SONY®

HD CAMERA OPERATIONAL CONTROL UNIT

HDCO-350

HDVS

MAINTENANCE MANUAL

Volume 1 1st Edition

Serial No. 10001 and Higher

SAFETY RELATED COMPONENT WARNING

Components identified by shading and ⚠ marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

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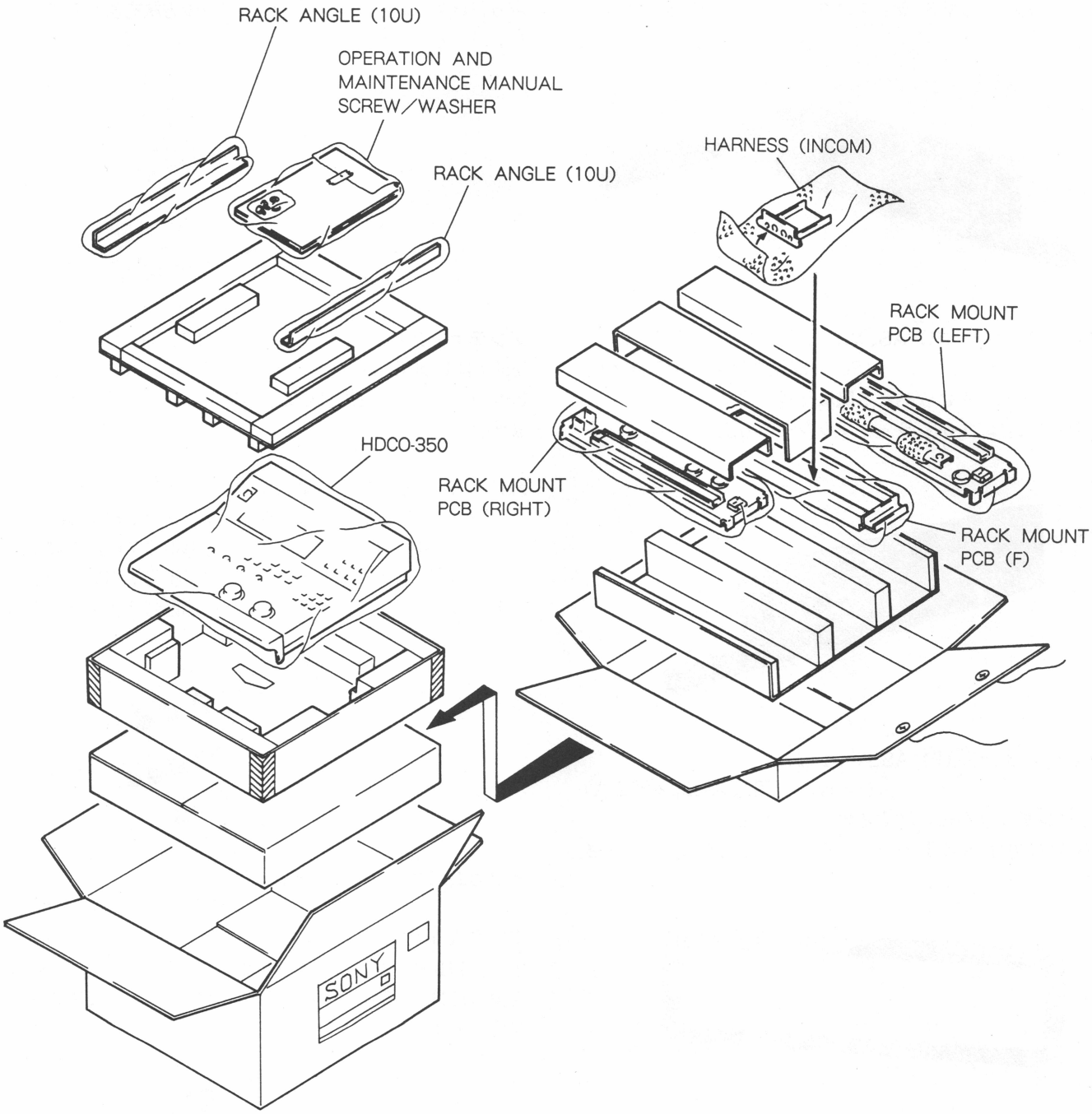
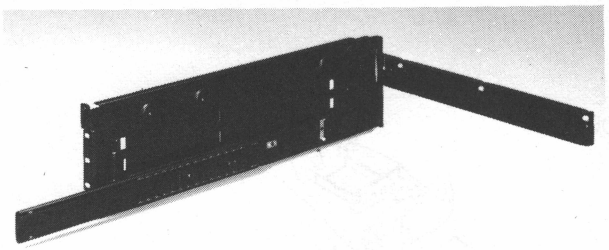
第1章
設　置

1-1. 開梱と再梱包

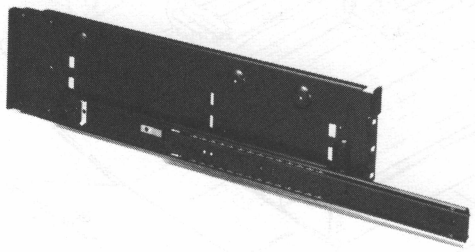


1-2. 標準付属品

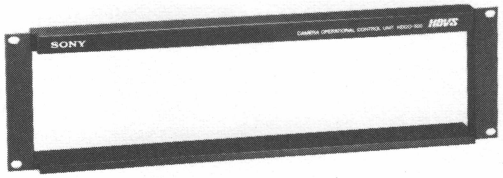
ラックマウント（L）ASSY：1個
（Sony 部品番号 A-7405-089-B）
19インチラックに収納する際に使用します。
取り付け方は，1-6-3. ラックマウントの方法を参照して下さい。



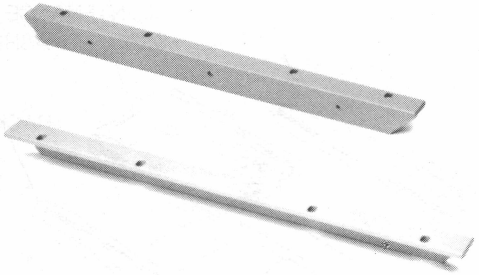
ラックマウント（R）ASSY：1個
（Sony 部品番号 A-7405-103-B）
19インチラックに収納する際に使用します。
取り付け方は，1-6-3. ラックマウントの方法を参照して下さい。



ラックマウント（F）ASSY：1個
（Sony 部品番号 A-8262-362-A）
19インチラックに収納する際に使用します。
取り付け方は，1-6-3. ラックマウントの方法を参照して下さい。

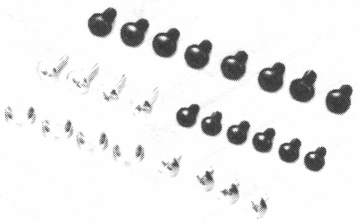


ラックアングル（10U）：2個
（Sony 部品番号 3-733-100-01）
テーブルに固定する際に使用します。
取り付け方は，1-6-3. ラックマウントの方法を参照して下さい。

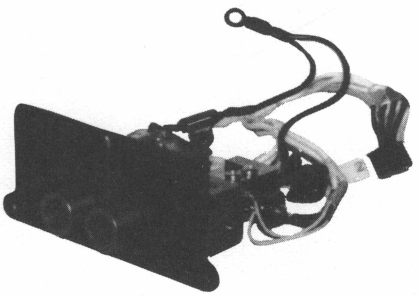


メンテナンスマニュアル：2冊（Vol-1，Vol-2）
Vol-1はHDCO-350のメンテナンス情報でVol-2はHDCO-350のブロック，回路図および補修用部品の情報が入っています。

ねじ ＋RK 5×8： 4個（Sony 部品番号 7-682-274-04）
＋RK 5×14：4個（Sony 部品番号 7-682-277-04）
＋B 4×8： 6個（Sony 部品番号 7-682-561-09）
＋B 5×10： 8個（Sony 部品番号 7-682-575-09）
台形飾りワッシャー：4個（Sony 部品番号 2-297-913-00）



インカムパネル ASSY：1個
（Sony 部品番号 1-942-312-12）
工場出荷時インカムパネルにはXLR型コネクタが付いています。110号型ジャックを使用する場合に交換して下さい。
交換方法は，1-5-4. 110号型インカムパネルの交換方法を参照して下さい。



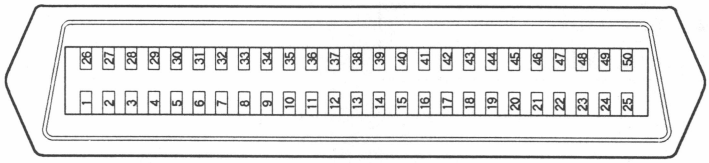
1-3. 適合コネクタ／ケーブル

1-3-1. コネクタの入出力信号

主なコネクタの入出力信号は次の通りです。

INCOM-1／-2　大型110型ジャック（標準付属品）
入力インピーダンス 5～10k Ω
出力インピーダンス 300 Ω平衡
入力レベル1kHz 200mVp-p
出力レベル1kHz 最大1.7Vp-p

SIGNAL PROCESSOR (50P, D-SUB)



Pin No	SIGNAL	REMARK for SIGNAL
1	GND	GND for signal and power
26	GND	
2	GND	
27	GND	
3	GND	
28	GND	
4	GND	
29	GND	
5	+ 20V IN	DC + 20V ± 0.5V 5A
30	+ 20V IN	
6	+ 20V IN	
31	+ 20V IN	
7	+ 20V IN	
32	+ 20V IN	
8	+ 20V IN	
33	+ 20V IN	
9	CCU POWER REMOTE (X) OUT	0～+ 5Vdc
34	CCU POWER REMOTE (Y) OUT	
10	CP TALK 1 OUT (X)	− 10dBm, 600 Ω
35	CP TALK 1 OUT (Y)	
11	CP TALK 1 OUT (G)	
36	CP REC 1 IN (X)	− 10dBm, 600 Ω
12	CP REC 1 IN (Y)	
37	CP REC 1 IN (G)	

Pin No	SIGNAL	REMARK for SIGNAL
13	CP TALK 2 OUT (X)	− 10dBm, 600 Ω
38	CP TALK 2 OUT (Y)	
14	CP TALK 2 OUT (G)	
39	CP REC 2 IN (X)	− 10dBm, 600 Ω
15	CP REC 2 IN (Y)	
40	CP REC 2 IN (G)	
16	SCDB17 (I／O)	2.0Vp-p Termination 200 Ω ON
41	SCDB16 (REQ)	
17	SCDB15 (C／D)	
42	SCDB14 (SEL)	
18	SCDB13 (MSG)	
43	SCDB12 (RST)	
19	SCDB11 (ACK)	
44	SCDB10 (BSY)	
20	SCDB9 (ATZ)	
45	SCDB8 (P)	
21	SCDB7	
46	SCDB6	
22	SCDB5	
47	SCDB4	
23	SCDB3	
48	SCDB2	
24	SCDB1	
49	SCDB0	
25	GND	GND for signal and power
50	GND	

INCOM-1／-2 (5P, FEMALE)

(EXTERNALVIEW)

Pin No.	SIGNAL	SPECIFICATION
1	INCOM-1／-2 MIC⊖	− 20 dBs (CARBON MIC)
2	INCOM-1／-2 MIC⊕	− 60 dBs (DYNAMIC MIC)
3	GND	
4	INCOM1 RECEIVE OUT	max. 0dBs
5	INCOM2 RECEIVE OUT	max. 0dBs

1-3-2. 接続コネクタ

設置時，サービス時等においてコネクタパネル部の各種コネクタにケーブルを接続する際には，その先端に次に記すコネクタまたは同等品を使用して下さい。

コネクタの機能名称	接続するケーブル側のコネクタの部品番号および名称
SIGNAL PROCESSOR (50P, D-SUB)	1-556-664-11 CABLE, INTERFACE (cable length 1.5m, supplied with HDCS-300)
INCOM-1 IN／OUT INCOM-2 IN／OUT	9-910-999-31 PLUG 5P, MALE XLR-5-12C or equivalent

注意：HDCS-350の“HDCO”とHDCO-350の“SIGNAL PROCESSOR”を接続しているインターフェースケーブルはプラグの交換はできません。

1-4. 電源

電源電圧　DC＋20V
DC ＋ 20V 電源電圧は HDCS-350 より
インターフェースケーブルにて供給され
CP-130基板にて＋5V, ＋7V, ＋15Vを発生。

1-5. 設置

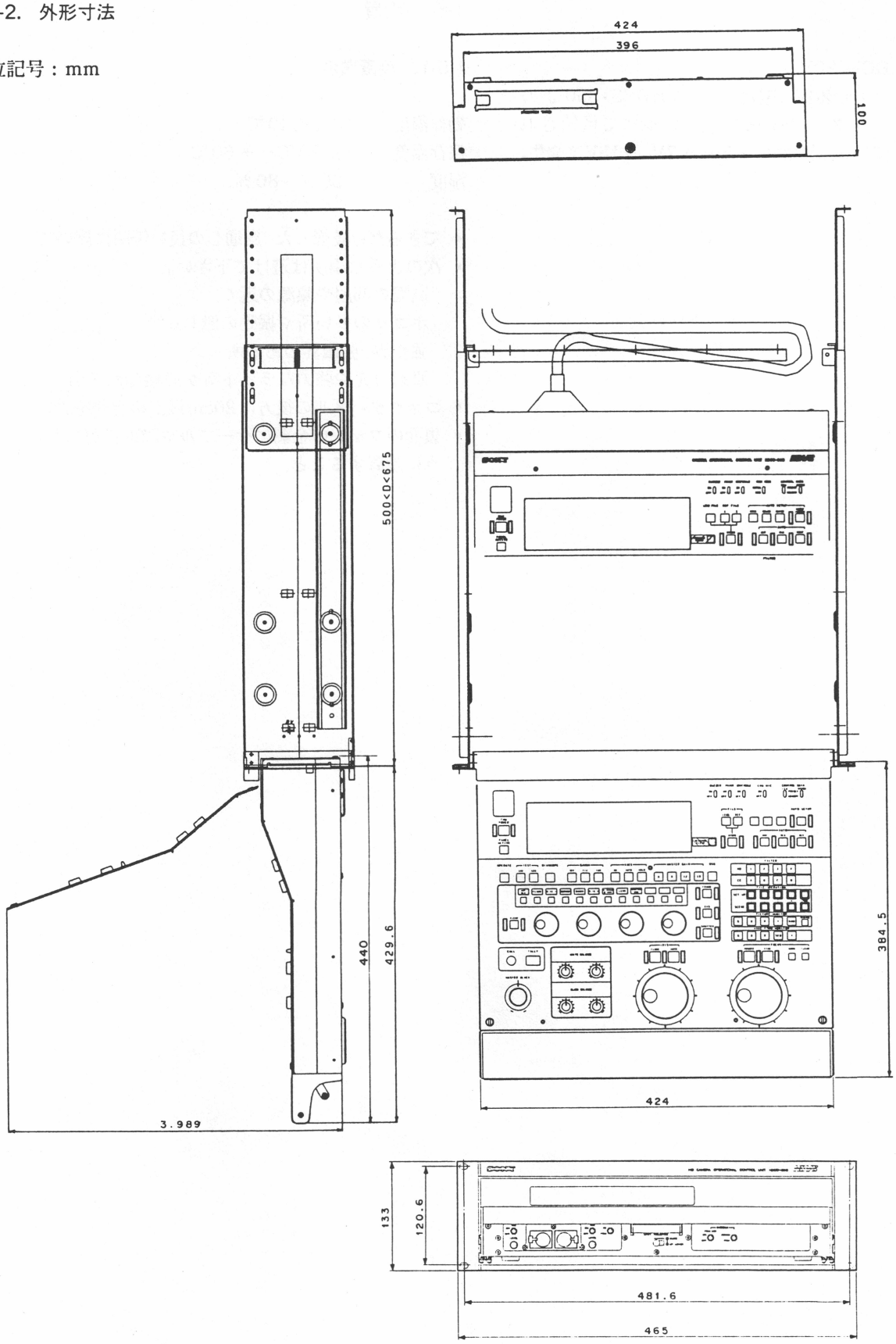
1-5-1. 設置環境

動作温度	0℃～40℃
保存温度	－20℃～＋60℃
湿度	20％～80％

- できるだけ乾燥した，風通しの良い場所に置いて下さい。
- 次のような場所は避けて下さい。
  高温の部屋や熱源の近く
  ホコリの多い所や振動の激しい所
  強電界，強磁界のある所
  直射日光や強力なライト等が直接当たる所
- コネクタパネルの後方に20cm以上の空間を設けること。
- 裏面のファンの金網にケーブルや障害物が当たらないように設置すること。

1-5-2. 外形寸法

単位記号：mm



（単位：mm, 最大突起を含む）

1-5-3. ラックマウントの方法

付属のラックマウントAss'yを使用してEIA19インチラックへ取り付けることができます。

設置形態

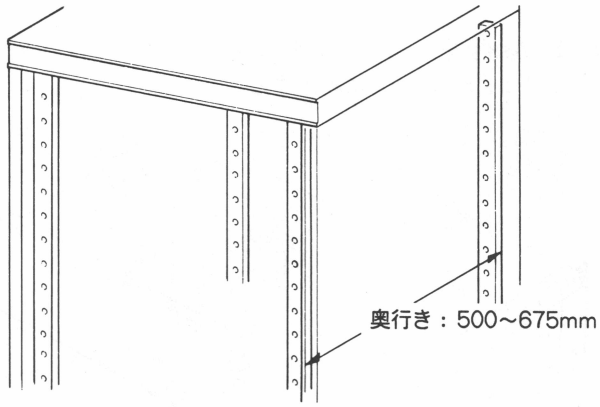
次の3種類に対応しています。

- 19インチラックマウント
  使用時は，パネルを引き出す。ラックから一時的に取り出すことも可能。
- テーブルマウント
- デスクトップユース

19インチラックマウント

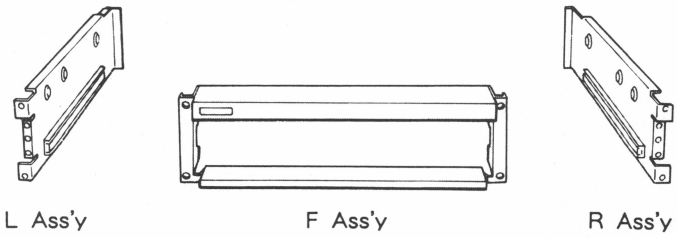
- 使用可能ラック

  19インチラック
  (EIA規格，ユニバーサルスパンニング－M5タイプ)



  推奨ラック： ソニーSU-860シリーズ

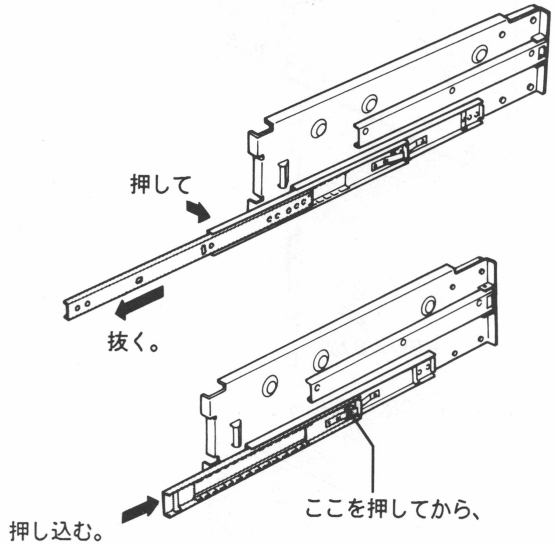
- 収納用部品（付属）



- ねじ
  ＋B5×8
  ＋RK5×8
- 飾りワッシャー

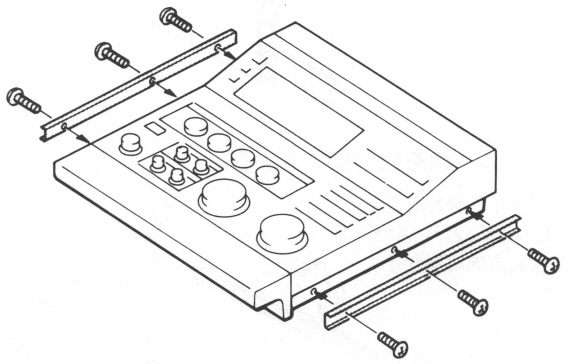
- 収納方法

1. L Ass'yとR Ass'yからインナーメンバーを抜き取る。

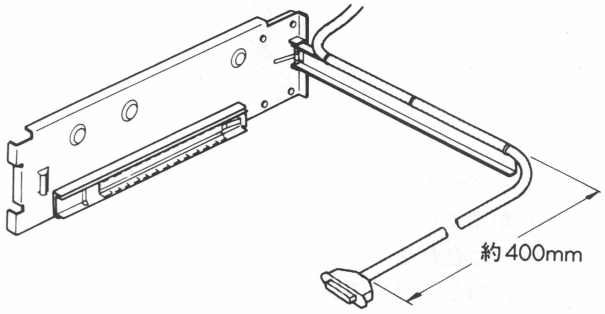


   レールは，元に戻しておく。

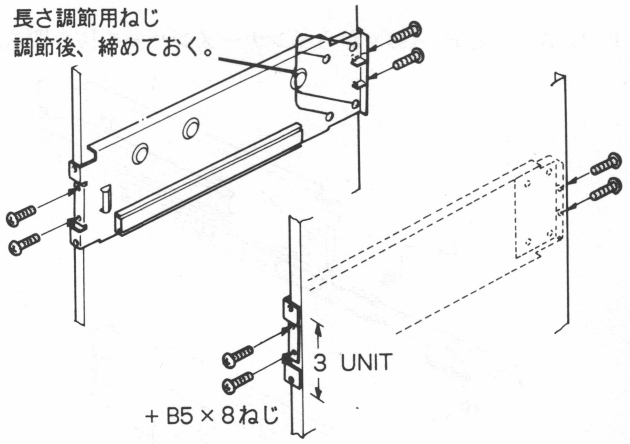
2. インナーメンバーをパネル本体に取り付ける。



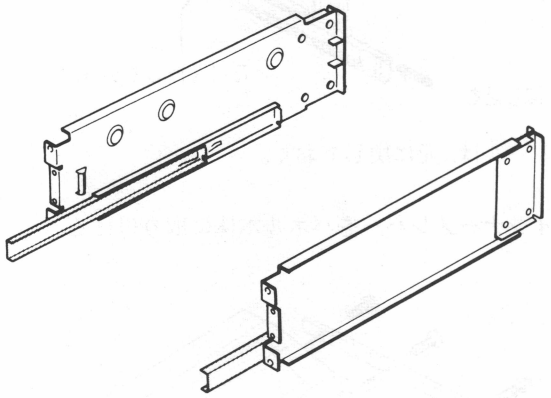
3. L Ass'yのケーブルクランプに，接続ケーブル（HDCS-350に付属）を取り付ける。



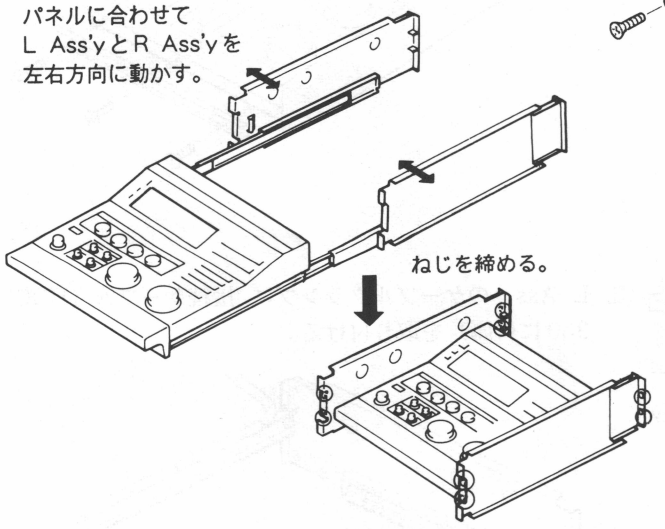
4. L Ass'yとR Ass'yを仮留めする。



5. レールを，一杯に引き出す。

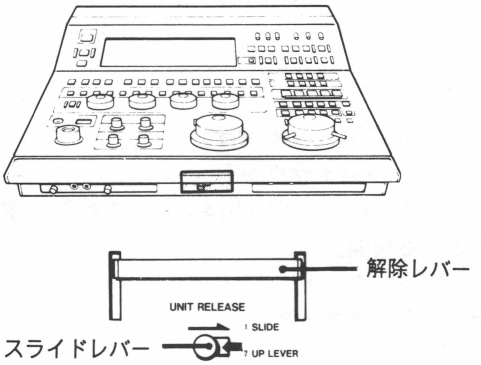


6. パネル本体を仮マウントする。



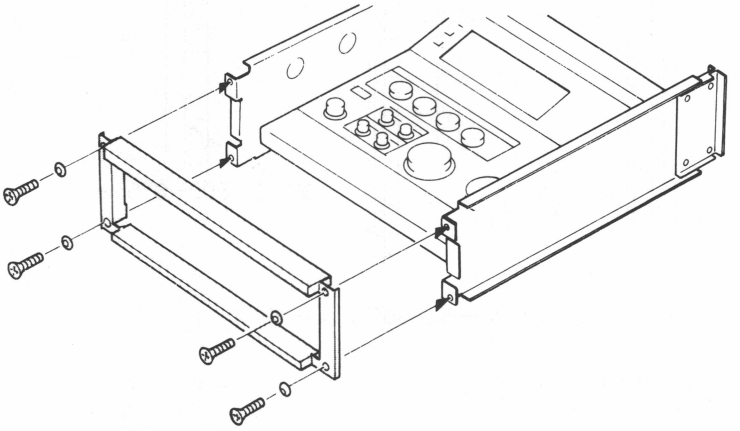
ストッパー（1-9ページ「ラックからの引き出しかた」参照）が出ていないことを確認する。
パネルに合わせてL Ass'yとR Ass'yを左右方向に動かす。ねじを締める。

7. スライドレバーを左にずらす。



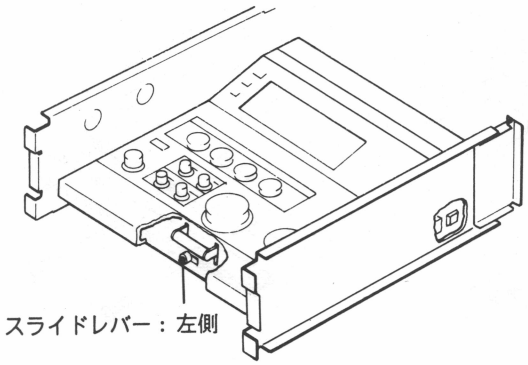
解除レバーが下がる。パネルがロックされることと，解除レバーを使ってパネルが前後にスムーズに動くこと（共に「ラックからの引き出しかた」参照）の確認をする。スムーズでないときは，ねじをゆるめてからL Ass'yとR Ass'yの位置を再調整する。

8. F Ass'yを，+RKと台形飾りワッシャーでラックマウントL，R Ass'yに固定する。

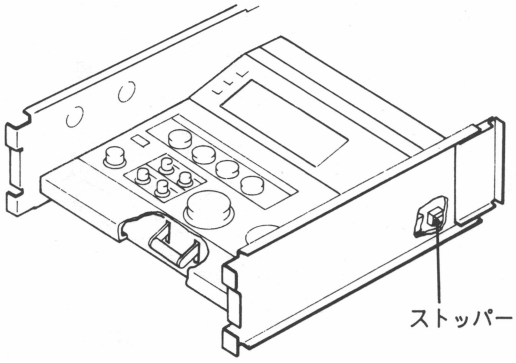


• ラックからの引き出しかた

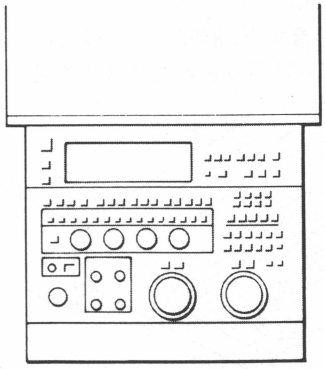
解除レバーを持ち上げてからパネルを引き出す。
(解除レバーを上げるとストッパーが引っ込み，パネルのロックが解除される。)



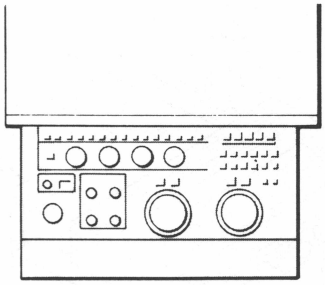
解除レバーが下がっていると，パネルが特定の位置（3箇所）に来たときにストッパーが出て，パネルはロックされる。



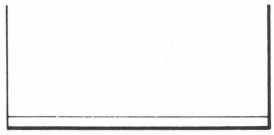
全体を操作するとき



手前の部分だけを操作するとき



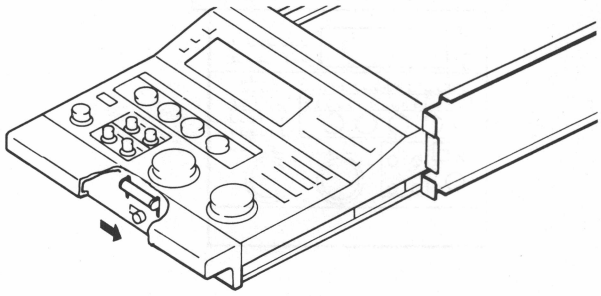
収納しておくとき



• ラックから取り出す場合

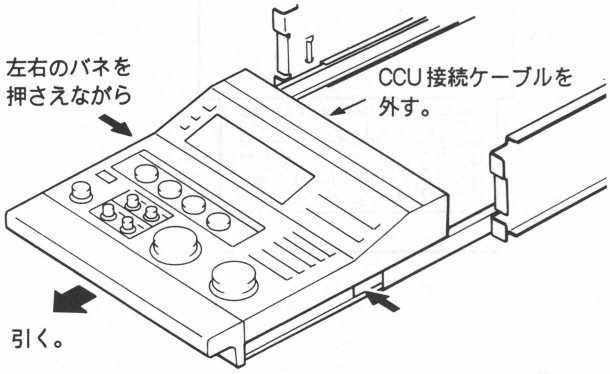
1. 一杯に引き出す。

2. 解除レバーを上げながらスライドレバーを右にずらす。スライドレバーを離すと，解除レバーは上がった状態で留まり，ストッパーは引っ込んだままとなる。

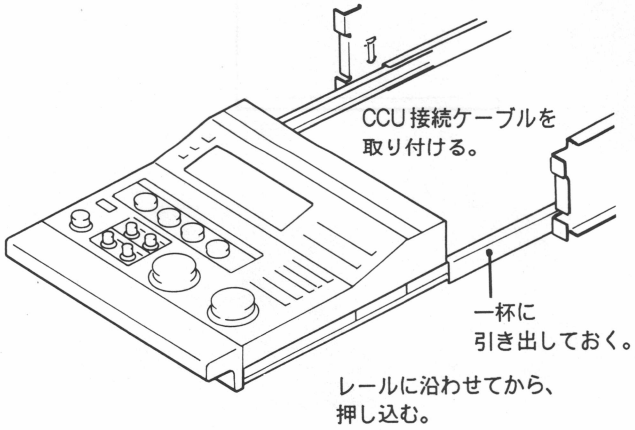


3. さらに，一杯に引き出す。

4.

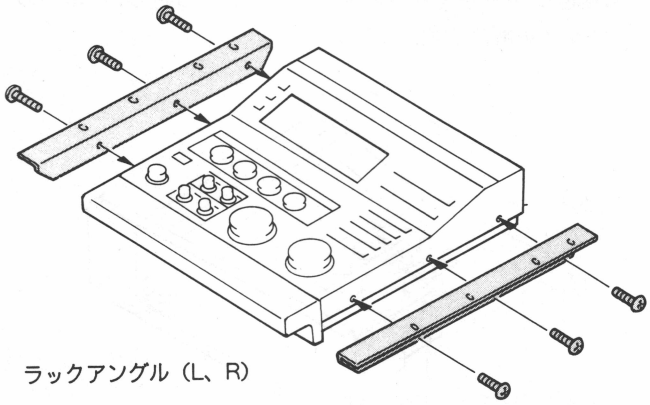


• 再収納

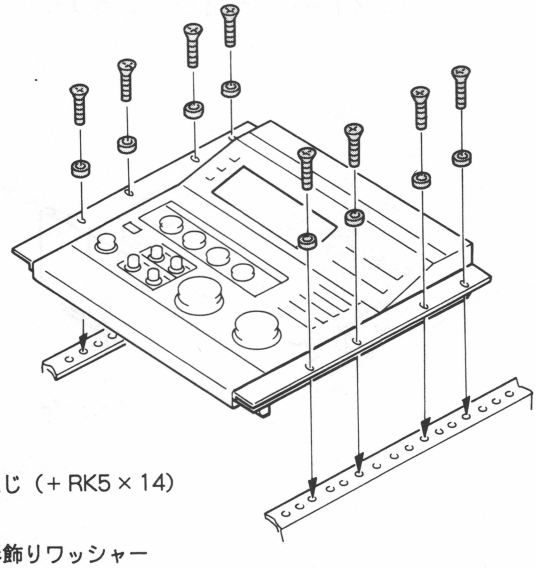


テーブルマウント

1.

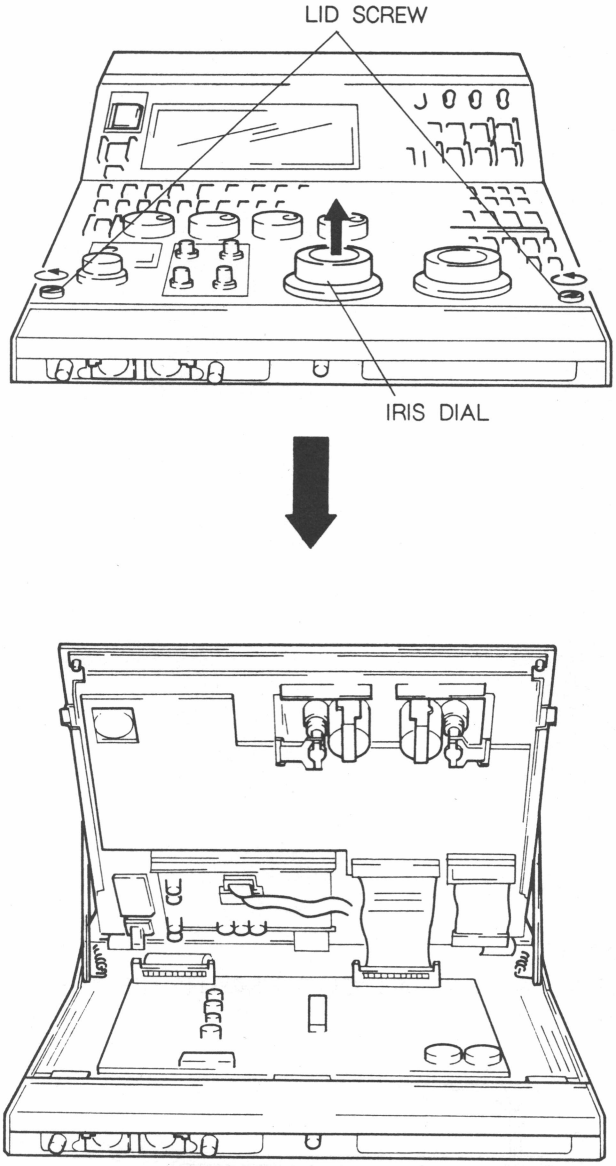


2. テーブルへの固定

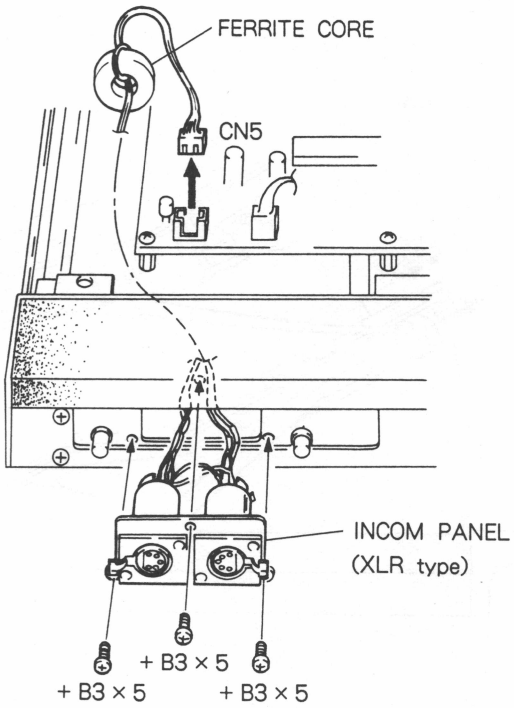


1-5-4. 110号インカムパネルの交換方法

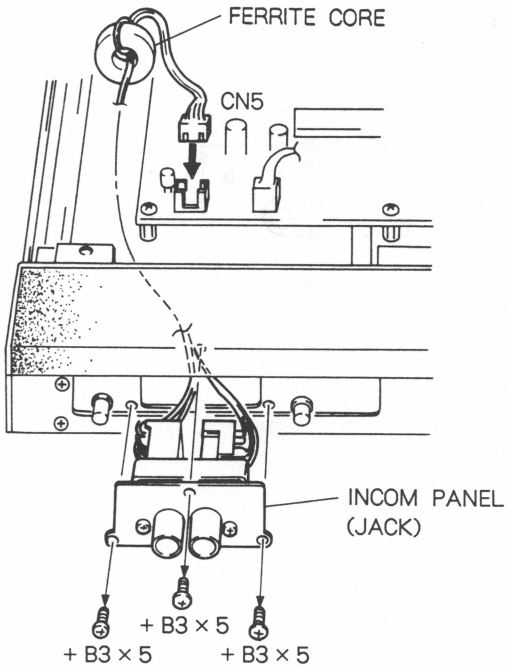
1. 2本のねじ（LID SCREW）をゆるめ，そしてIRIS DIALを持って上面パネルをロックするまで持ち上げる。



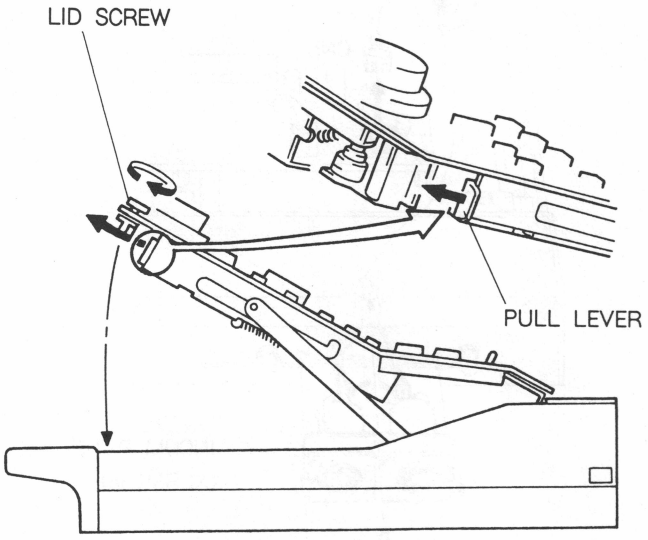
2. CP-130基板のコネクタCN5のプラグを引抜く。そしてINCOM PANEL（XLR type）を止めている3本のねじ（＋B3×5）を外し，INCOM PANELを手前に引出す。



3. 付属のINCOM PANEL（JACK）のハーネスを図のように通し，FERRITE COREにひとまきした後 CP-130基板のコネクタCN5に接続します。
そして，3本のねじ（＋B3×5）でINCOM PANEL（JACK）を取り付ける。

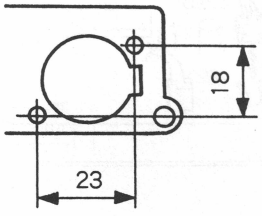


4. 左右のPULL LEVERを引きながら（ロック解除），パネルを閉める（手をはさまないように途中でIRIS dialに持ち換える）。
そして，2本のねじ（LID SCREW）を締める。

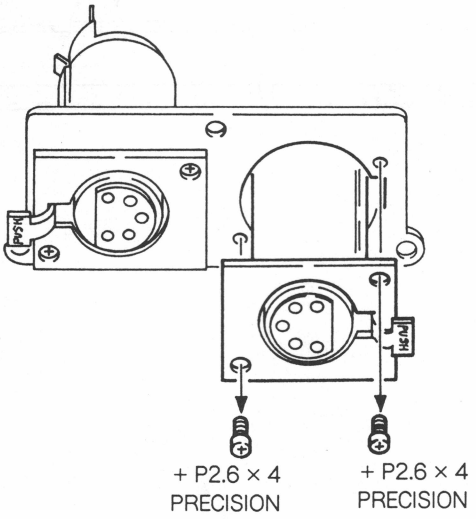


5ピン以外のXLR型を使用する場合

〔適合コネクタの取り付け寸法〕



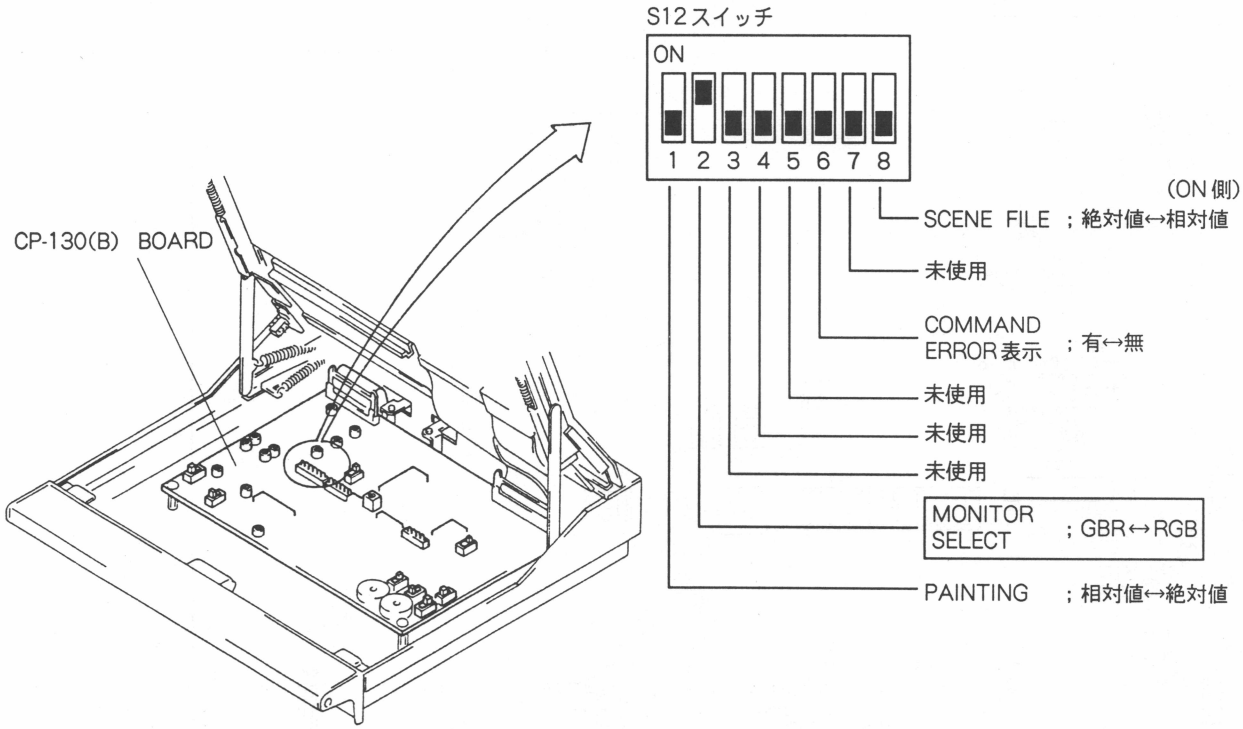
〔交換方法〕
XLR型コネクタを固定している4本のねじ（PRECISION ＋P2.6×4）を外す。



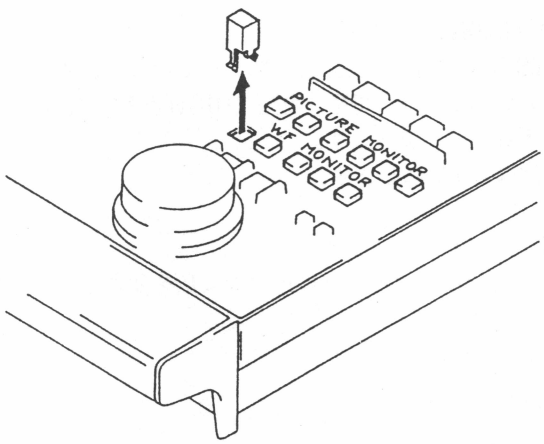
PICTURE MONITOR／WFM MONITORセレクターをRGBに並び換える方法

工場出荷時は，G，B，Rの順になっています。
R，G，Bの順に並び換える場合，下記の手順に従って下さい。

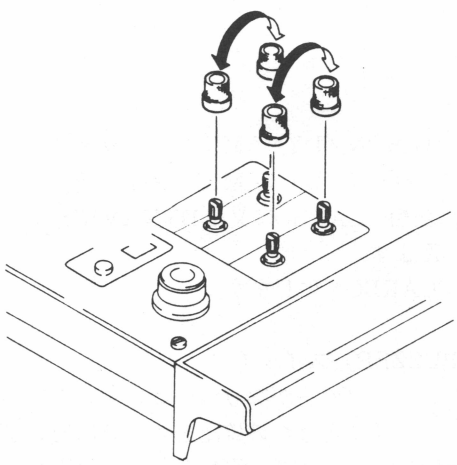
1. CP-130基板のS12-2（RGB／GBR）スイッチを“ON”側にします。



2. PICTURE MONITOR セレクターおよび WFM MONITORセレクターの G，B，R のキートップを差し換える。
   - キートップを引き抜く時
     キートップに厚手の布をかぶせラジオペンチで軽くはさむと良い。



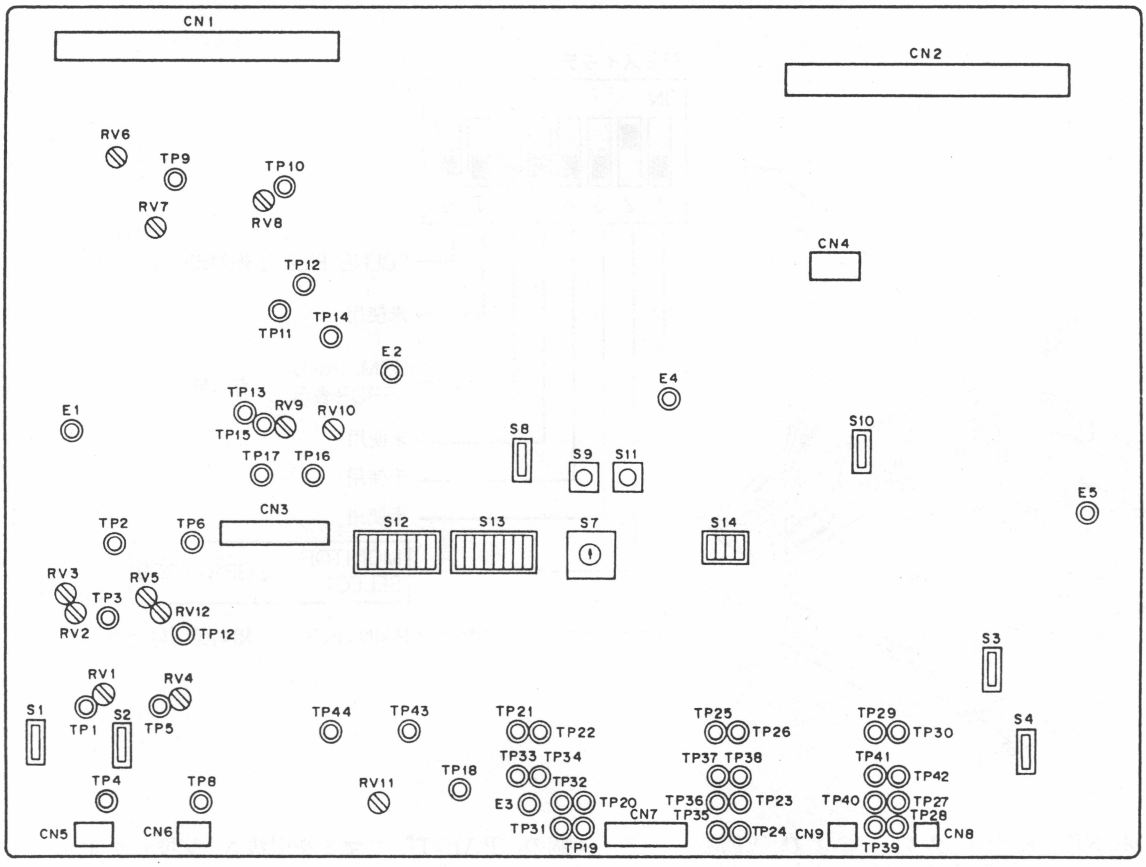
3. 4個の“PAINT”ツマミを引抜き，交換します。



1-6. 操作前の初期設定

1-6-1. 基板内部のスイッチセッティング

CP-130



- S1（CARBON／DYNAMIC）スイッチ
- S2（CARBON／DYNAMIC）スイッチ
  MICの種類（CARBON又はDYNAMIC）に合わせて切り換えます。
  通常はCARBONにします。

- S3（BUZZER）スイッチ
  TEST：　ブザーが鳴りつづけます。ブザーが鳴るかどうかの確認をする時に使います。
  NORMAL：BUZZER CONT信号を識別しブザーを鳴らします。
  通常はNORMALにします。

- S4（BUZZER）スイッチ
  RTS信号の有無を識別し，ブザーで知らせます。
  この時ブザーの音量を2段階（HIGHとLOW）に切り換えることができます。
  通常はLOWにします。

- S7（FREQ）スイッチ
  CPU等で使用するCLOCKの周波数を変えるスイッチです。（現状では使用不可）
  通常は0位置にします。

- S8（CPU1 NORMAL／TEST）スイッチ
  NORMAL：基板上CPUで動作します。
  TEST：　エミュレータをつないで基板の動作チェックができます。
  通常はNORMALにします。

- S9（CPU1 RESET）スイッチ
  CPU1をリセットします。

- S10（CPU2 NORMAL／TEST）スイッチ
  NORMAL：基板上のCPUで動作します。
  TEST：　エミュレーターをつないで基板の動作チェックができます。
  通常はNORMALにします。

- S11（CPU2 RESET）スイッチ
  CPU2をリセットします。

- S12（MODE SELECT）スイッチ

S12 MODE SELECT	モードスイッチの選択		NORMAL POSITION
	ON	OFF	
12-1（Painting）	Absolute values	Relative values	OFF
12-2 (Monitor Select)	RGB	GBR	OFF
12-3（Not used）	–	–	–
12-4（Not used）	–	–	–
12-5（Not used）	–	–	–
12-6（Command Error Indication）	No	Yes	OFF
12-7（Not used）	–	–	–
12-8（Scene File）	Absolute values	Relative values	OFF

- S13（MODE SELECT）スイッチ

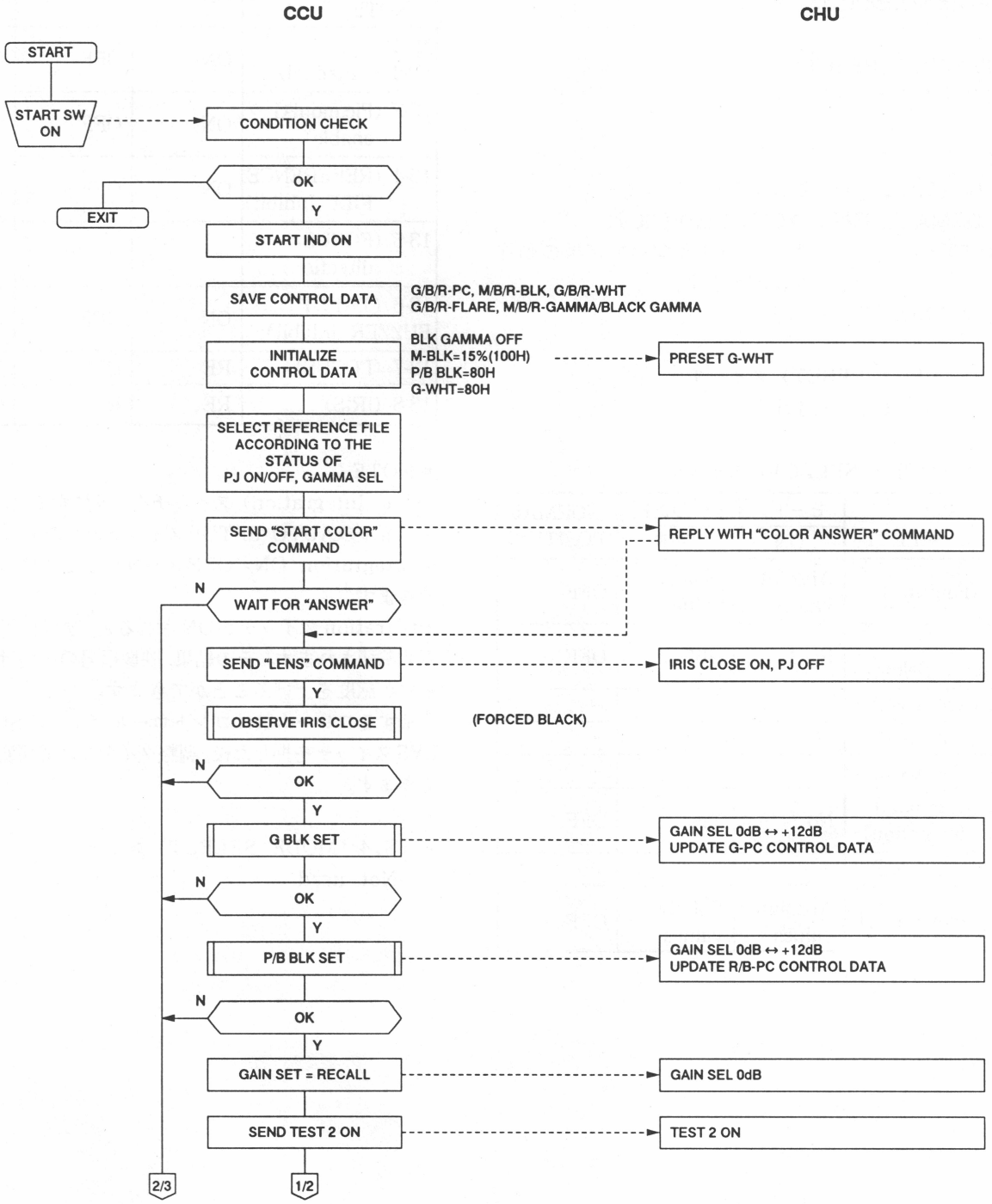
S13 MODE SELECT	モードスイッチの選択		NORMAL POSITION
	ON	OFF	
13-1（Integration）＊NOTE	ON	OFF	OFF
13-2 (Delay manual)	ON	OFF	OFF
13-3（Pic.moni-G enable）	ON	OFF	OFF
13-4（REFERENCE FILE Inhibit）	ON	OFF	OFF
13-5（FOCUS direction）	–	–	–
13-6（TALLY BUZZER Inhibit）	ON	OFF	OFF
13-7（FOCUS）	RE	RV	ON
13-8（IRIS）	RE	RV	ON

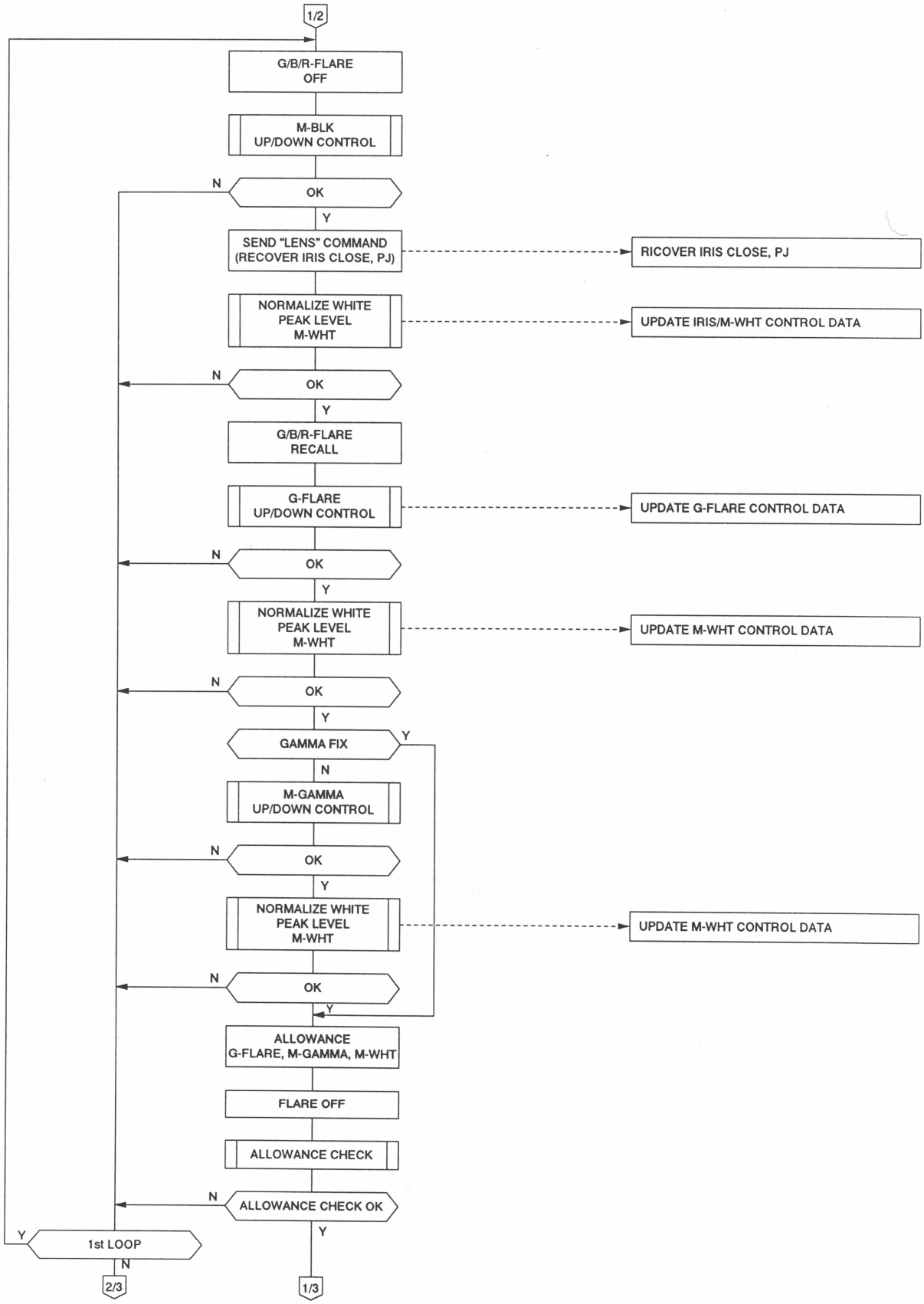
＊NOTE
S13-1（Integration）スイッチをONにすると，コントロールパネルのAUTO SETUPスイッチの左のスイッチ（予備）をIntegration ON／OFFスイッチとして使用することができます。
IntegrationスイッチがONされると，映像信号が数フレーム間蓄積されます。その結果，映像信号の出力は間欠になりますが感度を上げることができます。
蓄積するフレーム数はコントロールパネルのSHUTTER／EVSスイッチを押した後，調整ダイヤルにて可変することができます。

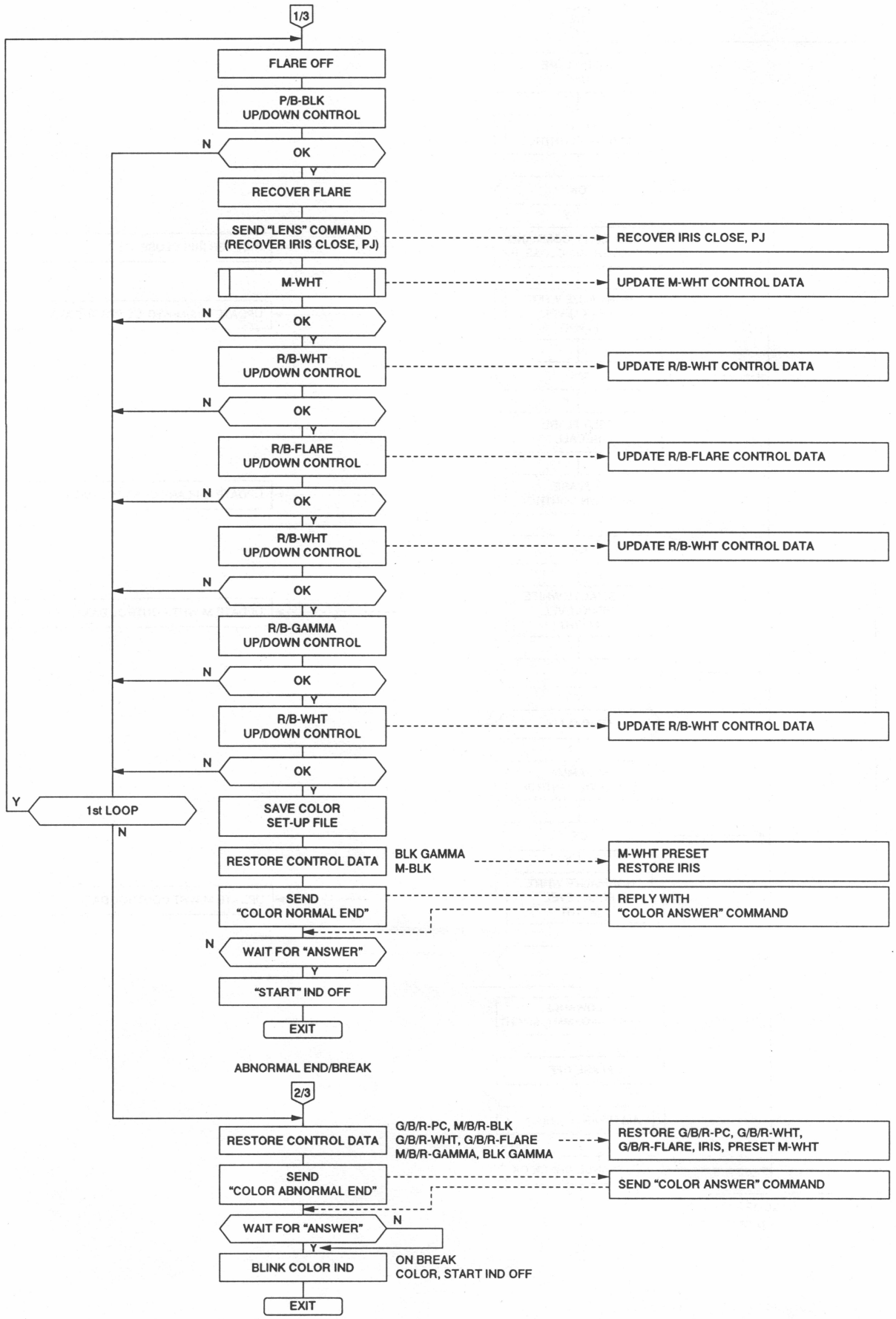
- S14（MODE SELECT）スイッチ
  Not used

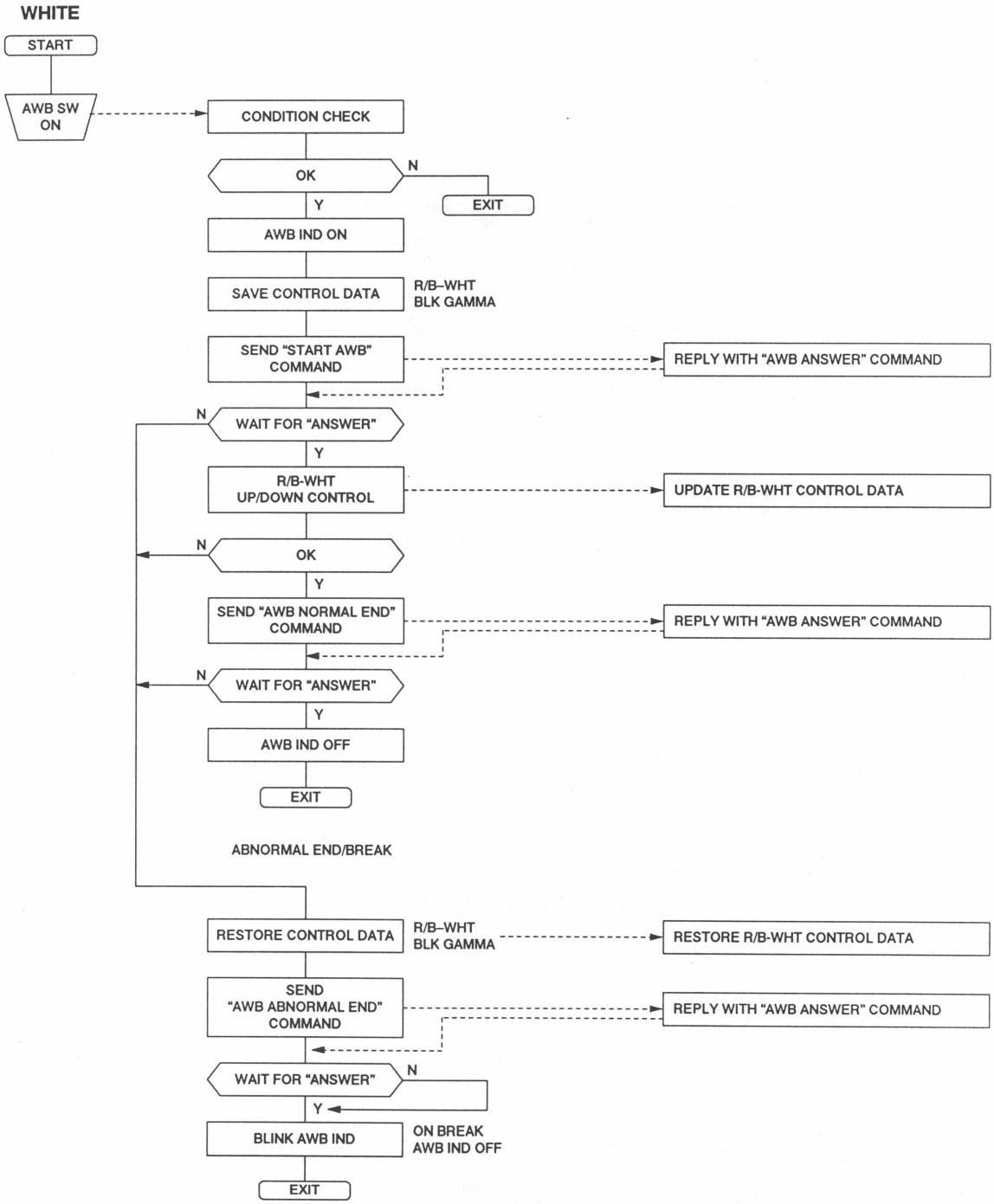
1-6-2. リファレンスファイルおよびセットアップファイルの設定

AUTO COLOR

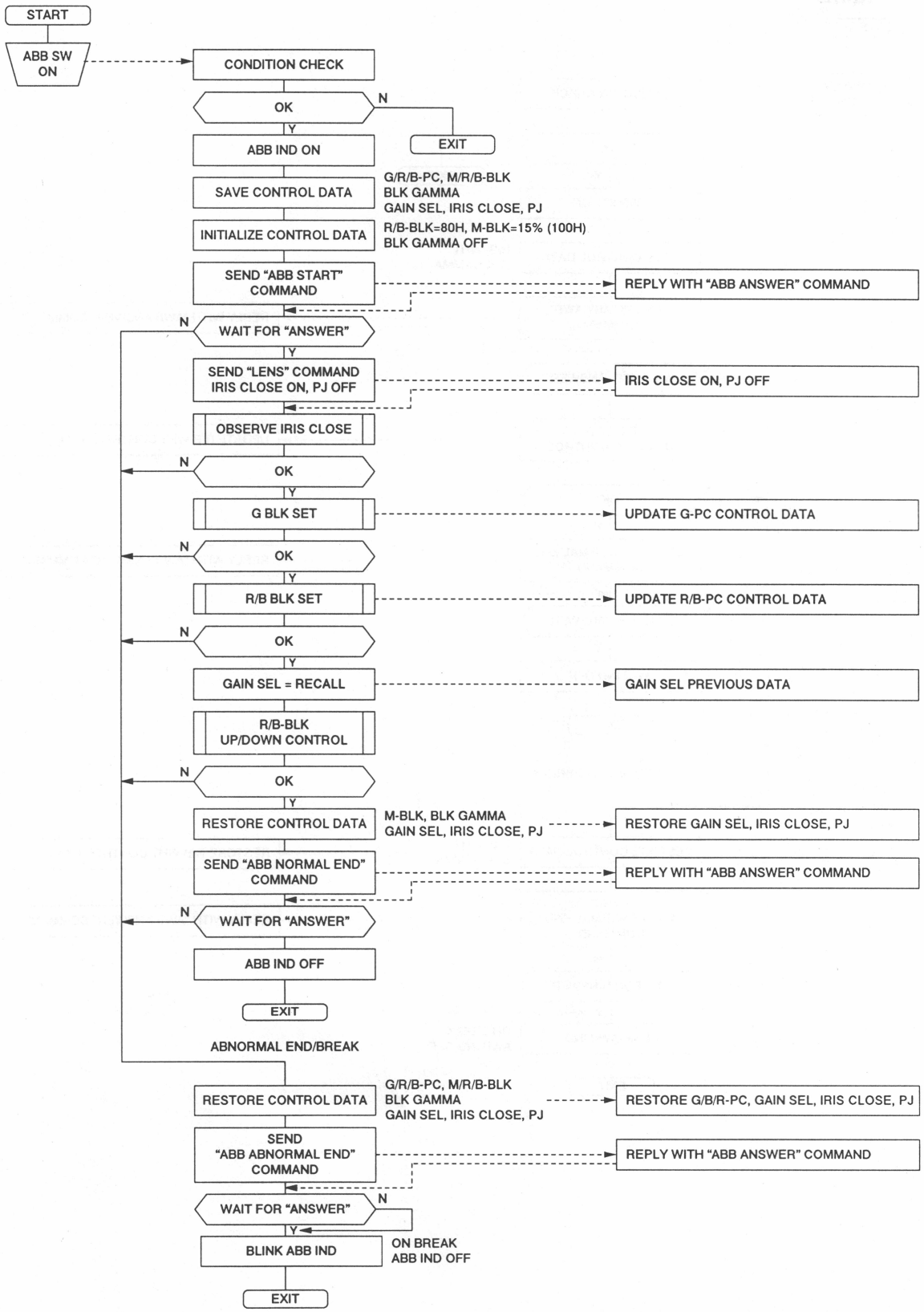



1/2
G/B/R-FLARE OFF
M-BLK UP/DOWN CONTROL
OK
N
Y
SEND "LENS" COMMAND (RECOVER IRIS CLOSE, PJ)
RICOVER IRIS CLOSE, PJ
NORMALIZE WHITE PEAK LEVEL M-WHT
UPDATE IRIS/M-WHT CONTROL DATA
OK
N
Y
G/B/R-FLARE RECALL
G-FLARE UP/DOWN CONTROL
UPDATE G-FLARE CONTROL DATA
OK
N
Y
NORMALIZE WHITE PEAK LEVEL M-WHT
UPDATE M-WHT CONTROL DATA
OK
N
Y
GAMMA FIX
Y
N
M-GAMMA UP/DOWN CONTROL
OK
N
Y
NORMALIZE WHITE PEAK LEVEL M-WHT
UPDATE M-WHT CONTROL DATA
OK
N
Y
ALLOWANCE G-FLARE, M-GAMMA, M-WHT
FLARE OFF
ALLOWANCE CHECK
ALLOWANCE CHECK OK
N
Y
1st LOOP
Y
N
2/3
1/3

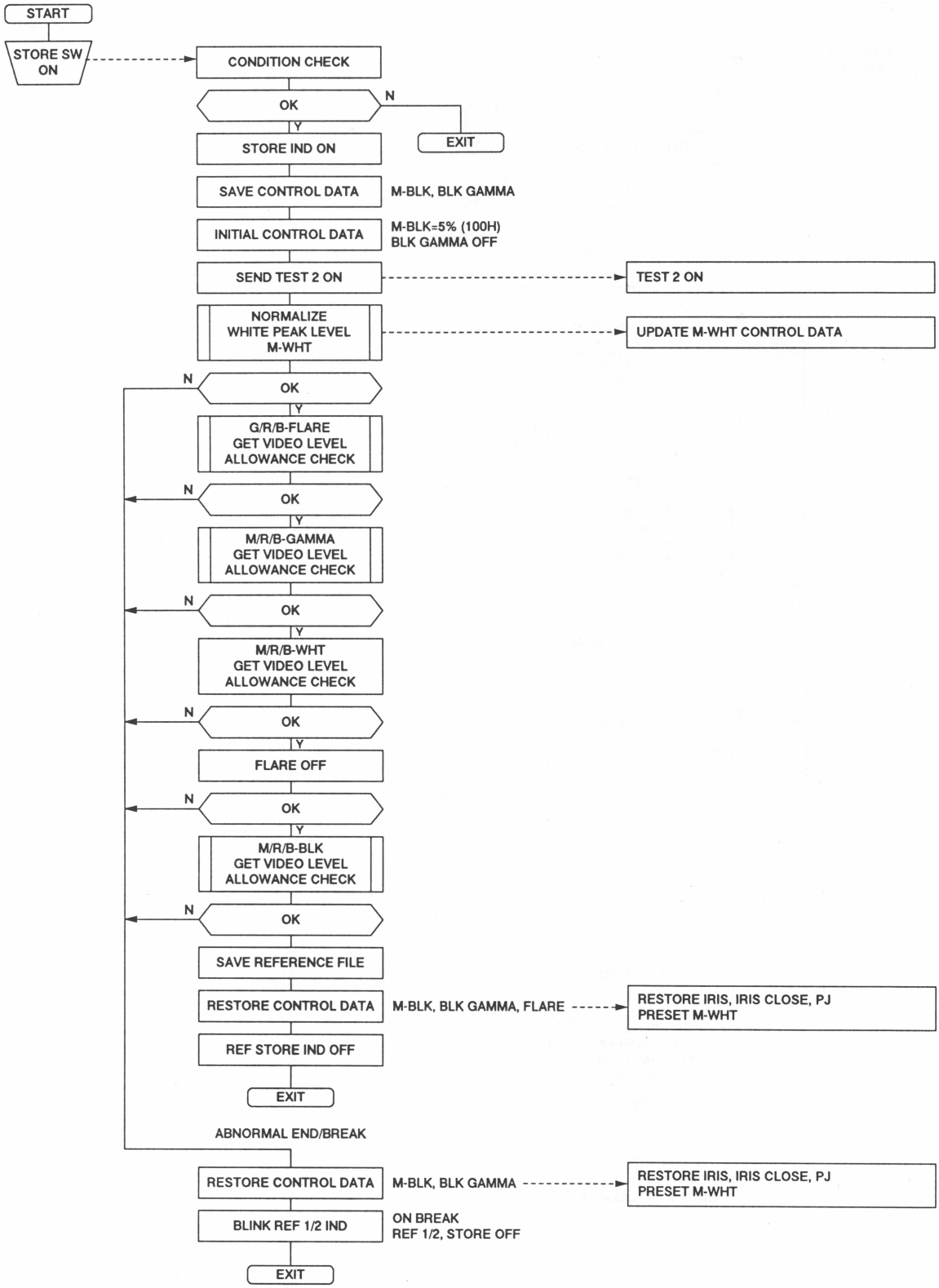

1/3
FLARE OFF
P/B-BLK UP/DOWN CONTROL
OK
N
Y
RECOVER FLARE
SEND "LENS" COMMAND (RECOVER IRIS CLOSE, PJ)
RECOVER IRIS CLOSE, PJ
M-WHT
UPDATE M-WHT CONTROL DATA
OK
R/B-WHT UP/DOWN CONTROL
UPDATE R/B-WHT CONTROL DATA
OK
R/B-FLARE UP/DOWN CONTROL
UPDATE R/B-FLARE CONTROL DATA
OK
R/B-WHT UP/DOWN CONTROL
UPDATE R/B-WHT CONTROL DATA
OK
R/B-GAMMA UP/DOWN CONTROL
OK
R/B-WHT UP/DOWN CONTROL
UPDATE R/B-WHT CONTROL DATA
OK
1st LOOP
SAVE COLOR SET-UP FILE
RESTORE CONTROL DATA
BLK GAMMA M-BLK
M-WHT PRESET RESTORE IRIS
SEND "COLOR NORMAL END"
REPLY WITH "COLOR ANSWER" COMMAND
WAIT FOR "ANSWER"
"START" IND OFF
EXIT
ABNORMAL END/BREAK
2/3
RESTORE CONTROL DATA
G/B/R-PC, M/B/R-BLK G/B/R-WHT, G/B/R-FLARE M/B/R-GAMMA, BLK GAMMA
RESTORE G/B/R-PC, G/B/R-WHT, G/B/R-FLARE, IRIS, PRESET M-WHT
SEND "COLOR ABNORMAL END"
SEND "COLOR ANSWER" COMMAND
WAIT FOR "ANSWER"
BLINK COLOR IND
ON BREAK COLOR, START IND OFF
EXIT


WHITE
START
AWB SW ON
CONDITION CHECK
OK
N
EXIT
Y
AWB IND ON
SAVE CONTROL DATA
R/B–WHT BLK GAMMA
SEND "START AWB" COMMAND
REPLY WITH "AWB ANSWER" COMMAND
N
WAIT FOR "ANSWER"
Y
R/B-WHT UP/DOWN CONTROL
UPDATE R/B-WHT CONTROL DATA
N
OK
Y
SEND "AWB NORMAL END" COMMAND
REPLY WITH "AWB ANSWER" COMMAND
N
WAIT FOR "ANSWER"
Y
AWB IND OFF
EXIT
ABNORMAL END/BREAK
RESTORE CONTROL DATA
R/B–WHT BLK GAMMA
RESTORE R/B-WHT CONTROL DATA
SEND "AWB ABNORMAL END" COMMAND
REPLY WITH "AWB ANSWER" COMMAND
WAIT FOR "ANSWER"
N
Y
BLINK AWB IND
ON BREAK AWB IND OFF
EXIT

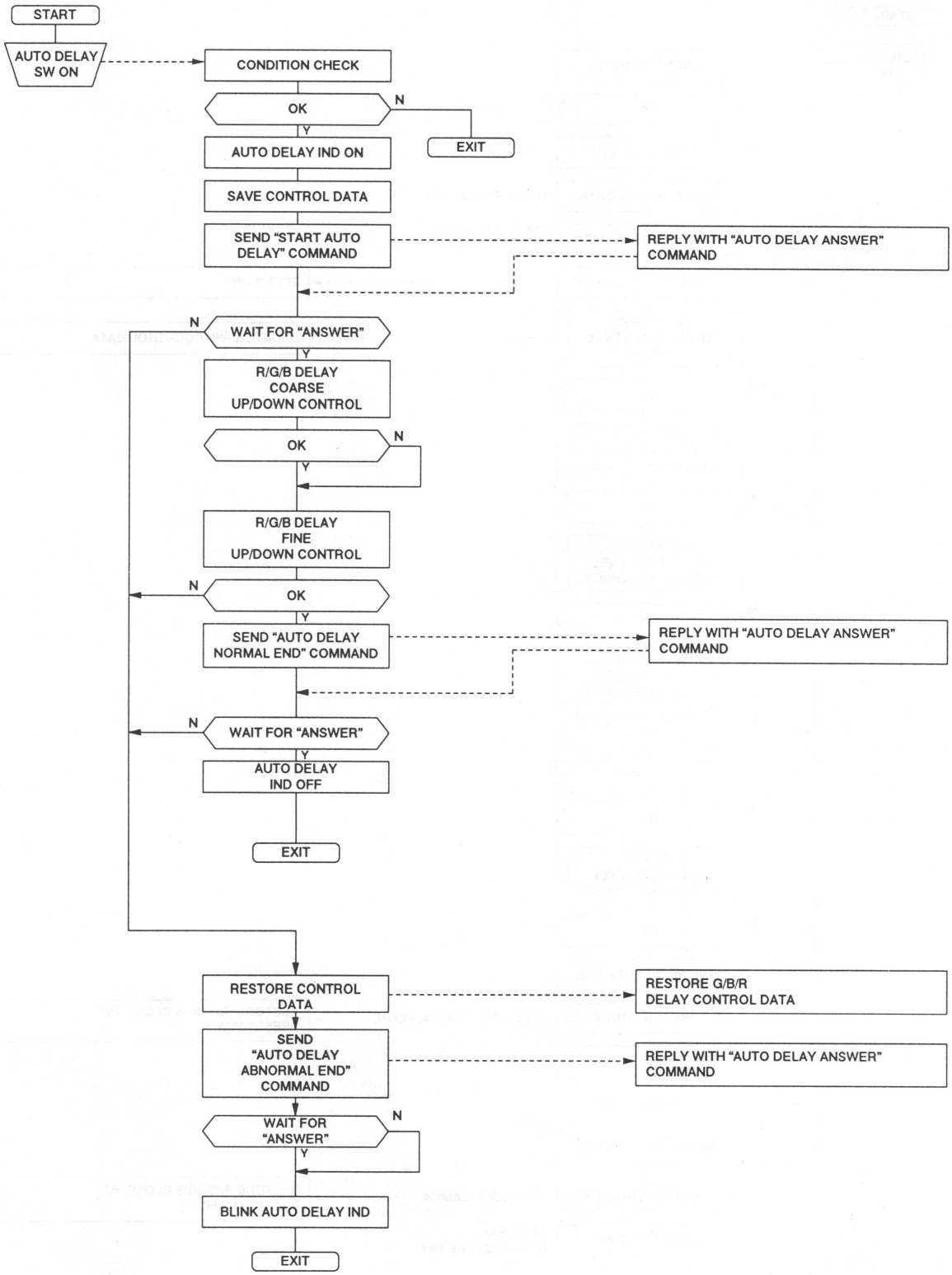
BLACK


START
ABB SW ON
CONDITION CHECK
OK
N
EXIT
Y
ABB IND ON
SAVE CONTROL DATA
G/R/B-PC, M/R/B-BLK
BLK GAMMA
GAIN SEL, IRIS CLOSE, PJ
INITIALIZE CONTROL DATA
R/B-BLK=80H, M-BLK=15% (100H)
BLK GAMMA OFF
SEND "ABB START" COMMAND
REPLY WITH "ABB ANSWER" COMMAND
WAIT FOR "ANSWER"
SEND "LENS" COMMAND IRIS CLOSE ON, PJ OFF
IRIS CLOSE ON, PJ OFF
OBSERVE IRIS CLOSE
G BLK SET
UPDATE G-PC CONTROL DATA
R/B BLK SET
UPDATE R/B-PC CONTROL DATA
GAIN SEL = RECALL
GAIN SEL PREVIOUS DATA
R/B-BLK UP/DOWN CONTROL
RESTORE CONTROL DATA
M-BLK, BLK GAMMA
GAIN SEL, IRIS CLOSE, PJ
RESTORE GAIN SEL, IRIS CLOSE, PJ
SEND "ABB NORMAL END" COMMAND
REPLY WITH "ABB ANSWER" COMMAND
ABB IND OFF
ABNORMAL END/BREAK
RESTORE G/B/R-PC, GAIN SEL, IRIS CLOSE, PJ
SEND "ABB ABNORMAL END" COMMAND
BLINK ABB IND
ON BREAK
ABB IND OFF

REFERENCE

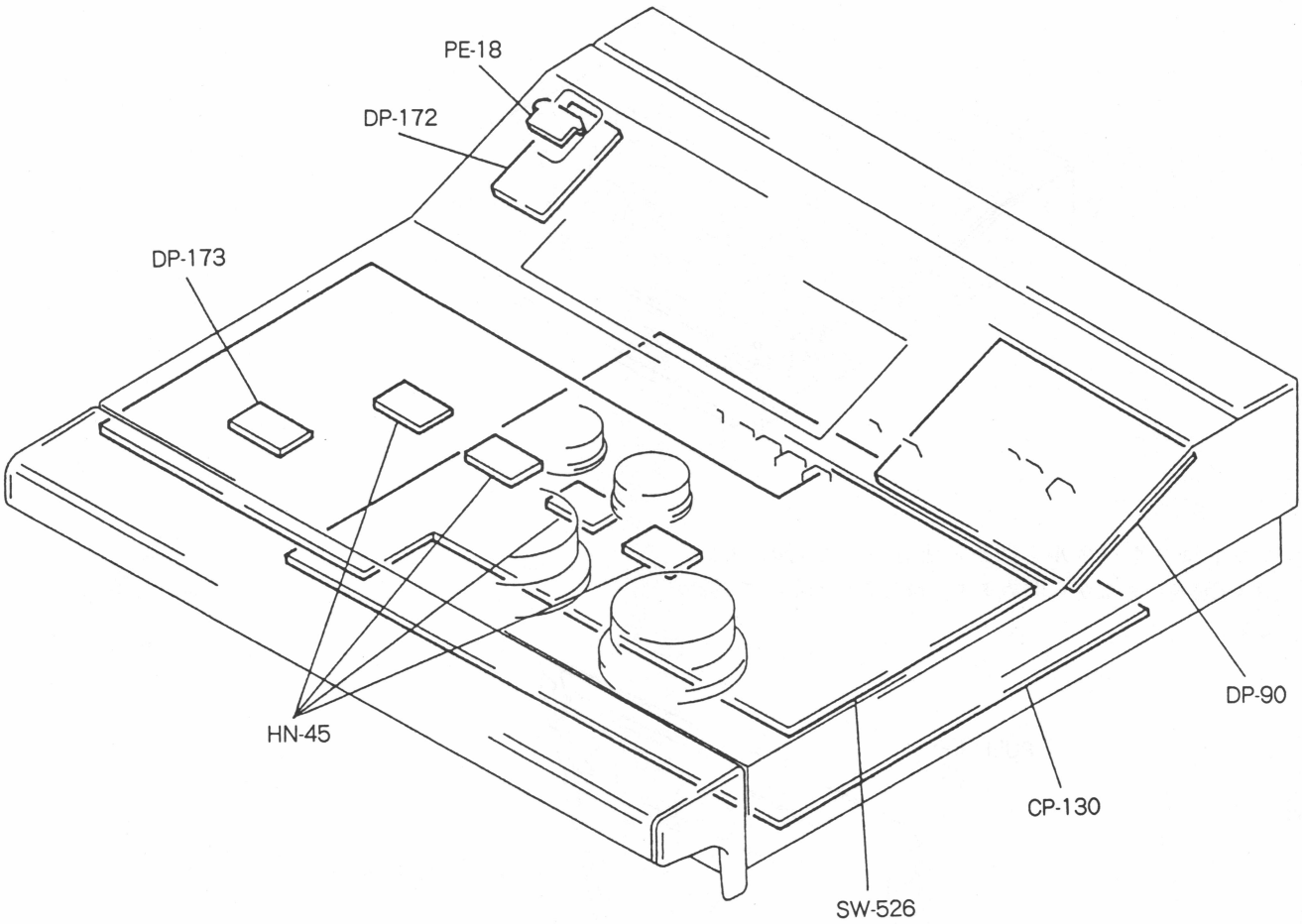

START
STORE SW ON
CONDITION CHECK
OK
N
EXIT
Y
STORE IND ON
SAVE CONTROL DATA
M-BLK, BLK GAMMA
INITIAL CONTROL DATA
M-BLK=5% (100H)
BLK GAMMA OFF
SEND TEST 2 ON
TEST 2 ON
NORMALIZE WHITE PEAK LEVEL M-WHT
UPDATE M-WHT CONTROL DATA
OK
G/R/B-FLARE GET VIDEO LEVEL ALLOWANCE CHECK
OK
M/R/B-GAMMA GET VIDEO LEVEL ALLOWANCE CHECK
OK
M/R/B-WHT GET VIDEO LEVEL ALLOWANCE CHECK
OK
FLARE OFF
OK
M/R/B-BLK GET VIDEO LEVEL ALLOWANCE CHECK
OK
SAVE REFERENCE FILE
RESTORE CONTROL DATA
M-BLK, BLK GAMMA, FLARE
RESTORE IRIS, IRIS CLOSE, PJ PRESET M-WHT
REF STORE IND OFF
EXIT
ABNORMAL END/BREAK
RESTORE CONTROL DATA
M-BLK, BLK GAMMA
RESTORE IRIS, IRIS CLOSE, PJ PRESET M-WHT
BLINK REF 1/2 IND
ON BREAK
REF 1/2, STORE OFF
EXIT

DELAY


START
AUTO DELAY SW ON
CONDITION CHECK
OK
N
EXIT
Y
AUTO DELAY IND ON
SAVE CONTROL DATA
SEND "START AUTO DELAY" COMMAND
REPLY WITH "AUTO DELAY ANSWER" COMMAND
N
WAIT FOR "ANSWER"
Y
R/G/B DELAY COARSE UP/DOWN CONTROL
OK
N
Y
R/G/B DELAY FINE UP/DOWN CONTROL
N
OK
Y
SEND "AUTO DELAY NORMAL END" COMMAND
REPLY WITH "AUTO DELAY ANSWER" COMMAND
N
WAIT FOR "ANSWER"
Y
AUTO DELAY IND OFF
EXIT
RESTORE CONTROL DATA
RESTORE G/B/R DELAY CONTROL DATA
SEND "AUTO DELAY ABNORMAL END" COMMAND
REPLY WITH "AUTO DELAY ANSWER" COMMAND
WAIT FOR "ANSWER"
N
Y
BLINK AUTO DELAY IND
EXIT

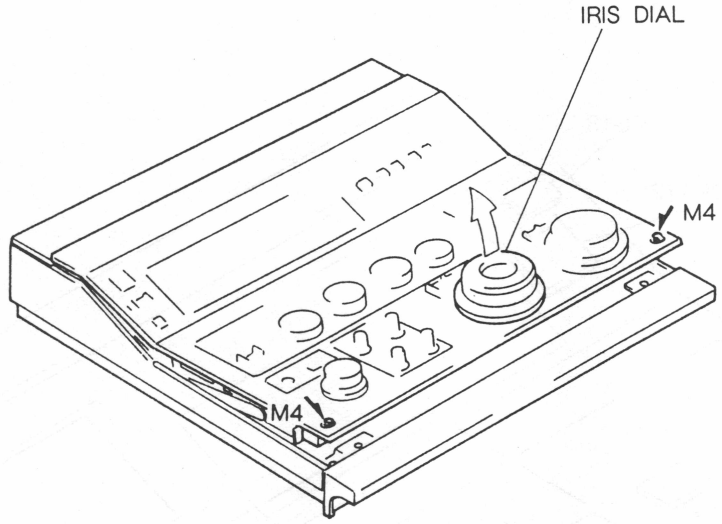
第2章
サービスインフォメーション

2-1. 基板配置図

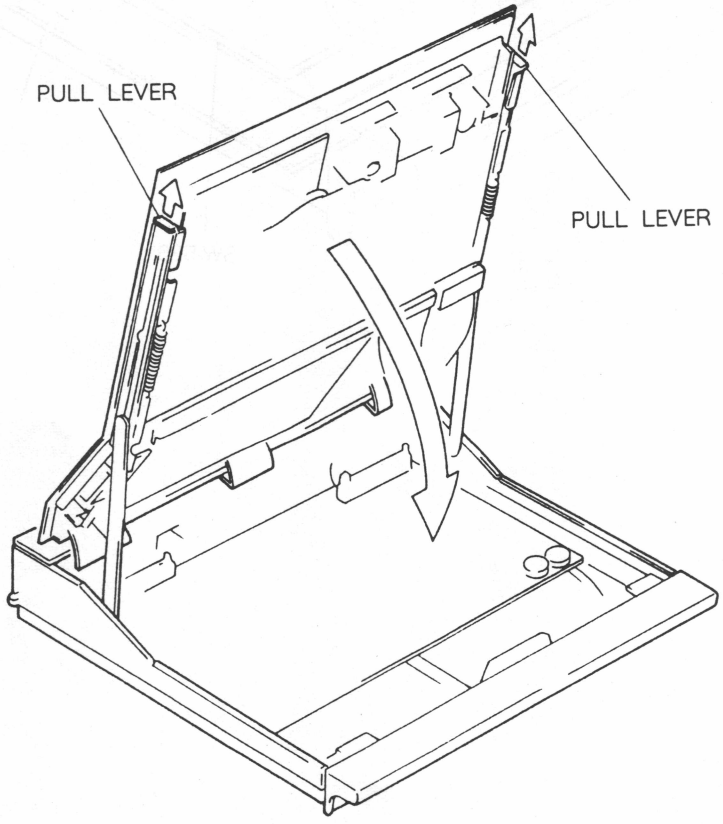


2-2. コントロールパネルの開閉

① ねじ2本（M4）をゆるめ、IRIS DIALを持ってコントロールパネルをロックするまで持ち上げます。



② コントロールパネルを閉めるときは、左右のPULL LEVERを引きながら閉めます。ねじ2本（M4）を締めます。



2-3. サービス上の注意事項

2-3-1. PROM IC

PROM ICにはオリジナル品名の末尾にそのプログラムの名称が記載されています。下表にはその名称が太い文字で示されています。
又，バージョン変更された場合，この末尾の名称が変わります。オリジナル品名のみ（プログラム化されていない）は絶対に使用しないこと。
尚，各基板に使われているICは全てソケット化しています。

基板	Ref. No	名称
CP-130	IC46	27C256A-CANL-V1.0
	IC-58	27C256A-CDSP-V1.0

2-3-2. 補修用部品の注意事項

(1) 安全重要部品
回路図，分解図，電気部品表中，⚠印および▒で囲まれた部品は安全性を維持するために重要な部品です。従って，これらの部品を交換するには必ず指定の部品と交換して下さい。

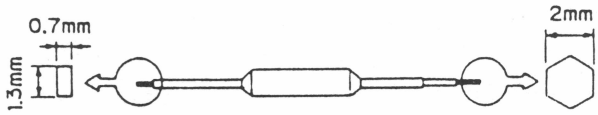
(2) 部品の共通化
ソニーから供給される部品はセットに実装されているものと異なることがあります。これは部品の共通化，改良等によるものです。分解図や電気部品表中には現時点での共通化された部品が記載されています。

(3) 部品在庫
分解図，電気部品表中，SP欄がSで示されている部品は常時在庫しています。
SP欄が“O”で示されている部品は交換頻度が低い部品であるので在庫しないことがあり，納期が長くなることがあります。

(4) コンデンサ，インダクタ，抵抗の単位
回路図，分解図，電気部品表中，特に明記したものを除き，下記の単位は省略されています。
コンデンサ　：　μF
インダクタ　：　μH
抵抗　　：　Ω

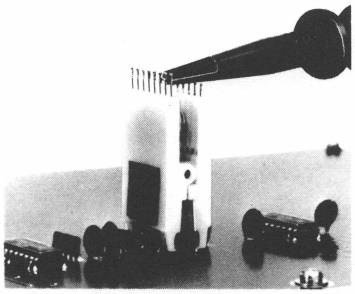
2-4. 治工具

調整用ドライバー　　ソニー部品番号 7-700-733-01



ICテストクリップ

TC-16 ソニー部品番号 J-6041-770-A
TC-20 ソニー部品番号 J-6041-780-A



チェック，調整時にDIPタイプICの足にオシロスコープのプローブをかけるのに便利です。TC-16は14ピン又は16ピンのICに，TC-20は18ピン又は20ピンのICに使えます。

第3章
調整要項

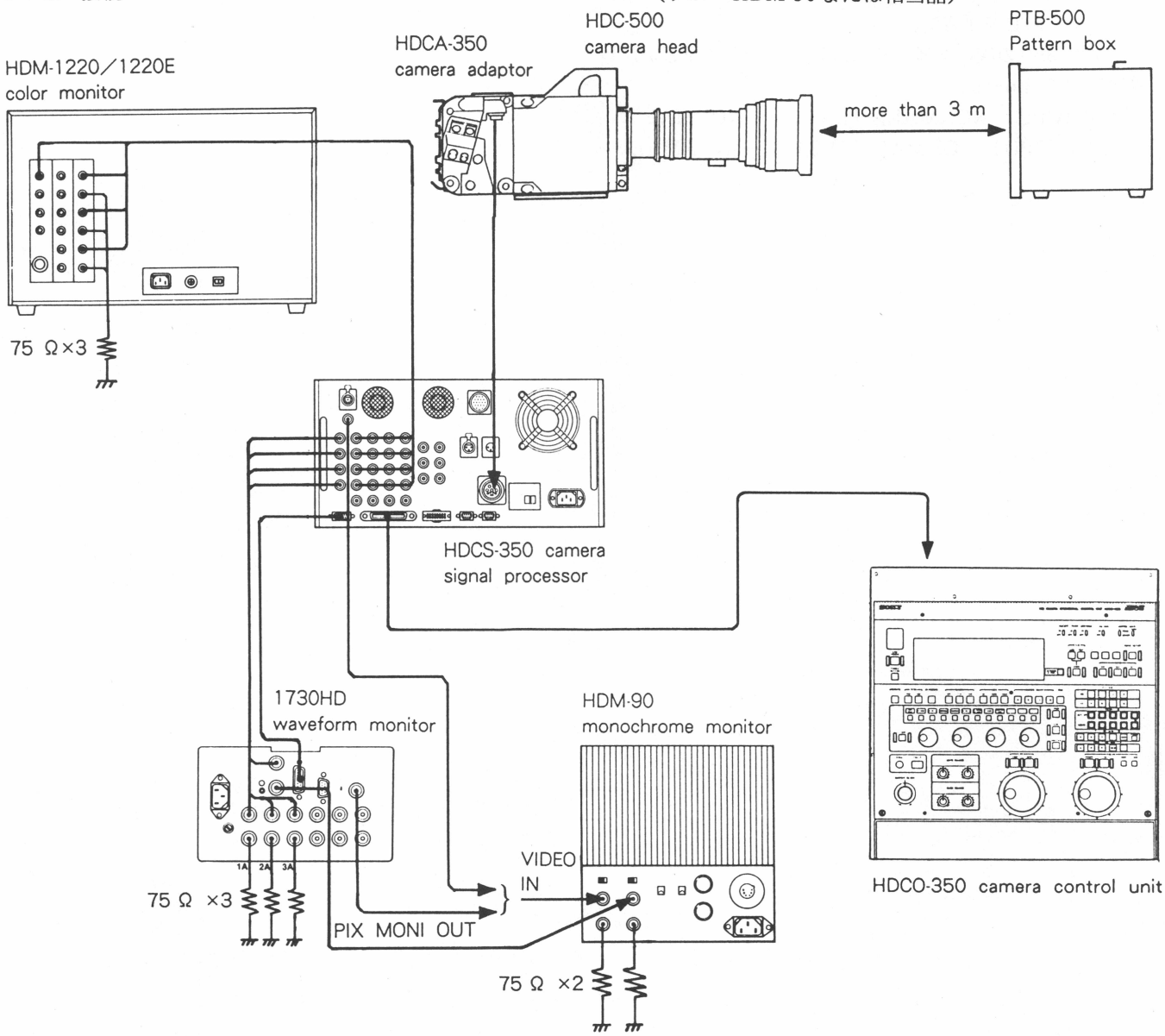
3-1. 準備

3-1-1. 使用機器

- 測定器
  - デジタル電圧計
  - オシロスコープ（300 MHz以上）
  - 低周波発振器
  - ヘッドセット

- 関連機器
  - HDC-500
  - HDCA-350
  - HDCS-350
  - HDVS波形モニタ
  - （テクトロニクス社1730HDまたは相当品）
  - HDVSカラーモニタ
  - （ソニーHDM-1220または相当品）
  - HDVS白黒モニタ
  - （ソニーHDM-90または相当品）

3-1-2. 接続



注意事項：HDCO-350の調整を行うときは、パターンボックス、波形モニタ、ピクチャーモニタは使用しなくてもかまいません。

3-1-3. 注意事項

- 調整を行うにあたり“3-1-2. 接続”に示すHDCO-350を除く関連機器が完全に調整されている事が必要です。
- 電源をOFFする時は，最初にHDCOのPANEL POWERスイッチをOFFするとカメラヘッドのフィルタがクローズの位置に戻らずに電源がOFFしてしまいますので，CHU POWERスイッチ→PANEL POWERスイッチの順で行って下さい。

3-1-4. 初期設定

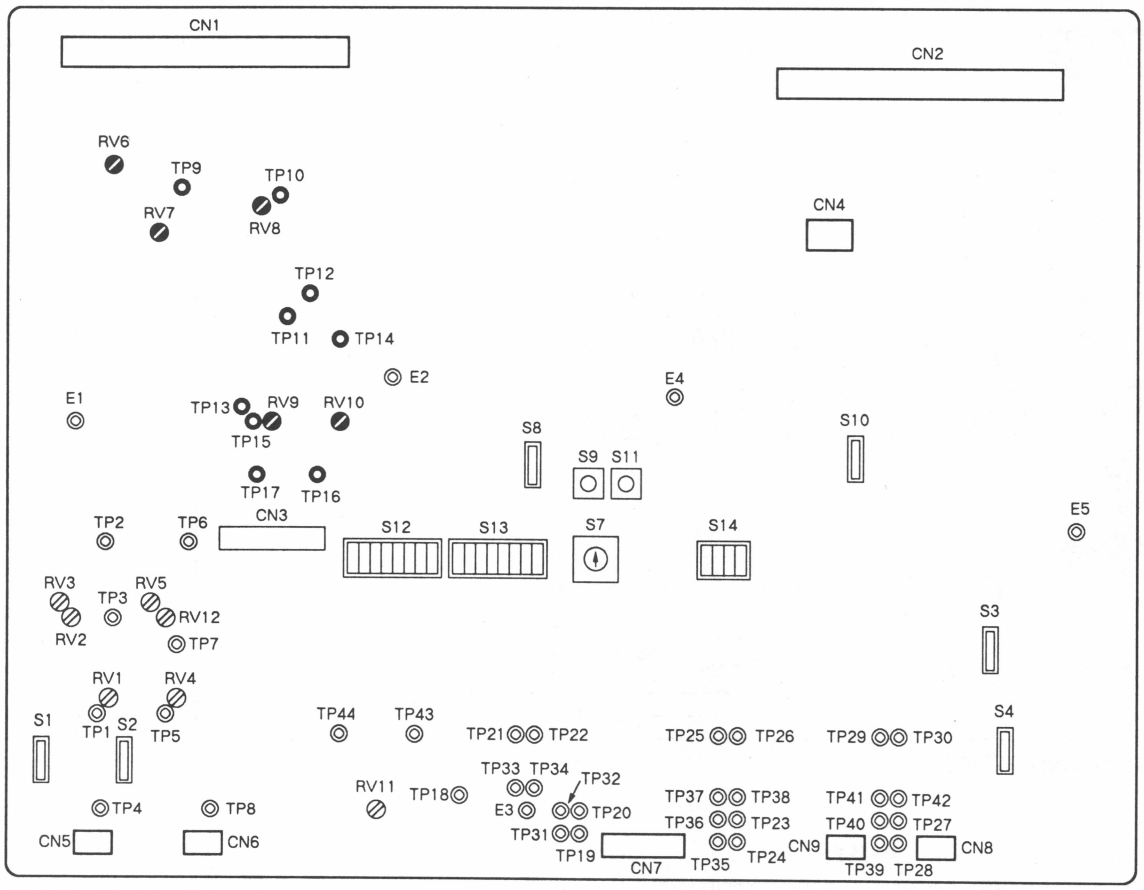
- 調整を行う前に接続したシステムの各電源を投入し，約10分間ウォーミングアップを行って下さい。
- HDVSカメラシステムのスイッチおよびボリューム類は，おのおののメンテナンスマニュアルの“操作前の初期設定”を参照して下さい。
- HDCO-350の次のスイッチの設定を確認して下さい。
  [CP-130 board]
  S8 (CPU1 NORMAL／TEST) → NORMAL
  S10 (CPU1 NORMAL／TEST) → NORMAL

3-2. 調整

3-2-1. 電源電圧調整

注意事項： この調整を行った場合は，HDCO-350に関する調整項目すべてを確認する必要があります。

測定器： デジタル電圧計
基板： CP-130基板



CP-130 BOARD (COMPONENT SIDE)

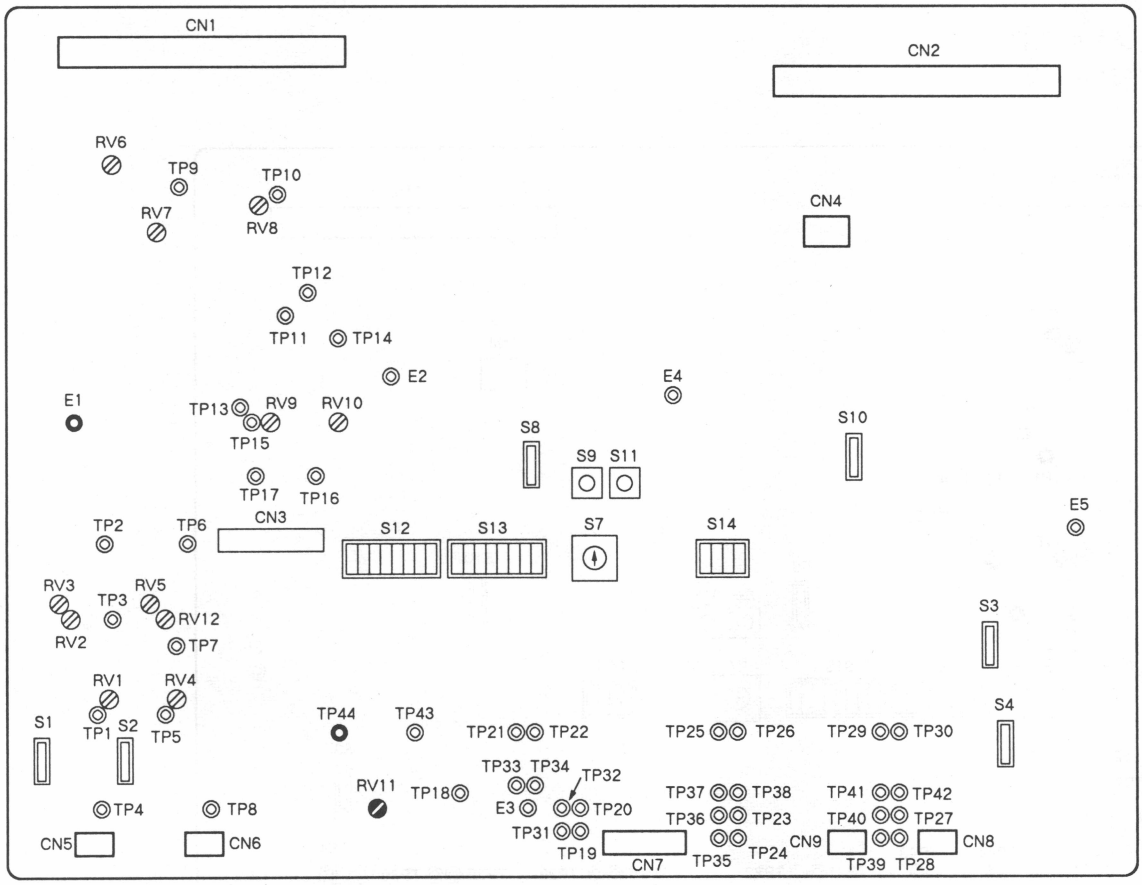
調整手順

- 下表のように調整して下さい。

調整項目	測定点／CP-130	調整箇所／CP-130	規　格
＋15V調整	TP16 (GND ; E1) TP15 (GND ; E1)	◐RV10 (＋15V ADJ) 確認	＋15.0 ± 0.8 V dc ＋17.0～20.0 V dc
＋9V調整	TP9 (GND ; E1) TP11 (GND ; E1) TP10 (GND ; E1) TP12 (GND ; E1)	◐RV7 (＋9.5V ADJ) ◐RV6 (－9.5V ADJ) ◐RV8 (＋9V ADJ) 確認	＋9.5 ± 0.05 V dc －9.5 ± 0.05 V dc ＋9.0 ± 0.05 V dc －9.0 ± 0.05 V dc
＋7V確認	TP17 (GND ; E1)	確認	＋7.0 ± 0.3 V dc
＋5V調整	TP14 (GND ; E1) TP13 (GND ; E1)	◐RV9 (＋5V ADJ) 確認	＋5.0 ± 0.02 V dc ＋5.5 ± 0.05 V dc

3-2-2. A／Dコンバーター読み込みタイミング幅調整

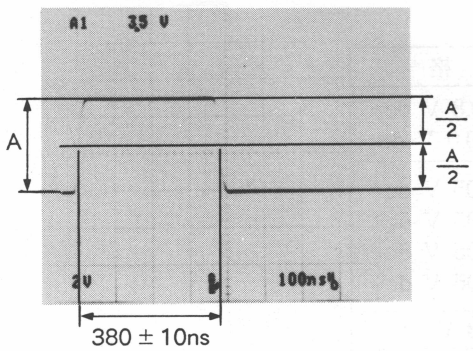
測定器：　オシロスコープ
基板：　CP-130基板



CP-130 BOARD (COMPONENT SIDE)

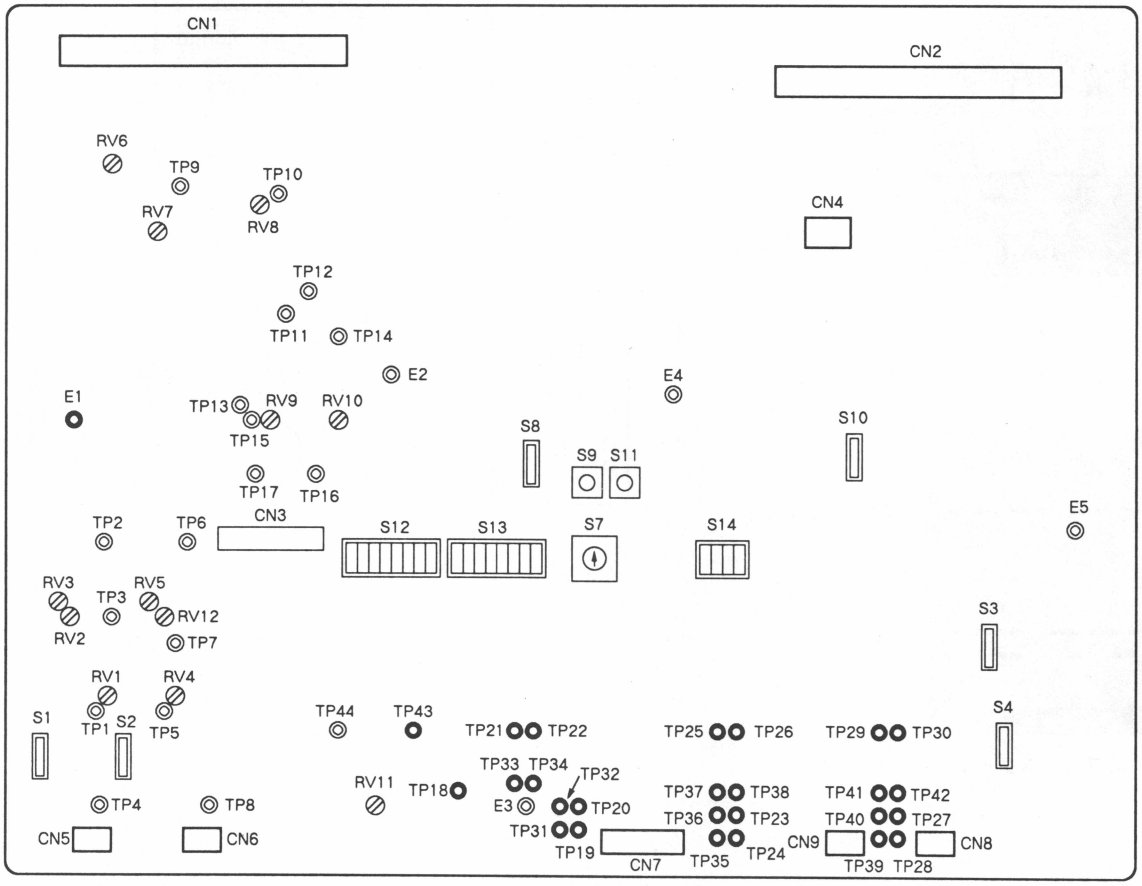
測定点：　TP44（GND；E1）／CP-130基板
調整箇所：RV11（EN PULSE WIDTH）／CP-130基板

規格：　380 ± 10 ns



3-2-3. ロータリエンコーダパルス確認

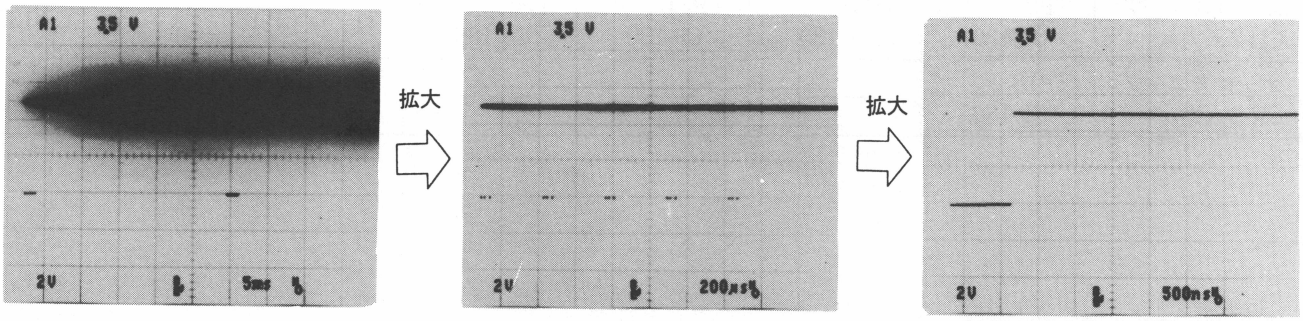
測定器：　　オシロスコープ
基板：　　CP-130基板



CP-130 BOARD (COMPONENT SIDE)

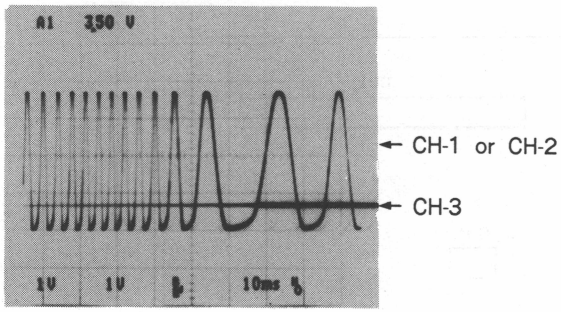
確認手順

1. TP43（GND；E1）／CP-130基板の波形が次のように
   なることを確認する。

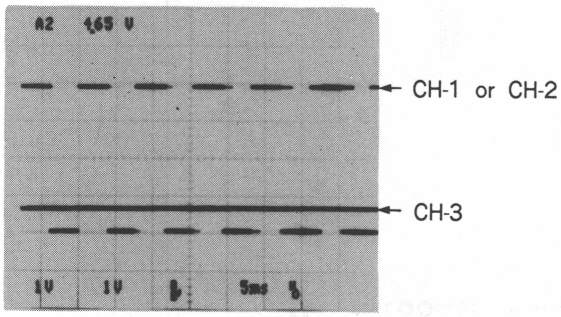


（次ページへ続く）

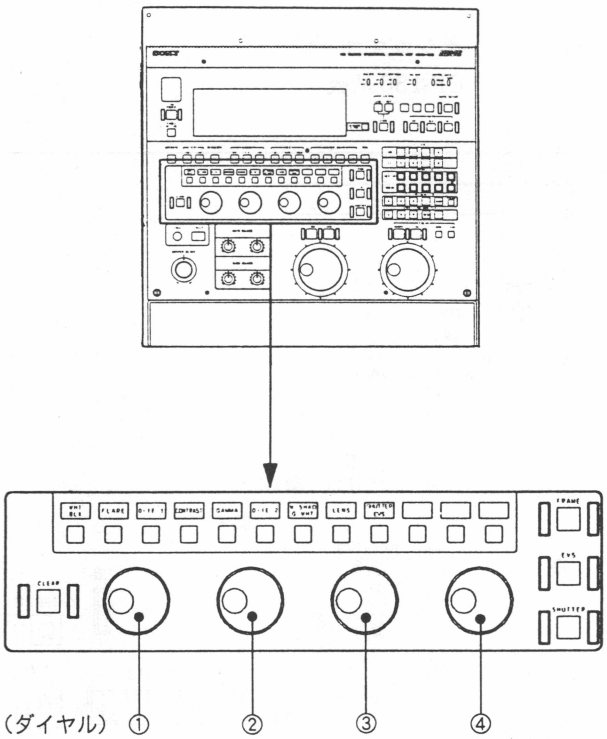
2. ダイヤルの動作確認 1
各ダイヤルを回したときそれぞれの測定点での波形が次のような波形になることを確認します。



ダイヤル①～④



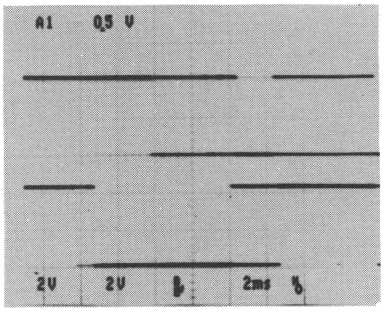
フォーカスダイヤル, アイリスダイヤル



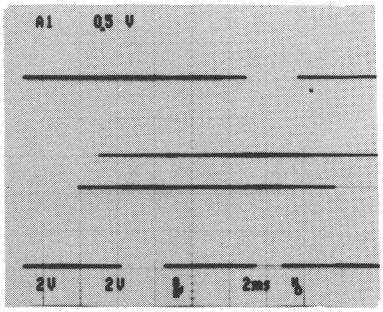
各ダイヤル動作確認時の測定点

	ダイヤル①	ダイヤル②	ダイヤル③	ダイヤル④	フォーカスダイヤル	アイリスダイヤル
オシロスコープ CH-1 入力	TP19 ／CP-130	TP31 ／CP-130	TP23 ／CP-130	TP35 ／CP-130	TP27／CP-130	TP39／CP-130
オシロスコープ CH-2 入力	TP20 ／CP-130	TP32 ／CP-130	TP24 ／CP-130	TP36 ／CP-130	TP28／CP-130	TP40／CP-130
オシロスコープ CH-3 入力	TP18 ／CP-130	←	←	←	←	←

3. ダイヤルの動作確認2
各ダイヤルを時計方向および反時計方向に回したときそれぞれの測定点での波形が次のようになることを確認します。



時計方向に回した時の波形
（各ダイヤル共通）



反時計方向に回した時の波形
（各ダイヤル共通）

各ダイヤル動作確認時の測定点

	ダイヤル①	ダイヤル②	ダイヤル③	ダイヤル④	フォーカスダイヤル	アイリスダイヤル
オシロスコープ CH-1入力	TP21 ／CP-130	TP33 ／CP-130	TP25 ／CP-130	TP37 ／CP-130	TP29／CP-130	TP41／CP-130
オシロスコープ CH-2入力	TP22 ／CP-130	TP34 ／CP-130	TP26 ／CP-130	TP38 ／CP-130	TP30／CP-130	TP42／CP-130

3-2-4. インカム調整

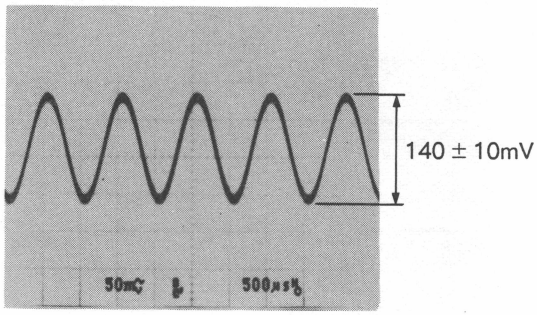
測定器：オシロスコープ

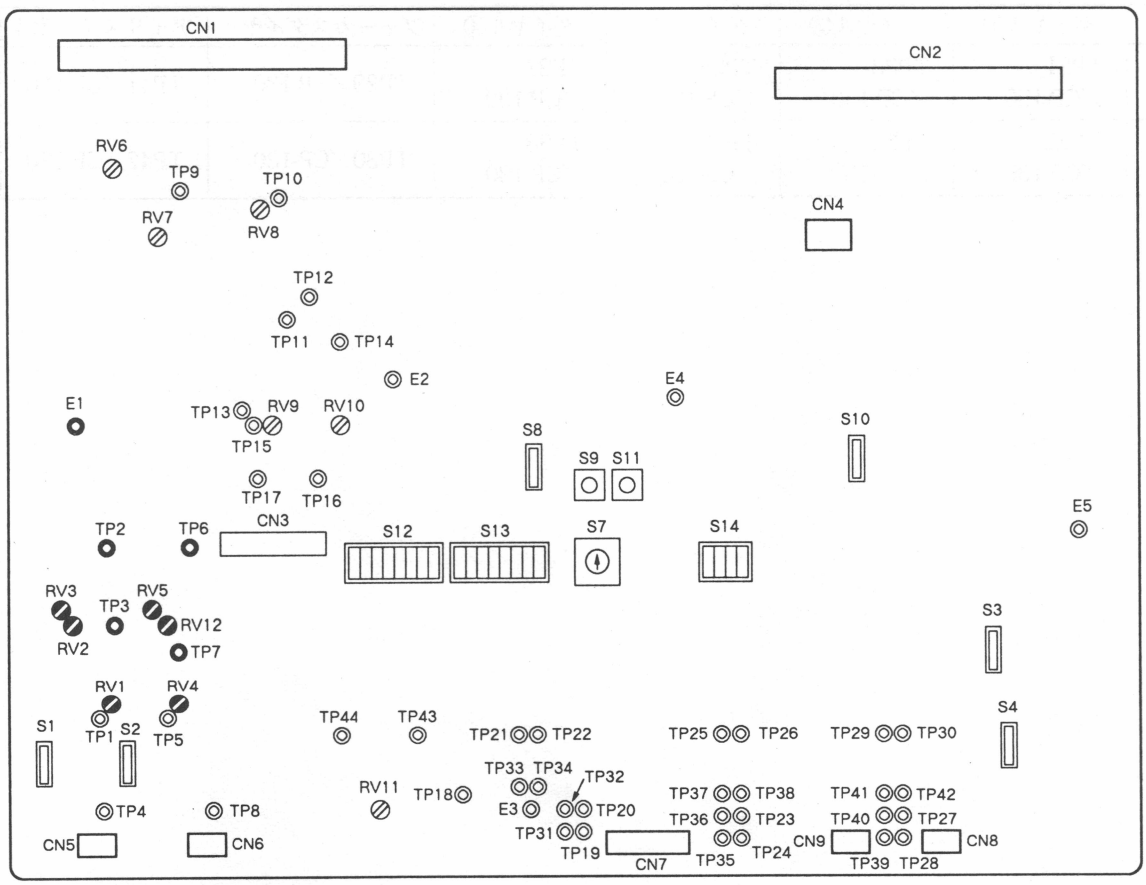
準備：

- レンズ絞りをCloseにします。
- ヘッドセットを用意します。
- 低周波発振器を用意します。

調整手順

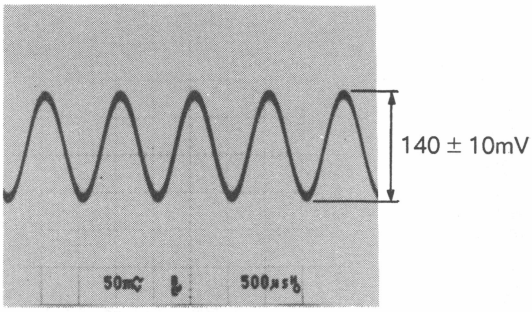
1. HDCA-350を次のように設定します。
   - 後方側面にあるINCOM1および2のMIC ONスイッチをON側にします。
   - IV-36基板のS1，S2をCARBON側にします。
   - AU-160基板側面のINCOM2 SELECTスイッチをPD側にします。
   - INCOM1コネクタに1 kHz（300±10 mV p-p）の正弦波を入力します。
2. オペレーションパネルを開きます。
   - TP3／CP-130基板の波形を◐RV3（INCOM1 R-LEVEL）／CP-130基板にて次のように調整します。



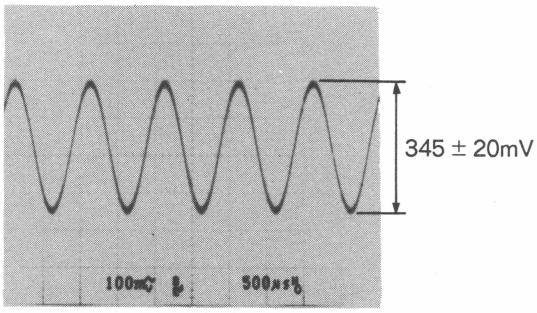


CP-130 BOARD (COMPONENT SIDE)

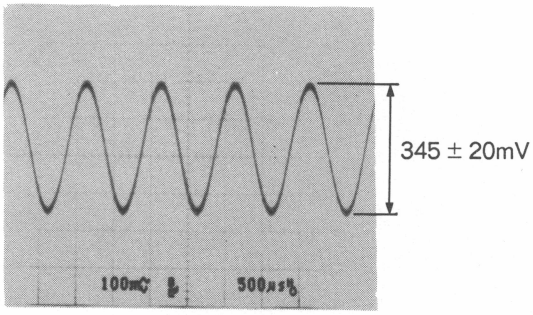
3. HDCA-350 の INCOM1 に入力していた正弦波を同 INCOM2 に入力します。
   - TP7／CP-130 基板の波形を◐RV5（INCOM2 R-LEVEL）／CP-130 基板にて次のように調整します。



4. HDCA-350 の INCOM2 に入力していた正弦波を HDCO-350 の INCOM1 に入力します。
   - ◐RV1（INCOM1 AGC）／CP-130 基板をメカニカルセンターにします。
   - TP2／CP-130 基板の波形を◐RV2（INCOM1 LEVEL MIX）／CP-130 基板にて次のように調整します。

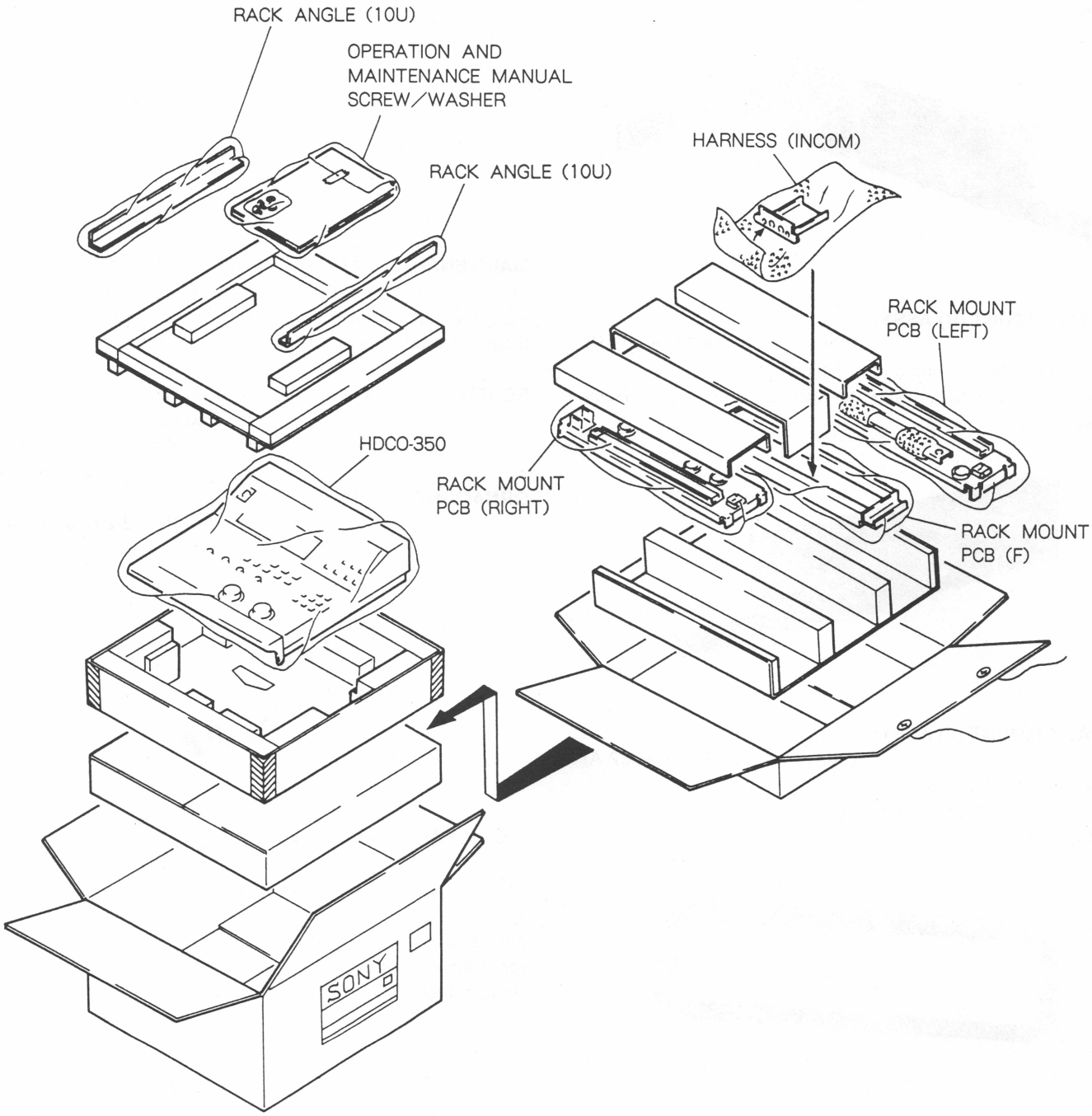


5. HDCO-350 の INCOM1 に入力していた正弦波を同 INCOM2 に入力します。
   - ◐RV4（INCOM2 AGC）／CP-130 基板をメカニカルセンターにします。
   - TP6／CP-130 基板の波形を◐RV12（INCOM2 LEVEL MIX）／CP-130 基板にて次のように調整します。



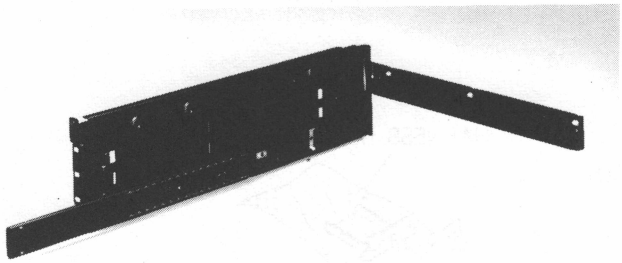
SECTION 1
INSTALLATION

1-1. UNPACKING AND REPACKING

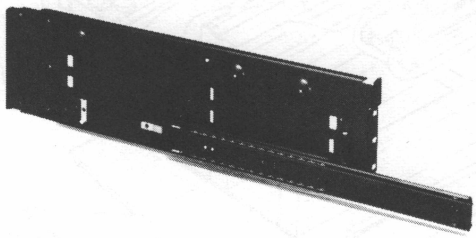


1-2. STANDARD ACCESSORY

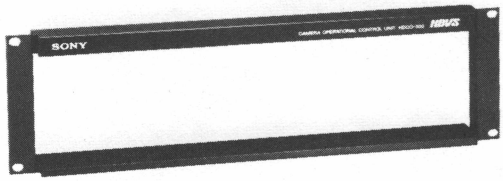
RACK MOUNT (L) ASSY: × 1
(Sony Part No.: A-7405-089-B)
Used to install the unit on the 19-inch rack.
As for installation, refer to the Section 1-6-3. Rack Mounting.



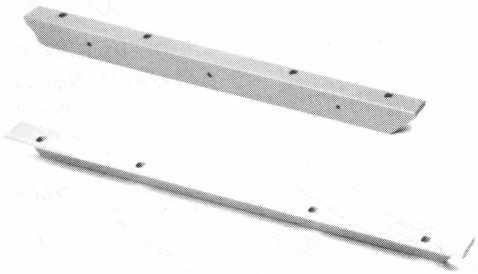
RACK MOUNT (R) ASSY: × 1
(Sony Part No.: A-7405-103-B)
Used to install the unit on the 19-inch rack.
As for installation, refer to the Section 1-6-3. Rack Mounting.



RACK MOUNT (F) ASSY: × 1
(Sony Part No.: A-8262-362-A)
Used to install the unit on the 19-inch rack.
As for installation, refer to the Section 1-6-3. Rack Mounting.

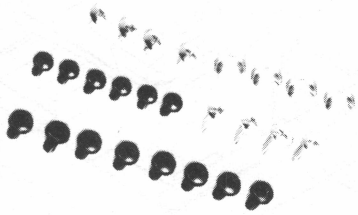


RACK ANGLE (10U): × 2
(Sony Part No.: 3-733-100-01)
Used to secure the unit on the table.
As for securing, refer to the section 1-6-3. Rack Mounting.

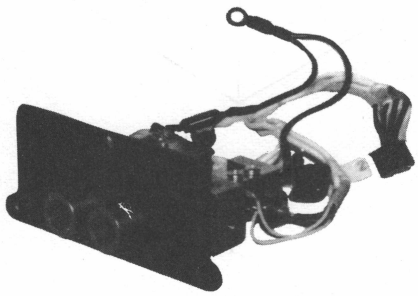


MAINTENANCE MANUAL: × 2 (VOL-1, VOL-2)
VOL-1 contains HDCO-350 maintenance information and VOL-2 contains the HDCO-350 block diagrams, circuit diagrams, and repair parts maintenance information.

SCREW +RK5 × 8: × 4 (Sony Part No.: 7-682-274-04)
+RK5 × 14: × 4 (Sony Part No.: 7-682-277-04)
+B4 × 8: × 6 (Sony Part No.: 7-682-561-09)
+B5 × 10: × 8 (Sony Part No.: 7-682-575-09)
ORNAMENTAL WASHER: × 4
(Sony Part No.: 2-297-913-00)



INCOM PANEL ASSY: × 1
(Sony Part No.: 1-942-312-12)
The XLR type connector is installed on the INCOM panel when shipping at the factory. So, be sure to replace the connector when using the 110 type Jack. As for replacement, refer to "1-5-4. 110 type INCOM PANEL Replacement ".



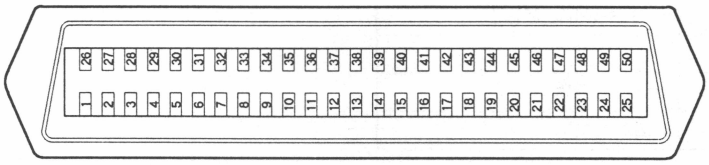
1-3. APPLICABLE CONNECTOR/CABLE

1-3-1. Connector Input/output Signal

Major input/output signals of the connector are as follows.

INCOM-1/-2 110 type Jack
Input Impedance 5 to 10k Ω
Output Impedance 300 Ω Balanced
Input Level 1kHz 200mVp-p
Output Level 1kHz Max. 1.7Vp-p

SIGNAL PROCESSOR(50P, D-SUB)



Pin No	SIGNAL	REMARK for SIGNAL
1	GND	GND for signal and power
26	GND	
2	GND	
27	GND	
3	GND	
28	GND	
4	GND	
29	GND	
5	+20V IN	DC +20V ± 0.5V 5A
30	+20V IN	
6	+20V IN	
31	+20V IN	
7	+20V IN	
32	+20V IN	
8	+20V IN	
33	+20V IN	
9	CCU POWER REMOTE(X)OUT	0~+5Vdc
34	CCU POWER REMOTE(Y)OUT	
10	CP TALK 1 OUT(X)	− 10dBm, 600 Ω
35	CP TALK 1 OUT(Y)	
11	CP TALK 1 OUT(G)	
36	CP REC 1 IN(X)	− 10dBm, 600 Ω
12	CP REC 1 IN(Y)	
37	CP REC 1 IN(G)	

Pin No	SIGNAL	REMARK for SIGNAL
13	CP TALK 2 OUT(X)	− 10dBm, 600 Ω
38	CP TALK 2 OUT(Y)	
14	CP TALK 2 OUT(G)	
39	CP REC 2 IN(X)	− 10dBm, 600 Ω
15	CP REC 2 IN(Y)	
40	CP REC 2 IN(G)	
16	SCDB17(I/O)	2.0Vp-p Termination 200 Ω ON
41	SCDB16(REQ)	
17	SCDB15(C/D)	
42	SCDB14(SEL)	
18	SCDB13(MSG)	
43	SCDB12(RST)	
19	SCDB11(ACK)	
44	SCDB10(BSY)	
20	SCDB9(ATZ)	
45	SCDB8(P)	
21	SCDB7	
46	SCDB6	
22	SCDB5	
47	SCDB4	
23	SCDB3	
48	SCDB2	
24	SCDB1	
49	SCDB0	
25	GND	GND for signal and power
50	GND	

INCOM-1/-2 (5P, FEMALE)

(EXTERNALVIEW)

Pin No.	SIGNAL	SPECIFICATION
1	INCOM-1/-2 MIC ⊖	− 20 dBs (CARBON MIC)
2	INCOM-1/-2 MIC ⊕	− 60 dBs (DYNAMIC MIC)
3	GND	
4	INCOM1 RECEIVE OUT	max. 0dBs
5	INCOM2 RECEIVE OUT	max. 0dBs

1-3-2. Connector

When cable with connectors are set to the respective connectors on the connector panel during installation or service, the specified or equivalent connectors with cables, or the specified cable assemblies should be used, these are listed as follows;

Connector function	Parts No. and name of connector with cable
SIGNAL PROCESSOR (50P, D-SUB)	1-556-664-11 CABLE, INTERFACE (cable length 1.5m, supplied with HDCS-300)
INCOM-1 IN/OUT INCOM-2 IN/OUT	9-910-999-31 PLUG 5P, MALE XLR-5-12C or equivalent

Note: The plug of the interface cable connecting "HDCO" of the HDCS-350 and "SIGNAL PROCESSOR" of the HDCO-350 cannot be replaced.

1-4. POWER SUPPLY

Power sources	DC +20V DC20V voltage are supplied from the HDCS-350 through the interface cable and +15V, +7V and +5V occur at each series regulator of the CP-130 board.

1-5. INSTALLATION

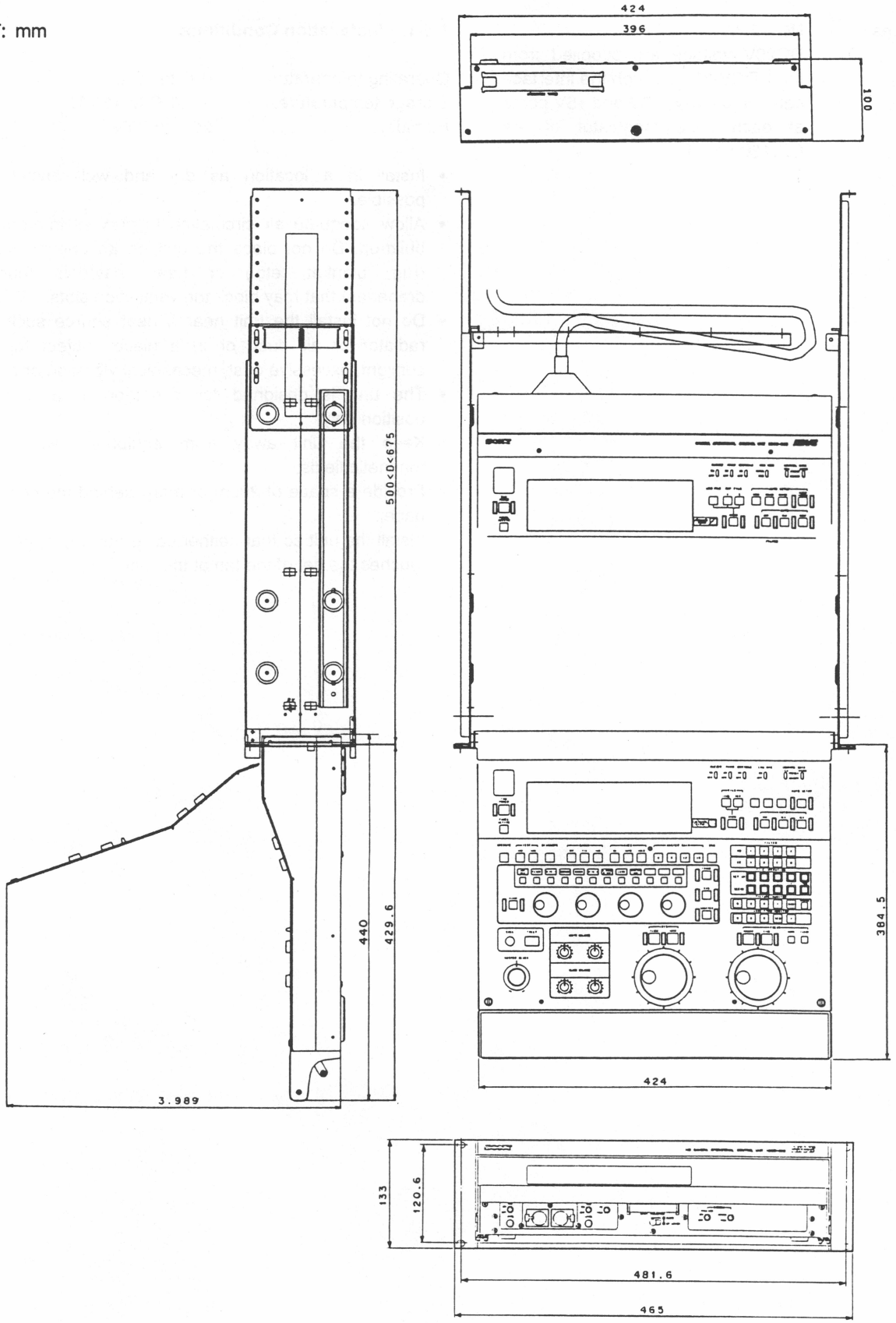
1-5-1. Installation Conditions

Operating temperature:	0℃ to 40℃
Storage temperature:	− 20℃ to +60℃
Humidity:	20% to 80%

- Install in a location as dry and well-ventilated as possible.
- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on an uneven surface (rug, blanket, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near a heat source such as a radiator or air duct, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position only.
- Keep the unit away from equipment with strong magnetic fields.
- Provide a space of 20cm or more behind the connector panel.
- Install the unit so that neither cable nor any other object touches the net of the fan at the rear.

1-5-2. External Dimensions

UNIT: mm



(UNIT: mm, including the most projected potion)

1-5-3. Rack Mounting

Installation can be made on the EIA 19-inch rack by using the supplied rack mount assy.

Mounting

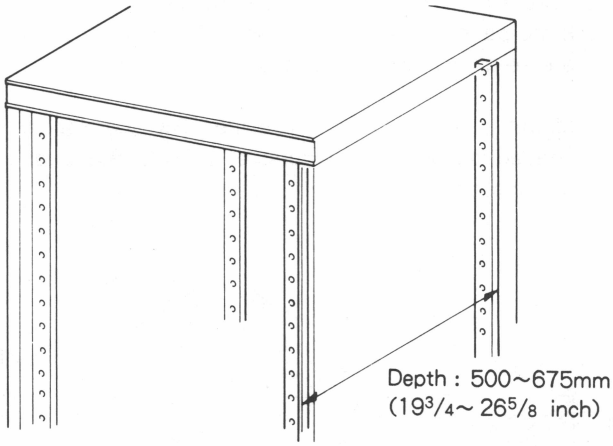
Three types of mounting are possible.

- 19" rack mount
  The panel is taken out when it is used. It can be removed from the rack temporarily.
- Table mount
- Desktop use

19" Rack Mount

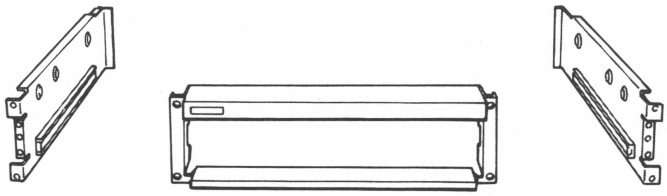
- Standard rack

  19" rack (EIA standard, universal spanning — M5 type)



Recommended rack: Sony SU-860 series

- Supplied parts
  Rack mount assembly

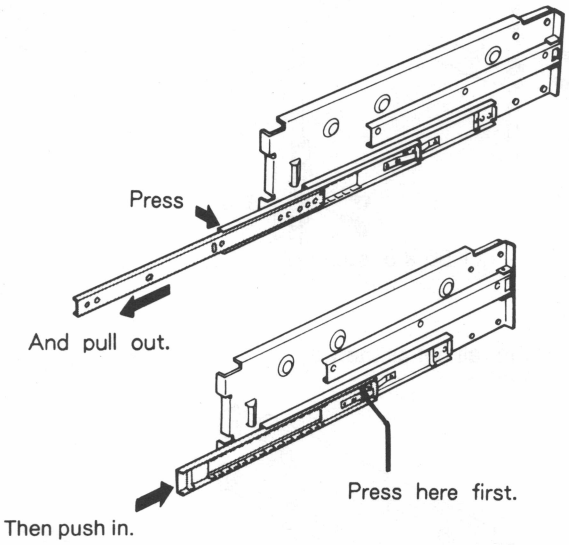


L assembly F assembly R assembly

- Screw
  +B5 × 8
  +RK5 × 8
- Ornamental washer

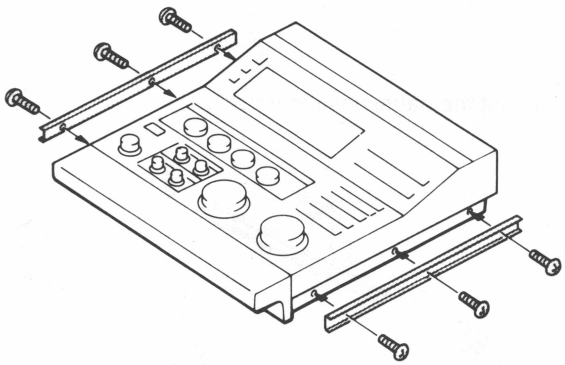
- Procedure

1. Remove the inner members from the L and R assemblies.

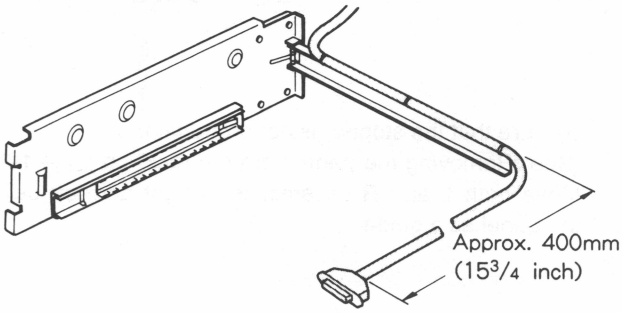


Return the rail to original position.

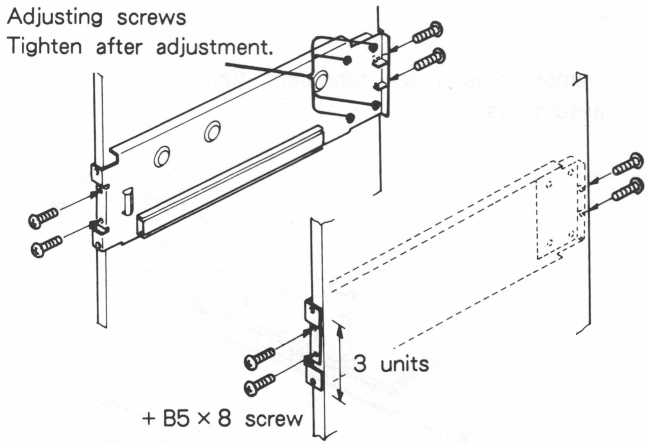
2. Mount the inner members to the panel.



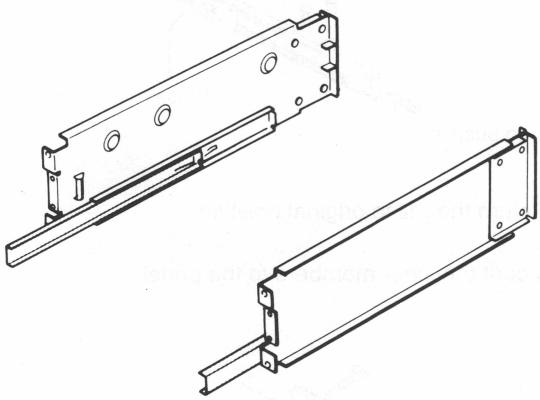
3. Attach the connector cable (supplied with HDCS-350) to the cable clamp of the L assembly.



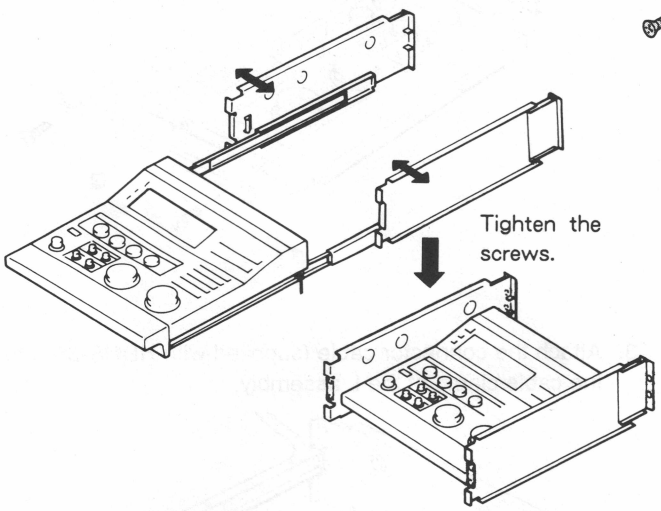
4. Fix both L and R assemblies temporarily.



5. Pull the rail out all the way.

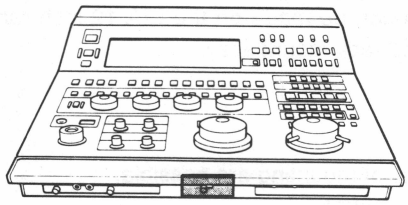


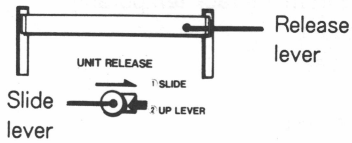
6. Mount the panel unit temporarily



Be sure that the stopper is not protruding.
(See "Removing the panel from the rack" on page 1-9.)
Move both L and R assemblies to right and left using the panel as a guide.

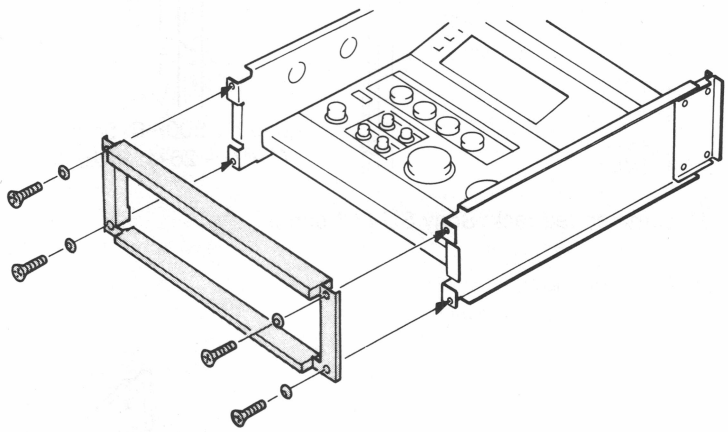
7. Move the slide lever to the left.





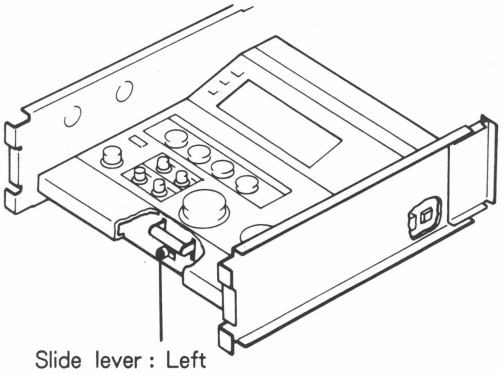
The release lever lowers. Check whether the panel can be locked. Also check whether the panel moves forward and backward smoothly using the handle.
(See "Removing the panel from the rack.")
If the panel does not move smoothly, undo the screws and re-adjust the L and R assembly positions.

8. Mount the F assembly using the +RK and trapezoidal shaped decorative washers, and fix to the L and R assemblies.

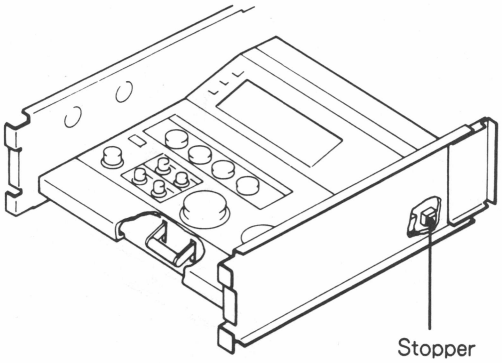


- Removing the panel from the rack

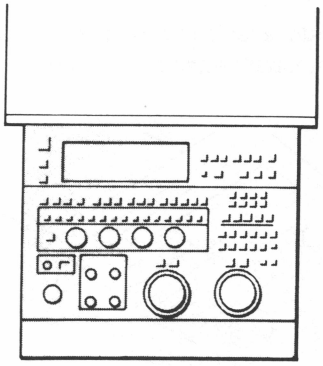
Lift the release lever and pull the panel.
(When the release lever is lifted, the stopper releases the panel lock.)



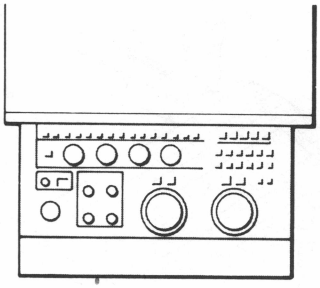
With the release lever lowered, the stopper protrudes when the panel reaches one of the specified three positions and the panel is locked.



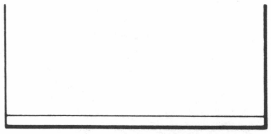
To operate entirely



To operate only the front part



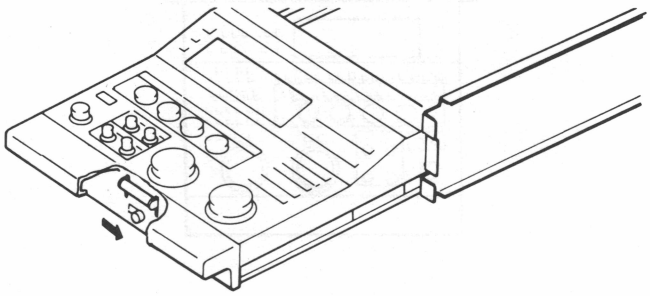
To put in the mounting rack



- Temporary removal

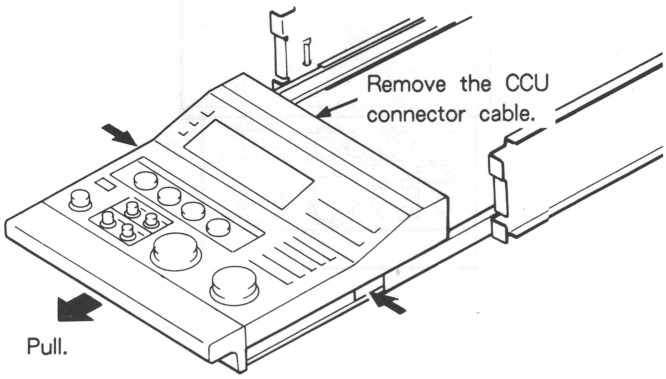
1. Pull out the panel fully.

2. Move the slide lever to the right while lifting the release lever.
   When the slide lever is released, the release lever stays up and the stopper remains withdrawn.

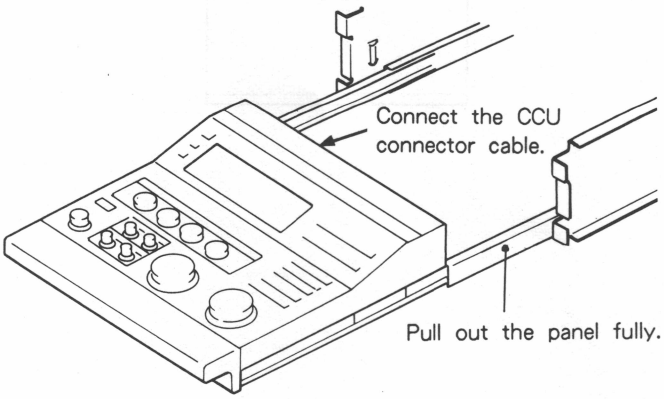


3. Pull the panel out further.

4.



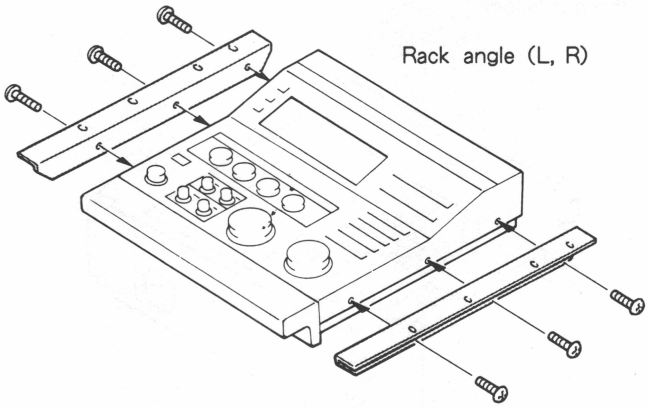
- Re-mounting



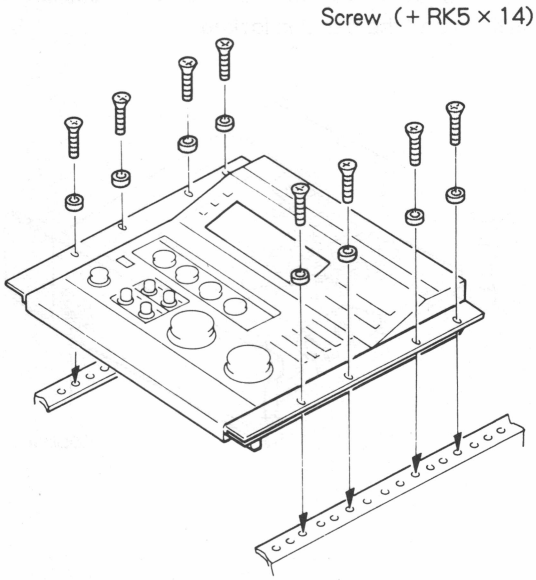
Push the panel following the rail guide.

Table mount

1.



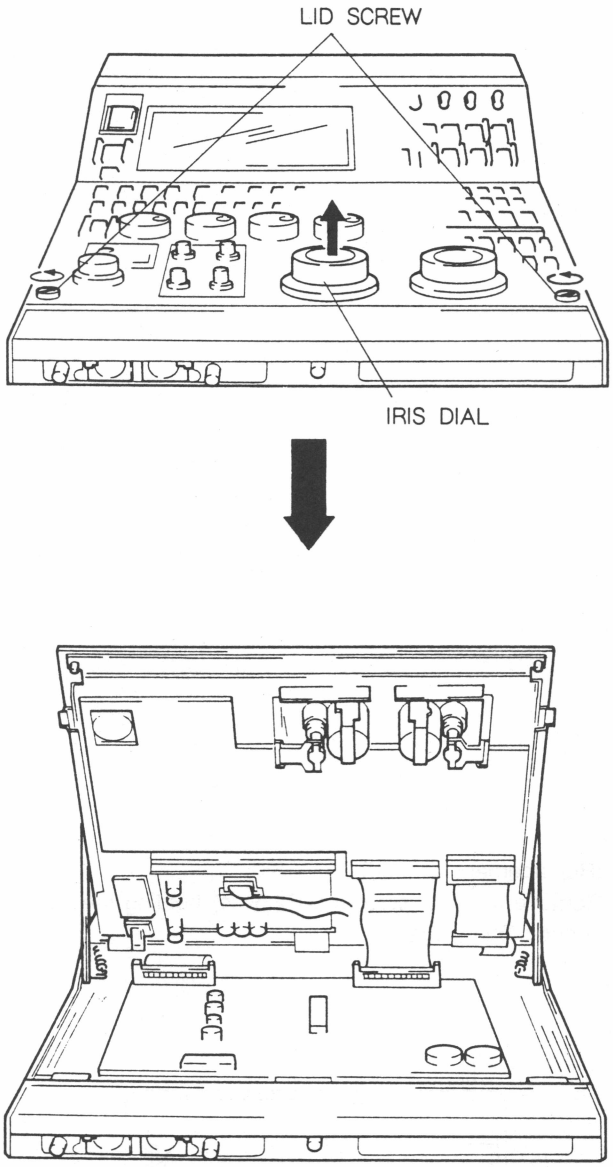
2. Fix it on the table.



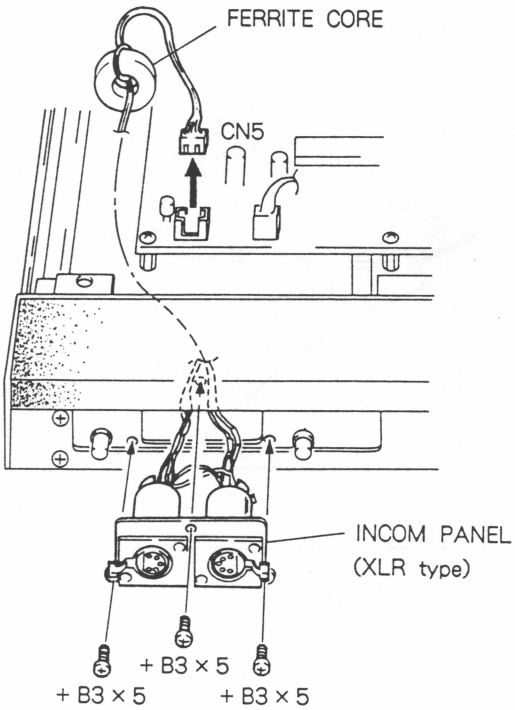
Trapezoidal shaped decorative washers

1-5-4. 110 Type INCOM Panel Replacement

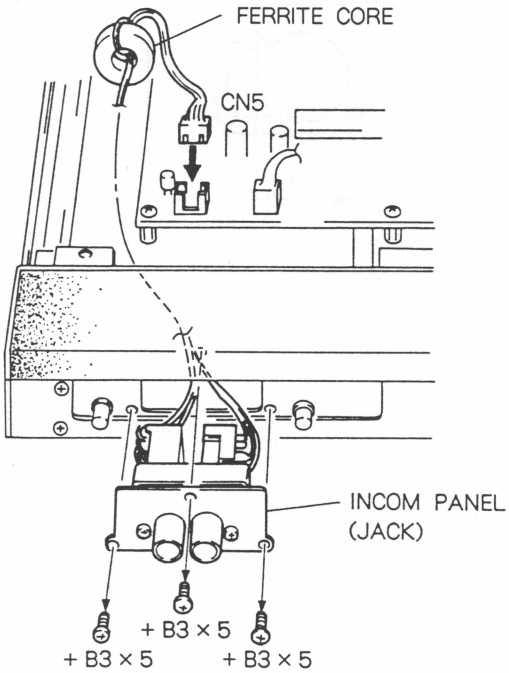
1. Loosen the two screws (LID SCREW), grasp the IRIS DIAL and pull up until the upper panel locks.



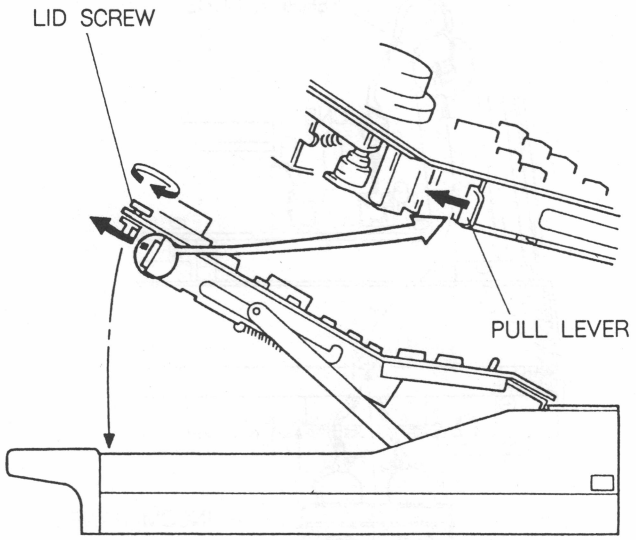
2. Remove the plug of the CN5 connector on the CP-130 board. Remove the three screws (+B3×5) holding INCOM PANEL (XLR type) in place, and pull out INCOM PANEL toward you.



3. Pass the supplied INCOM PANEL (JACK) harness through the opening and wind on the FERRITE CORE by one turn as shown in the figure and connect to the CN5 connector of the CP-130 board. And attach INCOM PANEL (JACK) in place with the three screws (+B3×5).

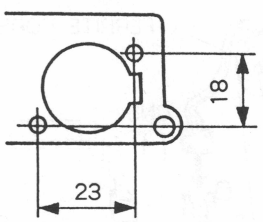


4. While pulling the PULL LEVERS on the left and right (lock release), close the panel. (To prevent sandwiching of your hand, change your grip to the IRIS dial while closing.)
   Then tighten the two screws (LID SCREW)

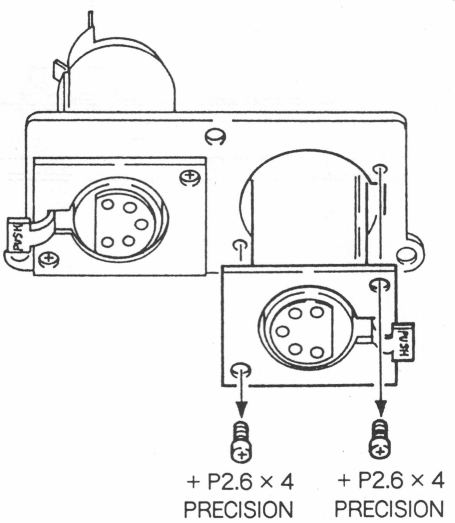


Use of XLR Type Not Having 5 Pins

[Attachment Dimensions for Applicable Connector]



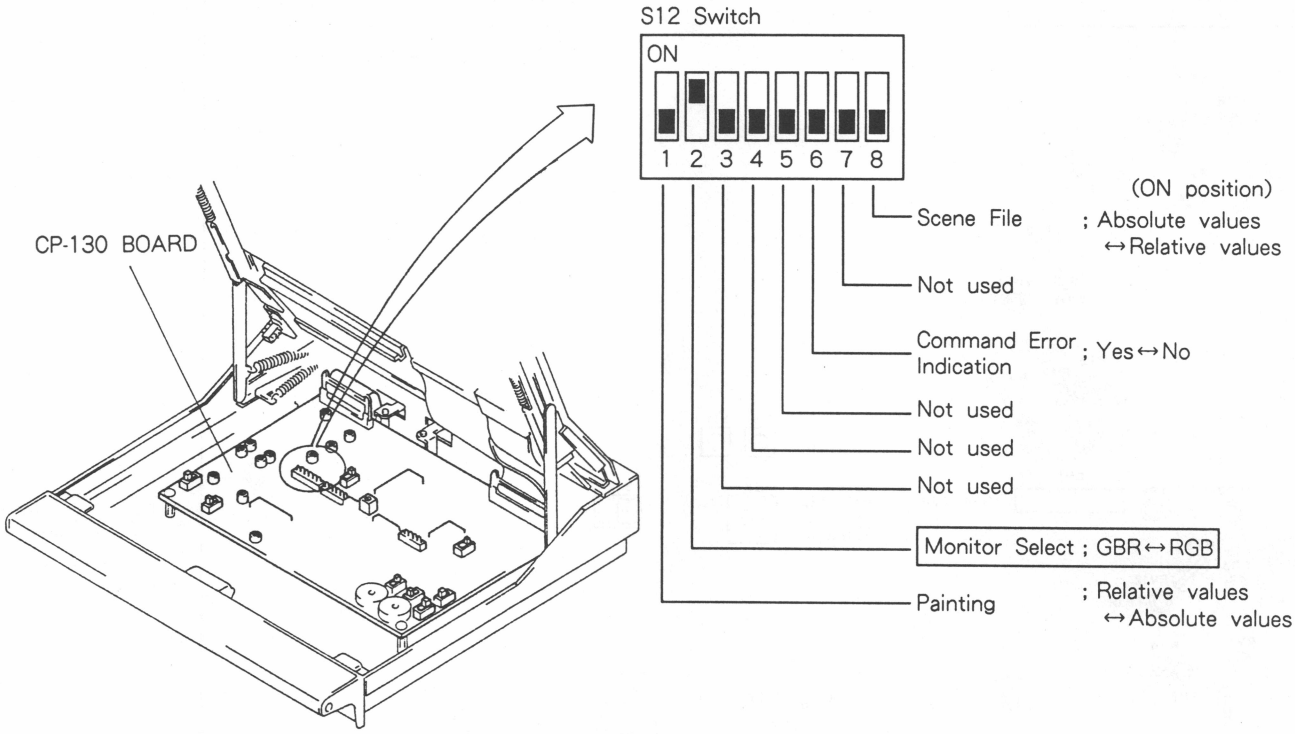
[Replacement Method]
Remove the four screws (+P2.6×4) holding the XLR type connector in place.



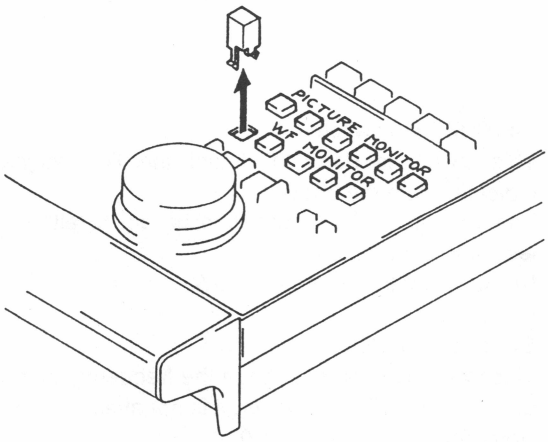
Changing Order of PICTURE MONITOR/WFM MONITOR Selectors to RGB

The order is GBR when the unit is shipped from the factory. Follow the procedure below for changing this order to RGB.

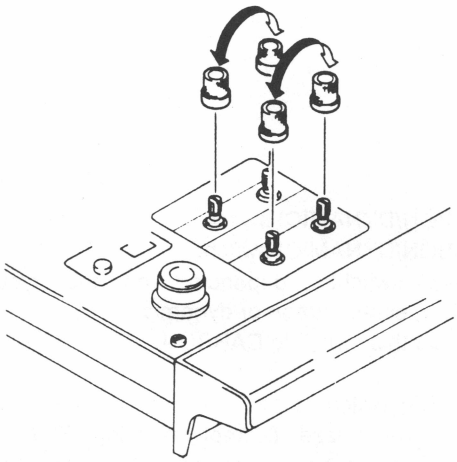
1. Set the S12-2 (RGB/GBR) switch on the CP-130 board to the ON position.



2. Change the [G], [B], [R] key tops of the PICTURE MONITOR selectors and WFM MONITOR selectors.
   - Removing key tops
     Place a heavy cloth over the key tops and remove with the pliers.



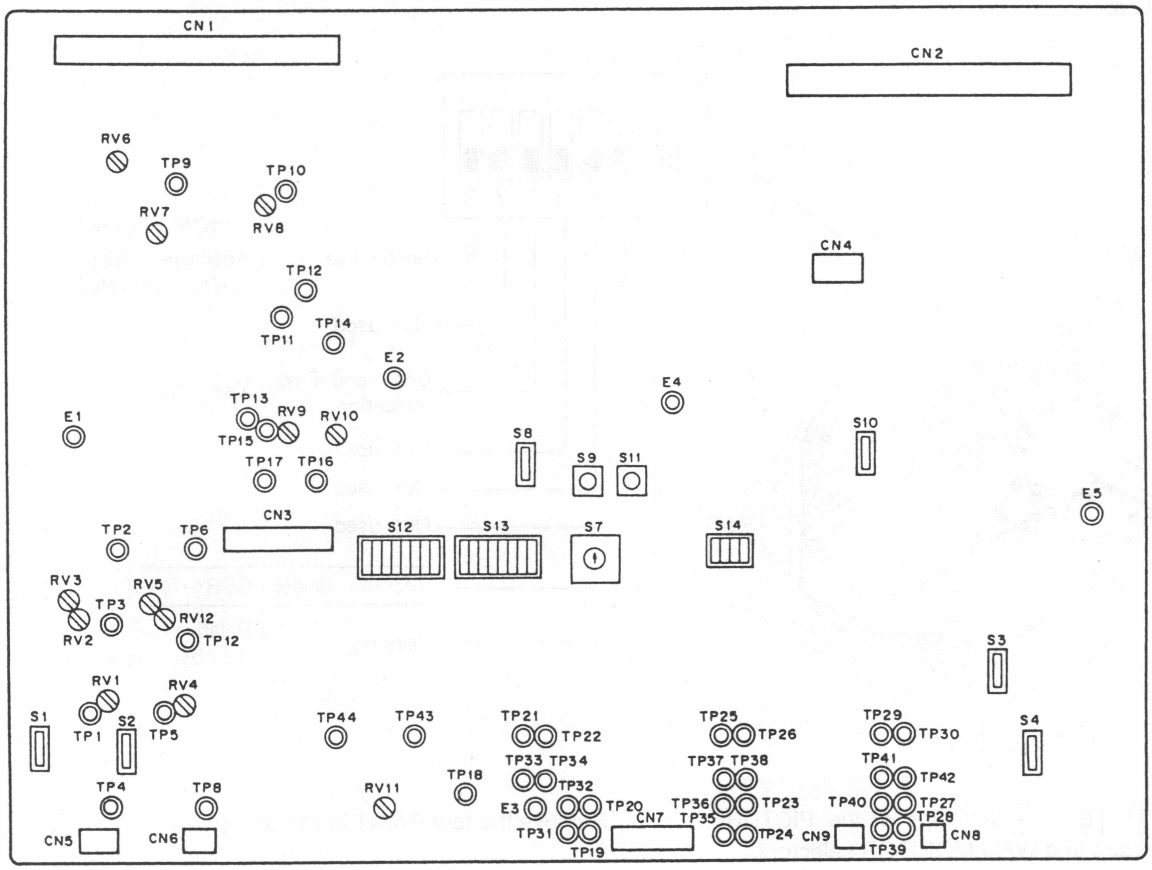
3. Remove the four PAINT knobs to replace.



1-6. INITIAL SETTING BEFORE OPERATION

1-6-1. Board Inside Switch Setting

CP-130



- S1 (CARBON/DYNAMIC) switch
- S2 (CARBON/DYNAMIC) switch
  Set these switches depending on the type of microphone, either carbon or dynamic.
  Normally set this switch to CARBON.

- S3 (BUZZER) switch
  TEST: The buzzer is kept sounding. This status should be set to check that the buzzer sounds.
  NORMAL: The buzzer sounds when the BUZZER CONT signal is generated.
  Normally set this switch to NORMAL.

- S4 (BUZZER) switch
  This switch is used to detect the RTS signal and indicate it with the buzzer.
  The volume of the buzzer can be set to either of two levels, HIGH or LOW.
  Normally set the volume to LOW.

- S7 (FREQ) switch
  This switch is used to change the frequency of the clock used by the CPU. (However, it is not available now.)
  Normally set this switch to 0.

- S8 (CPU 1 NORMAL/TEST) switch
  NORMAL: The system is operated by the CPU on the board.
  TEST: The board operation can be checked with the emulator.
  Normally set this switch to NORMAL.

- S9 (CPU 1 RESET) switch
  This switch is used to reset CPU 1.

- S10 (CPU 2 NORMAL/TEST) switch
  NORMAL: The system is operated by the CPU on the board.
  TEST: The board operation can be checked with the emulator.
  Normally set this switch to NORMAL.

- S11 (CPU 2 RESET) switch
  This switch is used to reset CPU 2.

- S12 (MODE SELECT) switch

S12 MODE SELECT	STATUS		NORMAL POSITION
	ON	OFF	
12-1(Painting)	Absolute value	Relative values	OFF
12-2 (Monitor Select)	RGB	GBR	OFF
12-3(Not used)	–	–	–
12-4(Not used)	–	–	–
12-5(Not used)	–	–	–
12-6(Command Error Indication)	No	Yes	OFF
12-7(Not used)	–	–	–
12-8(Scene File)	Absolute values	Relative values	OFF

- S13 (MODE SELECT) switch

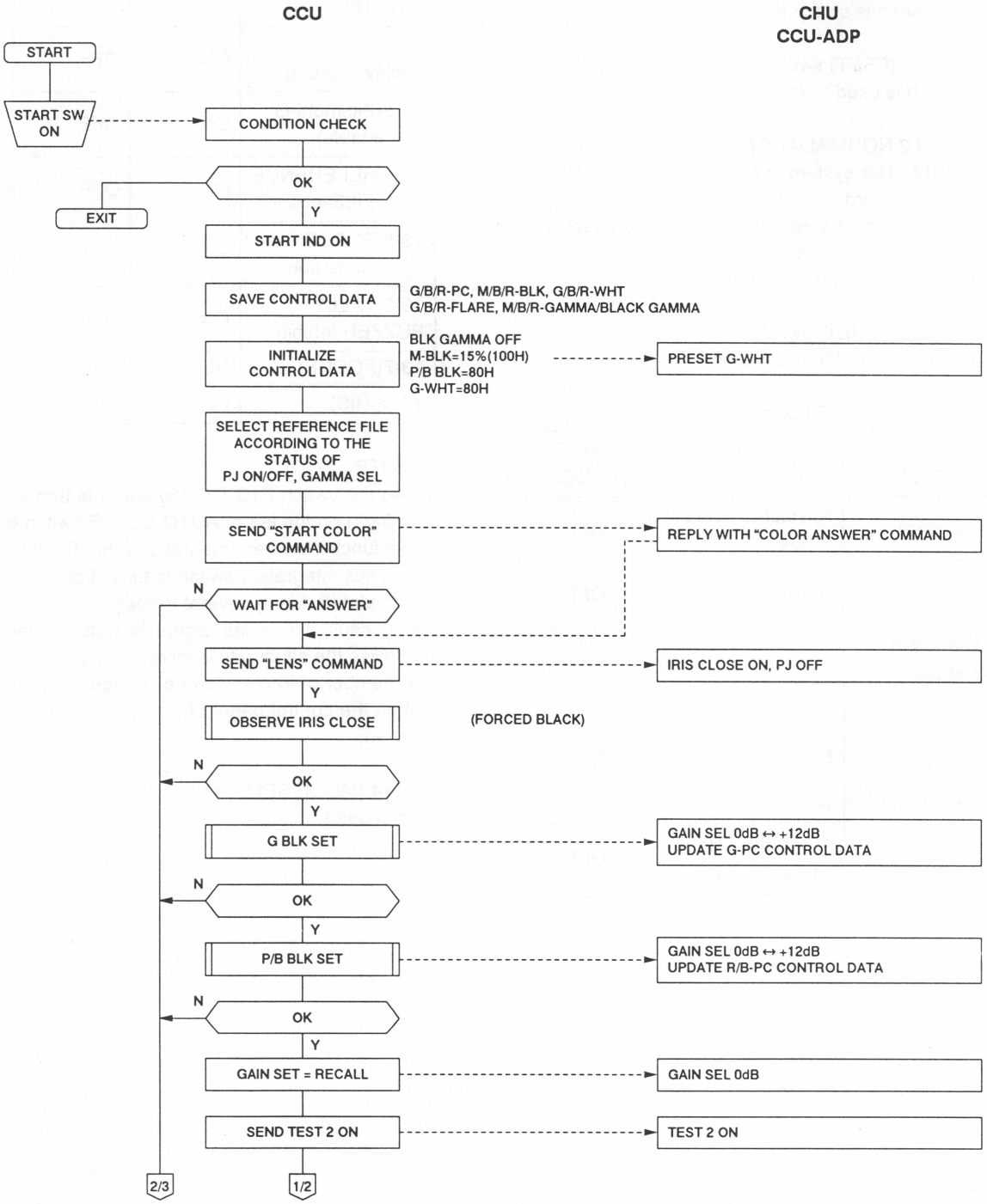
S13 MODE SELECT	STATUS		NORMAL POSITION
	ON	OFF	
13-1(Integration) * NOTE	ON	OFF	OFF
13-2 (Delay manual)	ON	OFF	OFF
13-3(Pic.moni-G enable)	ON	OFF	OFF
13-4 REFERENCE FILE inhibit	ON	OFF	OFF
13-5(FOCUS direction)	–	–	–
13-6(TALLY BUZZER Inhibit)	ON	OFF	OFF
13-7(FOCUS)	RE	RV	ON
13-8(IRIS)	RE	RV	ON

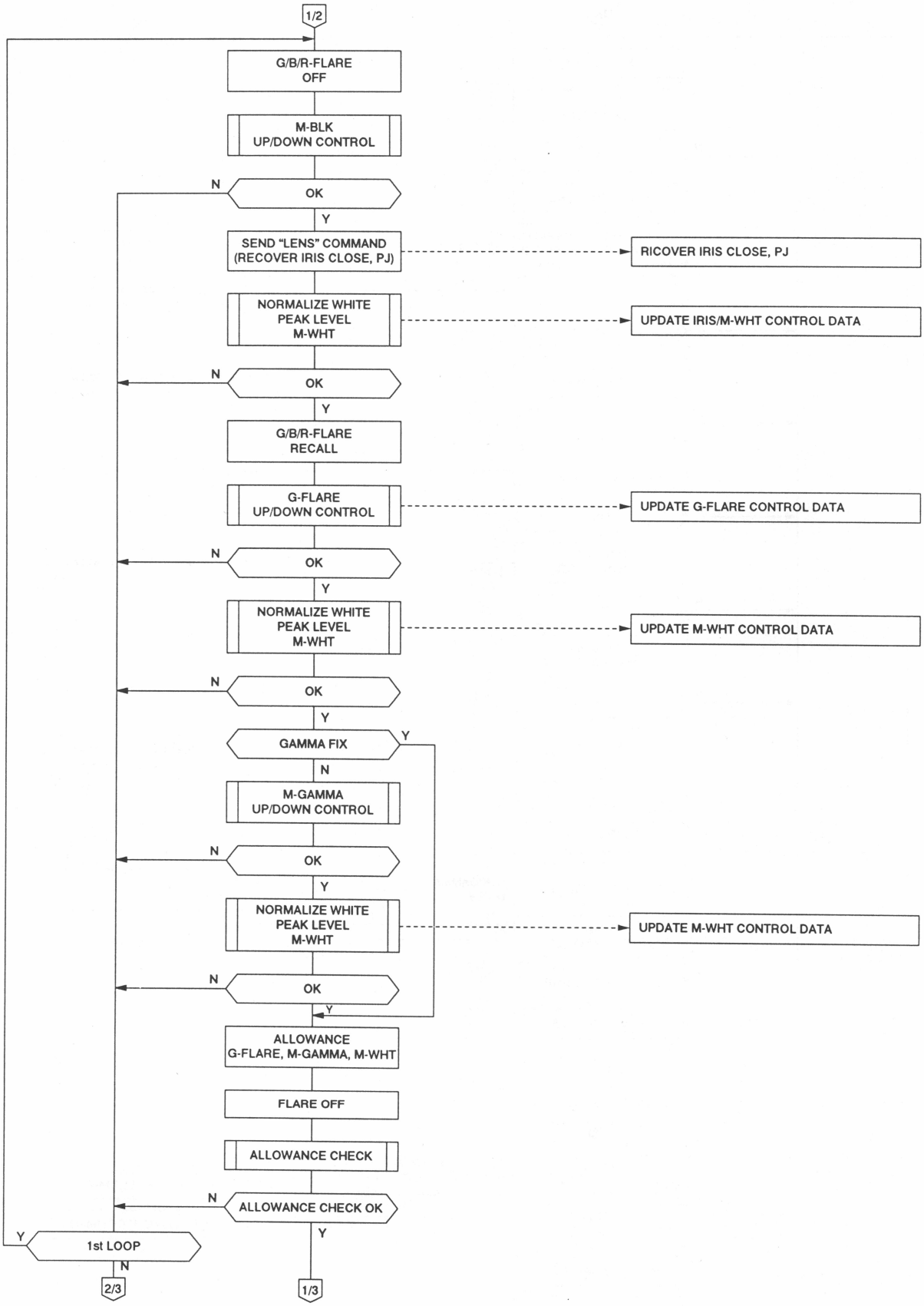
* NOTE
When the switch S13-1 (Integration) is turned on, a switch (auxiliary) on the left of AUTO SETUP switch on the control panel functions as an Integration ON/OFF switch.
When this integration switch is turned on, video signals are accumulated during several frames.
As a result, the video signal is output intermittently but otherwise the sensitivity is increased.
The number of frames can be changed with the adjustment dial on the control panel after the SHUTTER/EVS button is pressed.

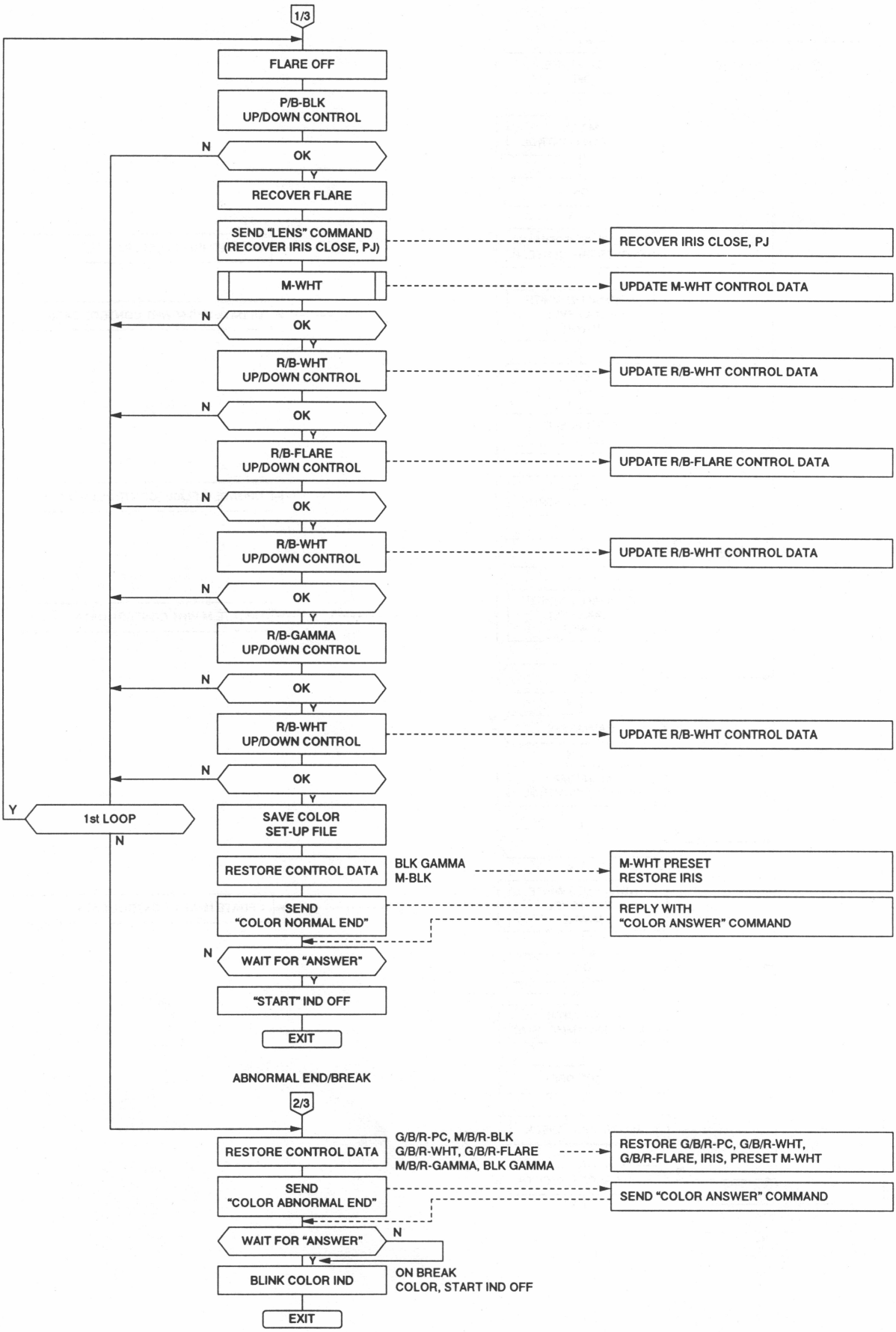
- S14 (MODE SELECT) switch
  Not used.

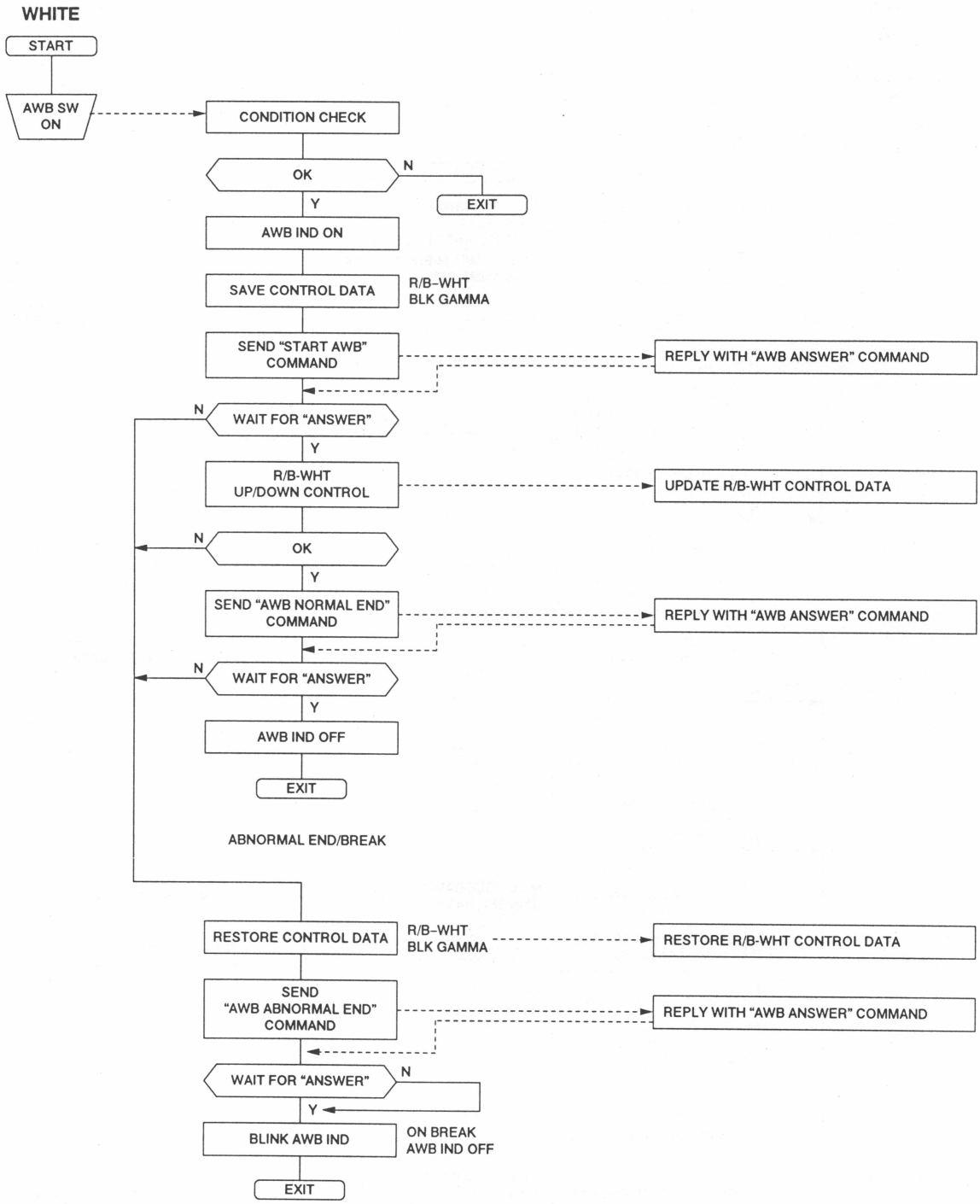
1-6-2. Reference File and Setup File Setting

AUTO COLOR

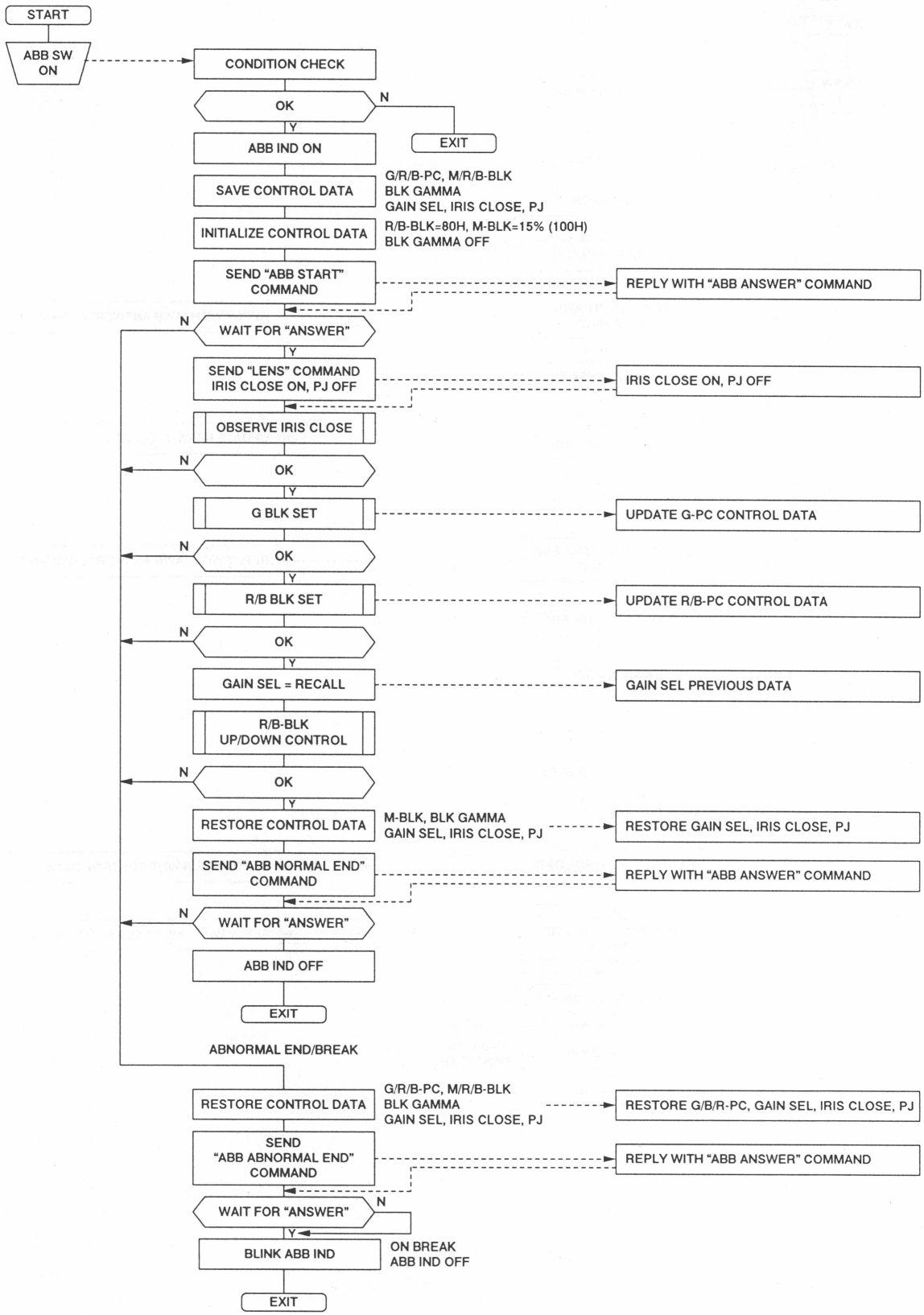



1/2
G/B/R-FLARE OFF
M-BLK UP/DOWN CONTROL
OK
N
Y
SEND "LENS" COMMAND (RECOVER IRIS CLOSE, PJ)
RICOVER IRIS CLOSE, PJ
NORMALIZE WHITE PEAK LEVEL M-WHT
UPDATE IRIS/M-WHT CONTROL DATA
OK
N
Y
G/B/R-FLARE RECALL
G-FLARE UP/DOWN CONTROL
UPDATE G-FLARE CONTROL DATA
OK
N
Y
NORMALIZE WHITE PEAK LEVEL M-WHT
UPDATE M-WHT CONTROL DATA
OK
N
Y
GAMMA FIX
Y
N
M-GAMMA UP/DOWN CONTROL
OK
N
Y
NORMALIZE WHITE PEAK LEVEL M-WHT
UPDATE M-WHT CONTROL DATA
OK
N
Y
ALLOWANCE G-FLARE, M-GAMMA, M-WHT
FLARE OFF
ALLOWANCE CHECK
ALLOWANCE CHECK OK
N
Y
1st LOOP
Y
N
2/3
1/3

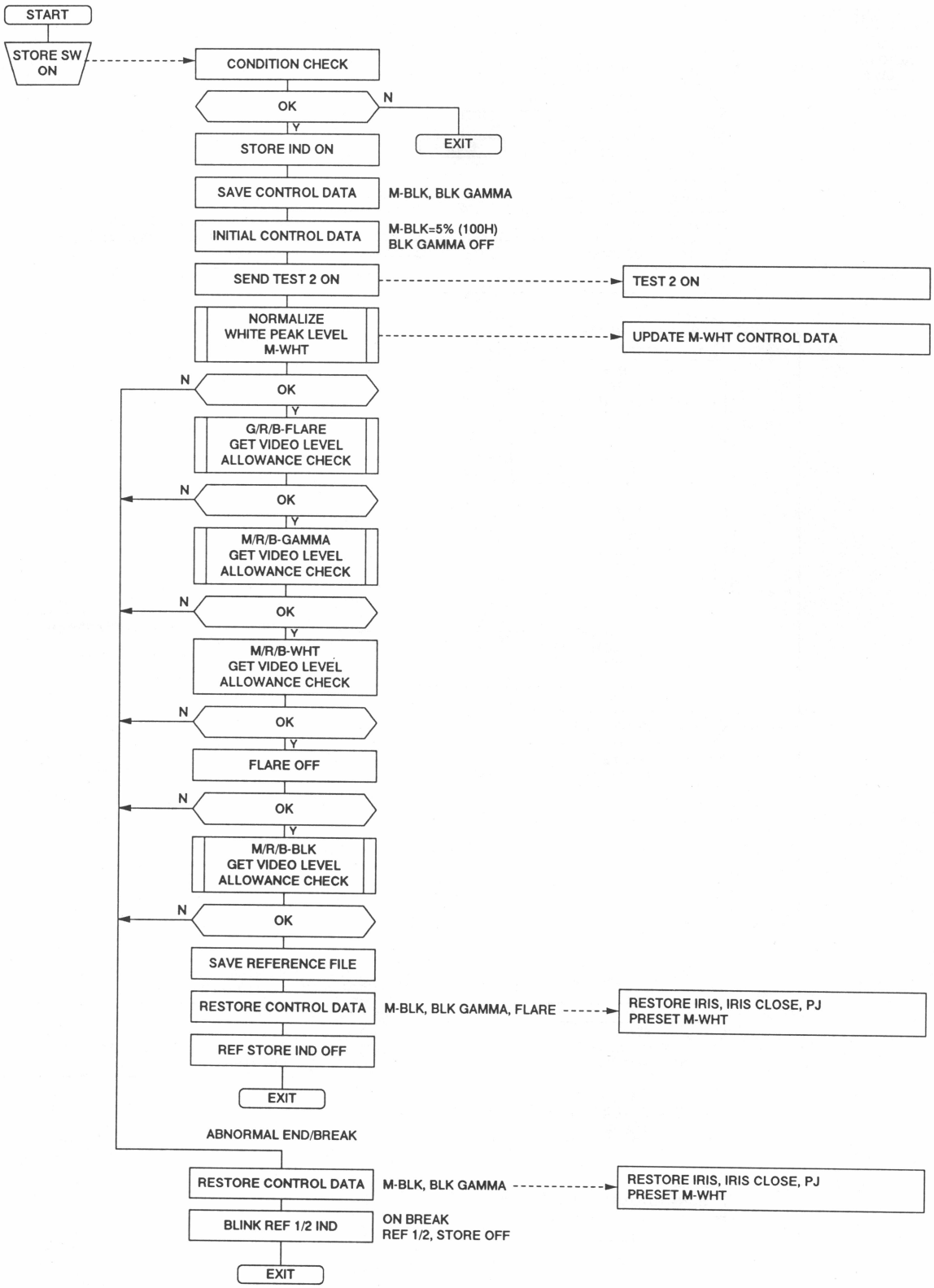

1/3
FLARE OFF
P/B-BLK UP/DOWN CONTROL
OK
N
Y
RECOVER FLARE
SEND "LENS" COMMAND (RECOVER IRIS CLOSE, PJ)
RECOVER IRIS CLOSE, PJ
M-WHT
UPDATE M-WHT CONTROL DATA
OK
R/B-WHT UP/DOWN CONTROL
UPDATE R/B-WHT CONTROL DATA
OK
R/B-FLARE UP/DOWN CONTROL
UPDATE R/B-FLARE CONTROL DATA
OK
R/B-WHT UP/DOWN CONTROL
UPDATE R/B-WHT CONTROL DATA
OK
R/B-GAMMA UP/DOWN CONTROL
OK
R/B-WHT UP/DOWN CONTROL
UPDATE R/B-WHT CONTROL DATA
OK
1st LOOP
SAVE COLOR SET-UP FILE
RESTORE CONTROL DATA
BLK GAMMA M-BLK
M-WHT PRESET RESTORE IRIS
SEND "COLOR NORMAL END"
REPLY WITH "COLOR ANSWER" COMMAND
WAIT FOR "ANSWER"
"START" IND OFF
EXIT
ABNORMAL END/BREAK
2/3
RESTORE CONTROL DATA
G/B/R-PC, M/B/R-BLK G/B/R-WHT, G/B/R-FLARE M/B/R-GAMMA, BLK GAMMA
RESTORE G/B/R-PC, G/B/R-WHT, G/B/R-FLARE, IRIS, PRESET M-WHT
SEND "COLOR ABNORMAL END"
SEND "COLOR ANSWER" COMMAND
WAIT FOR "ANSWER"
BLINK COLOR IND
ON BREAK COLOR, START IND OFF
EXIT


WHITE
START
AWB SW ON
CONDITION CHECK
OK
N
EXIT
Y
AWB IND ON
SAVE CONTROL DATA
R/B–WHT
BLK GAMMA
SEND "START AWB" COMMAND
REPLY WITH "AWB ANSWER" COMMAND
N
WAIT FOR "ANSWER"
Y
R/B-WHT UP/DOWN CONTROL
UPDATE R/B-WHT CONTROL DATA
N
OK
Y
SEND "AWB NORMAL END" COMMAND
REPLY WITH "AWB ANSWER" COMMAND
N
WAIT FOR "ANSWER"
Y
AWB IND OFF
EXIT
ABNORMAL END/BREAK
RESTORE CONTROL DATA
R/B–WHT
BLK GAMMA
RESTORE R/B-WHT CONTROL DATA
SEND "AWB ABNORMAL END" COMMAND
REPLY WITH "AWB ANSWER" COMMAND
WAIT FOR "ANSWER"
N
Y
BLINK AWB IND
ON BREAK
AWB IND OFF
EXIT

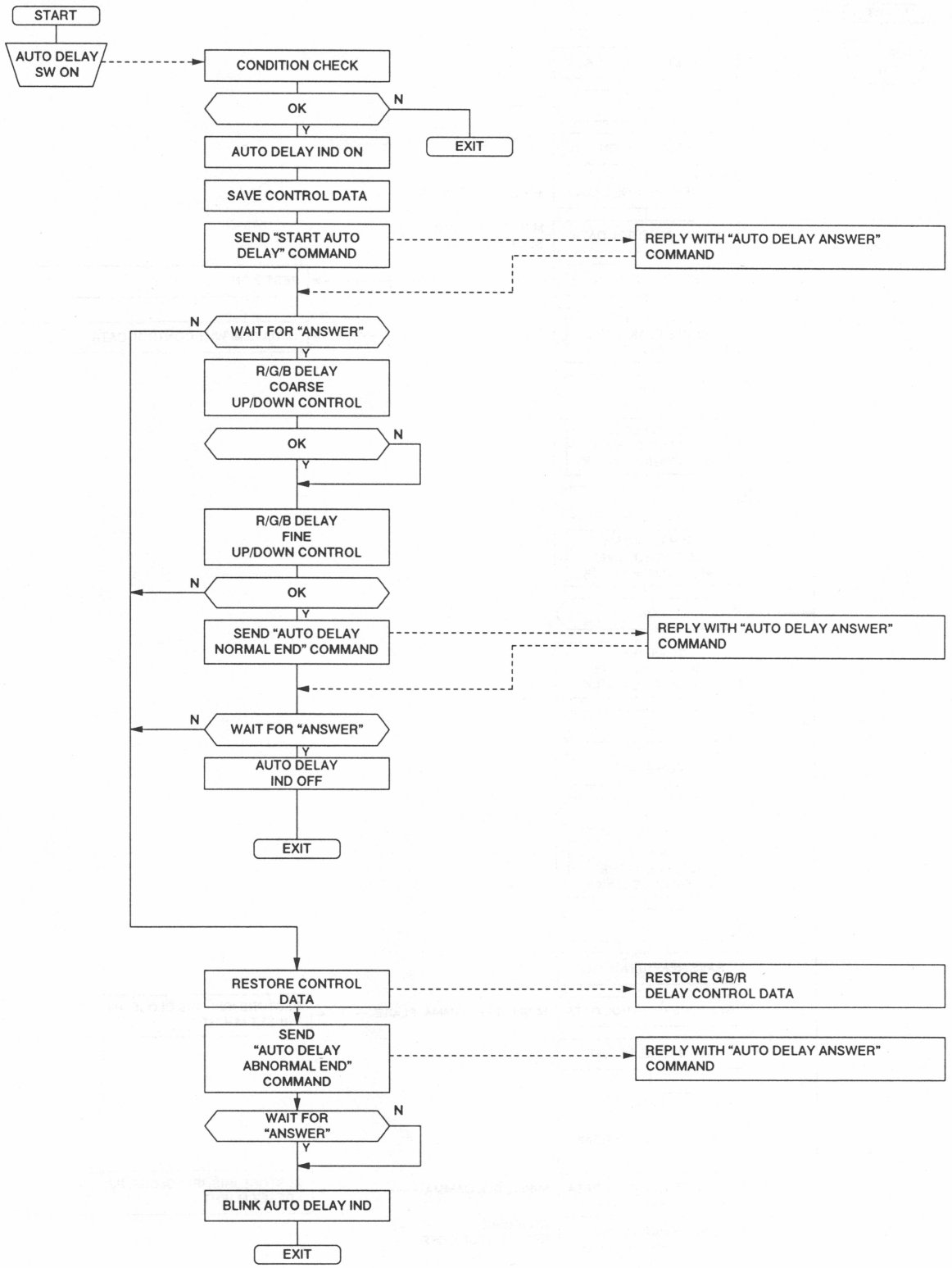
BLACK


START
ABB SW ON
CONDITION CHECK
OK
N
EXIT
Y
ABB IND ON
SAVE CONTROL DATA
G/R/B-PC, M/R/B-BLK
BLK GAMMA
GAIN SEL, IRIS CLOSE, PJ
INITIALIZE CONTROL DATA
R/B-BLK=80H, M-BLK=15% (100H)
BLK GAMMA OFF
SEND "ABB START" COMMAND
REPLY WITH "ABB ANSWER" COMMAND
WAIT FOR "ANSWER"
SEND "LENS" COMMAND IRIS CLOSE ON, PJ OFF
IRIS CLOSE ON, PJ OFF
OBSERVE IRIS CLOSE
G BLK SET
UPDATE G-PC CONTROL DATA
R/B BLK SET
UPDATE R/B-PC CONTROL DATA
GAIN SEL = RECALL
GAIN SEL PREVIOUS DATA
R/B-BLK UP/DOWN CONTROL
RESTORE CONTROL DATA
M-BLK, BLK GAMMA
GAIN SEL, IRIS CLOSE, PJ
RESTORE GAIN SEL, IRIS CLOSE, PJ
SEND "ABB NORMAL END" COMMAND
ABB IND OFF
ABNORMAL END/BREAK
G/R/B-PC, M/R/B-BLK
BLK GAMMA
GAIN SEL, IRIS CLOSE, PJ
RESTORE G/B/R-PC, GAIN SEL, IRIS CLOSE, PJ
SEND "ABB ABNORMAL END" COMMAND
BLINK ABB IND
ON BREAK
ABB IND OFF

REFERENCE

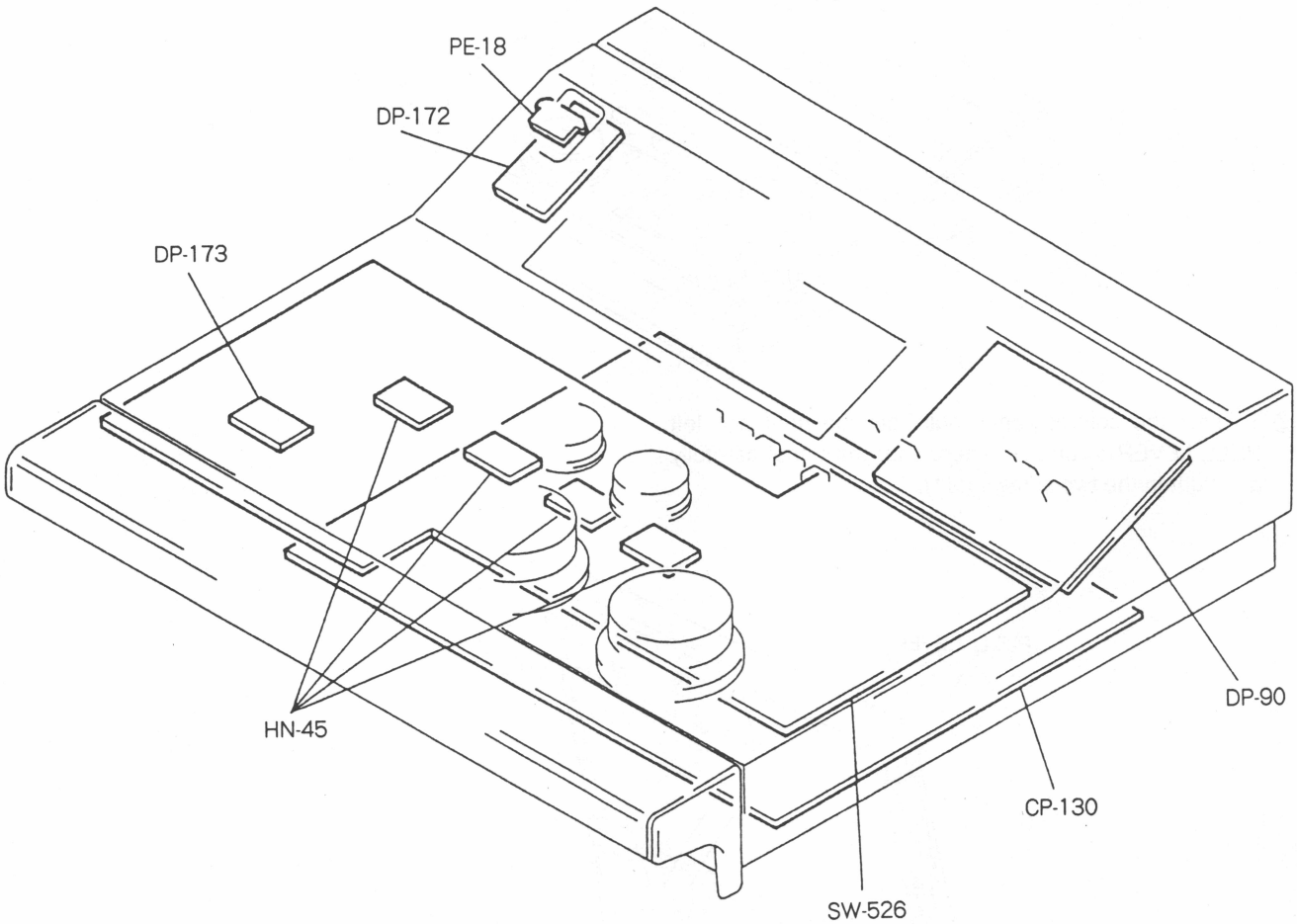

START
STORE SW ON
CONDITION CHECK
OK
N
Y
EXIT
STORE IND ON
SAVE CONTROL DATA
M-BLK, BLK GAMMA
INITIAL CONTROL DATA
M-BLK=5% (100H)
BLK GAMMA OFF
SEND TEST 2 ON
TEST 2 ON
NORMALIZE
WHITE PEAK LEVEL
M-WHT
UPDATE M-WHT CONTROL DATA
OK
G/R/B-FLARE
GET VIDEO LEVEL
ALLOWANCE CHECK
OK
M/R/B-GAMMA
GET VIDEO LEVEL
ALLOWANCE CHECK
OK
M/R/B-WHT
GET VIDEO LEVEL
ALLOWANCE CHECK
OK
FLARE OFF
OK
M/R/B-BLK
GET VIDEO LEVEL
ALLOWANCE CHECK
OK
SAVE REFERENCE FILE
RESTORE CONTROL DATA
M-BLK, BLK GAMMA, FLARE
RESTORE IRIS, IRIS CLOSE, PJ
PRESET M-WHT
REF STORE IND OFF
EXIT
ABNORMAL END/BREAK
RESTORE CONTROL DATA
M-BLK, BLK GAMMA
RESTORE IRIS, IRIS CLOSE, PJ
PRESET M-WHT
BLINK REF 1/2 IND
ON BREAK
REF 1/2, STORE OFF
EXIT

DELAY


START
AUTO DELAY SW ON
CONDITION CHECK
OK
N
EXIT
Y
AUTO DELAY IND ON
SAVE CONTROL DATA
SEND "START AUTO DELAY" COMMAND
REPLY WITH "AUTO DELAY ANSWER" COMMAND
N
WAIT FOR "ANSWER"
Y
R/G/B DELAY COARSE UP/DOWN CONTROL
OK
N
Y
R/G/B DELAY FINE UP/DOWN CONTROL
N
OK
Y
SEND "AUTO DELAY NORMAL END" COMMAND
REPLY WITH "AUTO DELAY ANSWER" COMMAND
N
WAIT FOR "ANSWER"
Y
AUTO DELAY IND OFF
EXIT
RESTORE CONTROL DATA
RESTORE G/B/R DELAY CONTROL DATA
SEND "AUTO DELAY ABNORMAL END" COMMAND
REPLY WITH "AUTO DELAY ANSWER" COMMAND
WAIT FOR "ANSWER"
N
Y
BLINK AUTO DELAY IND
EXIT

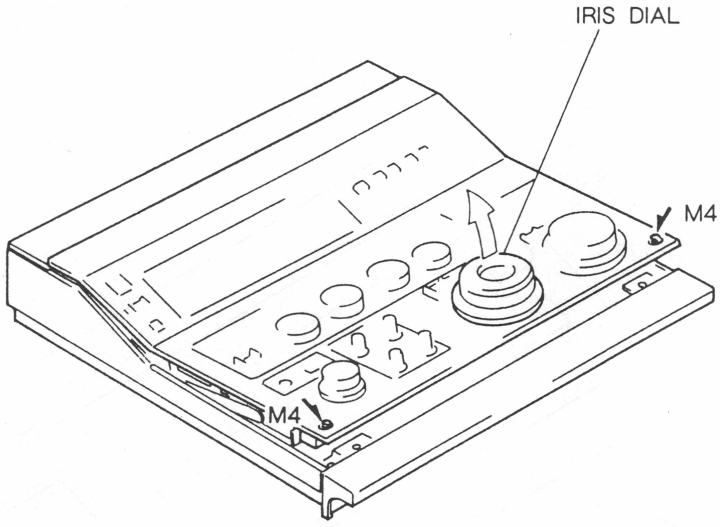
SECTION 2
SERVICE INFORMATION

2-1. BOARD LAYOUT

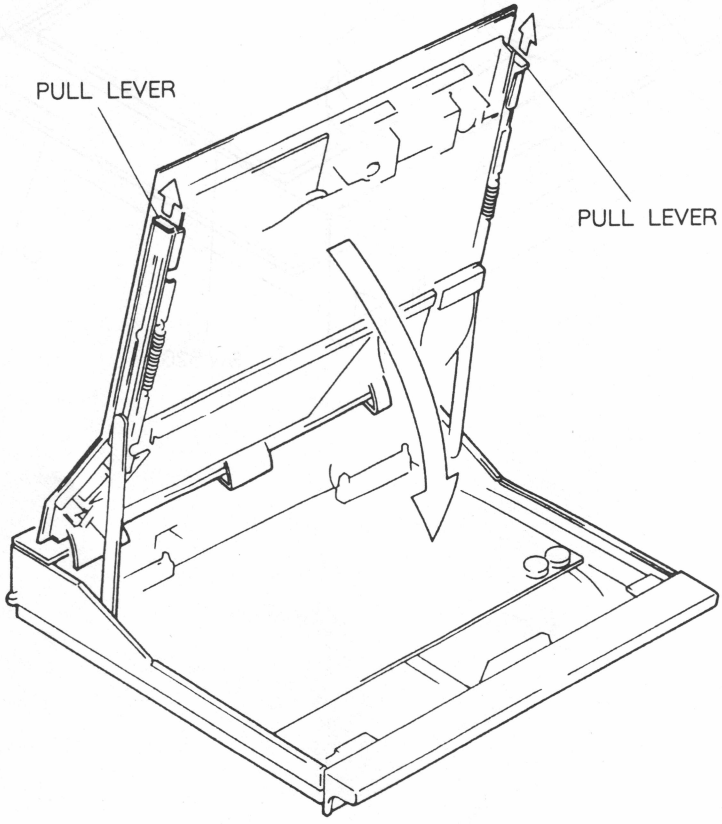


2-2. OPENING AND SHUTTING THE CONTROL PANEL

① Loosen the two screws (M4). Lift up the panel holding the IRIS DIAL, until the panel locks.



② To shut the control panel, pull both the right and left PULL LEVER to unlock. Then, shut the panel carefully and tighten the two screws (M4).



2-3. NOTE ON MAINTENANCE SERVICES

2-3-1. PROM IC

Each PROM IC on the PC board has a suffix to its original designation, which is shown in bold-face type in the following table. This suffix may change according to improvement of IC. Never use an IC having no suffix to its original designation, because its memory has not been programmed. Each PROM IC is mounted to the PC board via socket.

BOARD	REF NO.	PROM IC
CP-130	IC46	27C256A-**CANL-V1.0**
	IC58	27C256A-**CDSP-V1.0**

2-3-2. Note On Replacement Parts

1. Safety Related on Components Warning
   Components identified by shading marked with ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony Parts whose parts numbers appear as shown in this manual or in service manual supplements published by Sony.

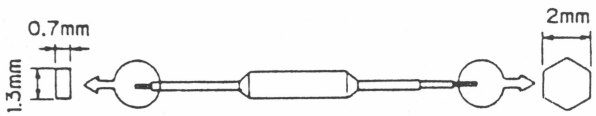
2. Standardization of Parts
   Replace Parts that are supplied from Sony Parts Center can sometimes have different shape and external appearance than what are actually used in equipment. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts."
   - This manual's exploded view and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present."
   - Regarding engineering parts and diagrams changes in our engineering department, refer Sony service bulletins and service manual supplements.

3. Stocked of Parts
   The parts marked with "S" in the SP column of the exploded views and electrical spare parts list are normally required for routine service work. Order for parts marked with "O" will be proceed, but allow for additional delivery time.

4. Units of Capacitors, Inductors, and Resistors
   The following units are omitted in the schematic diagrams, exploded views, and electrical parts lists unless otherwise specified;
   Capacitor : μF
   Inductor : μH
   Resistor : Ω

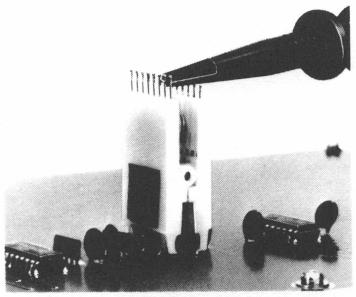
2-4. TOOLS AND FIXTURES

Adjusting Screwdriver Sony Parts No. 7-700-733-01



IC Test Clip

TC-16 Sony Parts No. J-6041-770-A
TC-20 Sony Parts No. J-6041-780-A



This clip is convenient for contacting an oscilloscope probe with each leg of DIP type IC when the IC is checked and adjusted. TC-16 is used for an IC having 14 or 16 pins and TC-20 is used for an IC having 18 or 20 pins.

SECTION 3
ALIGNMENT

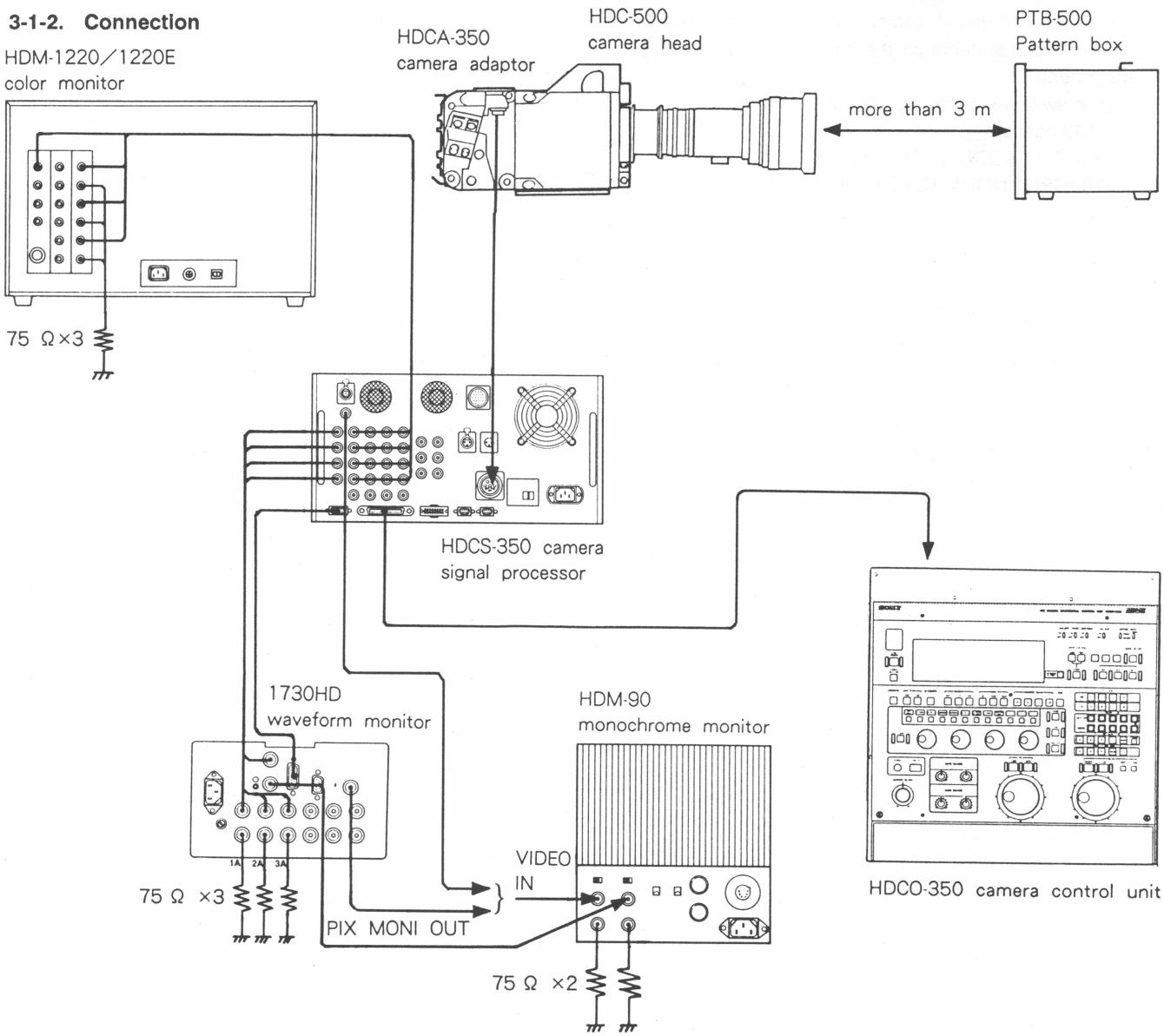
3-1. PREPARATION

3-1-1. Equipment Required

- **Measuring equipment**
  Digital Voltmeter
  Oscilloscope (Tektronix 2465 or equivalent)
  Audio Frequency Generator
  Headset

- **Peripheral equipment**
  HDC-500
  HDCA-350
  HDCS-350
  HDVS Waveform Monitor
  (Tektronix 1730HD or equivalent)
  HDVS Color Monitor
  (Sony HDM-1220 or equivalent)
  HDVS B/W Monitor
  (Sony HDM-90 or equivalent)

3-1-2. Connection



Note: The HDCO-350 can be adjusted without a pattern box, waveform monitor and picture monitor.

3-1-3. Note on Adjustment

- Before adjustment, be sure to completely align all other equipments than the HDCO-350 shown in the Section 3-1-2. Connection.
- Turn off the power switch in the following sequence, otherwise the filter on the camera head will not be returned to CLOSE position.
  ① Turn off the CHU POWER switch on the HDCO operation panel.
  ② Turn off the POWER switch on the HDCO operation panel.

3-1-4. Initial Setting

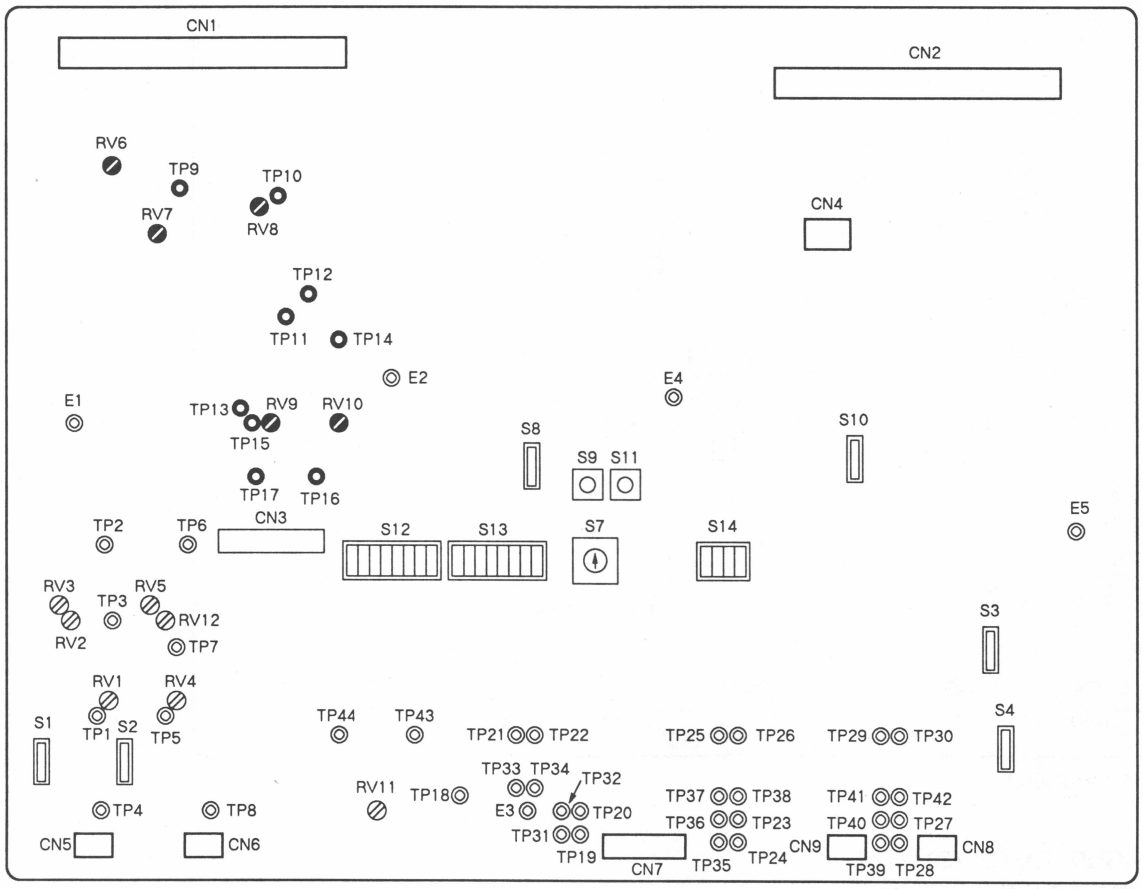
- Before adjustment, turn on the power for each block of the HDVS camera system and allow 10 minutes for warming the unit up.
- For details on initial settings of other equipments, refer to the maintenance manual supplied with each equipment.
- Set the switches of the HDCO-350 as follows.
  [CP-130 board]
  S8 (CPU1 NORMAL/TEST) → NORMAL
  S10 (CPU1 NORMAL/TEST) → NORMAL

3-2. ADJUSTMENT

3-2-1. Power Supply Voltage Adjustment

Note: If this adjustment is performed, be sure to check all of adjustment items related to the HDCO-350.

Equipment: Digital voltmeter



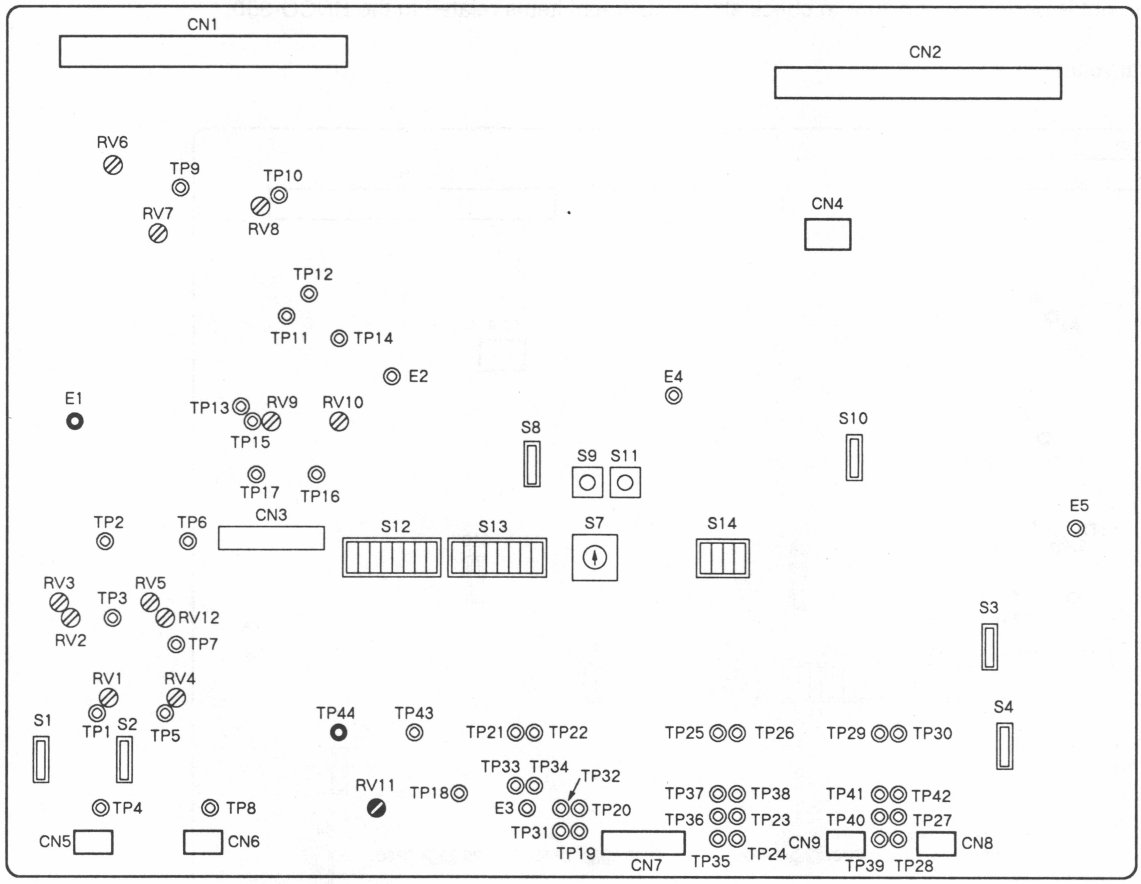
CP-130 BOARD (COMPONENT SIDE)

Adjustment procedures

Item	Test point/CP-130	Adjusting point/CP-130	Specification
+ 15V adj.	TP16 (GND; E1) TP15 (GND; E1)	◐RV10 (+ 15V ADJ) Checking	+ 15.0 ± 0.8 V dc + 17.0 to 20.0 V dc
+ 9V adj.	TP9 (GND; E1) TP11 (GND; E1) TP10 (GND; E1) TP12 (GND; E1)	◐RV7 (+ 9.5V ADJ) ◐RV6 (− 9.5V ADJ) ◐RV8 (+ 9V ADJ) Checking	+ 9.5 ± 0.05 V dc − 9.5 ± 0.05 V dc + 9.0 ± 0.05 V dc − 9.0 ± 0.05 V dc
+ 7V adj.	TP17 (GND; E1)	Checking	+ 7.0 ± 0.3 V dc
+ 5V adj.	TP14 (GND; E1) TP13 (GND; E1)	◐RV9 (+ 5V ADJ) Checking	+ 5.0 ± 0.02 V dc + 5.5 ± 0.05 V dc

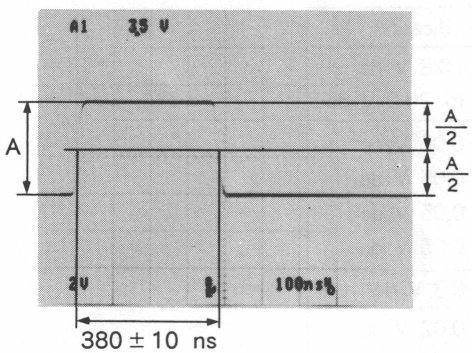
3-2-2. A/D Converter Read-Timing Pulse Width Adjustment

Equipment: Oscilloscope



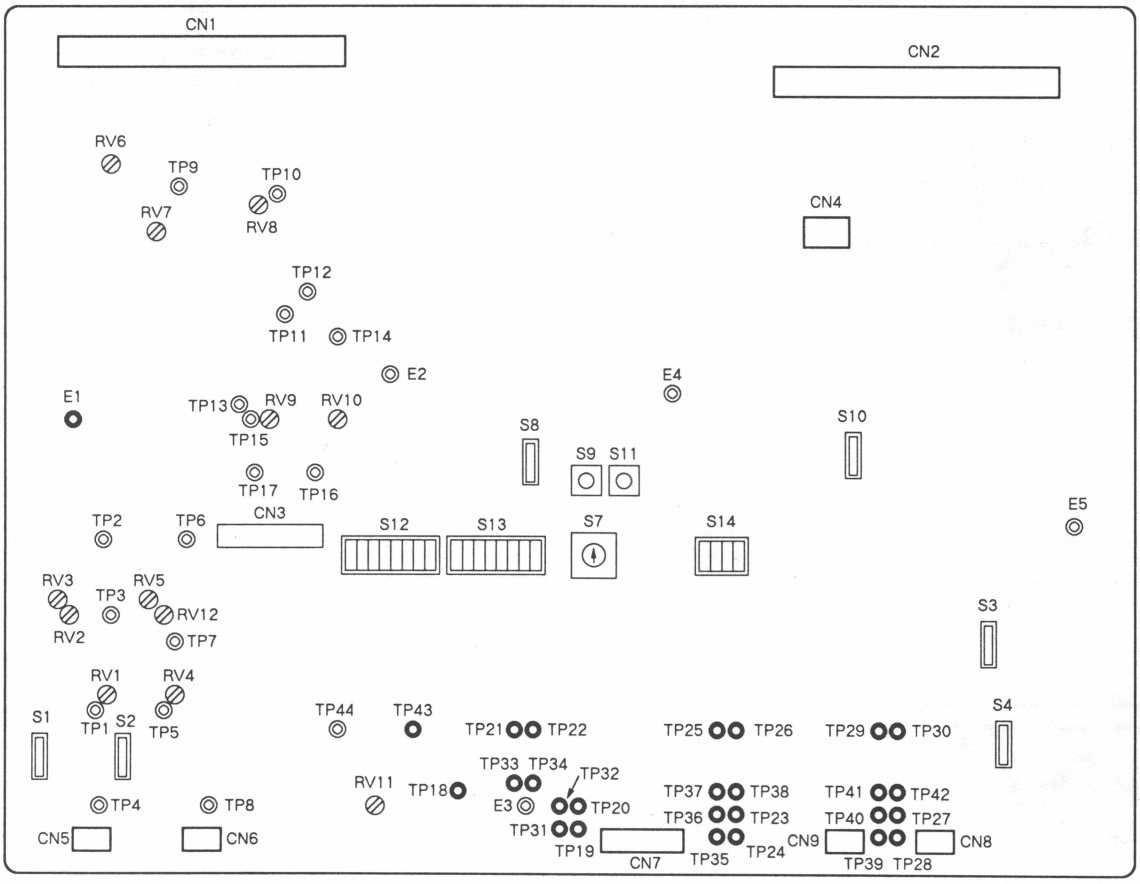
CP-130 BOARD (COMPONENT SIDE)

Test point: TP44 (GND; E1)/CP-130 board
Adjusting point: ⊘ RV11 (EN PULSE WIDTH)
/CP-130 board
Specification: 380 ± 10 ns



3-2-3. Rotary Encoder Pulse Check

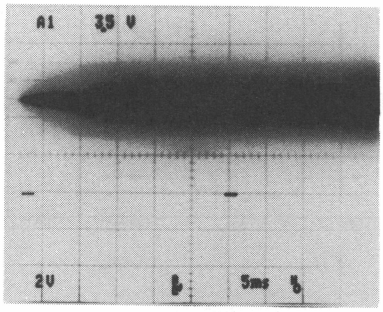
Equipment: Oscilloscope



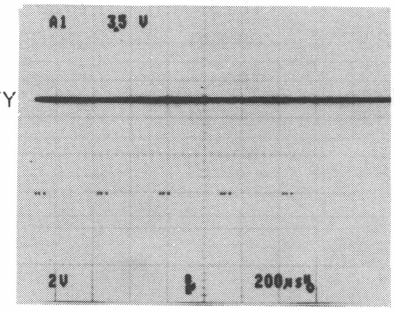
CP-130 BOARD (COMPONENT SIDE)

Checking procedures

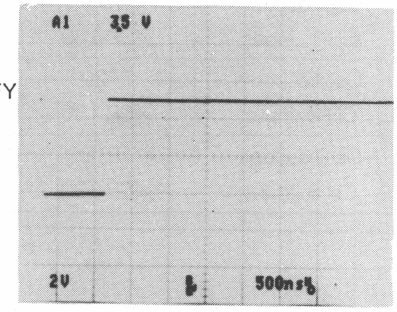
1. Confirm that the following waveform is output at TP43 (GND; E1)/CP-130 board.



MAGNIFY

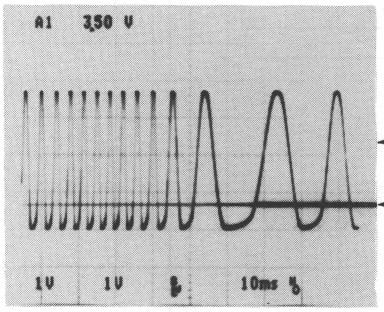


MAGNIFY



(Continued on the following page.)

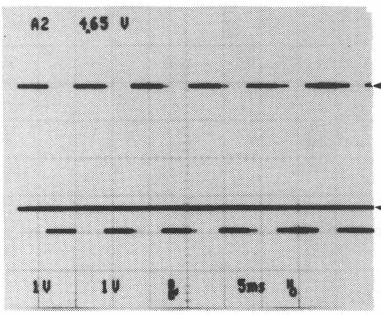
2. Checking of dial operation 1
Confirm that the following waveforms are output at each test points when turning each dials shown in the table.



← CH-1 or CH-2

← CH-3

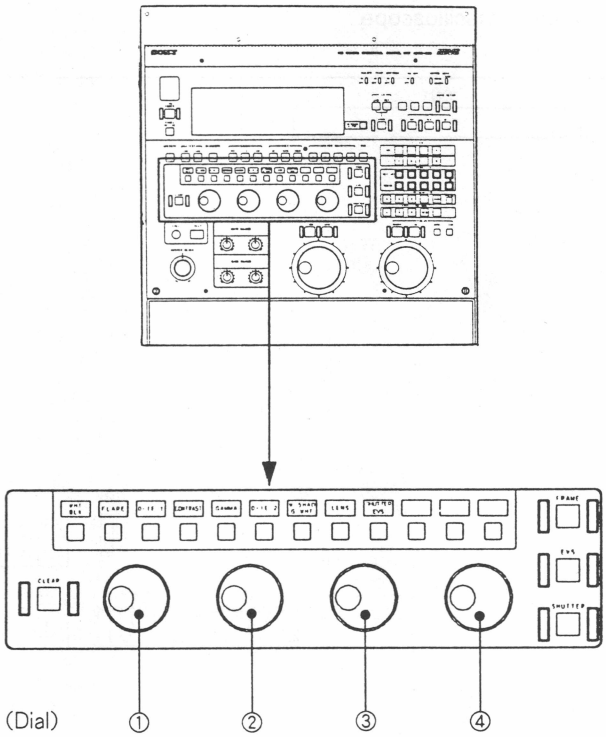
Dials ① to ④



← CH-1 or CH-2

← CH-3

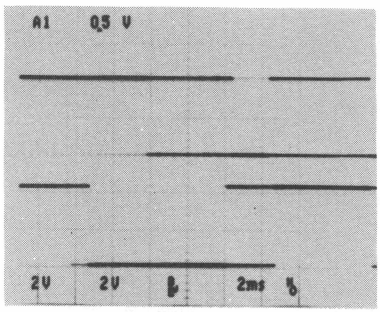
Focus dial, Iris dial



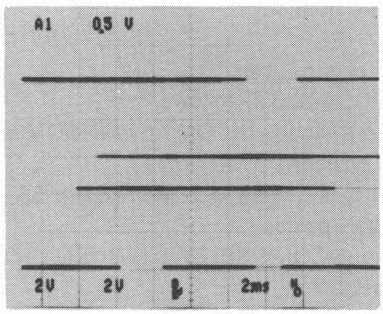
Test points when checking dial operation

	Dial ①	Dial ②	Dial ③	Dial ④	Focus Dial	Iris Dial
Oscilloscope CH-1 input	TP19 /CP-130	TP31 /CP-130	TP23 /CP-130	TP35 /CP-130	TP27/CP-130	TP39/CP-130
Oscilloscope CH-2 input	TP20 /CP-130	TP32 /CP-130	TP24 /CP-130	TP36 /CP-130	TP28/CP-130	TP40/CP-130
Oscilloscope CH-3 input	TP18 /CP-130	←	←	←	←	←

3. Checking of dial operation 2
   Confirm that the following waveform is output at each points, when turning each dials clockwise or counterclockwise.



Waveform when turning a dial clockwise



Waveform when turning a dial counterclockwise

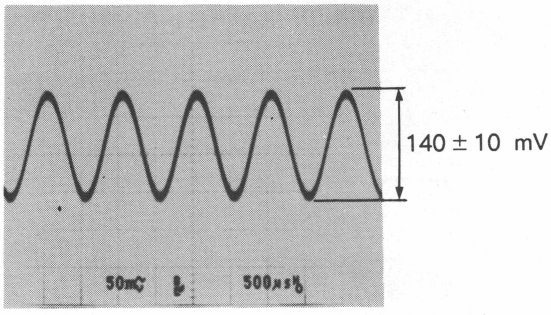
Test points when checking dial operation

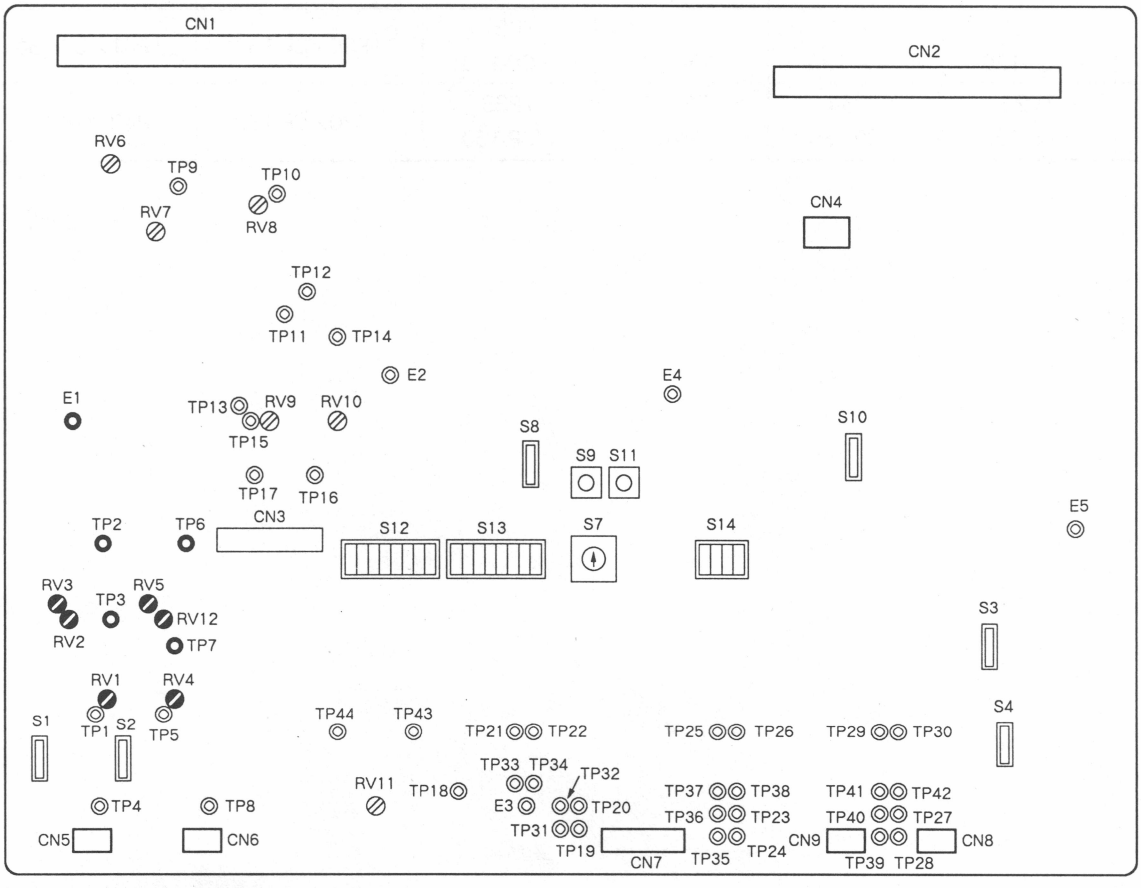
	Dial ①	Dial ②	Dial ③	Dial ④	Focus Dial	Iris Dial
Oscilloscope CH-1 input	TP21 /CP-130	TP33 /CP-130	TP25 /CP-130	TP37 /CP-130	TP29/CP-130	TP41/CP-130
Oscilloscope CH-2 input	TP22 /CP-130	TP34 /CP-130	TP26 /CP-130	TP38 /CP-130	TP30/CP-130	TP42/CP-130

3-2-4. Incom Adjustment

Equipments: Oscilloscope, Audio frequency oscillator
Preparations:
- Close the lens iris.
- Prepare the headset.

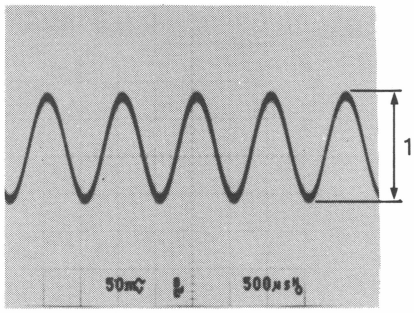
Adjustment procedures
1. Set the HDCA-350 as follows.
   - Set the switches INCOM1 and INCOM2/rear panel to ON position.
   - Set the switches S1 and S2/IV-36 board to CARBON position.
   - Set the INCOM2 SELECT switch/AU-160 board to PD position.
   - Feed the 1 kHz (300 ± 10 mV p-p) sine wave to the INCOM1 connector.
2. Open the operation panel.
   - Adjust ⊘ RV3 (INCOM1 R-LEVEL)/CP-130 board so that the level at TP3/CP-130board is 140 ± 10 mV.



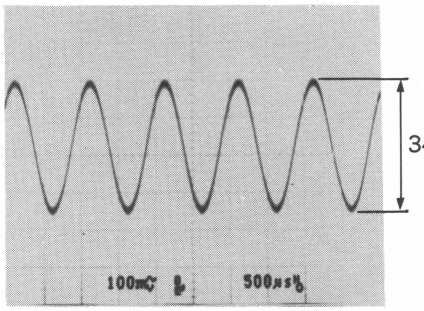


CP-130 BOARD (COMPONENT SIDE)

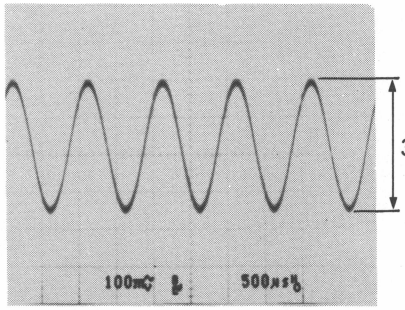
3. Feed the 1 kHz (300 ± 10 mV p-p) sine wave to the INCOM2 connector of HDCA-350, disconnecting the INCOM1 connector.
   - Adjust ⊘ RV5 (INCOM2 R-LEVEL)/CP-130 board so that the level at TP7/CP-130 board is 140 ± 10 mV.



4. Feed the 1 kHz (300 ± 10 mV p-p) sine wave to the INCOM1 connector of HDCO-350, disconnecting the INCOM2 connector of HDCA-350.
   - Set ⊘ RV1 (INCOM1 AGC)/CP-130 board to mechanical center.
   - Adjust ⊘ RV2 (INCOM1 LEVEL MIX)/CP-130 board so that the level at TP2/CP-130 board is 345 ± 20 mV.



5. Feed the 1 kHz (300 ± 10 mV p-p) sine wave to the INCOM2 connector of HDCO-350, disconnecting the INCOM1 connector.
   - Set ⊘ RV4(INCOM2 AGC)/CP-130 board to mechanical center.
   - Adjust ⊘ RV12 (INCOM2 LEVEL MIX)/CP-130 board so that the level at TP6/CP-130 board is 345 ± 20 mV.



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