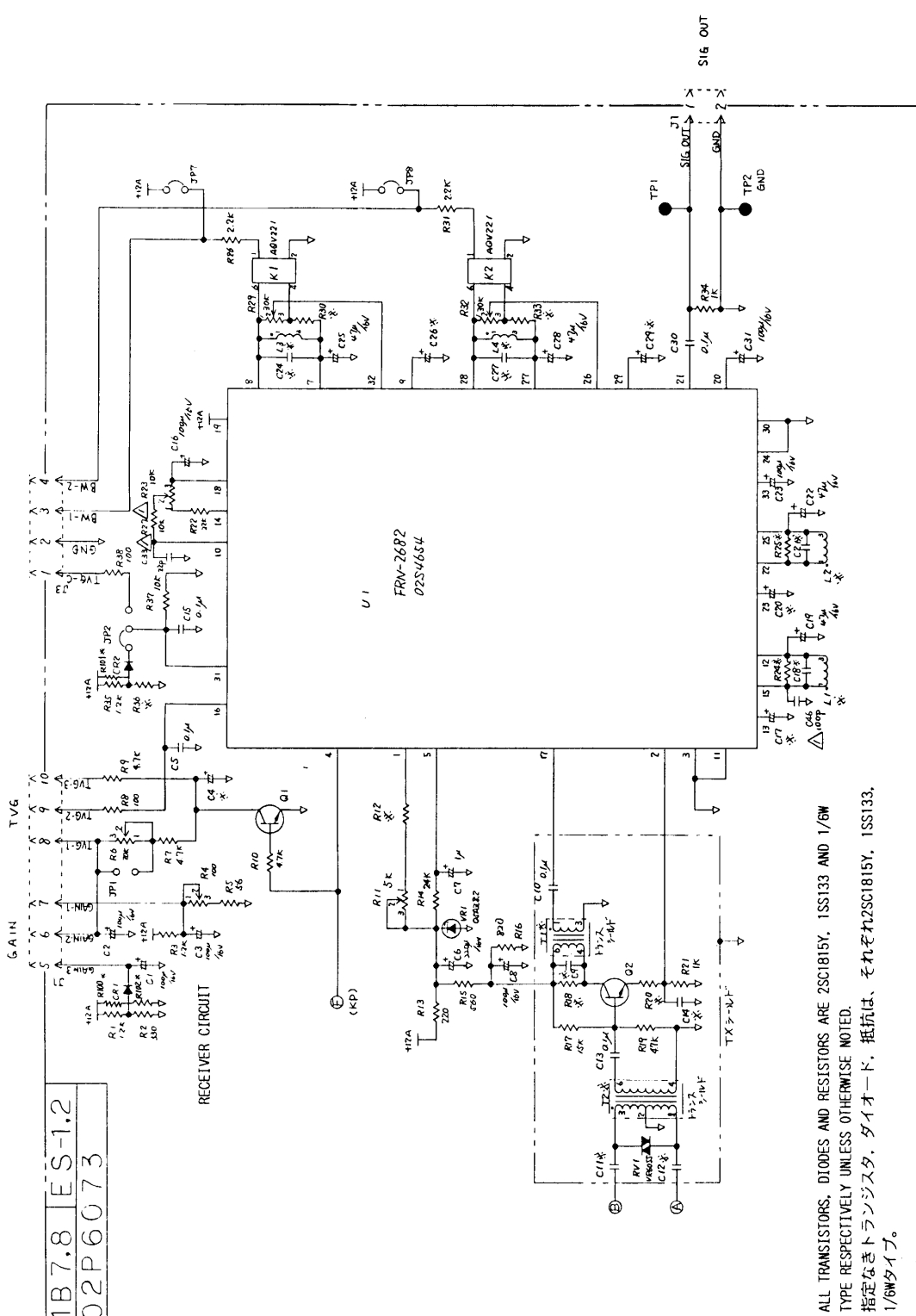
NOTE: 1.  
注

| 1 (R/R) | 2           | 3           | 4      | 5      | 6   | 7    | 8    | 9   | 10   | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    |
|---------|-------------|-------------|--------|--------|-----|------|------|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 28      | 025<br>1045 | 025<br>1040 | 0.15*  | 0.088* | 270 | 8.2K | 3.3K | 270 | 3.3K | SHORI | SHORI | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  |
| 50      | 025<br>1046 | 025<br>1041 | 0.088* | 0.033* | 330 | 3.3K | 7K   | 270 | 3.3K | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  |
| 68      | 025<br>1047 | 025<br>1042 | 0.047* | 0.022* | 330 | 3.3K | 1.5K | 150 | 7K   | SHORI | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  |
| 88      | 025<br>1048 | 025<br>1043 | 0.022* | 0.01*  | 470 | 2.7K | 1.2K | 150 | 1.5K | OP1*  | SHORI | SHORI | SHORI | SHORI | SHORI | SHORI | SHORI | SHORI | SHORI |
| 200     | 025<br>1049 | 025<br>1044 | 0.088* | 0.033* | 150 | 1.5K | 150  | 33  | 1.2K | SHORI | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  | OP1*  |

2. ALL TRANSISTORS, DIODES AND RESISTORS ARE 2SC1815Y, 1SS133 AND 1/6W TYPE RESPECTIVELY UNLESS OTHERWISE NOTED.  
指定なきトランジスタ、ダイオード、抵抗は、それぞれ2SC1815Y、1SS133、1/6Wタイプ。

|                |           |                                |                                   |
|----------------|-----------|--------------------------------|-----------------------------------|
| 承認<br>APPROVED | 7.5/11/10 | 名<br>TITLE                     | 送受信基板 (1/2)<br>TRANSCIEIVER BOARD |
| 検<br>CHECKED   | 4/10/10   | 図<br>DWG. NO.                  | 02P6073 C2320-K02-A               |
| 製<br>DRAWN     | 4/10/10   | 社<br>FURUNO ELECTRIC CO., LTD. |                                   |

FCV-363



1B7.8 ES-1.2  
02P6073

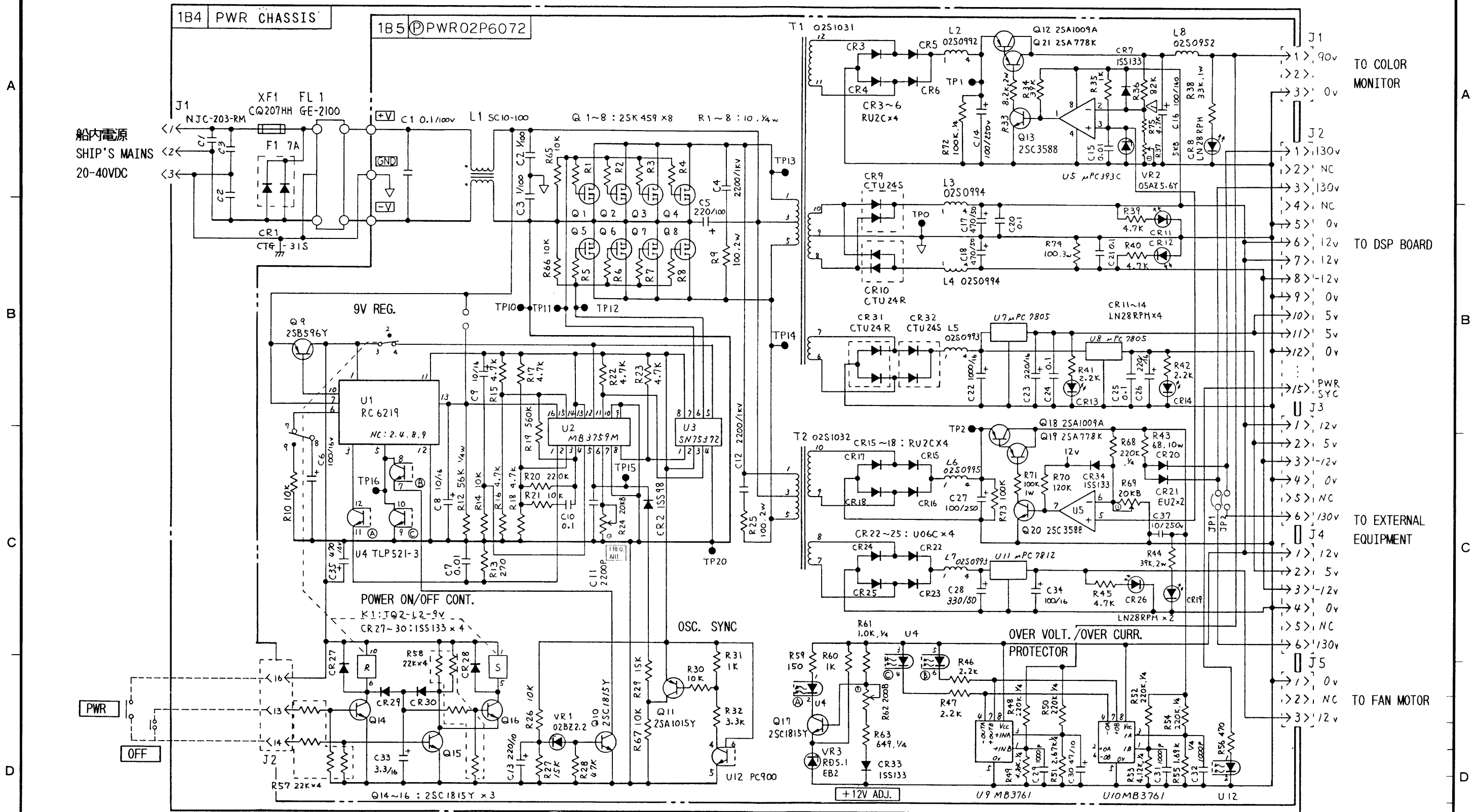
ALL TRANSISTORS, DIODES AND RESISTORS ARE ZSC1815Y, 1SS133 AND 1/6W TYPE RESPECTIVELY UNLESS OTHERWISE NOTED.  
指定なきトランジスタ、ダイオード、抵抗は、それぞれZSC1815Y、1SS133、1/6Wタイプ。

|       |             |             |      |      |             |             |      |       |       |       |      |      |      |      |      |       |      |       |      |      |      |     |      |      |      |      |      |      |      |      |
|-------|-------------|-------------|------|------|-------------|-------------|------|-------|-------|-------|------|------|------|------|------|-------|------|-------|------|------|------|-----|------|------|------|------|------|------|------|------|
| (MHz) | 11          | 12          | 11   | 12   | L3          | L4          | C4   | C9    | C11   | C12   | C14  | C17  | C18  | C20  | C21  | C24   | C28  | C27   | C29  | R12  | R18  | R20 | R24  | R25  | R30  | R33  | R36  | R100 | R101 | R102 |
| 28    | 025<br>0829 | 025<br>0826 | OPEN | OPEN | 025<br>0880 | 025<br>0880 | 3.3k | 3900p | 6800p | 6800p | 0.47 | OPEN | OPEN | OPEN | OPEN | 0.027 | OPEN | 0.027 | OPEN | 5.6k | 3.3k | 15  | 3.3k | 3.3k | 2.7k | 2.7k | 2.7k | 21k  | 21k  | OPEN |
| 50    | 025<br>0830 | 025<br>0827 | OPEN | OPEN | 025<br>0880 | 025<br>0880 | 3.3k | 1800p | 3200p | 3200p | 0.1  | OPEN | OPEN | OPEN | OPEN | 0.01  | OPEN | 0.01  | OPEN | 5.6k | 3.3k | 15  | 3.3k | 3.3k | 3.3k | 3.3k | 27k  | 27k  | OPEN | OPEN |
| 68    | 025<br>0876 | 025<br>0873 | OPEN | OPEN | 025<br>0880 | 025<br>0880 | 3.3k | 1800p | 3200p | 3200p | 0.1  | OPEN | OPEN | OPEN | OPEN | 5600p | OPEN | 5600p | OPEN | 5.6k | 3.3k | 15  | 3.3k | 3.3k | 3.3k | 3.3k | 27k  | 27k  | OPEN | OPEN |
| 88    | 025<br>0835 | 025<br>0832 | OPEN | OPEN | 025<br>0880 | 025<br>0880 | 3.3k | 1000p | 1500p | 1500p | 0.1  | OPEN | OPEN | OPEN | OPEN | 3300p | OPEN | 3300p | OPEN | 5.6k | 10k  | 33  | 4.7k | 4.7k | 3.3k | 3.3k | 27k  | 27k  | OPEN | OPEN |
| 200   | 0831        | 0828        | OPEN | OPEN | 025<br>1050 | 025<br>1050 | 2.2k | 40p   | 1000p | 1000p | 0.1  | OPEN | OPEN | OPEN | OPEN | 2200p | OPEN | 2200p | OPEN | 5.1k | 10k  | 33  | OPEN | 3.3k | 3.3k | 27k  | 27k  | OPEN | OPEN | 5.1k |

APR. 3 '87  
T. UYAKAJO  
APR. 3 '87  
T. KODAI  
APR. 3 '89  
H. USUDA

名称  
02P6073 送信基板 (2/2)  
TRANSMITTER BOARD

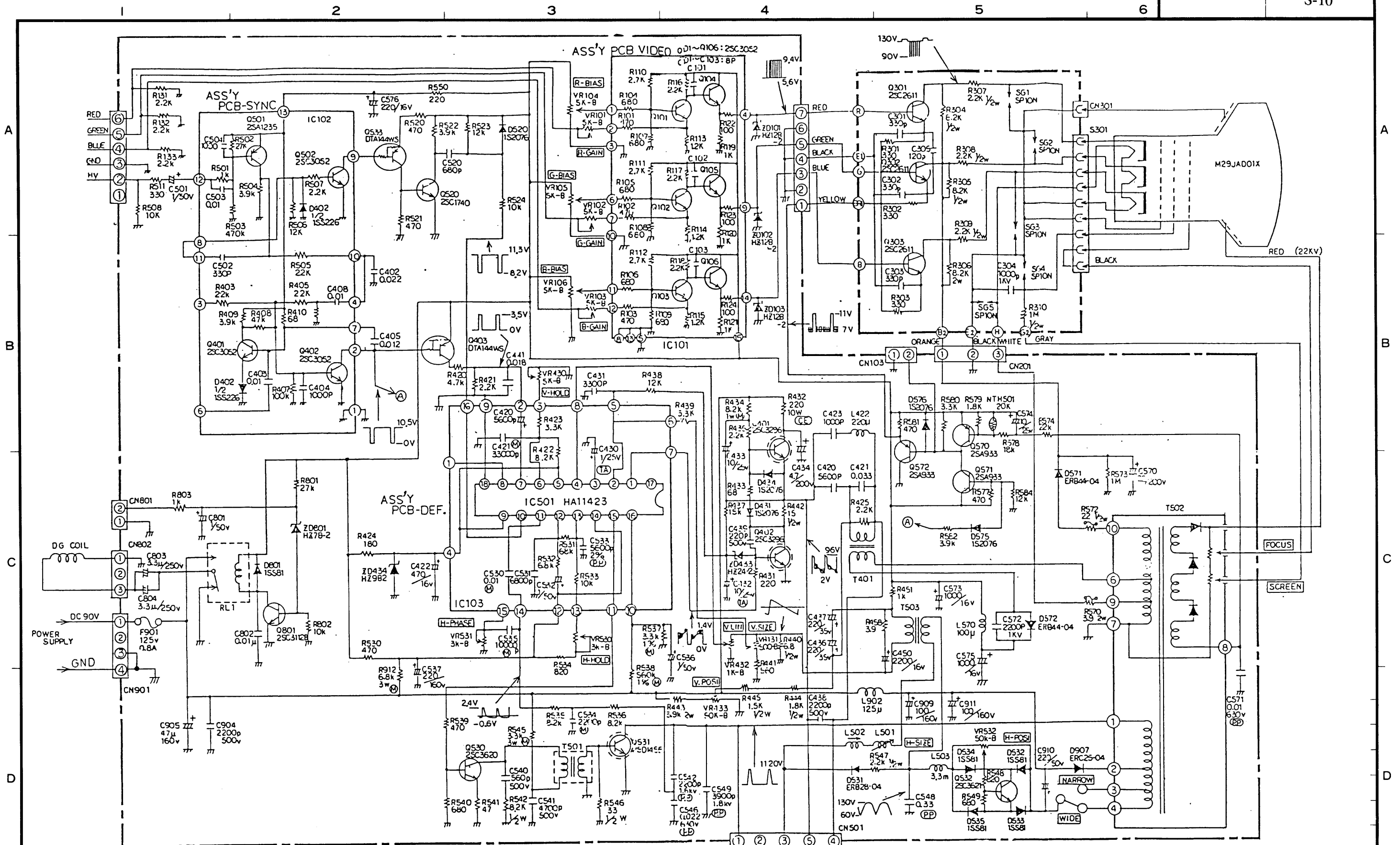
図番  
C2320-K03-A



|                |                         |             |                                    |
|----------------|-------------------------|-------------|------------------------------------|
| 承認<br>APPROVED | APR. 3 '89<br>T. YAKAWO | 名称<br>TITLE | 02P6072 電源回路<br>POWER SUPPLY BOARD |
| 検<br>CHECKED   | APR. 3 '89<br>M. USUDA  | 製<br>DRAWN  | DWG. NO. C2320-K06-A               |
| 製<br>DRAWN     | APR. 3 '89<br>M. USUDA  | 製<br>DRAWN  | DWG. NO. C2320-K06-A               |

FCV-360/361/362/363/371S





|                |                          |                |                          |
|----------------|--------------------------|----------------|--------------------------|
| 承認<br>APPROVED |                          | 名称<br>TITLE    | カラーモニター<br>COLOR MONITOR |
| 検査<br>CHECKED  | Aug. 25. '89<br>M. USUDA | MD-1219FR      |                          |
| 製<br>DRAWN     | Aug. 25. '89<br>M. USUDA | 図番<br>DWG. NO. | C2320-K09A               |