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MODEL S-1800H800

Technical Manual

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PRIOR TO MAKING REPAIR and SERVICE (Some excerpted from operation manual)

WARNING
Do not let flammable gas get in the unit, as this will lead to fires.

CAUTION
For long term trouble-free service, the proposed site for installation should be:
* Away as much as possible from areas where the unit is likely to be exposed to direct water spray and free as much as possible from shocks and engine vibrations.
* Away as much as possible from areas of high temperatures or areas where the unit is likely to be exposed to direct sunlight.

To avoid magnetic interference to the display, please keep the unit separated from magnetic equipments such as loud speakers.

WARNING
Do not install the S-1800 on unstable or unleveled surfaces.
Failure to observe this condition may result in the unit falling or topping over, resulting in injury.

Bring wiring to the following attention to avoid getting hurt or causing fire or damage.
* Run the cables not to touch the rotary obstacles or disturb the operation.
* Do not use the cables bent, twisted or stretched by force.
* Do not put heavy thing on the cables.

CAUTION
Always turn off the power before connecting or disconnecting the unit.
Pulling the cables may damage the cables themselves and result in fire or electric shock, or fire.

WARNING
All S-1800 operate universal power supply of the following voltages.

S-1800M10 DISPLAY CABINET	: 10.5～40V
S-1800M15/MBB DISPLAY CABINET	: 20.0～30V
S-1800H800 HULL UNIT	: 10.5～30V

Incorrect voltage may cause units damage.
Note that power supply connection for S-1800M15 should be accomplished via Operation unit.

DANGER
When installing the transducer through an opening in the hull bottom, pay attention to intensity and waterproofing. If not, it may cause wrecks.

WARNING
Please use specified fuse.
If not, it could result in serious trouble or fire.
Please use the specified power supply cables.
If not, could result in fire.
The Hoist Gears and Flange Unit require regular lubrication with grease.
Make sure the voltage between the Flange and the Battery's negative terminal not to exceed 0.65V.
Otherwise due to the electric corrosion the Soundome may be damaged.

CAUTION
Be sure there are no obstacles to interfere the ultrasonic beam when the soundome is lowered.
Provide sufficient clearance around the trunk pipe to make maintenance and inspection work.
The Bow mark (△) on the Hull unit flange should be installed facing the bow of the vessel.
However, if this hinders maintenance and inspection and when there is no solution, direct the mark to the opposite (180 degrees) direction toward the stern.

DANGER
Fully discuss about the strength and water tightness with the ship owner,
persons in charge in the shipyard and the installer before determining on the position
and the method of installation and necessary materials.

CAUTION
Please apply grease regularly to the Flange opening and Hoist gears.

CAUTION
Do not apply adhesive, etc, on the Gum packing of the Flange but use it direct as it is.

WARNING
When replacing batteries,
* Insert the new batteries. Be sure that the polarity (+, -) is correct.
* Never subject batteries to very hot or cold temperatures, or disassemble or dump into fire/water,
* Never use batteries with fluid leaking out.

DAILY MAINTENANCE AND INSPECTION

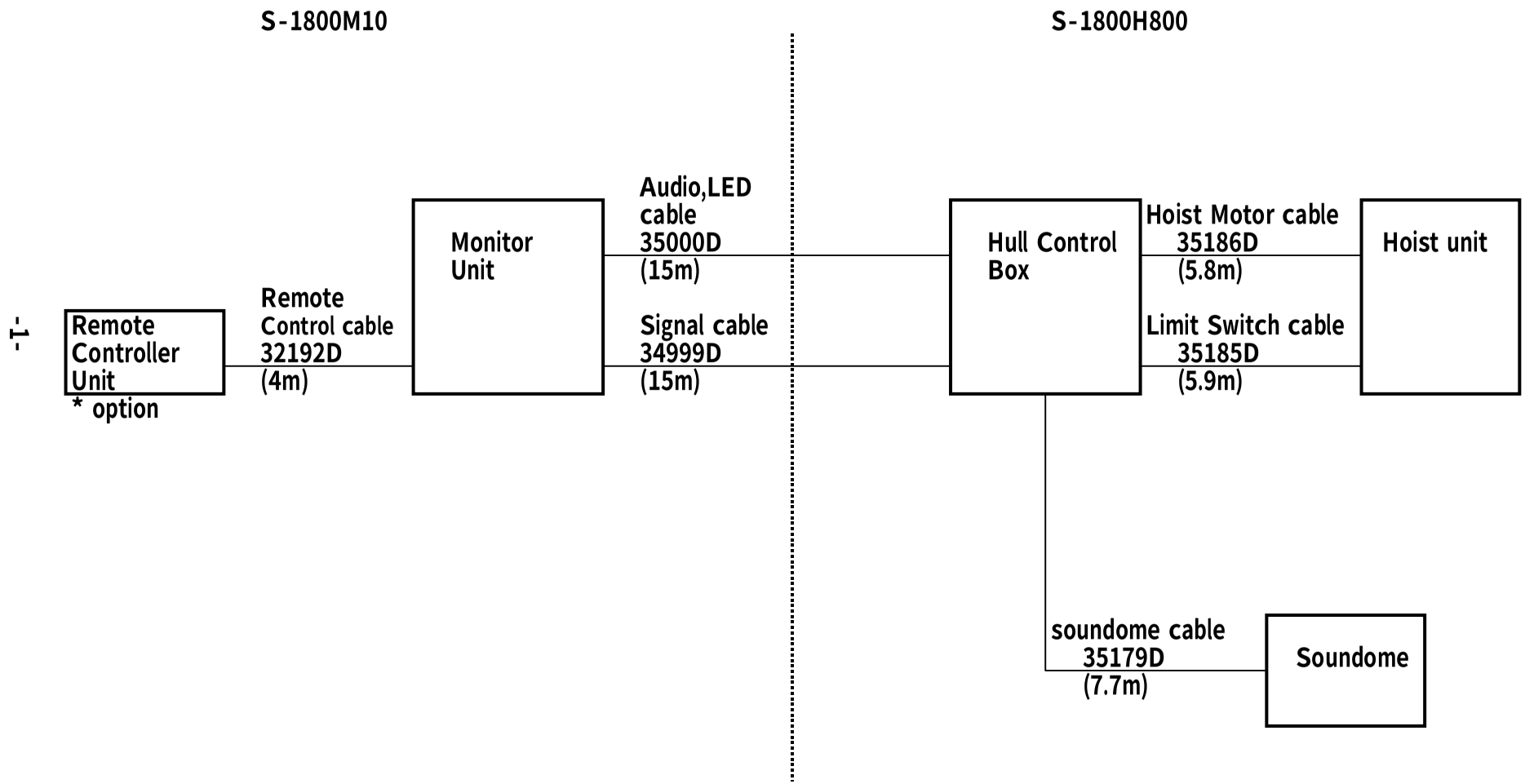
For keeping the equipment in good working order, check the following points regularly.

* Check voltage of ship's mains to be sure it is within the equipment's power rating.
* Dust or dirt can be removed from the equipment with a soft, dry cloth.
* Do not use chemical cleaners to clean the equipment.

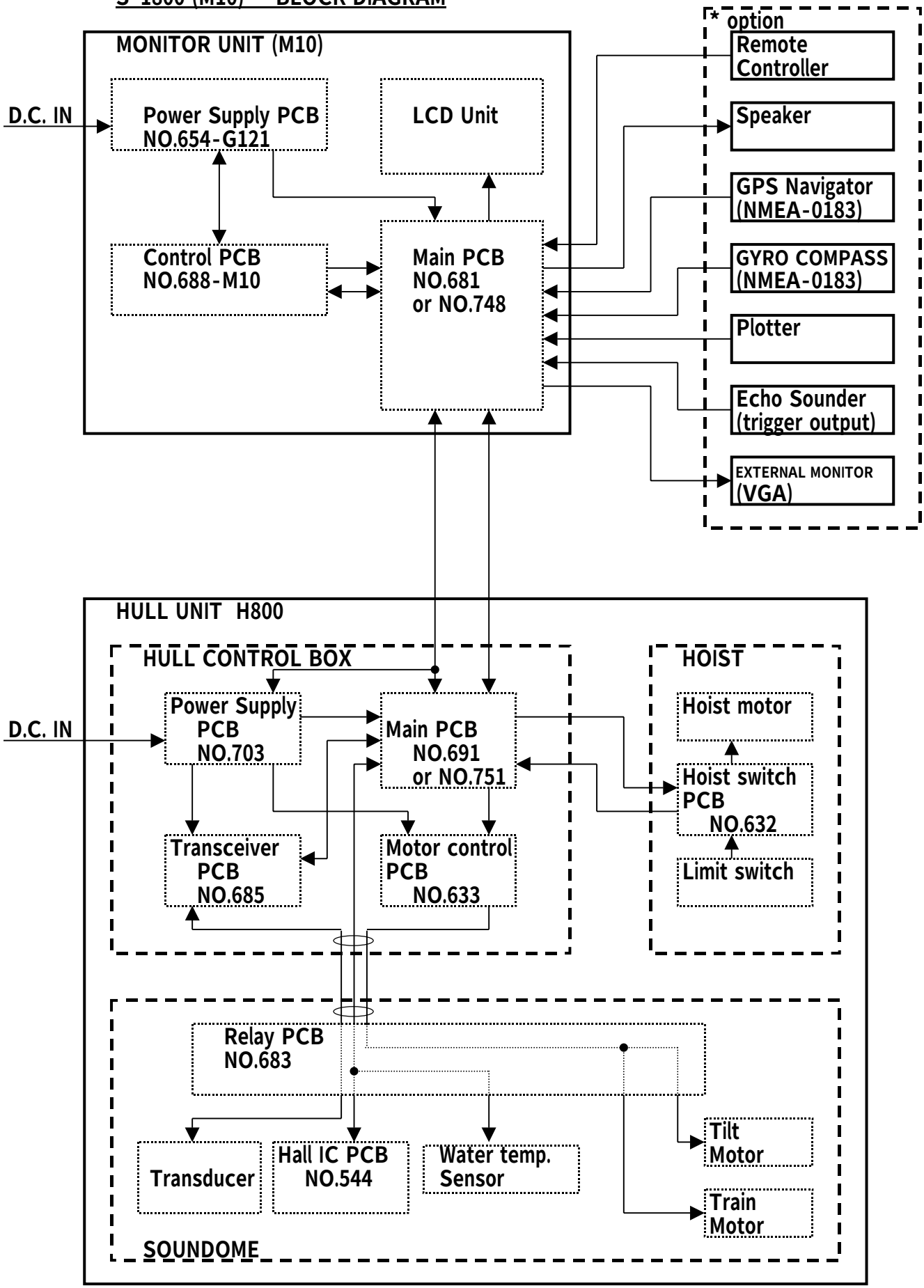
* Keep the SOUNDOME as clean as possible.
  Otherwise the performance is degraded.
  Do not apply the paint to the SOUNDOME.

* Check connectors at rear of each unit. Clean if necessary.

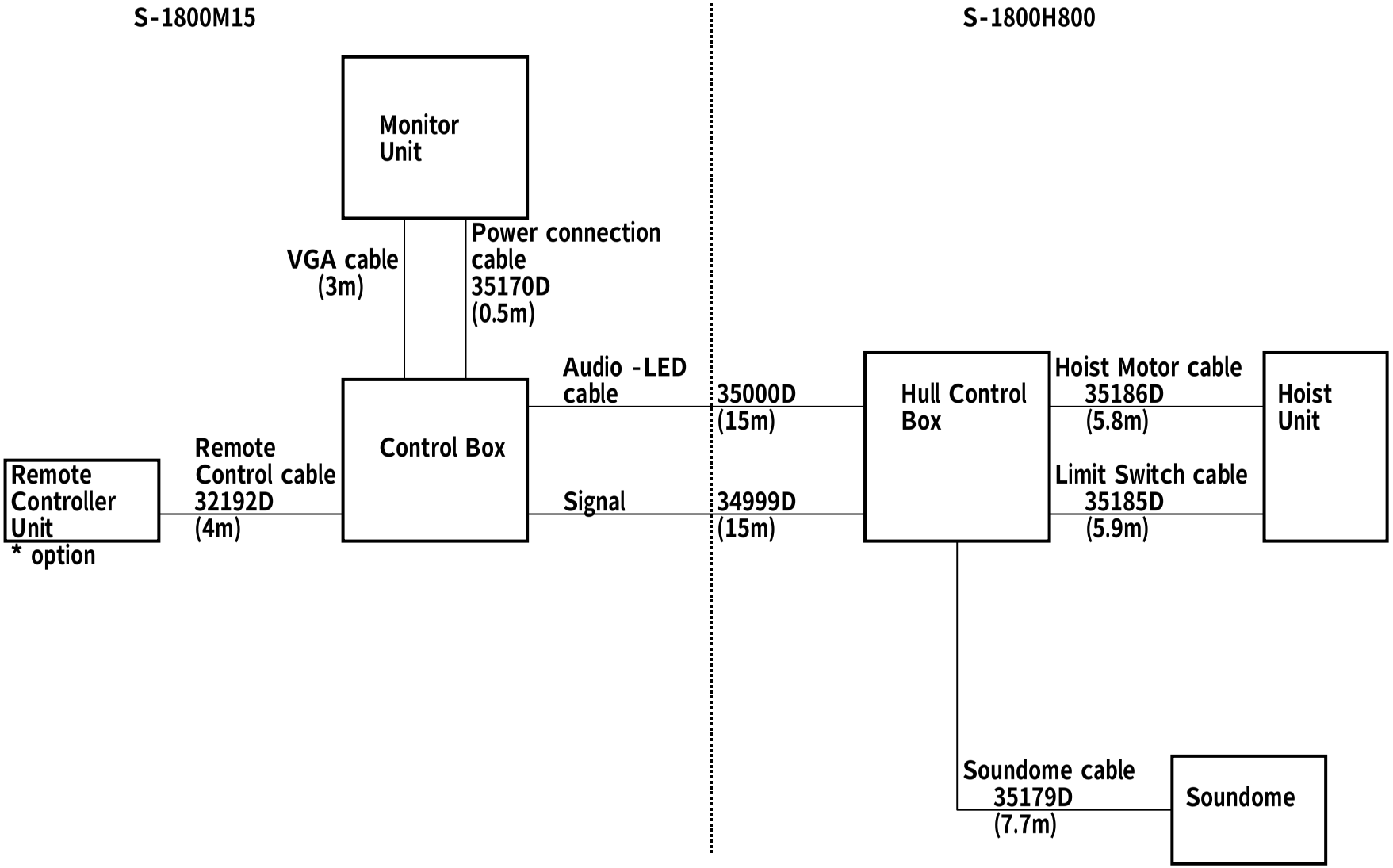
SYSTEM BLOCK DIAGRAM (M10)



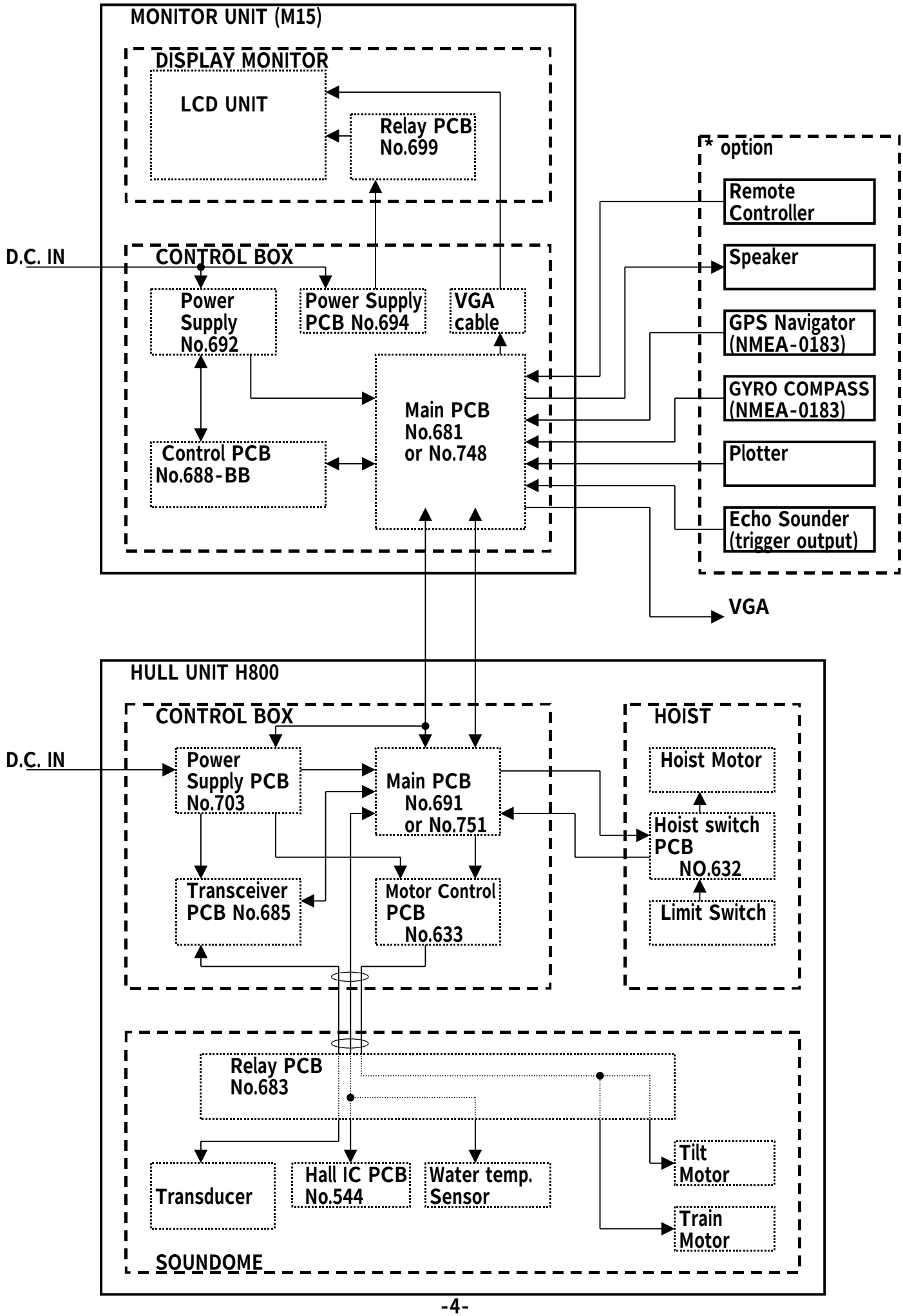
S-1800 (M10) - BLOCK DIAGRAM



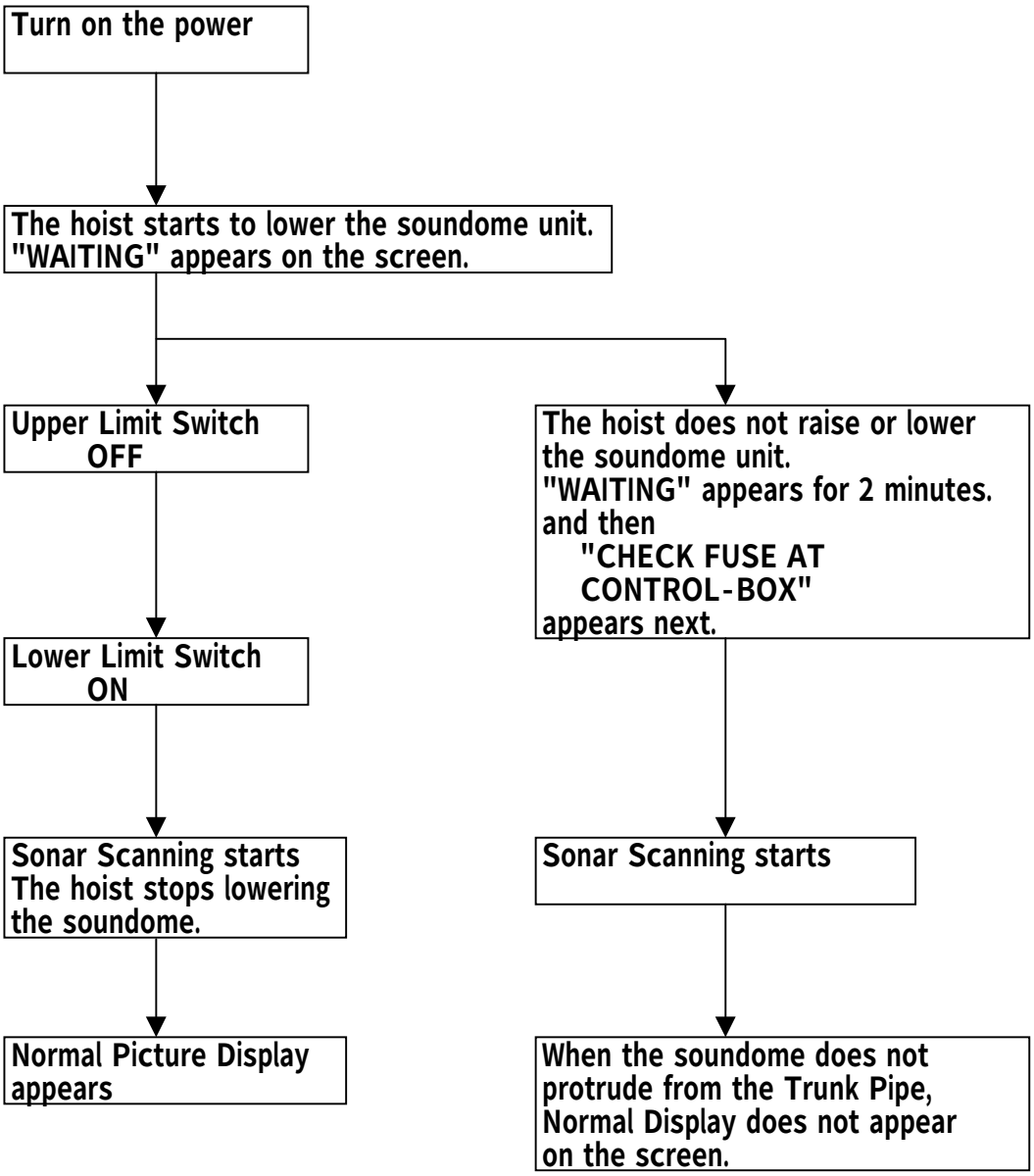
SYSTEM BLOCK DIAGRAM (M15)



S-1800 (M15) - BLOCK DIAGRAM



[FLOWCHART into ECHO DISPLAY]



SELF CHECK SCREEN

* By selecting the mode selection dial to MENU 2 SELF CHECK appears on the screen.

SELF CHECK

DATA-TX	OK	Receiving the data between the Monitor unit and the Hull Unit.
DATA-RX	OK	Transmitting the data between the Monitor and the Hull Unit.
DATA	OK	Data transferred between the Monitor Unit and the Hull Unit.
HOIST	OK	Hoist up and down
TILT	OK	Tilt control on the soundome (only in case of S-1800H150)
TRAIN	OK	Bearing direction control on the soundome
ROM-VER	OK	P-Rom version of Monitor or Hull unit
OTHERS	OK	Other items

DATA-TX NG
Power Supply PCB for Monitor or for Hull unit (5V-2) is faulty.
Main PCB for Monitor or for Hull Unit is faulty. (C. Circuit: BUSY, ACK, REQ)
Signal cable is faulty

DATA-RX NG
Main PCB for Monitor or for Hull Unit is faulty. (C. Circuit: BUSY, ACK, REQ)

DATA NG
Main PCB for Monitor or for Hull unit is faulty.(C. Circuit: DIO 0~DIO 3)
Signal cable is faulty

HOIST NG
Fusing at FUSE 2 for hoist motor
Hoist control circuit in Main PCB for Hull unit is faulty.
Hoist motor cable is faulty.
Limit Switch is faulty.
Hoist Motor is faulty.

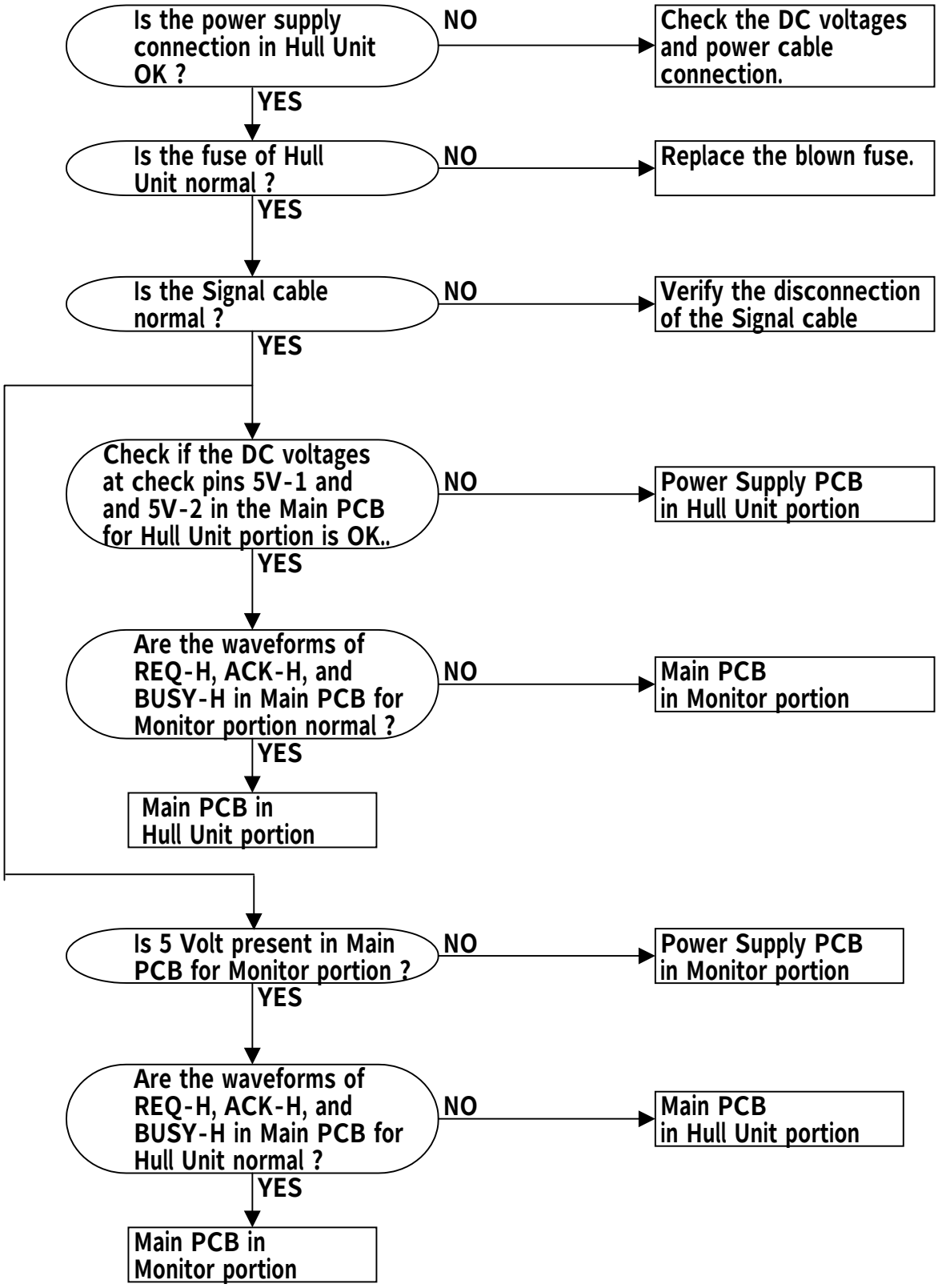
TILT NG The box below shows the case of S-1800H150.
Motor Control PCB of Hull Unit is faulty.
(Tilt Control portion)
Tilt Motor is faulty. Soundome cable is faulty.

TRAIN NG
Motor Control PCB for Hull Unit is faulty.
(Train Control section)
Soundome is faulty. Soundome cable is faulty.

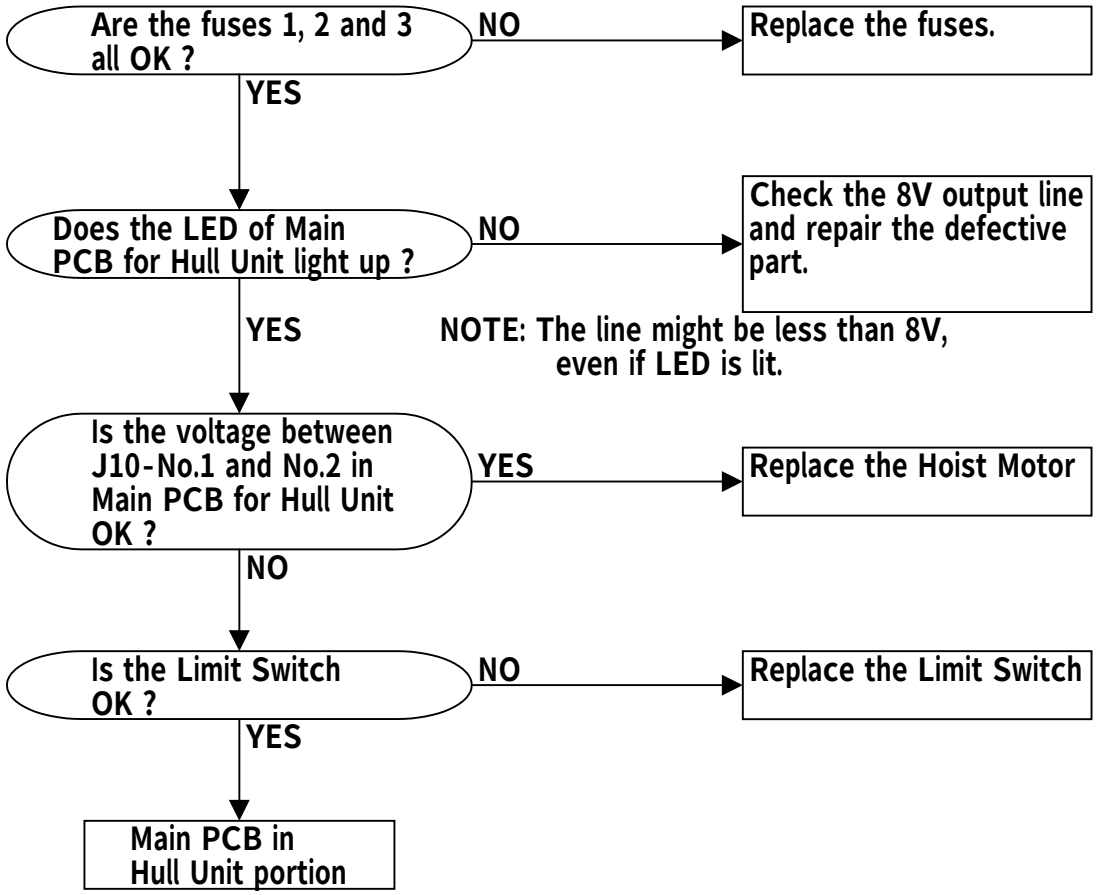
ROM-VER NG
P-ROM version for Monitor or for Hull Unit is not correct.

OTHERS NG
Other errors

"WAITING" stays more than 2 minutes
and then "CHECK FUSE AT CONTROL-BOX" appears next.



The hoist does not raise or lower the soundome.
The hoist stops raising or lowering the soundome on the way,

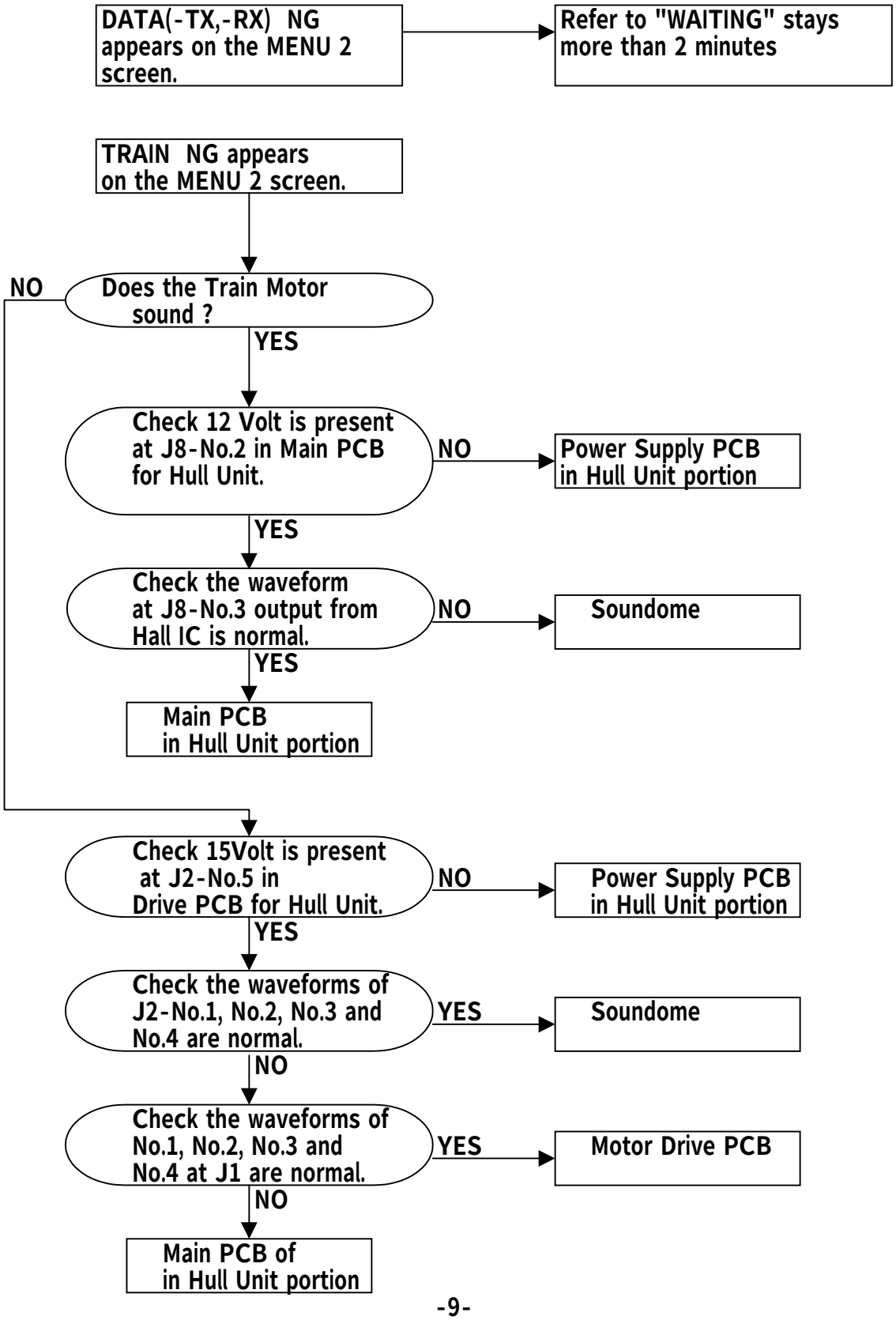


* When the fuse 1 blows, the Hoist raised the soundome, but does not lower it. When the fuse 2 and 3 blow, the Hoist neither raises nor lowers the soundome.

* Barnacles or oysters that adhere to the soundome will cause the soundome trouble. Therefore remove them whenever they are found.

* Disconnect the power when the Hoist could not raise or lower the soundome. Otherwise this could damage the motors or Main PCB in Hull Unit.

Sonar Scanning stops intermittently.
Sonar Scanning stops.



"WAITING" stays more than 2 minutes
and then "CHECK FUSE AT CONTROL-BOX" appears next.
Normal Display does not appear on the screen even when Sonar Mode is set.
(HOIST NG)

* Refer to the Hoist does not raise or lower the soundome.

Scanning stops when Gain Dial/Far Gain Dial are turned.
Scanning stops when a Key is pressed.

* Refer to the "WAITING" stays more than 2 minutes.

[Bearing 0 ° and Scanning]

* Bearing does not show 0 ° after Train starts.
  Scanning starts after lowering the hoist and turning the
  Limit Switch on even if Bearing does not show 0 °
  "MENU 2" screen shows SELF CHECK -TRAIN NG.

* 0 ° can not be adjusted while bearing.
  Scanning is normal other than stopping temporarily.
  "MENU 2" screen shows SELF CHECK -TRAIN NG.

* 0 ° can not be adjusted and scanning stops occasionally.
  "MENU 2" screen shows SELF CHECK -TRAIN NG
  only when the scanning stops intermittently.

* Scanning is normal, though Train is inactive.
  "MENU 2" screen shows SELF CHECK -TRAIN NG.

[When Signal cable disconnected while operating.]

* Hoist raises

* Scanning stops

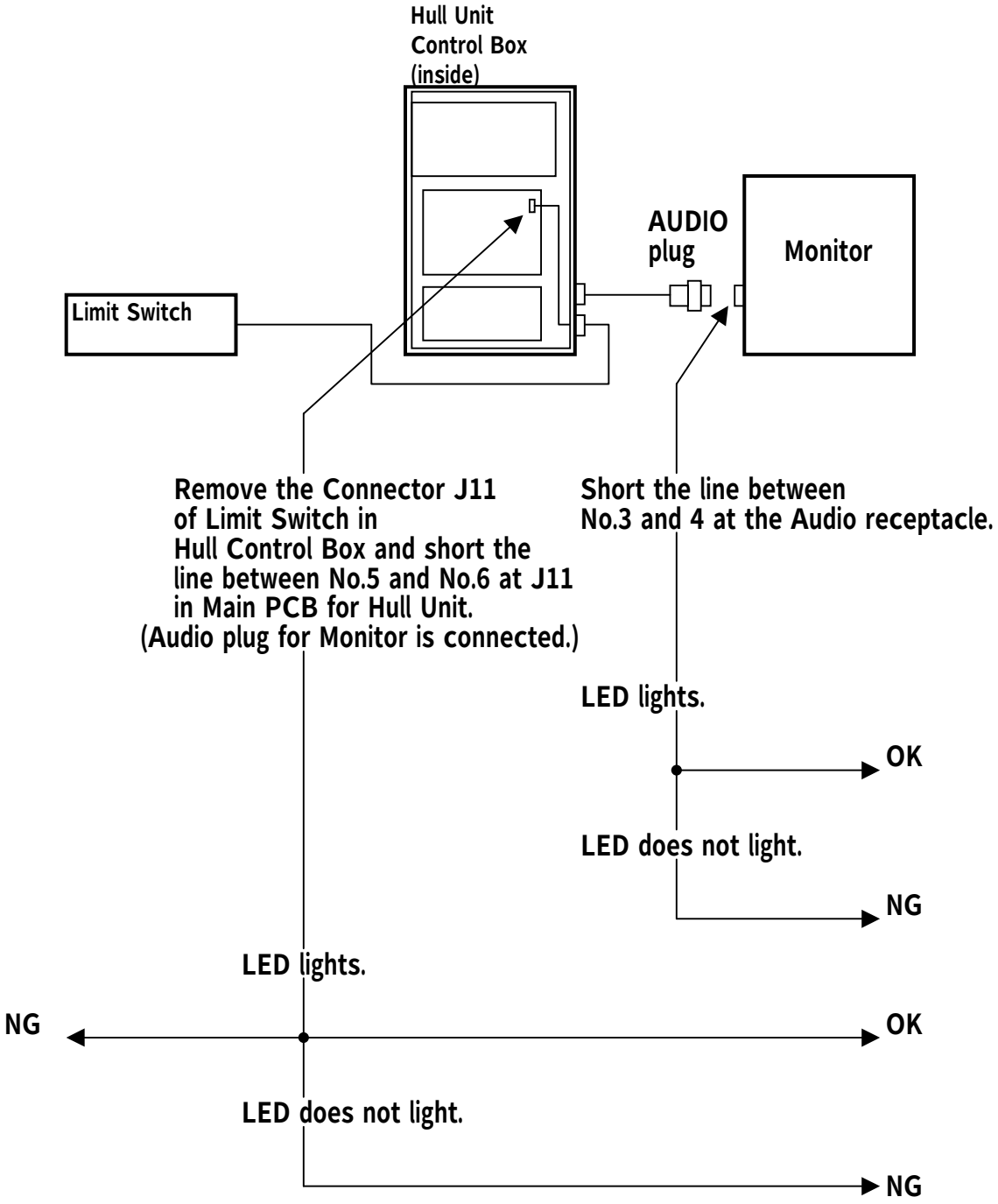
* "MENU 2" on the screen shows:

SELF CHECK

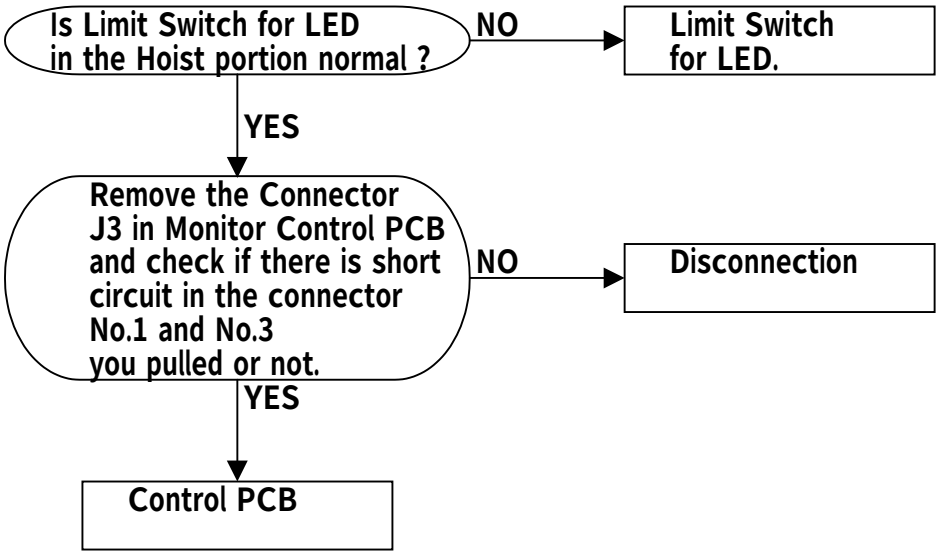
DATA-TX	NG
DATA-RX	NG
DATA	OK
HOIST	OK
TILT	OK
TRAIN	OK
ROM-VER	OK
OTHERS	OK

No lighting of Sensor Lamp (LED)

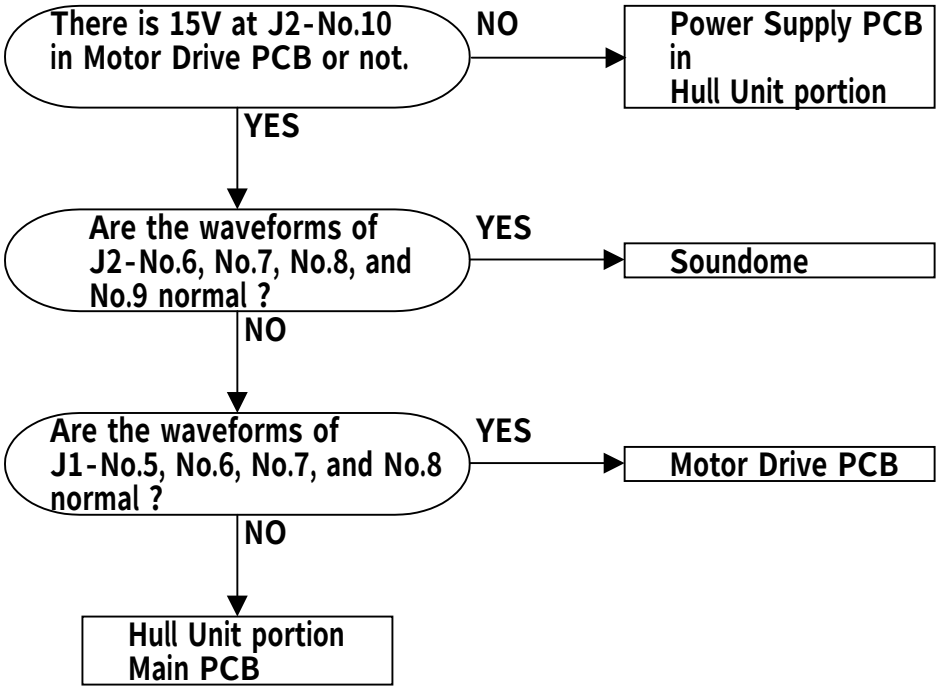
* Turn off power to the Hoist system and keep the Hoist neither being lowered nor raised.



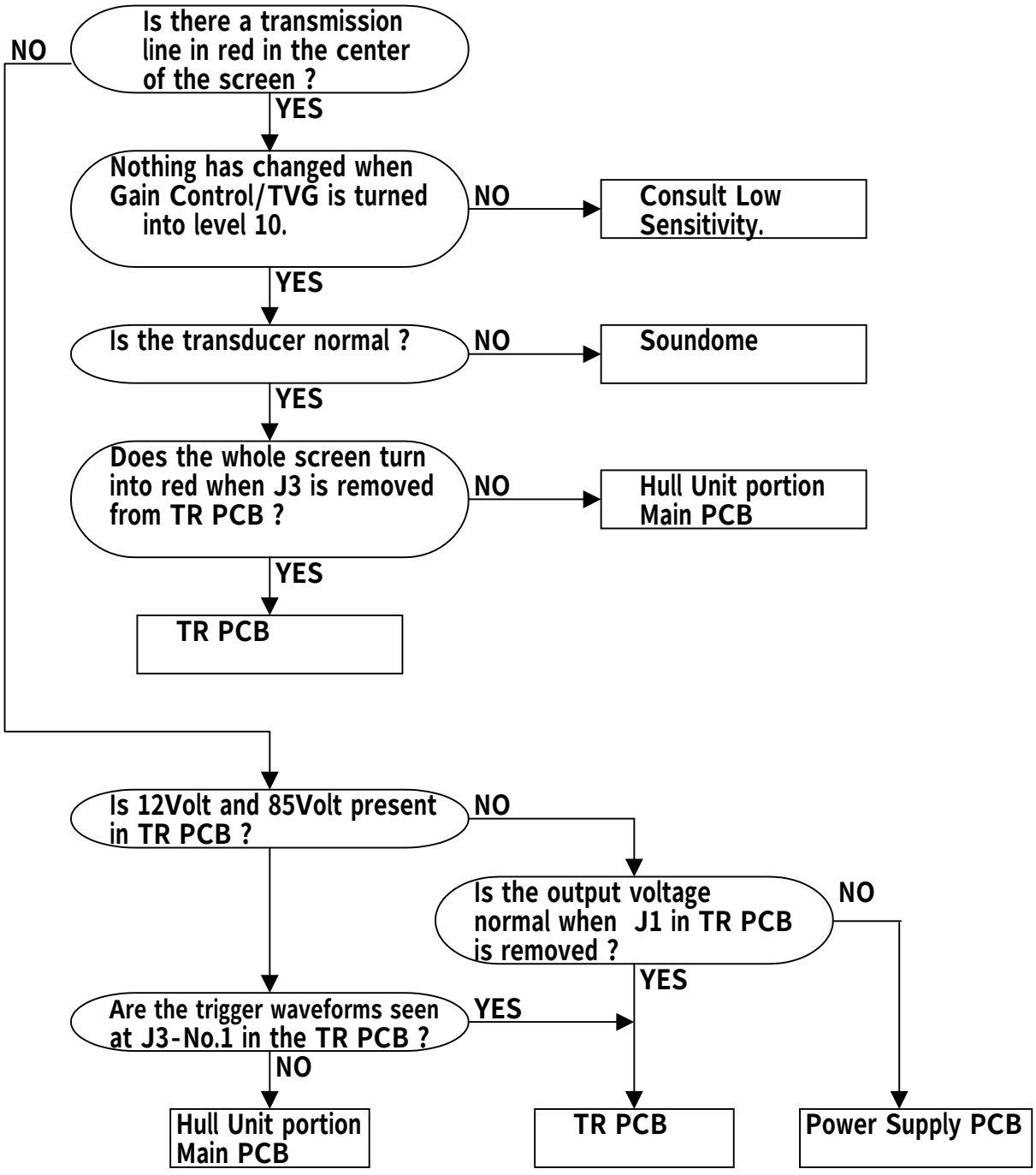
LED does not light even if the Hoist is lowered.



Display does not change even if the tilt has been changed.
The depth readout is abnormal when Bottom Scanning is selected.



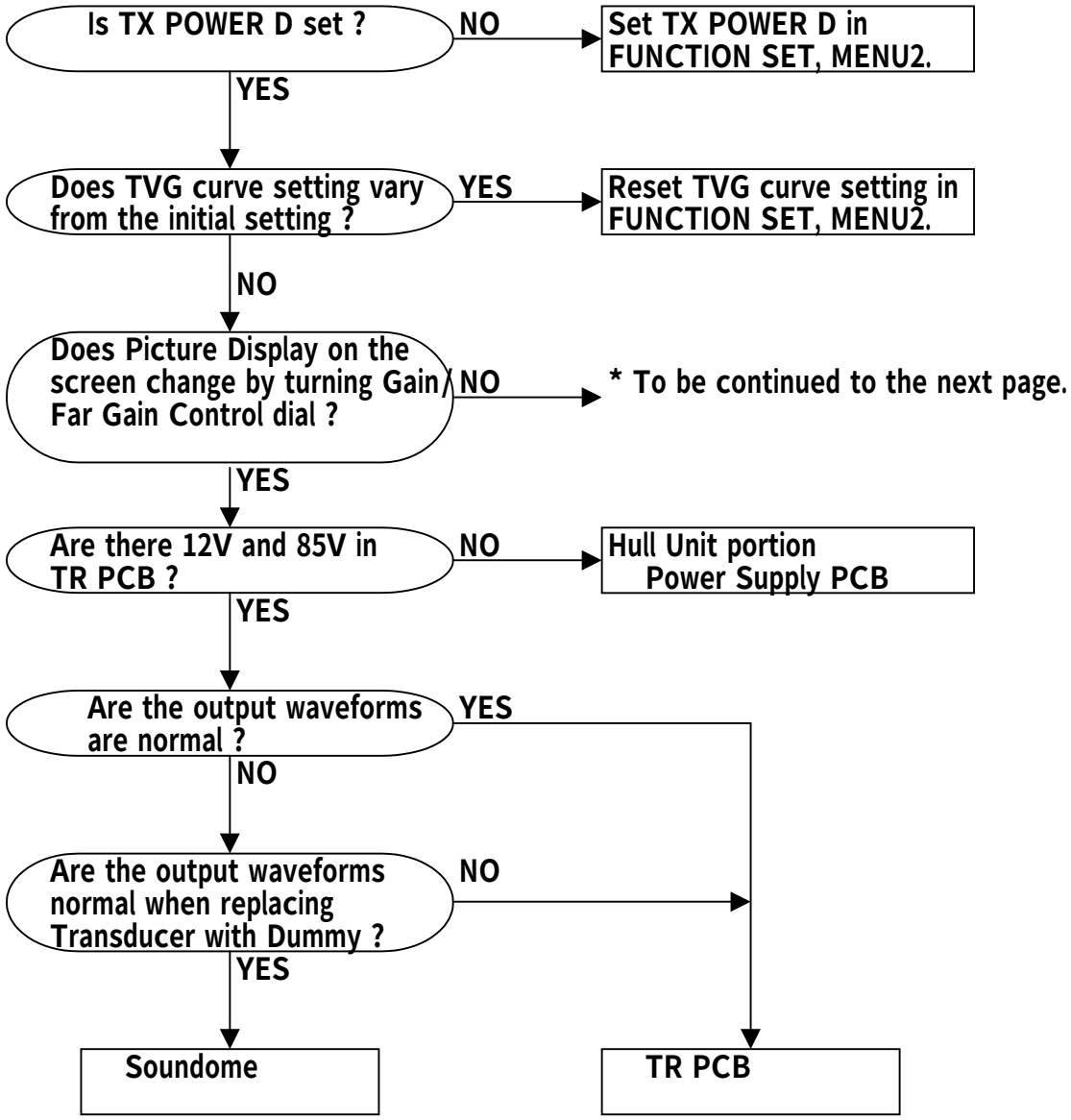
No Picture Display on the screen when scanning.



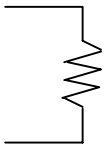
[Transducer Disconnection]

Remove J2 in the TR PCB and set the tester to the 100M ohm or more range between the connector No.1 and No.3.
Connect the red or black lead of the tester alternately.
If it is normal, the indicator will move a little.
If the indicator will not move, the disconnection is suspected.
If there is a resistance value, sea water may invade the Soundome.

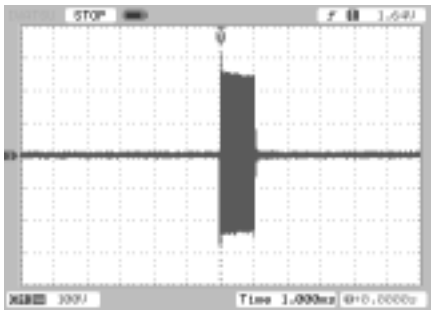
Only the surface echo is displayed.
The sensitivity is poor.
The picture does not change even if the Gain or Far Gain Control dial is turned.



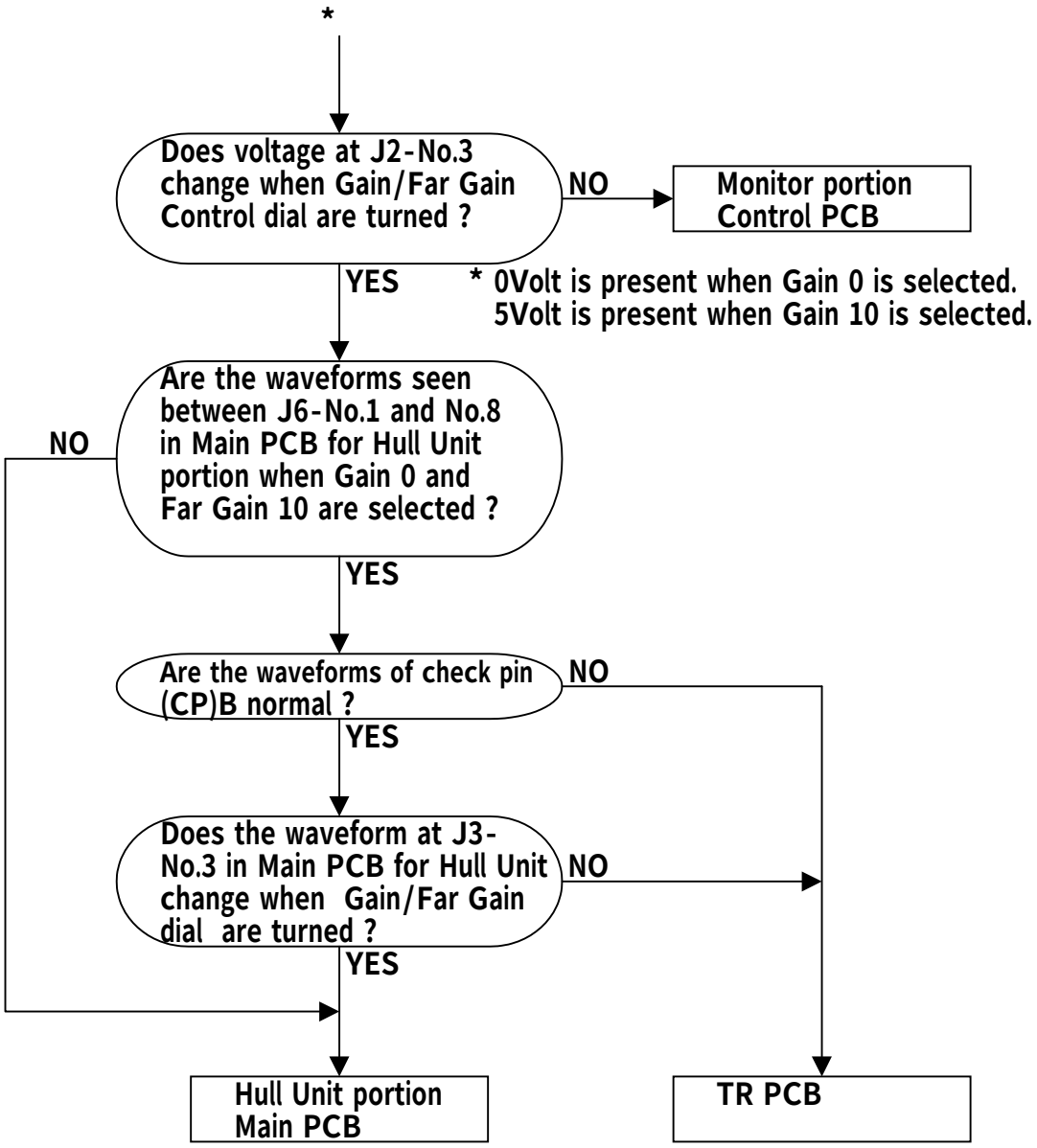
* DUMMY RESISTANCE



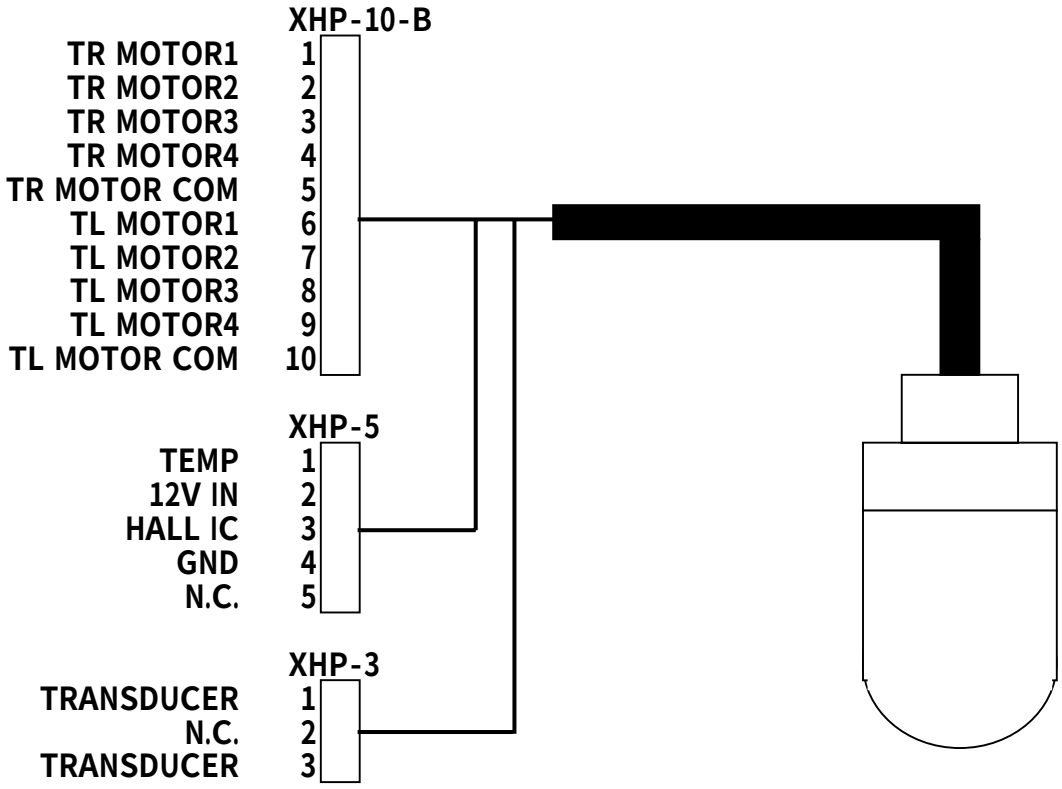
110 ohm



450Vp-p
(or 550Vp-p in case Power Supply PCB-85V)


*
Does voltage at J2-No.3 change when Gain/Far Gain Control dial are turned ?
NO
Monitor portion Control PCB
YES
* 0Volt is present when Gain 0 is selected.
5Volt is present when Gain 10 is selected.
Are the waveforms seen between J6-No.1 and No.8 in Main PCB for Hull Unit portion when Gain 0 and Far Gain 10 are selected ?
NO
YES
Are the waveforms of check pin (CP)B normal ?
NO
YES
Does the waveform at J3-No.3 in Main PCB for Hull Unit change when Gain/Far Gain dial are turned ?
NO
YES
Hull Unit portion Main PCB
TR PCB

Alignment for soundome cable connectors.



[Soundome Check by using a tester]

* The temperature sensor is connected to the No.1 and No.2 pins of XHP-5 (5P connector) and it is normal when the resistance value of a temperature sensor at 25C., 5k ohm is covered.

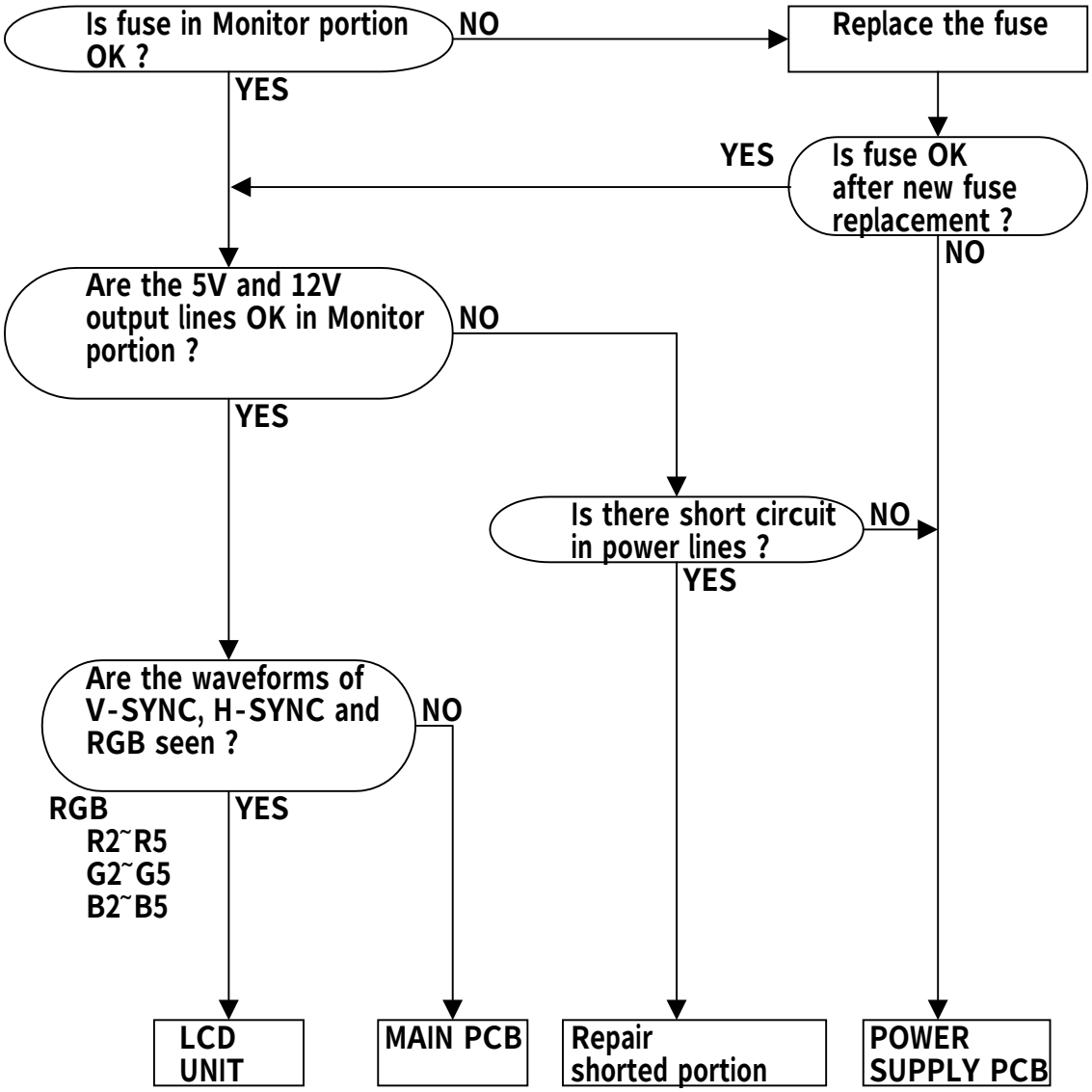
In case of other temperatures

0C.	approx.17k ohm
10C.	approx.10k ohm
20C.	approx.6.3k ohm
30C.	approx.4k ohm

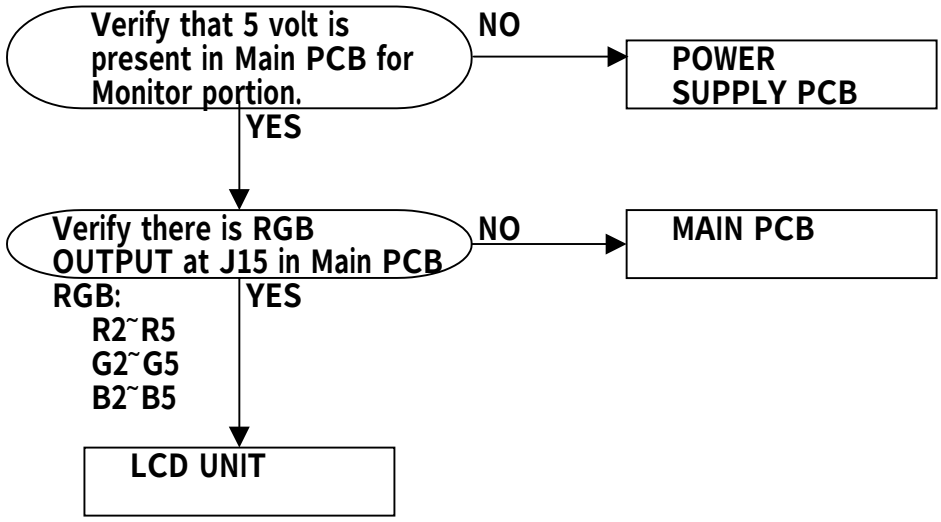
* When Train Motor is normal, there is 25 ohm of resistance value between check pins No.1 (or No.2 to No.4) and XHP-10-B (10P connector) -No.5.

* When Tilt Motor is normal, there is 21 ohm of resistance value between check pins XHP-10-B (10P connector).-No.10 and No.6 (or No.7 to No.9).

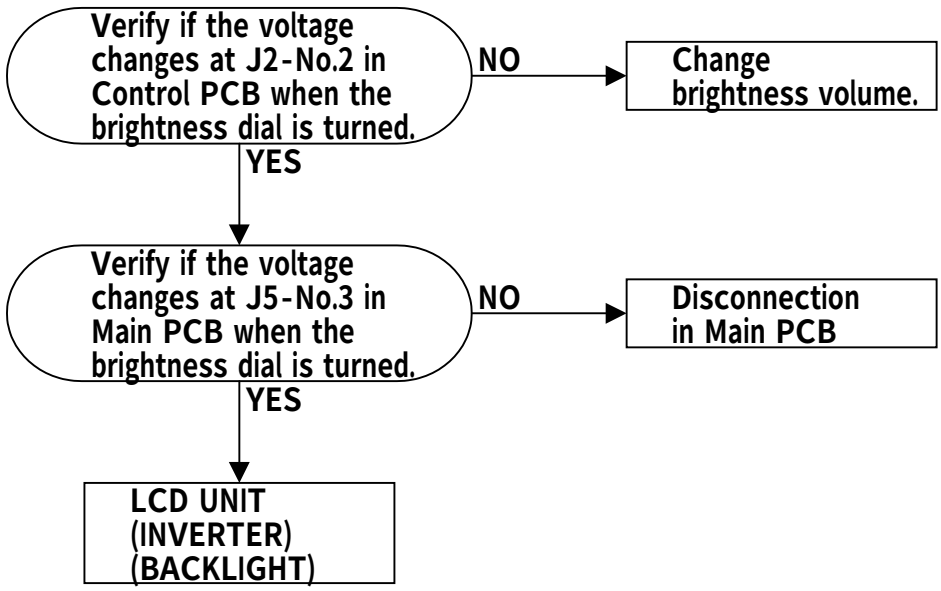
(S-1800M10)
Nothing appears on the screen when powered.



(S-1800M10)
Screen gets bright, but nothing appears



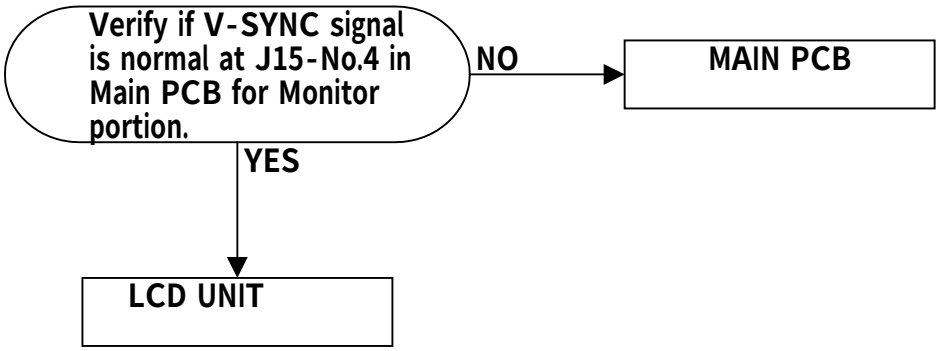
(S-1800M10)
Screen doesn't change into bright, even if the brightness dial is turned.



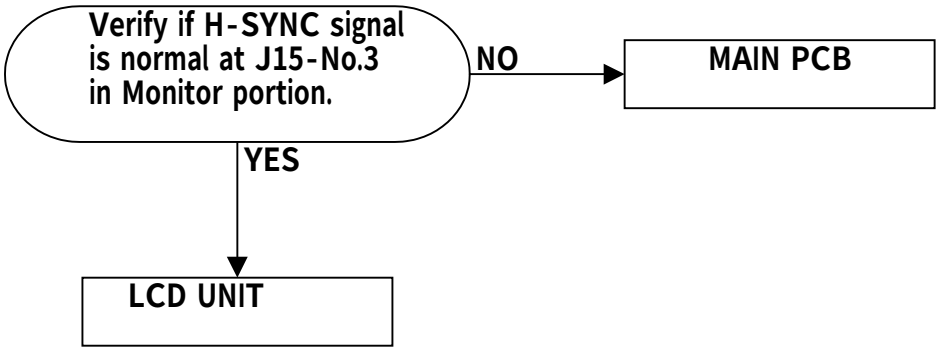
*** BACKLIGHT FOR LCD UNIT**

When one side does not light, either the upper part or the lower part gets dark.
When both sides do not light, no picture is seen.
Contact your authorized dealers when replacing the backlights.

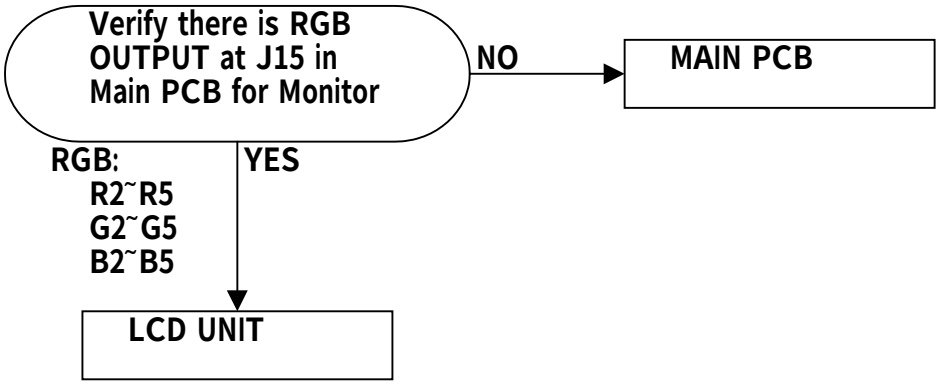
(S-1800M10)
The picture is unstable and scrolling vertically.



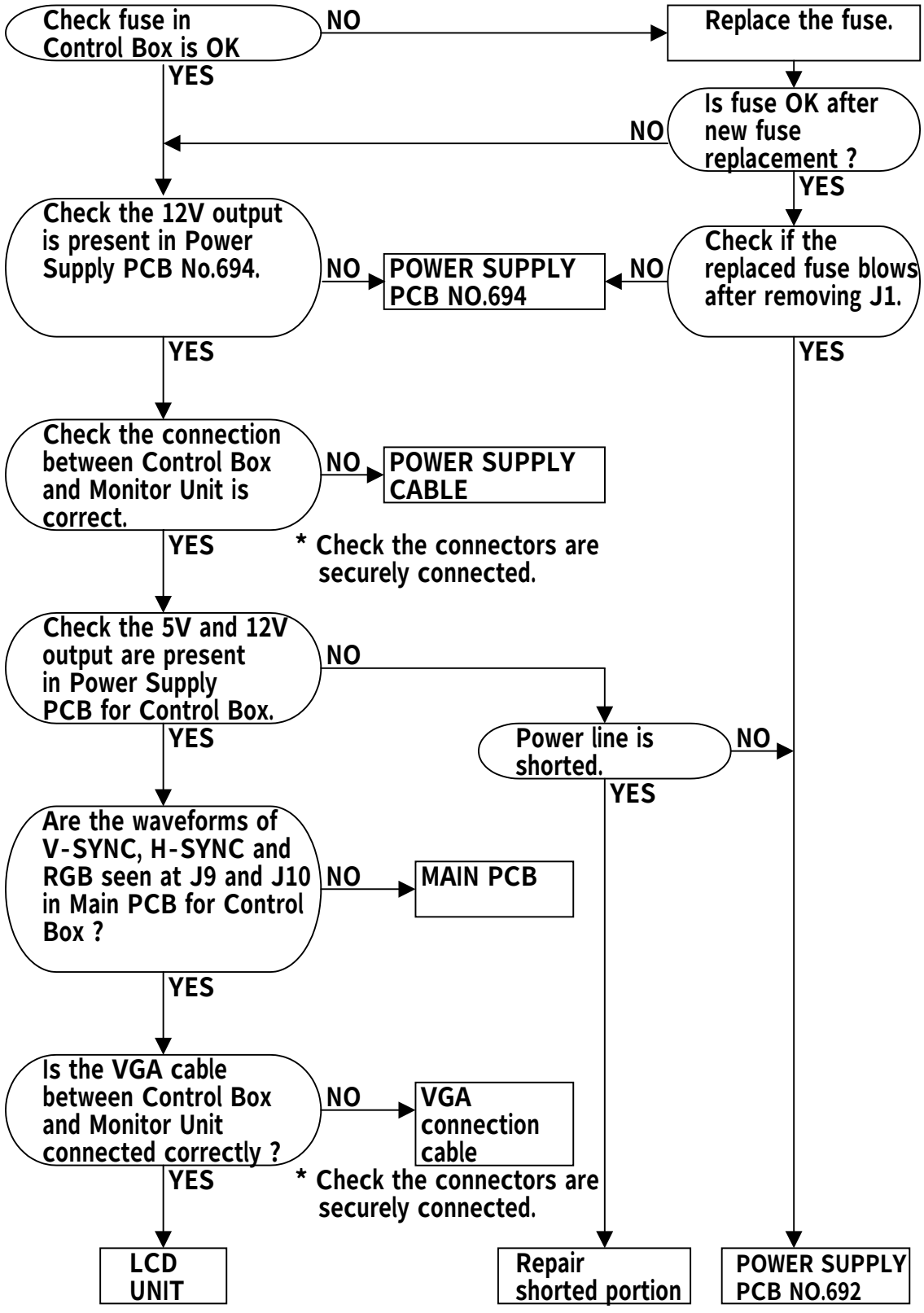
(S-1800M10)
Stripes appears to the left or right direction on the screen and no normal picture display.



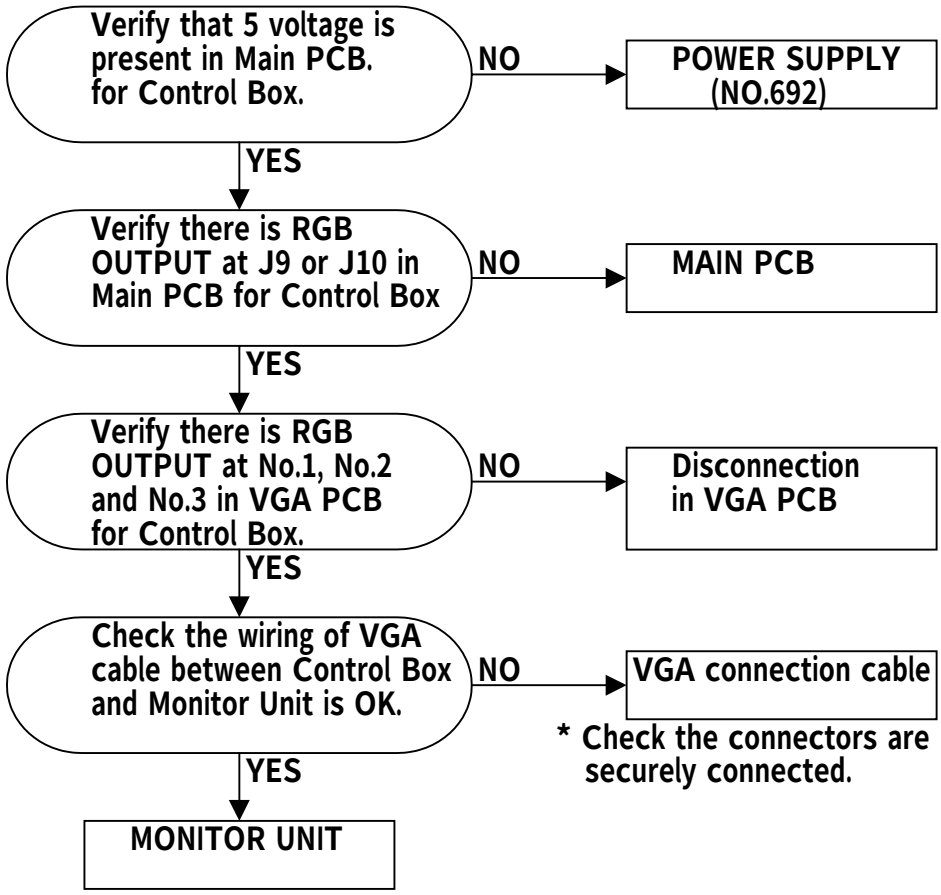
(S-1800M10)
The specific colors do not appear on the screen.
All screen changes into a specific color.



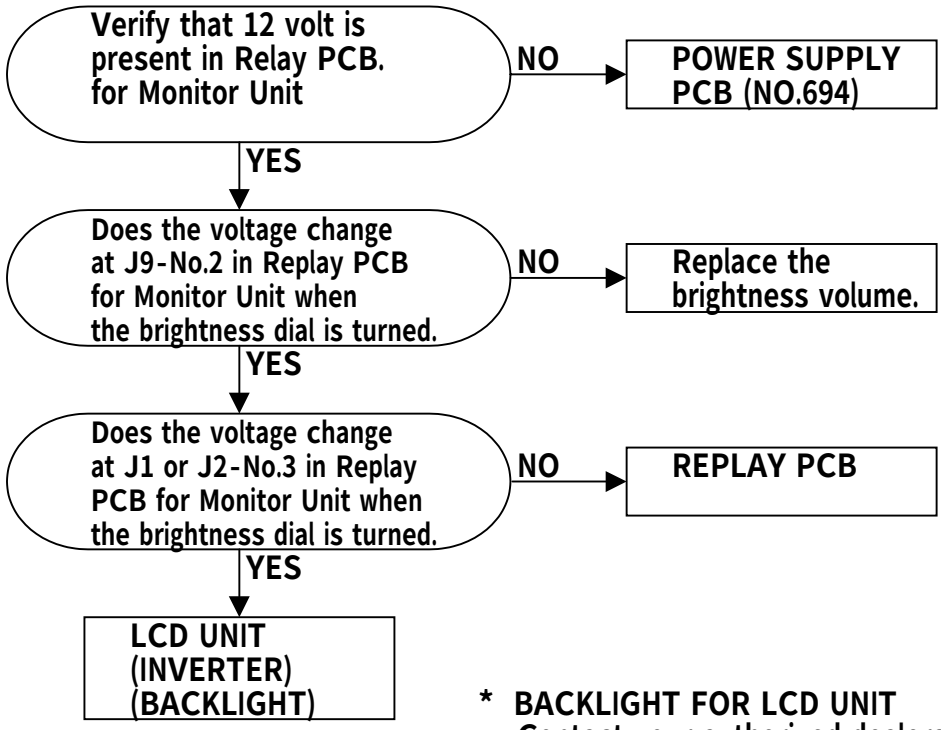
(S-1800M15)
No picture on display screen when powered.



(S-1800M15)
Screen gets bright, but nothing appears.

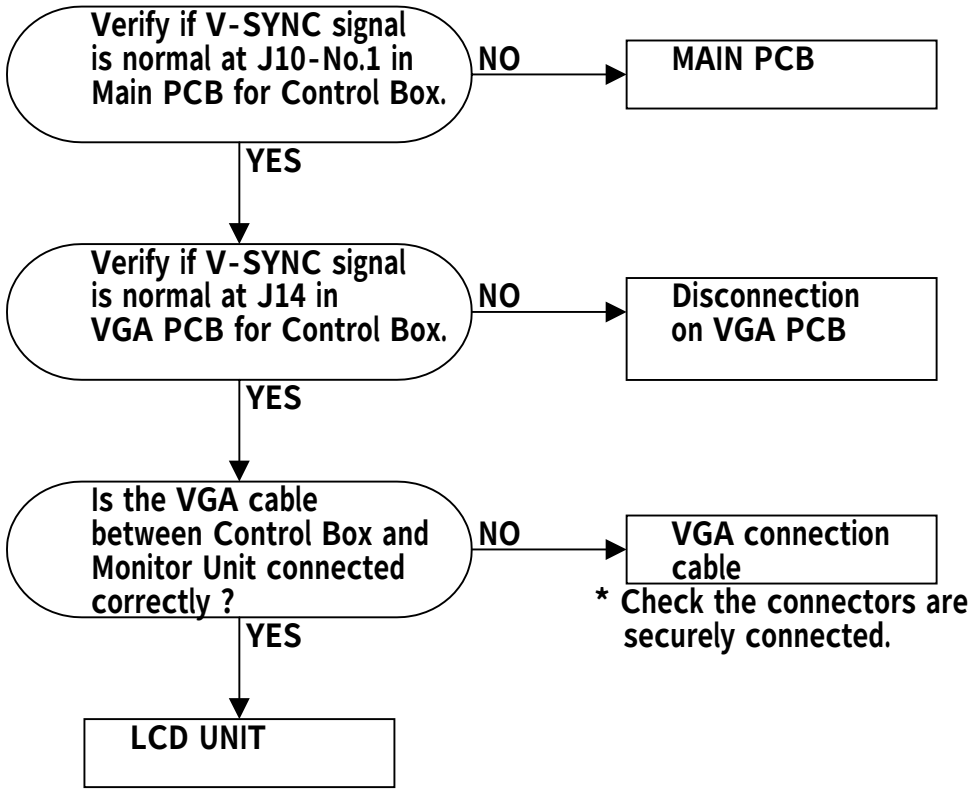


(S-1800M15)
Screen does not change into bright even if the bright dial is turned.

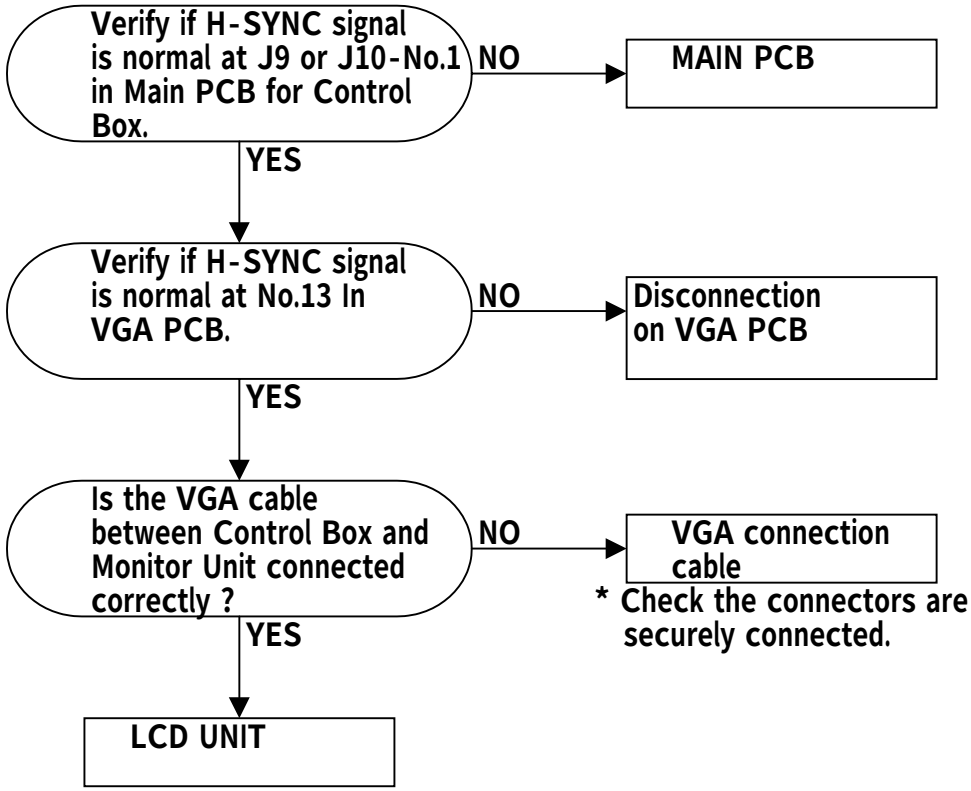


* BACKLIGHT FOR LCD UNIT
Contact your authorized dealers when replacing the backlights.

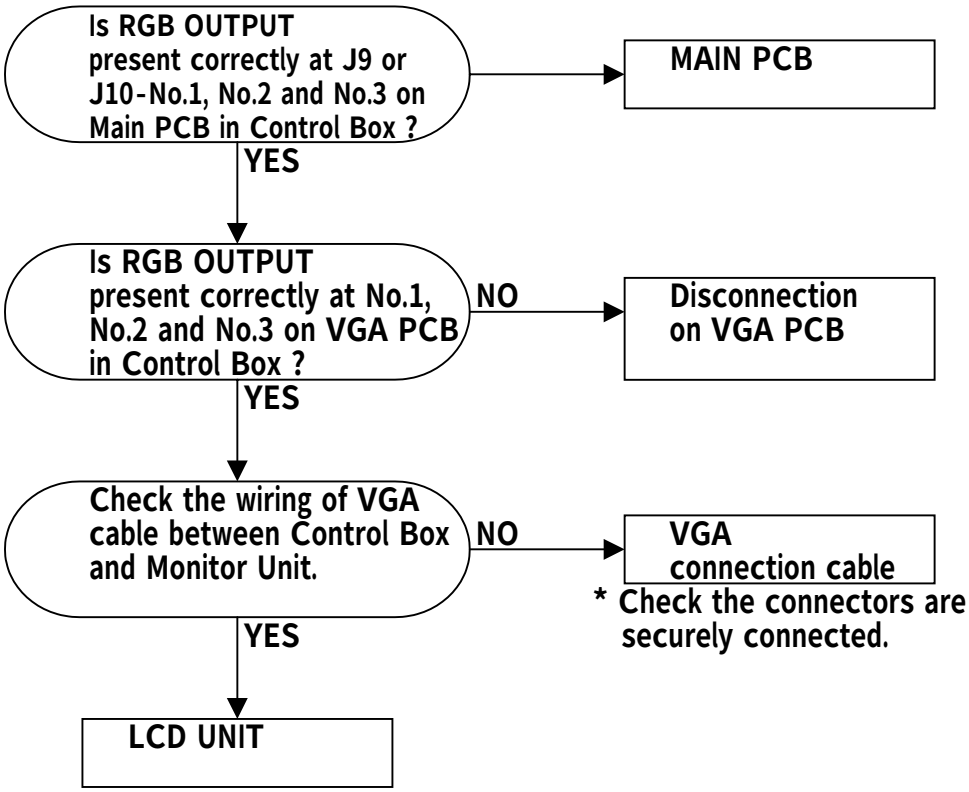
(S-1800M15)
The picture is unstable and scrolling vertically.



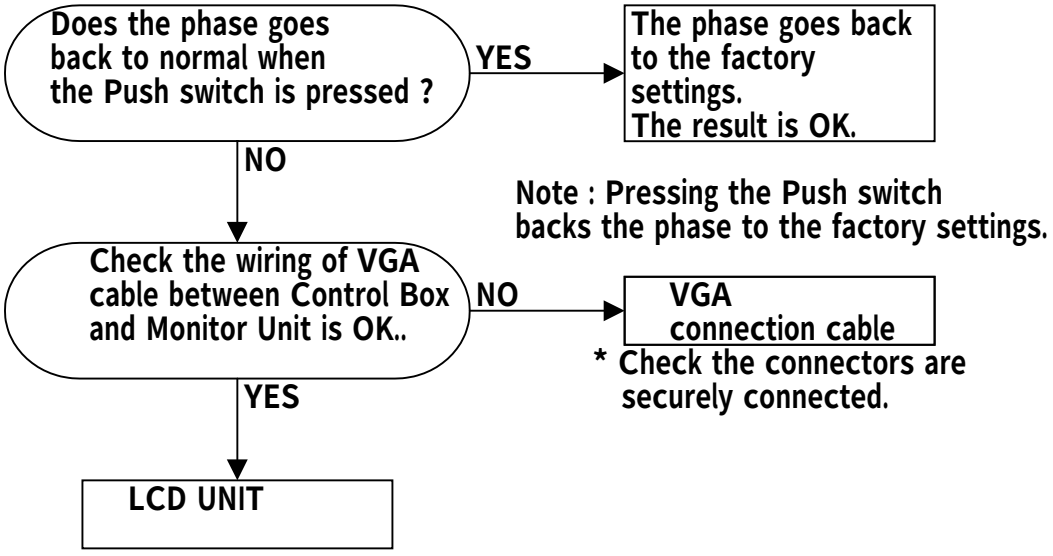
(S-1800M15)
Stripes appears to the left or right direction on the screen and no normal echo display.



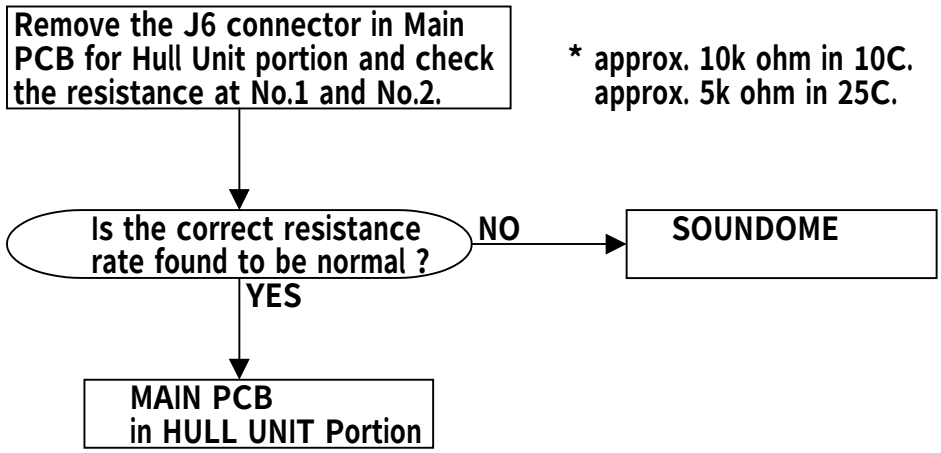
(S-1800M15)
The specific colors do not appear on the screen
All screen changes into a specific color.



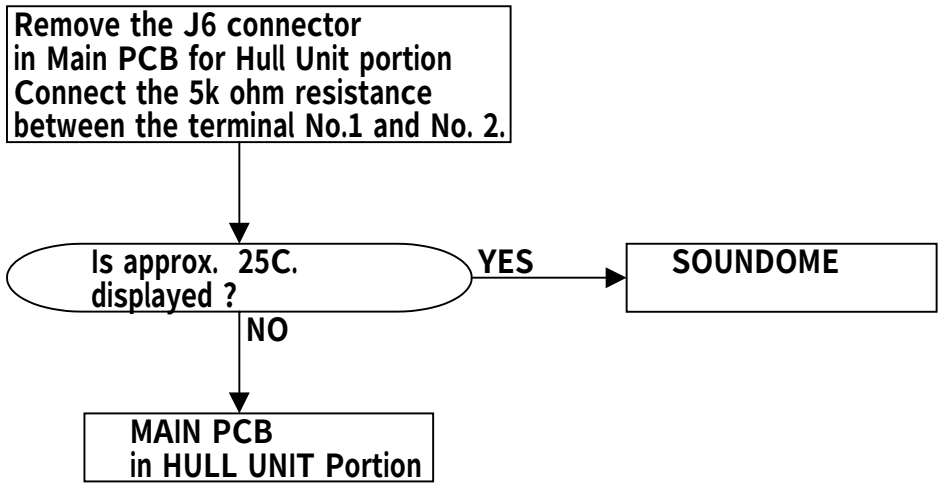
(S-1800M15)
Vertical phase is in a wrong position.
Horizontal phase is in a wrong position.



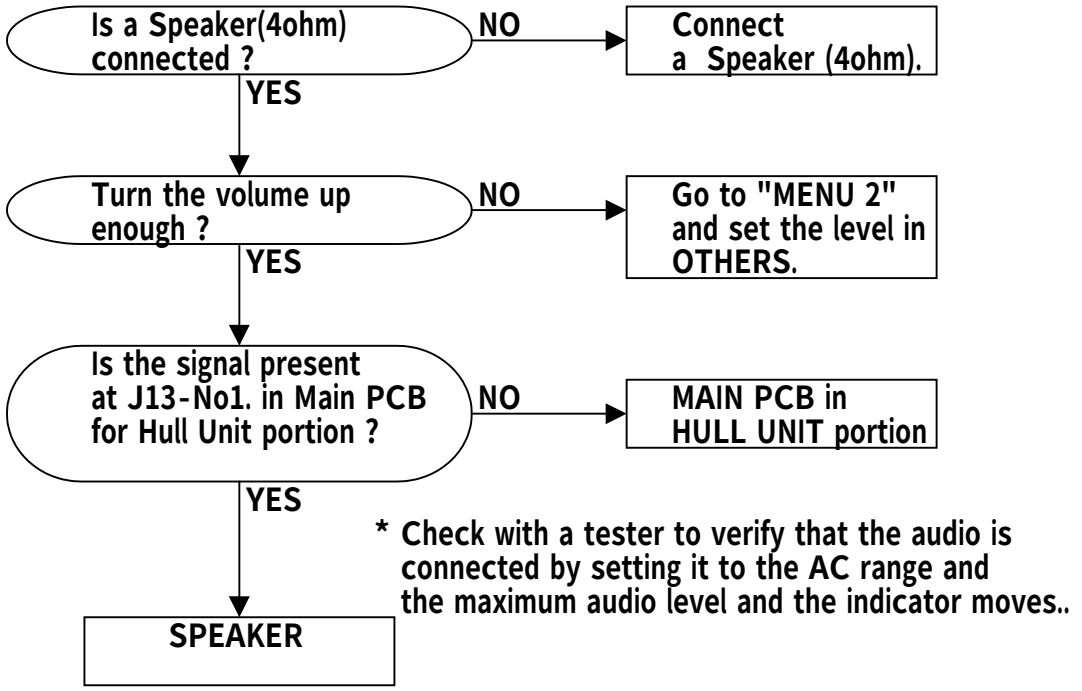
The temperature readout is abnormal.



OR

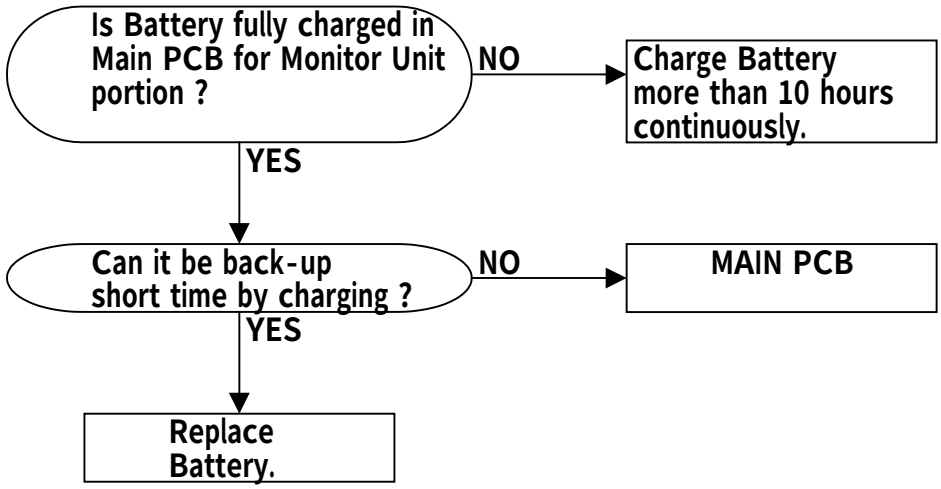


The audio monitor is not audible.

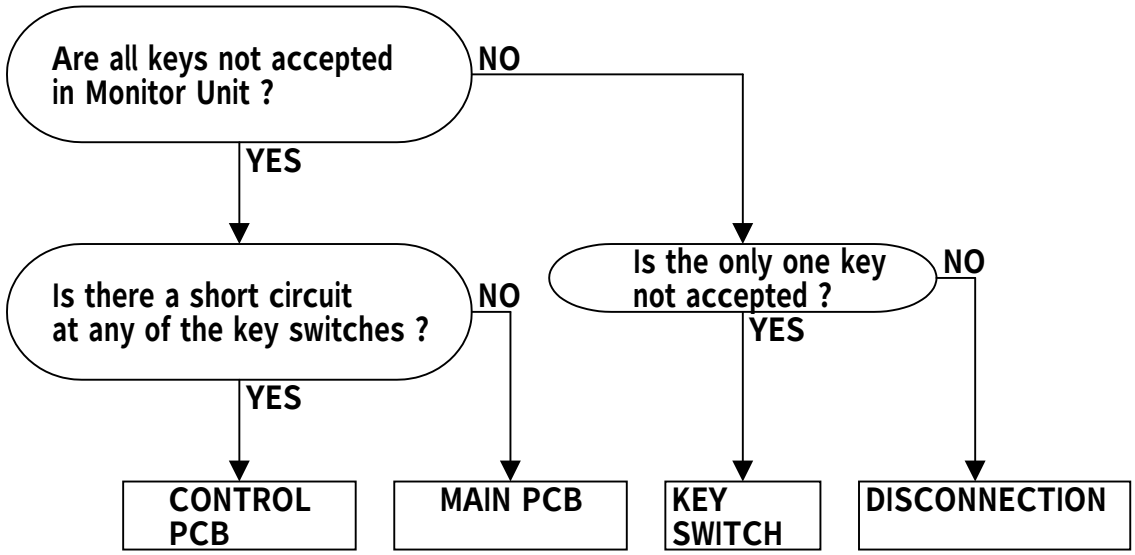


* Check with a tester to verify that the audio is connected by setting it to the AC range and the maximum audio level and the indicator moves..

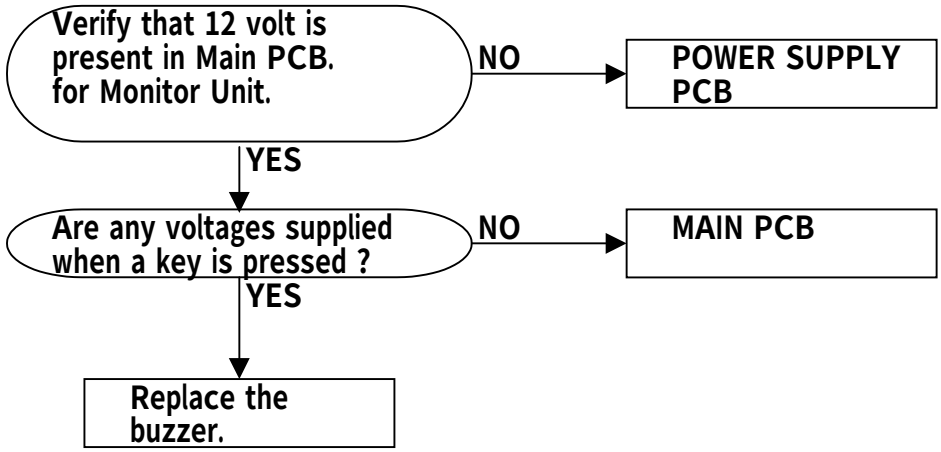
The memory data can not back-up.



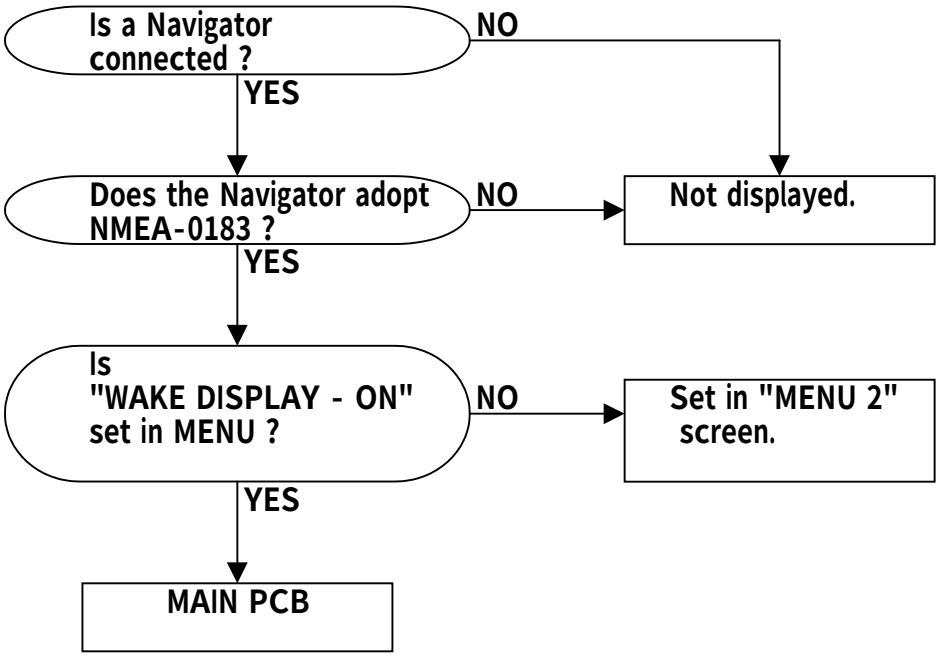
Key operation is not accepted.



"Beep" is not heard when a key is pressed.



Ship's speed can not be displayed or abnormally displayed.
Navigational display does not appear on the screen.



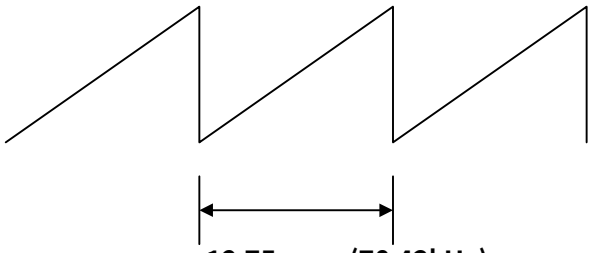
ADJUSTING the M10 POWER SUPPLY PCB (No.654)in MONITOR PORTION

* Connect the digital tester to the 12V and GND-1 check pins and adjust VR4 so that the voltage is 12V.

* Connect the digital tester to the 5V and GND-1 check pins and adjust VR3 so that the voltage is 5V.

* Connect the oscilloscope to the 5V and GND-1 check pins and adjust the waveforms at VR2 so that the below is shown.

  The value of frequency counter is 78.43kHz.



12.75u sec(78.43kHz)

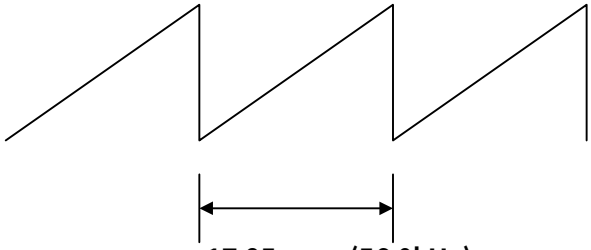
ADJUSTING the M15 POWER SUPPLY PCB (No.692)in MONITOR PORTION

* Connect the digital tester to the 5V-S and GND-S check pins and adjust VR3 so that the voltage is 5V.

* Connect the digital tester to the 12V-S and GND-S check pins and verify the voltage is 12.0+-0.5V.

* Connect the oscilloscope to the FRQ and GND-P check pins and adjust the waveforms at VR1 so that the below is shown.

  The value of frequency counter is 56kHz.



17.85u sec(56.0kHz)

ADJUSTING the M15 POWER SUPPLY PCB (No.694)in CONTROL BOX

* Verify the voltage between +VOUT and -VOUT in the Power Supply PCB No.694 is 12.0+-0.5V.

[MAIN BOARD for MONITOR]

There are two types of the main boards, which are No.681and No.748.

The difference between No.681 and No.748 are circuit and some parts.
No.748 is interchangeable with No.681.
No.748 conforms to RoHS directive.

IMPORTANT NOTE for P-ROM

Ver. 2.1 or previous version of P-ROM works only on No.681 board.
Ver. 3.0 or latest version of P-ROM works on both No.681 and No.748 boards.

S-1800M10	**Product label: S/No.0 - 1393**	**⇒ Main board is No.681.**
	Product label: S/No.1394 - up	**⇒ Main board is No.748.**
S-1800M15	**Product label: S/No.0 - 1486**	**⇒ Main board is No.681.**
	Product label: S/No.1487 – up	**⇒ Main board is No.748.**
S-1800MBB	**Product label: S/No.0 - 1349**	**⇒ Main board is No.681.**
	Product label: S/No.1350 – up	**⇒ Main board is No.748.**

[MAIN BOARD for HULL UNIT]

There are two types of the main boards, which are No.691and No.751.

No.751 conforms to RoHS directive.
No.751 is interchangeable with No. 691. (However, caution should be taken on P-ROM.)

IMPORTANT NOTE for P-ROM

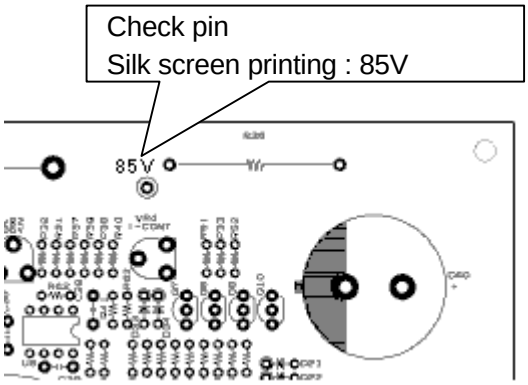
Ver. 2 or previous version of P-ROM works only on No.691 board.
Ver. 3 or latest version of P-ROM works only on No.751 board.

RoHS: The Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (commonly referred to as the Restriction of Hazardous Substances Directive or RoHS) was adopted by the European Union.

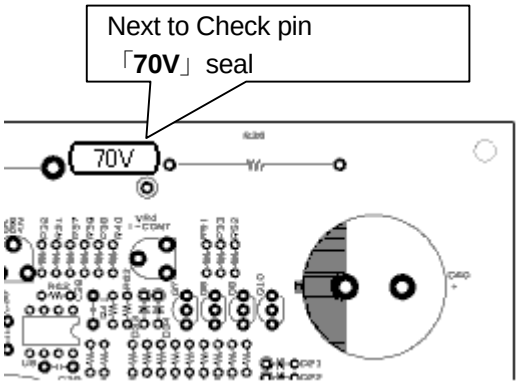
【POWER SUPPLY PCB and TR PCB for HULL UNIT】

POWER SUPPLY PCB: NO.703

OLD

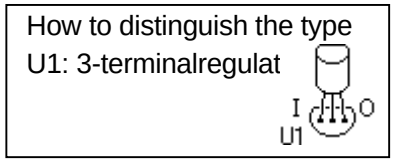


NEW

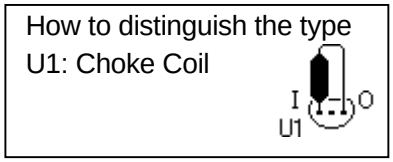


TR PCB: No.685

OLD



NEW



Adjust the voltage, 85V on the Power Supply PCB (No.703) for S-1800 Hull Unit
(Reckless adjustment may cause serious problem.)

Connect the digital tester to the 15V and GND-1 check pins and adjust VR3 so that the voltage is 15.0V.

Connect the digital tester to the 85V and GND-1 check pins and adjust VR2 so that the voltage is 85.0V, when J3 connector is not connected.

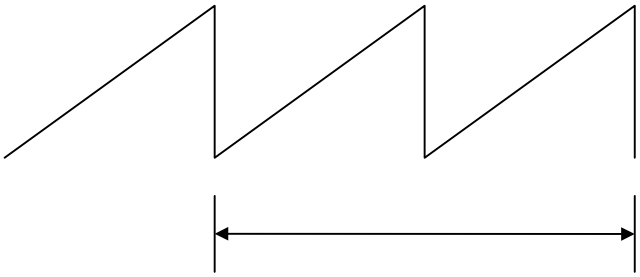
Connect the digital tester to the 12V and GND-1 check pins and verify the voltage is 12.0±0.6V.

Connect the digital tester to the 5V-1 and GND-1 check pins and verify the voltage is 5.0±0.25V.

Connect the digital tester to the 5V-2 and GND-2 check pins and verify the voltage is 5.0±0.25V.

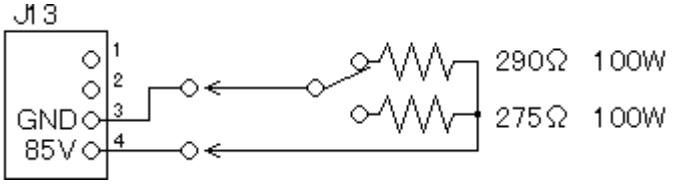
Connect the oscilloscope to the FRQ and GND-P check pins and adjust the waveforms at VR1 so that the below is shown.

The value of frequency counter is 115.0 kHz.



8.69 μ sec (115.0 kHz)

Connect the oscilloscope to the 85V and GND-1 check pins and the Dummy Load between the J3-No.4 (85V) and No.3 (GND).
And adjust VR4 voltage rate that starts to degrease at 275Ω and keeps it not to degrease at 290Ω.



※85V on the No.703 is designed to reduce the voltage when overloaded. 85V is output constantly when minimum loading. However carefully measure the changeable voltage on loading.

Verify the voltage by changing Power Reduction Control (TX POWER) as follows.

TX POWER	Voltage (V)
C	61±3.0V
B	38±3.8V
A	22±5.0V

Adjust the voltage, 70V on the Power Supply PCB (No.703) for S-1800 Hull Unit
(Reckless adjustment may cause serious problem.)

Connect the digital tester to the 15V and GND-1 check pins and adjust VR3 so that the voltage is 15.0V.

Connect the digital tester to the 70V and GND-1 check pins and adjust VR2 so that the voltage is 70.0V, when J3 connector is not connected.

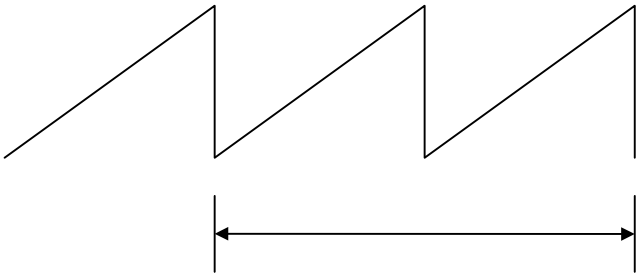
Connect the digital tester to the 12V and GND-1 check pins and verify the voltage is 12.0±0.6V.

Connect the digital tester to the 5V-1 and GND-1 check pins and verify the voltage is 5.0±0.25V.

Connect the digital tester to the 5V-2 and GND-2 check pins and verify the voltage is 5.0±0.25V.

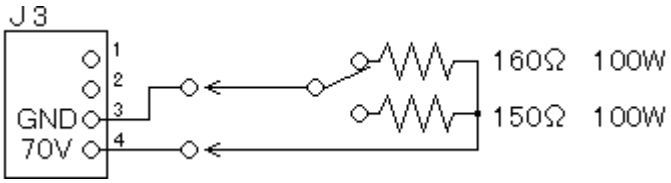
Connect the oscilloscope to the FRQ and GND-P check pins and adjust the waveforms at VR1 so that the below is shown.

The value of frequency counter is 115.0 kHz.



8.69 μ sec (115.0 kHz)

Connect the oscilloscope to the 70V and GND-1 check pins and the Dummy Load between the J3-No.4 (70V) and No.3 (GND).
And adjust VR4 voltage rate that starts to degrease at 150Ω and keeps it not to degrease at 160Ω.



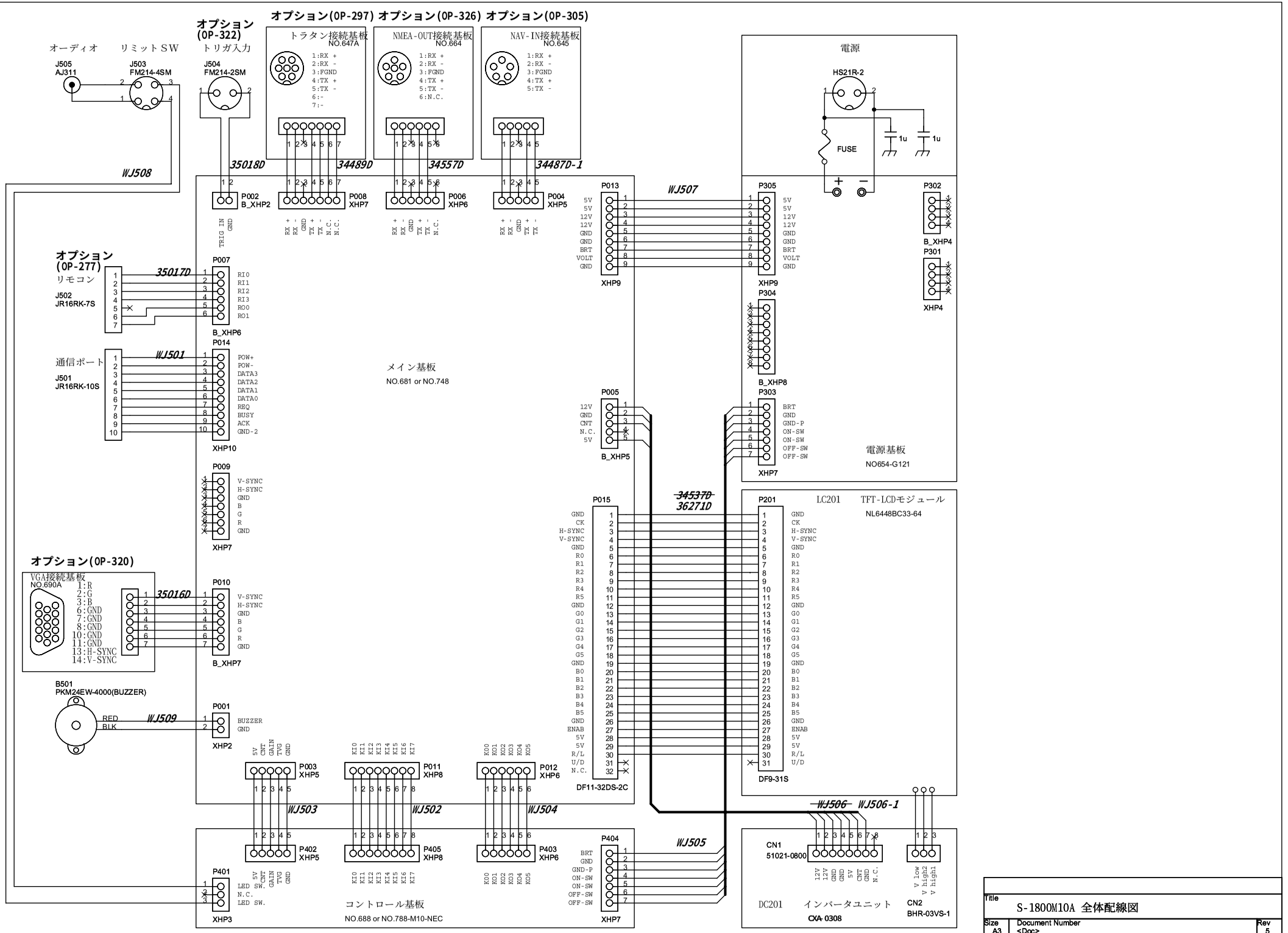
Reference: Power Reduction Control (TX POWER)

TX POWER	Voltage (V)
C	50V± 5%（approx.47～53V）
B	31V±10%（approx.28～34V）
A	21V±20%（approx.16～25V）

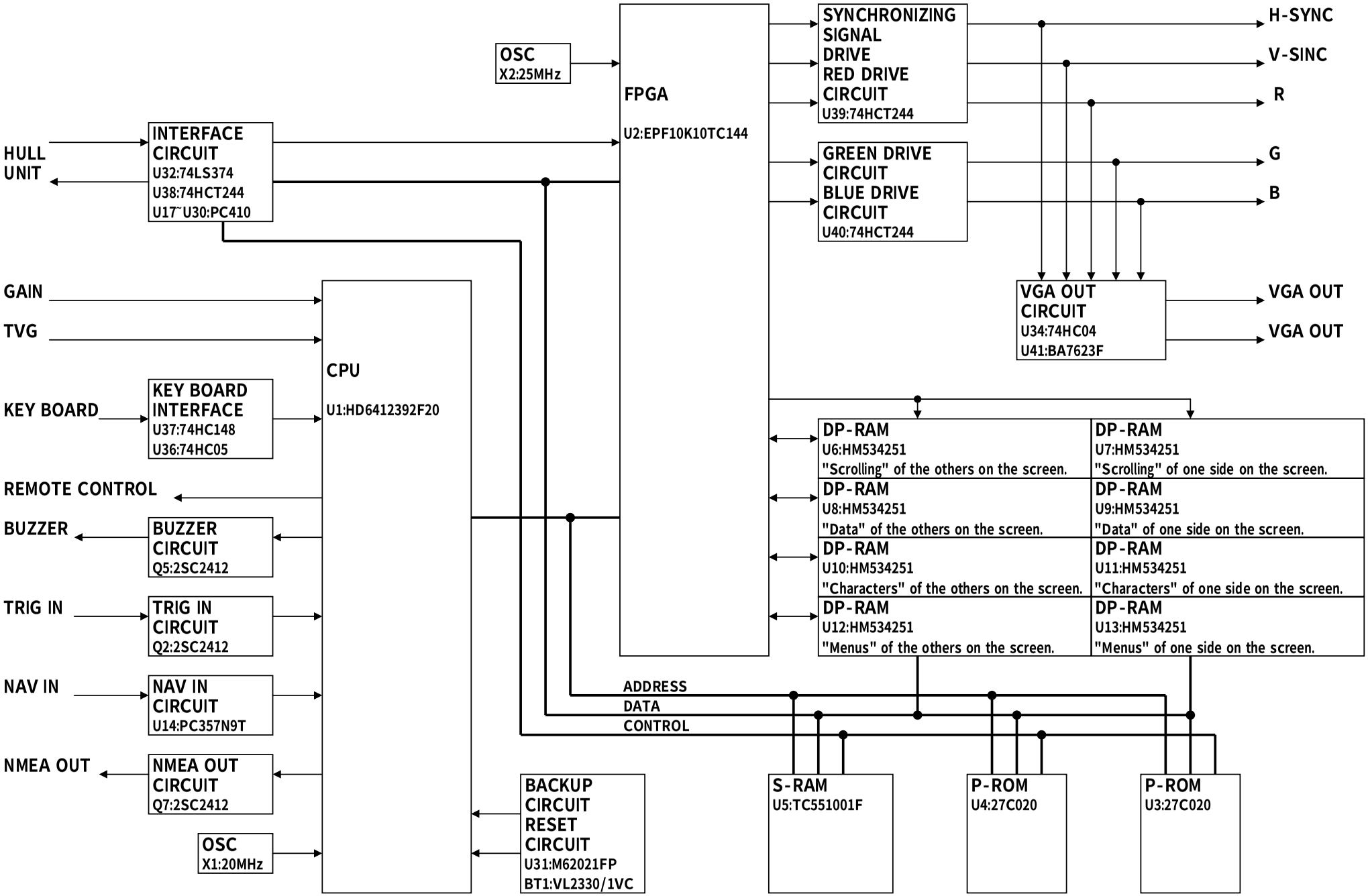
MONITOR UNIT(M10)

CIRCUIT DIAGRAM

WAVE FORMS

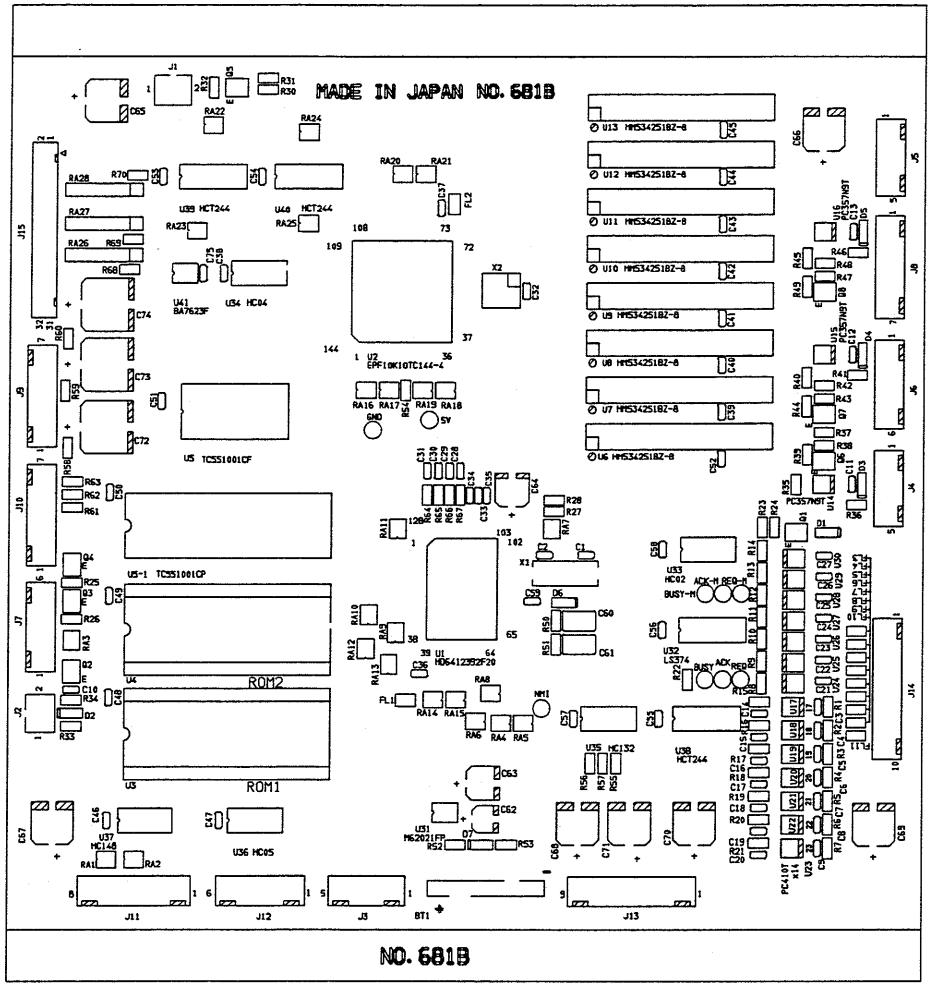


Title	S-1800M10A 全体配線図	
Size A3	Document Number <Doc>	Rev 5
Date: Tuesday, March 22, 2011	Sheet 1 of 1	

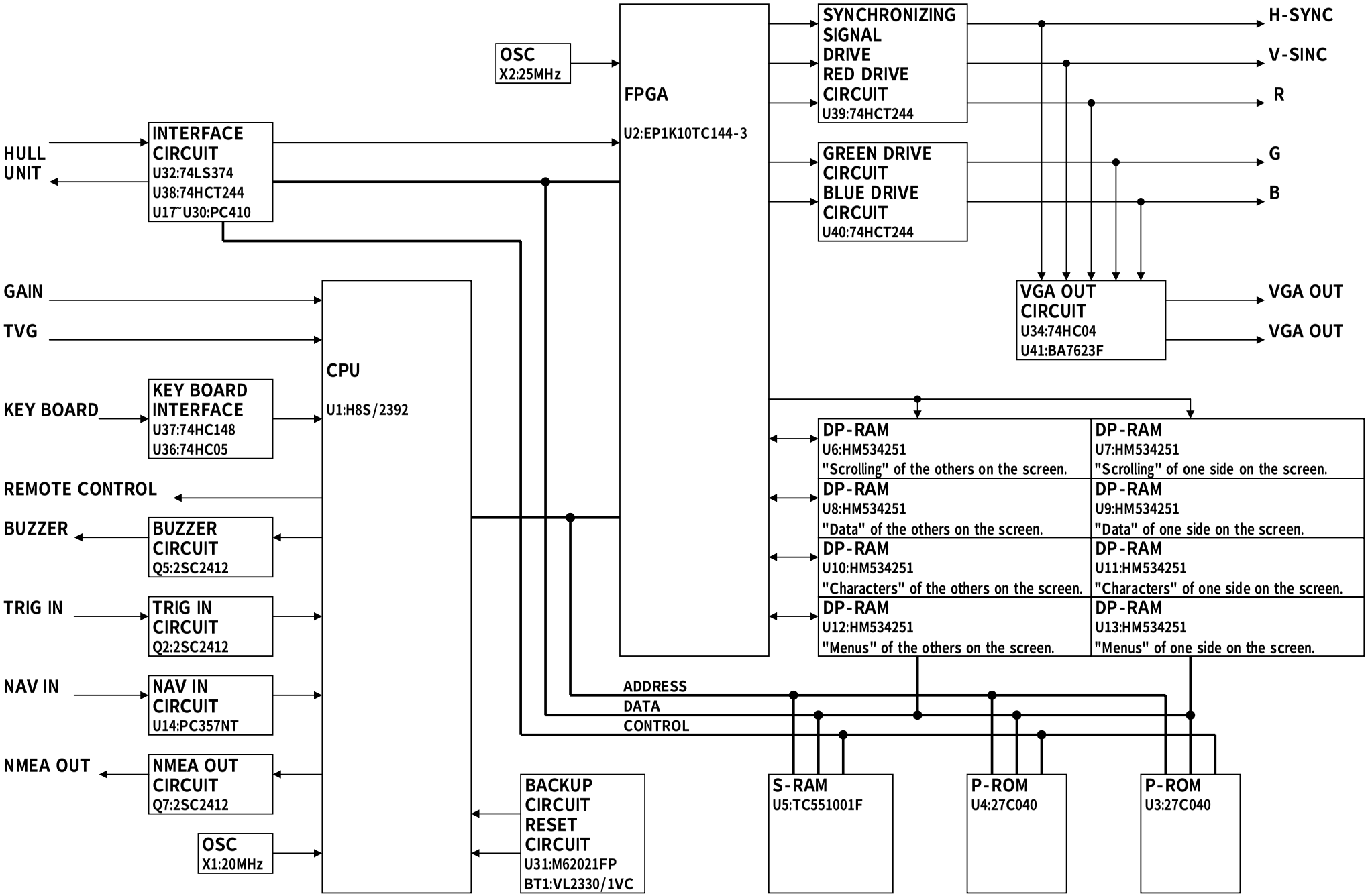


NO.681 BLOCK DIAGRAM

BUHIN-S NO.681B

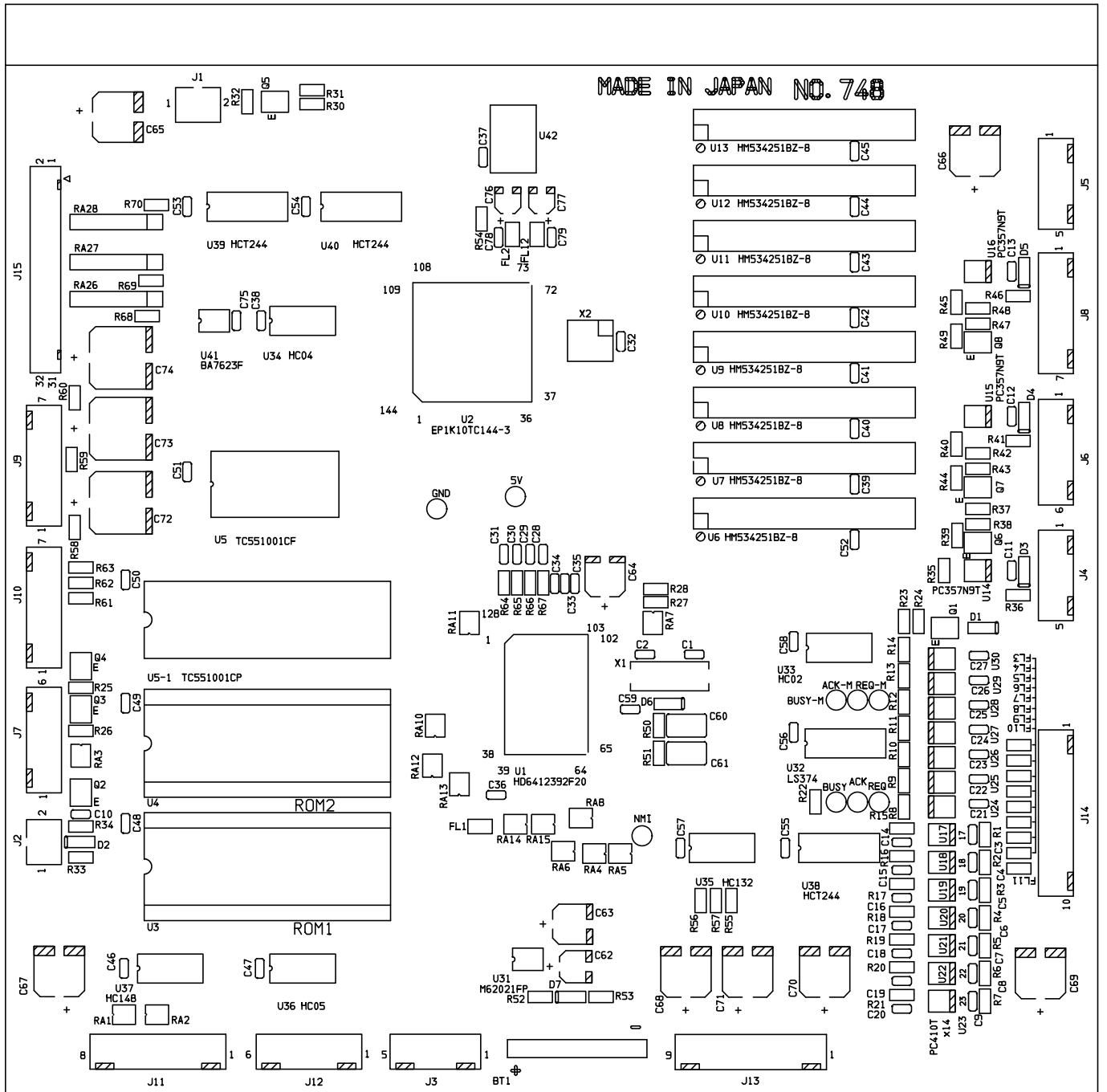


NO.681B

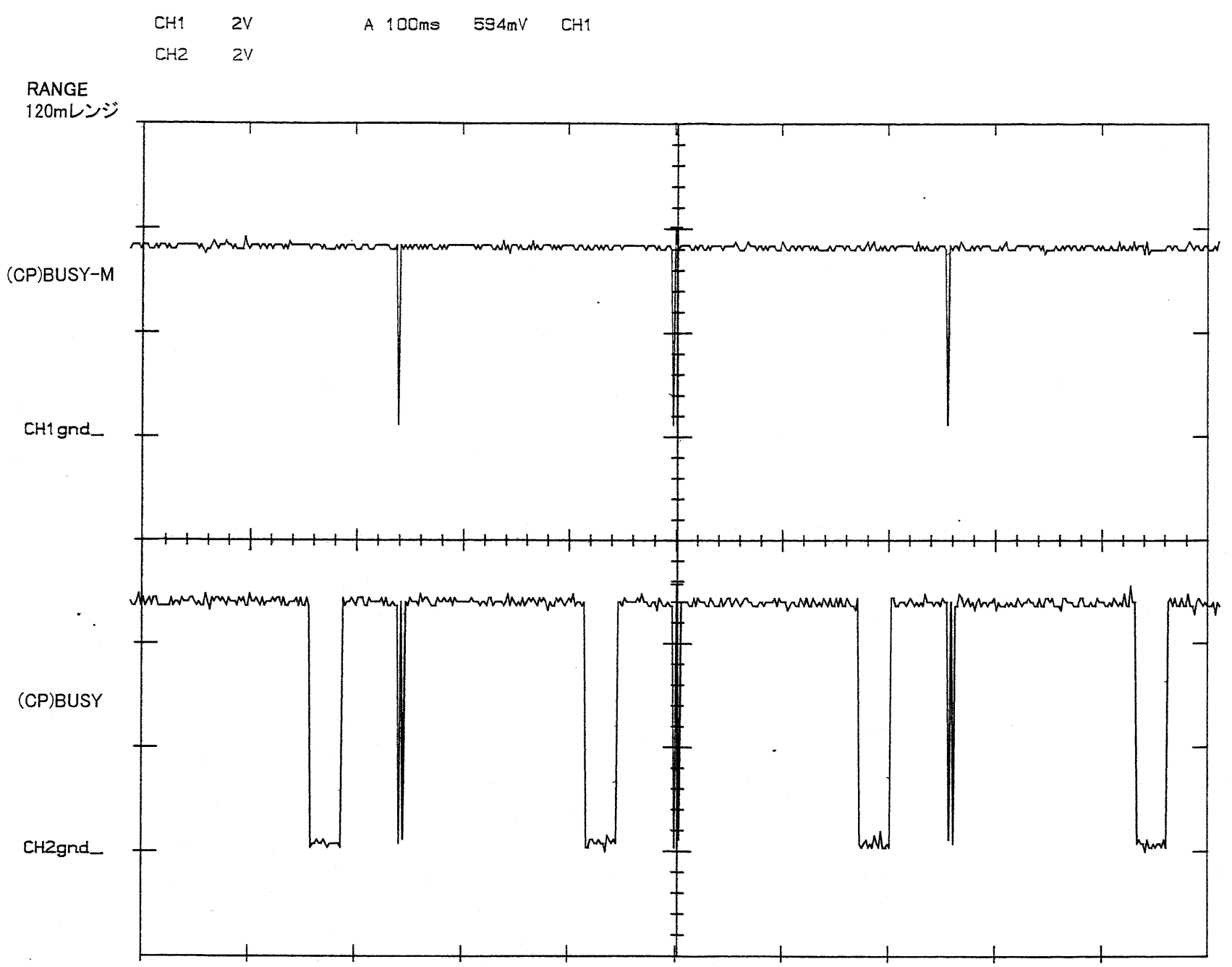


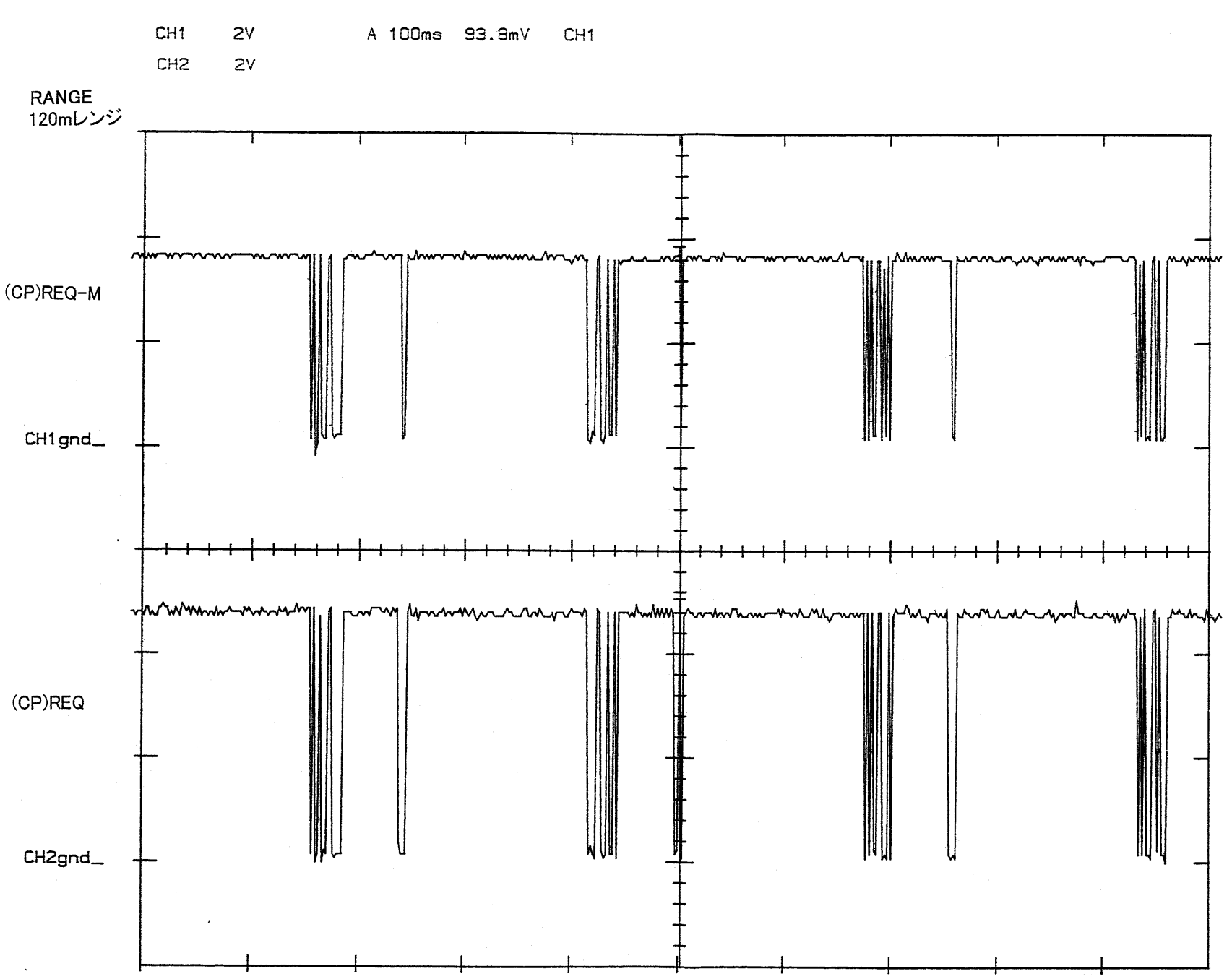
NO.748 BLOCK DIAGRAM

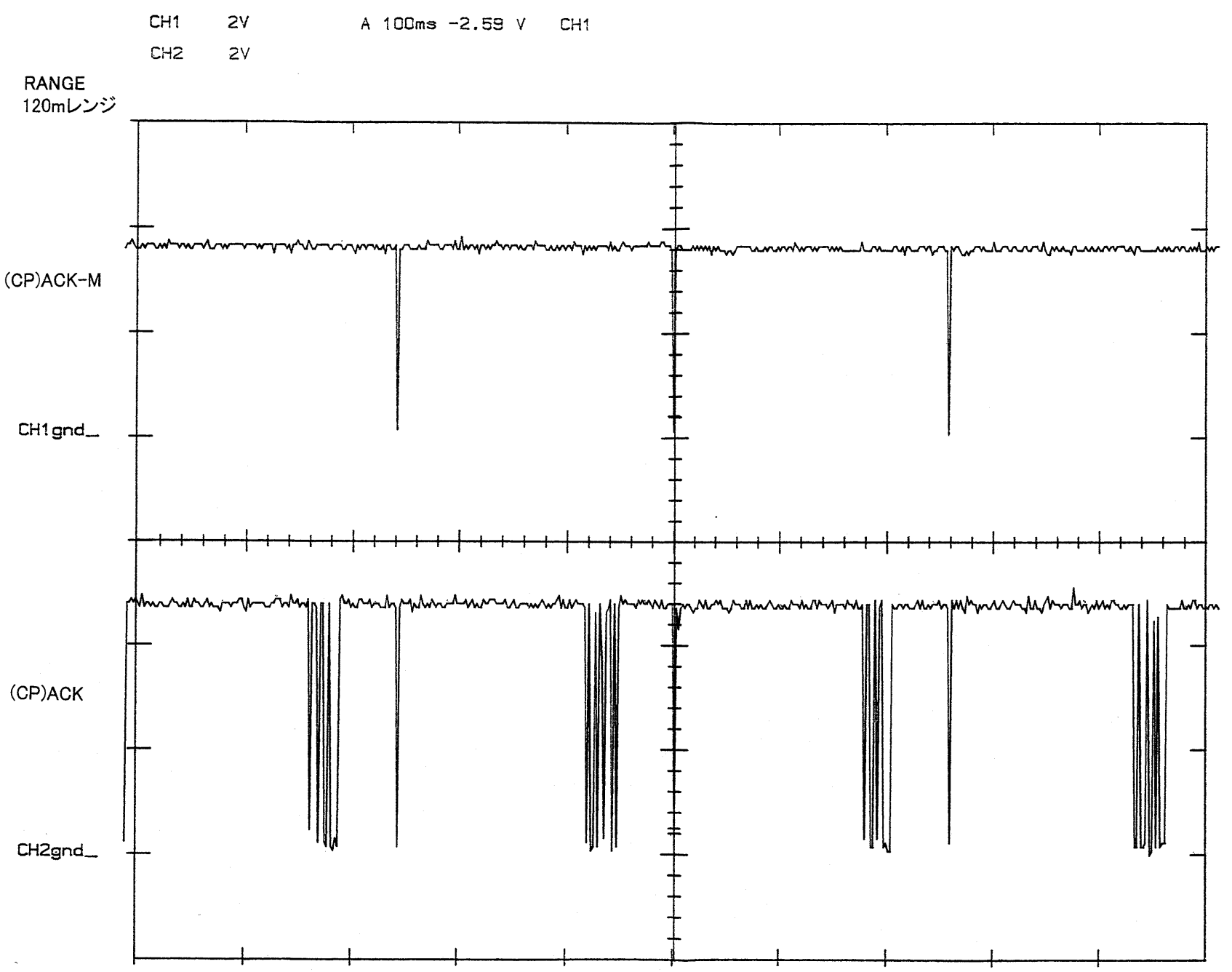
BUHIN-S NO. 748



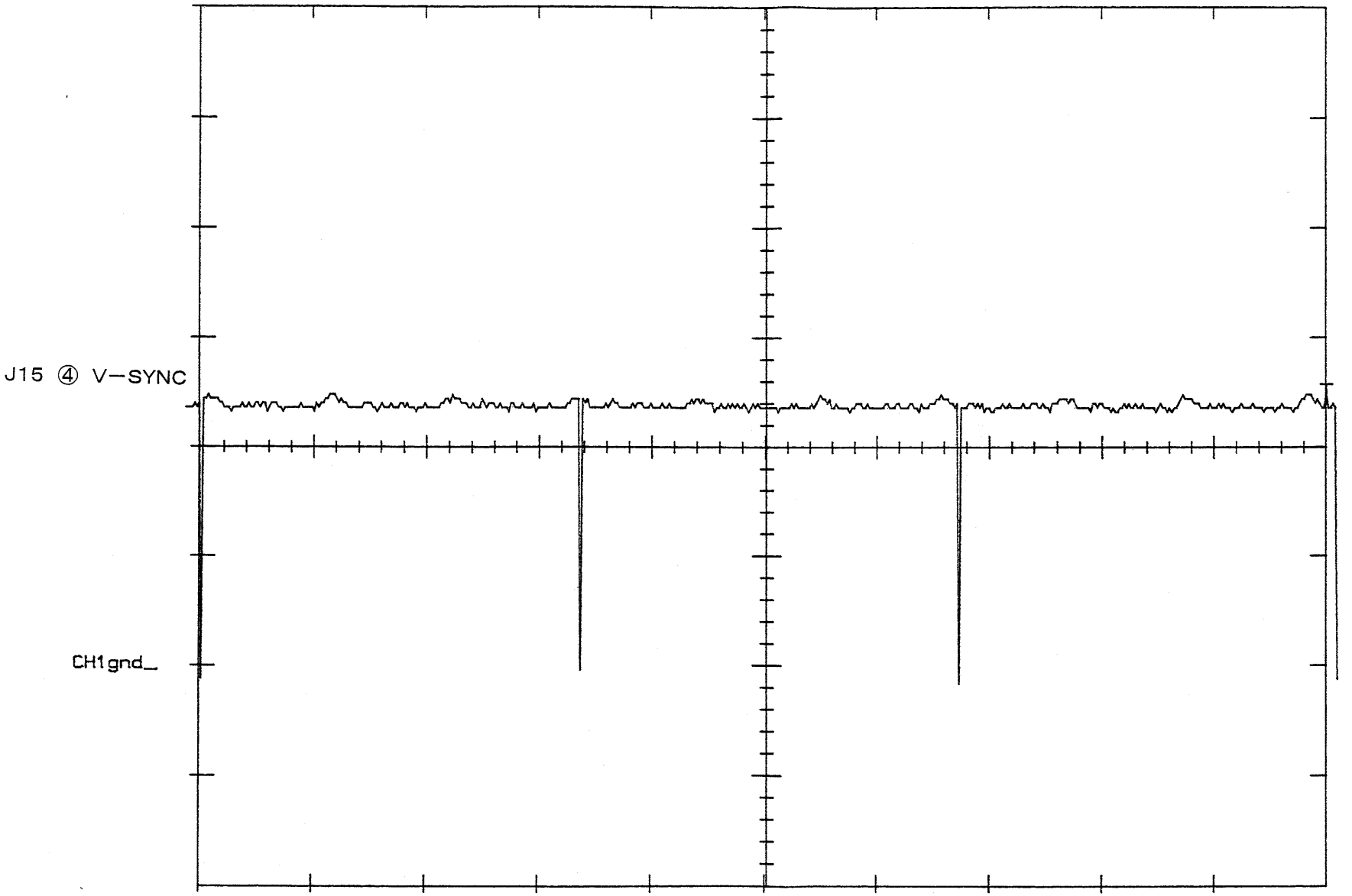
NO. 748

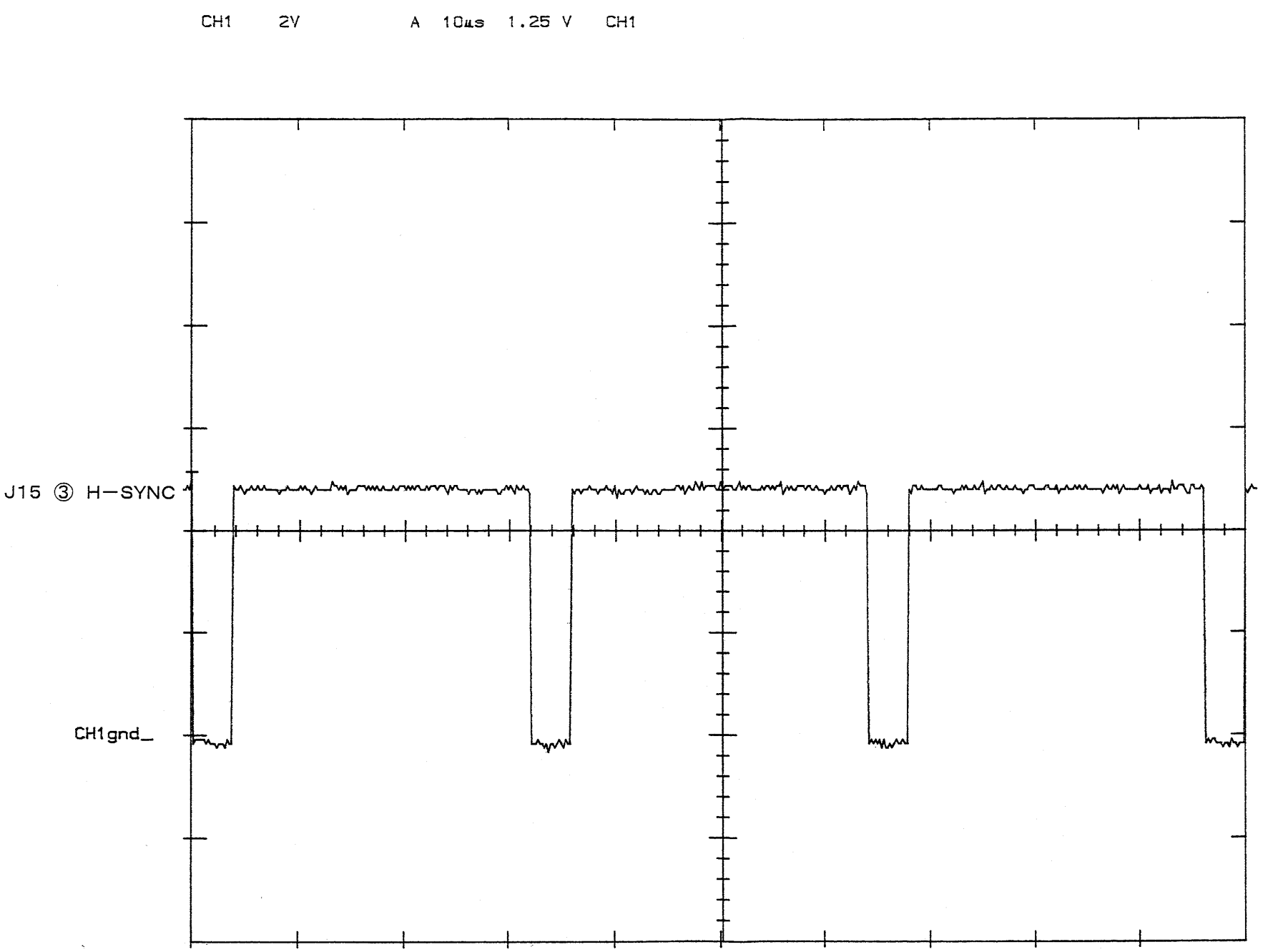

CH1 2V
A 100ms 594mV CH1
CH2 2V
RANGE
120mレンジ
(CP)BUSY-M
CH1 gnd_
(CP)BUSY
CH2gnd_

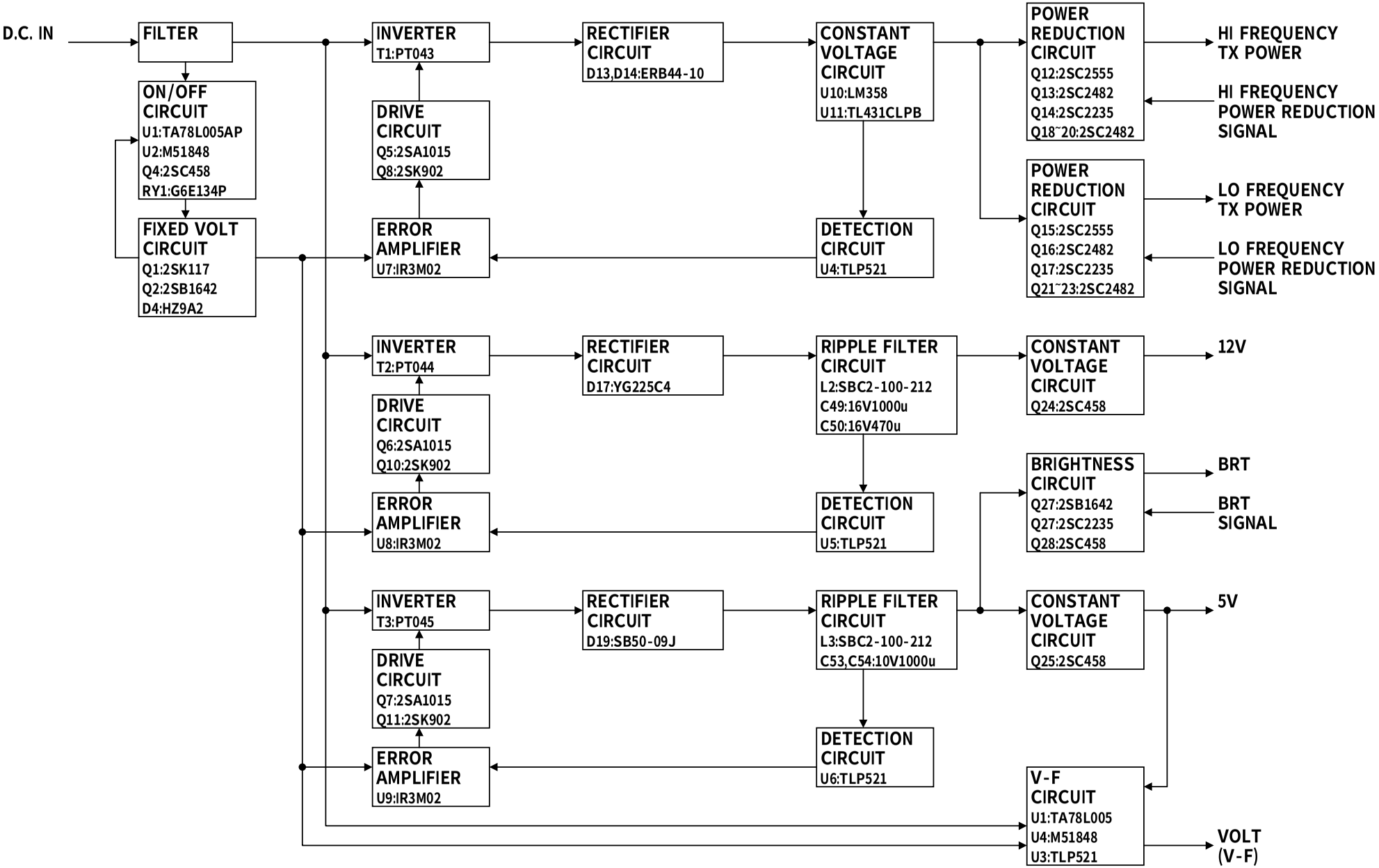

CH1 2V
A 100ms 93.8mV CH1
CH2 2V
RANGE
120mレンジ
(CP)REQ-M
CH1gnd_
(CP)REQ
CH2gnd_


CH1 2V
A 100ms -2.59 V CH1
CH2 2V
RANGE
120mレンジ
(CP)ACK-M
CH1gnd_
(CP)ACK
CH2gnd_

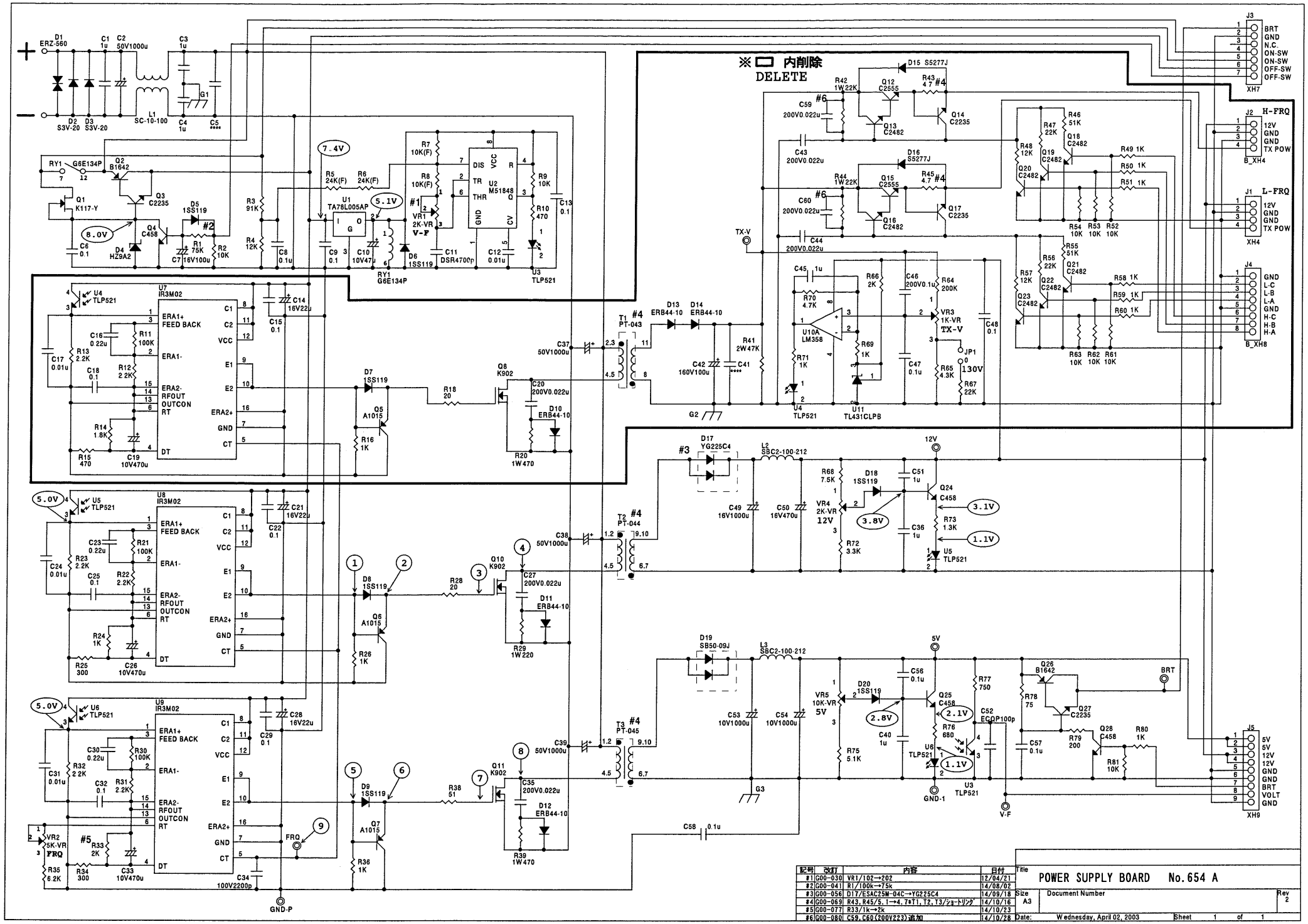
CH1 2V A 5ms 969mV CH1



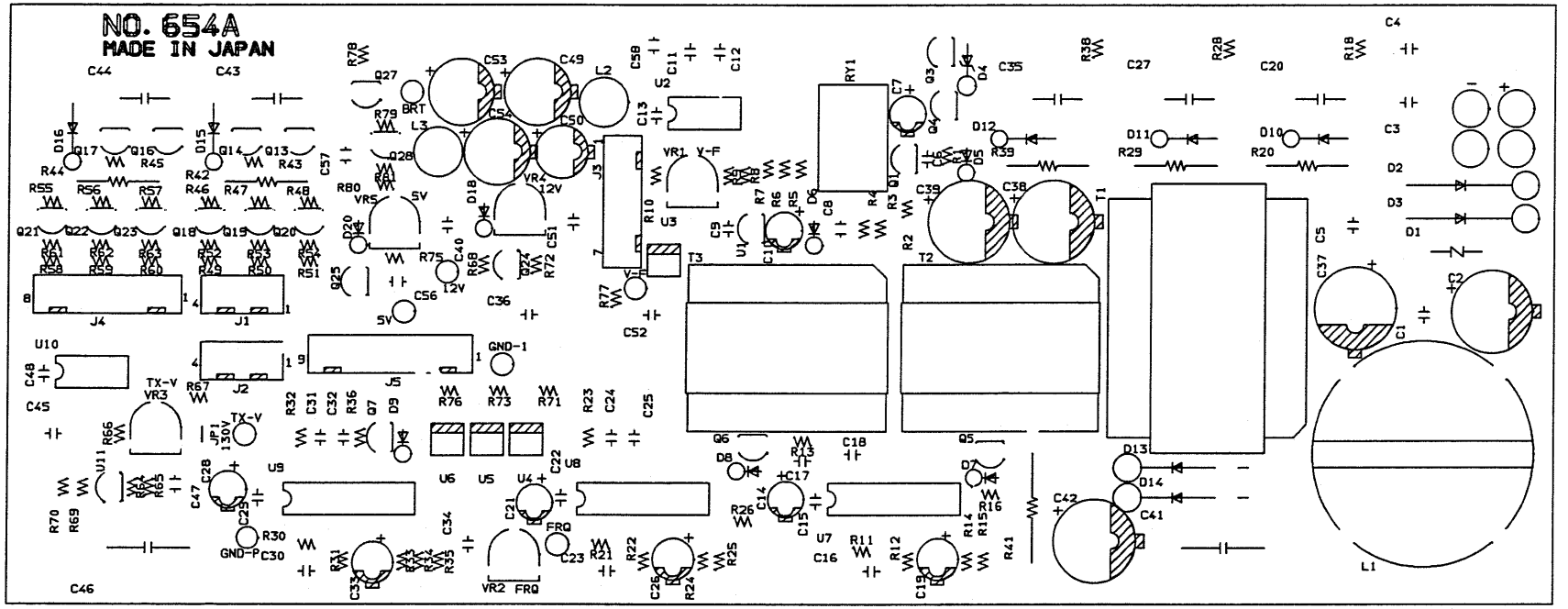

CH1 2V A 10µs 1.25 V CH1
J15 ③ H—SYNC
CH1gnd_



NO.654 POWER SUPPLY BOARD

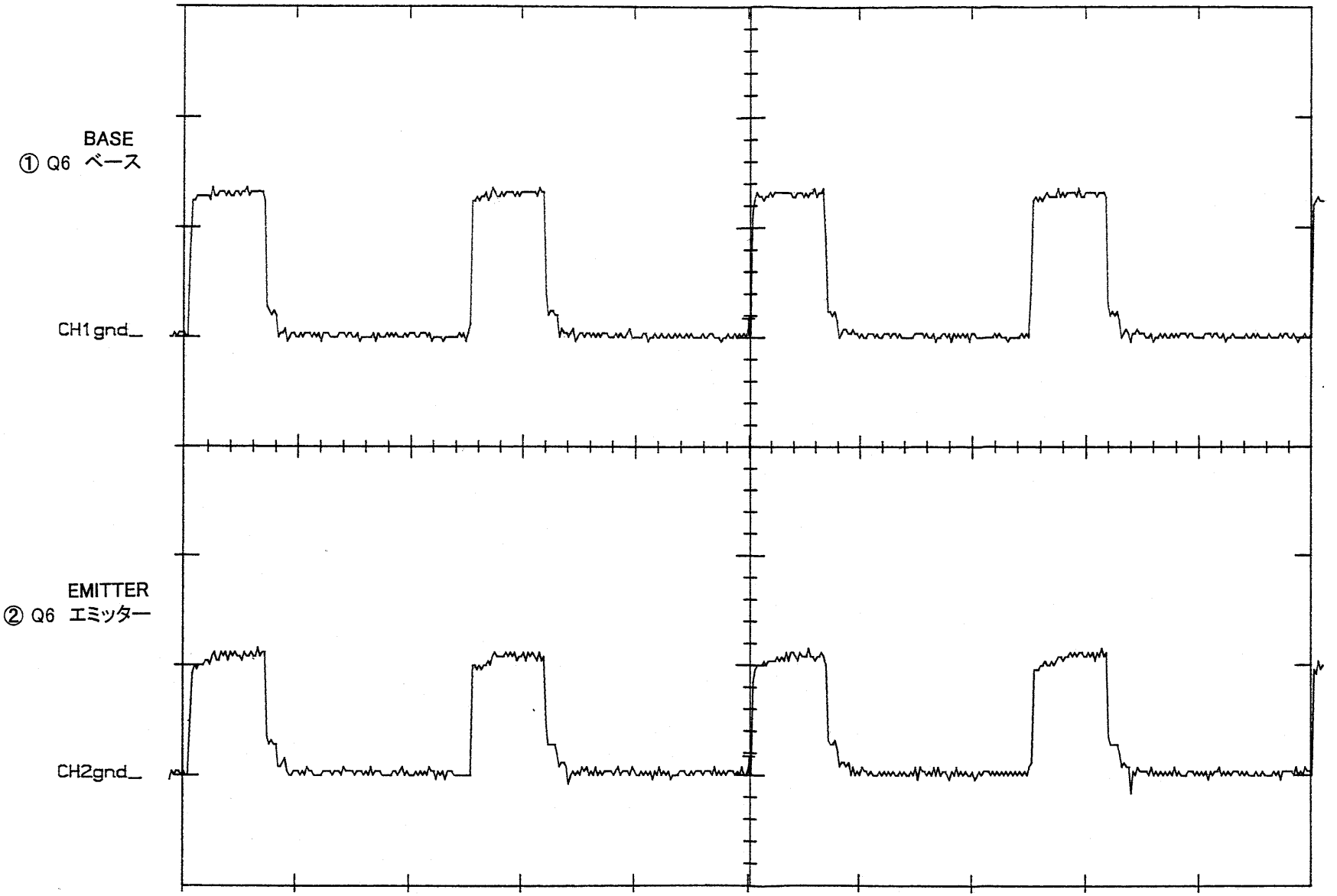

※□ 内削除
DELETE
POWER SUPPLY BOARD No.654 A
Title
Size A3
Document Number
Rev 2
Date: Wednesday, April 02, 2003
Sheet 1 of 1
記号 改訂 内容 日付
#1 G00-030 VR1/10Ω→20Ω 12/04/21
#2 G00-041 R1/100k→75k 14/08/02
#3 G00-056 D17/ESAC25M-04C→YG225C4 14/09/18
#4 G00-069 R43,R45/5.1→4.7ΩT1,T2,T3/ショートリング 14/10/16
#5 G00-077 R33/1k→2k 14/10/23
#6 G00-080 C59,C60(200V223)追加 14/10/28
J3 BRT GND N.C. ON-SW ON-SW OFF-SW OFF-SW XH7
J2 H-FRQ 12V GND GND TX POW B_XH4
J1 L-FRQ 12V GND GND TX POW XH4
J4 GND L-C L-B L-A GND H-C H-B H-A B_XH8
J5 5V 5V 12V 12V GND GND BRT VOLT GND XH9
U1 TA78L005AP
U2 M51848
U3 TLP521
U4 TLP521
U5 TLP521
U6 TLP521
U7 IR3M02
U8 IR3M02
U9 IR3M02
U10A LM358
U11 TL431CLPB
T1 PT-043
T2 PT-044
T3 PT-045
L1 SC-10-100
L2 SBC2-100-212
L3 SBC2-100-212
VR1 2K-VR V-F
VR2 5K-VR FRQ
VR3 1K-VR TX-V
VR4 2K-VR 12V
VR5 10K-VR 5V
JP1 130V
7.4V
5.1V
8.0V
5.0V
3.8V
3.1V
1.1V
2.8V
2.1V
TX-V
V-F
FRQ
BRT
GND-P
GND-1
G1
G2
G3

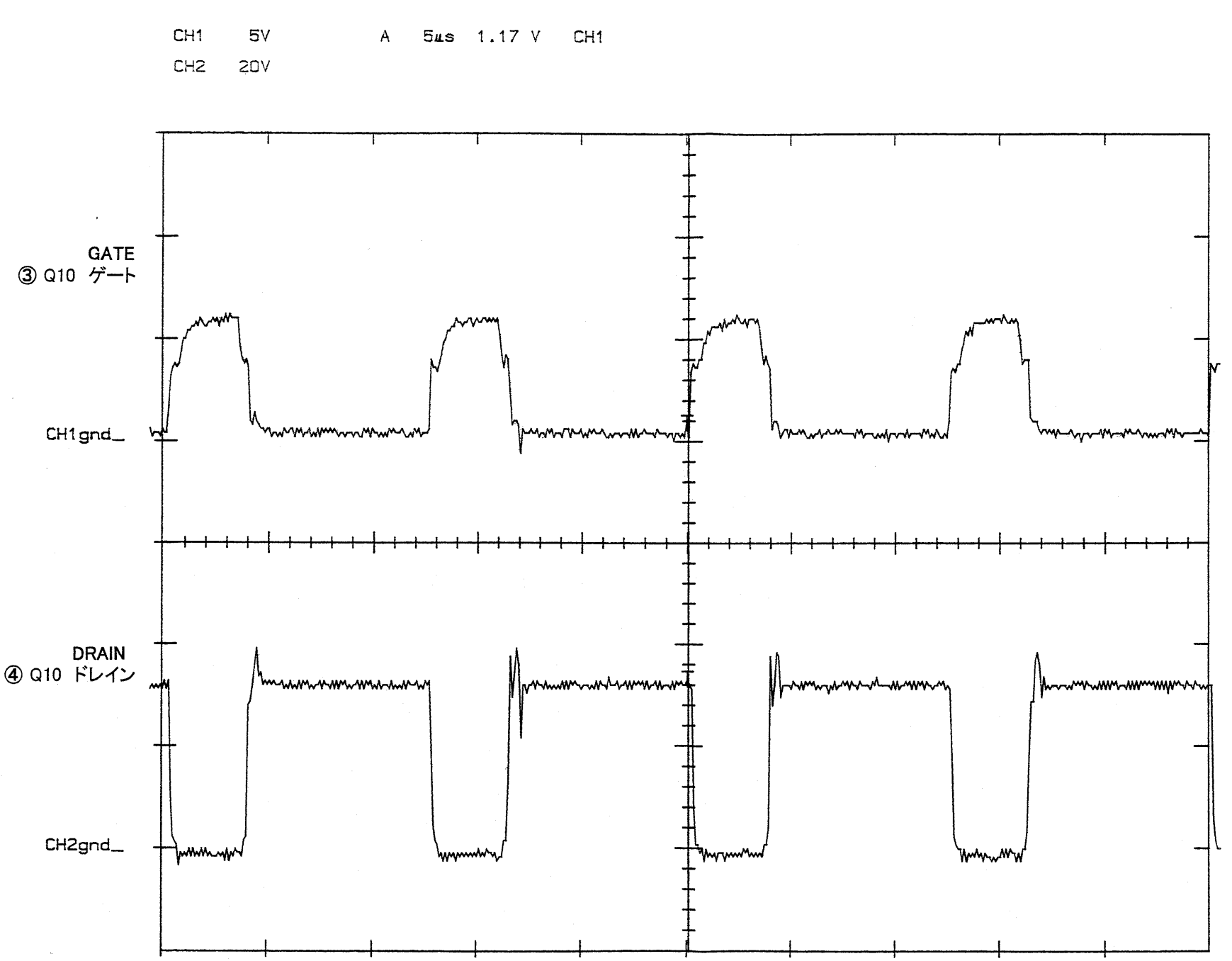
BUHIN-S NO. 654A



CH1 5V A 5μs 1.09 V CH1

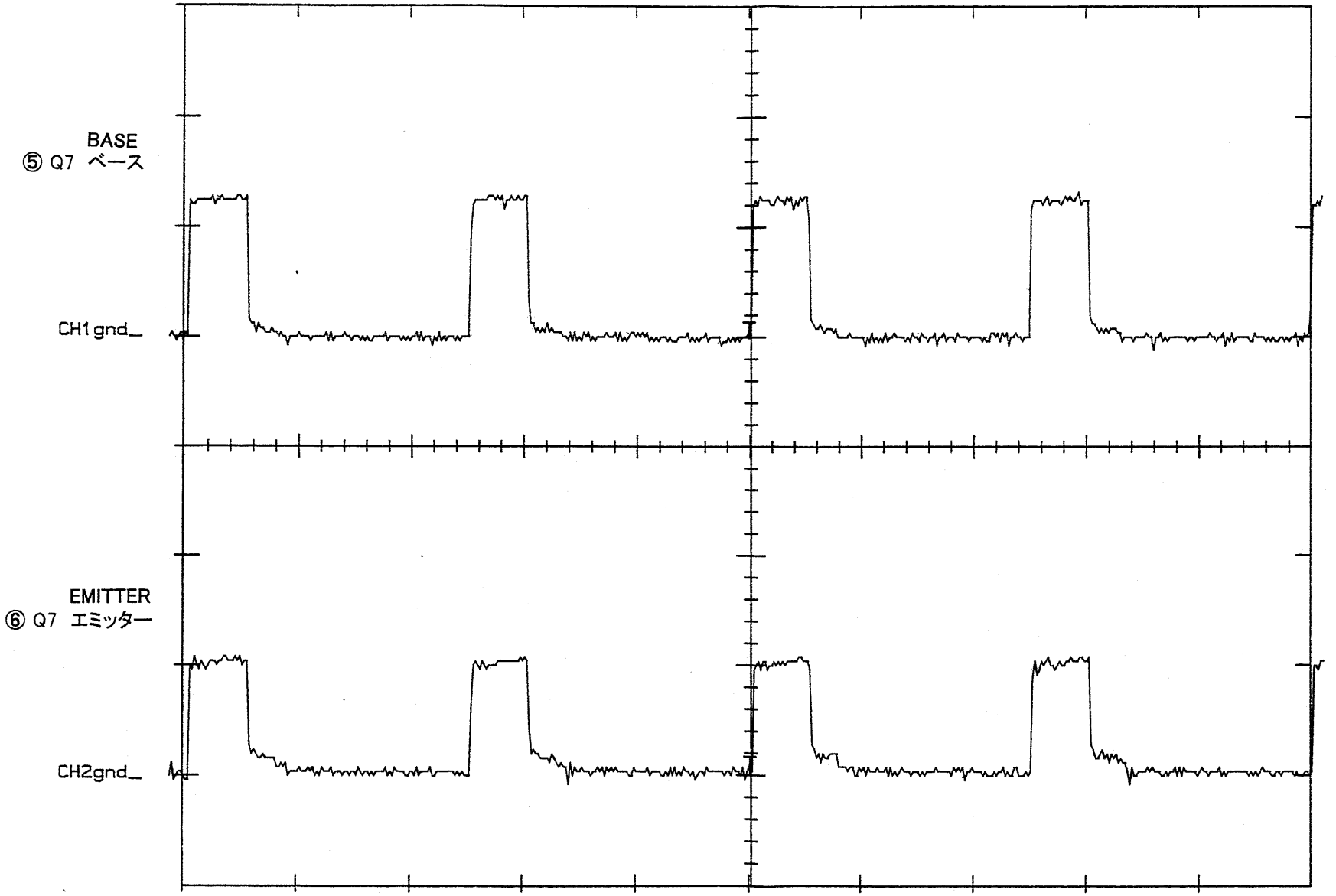
CH2 5V



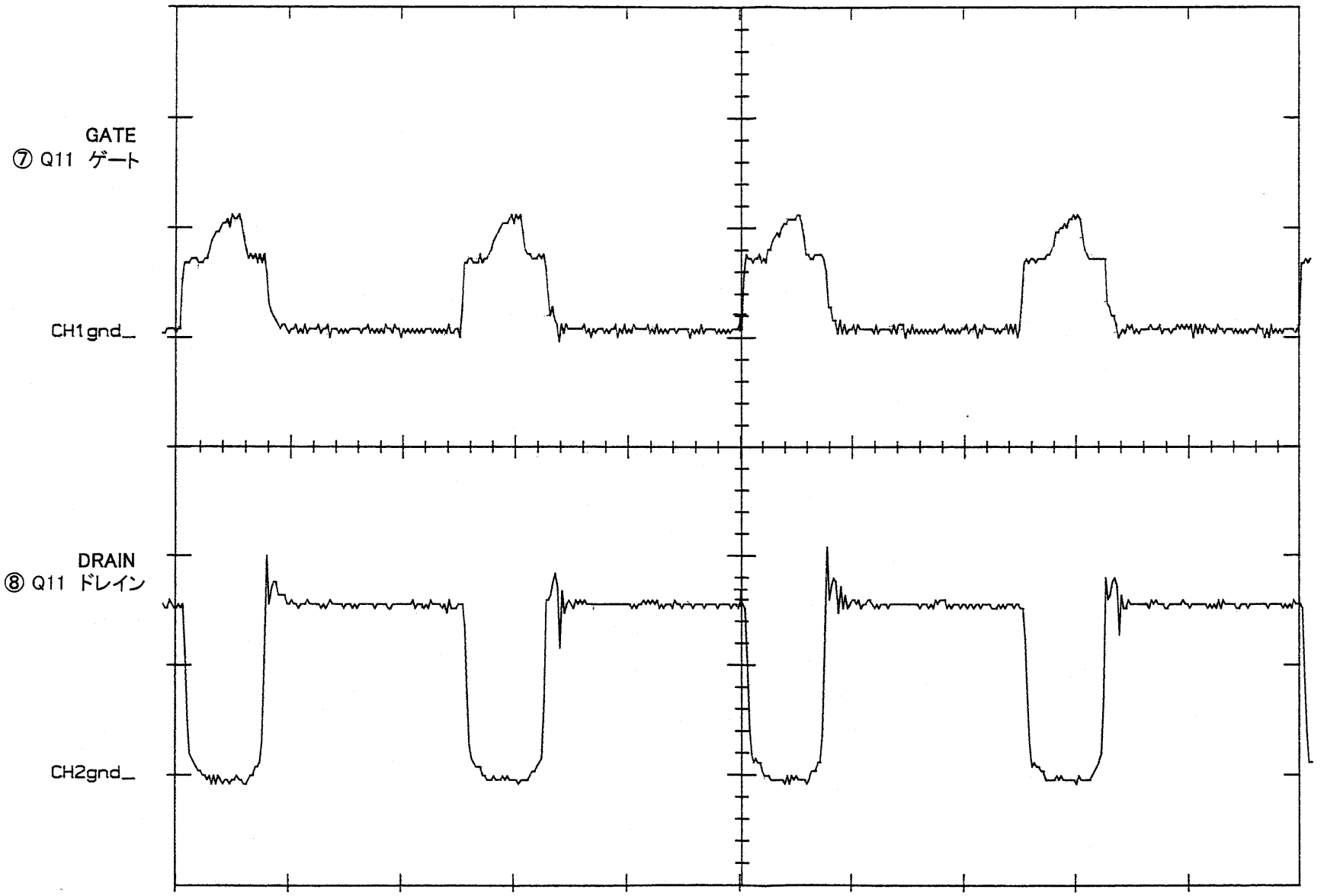

CH1 5V A 5µs 1.17 V CH1
CH2 20V
GATE
③ Q10 ゲート
CH1gnd_
DRAIN
④ Q10 ドレイン
CH2gnd_

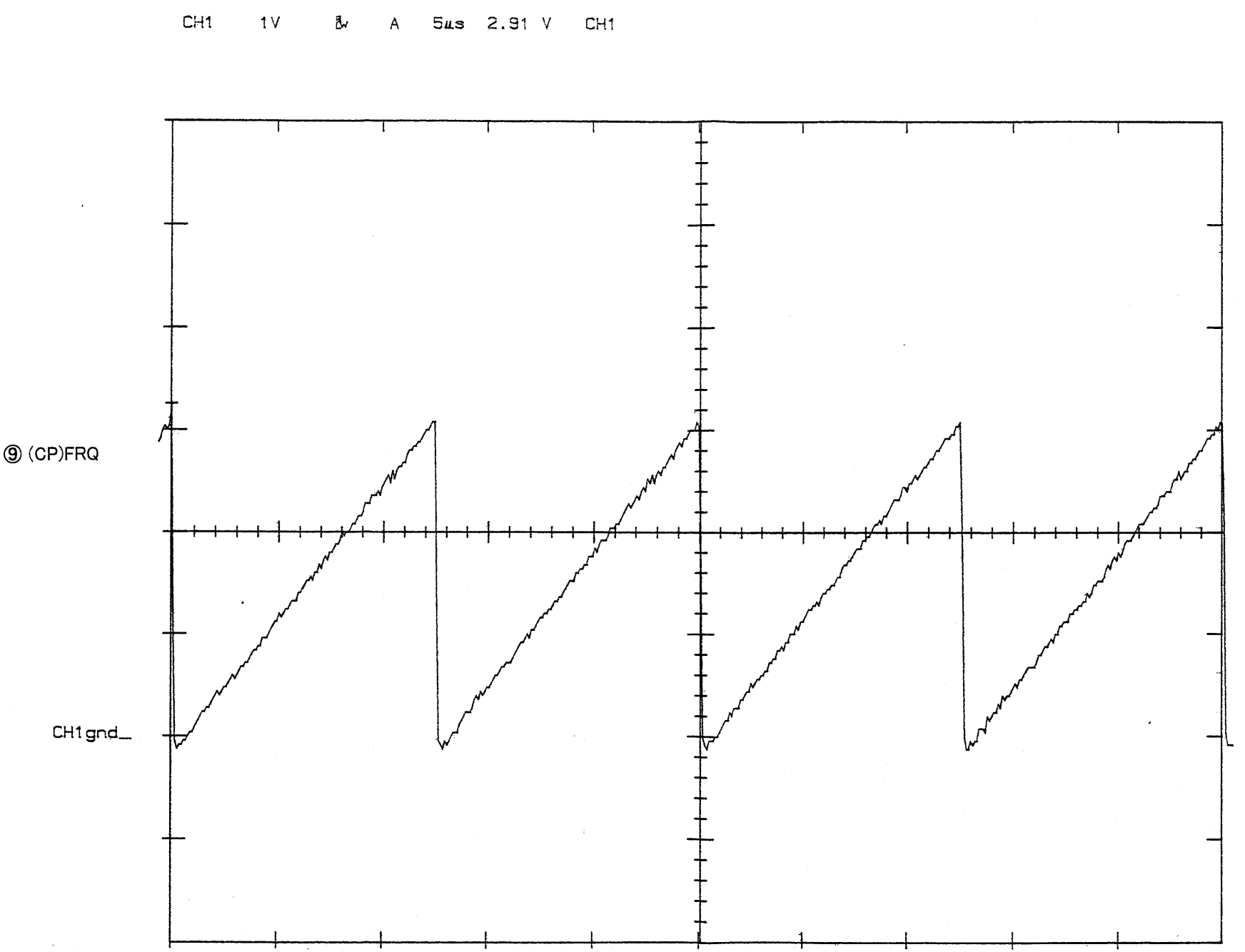
CH1 5V A 5μs 1.17 V CH1

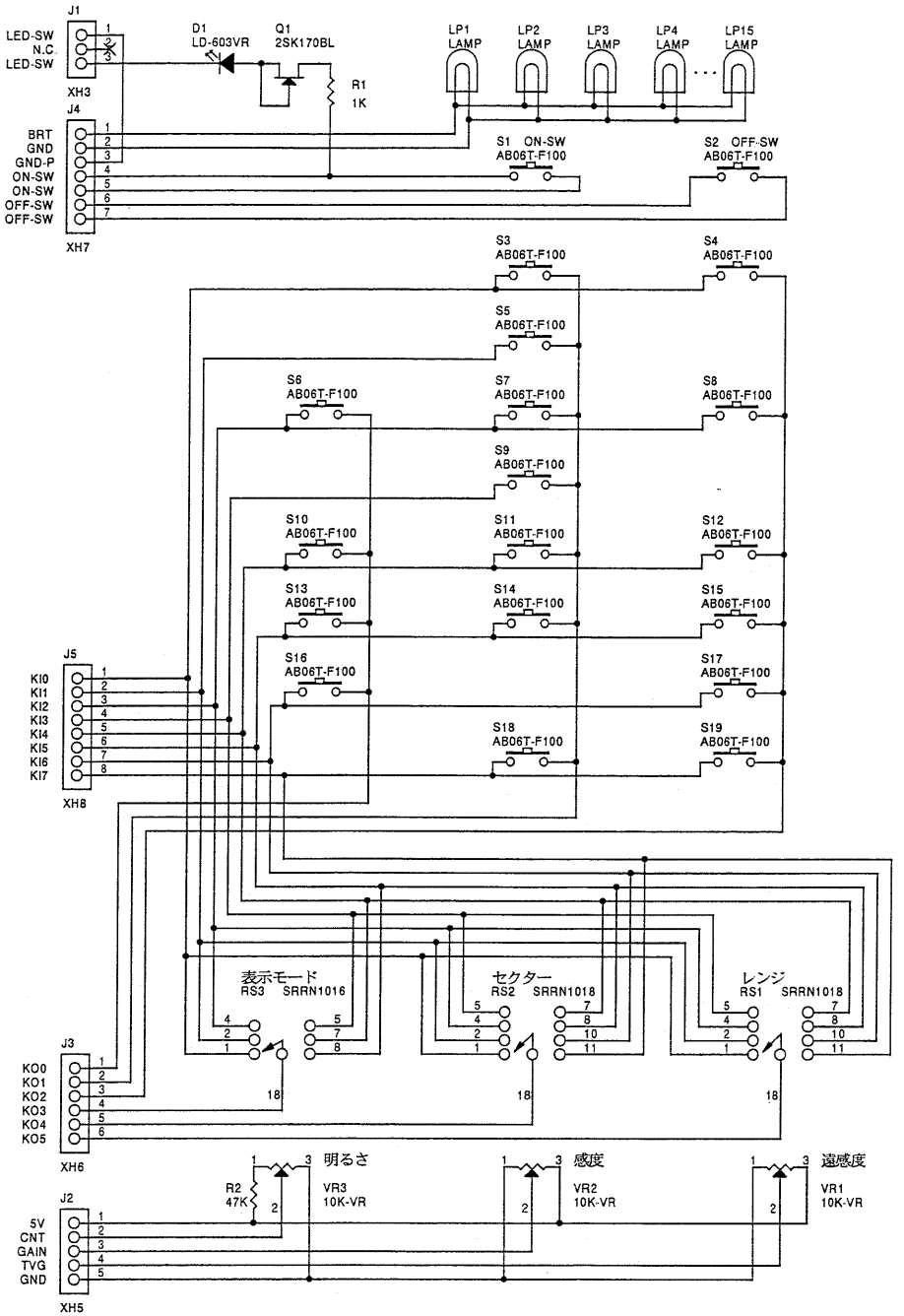
CH2 5V



CH1 5V A 5μs 1.17 V CH1
CH2 20V



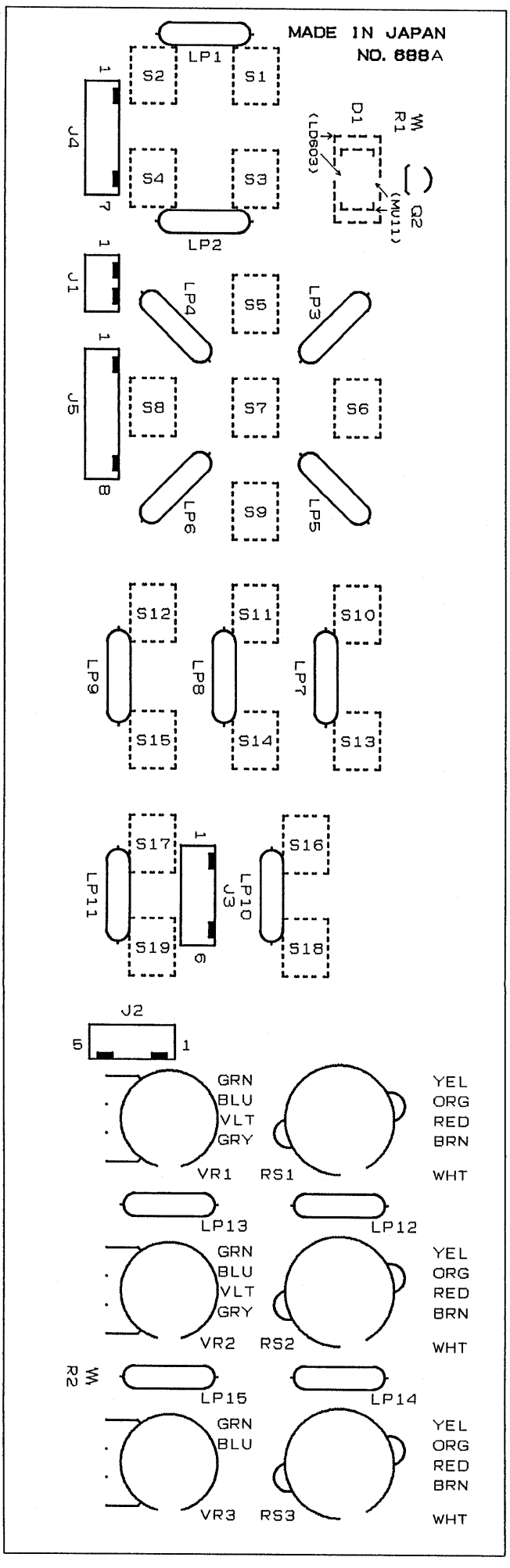

CH1 1V BW A 5µs 2.91 V CH1
⑨ (CP)FRQ
CH1gnd_



NO.688-BB時　ＶＲ３削除

Title	コントロール基板	
Size B	Document Number NO.688-M10 / NO.688-BB	Rev 0
Date: Monday, November 18, 2002	Sheet 1 of 1	

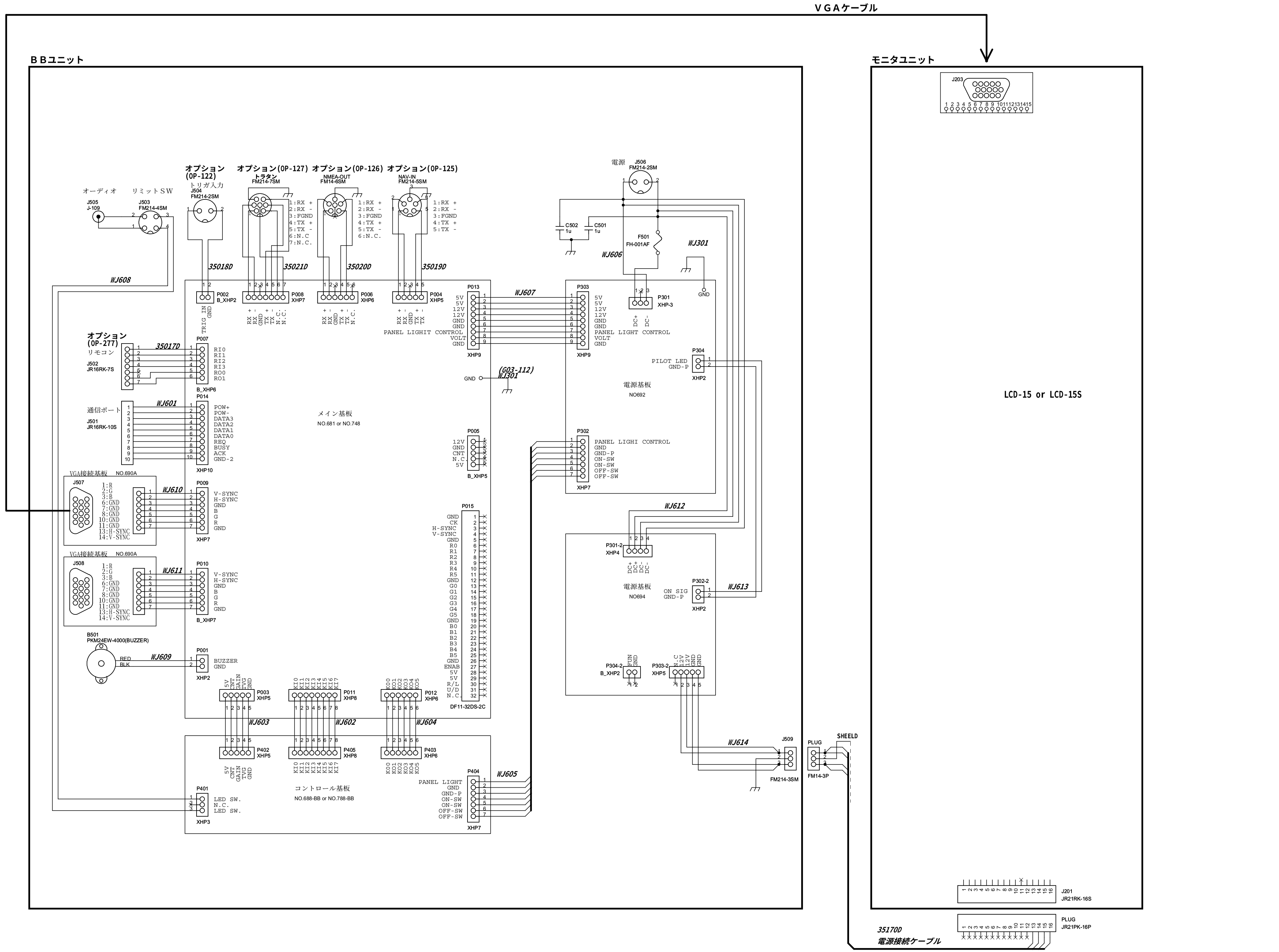
No. 688A
シルク図


MADE IN JAPAN
NO. 688A
LP1
S2
S1
J4
1
7
S4
S3
LP2
D1
(LD603)
(MU11)
R1
Q2
J1
LP4
S5
LP3
J5
S8
S7
S6
8
LP6
S9
LP5
S12
S11
S10
LP9
LP8
LP7
S15
S14
S13
S17
S16
J3
9
LP11
LP10
S19
S18
J2
5
GRN
BLU
VLT
GRY
YEL
ORG
RED
BRN
WHT
VR1
RS1
LP13
LP12
VR2
RS2
R2
LP15
LP14
VR3
RS3

MONITOR UNIT(M15)

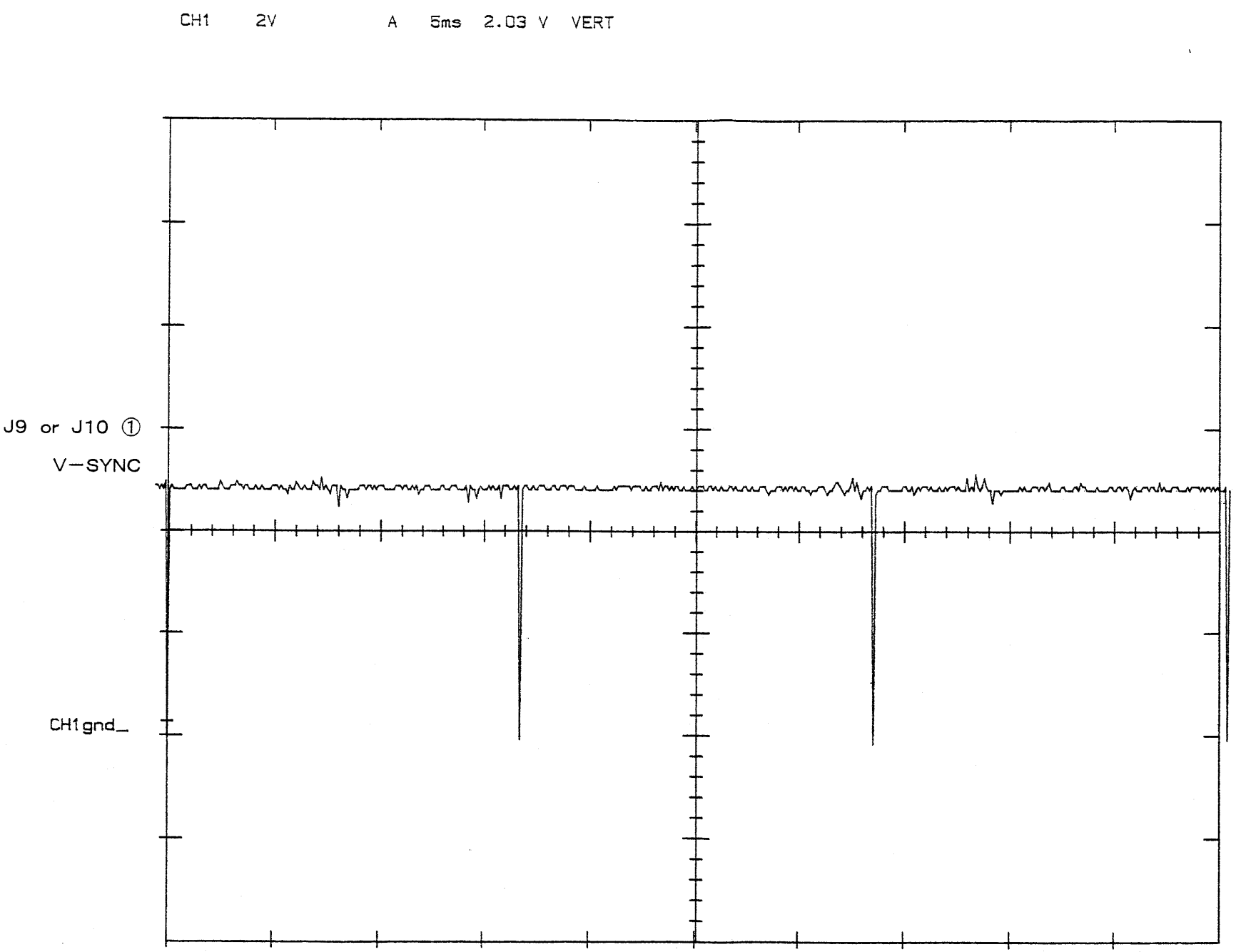
CIRCUIT DIAGRAM

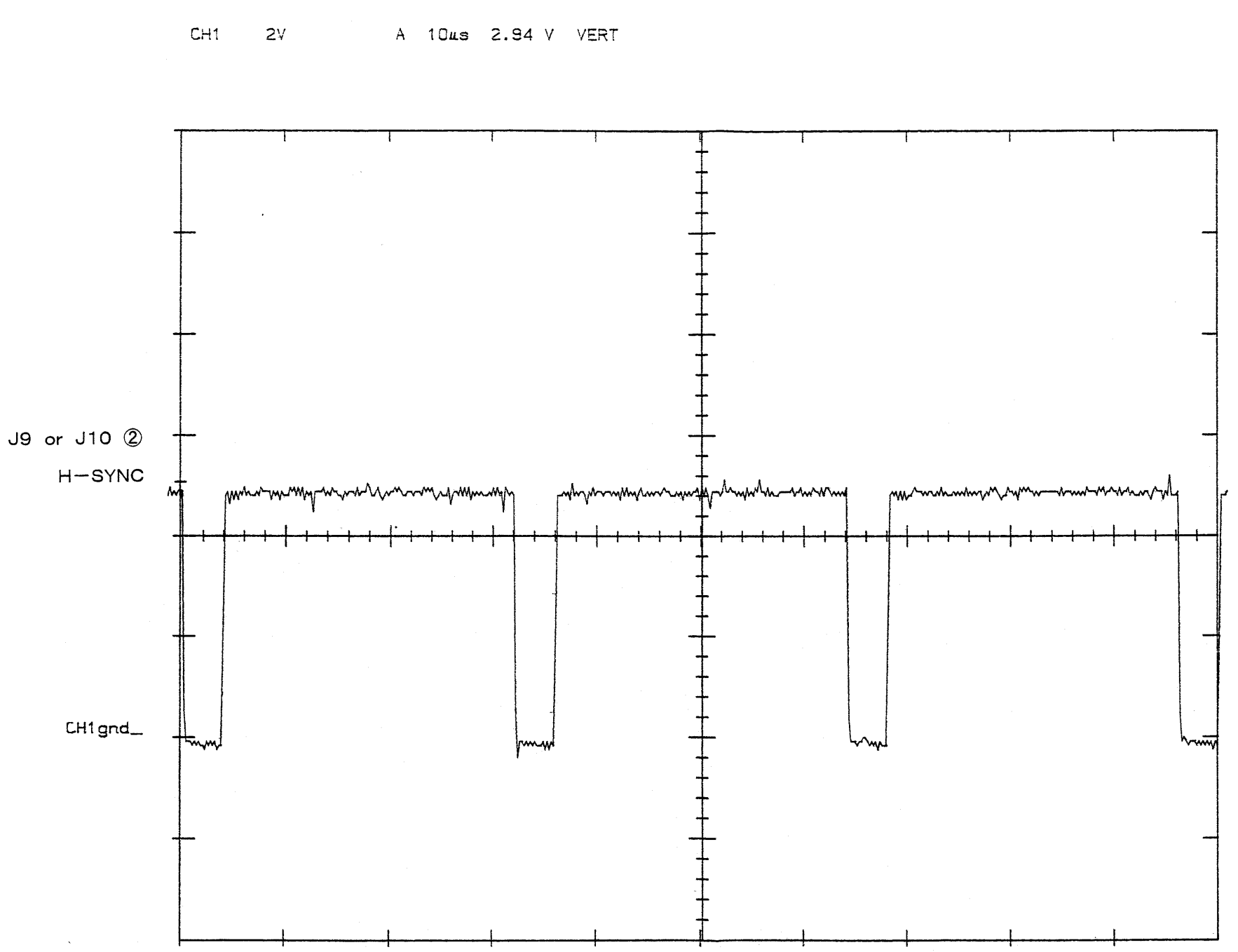
WAVE FORMS

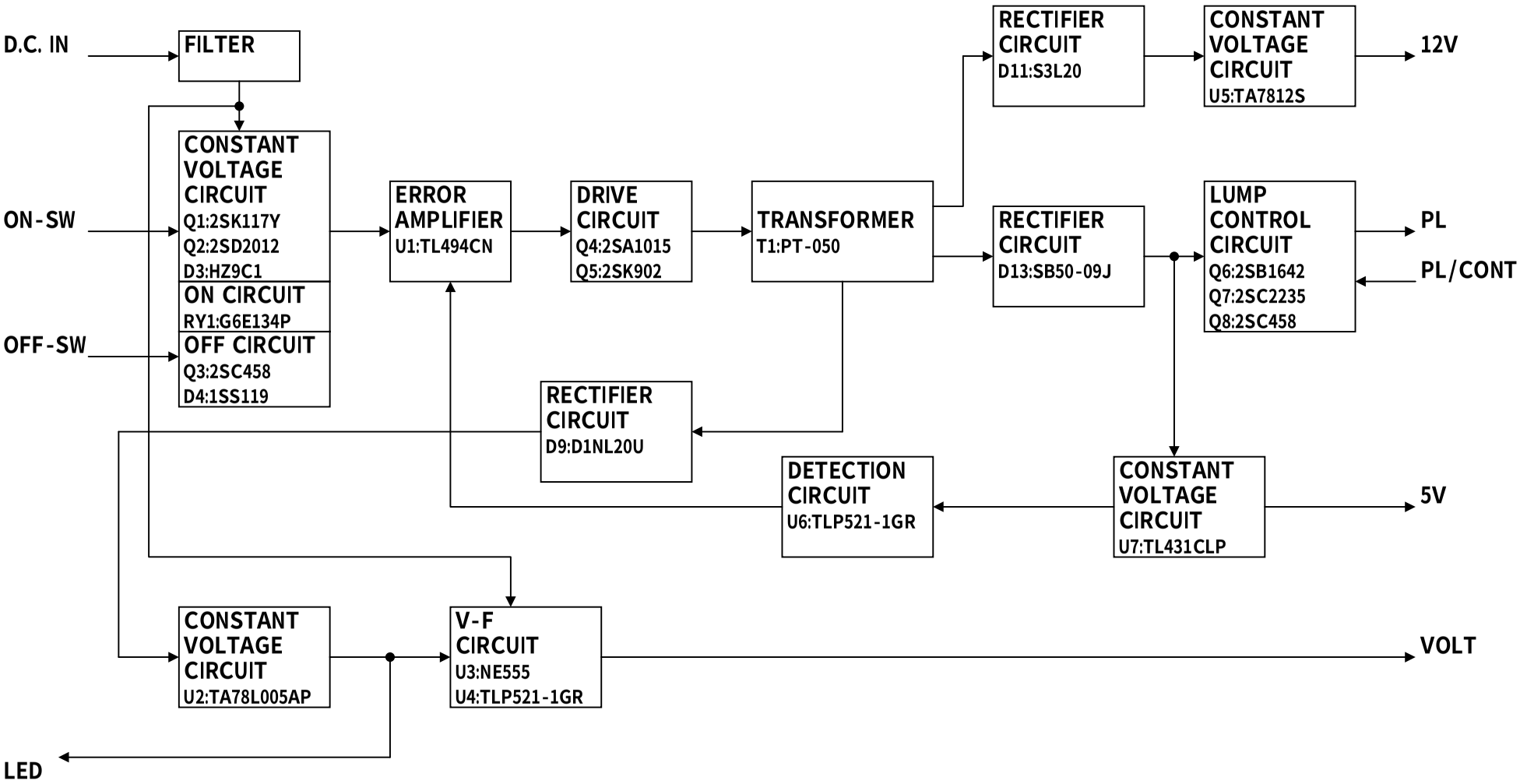


VGAケーブル
BBユニット
モニタユニット
LCD-15 or LCD-15S
メイン基板
NO.681 or NO.748
電源基板
NO692
電源基板
NO694
コントロール基板
NO.688-BB or NO.788-BB
VGA接続基板 NO.690A
オーディオ
リミットSW
オプション (OP-122)
トリガ入力
オプション(OP-127)
オプション(OP-126)
オプション(OP-125)
オプション (OP-277)
リモコン
通信ポート
電源
B501
PKM24EW-4000(BUZZER)
WJ601
WJ602
WJ603
WJ604
WJ605
WJ606
WJ607
WJ608
WJ609
WJ610
WJ611
WJ612
WJ613
WJ614
WJ301
35017D
35018D
35019D
35020D
35021D
35170D
電源接続ケーブル
SHEELD
PANEL LIGHT CONTROL
PILOT LED
ON SIG

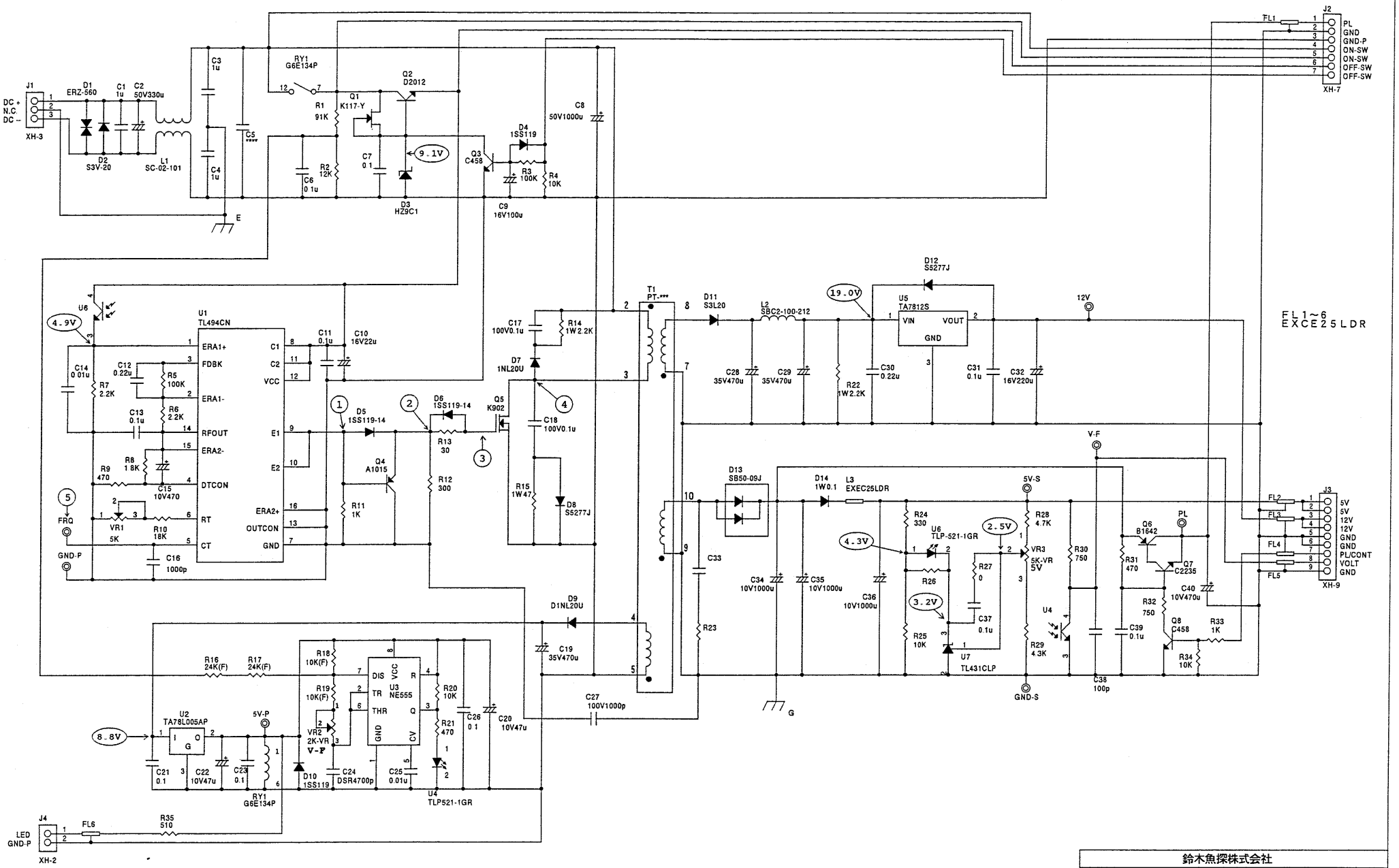
Title	S-1800M15全体配線図		
Size Custom	Document Number <Doc>		Rev 3
Date: Thursday, May 26, 2011	Sheet 1 of 1		


CH1 2V A 5ms 2.03 V VERT
J9 or J10 ①
V—SYNC
CH1 gnd_

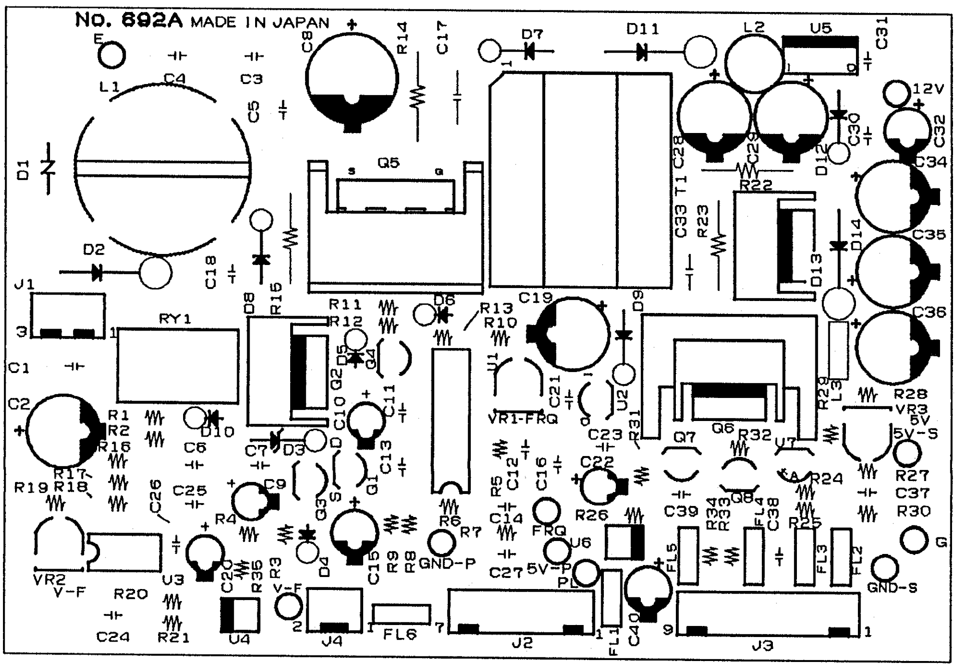

CH1 2V A 10µs 2.94 V VERT
J9 or J10 ②
H—SYNC
CH1gnd_



No.692 POWER SUPPLY BOARD



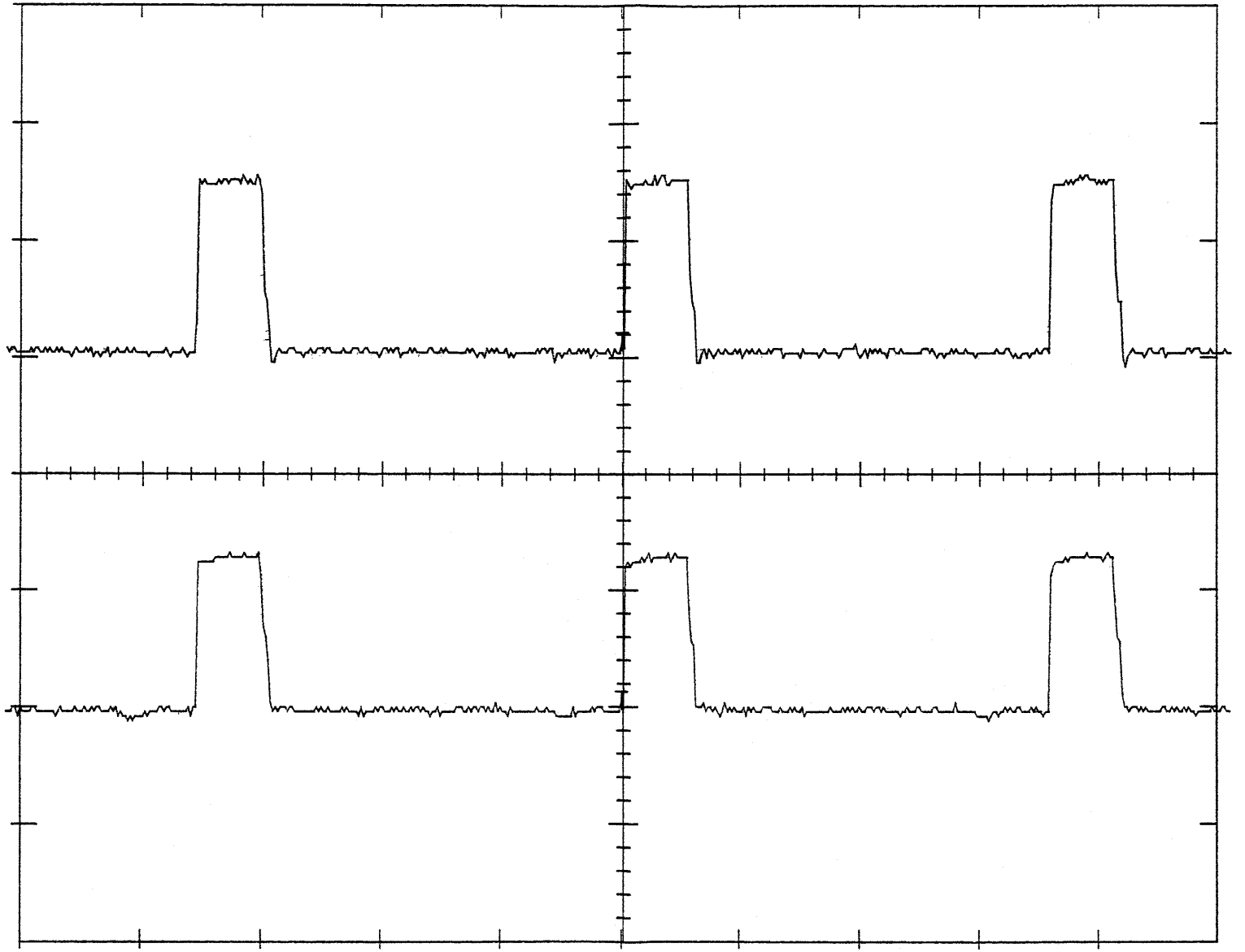
鈴木魚探株式会社			
Title: S-1800/BB 電源基板 No. 692A			
Size: A3	Document Number		Rev: 1
Date: Friday, March 14, 2003	Sheet 1 of 1		



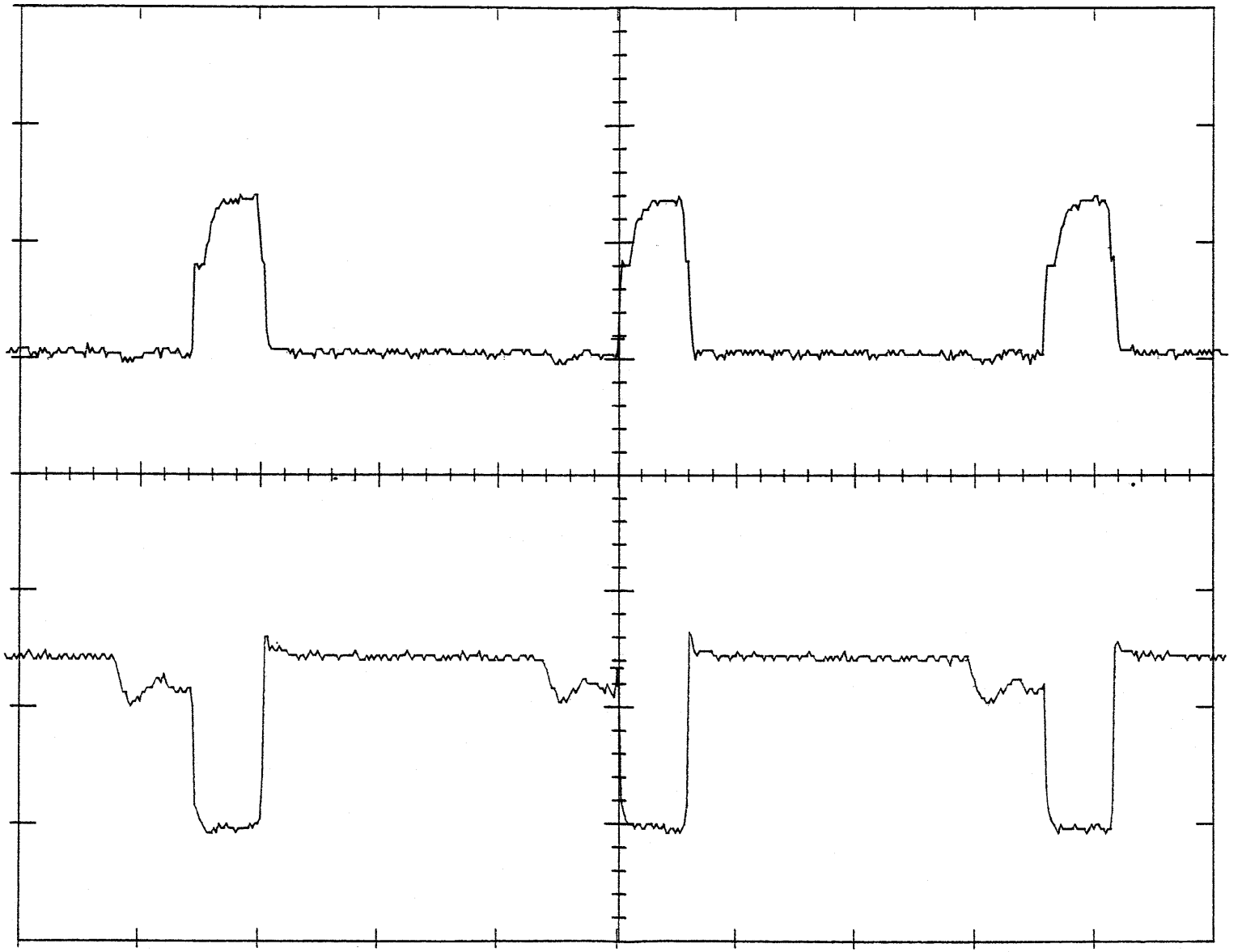
NO. 692A MADE IN JAPAN
E
L1
C4
C3
C5
C8
R14
C17
D7
D11
L2
U5
C31
12V
D1
Q5
C28
C29
C30
D12
C32
C34
T1
R22
C33
R23
D14
C35
D2
C18
D13
J1
RY1
D8
R15
R11
R12
D6
R13
R10
C19
D9
C36
C1
D5
Q4
Q2
C10
C11
U1
C21
U2
L3
R29
R28
VR3
5V
C2
R1
R2
R16
D10
C6
VR1-FRQ
C23
R31
Q7
Q6
R32
U7
5V-S
C7
D3
C13
Q1
R5
C12
C16
C22
R24
R27
R17
R19
R18
C26
C25
C9
Q3
C14
R26
C39
Q8
R34
R33
FL4
C38
R25
C37
R30
R4
R6
R7
FRQ
U6
FL5
FL3
FL2
G
VR2
V-F
U3
C20
R35
R3
D4
C15
R9
R8
GND-P
C27
5V-P
P
C40
GND-S
R20
V-F
U4
J4
FL6
J2
FL1
J3
C24
R21

CH1 5V A 5µs 1.80 V VERT

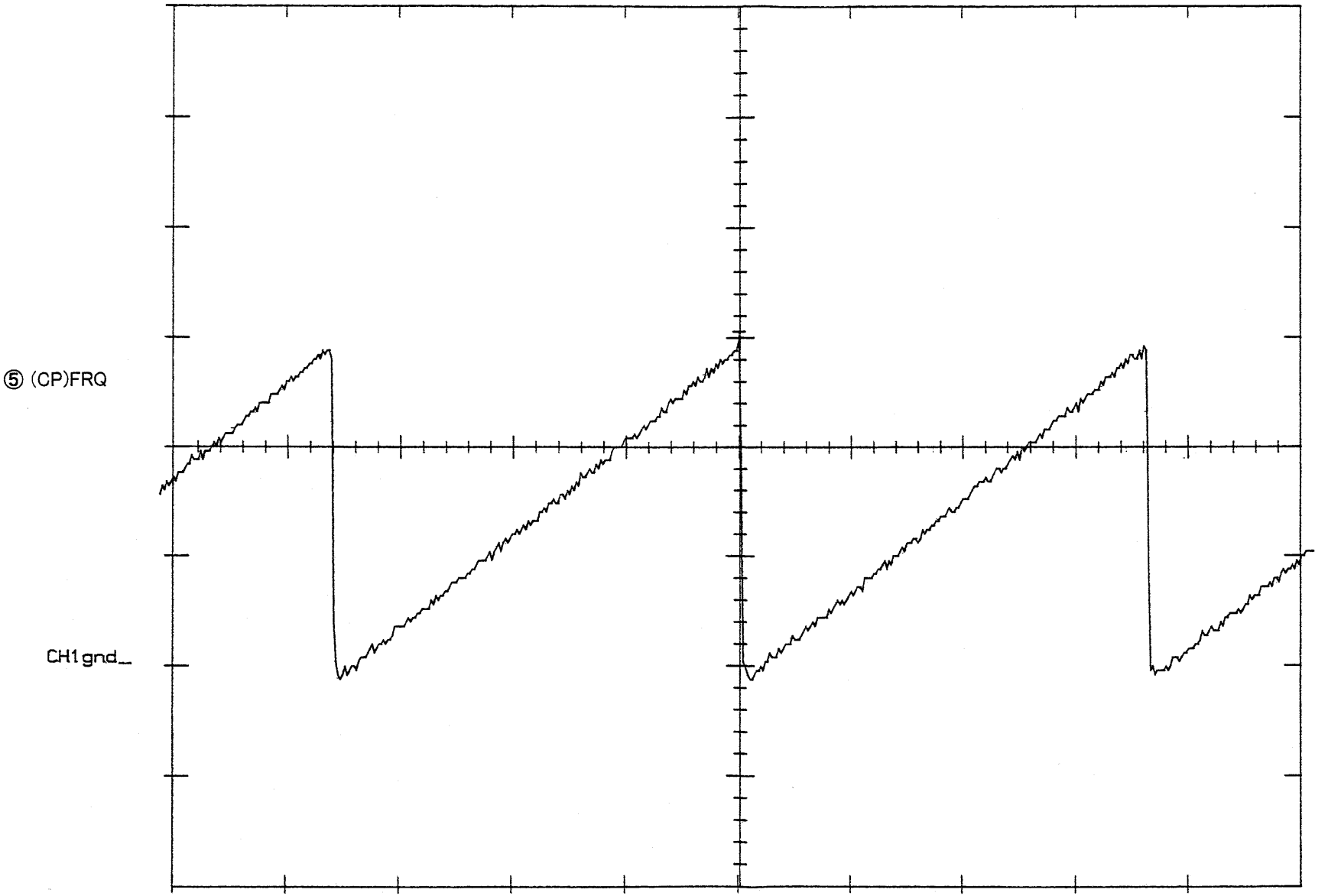
CH2 5V

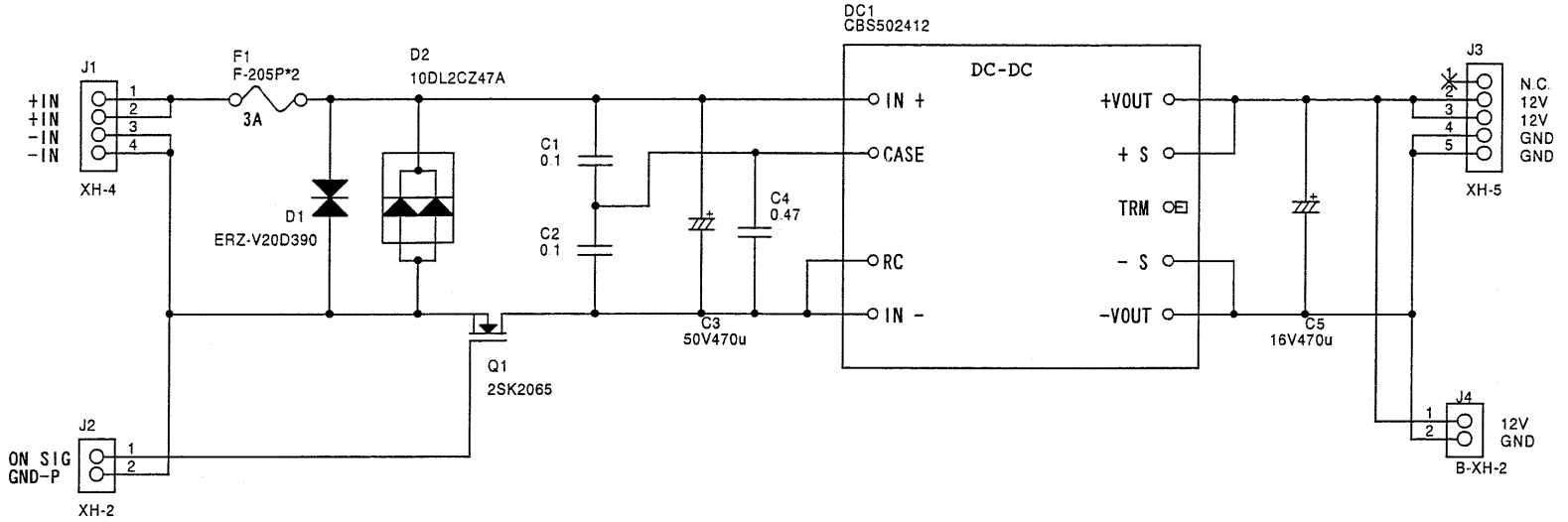


CH1 5V A 5μs 1.80 V VERT
CH2 20V

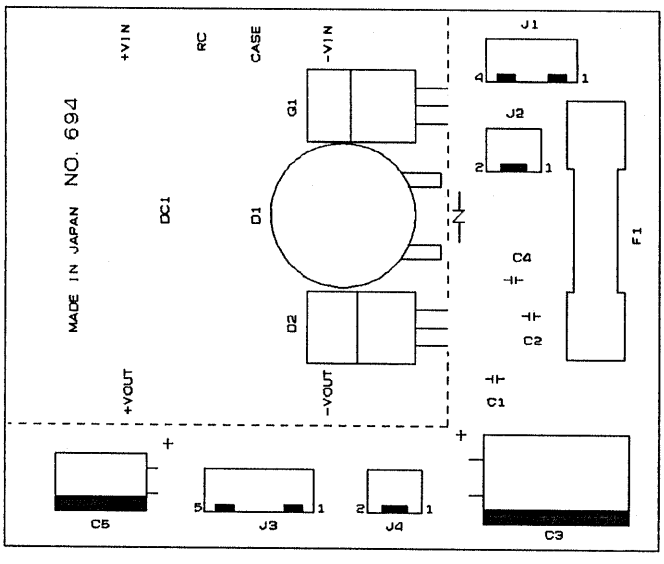


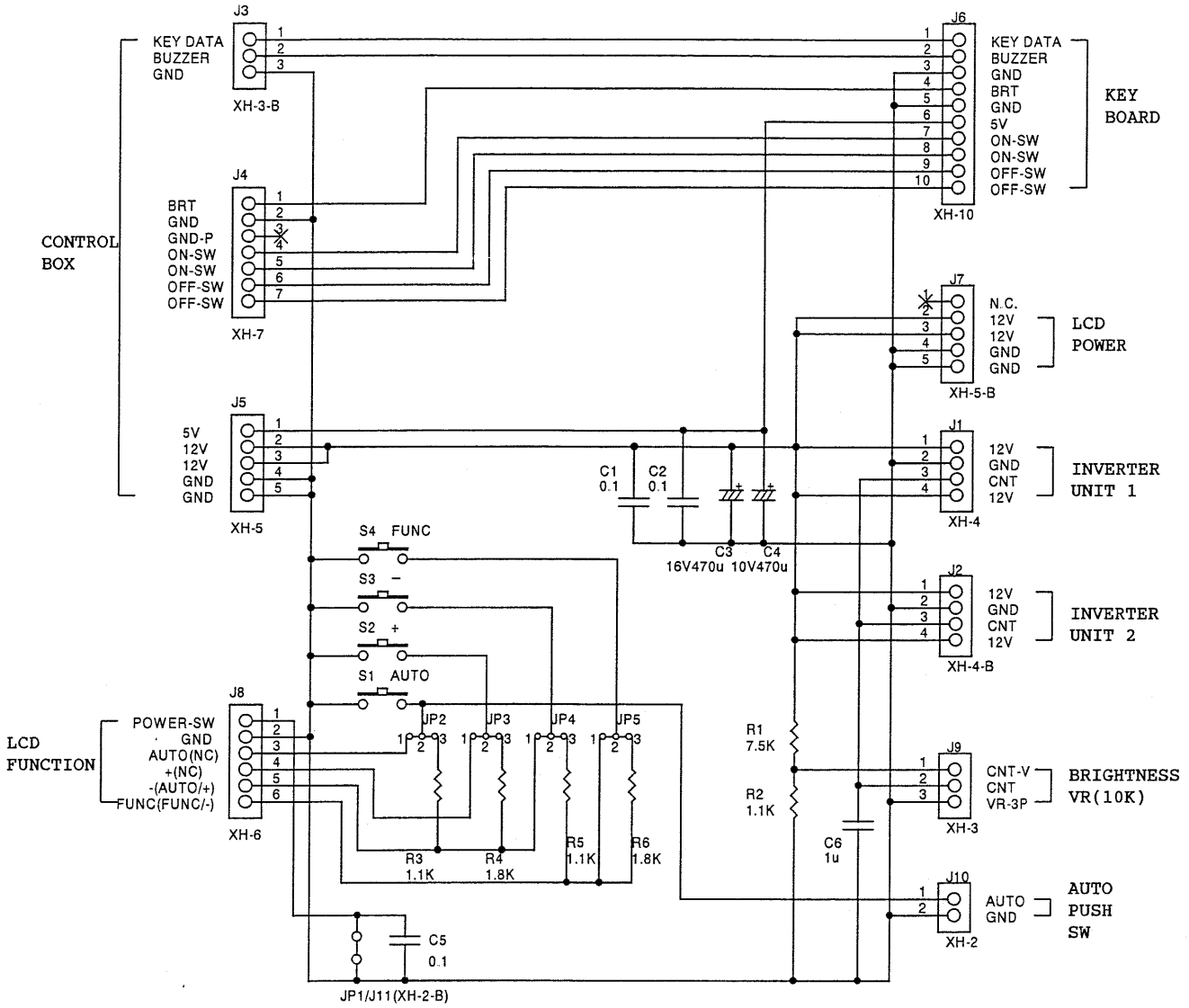
CH1 1V A 5µs 1.43 V VERT



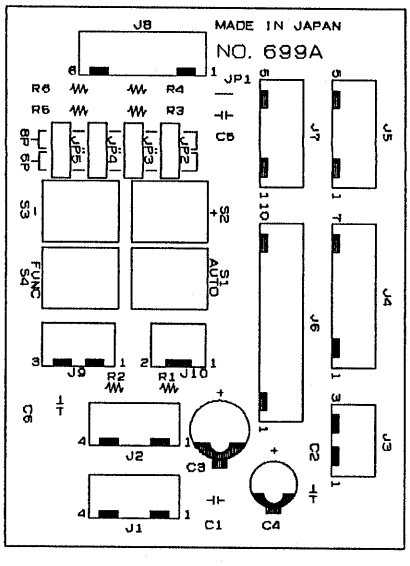


鈴木魚探株式会社		
Title: S-1800MBB M15ユニット用電源基板 No. 694		
Size: A4	Document Number	Rev: 0
Date: Friday, September 20, 2002	Sheet 1 of 1	


+VIN
RC
CASE
-VIN
MADE IN JAPAN NO. 694
DC1
G1
D1
D2
+VOUT
-VOUT
J1
J2
F1
C4
C2
C1
C5
J3
J4
C3



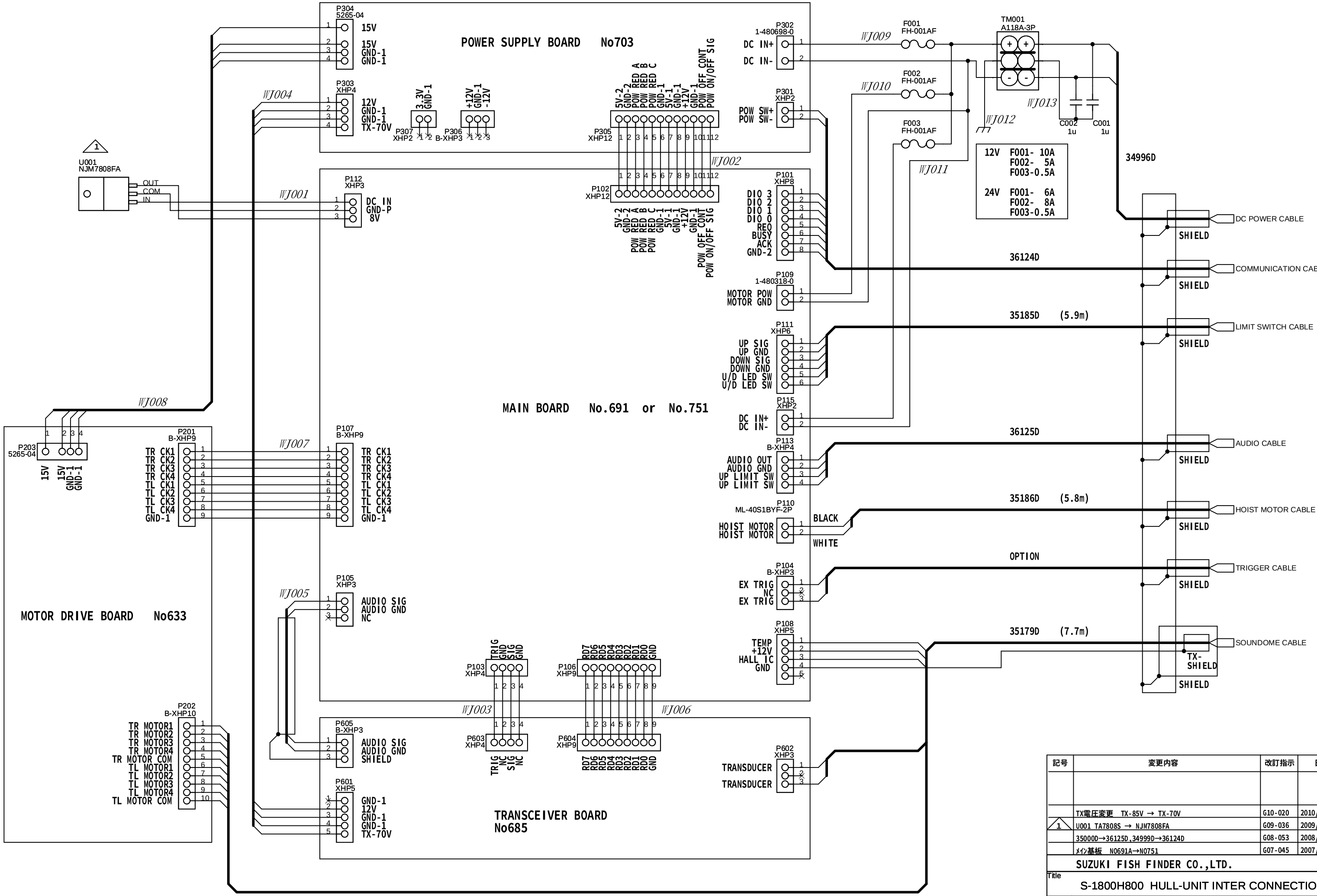
鈴木魚探株式会社		
Title: ES-8100 中継基板 No. 699A		
Size: A4	Document Number	Rev: 0
Date: Thursday, January 23, 2003	Sheet 1 of 1	


J8
MADE IN JAPAN
NO. 699A
JP1
R6
R5
R4
R3
C5
6P
6P
JP5
JP4
JP3
JP2
S3
S2
FUNC
S4
S1
AUTO
J9
J10
R2
R1
C6
J2
C3
C2
J1
C1
C4
J7
J5
J6
J4
J3

HULL UNIT

CIRCUIT DIAGRAM

WAVE FORMS



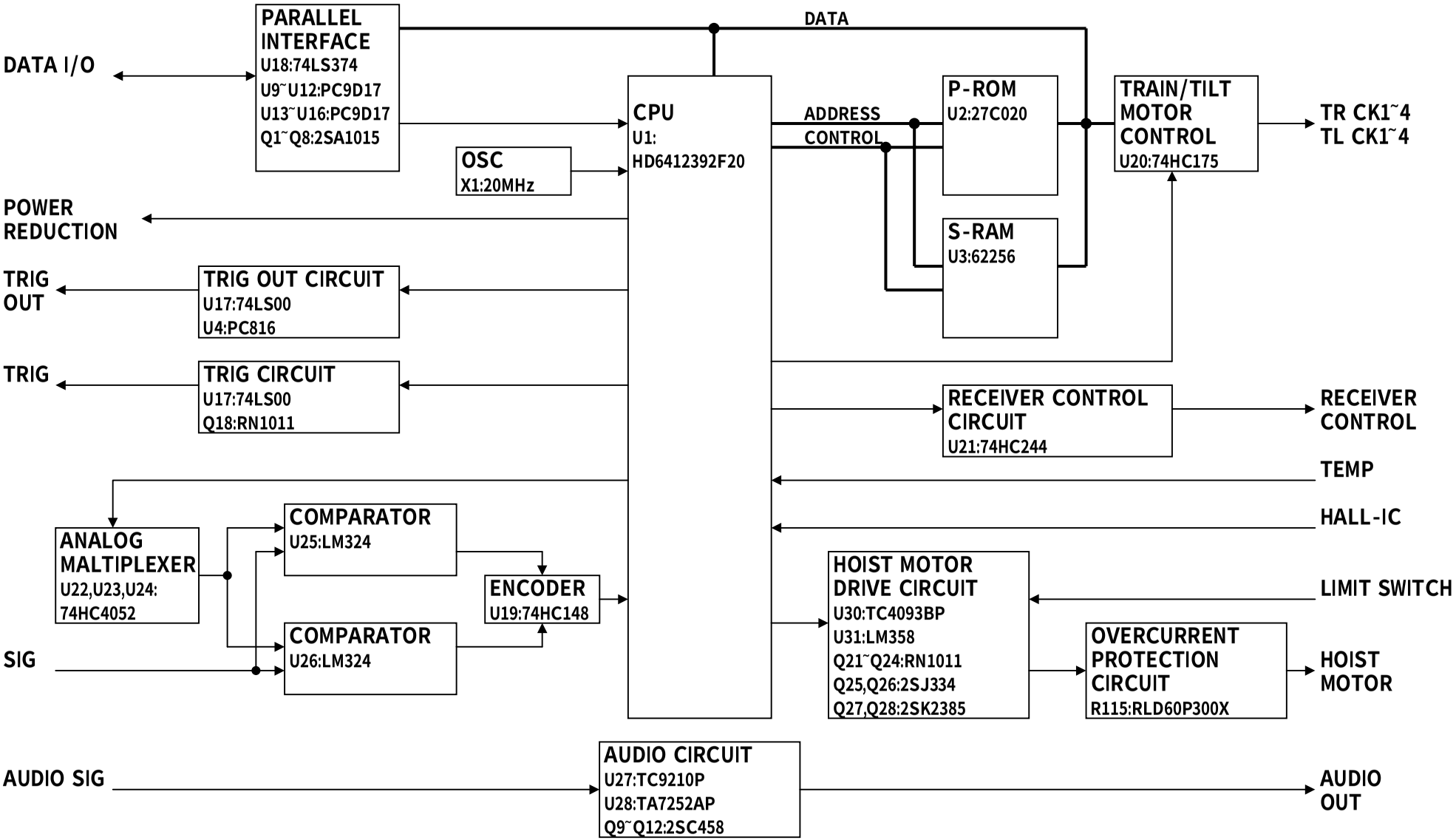
記号	変更内容	改訂指示	日付
	TX電圧変更 TX-85V → TX-70V	G10-020	2010/02/03
1	U001 TA7808S → NJM7808FA	G09-036	2009/03/02
	35000D→36125D,34999D→36124D	G08-053	2008/07/25
	ﾒｲﾝ基板 NO691A→NO751	G07-045	2007/06/15

SUZUKI FISH FINDER CO.,LTD.

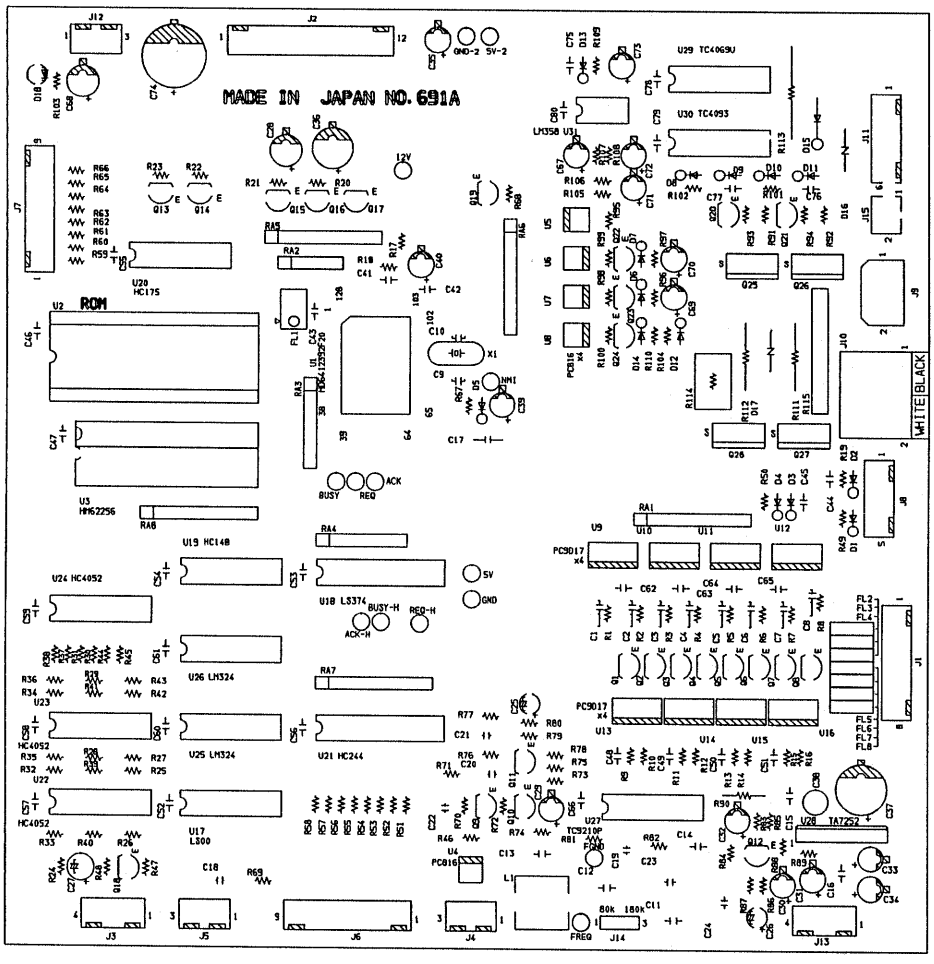
Title: S-1800H800 HULL-UNIT INTER CONNECTION

Size	Document Number	Rev
A3	<Doc>	4

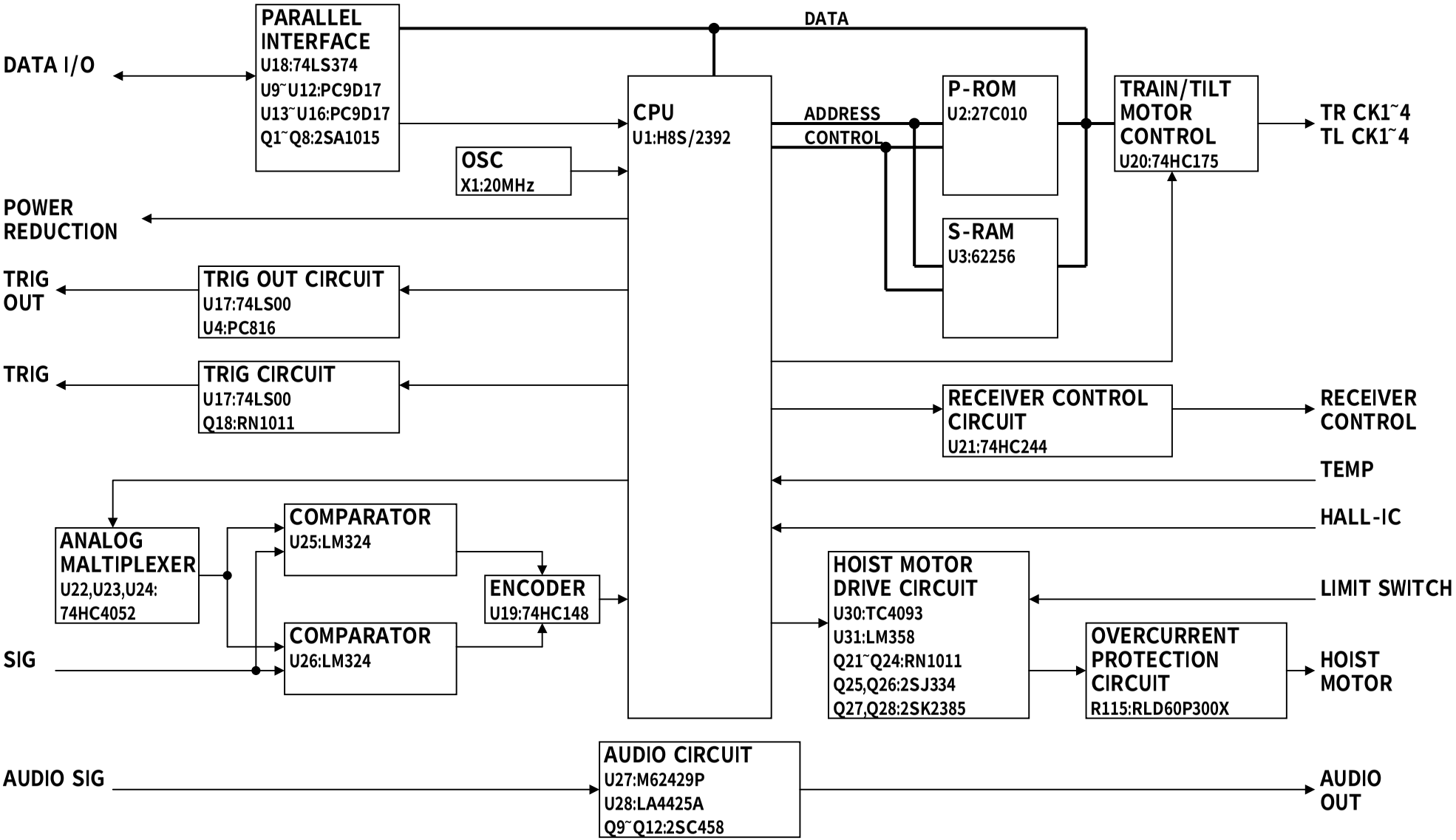
Date: Tuesday, June 29, 2010 Sheet 1 of 1



NO.691 MAIN BOARD

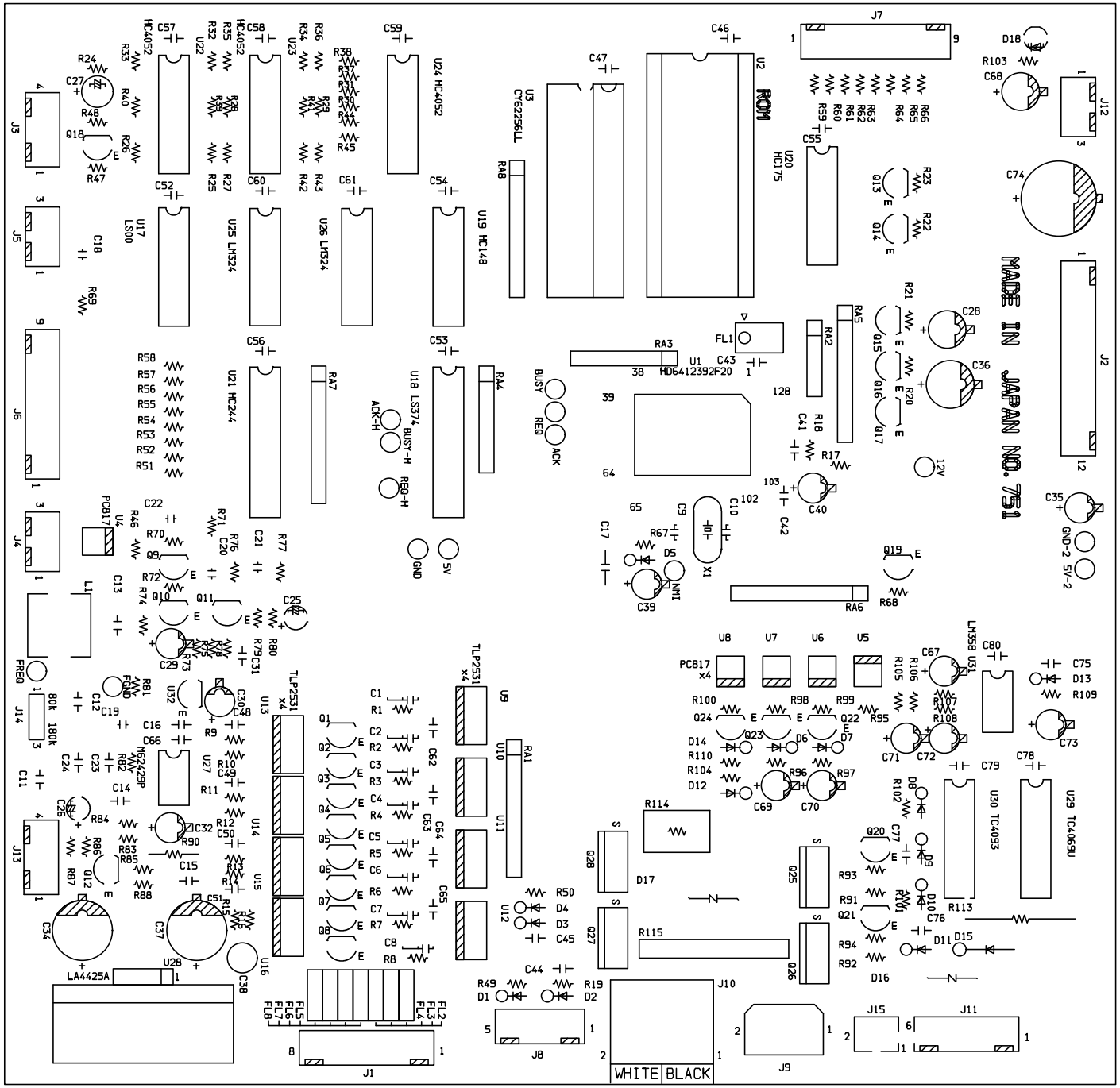


BUHIN-S NO 691A



NO.751 MAIN BOARD

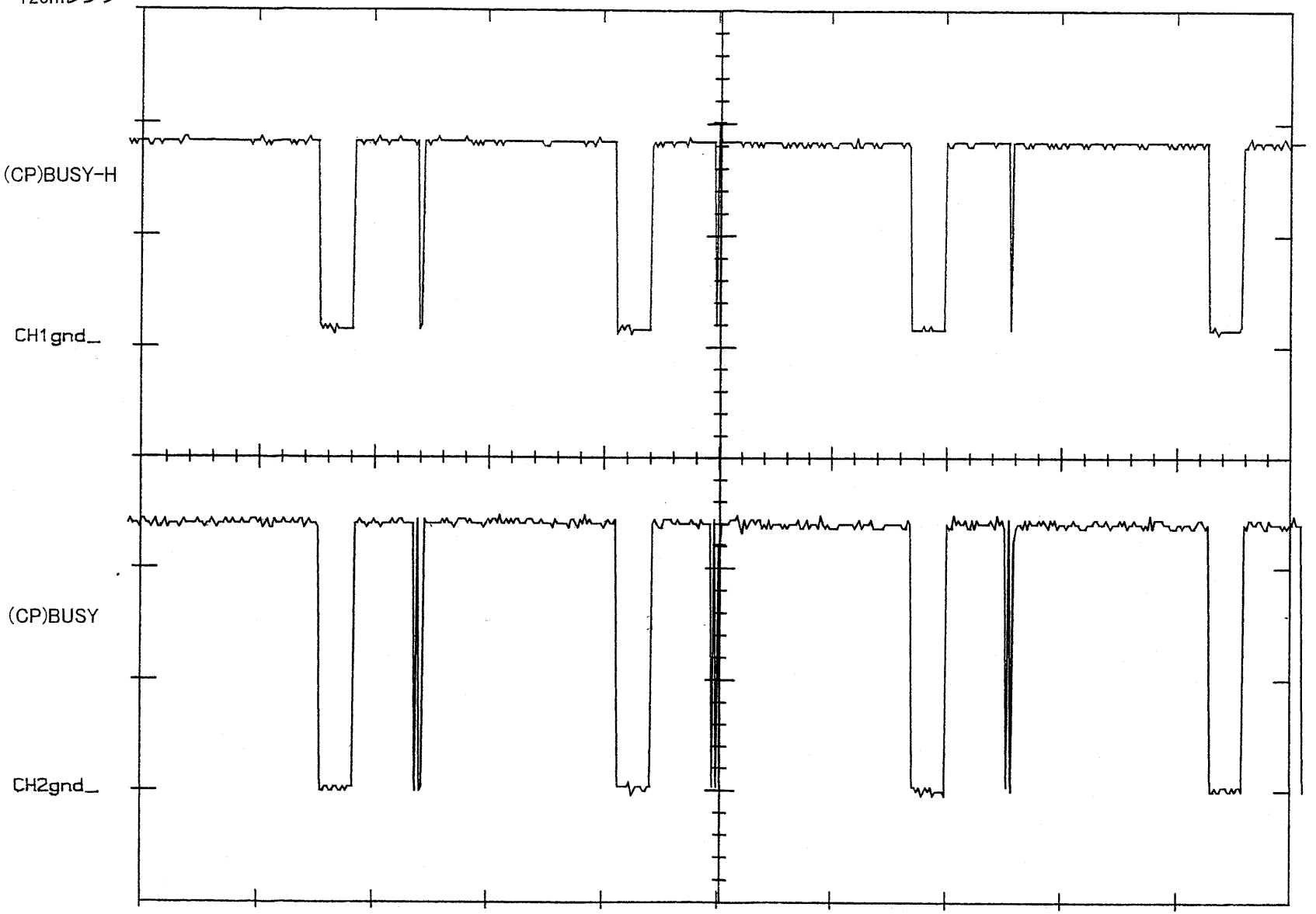
BUHIN-S NO. 751-1



CH1 2V A 100ms 188mV VERT

CH2 2V

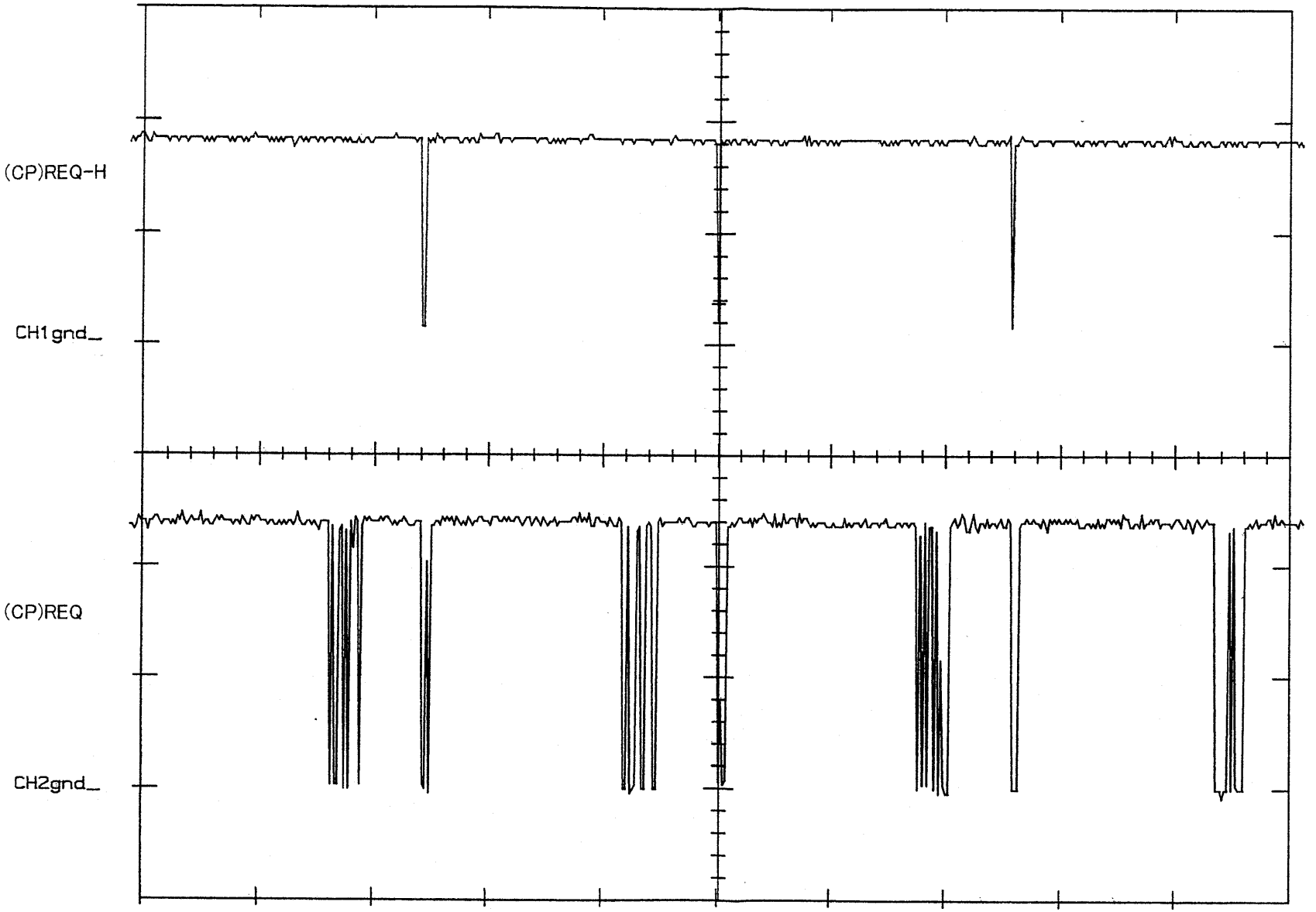
RANGE
120mレンジ



CH1 2V A 100ms 1.00 V VERT

CH2 2V

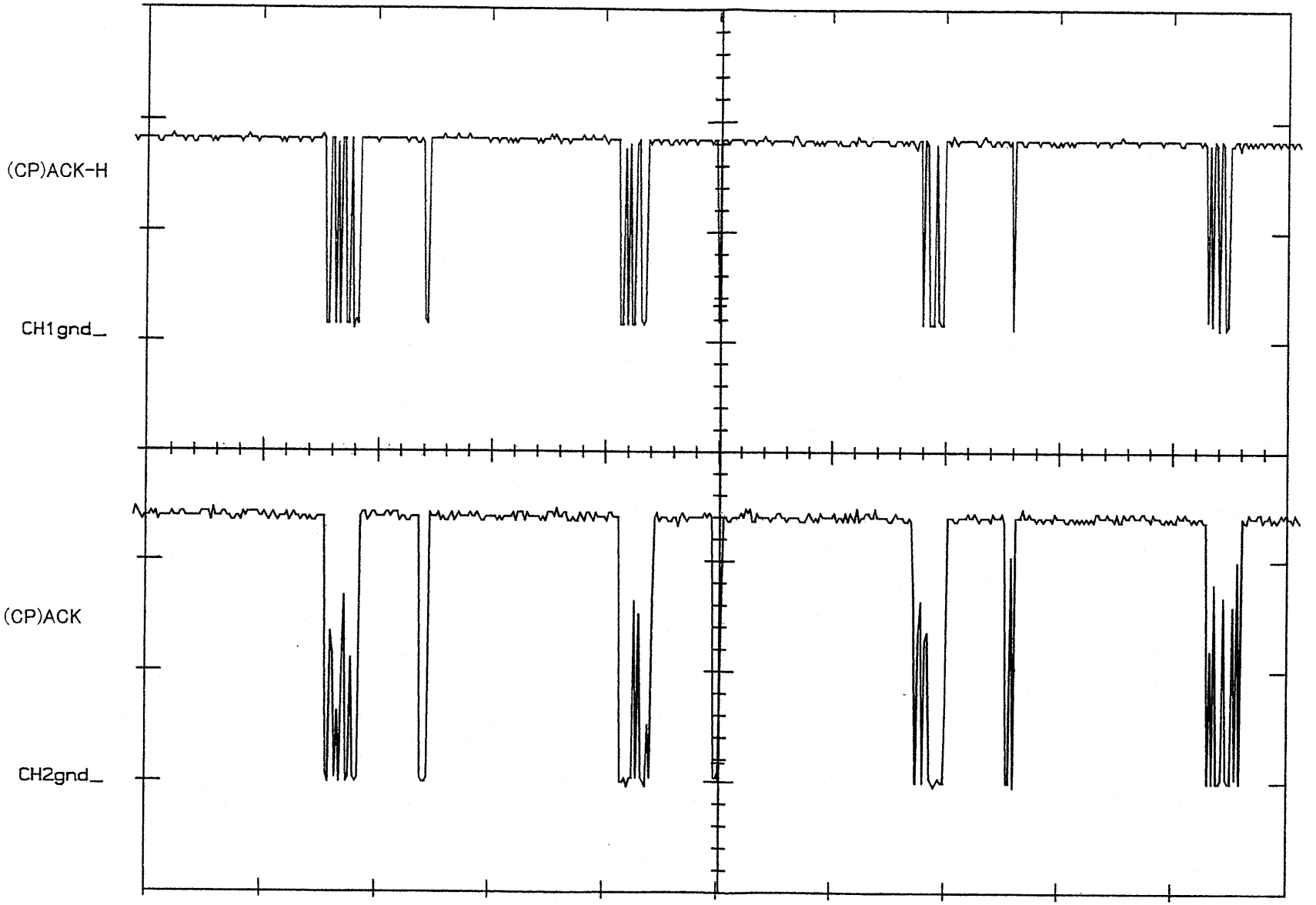
RANGE
120mレンジ



CH1 2V A 100ms 1.38 V VERT

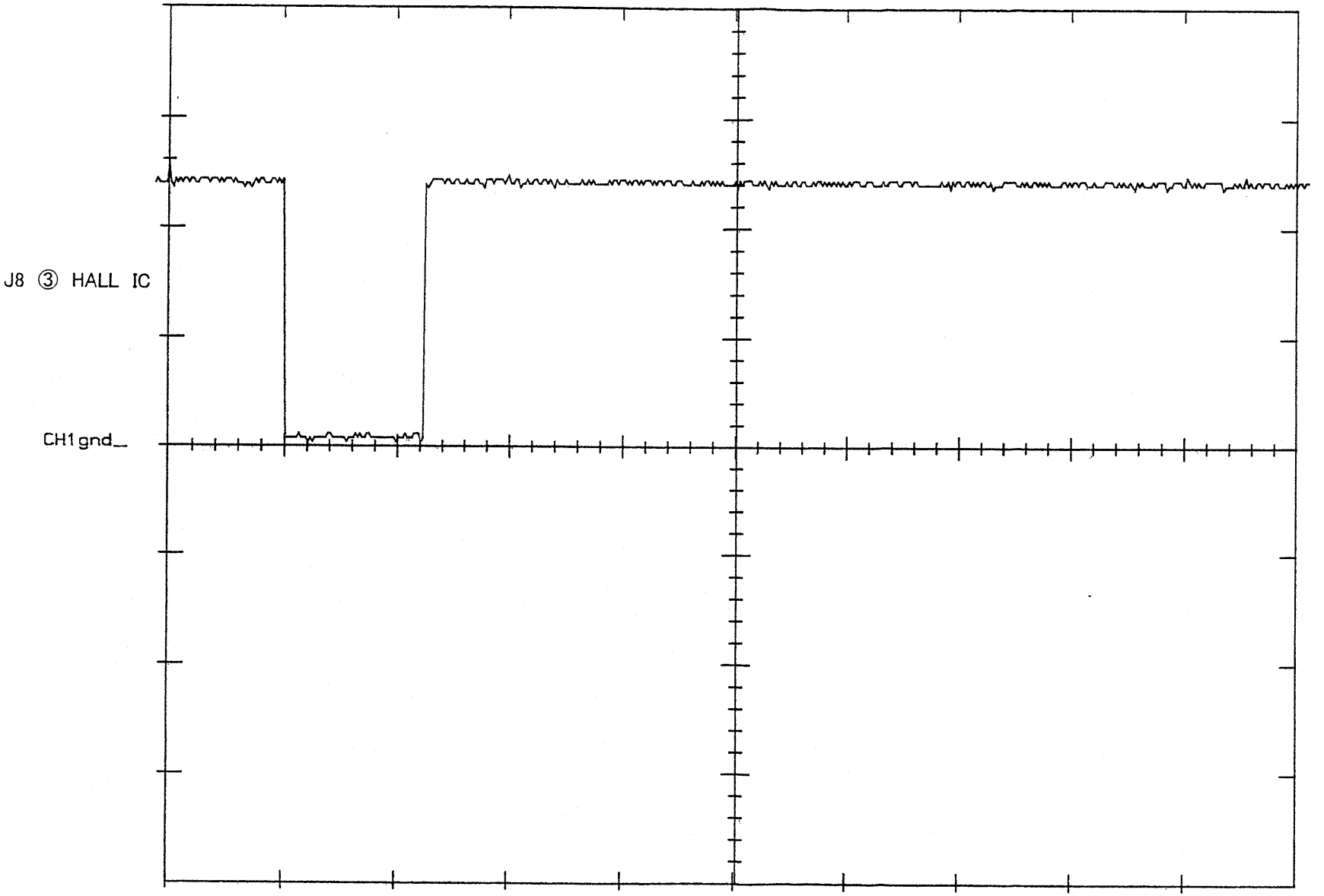
CH2 2V

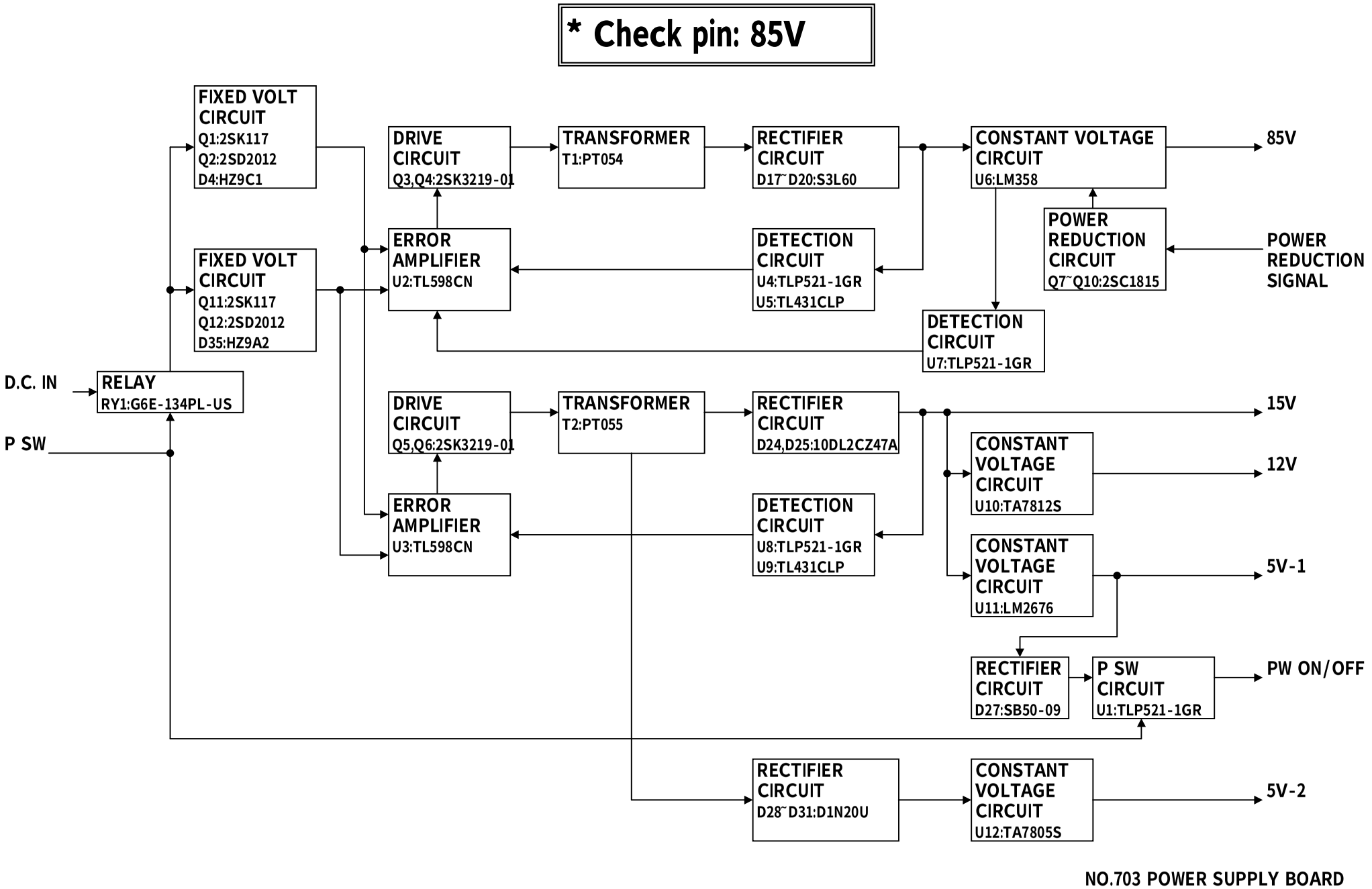
RANGE
120mレンジ



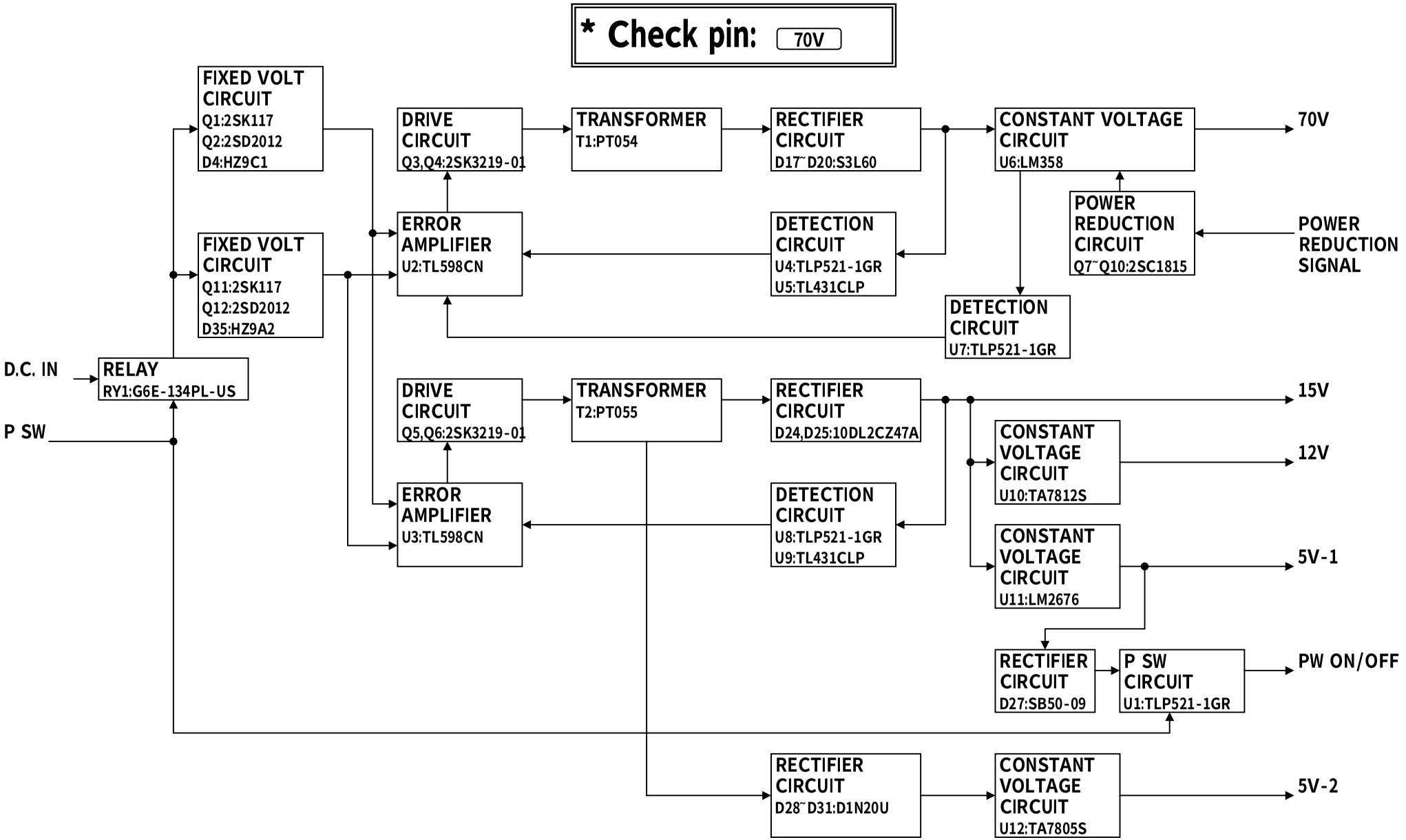
CH1 2V A 200ms 0.0 V VERT

RANGE
120mレンジ

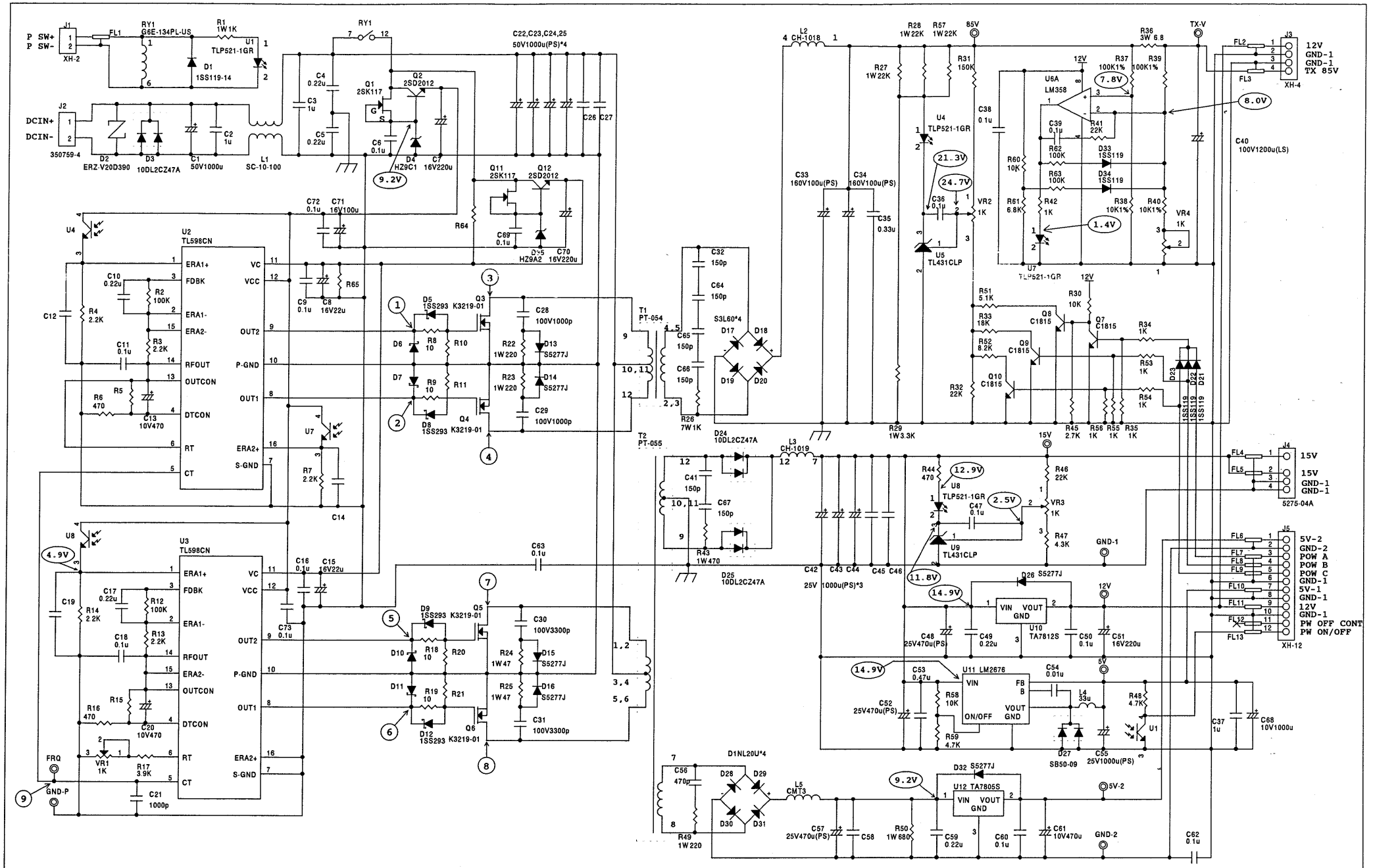




NO.703 POWER SUPPLY BOARD



NO.703 POWER SUPPLY BOARD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P SW-
DCIN+
DCIN-
TLP521-1GR
1SS119-14
SC-10-100
ERZ-V20D390
10DL2CZ47A
HZ9C1
16V220u
2SK117
2SD2012
TL598CN
ERA1+
FDBK
ERA1-
ERA2-
RFOUT
OUTCON
DTCON
RT
CT
VC
VCC
OUT2
P-GND
OUT1
ERA2+
S-GND
K3219-01
1SS293
PT-054
PT-055
S3L60*4
10DL2CZ47A
CH-1018
CH-1019
CMT3
LM358
TL431CLP
TA7812S
TA7805S
LM2676
VIN
VOUT
GND
FB
ON/OFF
SB50-09
S5277J
D1NL20U*4
12V
GND-1
TX 85V
15V
GND-2
5V-2
5V-1
GND-P
FRQ
PW OFF CONT
PW ON/OFF
POWER SUPLLY BOARD NO.703A
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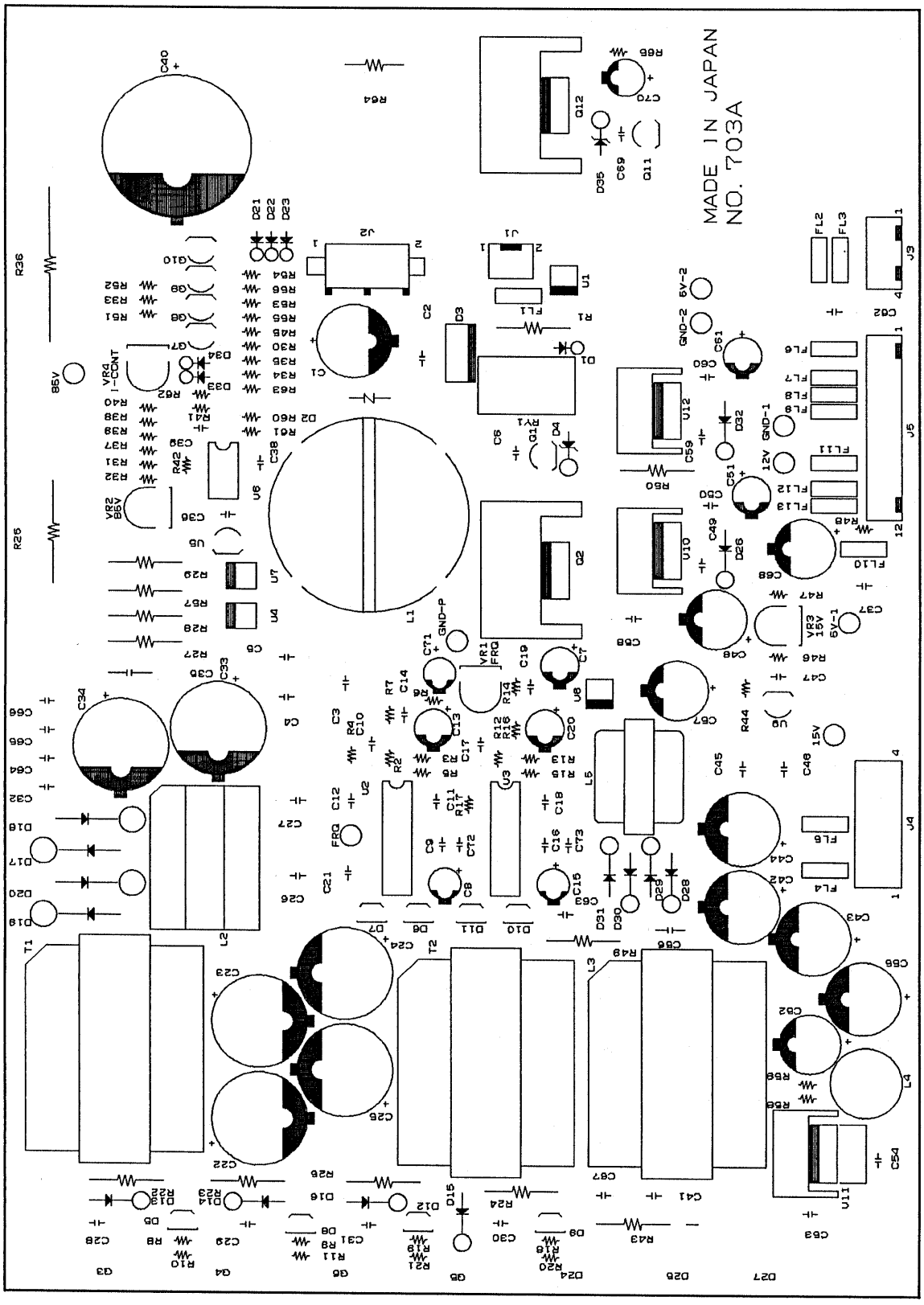
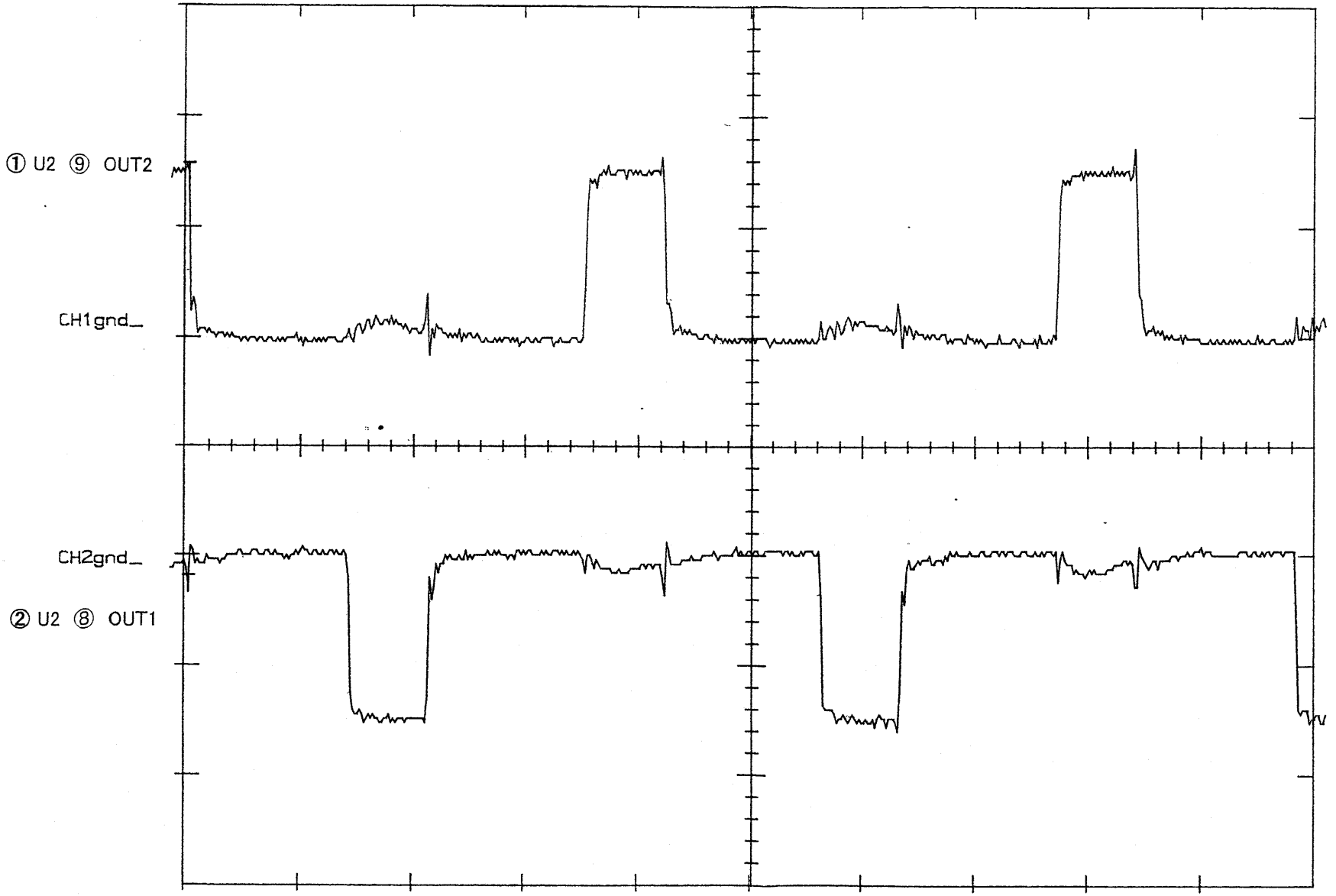
Rev 1
Date: Thursday, April 24, 2003
Sheet 1 of 1

No. 703A
シルク図



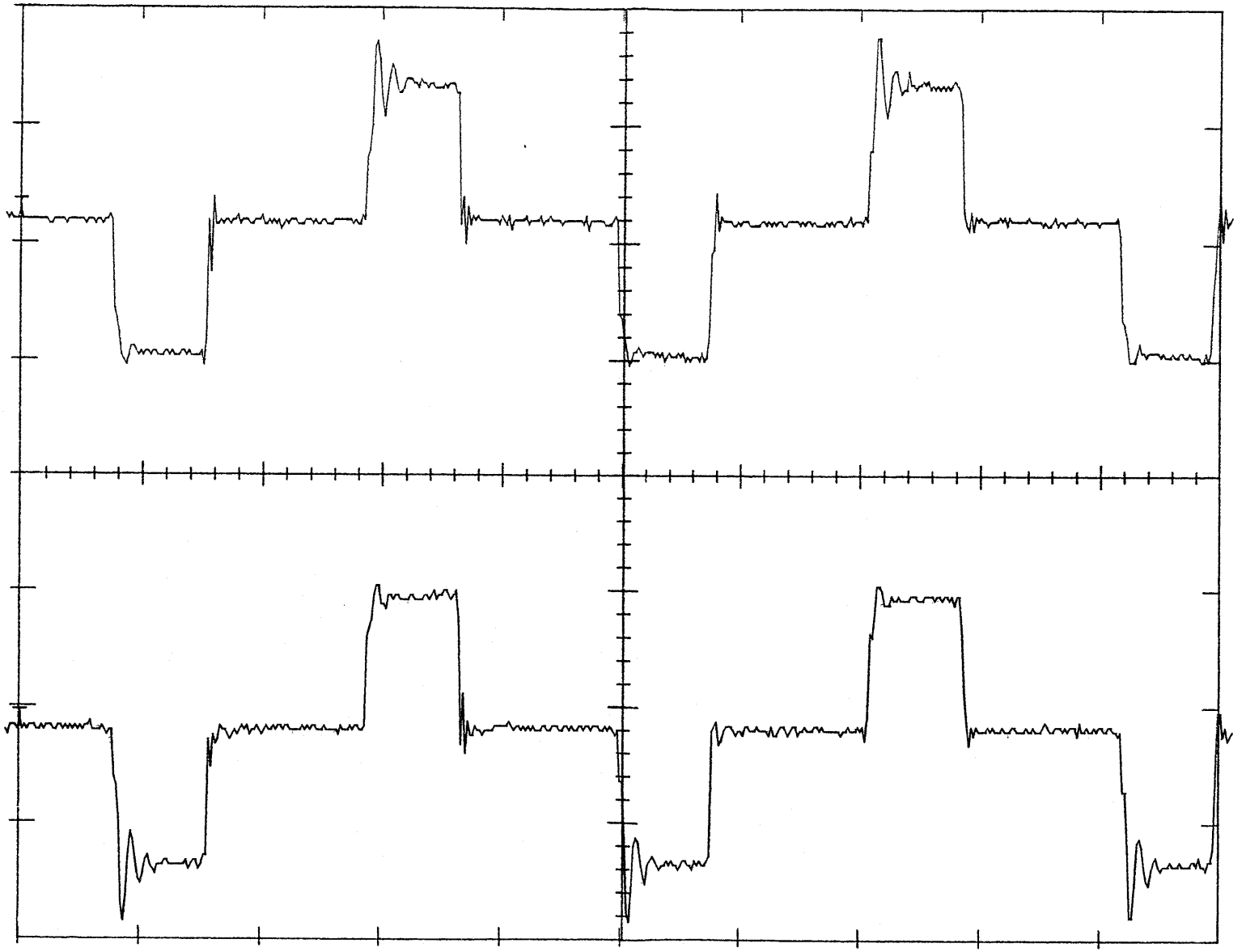
CH1 5V A 2µs 2.89 V VERT

CH2 5V



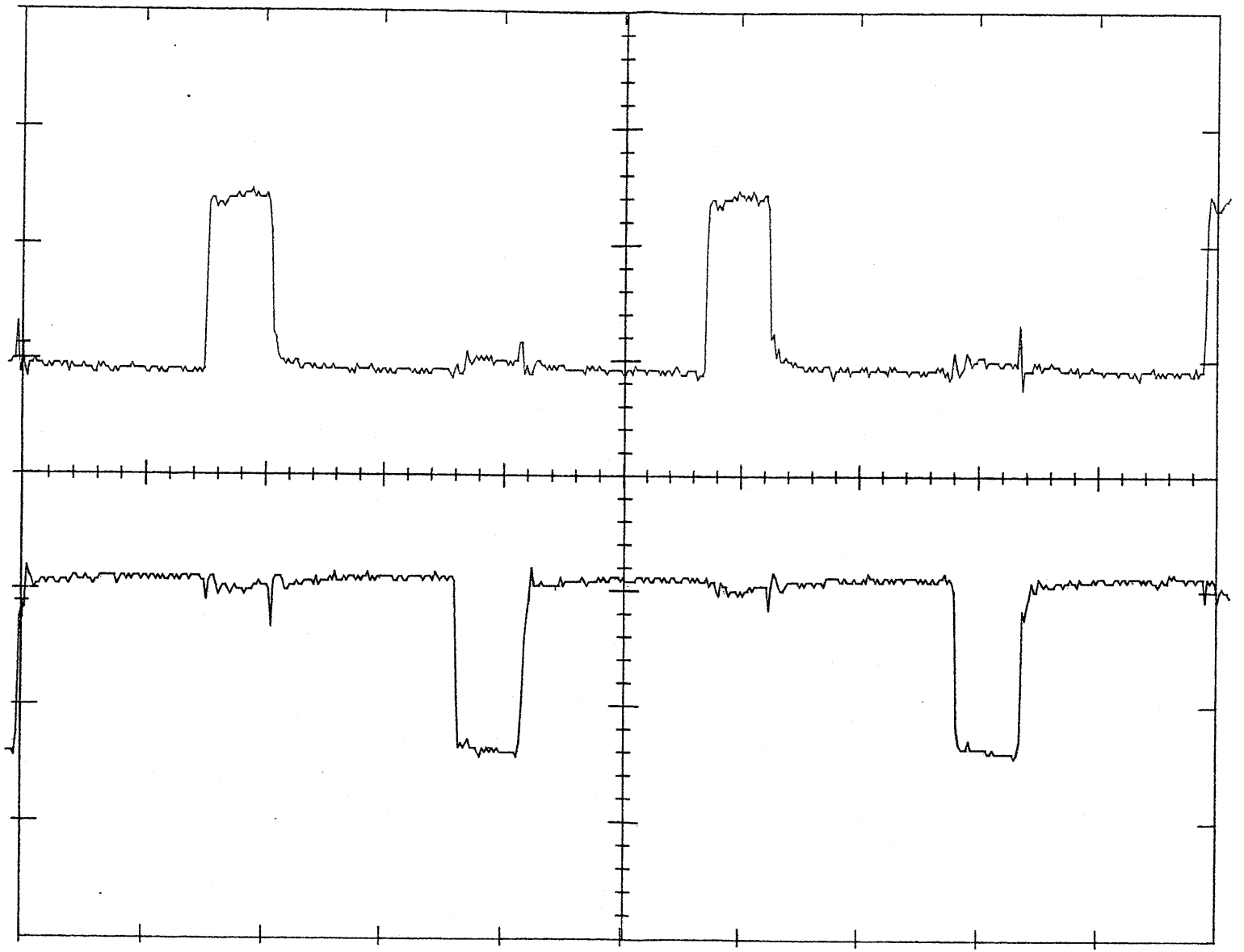
CH1 20V A 2µs 3.13 V VERT

CH2↓ 20V

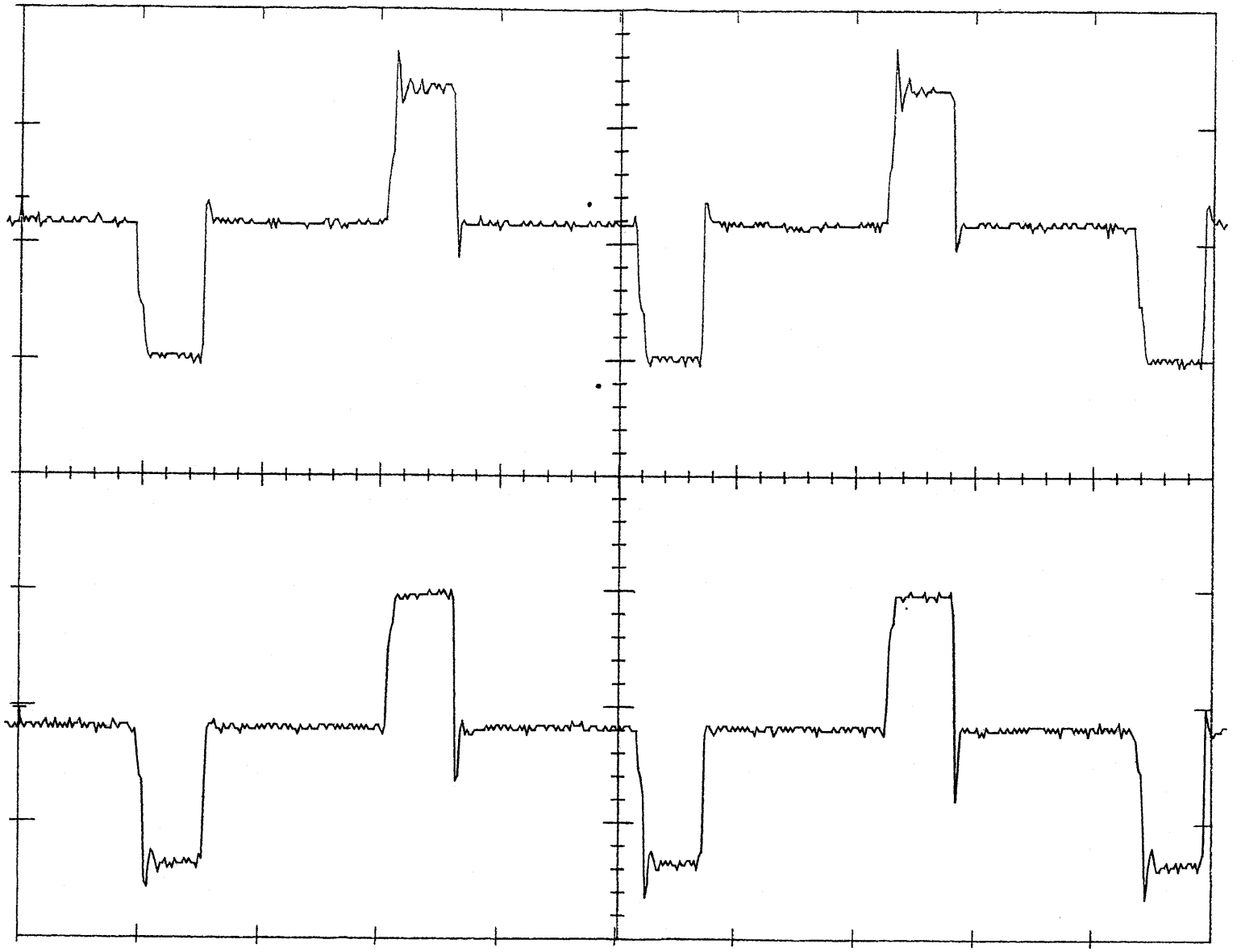


CH1 5V A 2µs 3.20 V VERT

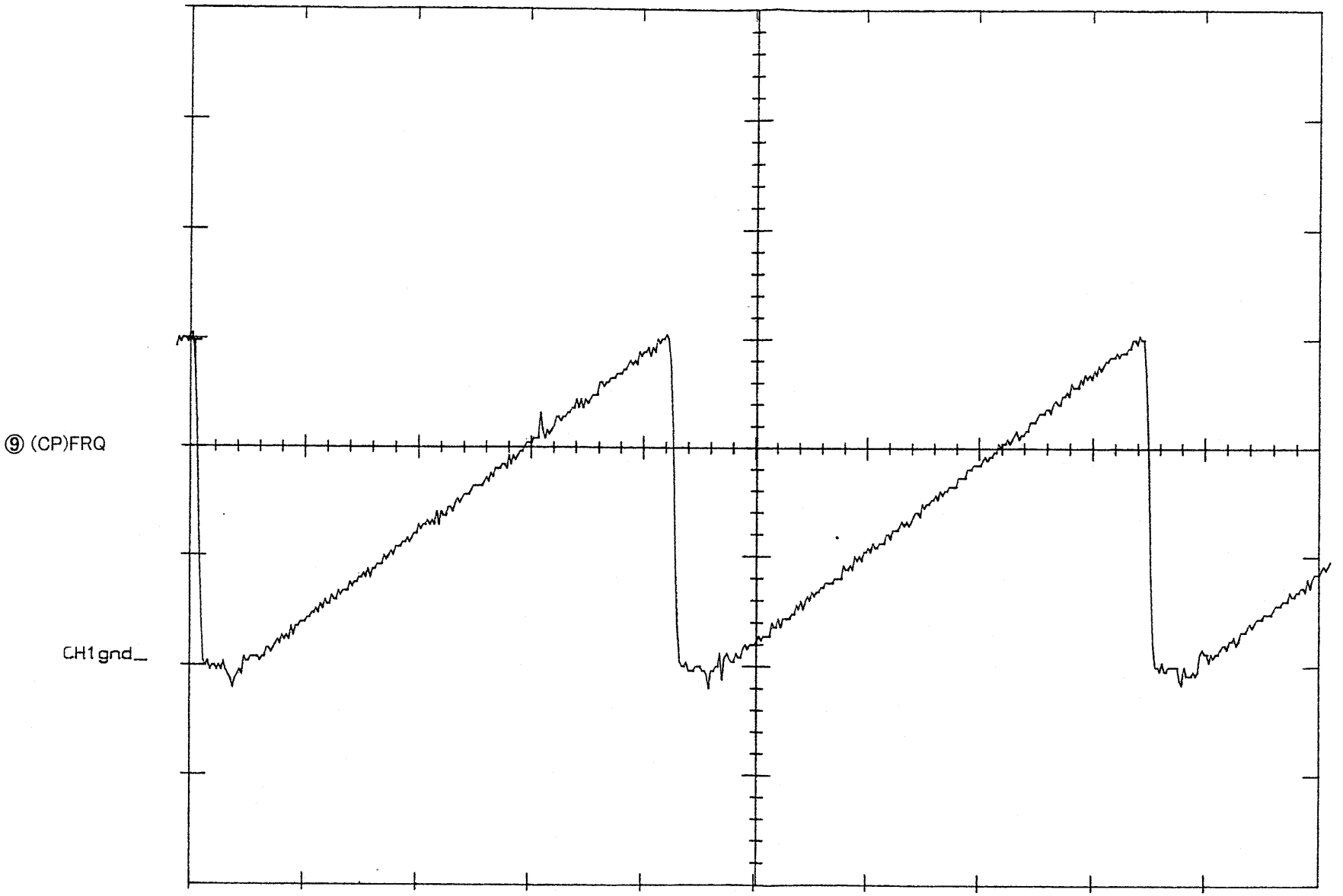
CH2 5V

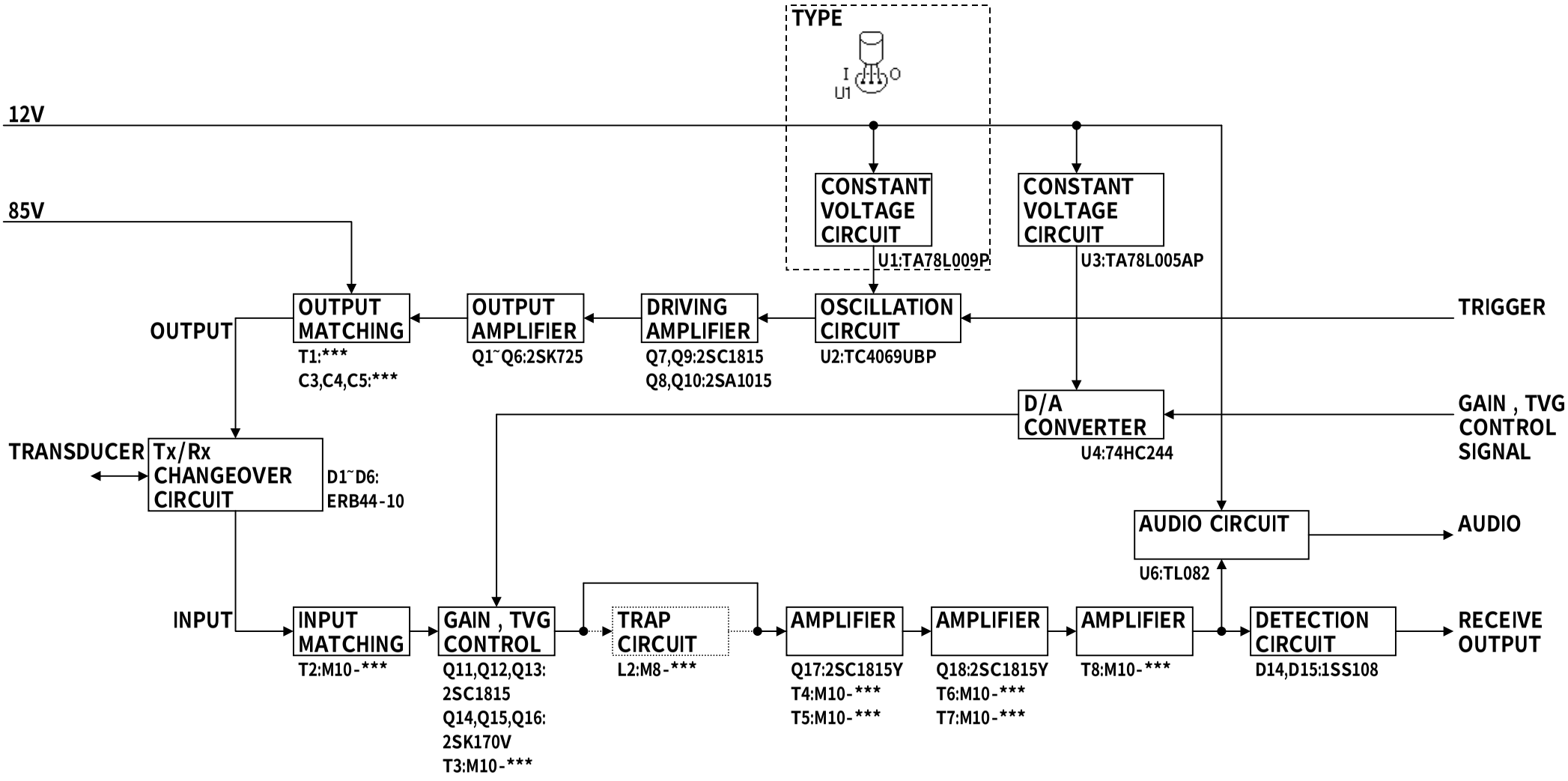


CH1 20V A 2μs 3.13 V VERT
CH2 20V

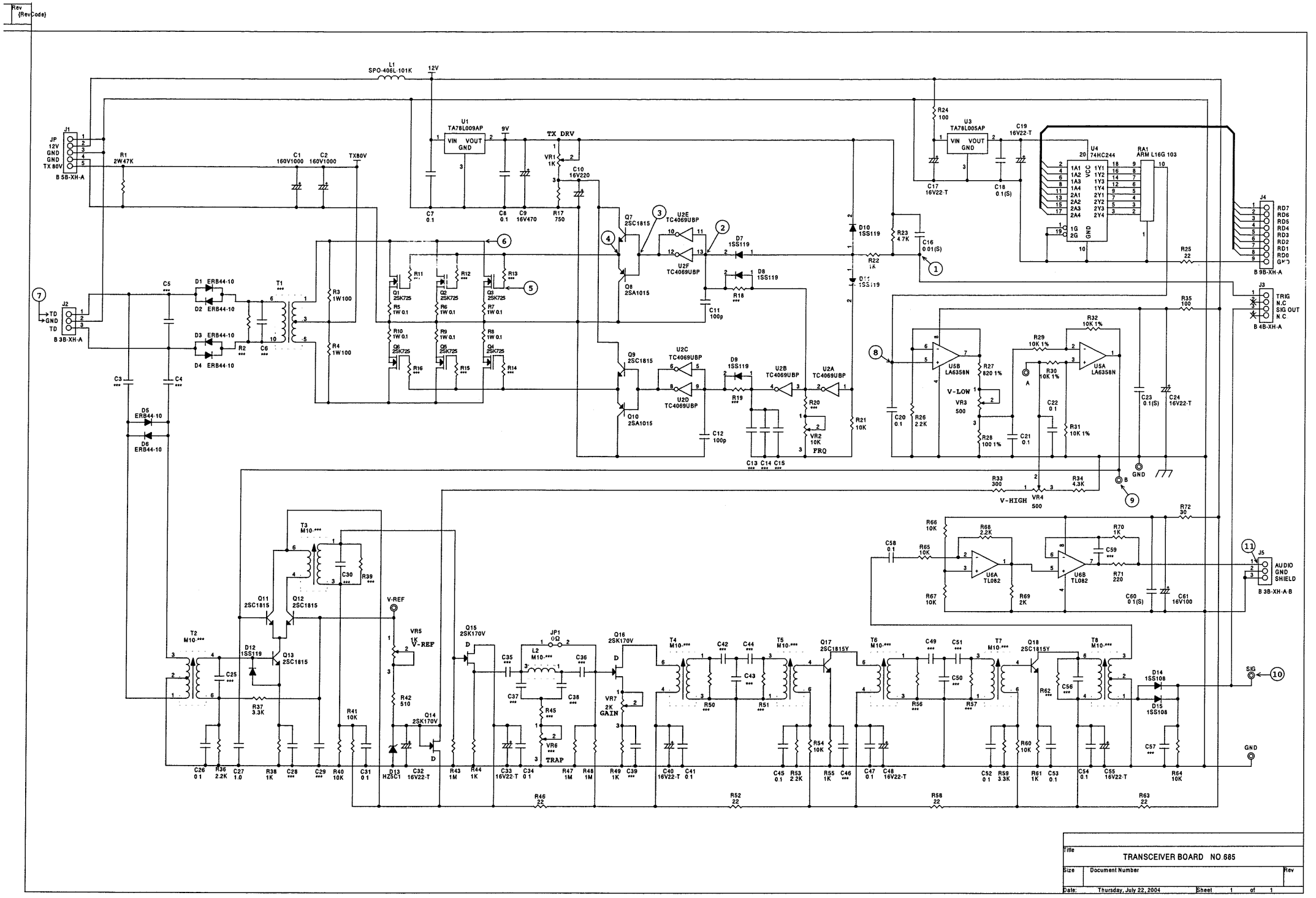


CH1 1V A 1µs 2.89 V VERT





NO.685 TRANSCEIVER BOARD


Rev
{RevCode}
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SPO-406L-101K
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J1
JP
12V
GND
GND
TX 80V
B 5B-XH-A
R1
2W47K
C1
160V1000
C2
160V1000
TX80V
U1
TA78L009AP
VIN VOUT
GND
9V
TX DRV
VR1
1K
C10
16V220
C7
0.1
C8
0.1
C9
16V470
R17
750
U3
TA78L005AP
C19
16V22-T
C17
16V22-T
C18
0.1(S)
R24
100
U4
74HC244
RA1
ARM L16G 103
J4
RD7
RD6
RD5
RD4
RD3
RD2
RD1
RD0
GND
B 9B-XH-A
R25
22
Q7
2SC1815
Q8
2SA1015
U2E
TC4069UBP
U2F
TC4069UBP
D7
1SS119
D8
1SS119
D10
1SS119
D11
1SS119
R23
4.7K
C16
0.01(S)
R22
1K
R18
C11
100p
J2
TD
GND
TD
B 3B-XH-A
C5
D1 ERB44-10
D2 ERB44-10
D3 ERB44-10
D4 ERB44-10
T1
R2
C6
R3
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R4
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Q1
2SK725
Q2
2SK725
Q3
2SK725
Q4
2SK725
Q5
2SK725
Q6
2SK725
R5
1W 0.1
R6
1W 0.1
R7
1W 0.1
R8
1W 0.1
R9
1W 0.1
R10
1W 0.1
R11
R12
R13
R14
R15
R16
C3
C4
D5
ERB44-10
D6
ERB44-10
Q9
2SC1815
Q10
2SA1015
U2C
TC4069UBP
U2D
TC4069UBP
D9
1SS119
U2B
TC4069UBP
U2A
TC4069UBP
R19
R20
VR2
10K
FRQ
R21
10K
C12
100p
C13 C14 C15
J3
TRIG
N.C
SIG OUT
N.C
B 4B-XH-A
R35
100
R32
10K 1%
R29
10K 1%
R30
10K 1%
R27
820 1%
R28
100 1%
R31
10K 1%
U5B
LA6358N
U5A
LA6358N
V-LOW
VR3
500
C20
0.1
R26
2.2K
C21
0.1
C22
0.1
C23
0.1(S)
C24
16V22-T
GND
B
R33
300
R34
4.3K
V-HIGH
VR4
500
R72
30
R66
10K
R68
2.2K
R70
1K
C58
0.1
R65
10K
C59
U6A
TL082
U6B
TL082
R71
220
R67
10K
R69
2K
C60
0.1(S)
C61
16V100
J5
AUDIO
GND
SHIELD
B 3B-XH-A-B
T3
M10-***
C30
R39
Q11
2SC1815
Q12
2SC1815
V-REF
T2
M10-***
D12
1SS119
Q13
2SC1815
C25
R37
3.3K
VR5
1K
V-REF
R42
510
Q14
2SK170V
R41
10K
Q15
2SK170V
JP1
0Ω
L2
M10-***
C35
C36
C37
C38
R45
VR6
TRAP
Q16
2SK170V
VR7
2K
GAIN
T4
M10-***
T5
M10-***
Q17
2SC1815Y
T6
M10-***
T7
M10-***
Q18
2SC1815Y
T8
M10-***
C42
C43
C44
C49
C50
C51
C56
R50
R51
R56
R57
R62
D14
1SS108
D15
1SS108
SIG
GND
C26
0.1
R36
2.2K
C27
1.0
R38
1K
C28
C29
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C31
0.1
D13
HZ5C1
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16V22-T
R43
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C33
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C34
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R47
1M
R48
1M
R49
1K
C39
C40
16V22-T
C41
0.1
C45
0.1
R53
2.2K
R54
10K
R55
1K
C46
C47
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C48
16V22-T
C52
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R59
3.3K
R60
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R61
1K
C53
0.1
C54
0.1
C55
16V22-T
C57
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R46
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R52
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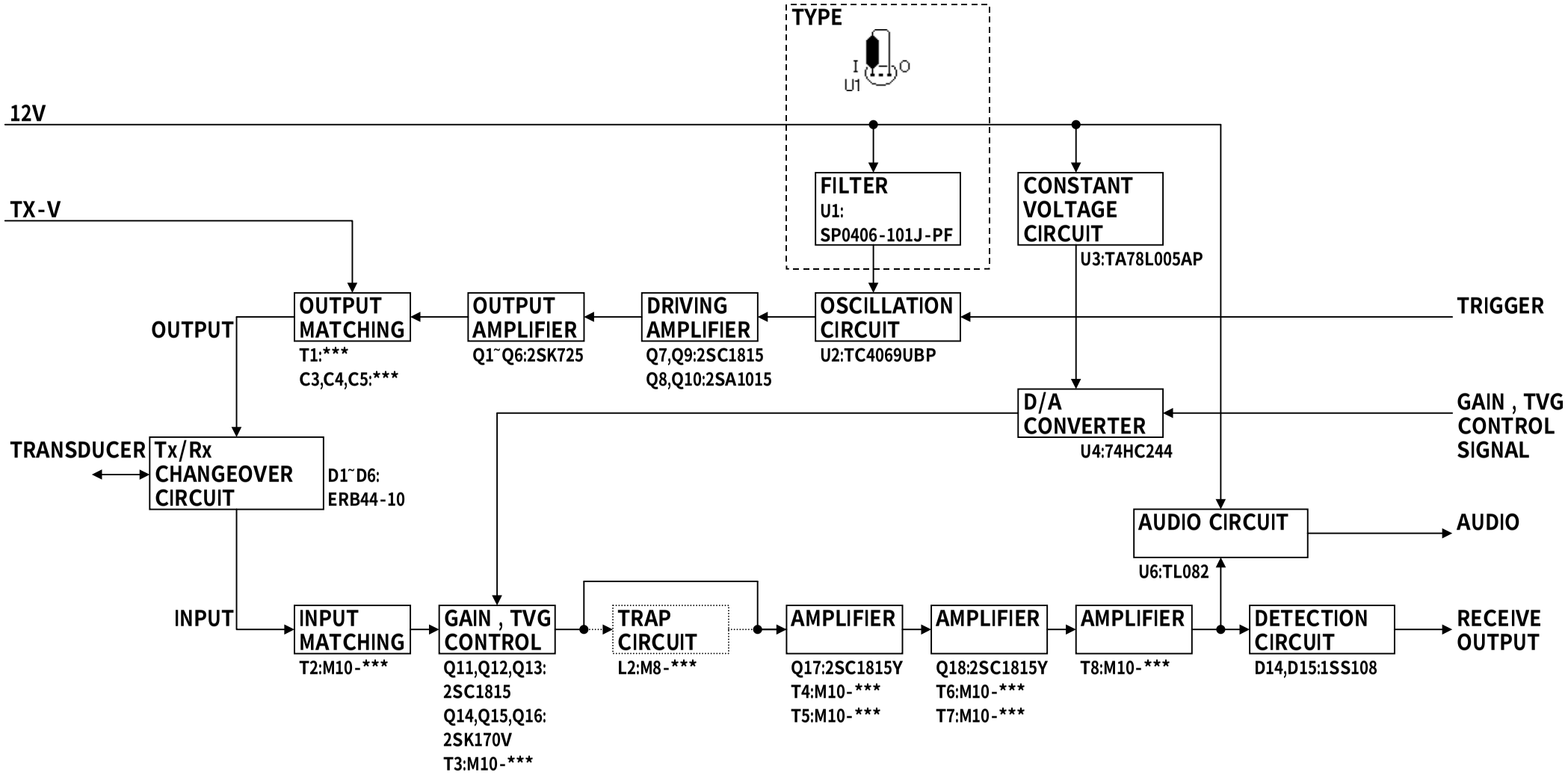
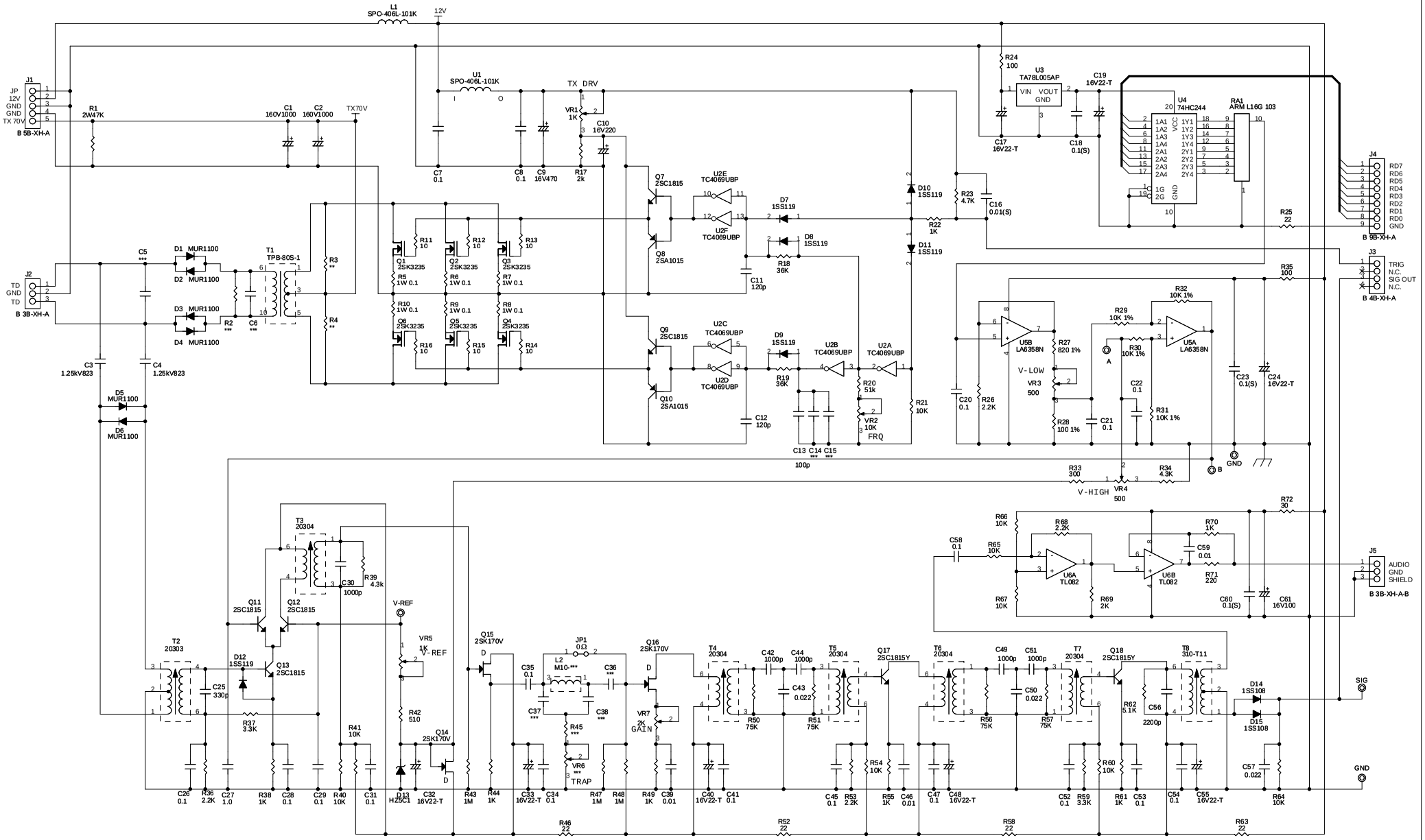
R58
22
R63
22
Title
TRANSCEIVER BOARD NO.685
Size
Document Number
Rev
Date:
Thursday, July 22, 2004
Sheet
1
of
1



NO.685 TRANSCEIVER BOARD



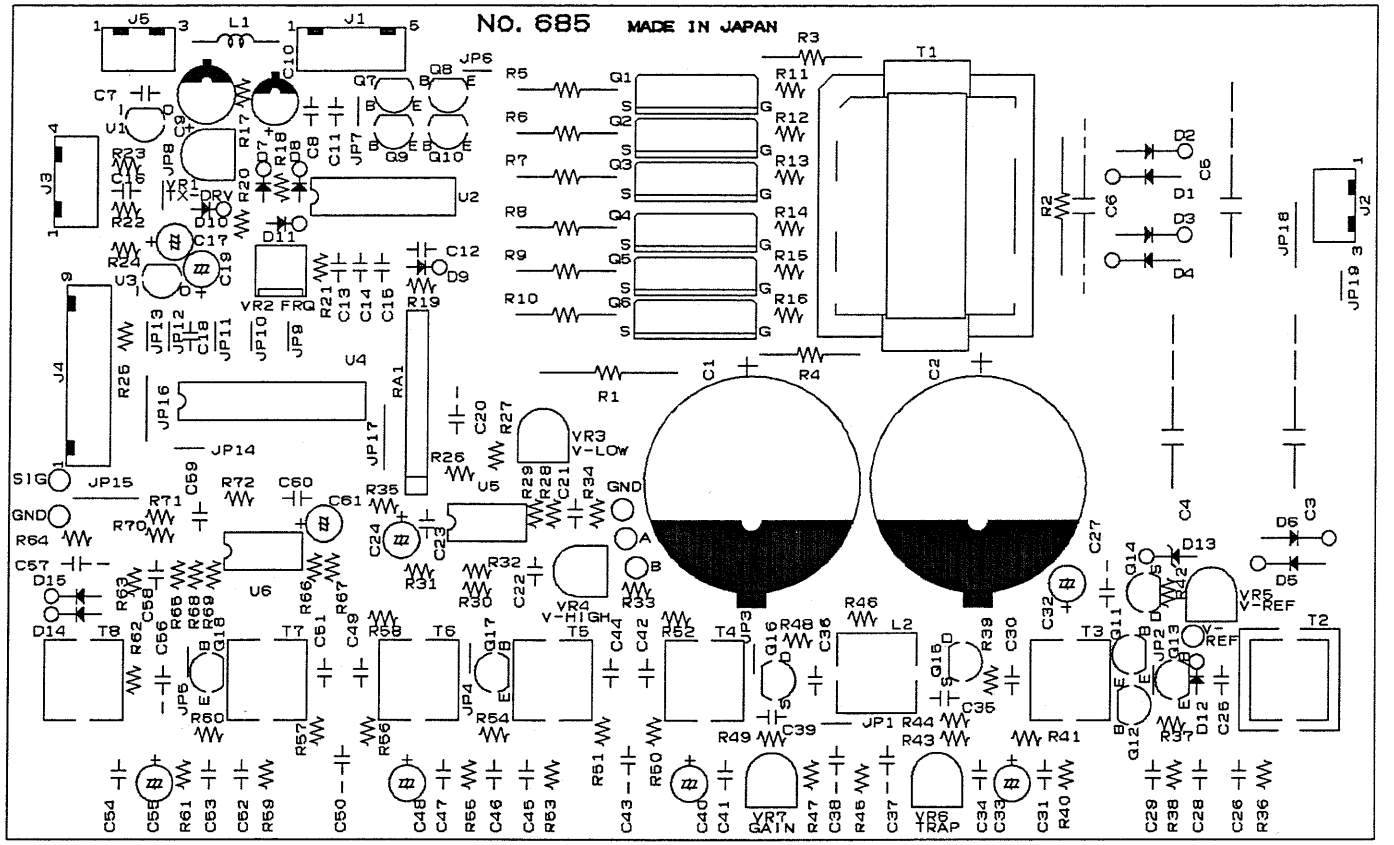
記号	変更内容	改訂番号	日付	備考
	電圧 TX85V→TX70V	G10-020 G09-062	2010/02/03 2009/08/25	
	電圧 TX85V→TX75V	既時G09-003 既時G09-002	2009/06/03 2009/05/19	適用 JM,AMのみ
	U1／TA78L009AP(F)→SPO406-101J-PF, T1／TPB-80S→TPB-80S-1, R3・R4／100Ω削除, R17／750Ω→2kΩ, R18・R19／3.3kΩ→36kΩ	G08-043	2008/05/12	
	D1～D6 ERB44-10→MUR1100EG			

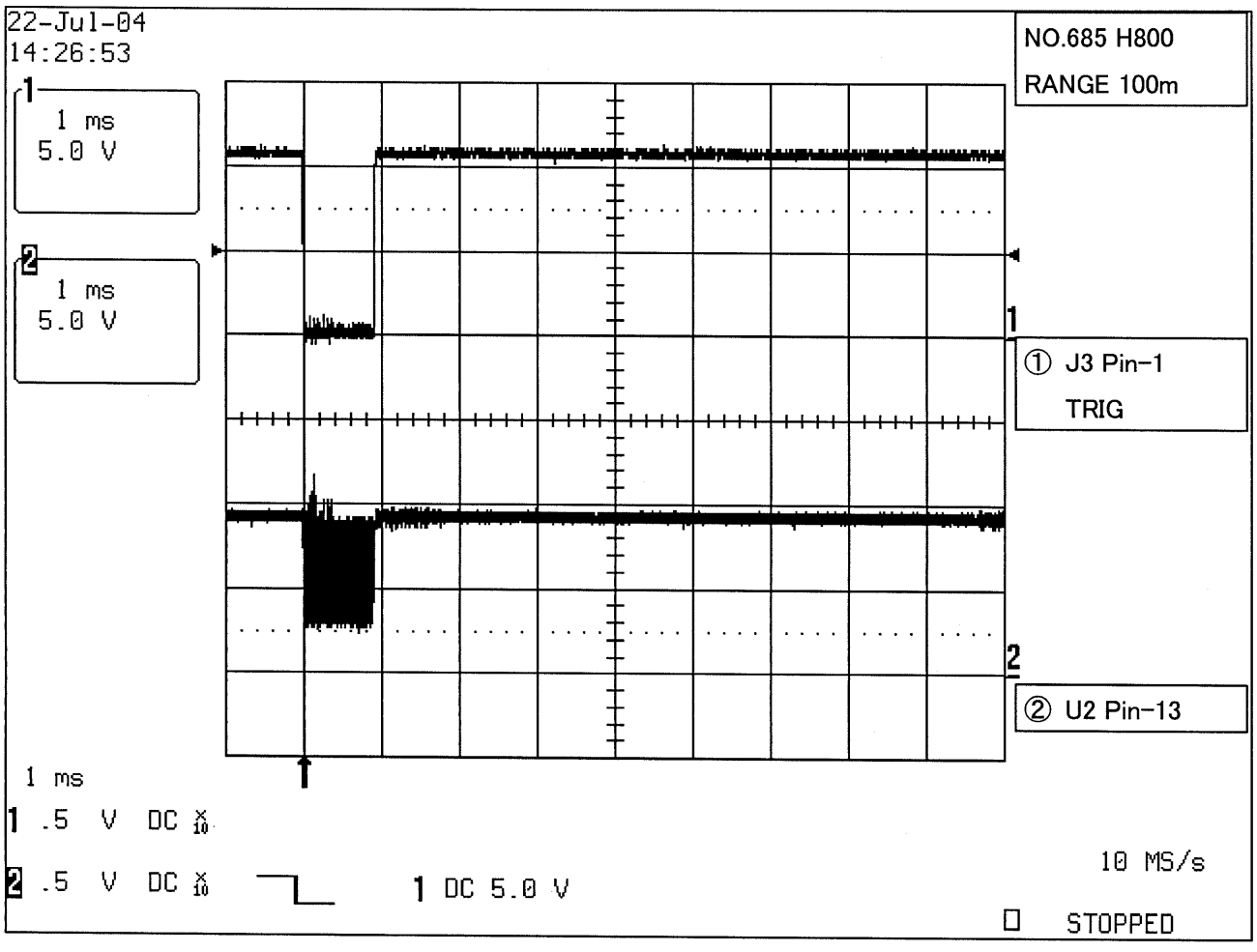
SUZUKI FISH FINDER CO.,LTD

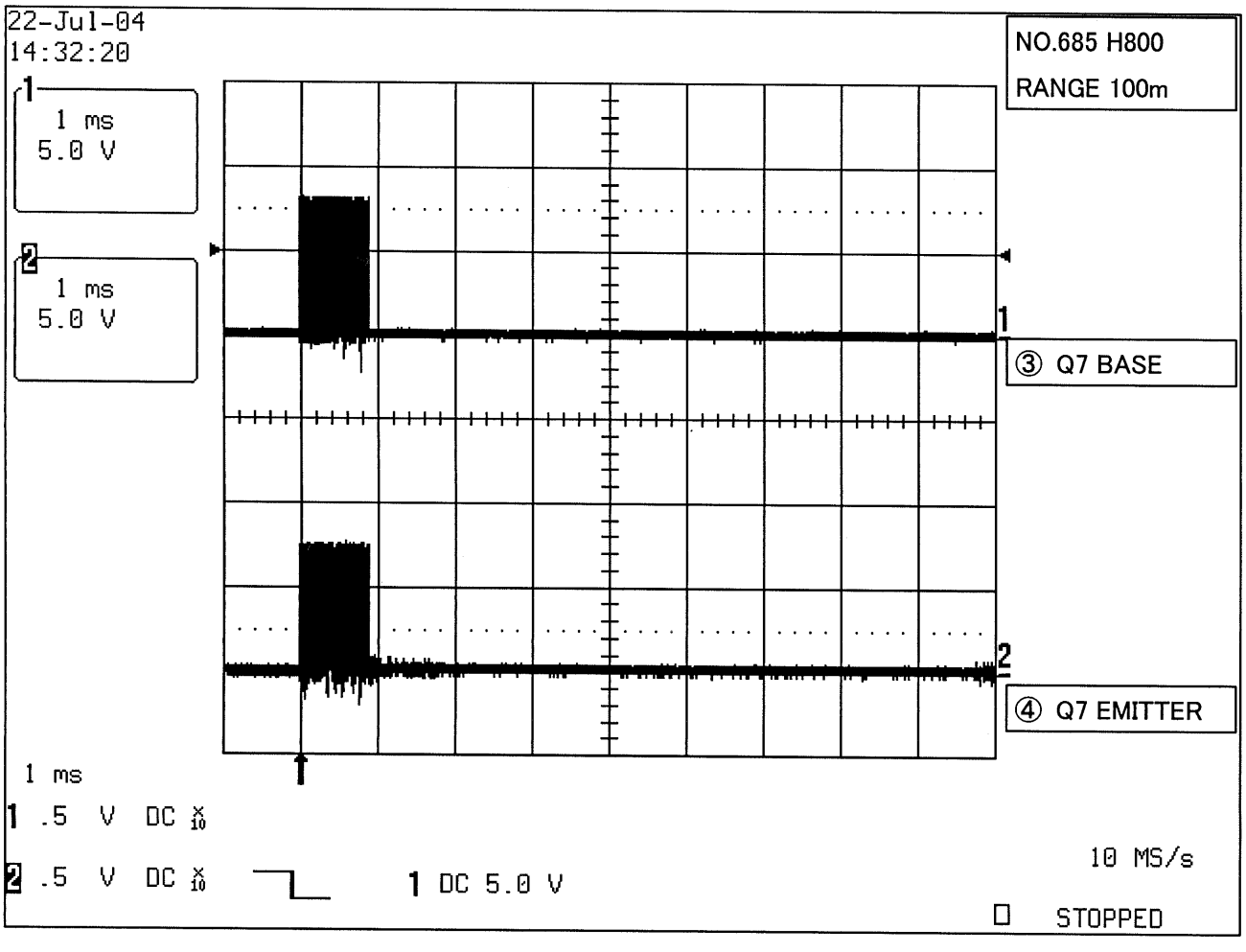
Title: S-1800 TRANSCEIVER BOARD NO.685 H800

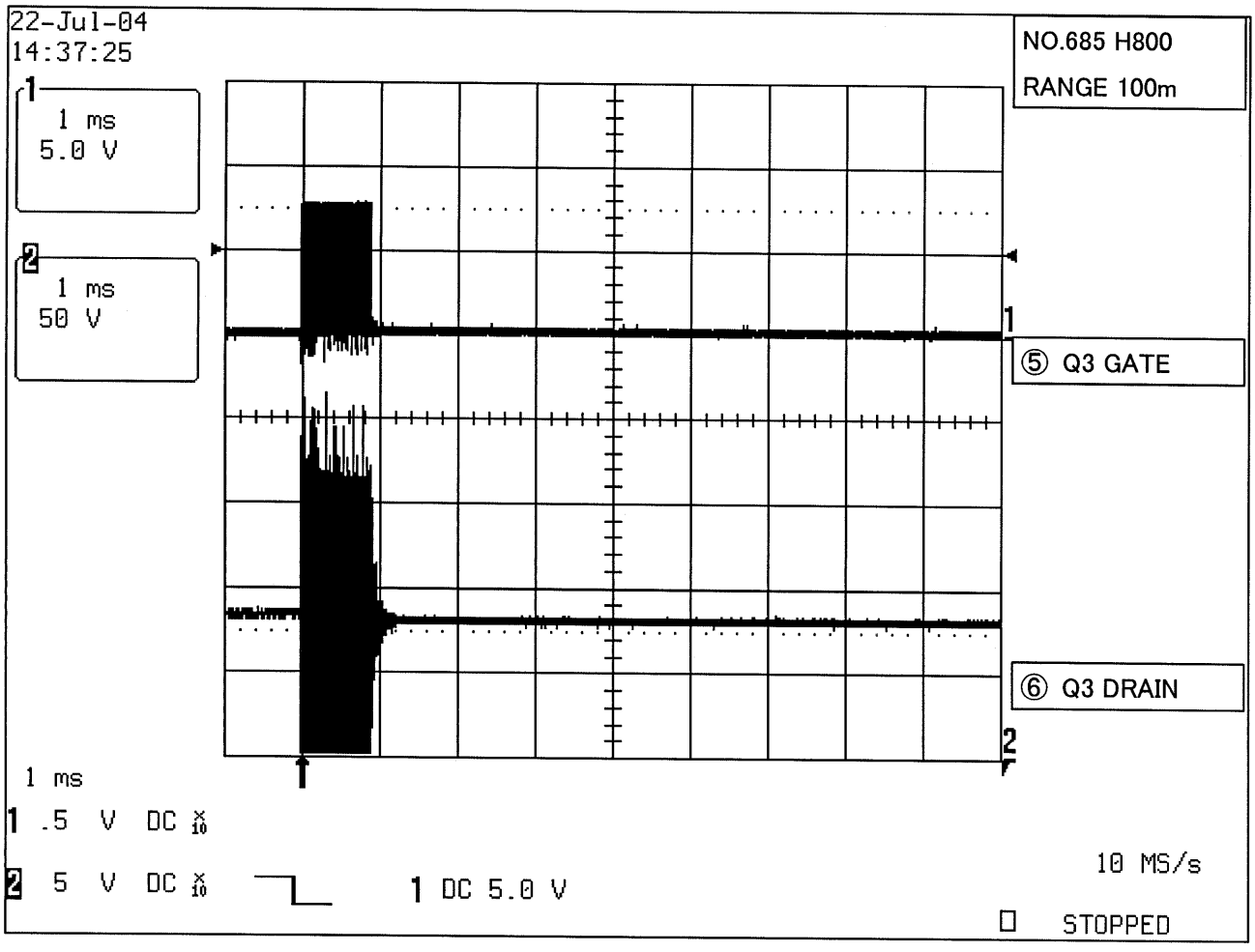
Size | Document Number | Rev 3

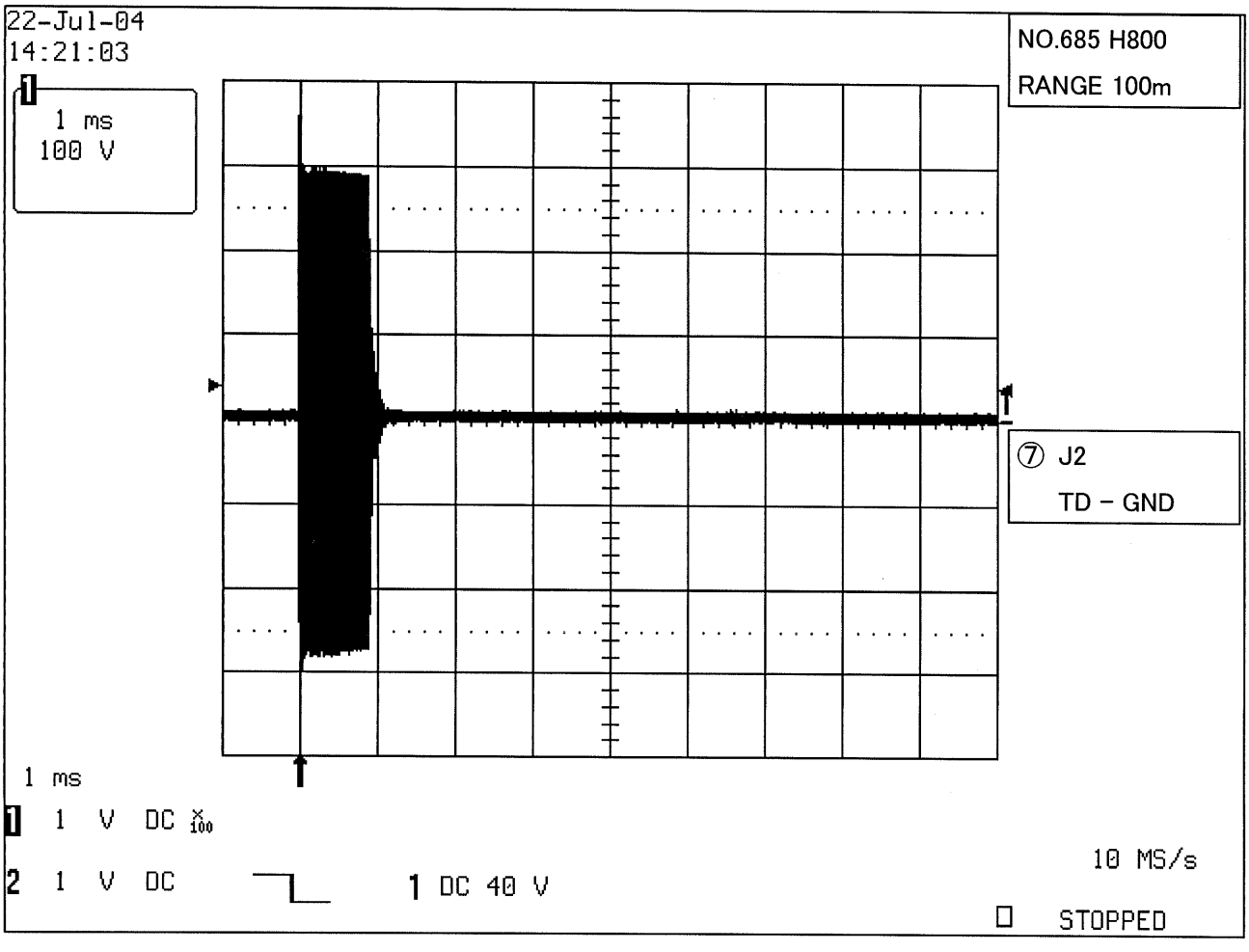
Date: Wednesday, June 30, 2010 Sheet 1 of 1

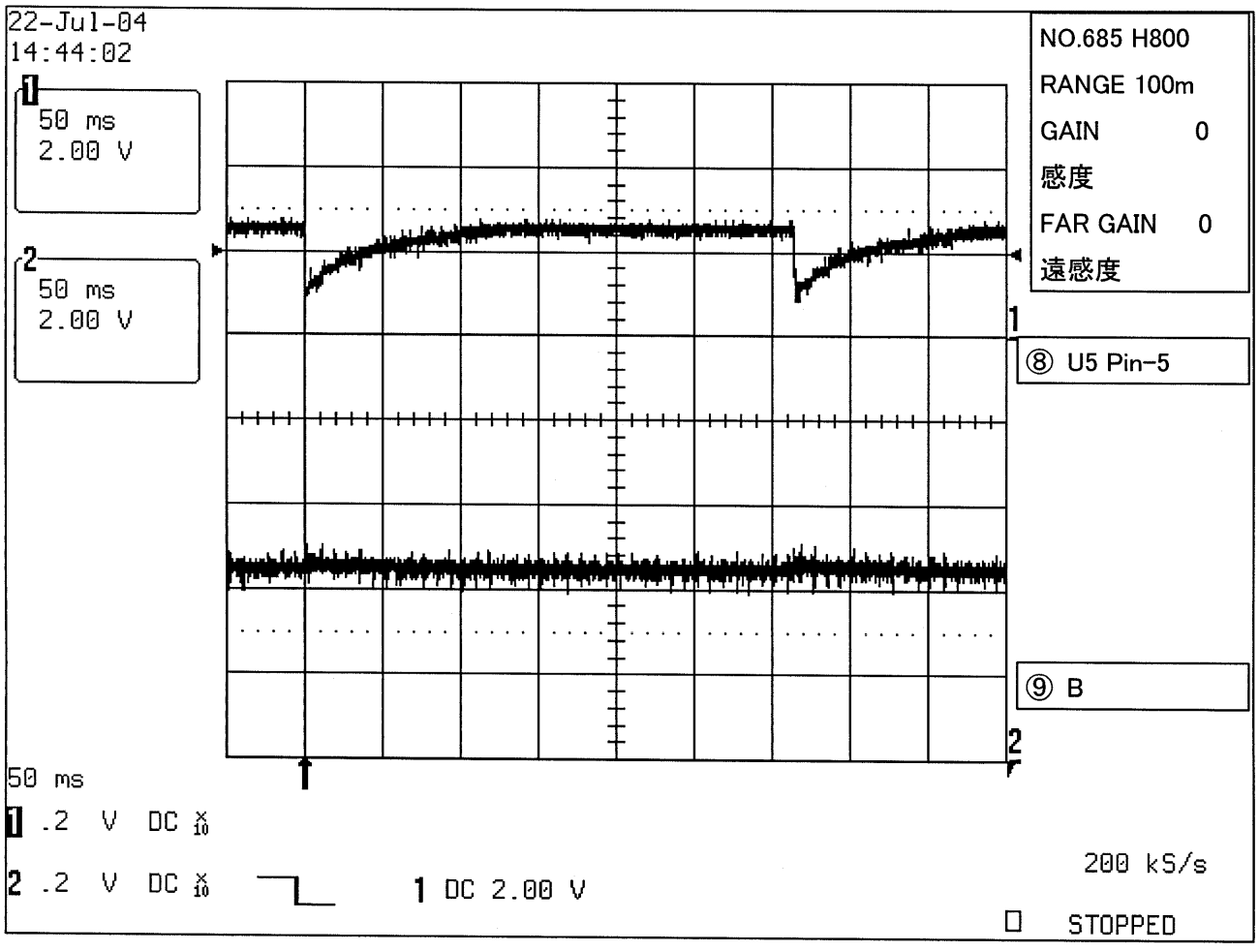

NO. 685
MADE IN JAPAN
J5
L1
J1
C10
JP6
Q8
Q7
C7
C9
V1
R17
JP8
VR1
TX-DRV
R23
R20
D7
R18
C8
C11
JP7
Q9
Q10
J3
R22
D10
U2
C17
C19
D11
R24
U3
VR2 FRQ
C12
D9
R21
C13
C14
C15
R19
JP13
JP12
C18
JP11
JP10
JP9
J4
R25
U4
JP16
RA1
JP17
C20
R27
VR3
V-LOW
JP14
R26
U5
R29
R28
C21
R34
GND
SIG
JP15
C59
R72
C60
C61
R35
C24
C23
R71
R70
R64
GND
C57
R63
C58
R65
R68
R69
U6
R66
R67
R32
R30
C22
VR4
V-HIGH
R33
A
B
D15
D14
T8
R62
C56
JP5
G18
T7
C51
R60
R57
C49
R58
T6
G17
JP4
T5
C44
R54
R51
C42
R52
T4
JP3
G16
R48
C36
L2
R46
G15
R39
C30
C35
R49
C39
JP1
R44
R43
R41
C32
T3
Q11
JP2
Q13
Q12
R37
D12
C26
T2
C54
C55
R61
C53
C52
R59
C50
C48
C47
R55
C46
C45
R53
R50
C40
C41
VR7
GAIN
R47
C38
R45
C37
VR6
TRAP
C34
C33
C31
R40
C29
R38
C28
C26
R36
R3
T1
R5
R6
R7
R8
R9
R10
Q1
Q2
Q3
Q4
Q5
Q6
R11
R12
R13
R14
R15
R16
R1
R4
C1
C2
R2
C6
D1
D3
D4
C5
JP18
J2
JP19
C4
C3
D6
D5
Q14
D13
R42
VR5
V-REF
V-REF

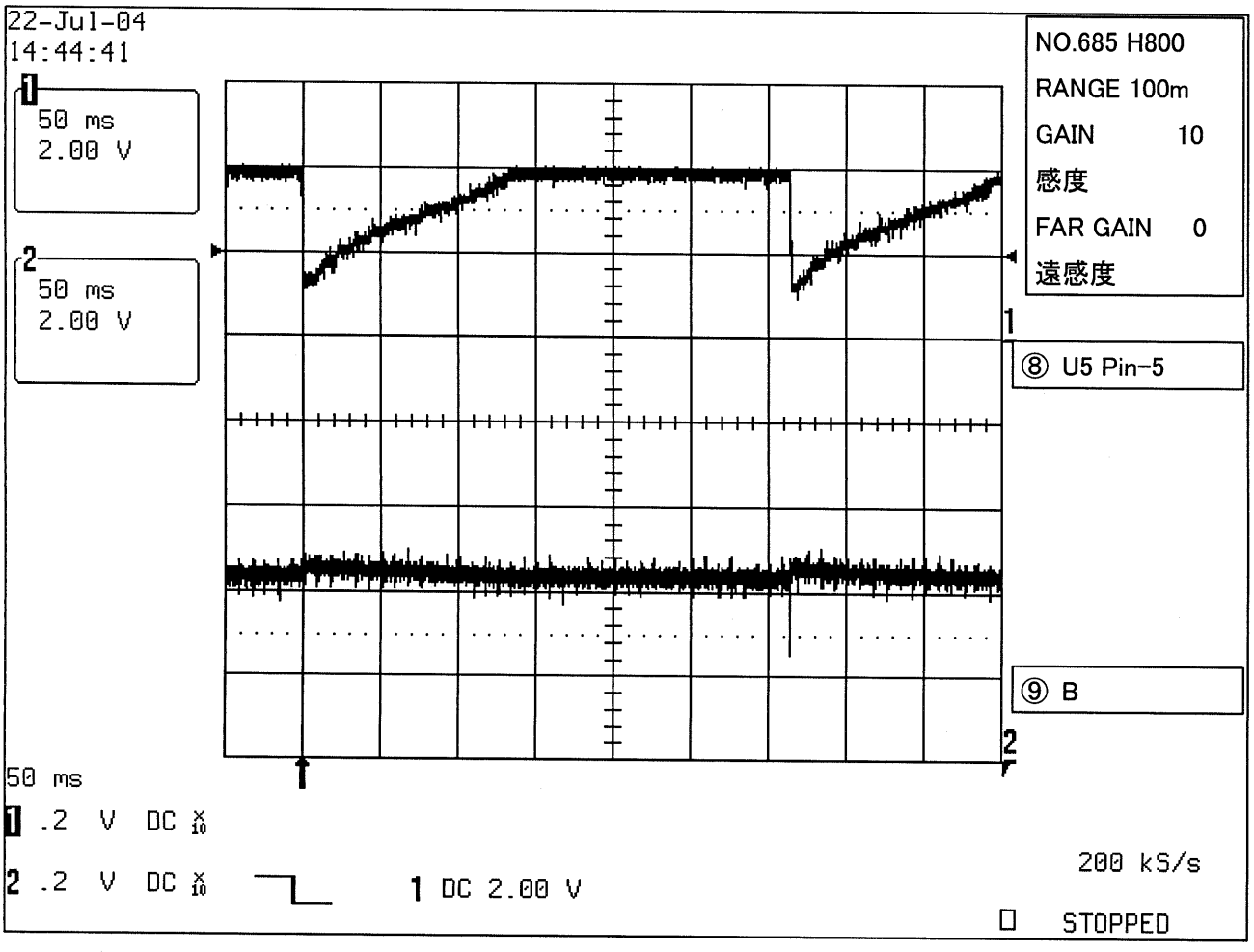

22-Jul-04
14:26:53
NO.685 H800
RANGE 100m
1 ms
5.0 V
1 ms
5.0 V
① J3 Pin-1
TRIG
② U2 Pin-13
1 ms
1 .5 V DC
2 .5 V DC
1 DC 5.0 V
10 MS/s
STOPPED

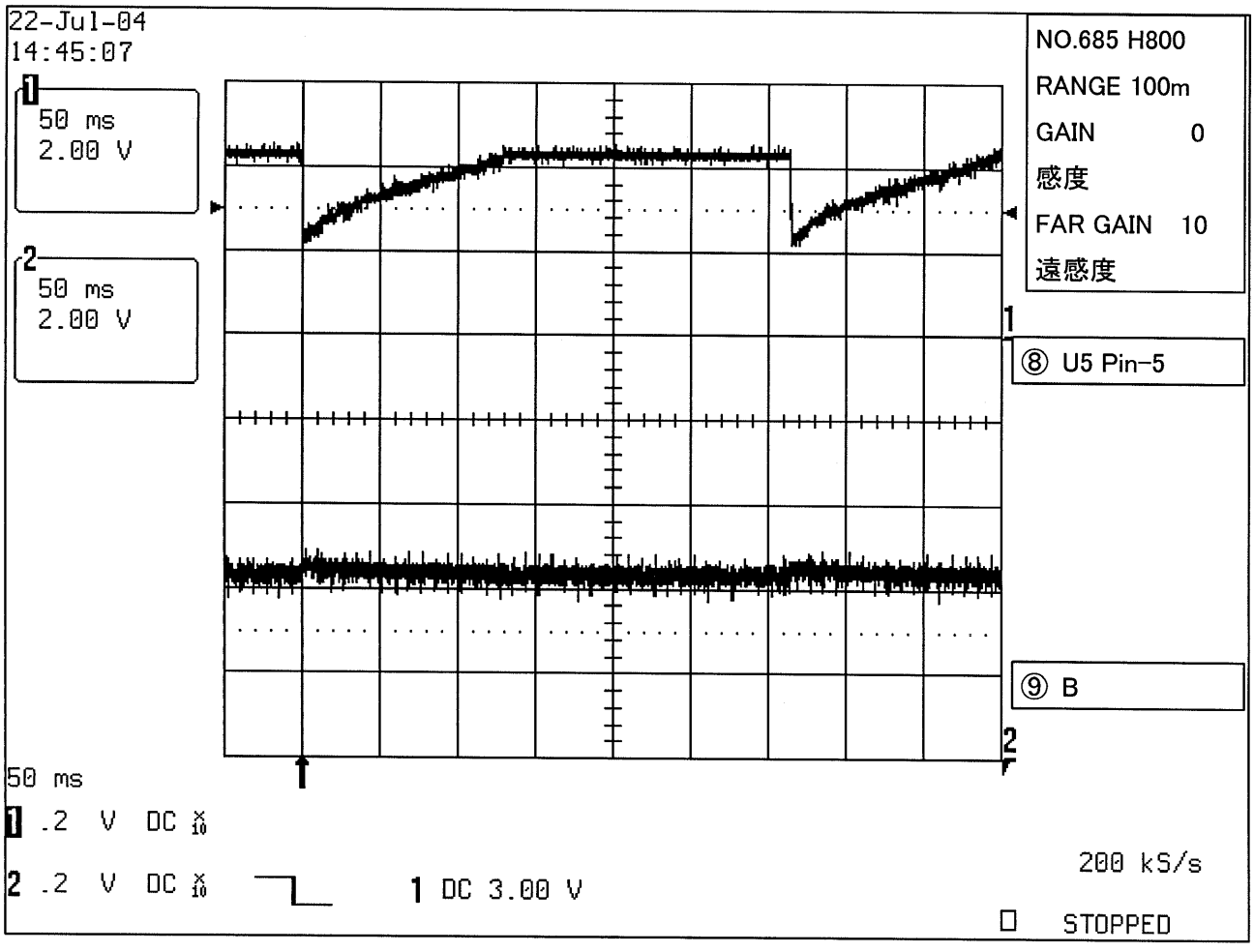

22-Jul-04
14:32:20
NO.685 H800
RANGE 100m
1 ms
5.0 V
1 ms
5.0 V
③ Q7 BASE
④ Q7 EMITTER
1 ms
1 .5 V DC
2 .5 V DC
1 DC 5.0 V
10 MS/s
STOPPED

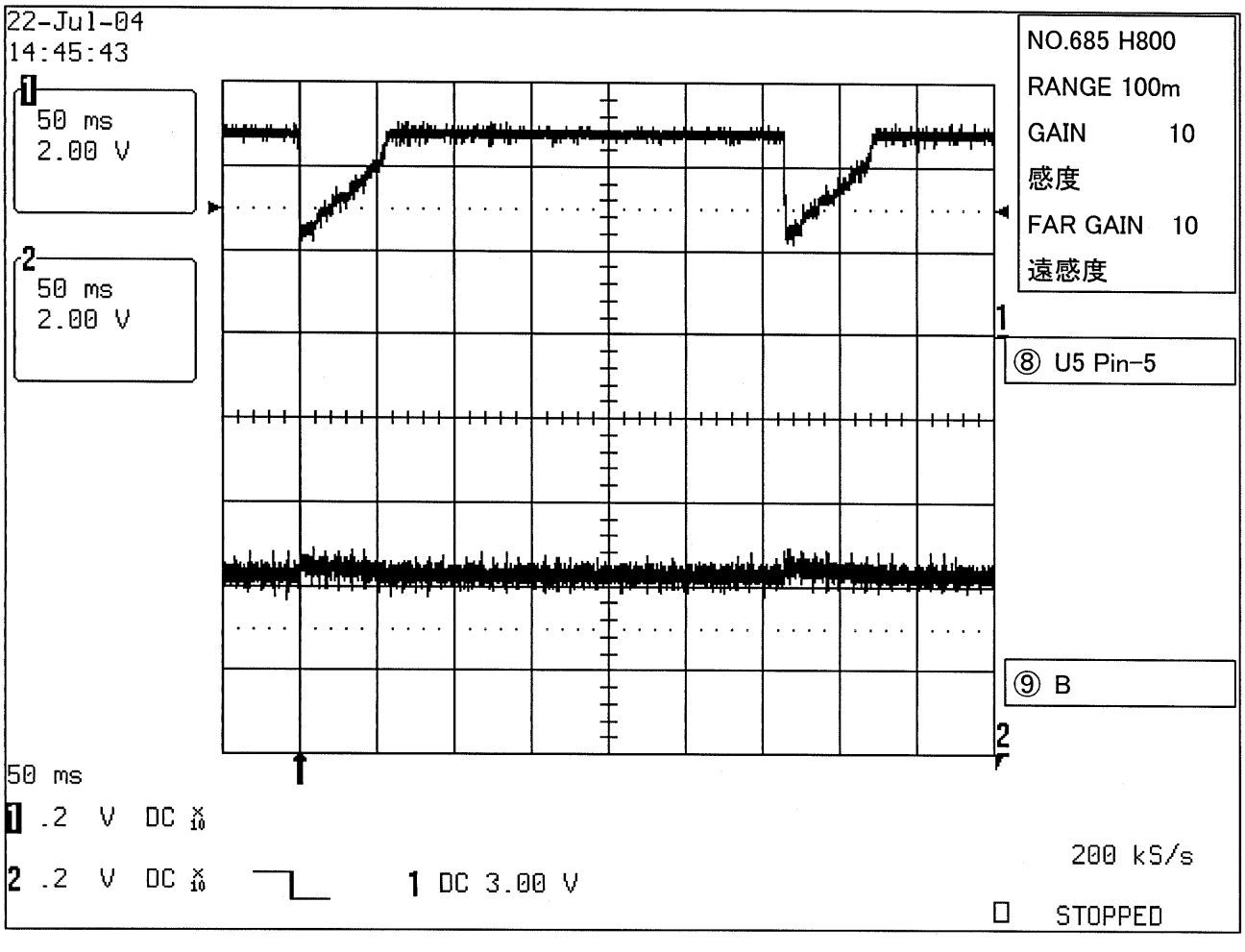

22-Jul-04
14:37:25
NO.685 H800
RANGE 100m
1 ms
5.0 V
1 ms
50 V
⑤ Q3 GATE
⑥ Q3 DRAIN
1 ms
1 .5 V DC
2 5 V DC
1 DC 5.0 V
10 MS/s
STOPPED

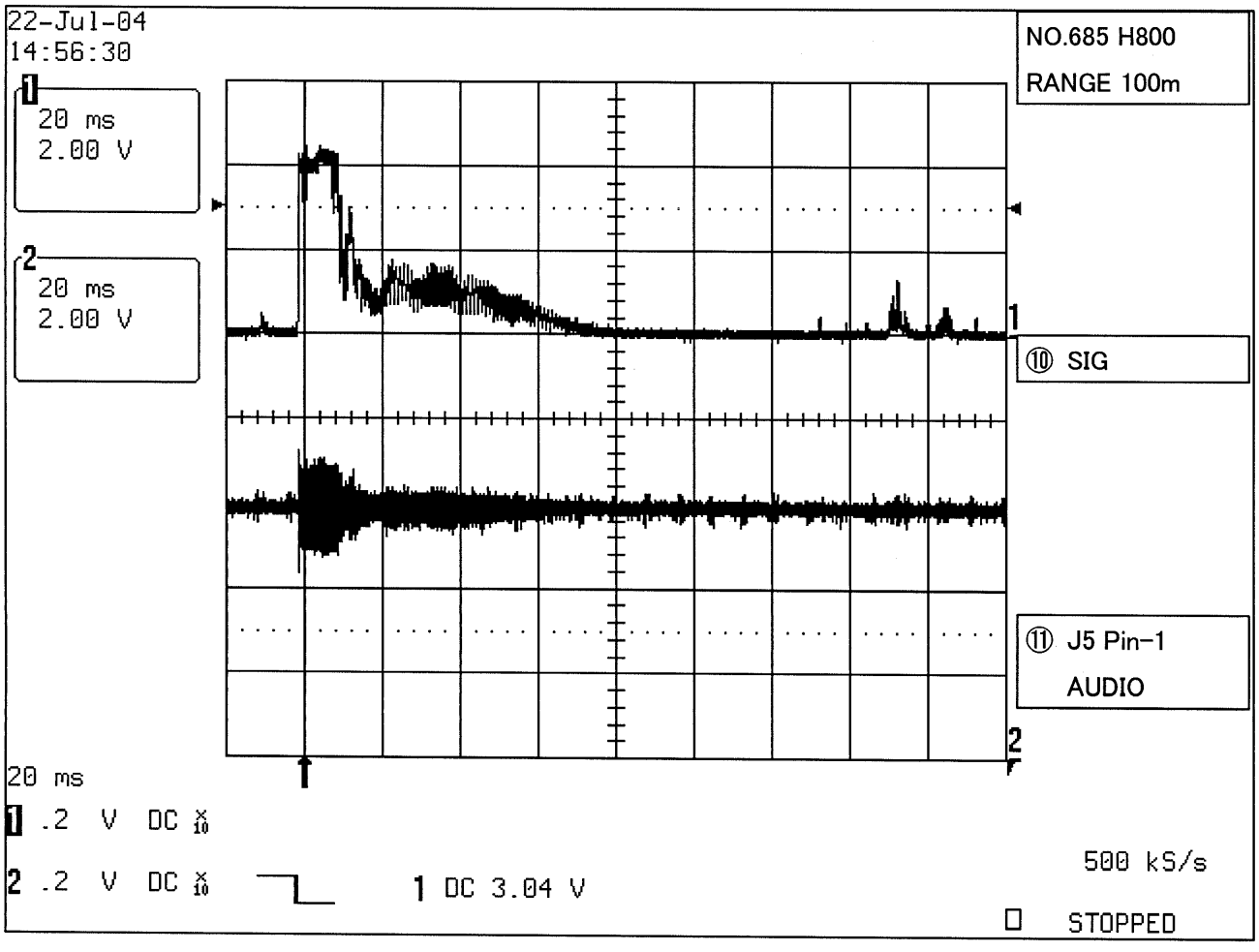

22-Jul-04
14:21:03
NO.685 H800
RANGE 100m
1 ms
100 V
⑦ J2
TD – GND
1 ms
1 1 V DC
2 1 V DC
1 DC 40 V
10 MS/s
STOPPED

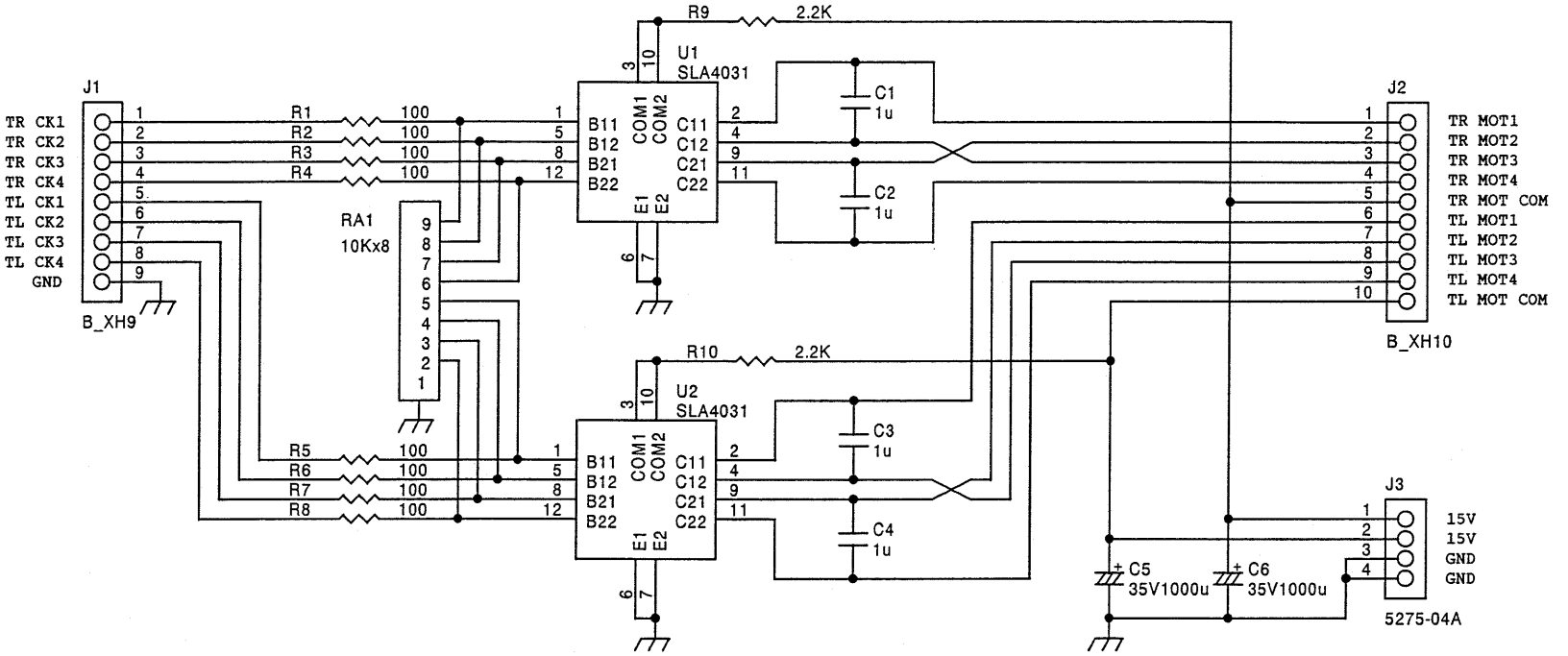

22-Jul-04
14:44:02
1
50 ms
2.00 V
2
50 ms
2.00 V
NO.685 H800
RANGE 100m
GAIN 0
感度
FAR GAIN 0
遠感度
1
⑧ U5 Pin-5
⑨ B
2
50 ms
1 .2 V DC
2 .2 V DC
1 DC 2.00 V
200 kS/s
STOPPED


22-Jul-04
14:44:41
1
50 ms
2.00 V
2
50 ms
2.00 V
NO.685 H800
RANGE 100m
GAIN 10
感度
FAR GAIN 0
遠感度
1
⑧ U5 Pin-5
⑨ B
2
50 ms
1 .2 V DC
2 .2 V DC
1 DC 2.00 V
200 kS/s
STOPPED

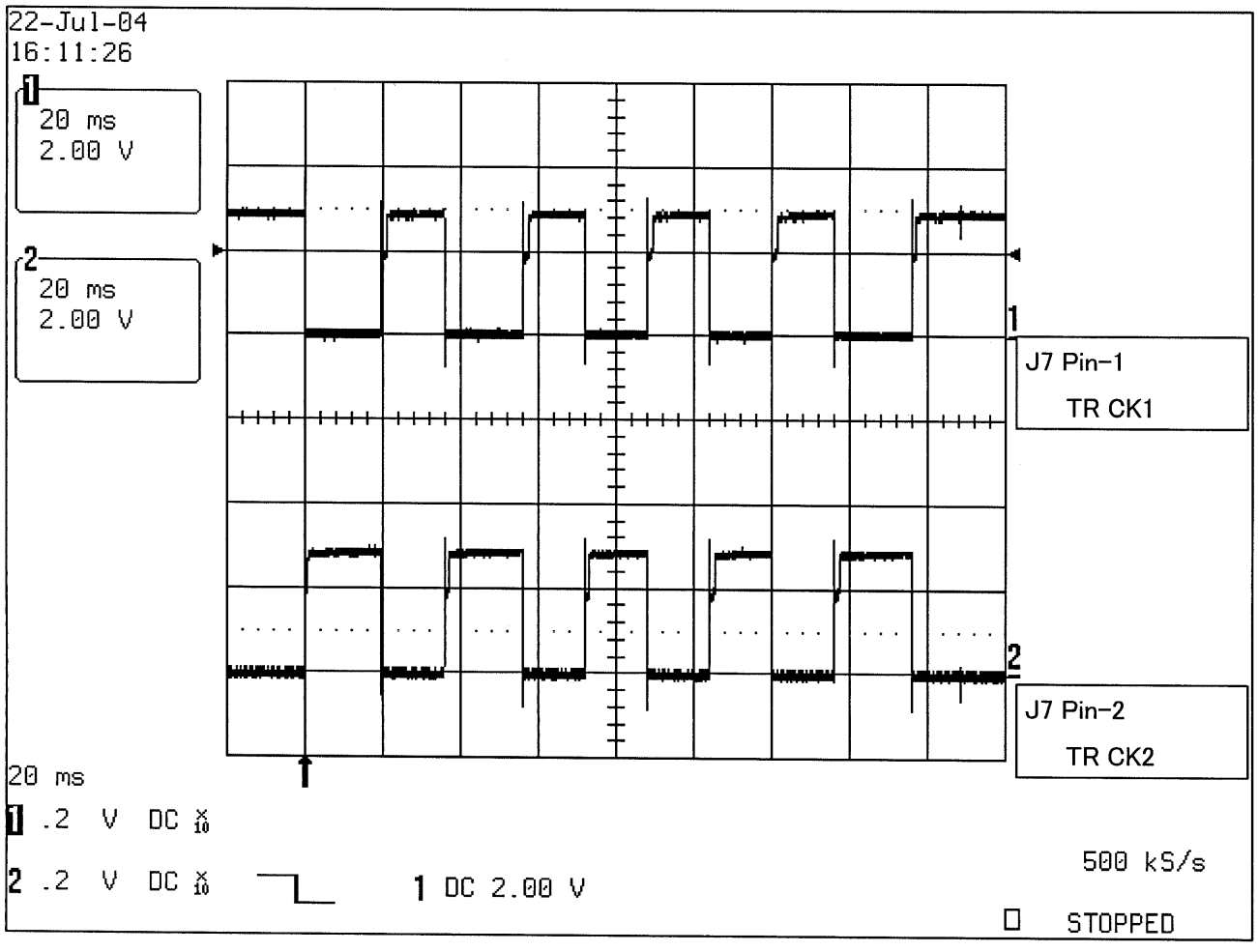

22-Jul-04
14:45:07
1
50 ms
2.00 V
2
50 ms
2.00 V
NO.685 H800
RANGE 100m
GAIN 0
感度
FAR GAIN 10
遠感度
1
⑧ U5 Pin-5
⑨ B
2
50 ms
1 .2 V DC
2 .2 V DC
1 DC 3.00 V
200 kS/s
STOPPED

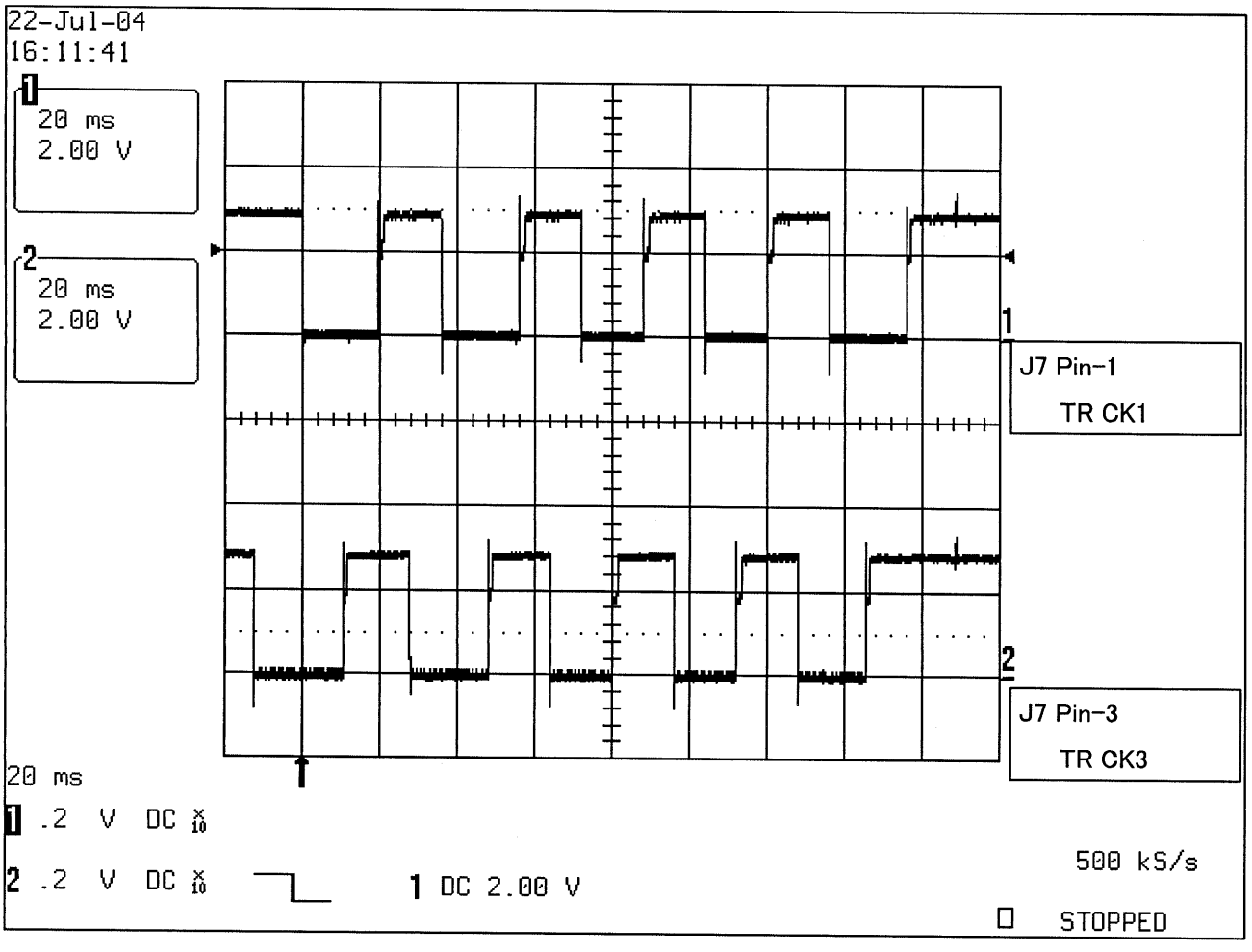

22-Jul-04
14:45:43
1
50 ms
2.00 V
2
50 ms
2.00 V
NO.685 H800
RANGE 100m
GAIN 10
感度
FAR GAIN 10
遠感度
1
⑧ U5 Pin-5
⑨ B
2
50 ms
1 .2 V DC
2 .2 V DC
1 DC 3.00 V
200 kS/s
STOPPED

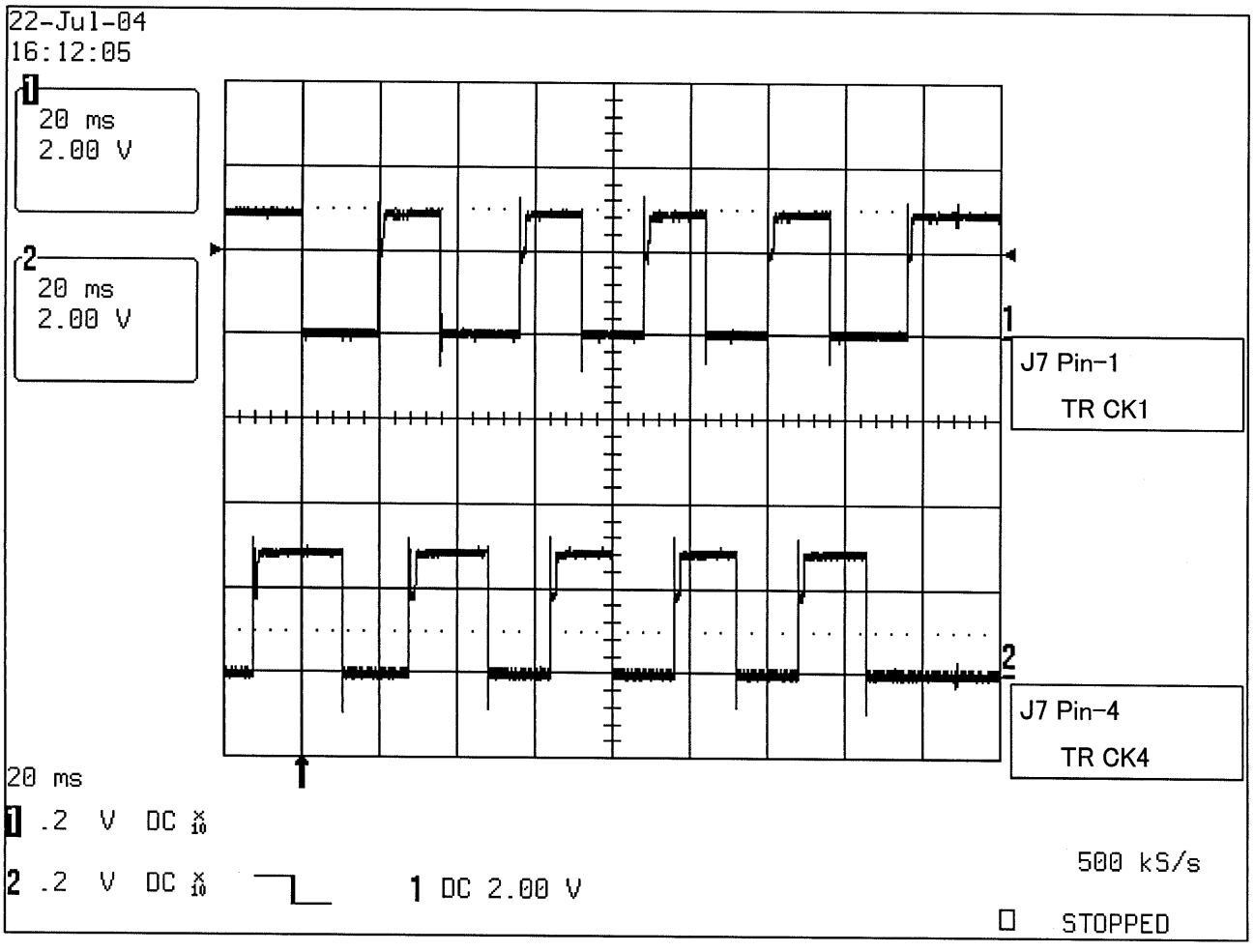

22-Jul-04
14:56:30
NO.685 H800
RANGE 100m
1
20 ms
2.00 V
2
20 ms
2.00 V
⑩ SIG
⑪ J5 Pin-1
AUDIO
20 ms
1 .2 V DC
2 .2 V DC
1 DC 3.04 V
500 kS/s
STOPPED

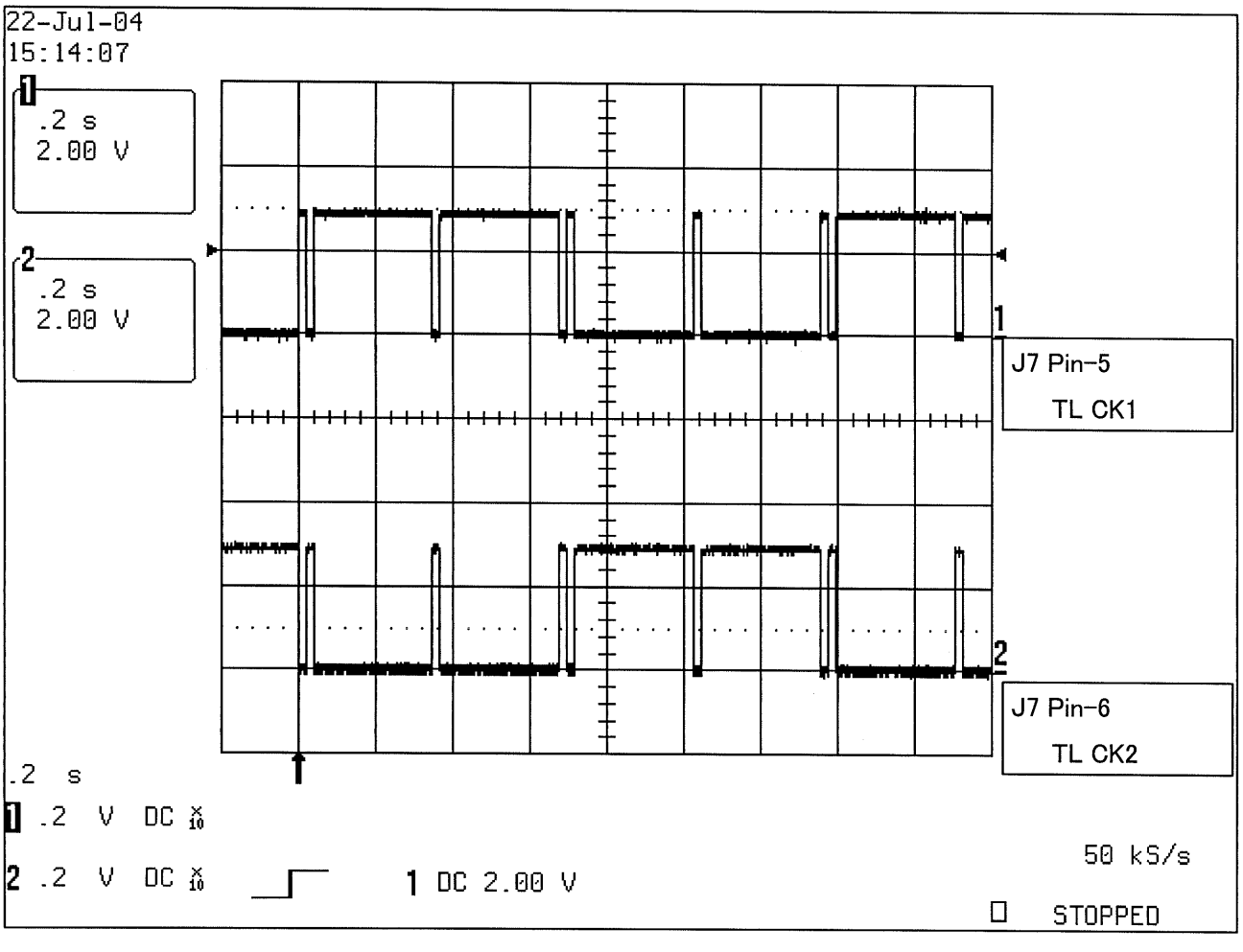


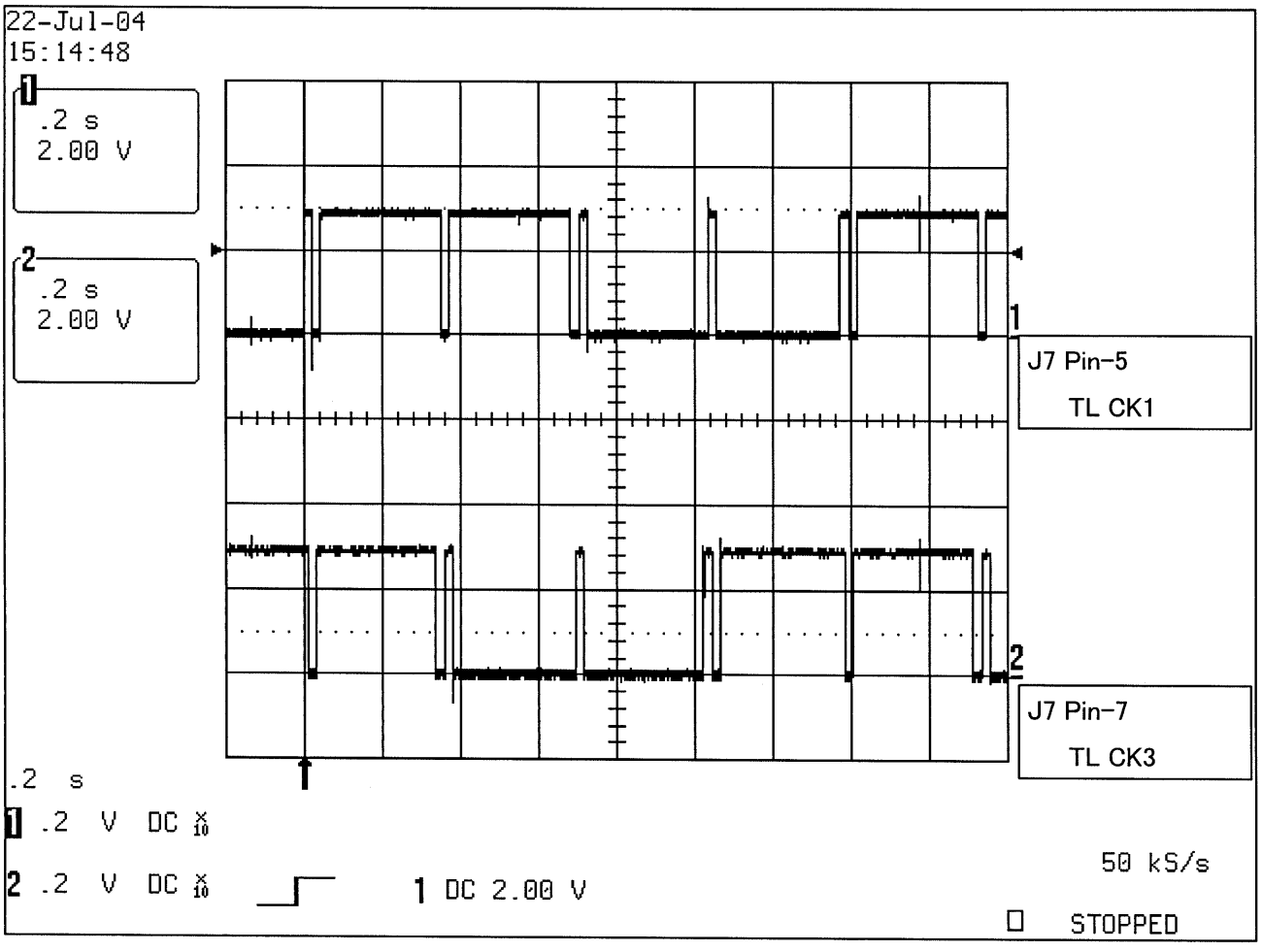
Title	MOTOR DRIVE BOARD	
Size A	Document Number NO.633	Rev 0
Date: Monday, January 22, 2001	Sheet 1 of 1	

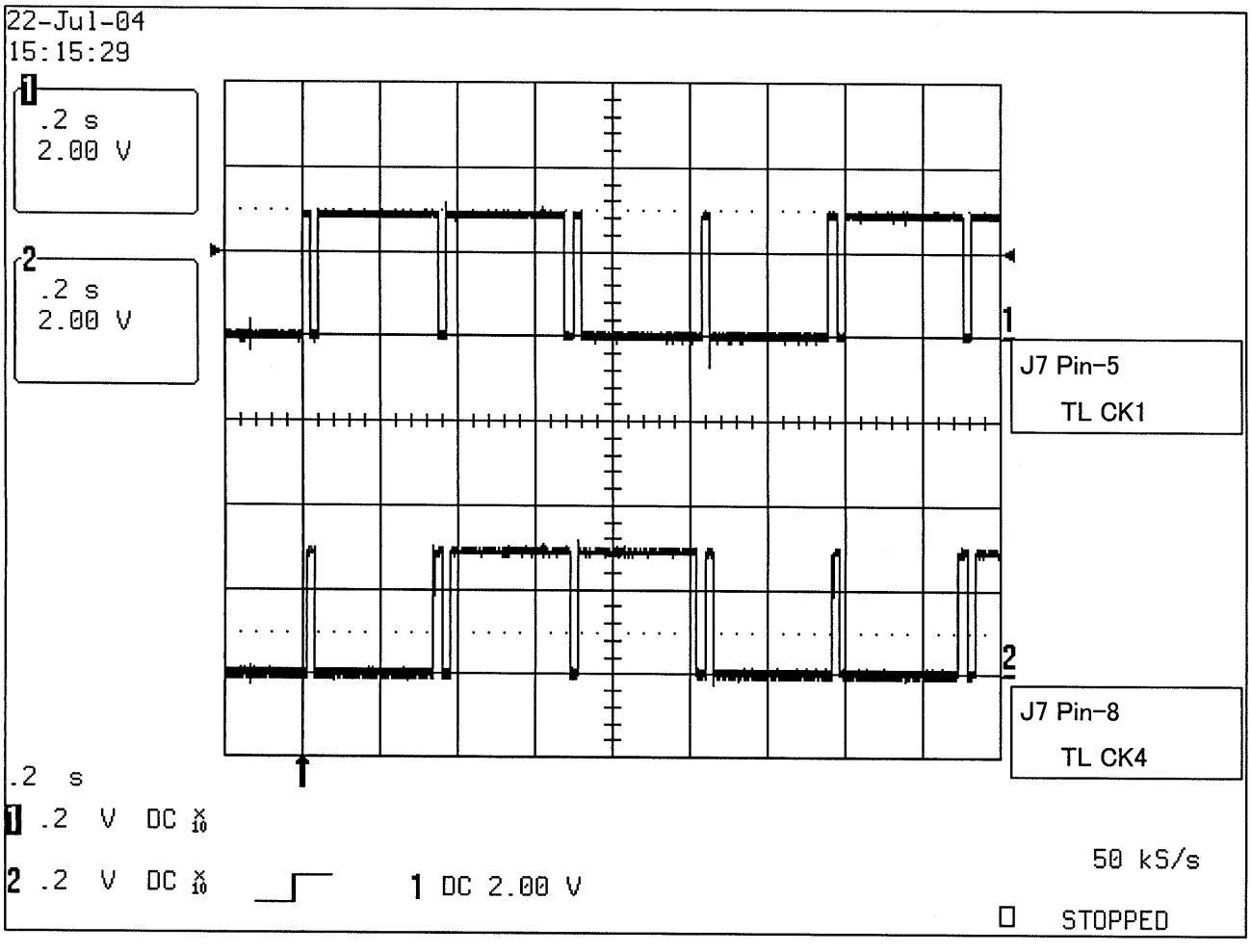

22-Jul-04
16:11:26
1
20 ms
2.00 V
2
20 ms
2.00 V
J7 Pin-1
TR CK1
J7 Pin-2
TR CK2
20 ms
1 .2 V DC
2 .2 V DC
1 DC 2.00 V
500 kS/s
STOPPED

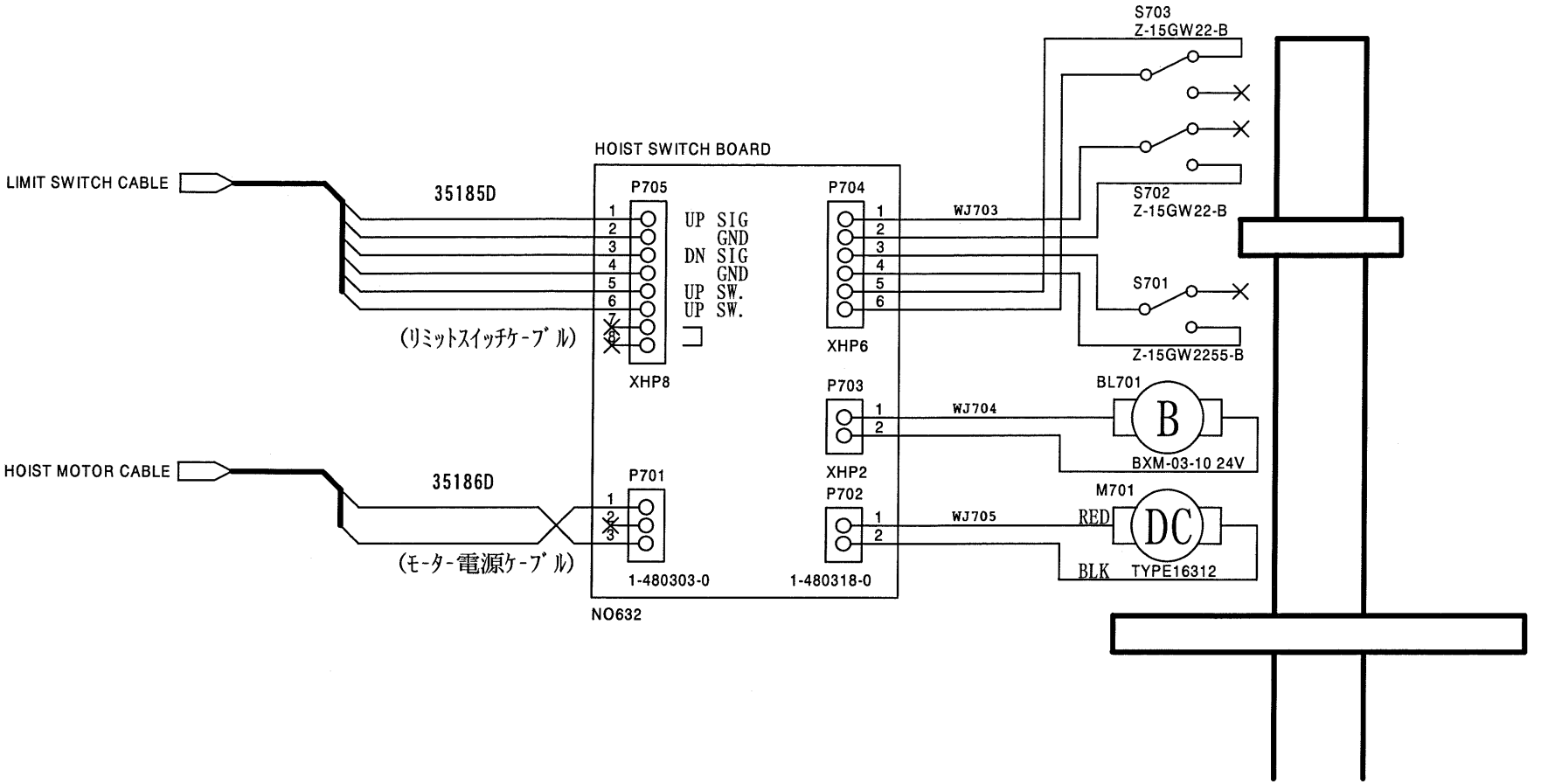

22-Jul-04
16:11:41
1
20 ms
2.00 V
2
20 ms
2.00 V
J7 Pin-1
TR CK1
J7 Pin-3
TR CK3
20 ms
1 .2 V DC
2 .2 V DC
1 DC 2.00 V
500 kS/s
STOPPED


22-Jul-04
16:12:05
1
20 ms
2.00 V
2
20 ms
2.00 V
J7 Pin-1
TR CK1
J7 Pin-4
TR CK4
20 ms
1 .2 V DC
2 .2 V DC
1 DC 2.00 V
500 kS/s
STOPPED

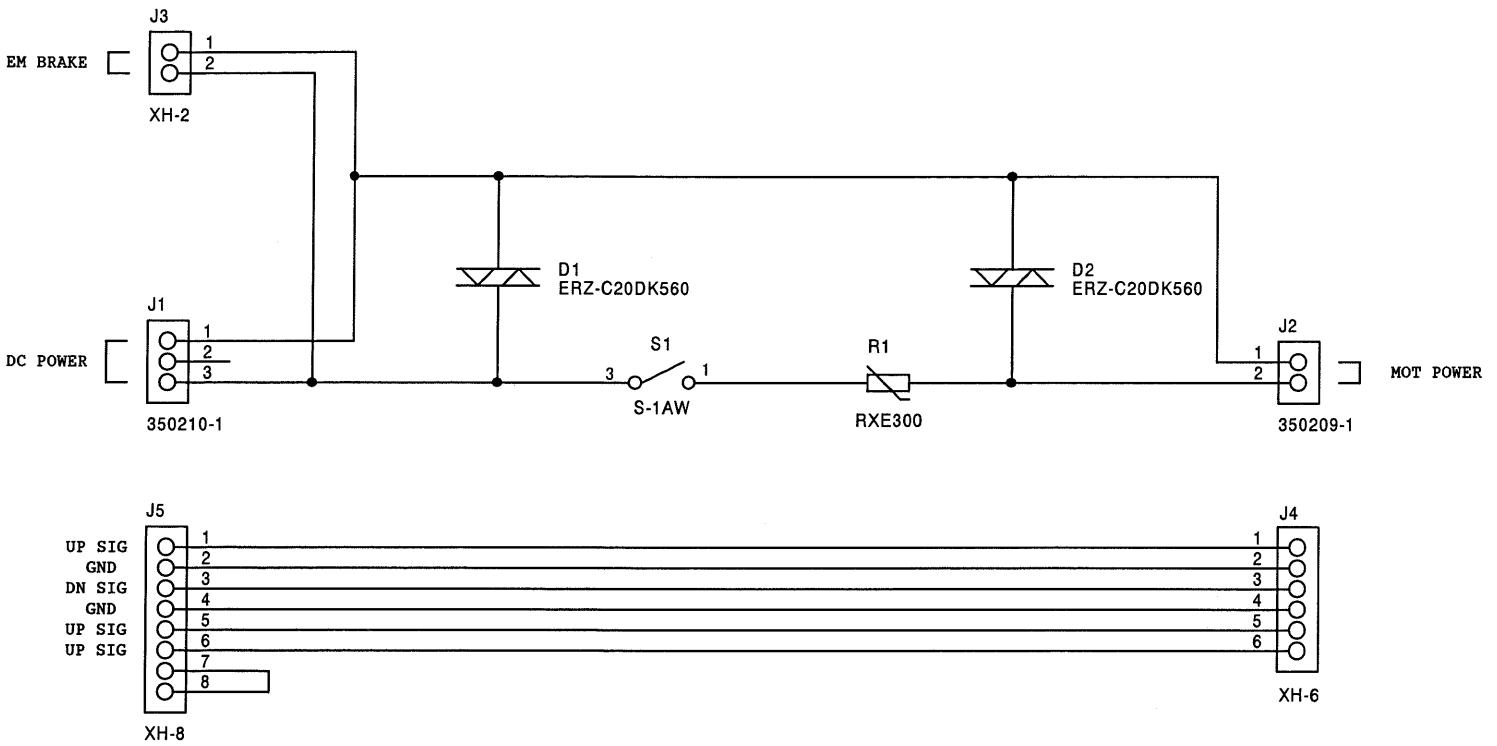

22-Jul-04
15:14:07
1
.2 s
2.00 V
2
.2 s
2.00 V
J7 Pin-5
TL CK1
J7 Pin-6
TL CK2
.2 s
1 .2 V DC
2 .2 V DC
1 DC 2.00 V
50 kS/s
STOPPED


22-Jul-04
15:14:48
.2 s
2.00 V
.2 s
2.00 V
J7 Pin-5
TL CK1
J7 Pin-7
TL CK3
.2 s
.2 V DC
.2 V DC
1 DC 2.00 V
50 kS/s
STOPPED


22-Jul-04
15:15:29
.2 s
2.00 V
.2 s
2.00 V
J7 Pin-5
TL CK1
J7 Pin-8
TL CK4
.2 s
.2 V DC
.2 V DC
1 DC 2.00 V
50 kS/s
STOPPED



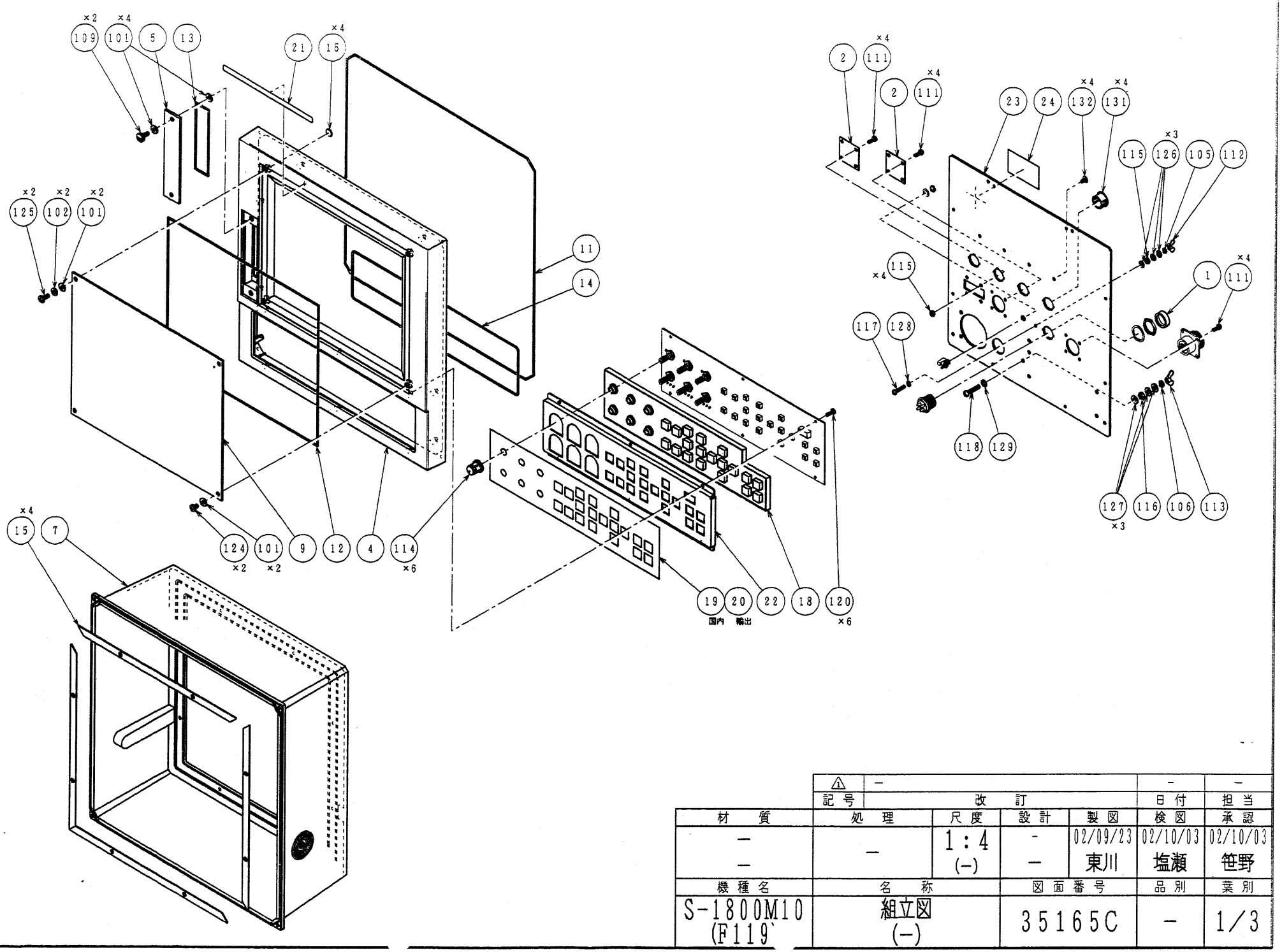
SUZUKI FISH FINDER CO.,LTD.		
Title: S-1800H800 HOIST-UNIT INTER CONNECTION		
Size: A	Document Number: {Doc}	Rev: 1
Date: Friday, December 20, 2002	Sheet 1 of 1	



Title: HOIST SWITCH BOARD		
Size: A	Document Number: NO.632A	Rev: 1
Date: Friday, July 16, 1999	Sheet 1 of 1	

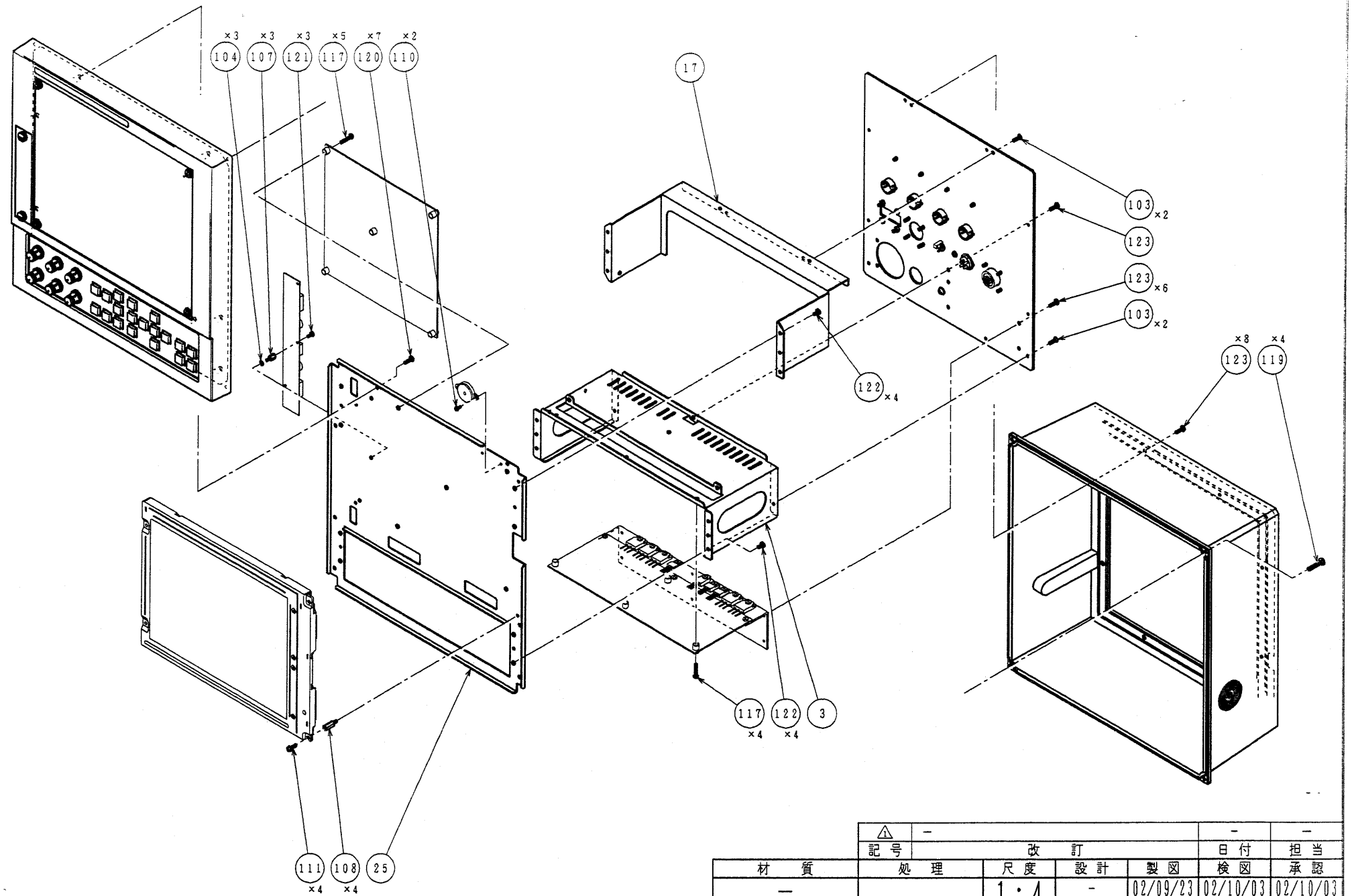
MONITOR UNIT(M10)

ASSEMBLY DRAWING



	⚠	−			−	−
	記号	改訂			日付	担当
材質	処理	尺度	設計	製図	検図	承認
− −	−	1:4 (−)	− −	02/09/23 東川	02/10/03 塩瀬	02/10/03 笹野
機種名	名称		図面番号		品別	葉別
S-1800M10 (F119`	組立図 (−)		35165C		−	1/3

鈴木魚探株式会社



	⚠1	−			−	−
	記号	改訂			日付	担当
材質	処理	尺度	設計	製図	検図	承認
− −	−	1:4 (−)	- −	02/09/23 東川	02/10/03 塩瀬	02/10/03 笹野
機種名	名称		図面番号		品別	葉別
S-1800M10 (F119`	組立図 (−)		35165C		−	2/3

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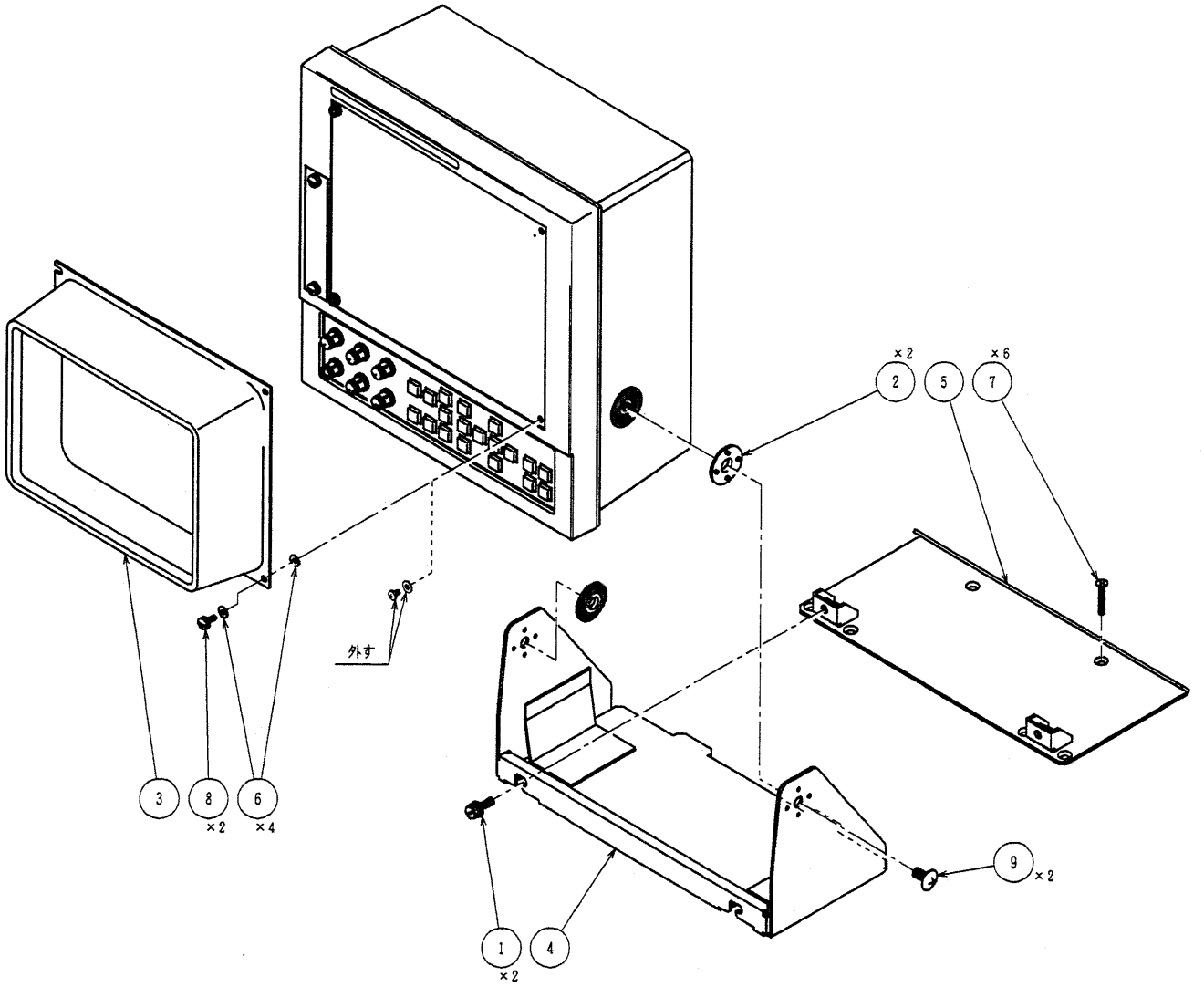
本図面は装備品を示す



	⚠1	−			−	−
	記号	改訂			日付	担当
材質	処理	尺度	設計	製図	検図	承認
− −	−	1:4 (−)	− −	02/09/23 東川	02/10/03 塩瀬	02/10/03 笹野
機種名	名称		図面番号		品別	葉別
S-1800M10 (F11)	組立図 (−)		35165C		−	3/3

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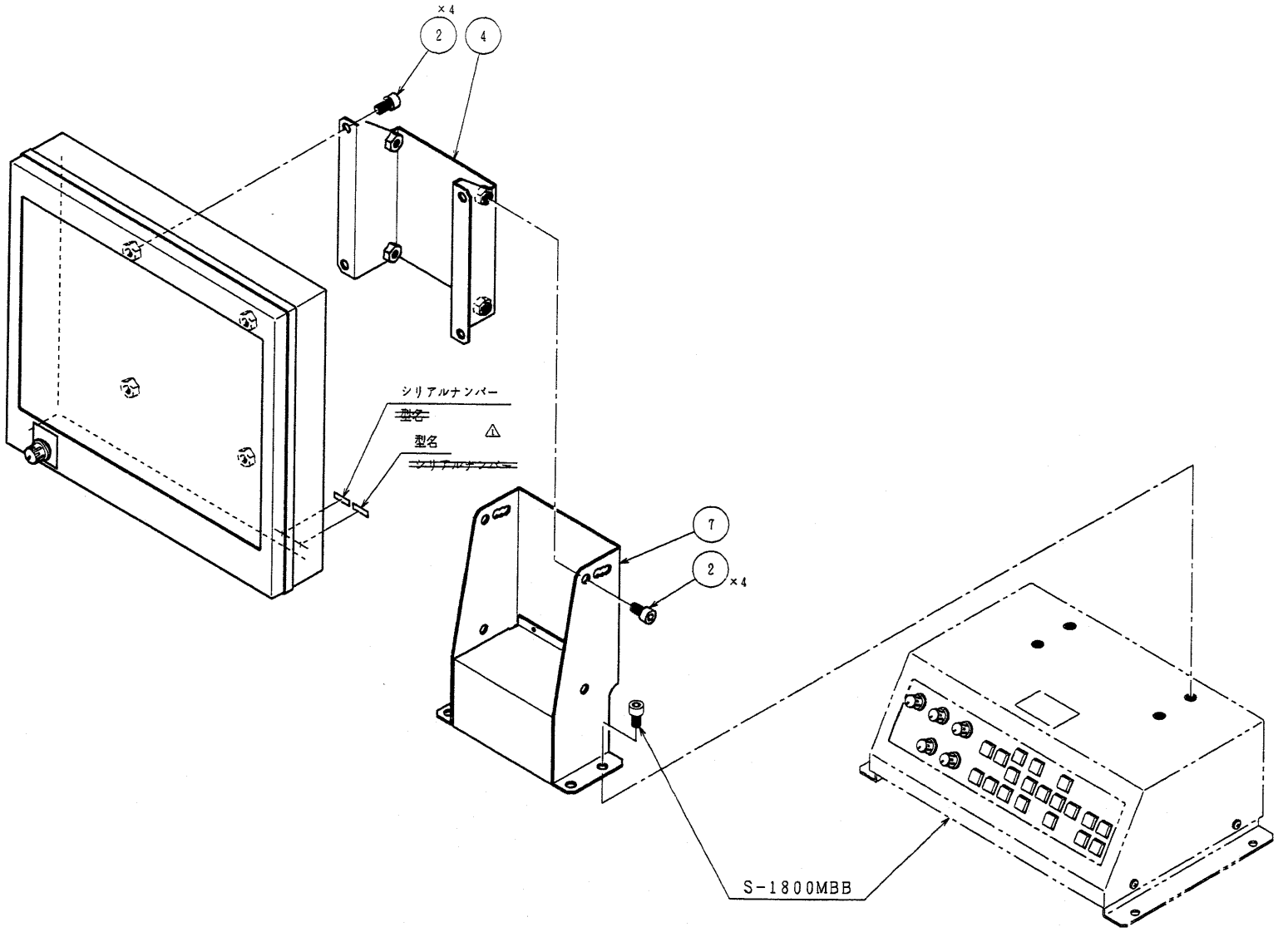
MONITOR UNIT(M15)

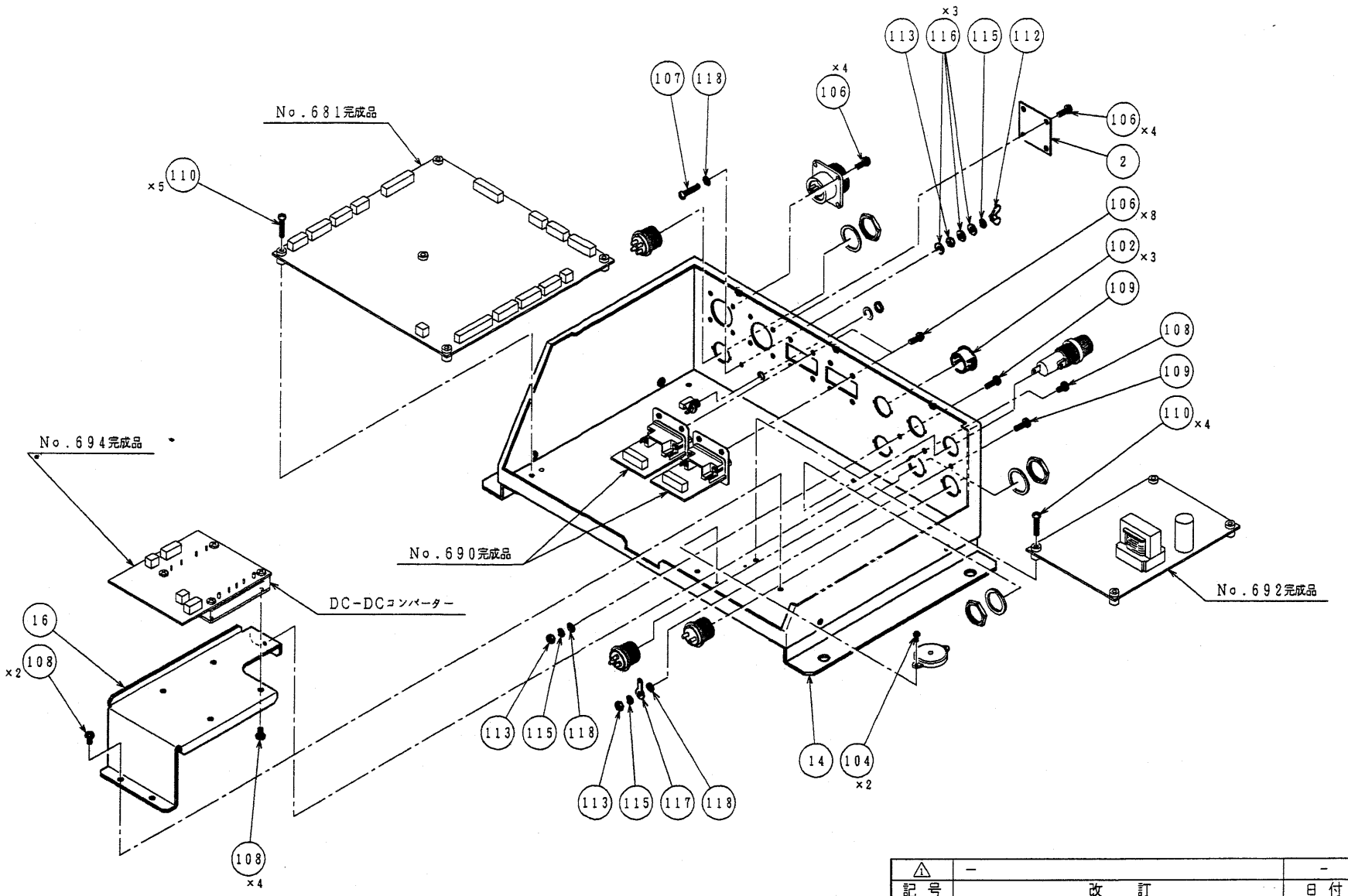
ASSEMBLY DRAWING

本図面は「S－1800M15」の装備品を示す



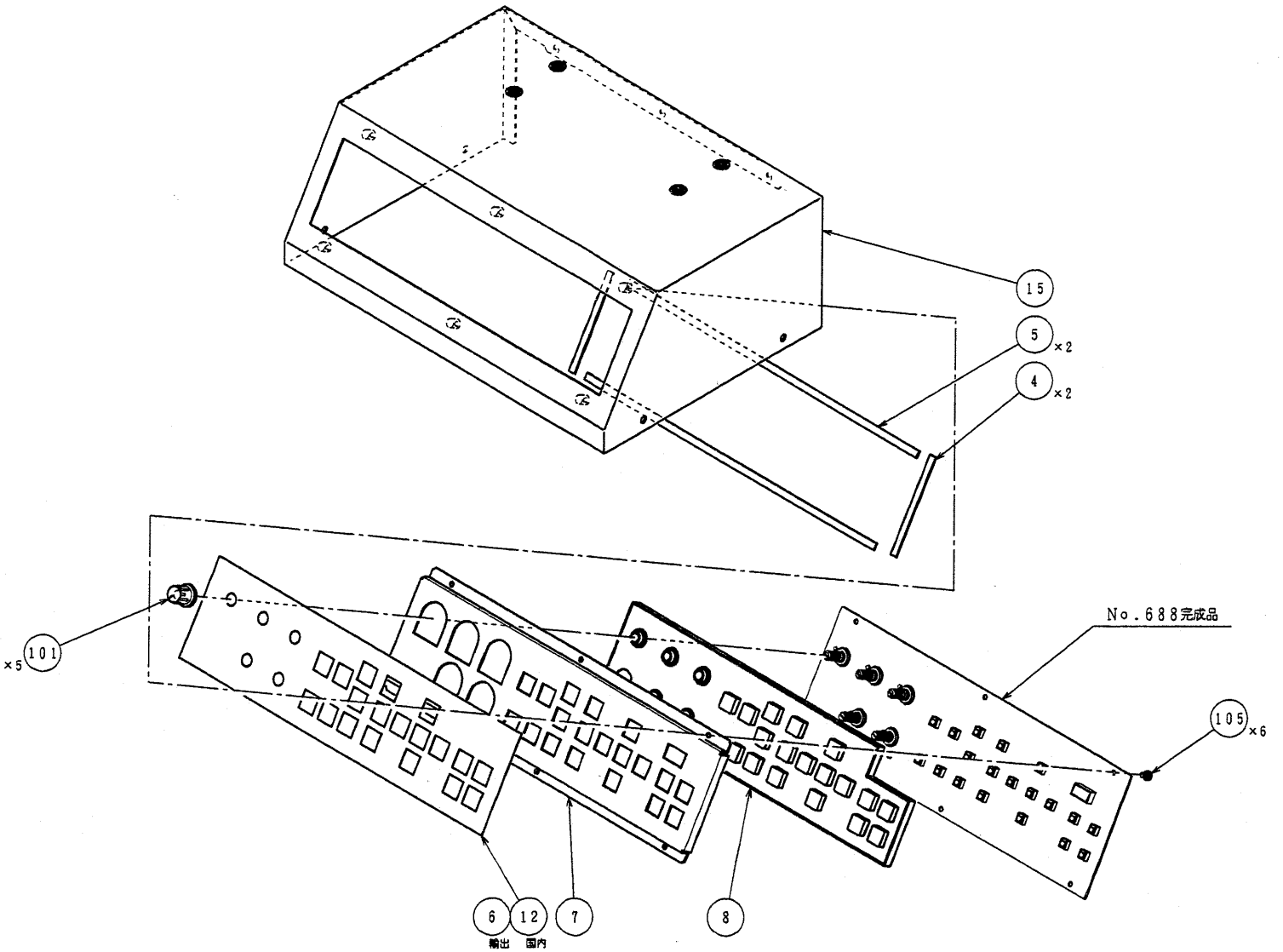
	⚠ 誤記訂正				02/12/25	東川
	記号 改訂				日付	担当
材質	処理	尺度	設計	製図	検図	承認
－ －	－	1：4 (－)	－ －	02/12/17 東川	02/12/17 岩崎	02/12/17 笹野
機種名	名称		図面番号		品別	葉別
LCD-15 (－)	組立図		35215C		－	4/4

鈴木魚探株式会社



	⚠	−			−	−
	記号	改訂			日付	担当
材質	処理	尺度	設計	製図	検図	承認
− −	−	1:3 (−)	− −	03/01/07 東川	03/01/09 岩崎	03/01/09 笹野
機種名	名称		図面番号		品別	葉別
S-1800M15 (F12(	組立図 (−)		35229C		−	1/3

鈴木魚探株式会社



	⚠	−			−	−
	記号	改訂			日付	担当
材質	処理	尺度	設計	製図	検図	承認
− −	−	1:3 (−)	− −	03/01/07 東川	03/01/09 岩崎	03/01/09 笹野
機種名	名称		図面番号		品別	葉別
S-1800M15 (F12(	組立図 (−)		35229C		−	2/3

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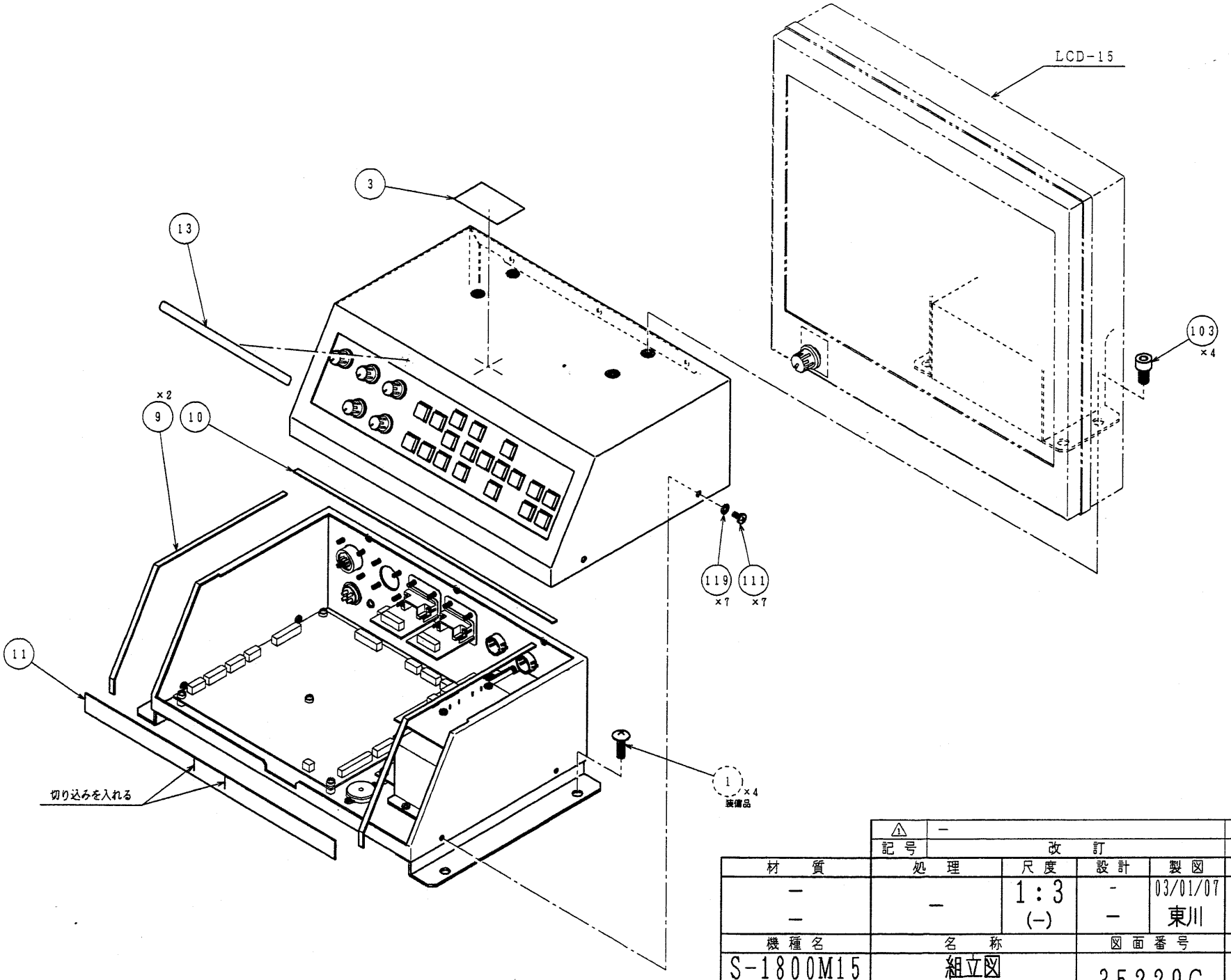
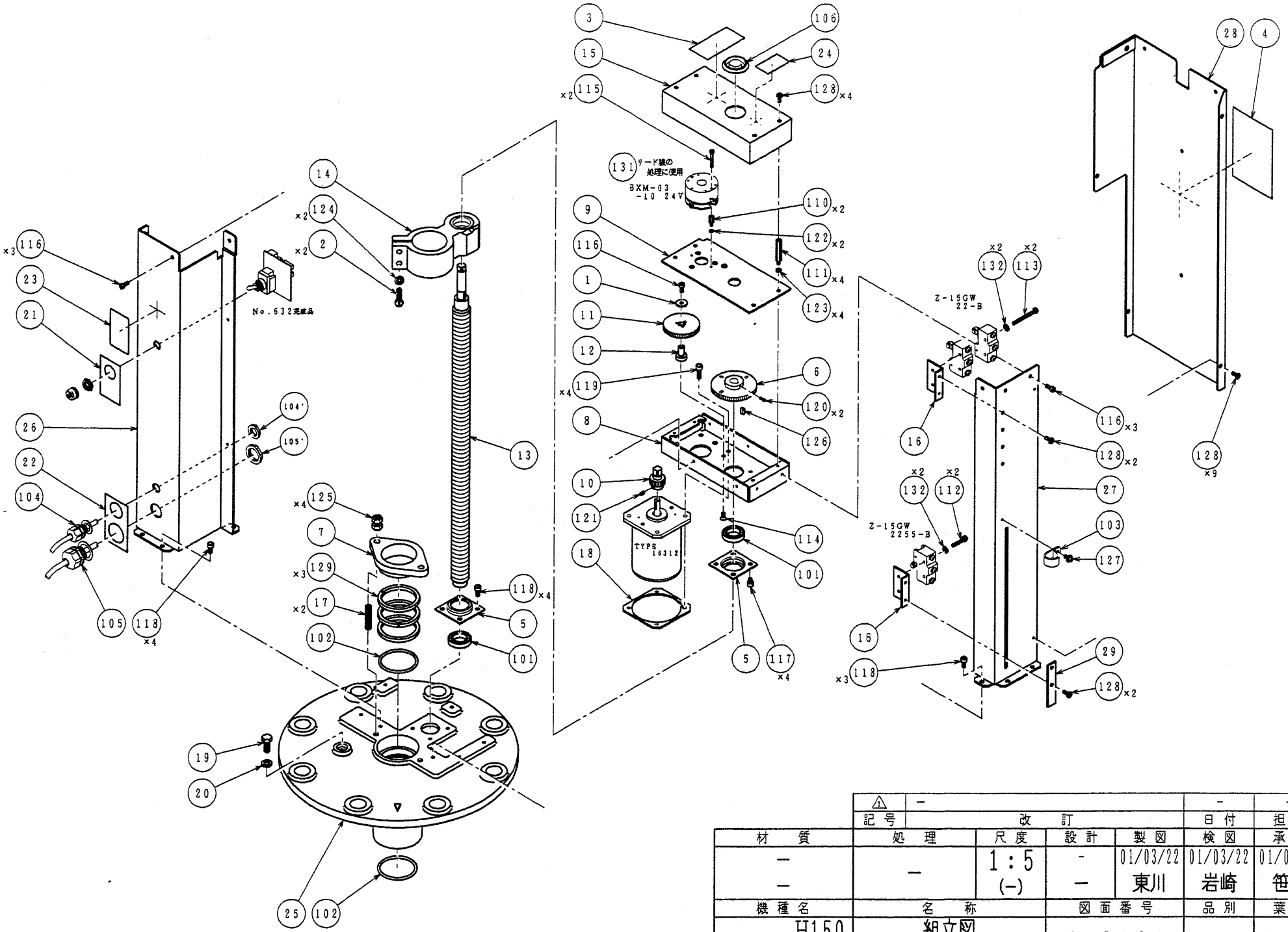


	⚠	−			−	−
	記号	改訂			日付	担当
材質	処理	尺度	設計	製図	検図	承認
− −	−	1:3 (−)	- −	03/01/07 東川	03/01/09 岩崎	03/01/09 笹野
機種名	名称		図面番号		品別	葉別
S-1800M15 (F12C	組立図 (−)		35229C		−	3/3

鈴木魚探株式会社

HULL UNIT

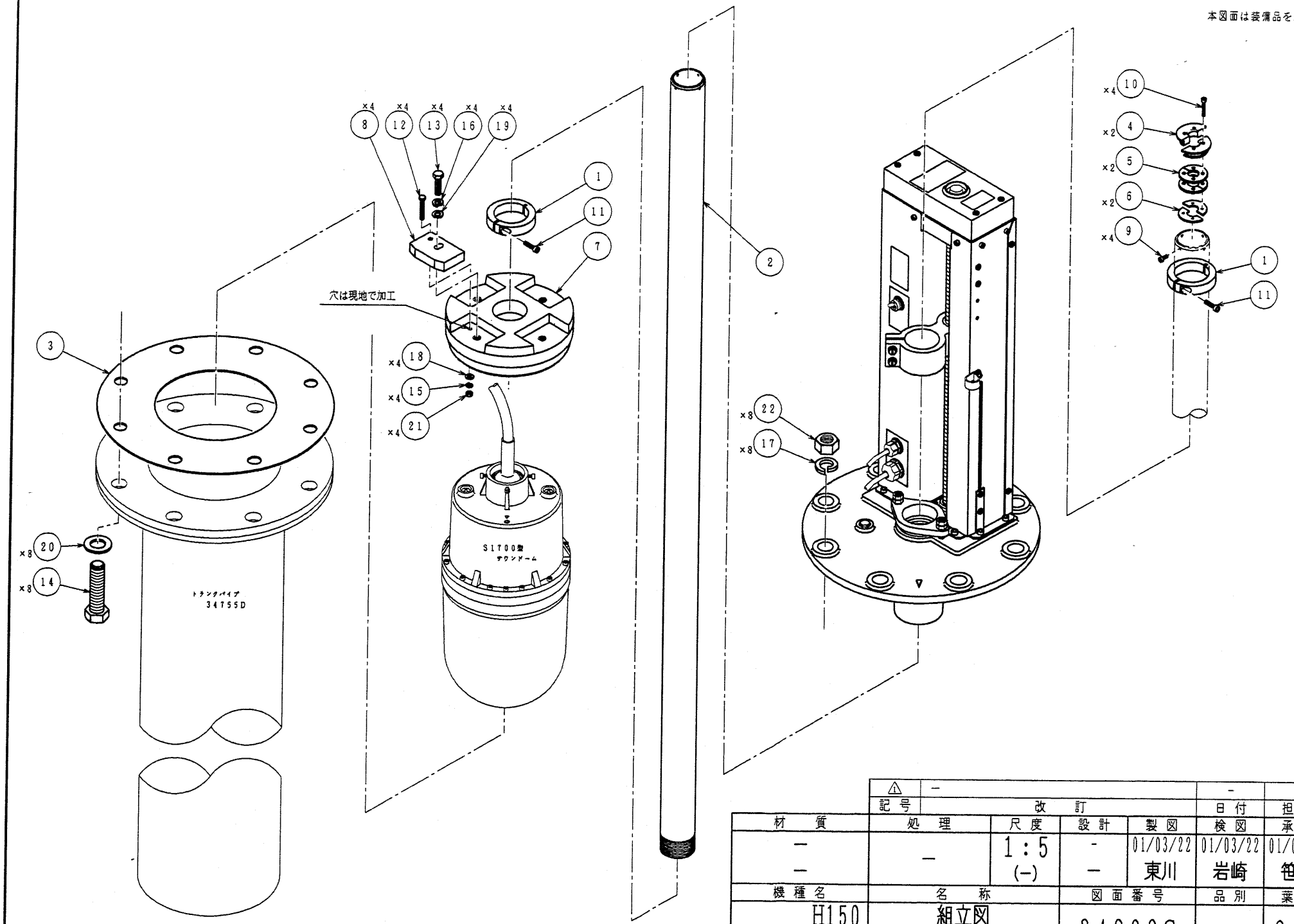
ASSEMBLY DRAWING



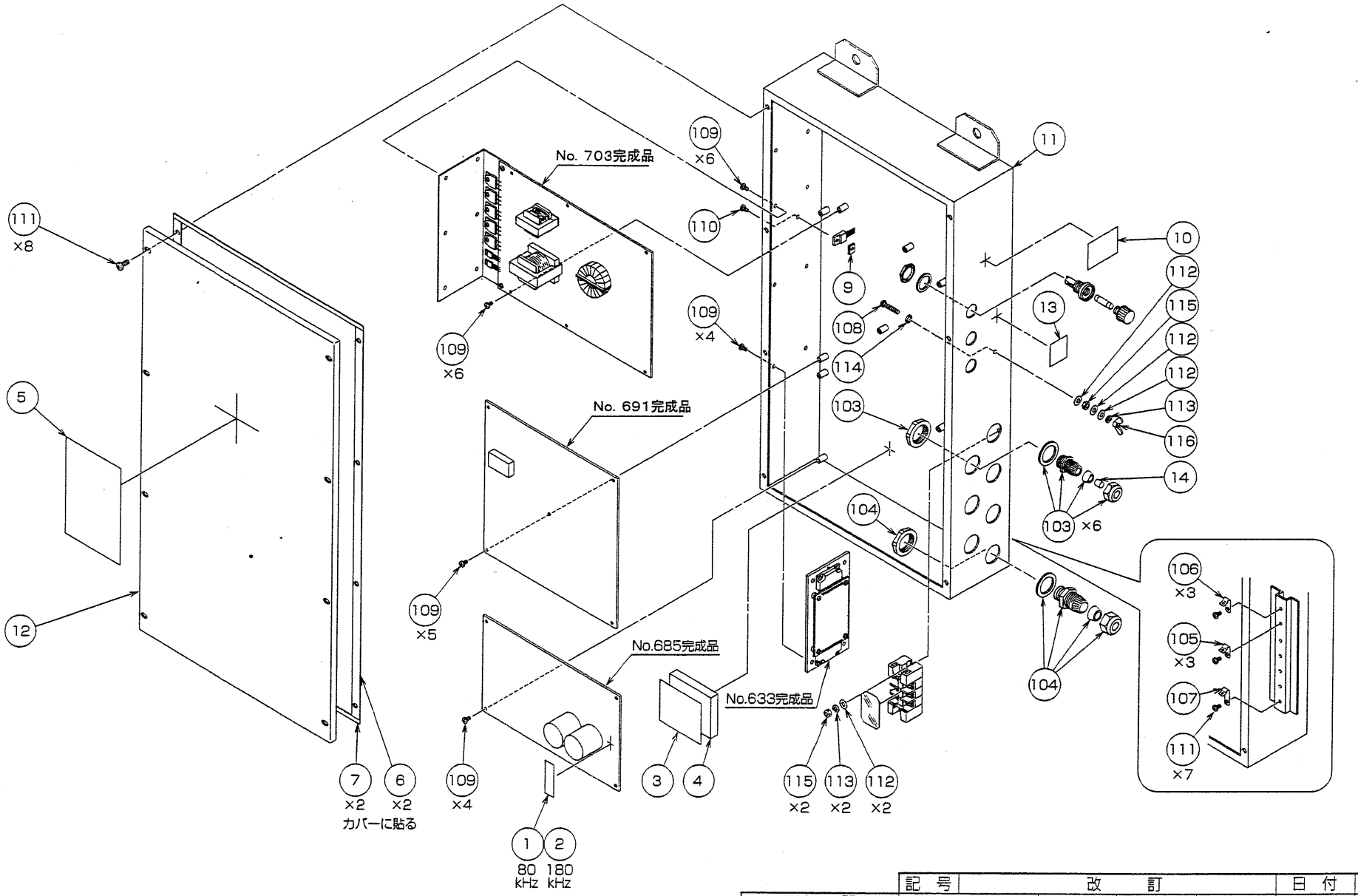
	⚠	–			–	–
	記号	改訂			日付	担当
材質	処理	尺度	設計	製図	検図	承認
– –	–	1:5 (–)	- –	01/03/22 東川	01/03/22 岩崎	01/03/22 笹野
機種名	名称		図面番号		品別	葉別
H150 (F110H)	組立図 (ホイスト)		34809C		–	1/2

鈴木金属株式会社

本図面は装備品を示す



記号	改訂				日付	担当
⚠	−				−	−
材質	処理	尺度	設計	製図	検図	承認
− −	−	1：5 (−)	− −	01/03/22 東川	01/03/22 岩崎	01/03/22 笹野
機種名	名称		図面番号		品別	葉別
H150 (F110H)	組立図 (ホイスト)		34809C		−	2/2



記号	改訂				日付	担当
材質	処理	尺度	設計	製図	検図	承認
			東 03.2.21	東 03.2.21	03.2.21	
機種名	名称		図面番号		品別	素別
S-1800H80,18 (F118B)	組立図 (制御ボックス)		35080C			

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