SECTION 1

SERVICE INFORMATION

Model No. : AG-AC90P/PX/PJ/AN/EJ/EN/MC

NOTE: Electrical adjustment procedure is also described in this section.
(Item 3-5-4 to 3-5-8)

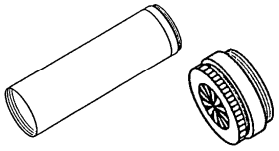
CONTENTS

1. Service Fixture & Tools

No.	Parts No.	Name	Remarks
1	VFK1164TCM03	Collimator Set (infinity Lens)	with focus chart
2	----------	49mm Attachment Ring (49mm-37mm)	for setting the collimator
3	VFK1345	CC Filter Holder	
4	VFK1346	Step-Down Ring (62mm-52mm)	
5	VFK1660	Step-Up Ring (49mm-62mm)	
6	VFK1347	CC Filter (LB120)	
7	VFK2039	CC Filter (G-10)	
8	----------	ND Filter (ND-0.7)	
9	----------	White Chart	

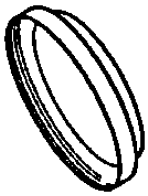
1 **VFK1164TCM03**

Collimator Set
(with focus chart)



2 **-----**

49mm Attachment Ring
(49mm-37mm)



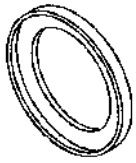
3 **VFK1345**
CC Filter Holder

4 **VFK1346**
Step-Down Ring
(62mm-52mm)

VFK1345 VFK1346

5 **VFK1660**

Step-Up Ring
(49mm-62mm)



VFK1660

6 **VFK1347** (LB120)
7 **VFK2039** (G-10)

CC Filter

8 **-----**

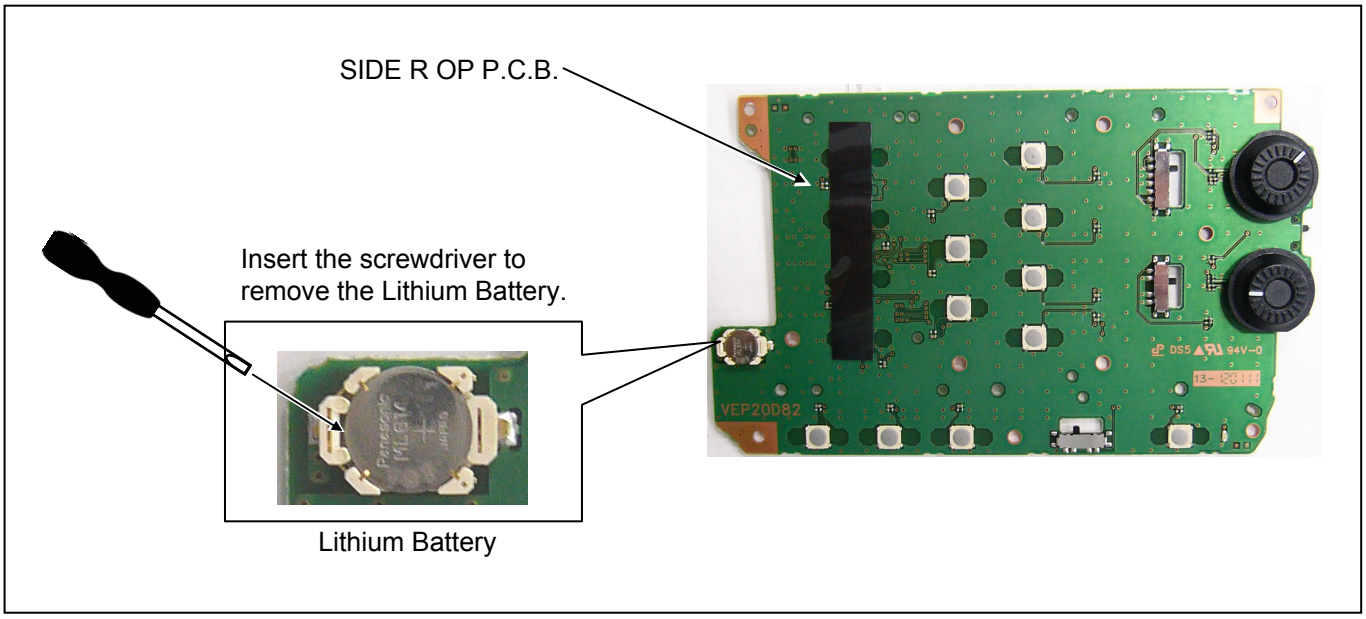
ND Filter (ND-0.7)

9 **-----**

White Chart

2. Replacement procedure of Lithium Battery

1. Remove the SIDE R OP P.C.B.. (The removal procedure has been described to the item **"19. Removal of SIDE R OP P.C.B."** of disassembly procedure (SECTION 2)).
2. There is a Lithium battery on the SIDE R OP P.C.B. (Ref No: B6951 at component side of SIDE R OP P.C.B.).
3. Insert the screwdriver to groove of the Lithium Battery Holder and press down it to remove the Lithium Battery. (Pay attention for remove of battery to be pop-up)
4. Install the new battery.
5. Set the date and time of internal clock (Refer to item **"Setting date and time"** of operation instructions for the setting method).



NOTE:
The lithium battery is a critical component. (Type No.: ML-614S/ZTK)
It must never be subjected to excessive heat of discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the old battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

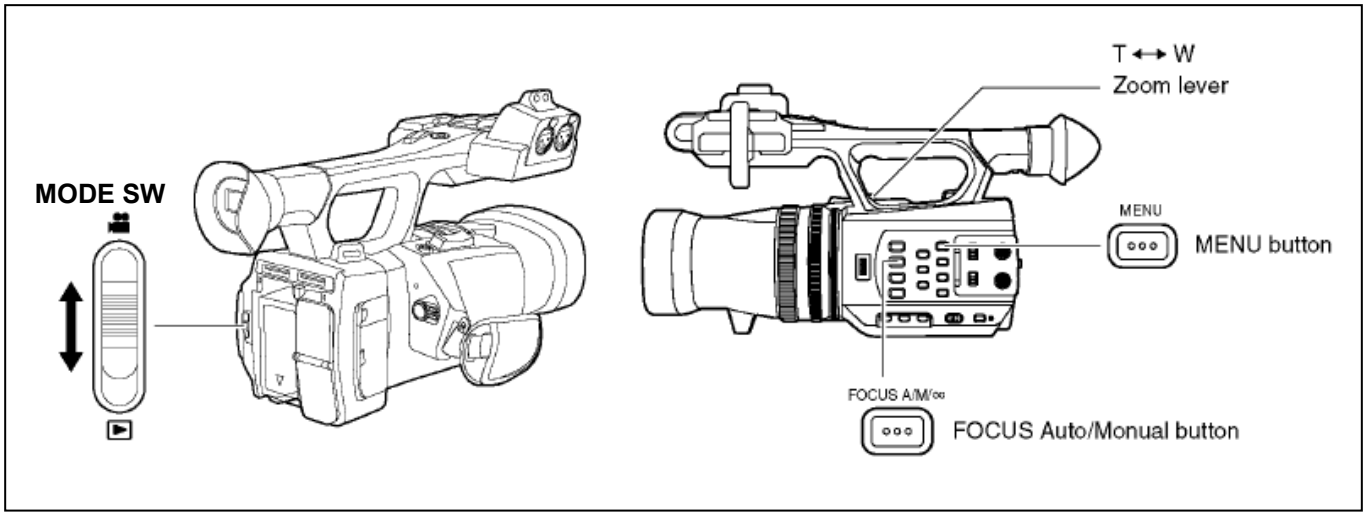
CAUTION

Danger of explosion if battery is incorrectly replaced, Replace only with the same or equivqlent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

3. Service Mode

< How to open the SERVICE menu >

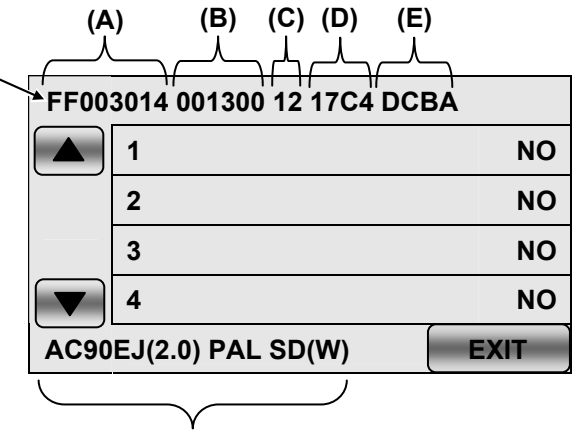
1. Set the **MODE SW** to **"Recording"** mode.
2. Keep pressing the **"MENU"** button, **"ZOOM LEVER"** to **W** side and **"FOCUS A/M/∞"** button for more than 3 seconds until the top screen of the Service Mode Menu being displayed.
3. End methord of the top screen of the service menu. Touch the **"EXIT"** of LCD to end the service mode, and then POWER OFF.



< Top screen of the service mode menu >

Display of Software version

(A): SPiCa software version
(B): CAM Micon software version
(C): SPiCa EEPROM version
(D): CRC for SPiCa EEPROM
(E): CRC for CAM EEPROM



Display of Product information

AC90EJ: Model No. / Destination
(2.0): Level of product (*fixed value)
NTSC: NTSC or PAL
SD(W): Media (SD card) (*fixed value)

< Service mode menu >

Number	Contents	Function
1	Factory settings	Function to throw a product up in a factory shipment state.
2	Not Used	Not Used
3	Not Used	Not Used
4	Error history & Error code indication	＜Operating time＞ Function to display the operating time in a power-on state. ＜Errot history indication＞ (SPiCa only) Function to display the last 5 error codes in the error history saved in EEPROM. ＜Movie recording time＞ Function to display the movie recording time of each media. ＜Interval recording time＞ Function to display the interval recording time of each media. ＜Number of recorded still pictures＞ Function to display the number of recorded still pictures of each media. ＜Error code＞ The last 5 error codes of each soft block are saved in the error history. (SPiCa) The last 3 error codes saved in CAM EEPROM is displayed. ＜Operation history＞ Up to a maximum of 16 operations are saved from the startup to the occurrence of a fatal error. Saved for the last 5 fatal errors each.
5	Self check result display	Function to diagnose if the devices and the interfaces between devices are working correctly.
6	Not Used	Not Used
7	Factory use only	Factory use only
8	Factory use only	Factory use only
9	Not Used	Not Used
10	Factory use only	Factory use only
11	Not Used	Not Used
12	Camara data indication while the video playback	Display the camera informations (Shutter speed, Iris value, White balance and focal length) while playing recorded video.
13	Factory use only	Factory use only
14	Service adjustment function	Camera adjustments can be made on the unit alone.
15	Adjustment data restoration	Function to write the backup adjustment data file back to the unit.
16	Touch panel adjustment	Function to adjust the touch panel.

NOTE: Please do not touch the numbers that have the description of “Factory use only” and “Not Used”.

3-1. Factory Setting

Please note that the following data etc. are initialized when the Factory setting is executed.

- Setting menu
- Folder number and file number of still pictures.
  (Setting the folder number is 100, and file number is 0.)
- Clear the date & time information.

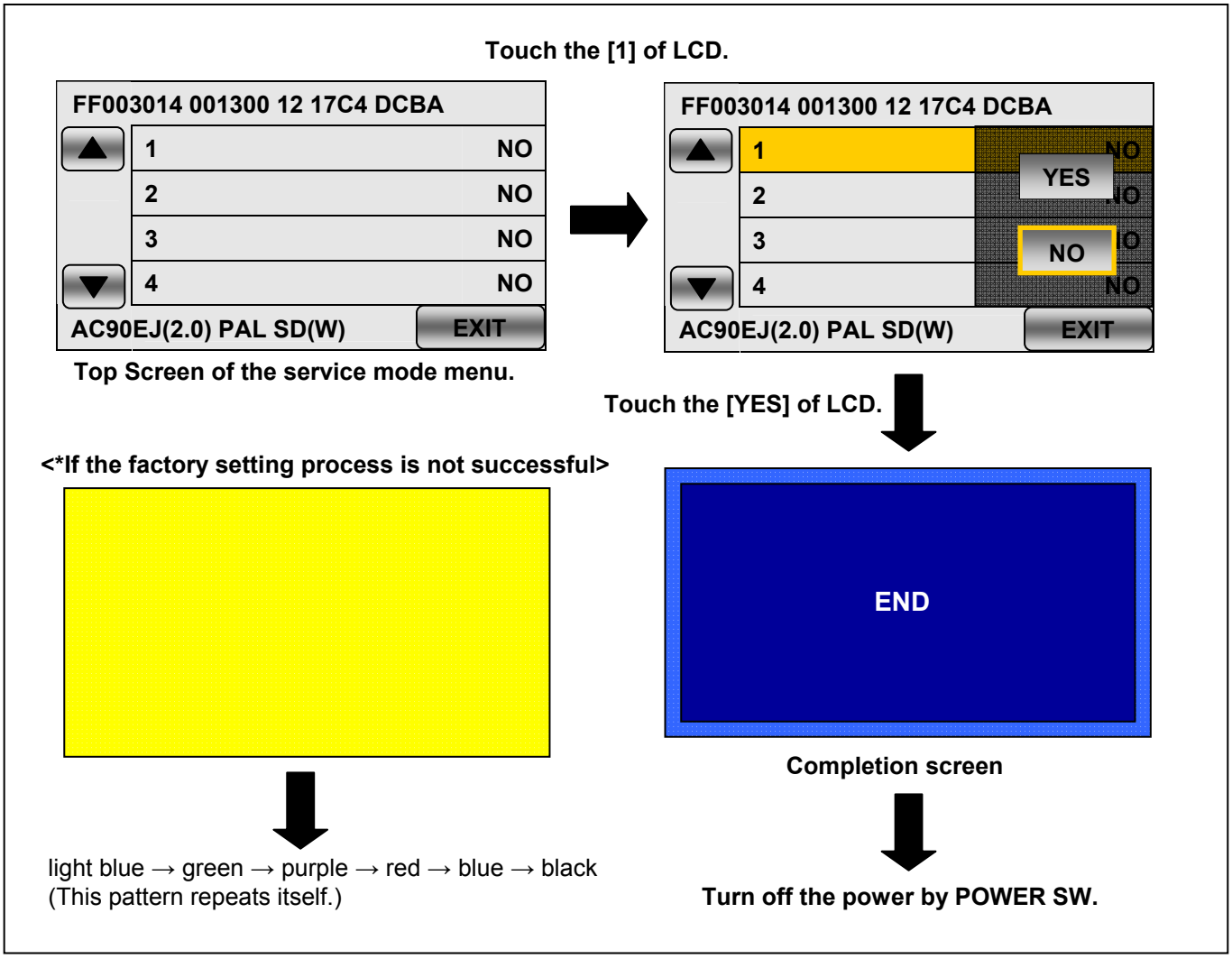
Adjustment values, hour meter, serial number and the values in error history are not reset.

Touch “1” on the service mode menu screen.
YES/NO selection screen is displayed, then touch “YES” to execute the factory setting.

After the factory setting process is completed, the shutter sound effect is made. (Even if the menu item “ALERT SOUND” is “OFF”, it is made and “END” is displayed on the screen.)

If the factory setting process is not successful, the screen changes as follows (whole LCD screen lights up) to show the failure.
yellow → light blue → green → purple → red → blue → black (It repeats in a loop in this order.)

＜How to end the factory setting＞
After the “END” screen is displayed, set the POWER SW to OFF to exit the factory setting screen (service mode).



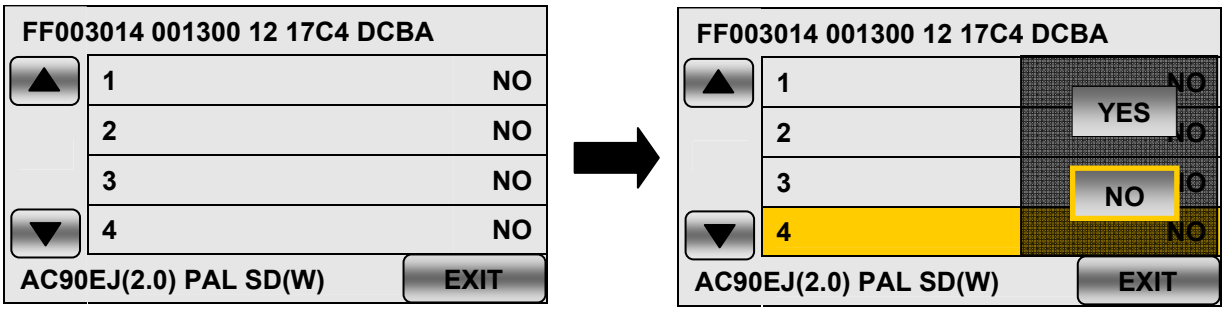
3-2. Error History & Error Code

On the screen in the service mode “4”, the following information is displayed.

- Operating time: Operating time in a power-on state
- Recording time: Function to display the movie recording time / interval recording time
- Error history indication (SPiCa only):
  Function to display the last 5 error codes in the error history saved in EEPROM.
  (008. ERROR CODE[1]～067.ERROR CODE[5])
- Error code display (SPiCa):
  Up to 5 errors are re corded in the history for each block. Error codes of the last 5 errors are displayed.
- Error code display (CAM):
  Error code of the last 3 errors saved in CAM EEPROM is displayed.
- Operation history display: (SPiCa only)
  Up to a maximum of 16 operations are recorded from the start to the occurrence of a fatal error.

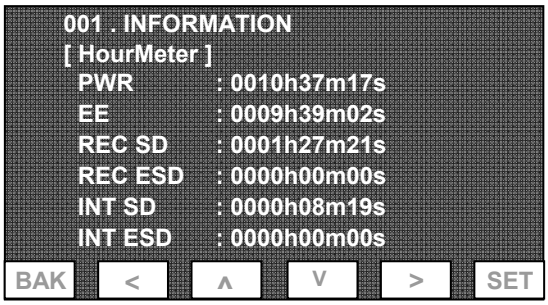
Touch “4” on the service mode menu screen.
YES/NO selection screen is displayed, then touch “YES” to display the INFORMATION screen.

Touch the [4] of LCD.



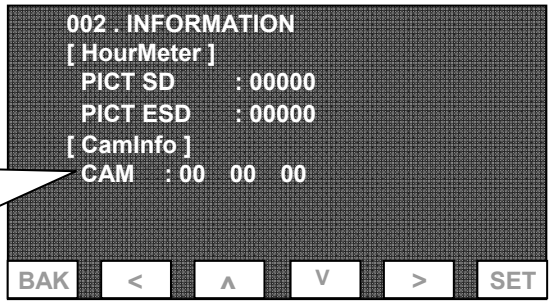
Top Screen of the service mode menu.

Touch the [YES] of LCD.



PWR : Total power-on time
EE : Total EE-state (Recording mode) time
REC SD : Total movie recording time
REC ESD : Not used
INT SD : Total interval recording time
INT ESD : Not used

Touch the [>] of LCD.



PICT SD : Total number of recorded still pictures
PICT ESD : Not used

< Display of CAM Error code >
CAM : 00 00 00
A B C

A: the third to last error
B: the second to last error
C: the last error

< Details about Camera Error Code >

Function to display the last 3 camera error codes in the error history saved in EEPROM.
The error codes represent as follows.

ERROR CODE	Contents of Error
51	Focus control is abnormal
52	Zoom control is abnormal (Zoom lens: Front side)
53	OIS lens control is abnormal
54	Zoom control is abnormal (Zoom lens: Rear side)
71	Lens cover operation is abnormal
72	Cooling fan operation is abnormal
33	Communication error between BE MICOM (SPiCa) and CAM MICOM inside SPiCa.

< How to exit the display screen >

On the service mode menu screen, touch “BAK” to exit the service mode and return to the normal screen.

3-3. Power ON Self Check Result Display

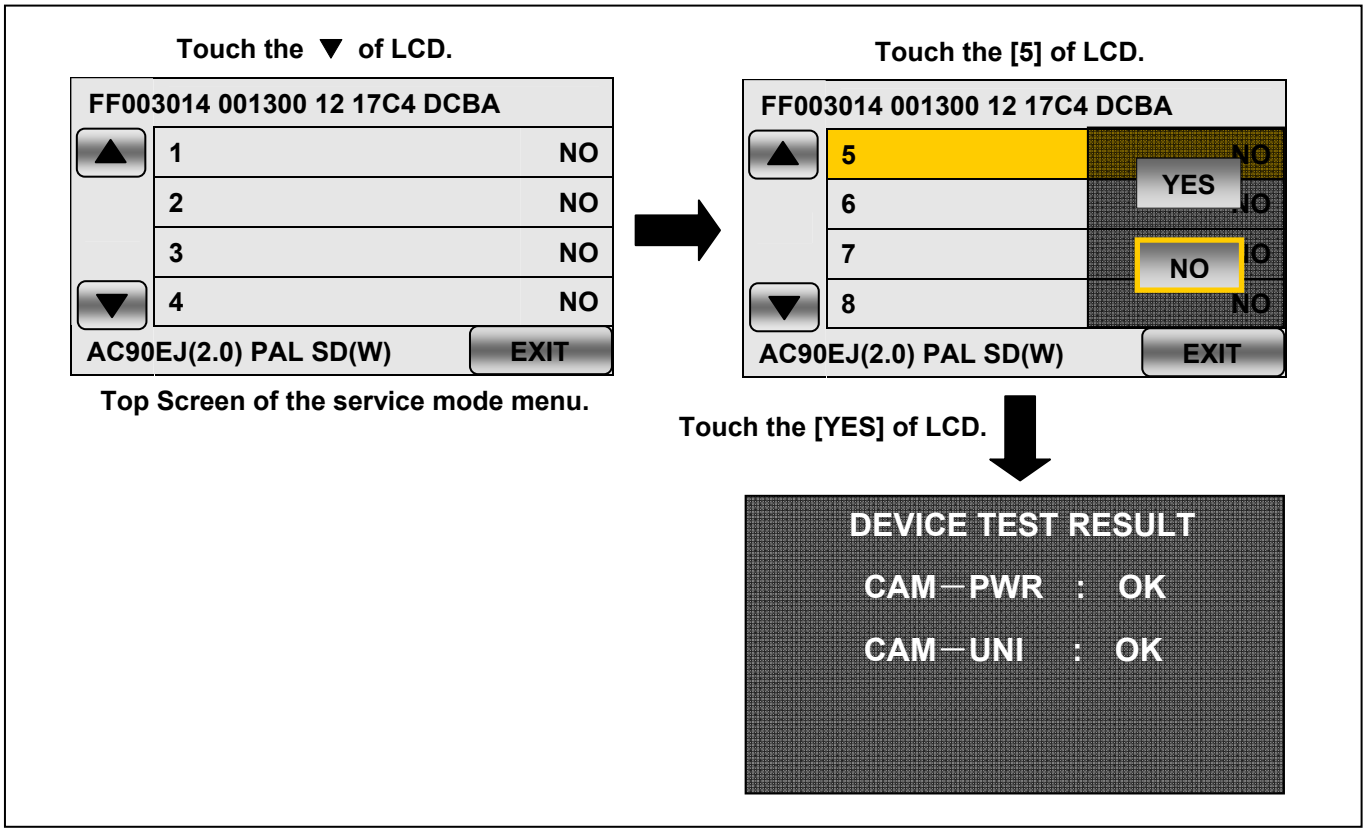
< Indication contents >
Self check is executed at the power-on. Power ON self check result display.
Function to diagnose correct function of the device and interface between devices result display.

Display the following communication test result.
● CAM-PWR : Communication test between IC3401 to IC2304
● CAM-UNI : IC3401 internal communication test.
Display other than "OK" are abnormalities of each lines.
Cutting of battery connection or AC power supply connection to end the service mode.

Touch the [5] of LCD, select Power ON self check result display.

Touch “5” on the service mode menu screen.
YES/NO selection screen is displayed, then touch “YES” to execute the device test and display the DEVICE TEST RESULT screen.

< How to diagnose the self check result display >
The POWER SW of the unit does not work. Turn off the AC adapter, or remove the battery, etc. in order to turn off the unit power.



＜Outline of the function＞
It displays the result of self check (function to diagnose if the devices and the interfaces between devices on MAIN Board are working correctly) that is executed at the power-on.

＜Contents displayed＞
The results of device tests are displayed at the center of the screen. (Details of the devices are as follows.)
CAM-PWR :
The result of communication test between CAM MICON (one of the 3 CAM MICONs inside Spica(IC3401)) and POWER CONTROL IC (IC2304).
CAM-UNI :
The result of communication test between Spica (IC3401) and CAM MICON (one of the 3 CAM MICONs inside Spica(IC3401)).

3-4. Camera data indications while the video playback

Touch the [12] of LCD, select indicating the camera informations while playing back the recorded video.

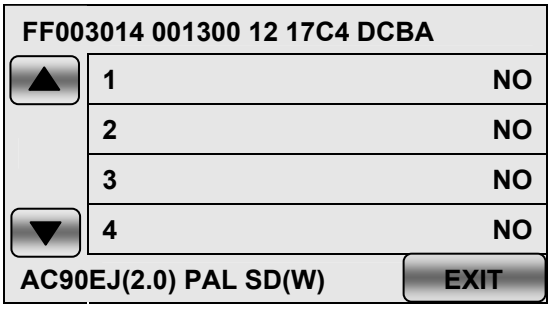
< Indication contents >
While playing back the recorded videos, the camera informations (Shutter speed, Iris value, White balance and focal length) are superimposed on the LCD screen.

< Outline of the function >
Information about the shutter, iris, white balance and focal length at the time of recording is displayed on the playback screen.

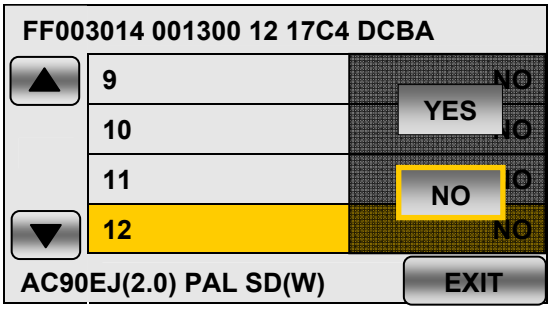
Touch “12” on the service mode menu screen.
YES/NO selection screen is displayed, then touch “YES” to exit the service mode menu screen and enter the RECORDING mode screen.
Set the MODE SW to the PLAYBACK position.
When playing back the clip, the camera data is displayed.
Details of camera data displayed are as follows.

Item	Contents displayed
SHTR	Exposure Time is indicated as a fraction whose numerator is 1. And Exposure Mode is indicated as AUTO or MNL.
IRIS	F Number is indicated.
WB	White Balance is indicated as AUTO or MNL.
Focal	Focal Length In 35mm Film is indicated.

Touch the ▼ of LCD.
Touch the [12] of LCD.

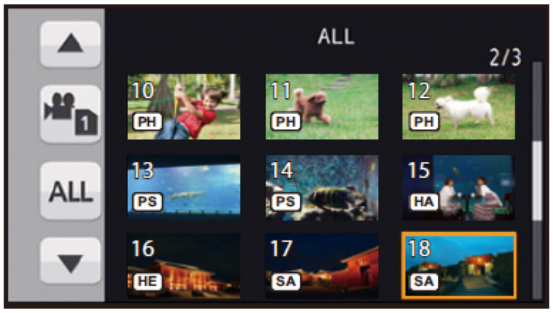


Top Screen of the service mode menu.



Touch the [YES] of LCD.

Normal display
(Motion picture recording mode)



Camera data displayed on the video playback screen

3-5. Service Adjustment Function

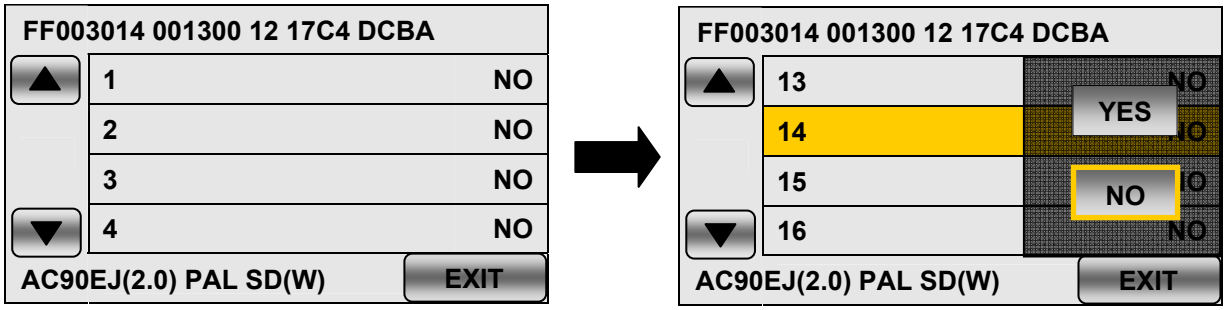
In stead of using EVR software (via PC connection), adjustments can be made on the camera recorder alone (a subject needed).

Touch “14” on the service mode menu screen.
YES/NO selection screen is displayed, then touch “YES” to display the SERVICE ADJUSTMENT screen.

Functions on the SERVICE ADJUSTMENT screen are as follows.

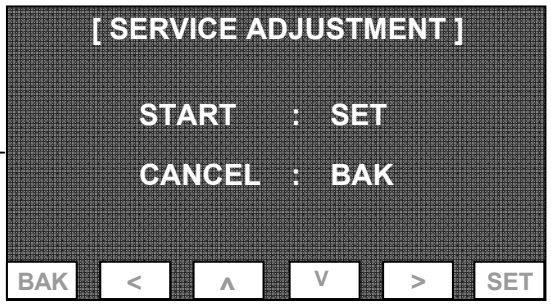
1 : Setting of destination
2 : Backup of adjustment value data
3 : Check of button and SW
4 : Zoom lever adjustment
5 : Camera adjustment (IRIS, GYRO, OIS, White blemish)
6 : Tracking adjustment
7 : White balance adjustment (3100K)
8 : White balance adjustment (5100K)

Touch the [14] of LCD.



Top Screen of the service mode menu.

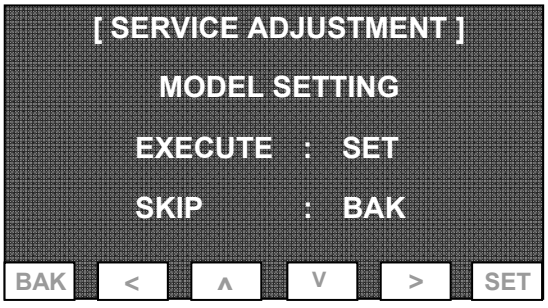
Touch the [YES] of LCD.



Touch the [BAK] of LCD.

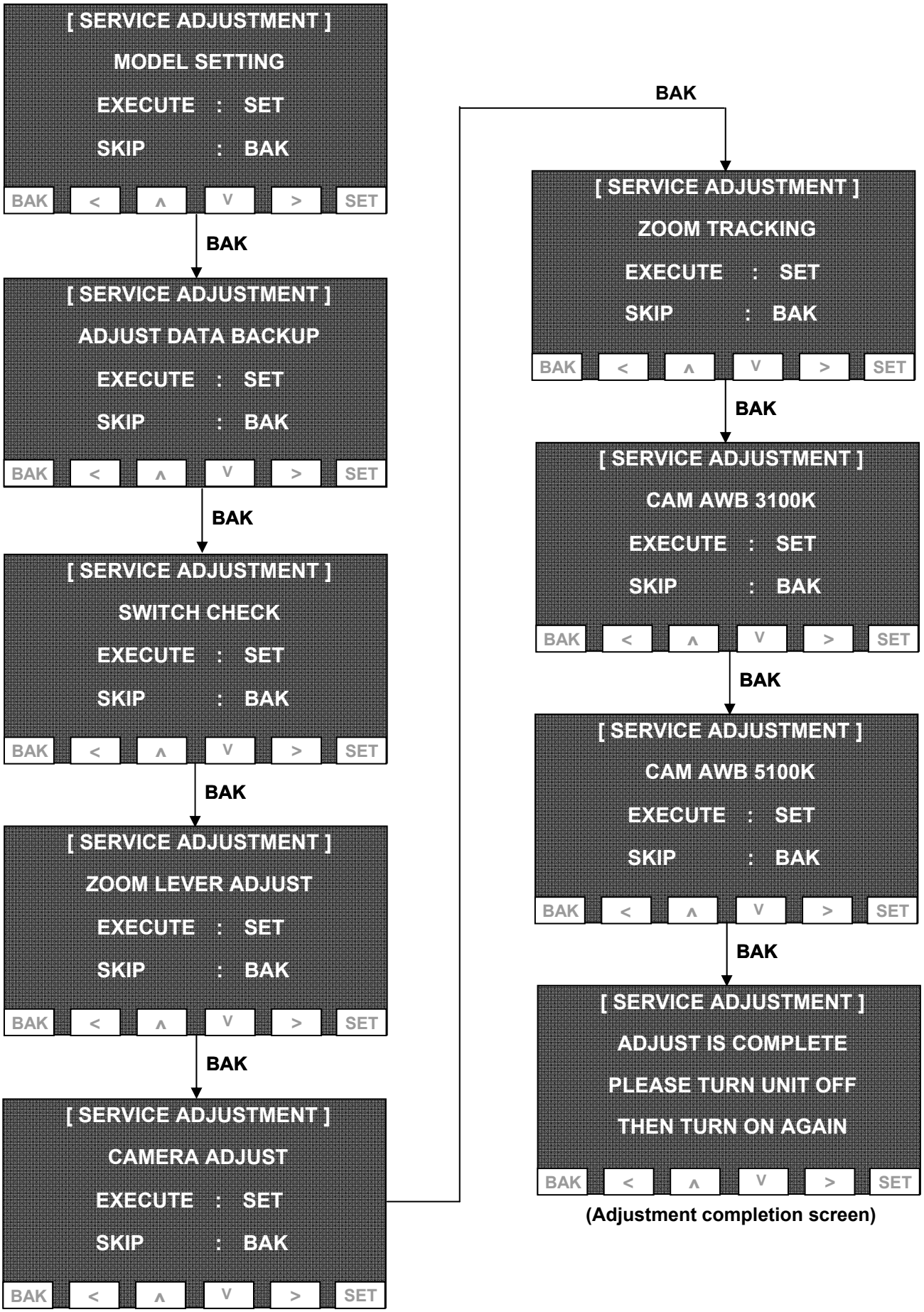
SERVICE MODE is cancelled.

Touch the [SET] of LCD.



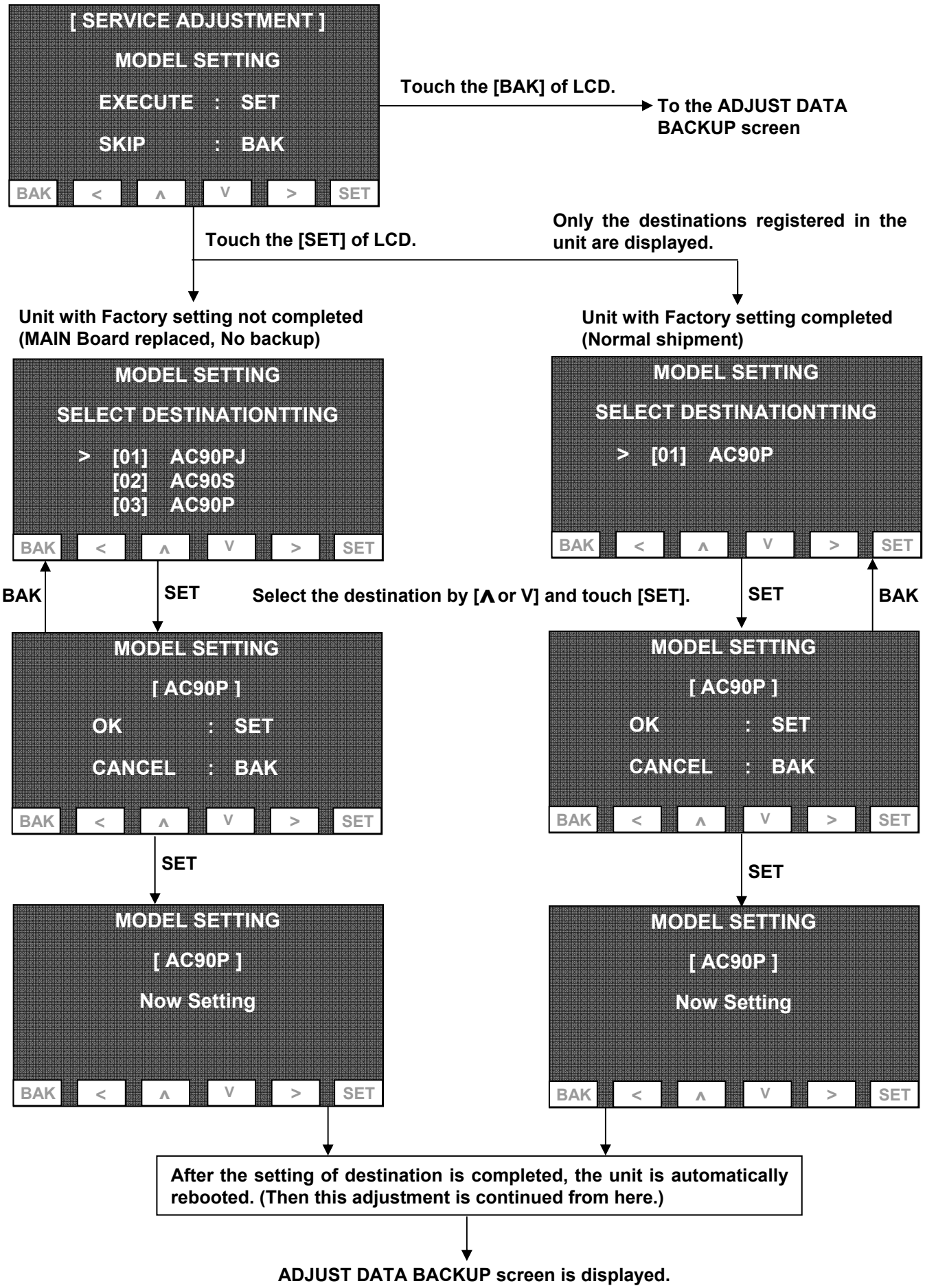
MODEL SETTING screen is displayed.

Each function screen of SERVICE ADJUSTMENT can be SKIPPED without executing the functions. For example, when only the zoom tracking needs to be adjusted, it is possible to execute only the zoom tracking adjustment and move to the adjustment completion screen.



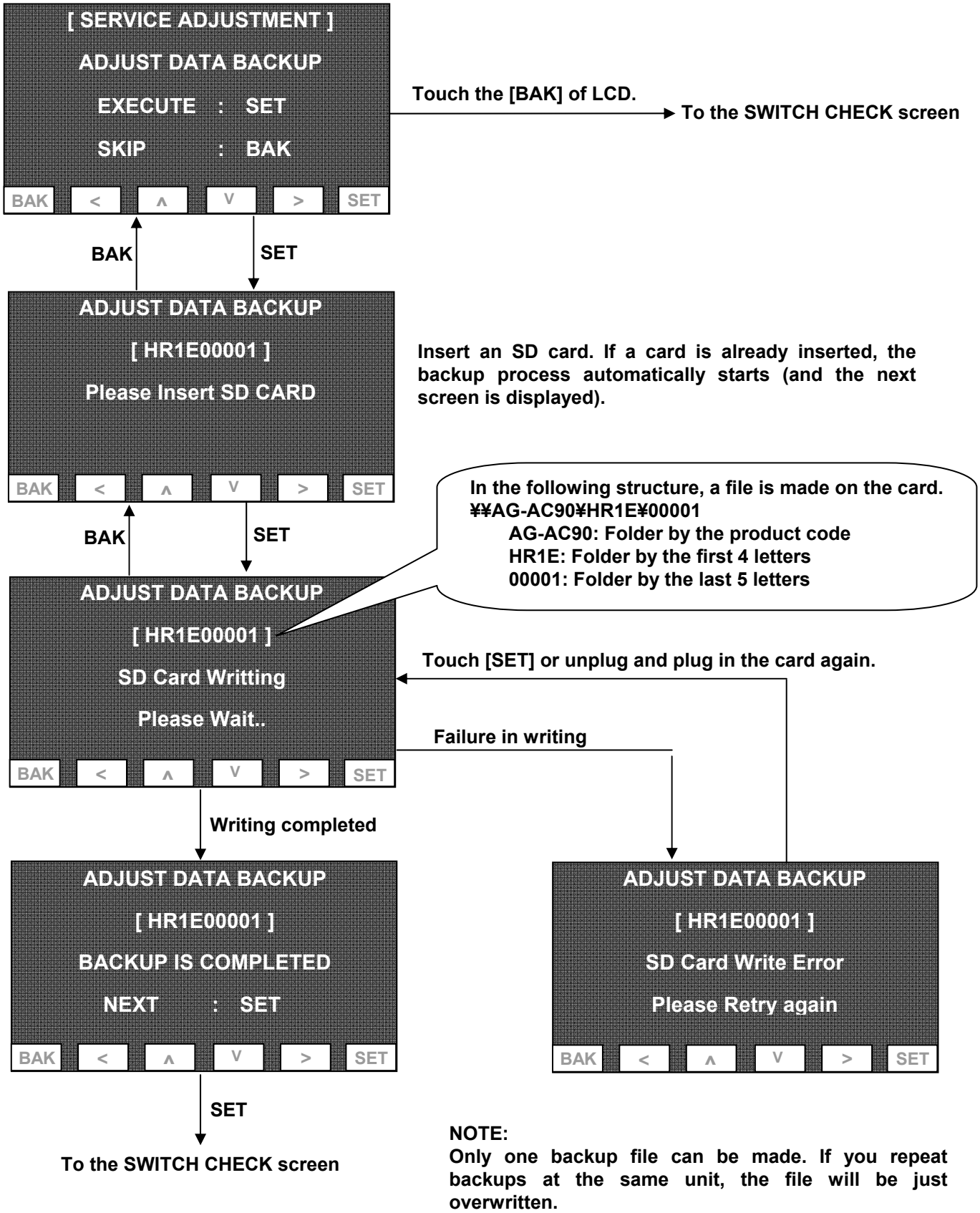
(Adjustment completion screen)

3-5-1. Setting of destination



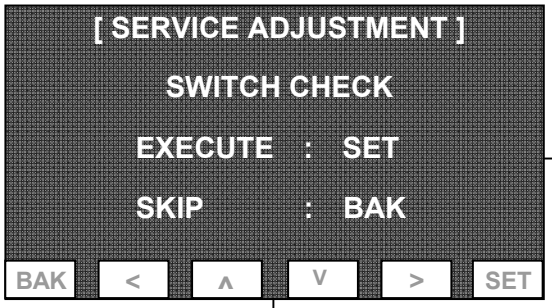
3-5-2. Backup the adjustment data

In addition to adjustment data, the data of hour meter and error history is also stored.



NOTE:
Only one backup file can be made. If you repeat backups at the same unit, the file will be just overwritten.

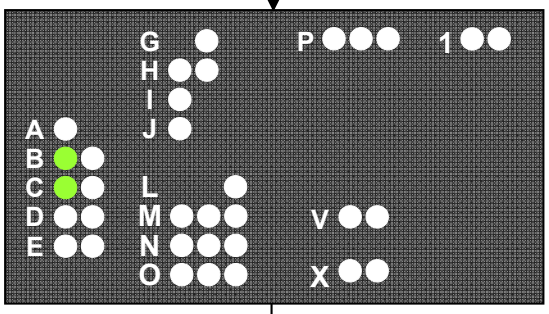
3-5-3. Check of button and SW



Touch the [BAK] of LCD.

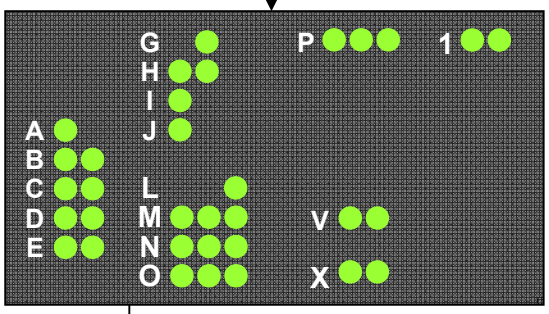
→ To the ZOOM LEVER ADJUST screen

SET



Current status of switches is displayed.
Circles mean as follows.
●: Not pressed (Not set)
●: Pressed (Set)

The left figure shows that the Mode SW is set to Recording position and the Auto/Manual SW is set to iA position.



The tables below show the layout of SWs, etc. on the screen.
Settings of SWs can be confirmed. Press the buttons, and the change in circle's color will show that they are working.

A	Power SW	
B	Mode SW (Recording)	Mode SW (Playback)
C	Auto/Manual SW (iA)	Auto/Manual SW (Manual)
D	Zoom lever (TELE)	Zoom lever (WIDE)
E	Sub Zoom lever (TELE)	Sub Zoom lever (WIDE)

All SWs checked

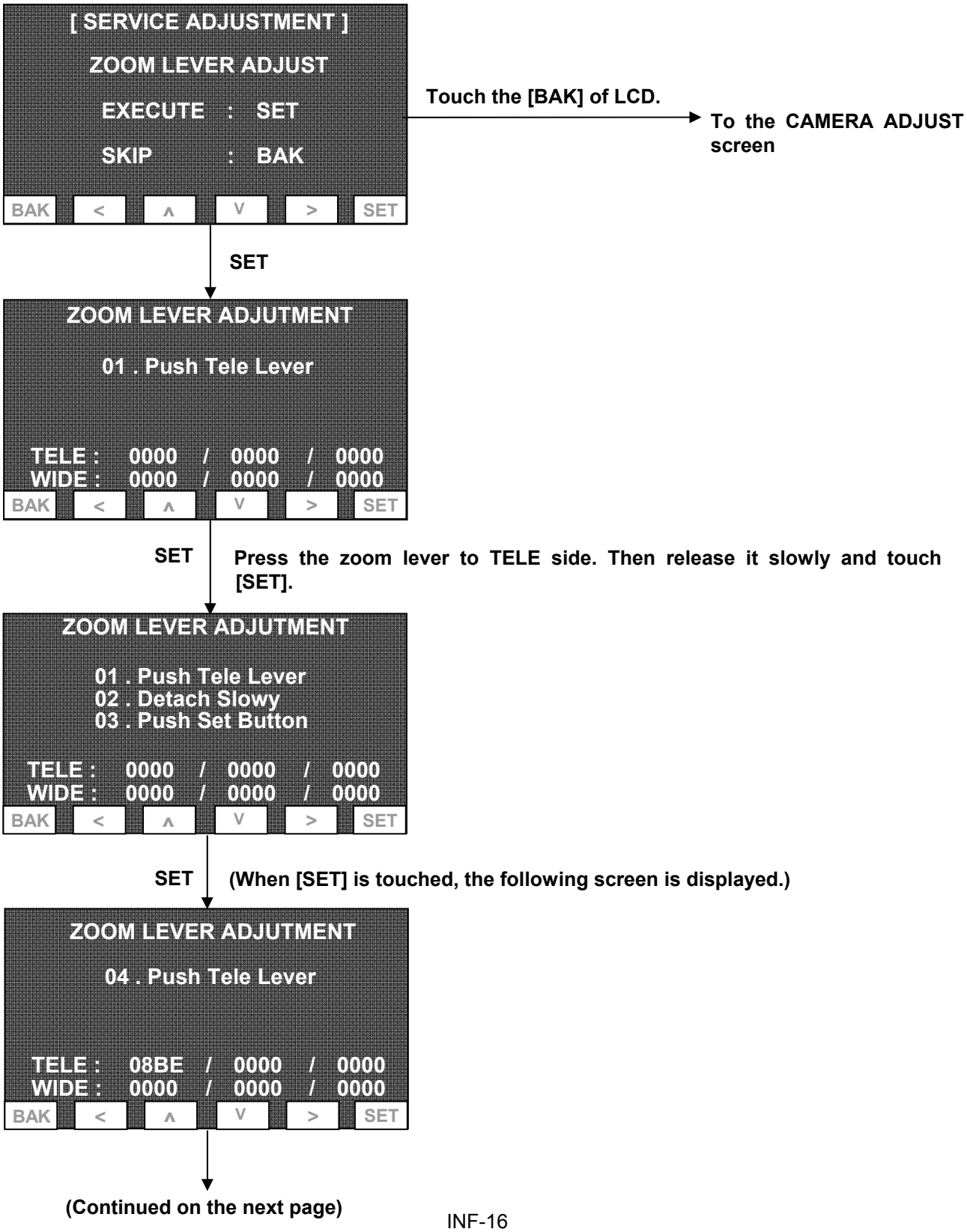
If the above screen is displayed, the display switches to the ZOOM LEVER ADJUST screen.

G		Photoshot button	
H	S/S button	Sub S/S button	
I	MENU button		
J	OIS button		
L			IRIS A/M button
M	FOCUS A/M/∞ button	WB button	FOCUS ASSIST button
N	ZEBRA button	BARS button	DISP/MODE CHK button
O	RESET button	COUNTER button	QUICK START button

P	USER1 button	USER2 button	USER3 button
V	IRIS Ring (Right rotation)	IRIS Ring (Left rotation)	
X	FOCUS Ring (Left rotation)	FOCUS Ring (Right rotation)	
1	ZOOM Ring (Left rotation)	ZOOM Ring (Right rotation)	

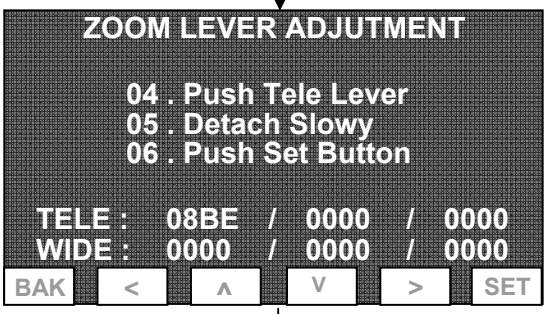
3-5-4. Zoom Lever adjustment

1. Press T side button of Zoom Lever on the Grip cover to T position fully and release the finger from the button slowly. Touch the [SET] of LCD.
2. Repeat three times from the above steps 1.
3. Press W side button of Zoom Lever on the Grip cover to W position fully and release the finger from the button slowly. Touch the [SET] of LCD.
4. Repeat three times from the above steps 3.
5. From these measurements at WIDE/TELE, the zoom lever adjustment values are calculated. If they are OK, “ADJUST OK” is displayed.

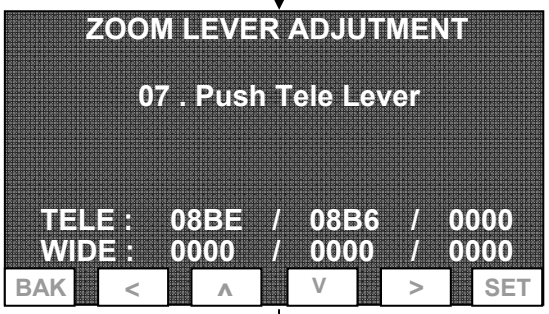


(Continued on the next page)

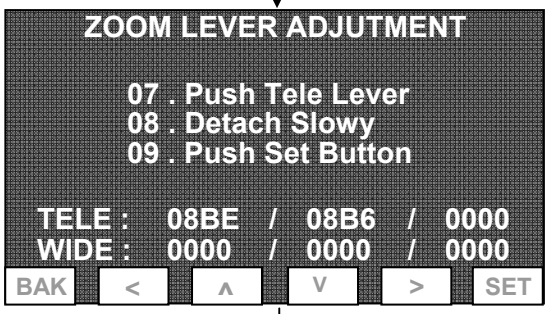
Press the zoom lever to TELE side. Then release it slowly and touch [SET].



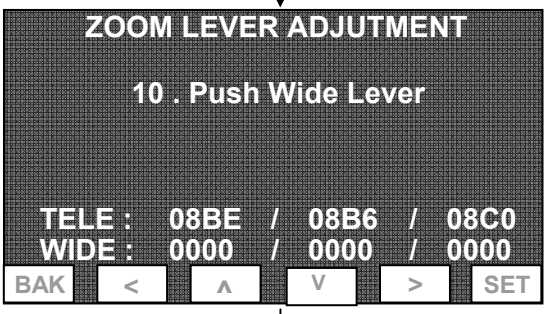
SET (When [SET] is touched, the following screen is displayed.)



SET Press the zoom lever to TELE side. Then release it slowly and touch [SET].
(When the lever is pressed to TELE, the following screen is displayed.)

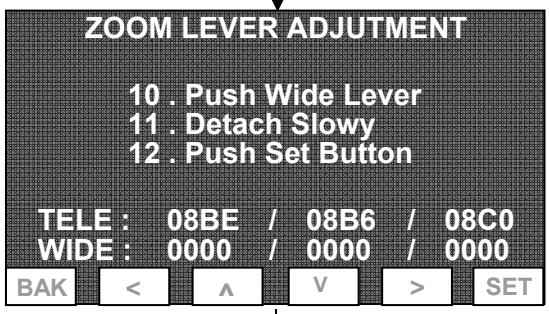


SET (When [SET] is touched, the following screen is displayed.)

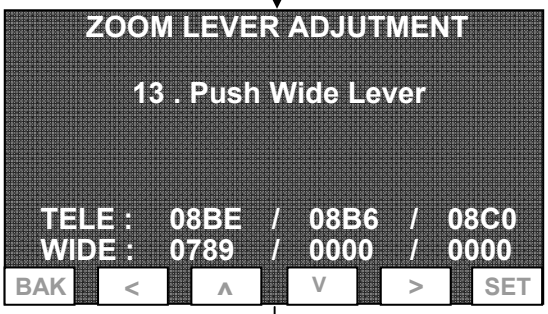


(Continued on the next page)

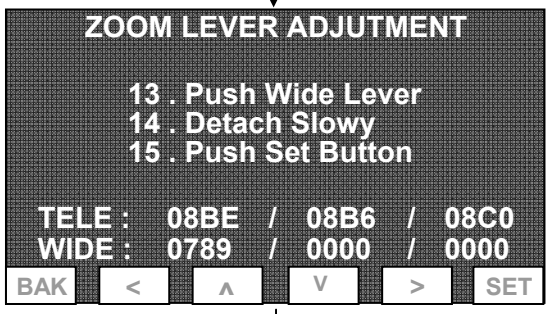
Press the zoom lever to WIDE side. Then release it slowly and touch [SET].



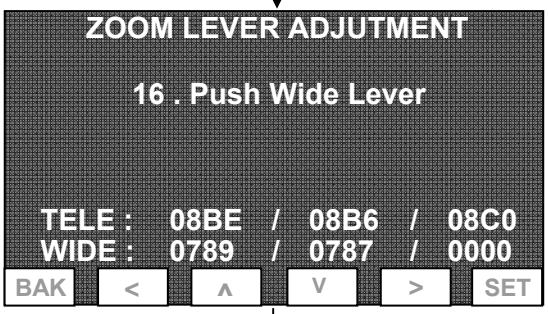
SET (When [SET] is touched, the following screen is displayed.)



Press the zoom lever to WIDE side. Then release it slowly and touch [SET].
(When the lever is pressed to WIDE, the following screen is displayed.)

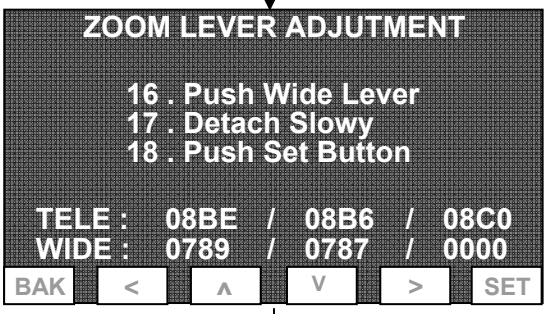


SET (When [SET] is touched, the following screen is displayed.)

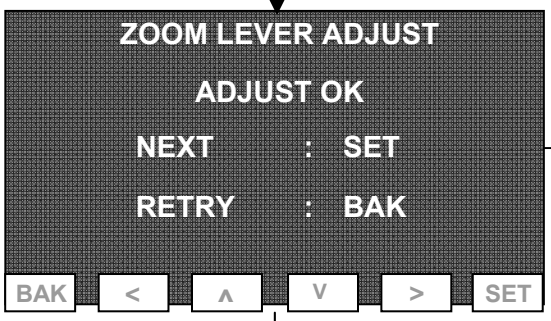


(Continued on the next page)

Press the zoom lever to WIDE side. Then release it slowly and touch [SET].
(When the lever is pressed to WIDE, the following screen is displayed.)



When [SET] is touched, the zoom lever adjustment values are calculated from the measurements at WIDE/TELE. If they are OK, "ADJUST OK" is displayed.



Touch the [BAK] of LCD.

If the adjustment needs to be retried, touch [BAK].
The display returns to the first screen of ZOOM LEVER ADJUST.

SET

To the CAMERA ADJUST screen

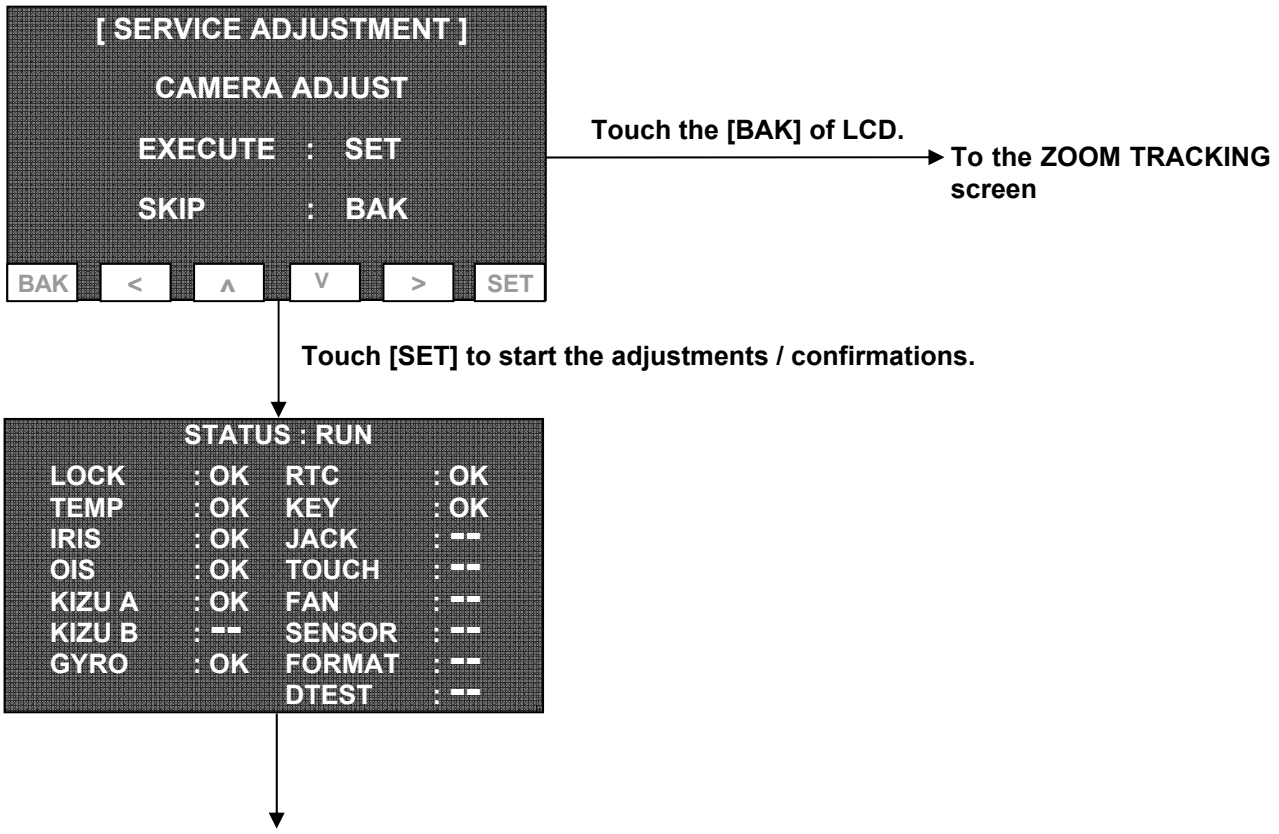
3-5-5. CAMERA adjustment

On the CAMERA ADJUST screen, the following adjustments and confirmations are automatically executed and their results are displayed.

< Adjustment / Confirmation items >

LOCK	Confirmation that the lens is not locked
TEMP	Confirmation that the lens thermistor has nothing wrong
IRIS	IRIS asjustment
OIS	OIS asjustment
KIZU A	White blemish conpensation
GYRO	GYRO DC compensation asjustment
RTC	Confirmation that the RTC is working
KEY	Confirmation that PUSH SWs are not left pressed

NOTE: PUSH SW includes the buttons and SWs shown in the tables of Item 3-5-3, except for Zoom, Iris and Focus ring.

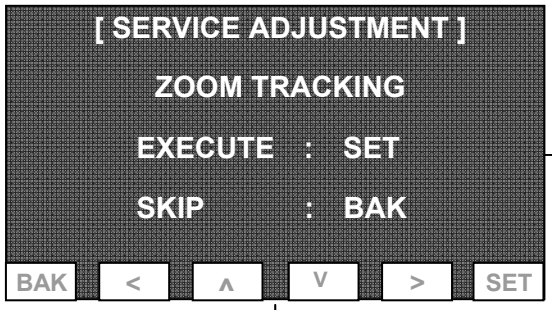


When the adjustments / confirmations are completed (all the items are OK), the display switches to the ZOOM TRACKING screen.

3-5-6. Zoom Tracking adjustment

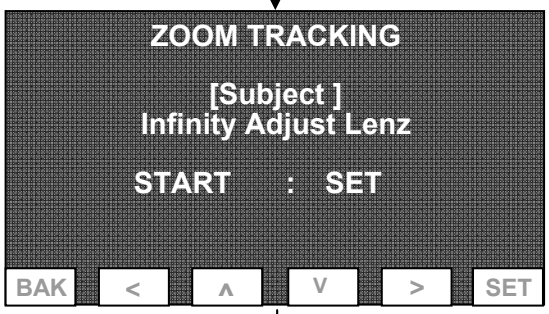
< Preparation >
1. Set the Step-Down Ring (49mm -> 37mm) to the front of lens.
2. Set the Colimator (VFK1164TCM03) to Step-Down Ring (49mm -> 37mm).

NOTE: Please set the Collimator squarely to the lens.



Touch the [BAK] of LCD. → **To the CAM AWB 3100K screen**

SET



Turn the zoom ring to the TELE end and fix the Collimator again so that the center of the chart is located right at the center of the screen.

NOTE: In the adjustment mode, the zoom lever does not work.

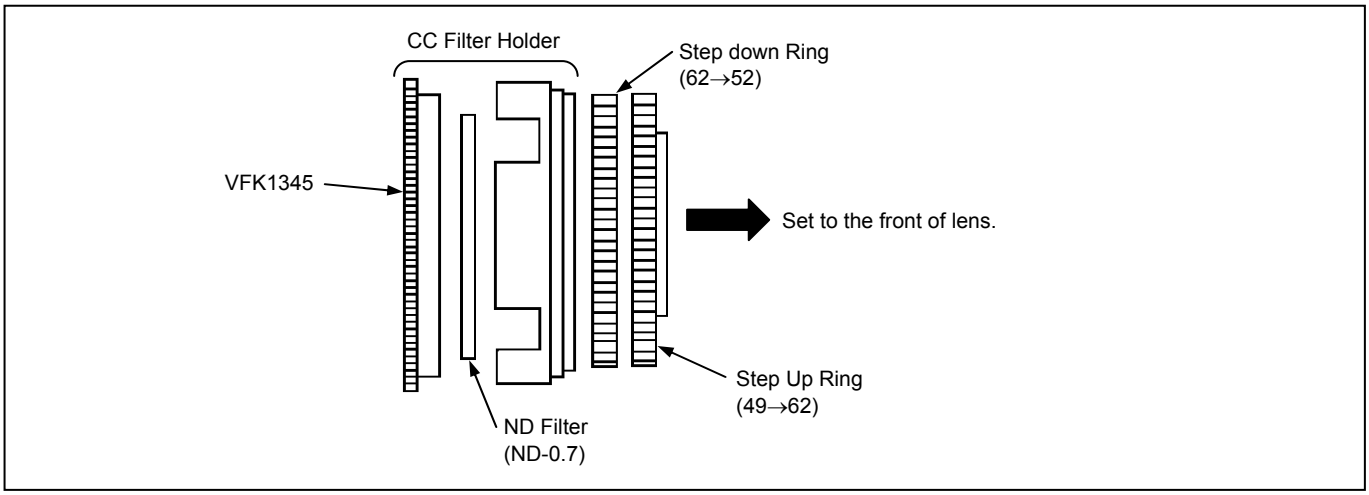
Touch [SET] to start the adjustment / confirmation.

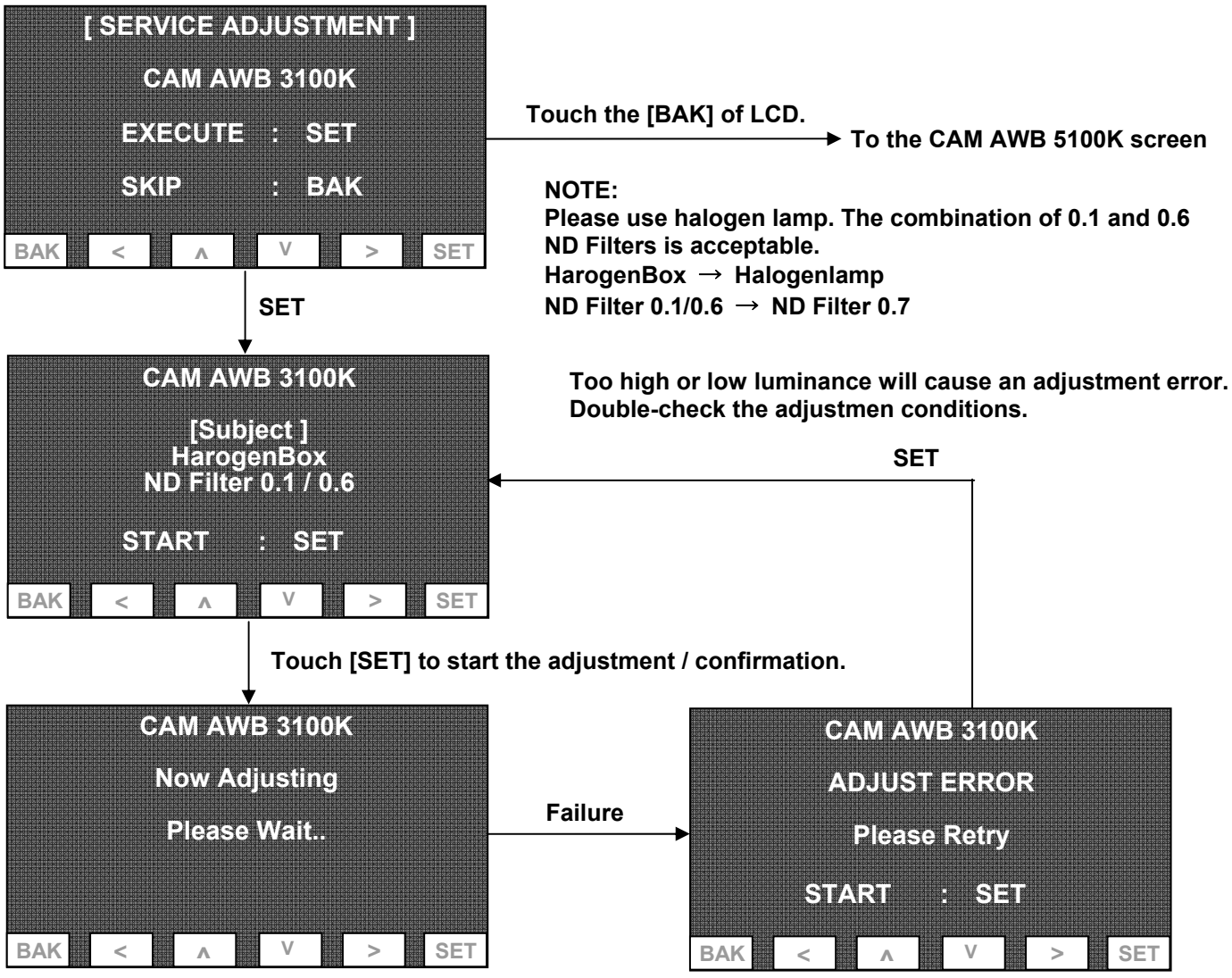
When the adjustment is completed, the display switches to the CAM AWB 3100K screen. Remove the Step-Down Ring and Colimator.

-

3-5-7. White balance (3100K) adjustment

1. Set the ND filter (ND-0.7) to the CC Filter Holder (VFK1345) as shown in figure.
2. Set the one Step-down Ring (VFK1346: 62 → 52) and one Step-up Ring (VFK1660: 49 → 62) to the CC Filter Holder as shown in figure.
3. Set the Step-up Ring (with VFK1345 and VFK1346) to the front of Lens.
4. Aim the Camera-Recorder at white chart under the Halogen lamp condition (3100K, 2000Lux).

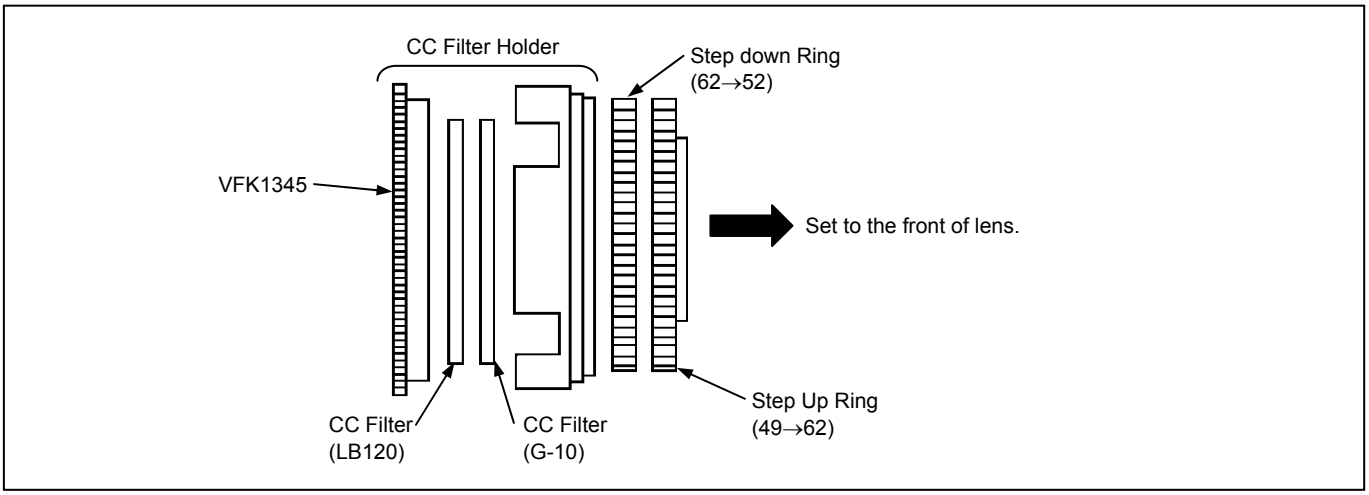


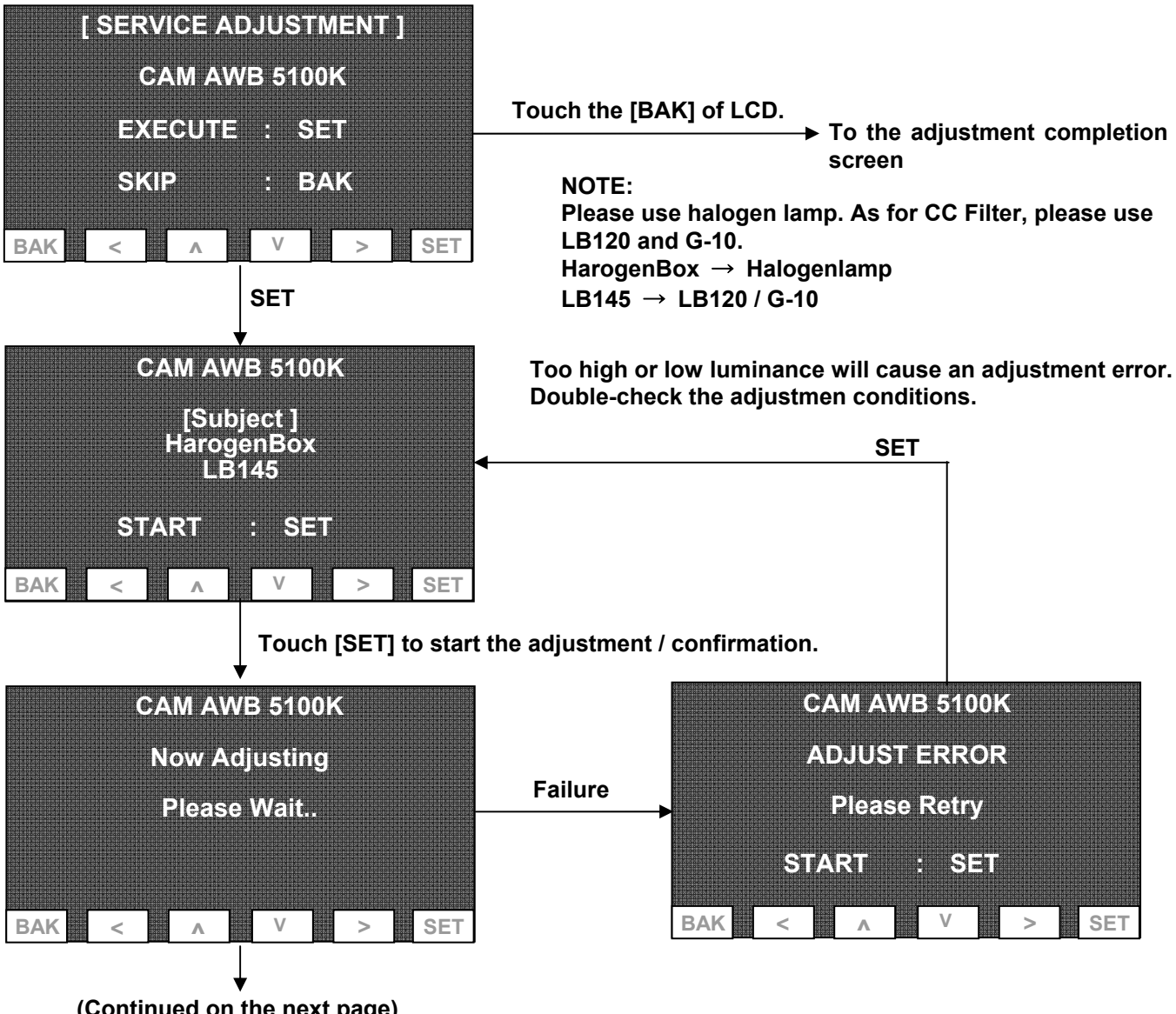


When the adjustment is completed, the display switches to the CAM AWB 5100K screen.

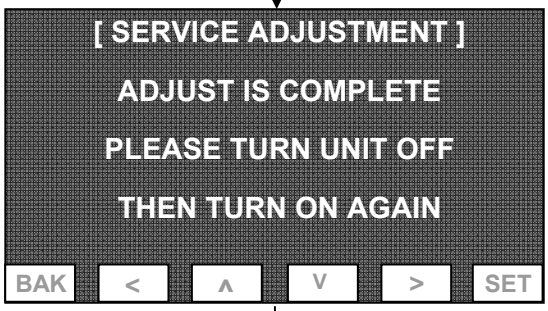
3-5-8. White blance (5100K) adjustment

1. Set the CC filter (LB120: VFK1347) and (G-10: VFK2039) to the CC Filter Holder (VFK1345) as shown in figure.
2. Set the one Step-down Ring (VFK1346: 62 → 52) and one Step-up Ring (VFK1660: 49 → 62) to the CC Filter Holder as shown in figure.
3. Set the Step-up Ring (with VFK1345 and VFK1346) to the front of Lens.
4. Aim the Camera-Recorder at white chart under the Halogen lamp condition (3100K, 2000Lux).





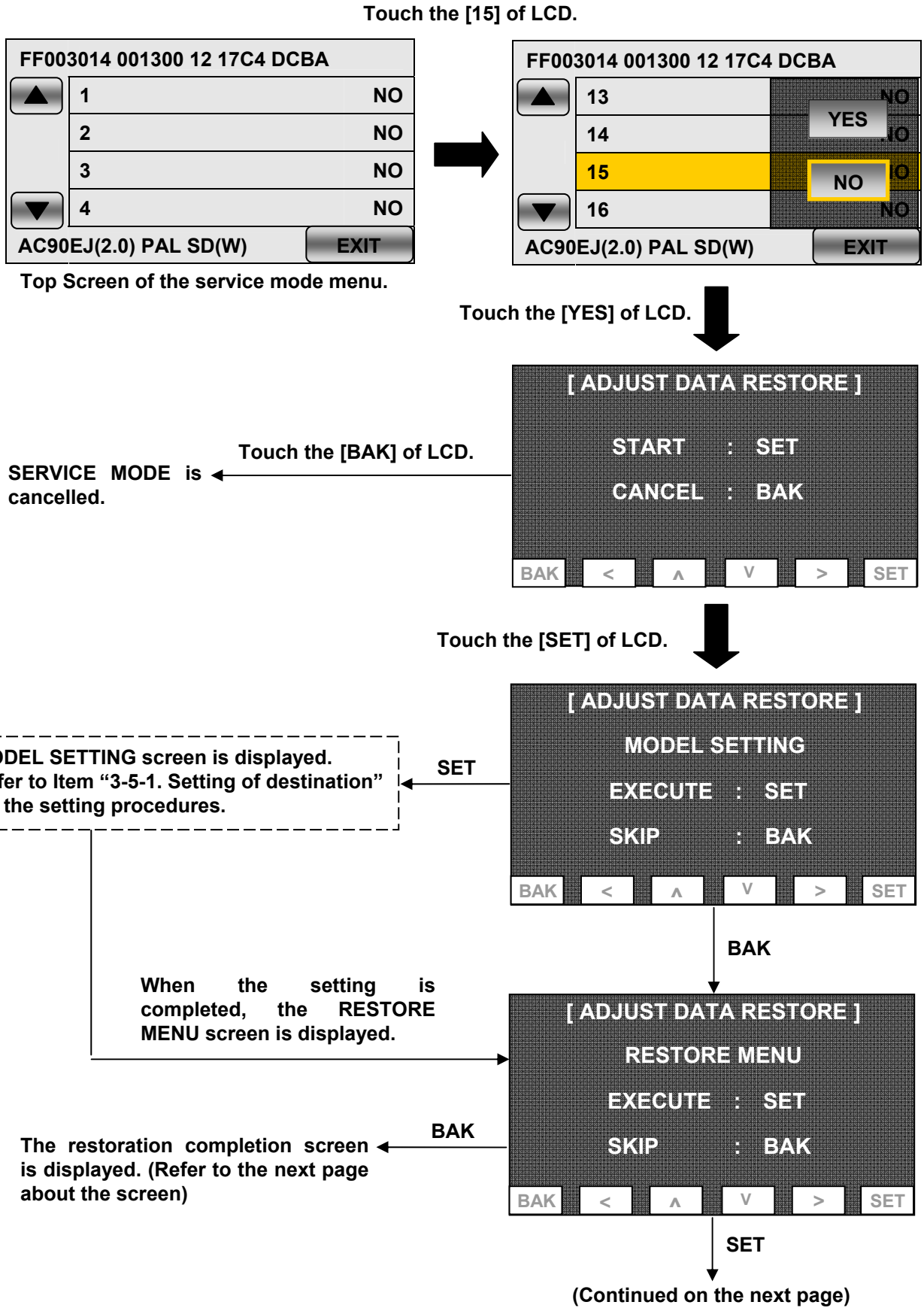
When the adjustment is completed, the adjustment completion screen is displayed.

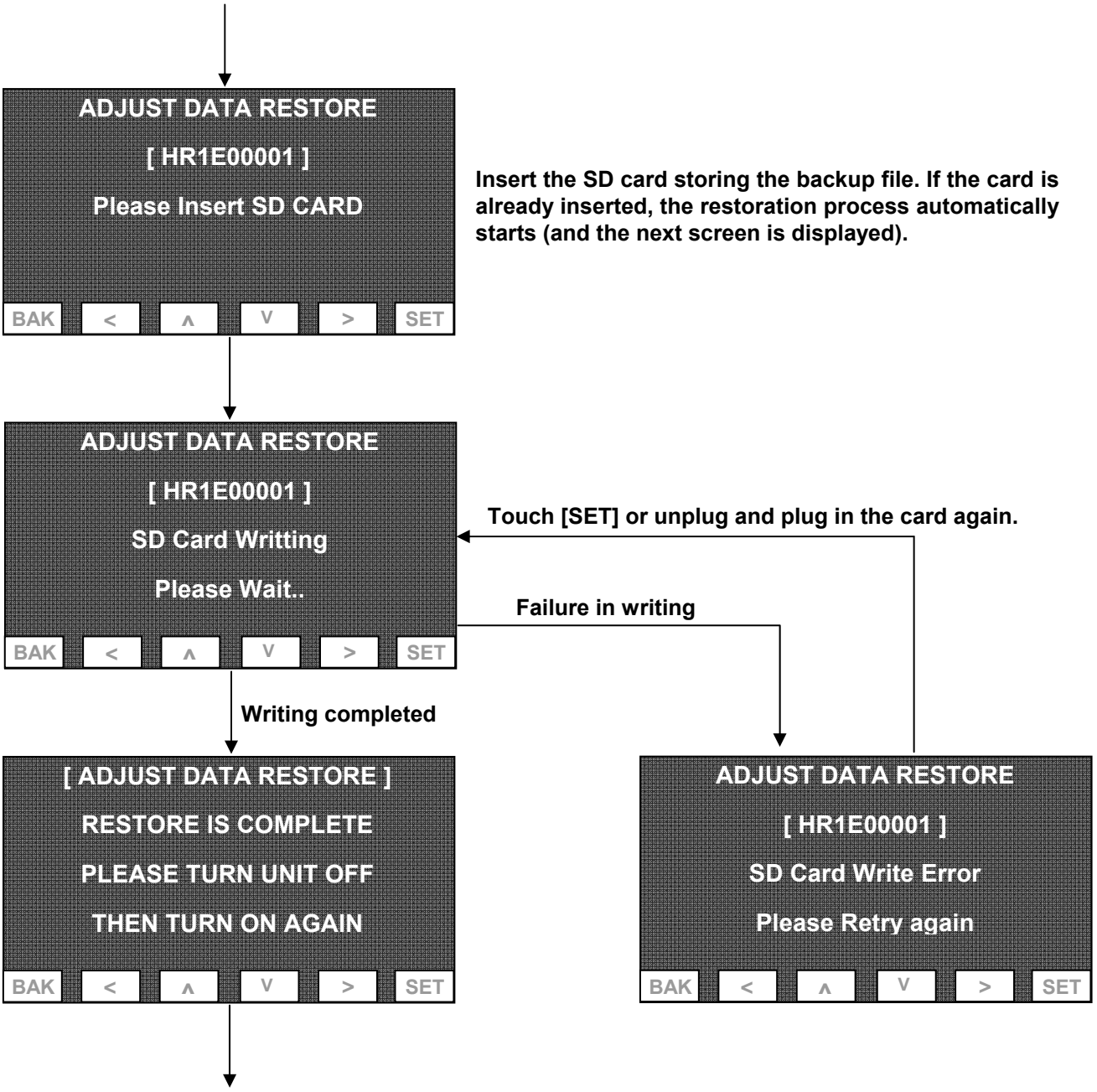


Use the POWER SW to turn the power OFF and ON.

3-6. Restore the adjustment data

The file data backed up by the function in Item 3-5-2 can be restored to the unit.

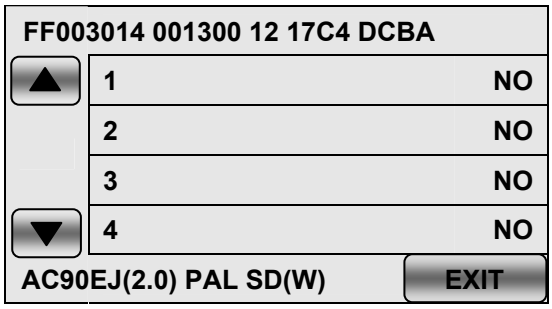



ADJUST DATA RESTORE
[HR1E00001]
Please Insert SD CARD
BAK < ∧ V > SET
Insert the SD card storing the backup file. If the card is already inserted, the restoration process automatically starts (and the next screen is displayed).
ADJUST DATA RESTORE
[HR1E00001]
SD Card Writting
Please Wait..
BAK < ∧ V > SET
Touch [SET] or unplug and plug in the card again.
Failure in writing
Writing completed
[ADJUST DATA RESTORE]
RESTORE IS COMPLETE
PLEASE TURN UNIT OFF
THEN TURN ON AGAIN
BAK < ∧ V > SET
ADJUST DATA RESTORE
[HR1E00001]
SD Card Write Error
Please Retry again
BAK < ∧ V > SET
Use the POWER SW to turn the power OFF and ON.

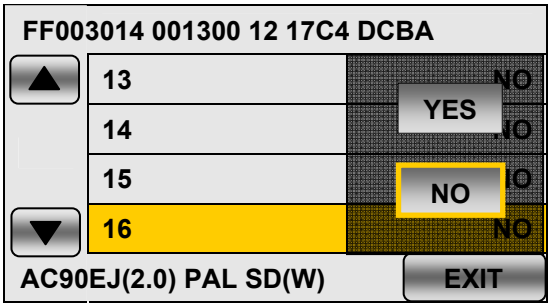
3-7. Touch Panel adjustment function

Adjustment to the touch panel can be made by this function. (Necessary only after the touch panel replacement)

Touch the [16] of LCD.



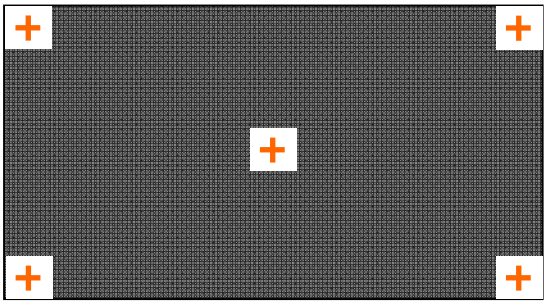
Top Screen of the service mode menu.

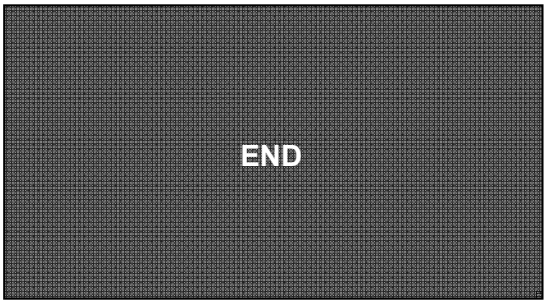


Touch the [YES] of LCD.

< Adjustment procedure >

1. Touch the centers of 4 "+" marks at the corners with something like a touch pen.
2. Touch the "+" mark at the center with the touch pen.
3. The completion screen is displayed.
4. Turn the power OFF using POWER SW.





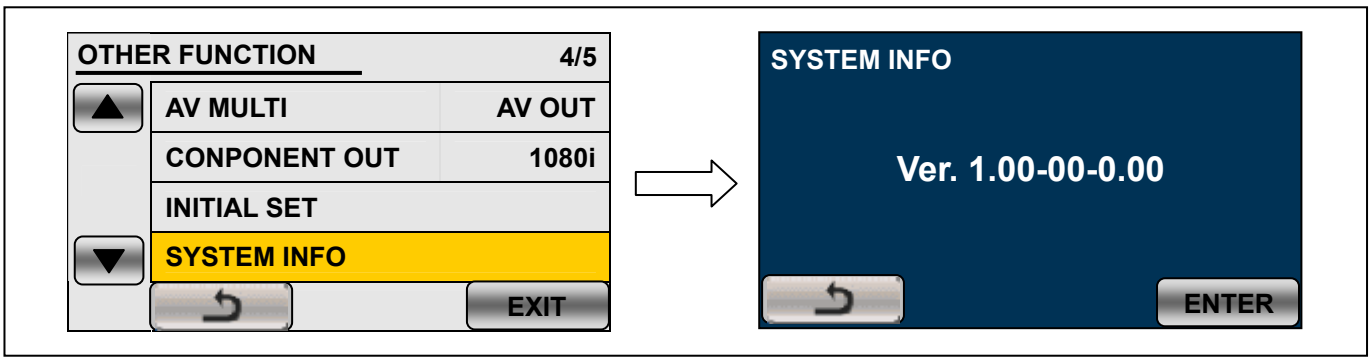
4. Firmware update procedure

The FLASH ROM (NAND) software can be updated by SD memory card.

4-1. Version display method

The version of system in this camera recorder is displayed in OTHER FUNCTIONS menu screen of setting menu.

1. Turn the power on.
2. Press **MENU** button to display the setting menu.
3. Select the OTHER FUNCTIONS menu and touch **"OTHER FUNCTIONS"** to open the OTHER FUNCTIONS menu.
4. Select the item **"SYSTEM INFO"** (Touch **"SYSTEM INFO"**) to display the version of system in this camera recorder.



4-2. Update with the SD memory card

CAUTION: Before Updating Software

- **Do not power down or pull card while upgrading.** If the program quits during loading, the data will be erased or part writing condition and the restart is not made. However software can not be updated, please contact Panasonic Service Engineering.

< External Power >

The update can not be executed while the camera is operating on battery power. Please use the AC adapter.

4-2-1. Copy the firmware update file into an SD memory card

< Preparation for SD memory card >

1. Buffer memory size in SD memory card more than file size of update file (hdc file) is needed, and use an SD Memory Card which has already been formatted for this unit.

NOTE: Be sure to format SD memory card on this unit.

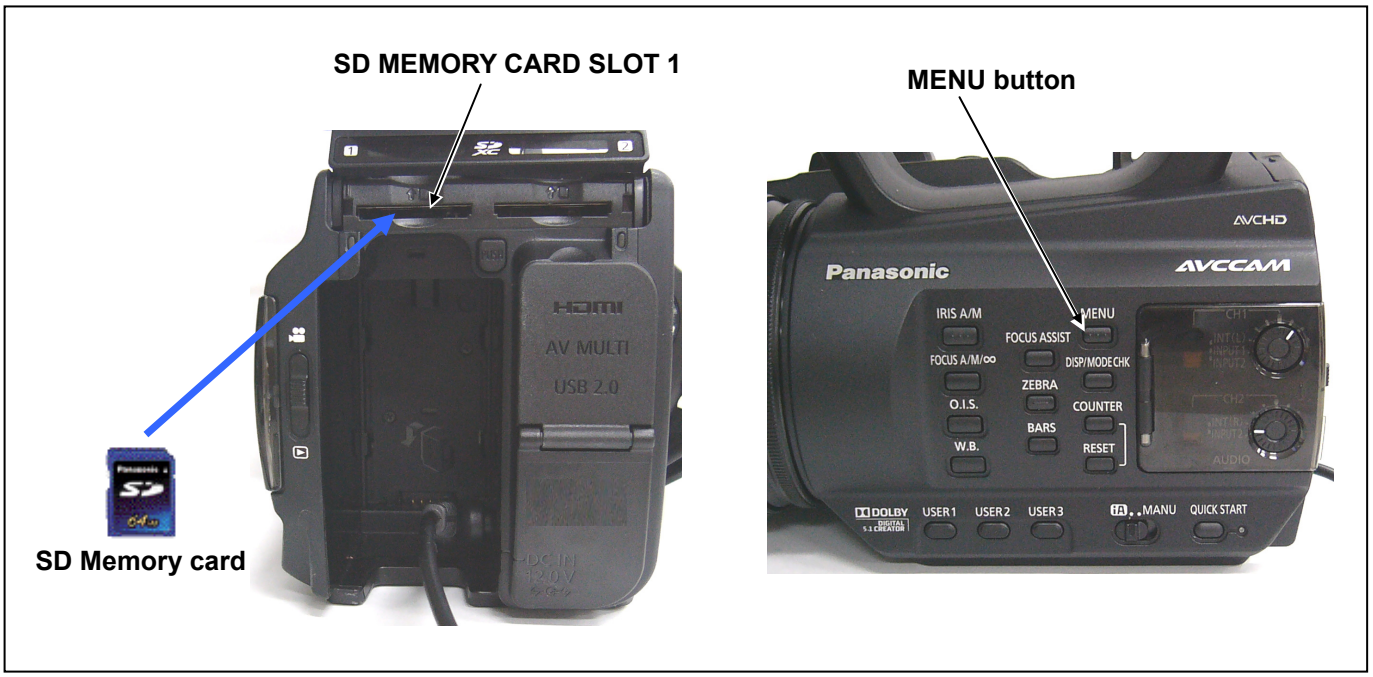
< Copy the update file >

1. Download update file data **"VSI*****.zip"** for the update from **"Support Desk"** web site.
2. Copy the file **"VSI*****.zip"** to hard disk of your PC and extract the file.
3. Insert the formatted SD memory card into the PC's card slot. Then copy the extracted update file **"UPDATE.HDC"** to the root directory(*1) of the card. For example, if the SD Card folder is on D drive, the file's location will be described as D \ UPDATE.HDC.

(*1): Root directory = top-level directory of the file structure.

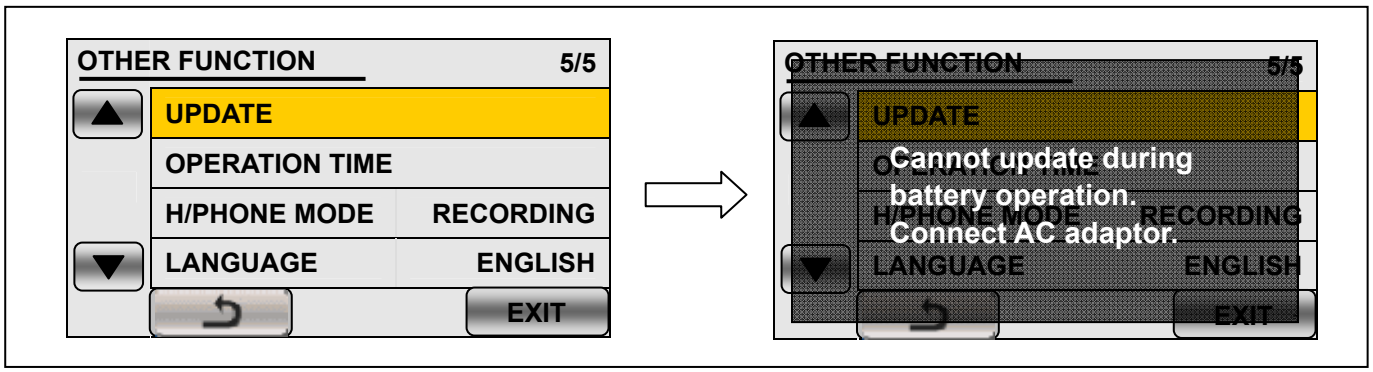
4-2-2. Updated procedure

1. Turn the power on. Set the **MODE SW** to **RECORDING** side.
2. Insert the SD memory card into the SD memory card slot 1.
3. Press the **MENU** button to display the setting menu.

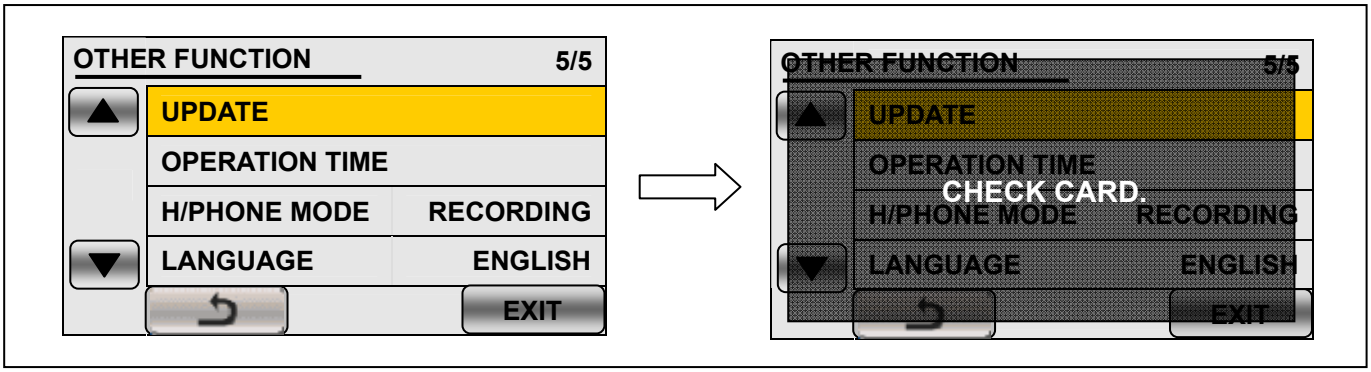


4. Select the item **"UPDATE"** on the OTHER FUNCTION menu. (Touch **"UPDATE"**.)

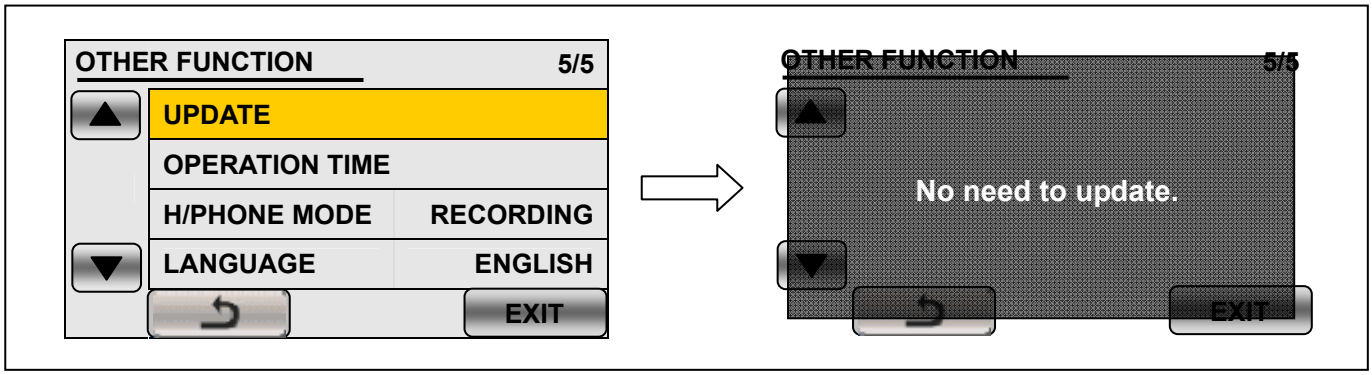
NOTE: The update can not be executed when the camera is operating on battery power. The following message is displayed. Please connect the AC adapter.



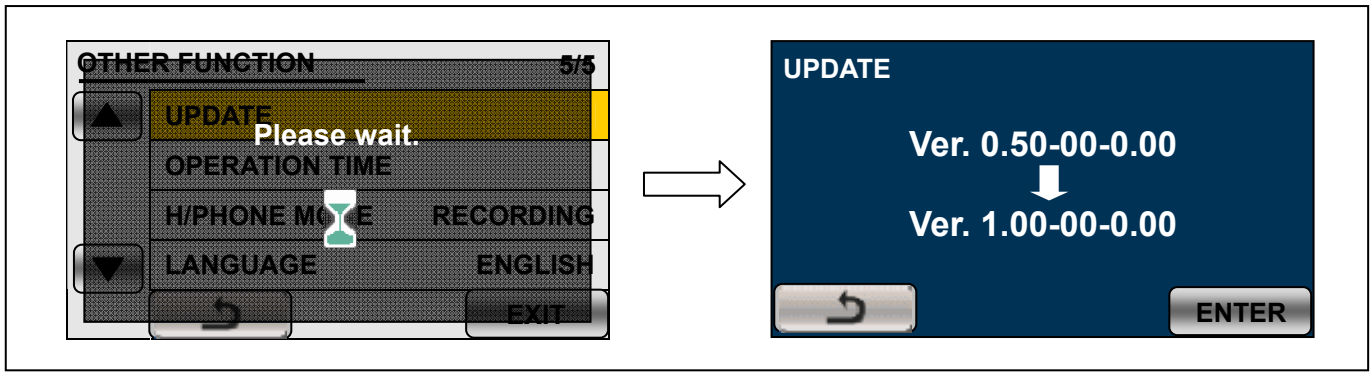
NOTE: When the update file is not recognized on SD memory card etc., the message **"CHECK CARD."** is displayed as follows. Please confirm whether the update file is correctly written on the SD memory card.



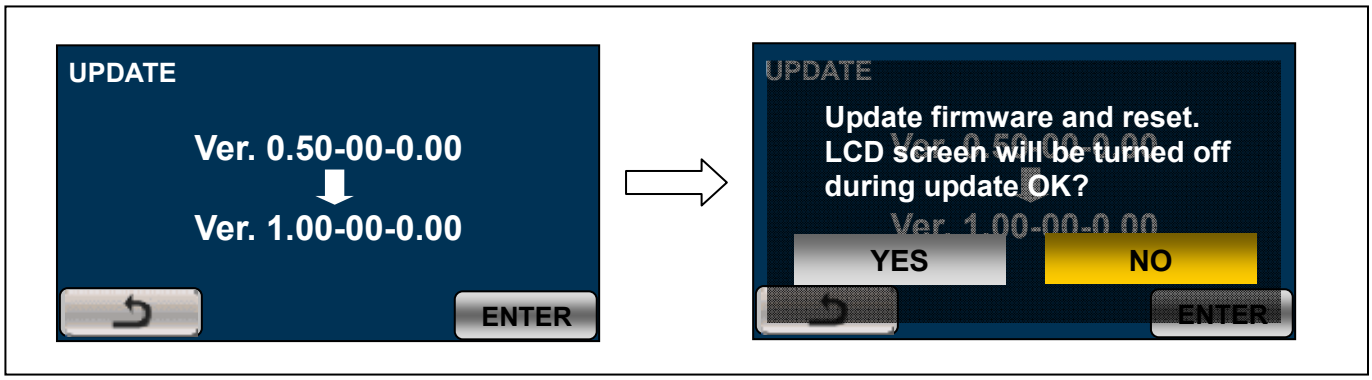
NOTE: When the version is the same or when the version of the update file on the SD card is lower, the message **"No need to update."** is displayed.



5. It takes a few seconds to check the file. While checking it, the message **"Please wait."** is displayed. If the update can be executed, the versions of the camera recorder and the update file on the SD card are displayed.



6. Select the **"ENTER"** button. (Touch the **"ENTER"** button.)
7. The update confirmation screen is displayed. When **"YES"** is selected, the update process will start. (Touch the **"YES"** button.) When **"NO"** is selected, the screen will return to the OTHER FUNCTION menu screen.

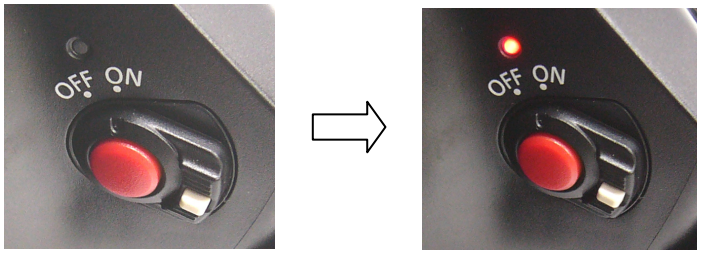


8. The LCD screen darkens when shifting to the update processing, and the **Status indicator** goes OFF. During updating software, **Status indicator** is OFF.

The message does not display on the screen.

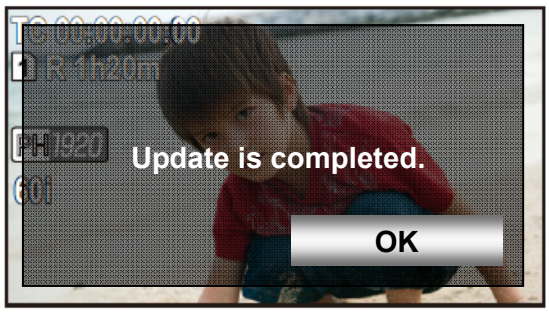
During updating software, **Status indicator** is OFF.

In updating succeed, **Status indicator** lights.



◆ Software update takes **approx. 1 to 2min**. **Do not power down while updating.**

9. When the update is completed, the power automatically turns OFF / ON and the message **"Update is completed."** is displayed. After the power is ON again, **Status indicator is ON.**
10. Select the **"OK"** button. (Touch the **"OK"** button.) The normal "Recording" mode screen is displayed.

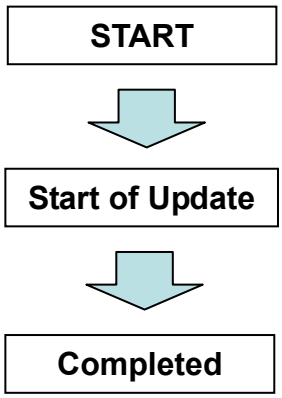


11. Confirm that the version number is renewed for your confirmation update was correctly done follow the item **"5-1. Version display method"**.

< How to recover from irregular situations while updating >

Solutions are introduced against both Card Plug-Out and Power Interruption troubles to execute the update again.

Process	Card Plug-Out	Power Interruption
Data Readout from SD Card	Error Message (CHECK CARD) Restart from selection of “UPDATE”	The camera recorder starts up normally. Restart from selection of “UPDATE”
Updating (Update of FlashROM Data)	Plug-Out is ignored. Update is continued. (because the update file data is already transferred to the camera recorder)	At the power-on, the camera recorder starts up in UPDATE mode. Update is continued.



5. Operation after major part exchanged

5-1. Operation List

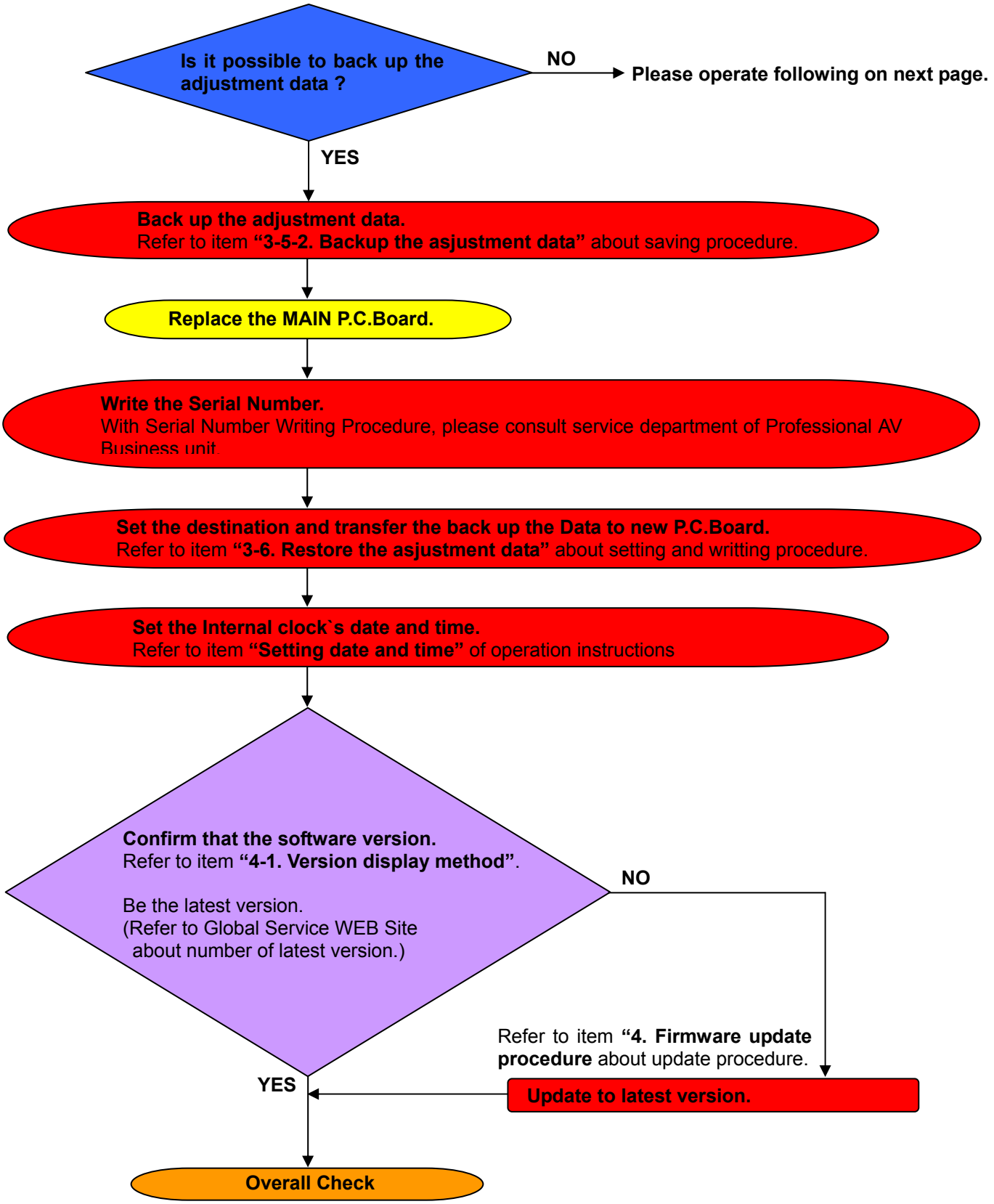
These are items that must be done when the major part has been replaced.

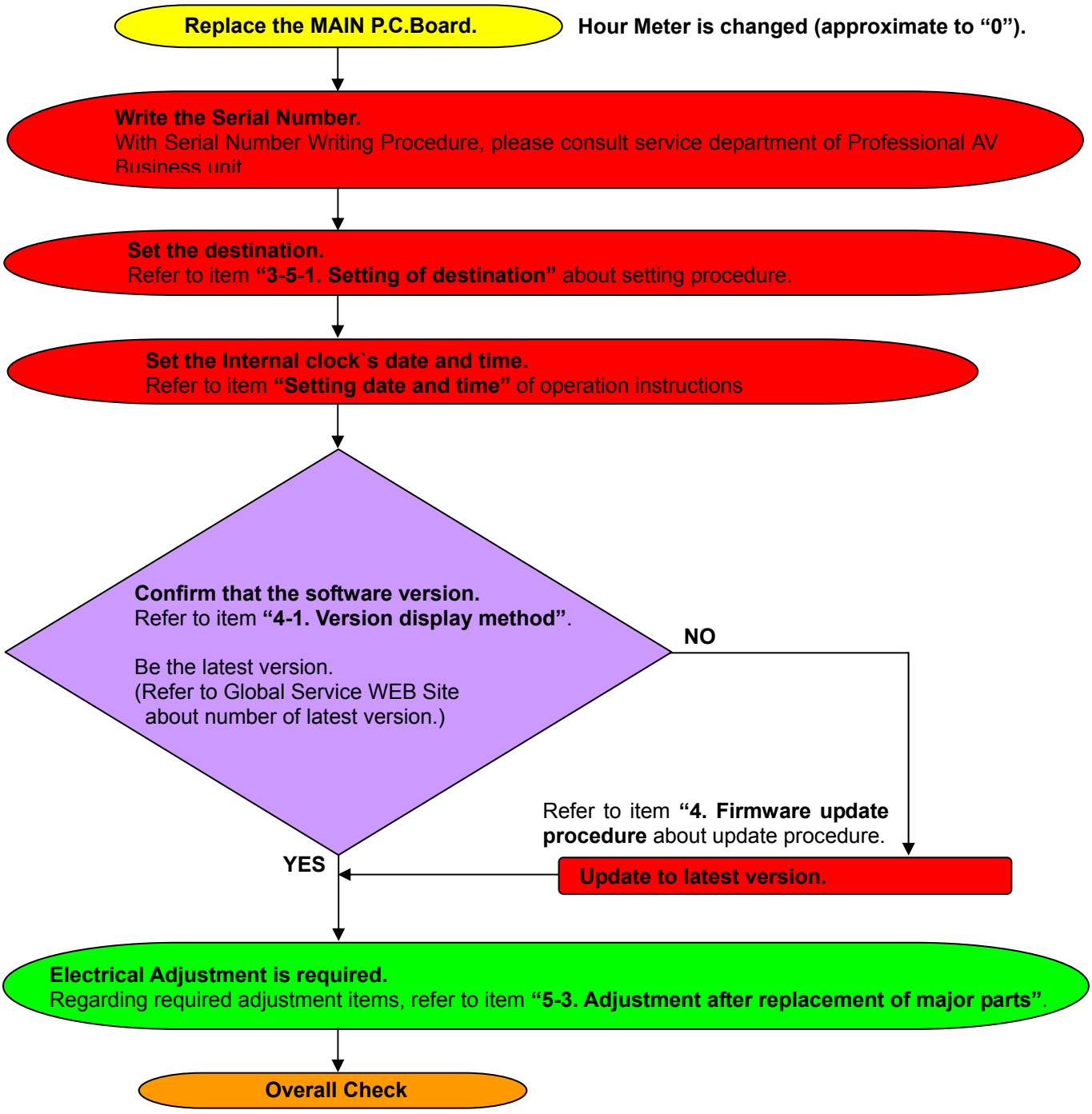
X: Operation required

	Replacement Parts	Adj.	Version conf.	EEPROM	Remark
	MAIN P.C.B.	X	X	X	Setting of Internal clock's
CAMERA LENS U	MOS SENSOR P.C.B.	X			
	LENS RELAY P.C.B.				
MF U	RING P.C.B.				Not required
REAR JACK U	USB AV P.C.B.				Not required
REAR CASE U	SD HOLDER P.C.B.				Not required
	BATT CATCHER P.C.B.				Not required
REMOTE JACK U	WIRED REMO P.C.B.				Not required
EVF U	EVF P.C.B.				Not required
SIDE CASE R U	SIDE R OP P.C.B.				Setting of Internal clock's
HANDLE B U	LCD PANEL U				Not required
	MONITOR P.C.B.				*Included in LCD PANEL U.
	LED P.C.B.				Not required
	HANDLE OP P.C.B.				Not required
	XLR P.C.B.				Not required
HANDLE CASE L U	SUB SS ZOOM P.C.B.				Not required
GRIP U	POWER SS P.C.B.				Not required
	ZOOM PHOTO P.C.B.	X			

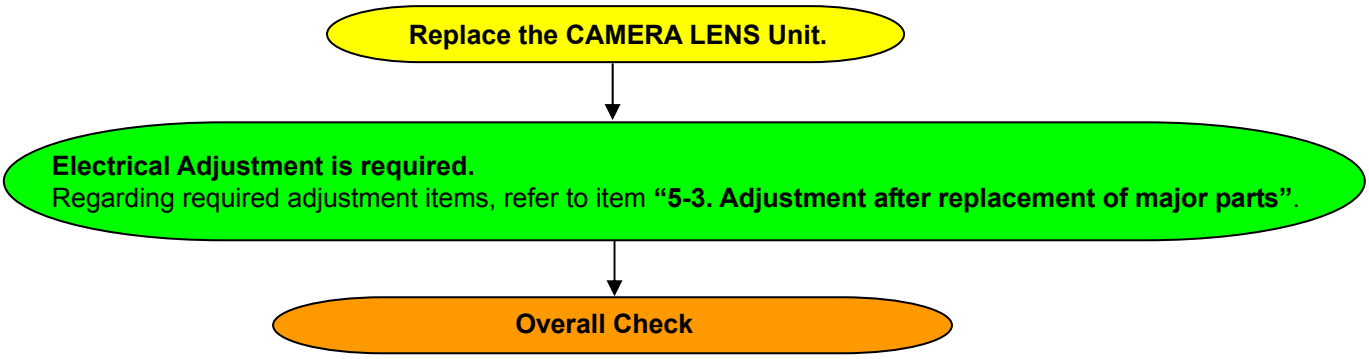
5-2. Operation flow chart after replacement of major parts

5-2-1. MAIN P.C.Board

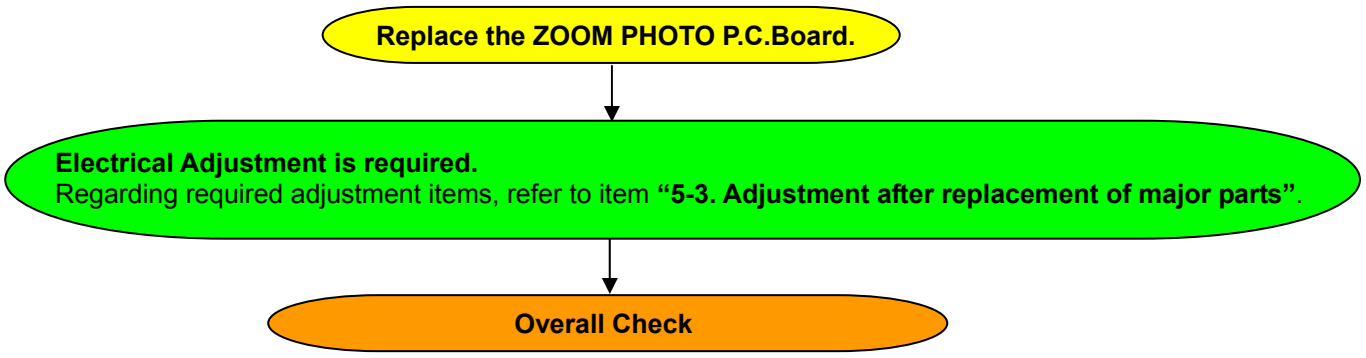



Replace the MAIN P.C.Board.
Hour Meter is changed (approximate to “0”).
Write the Serial Number.
With Serial Number Writing Procedure, please consult service department of Professional AV Business unit.
Set the destination.
Refer to item “3-5-1. Setting of destination” about setting procedure.
Set the Internal clock`s date and time.
Refer to item “Setting date and time” of operation instructions
Confirm that the software version.
Refer to item “4-1. Version display method”.
Be the latest version.
(Refer to Global Service WEB Site about number of latest version.)
NO
Refer to item “4. Firmware update procedure” about update procedure.
Update to latest version.
YES
Electrical Adjustment is required.
Regarding required adjustment items, refer to item “5-3. Adjustment after replacement of major parts”.
Overall Check

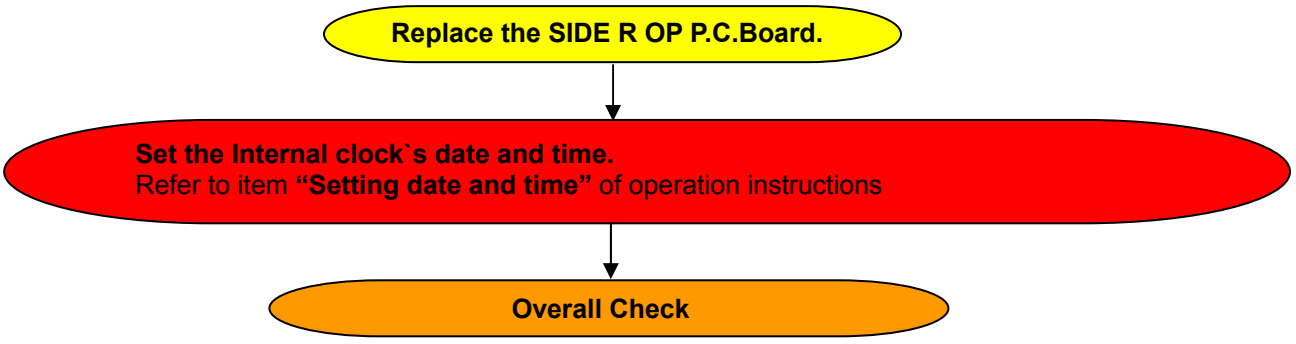
5-2-2. CAMERA LENS Unit



5-2-3. ZOOM PHOTO P.C.Board



5-2-4. SIDE R OP P.C.Board



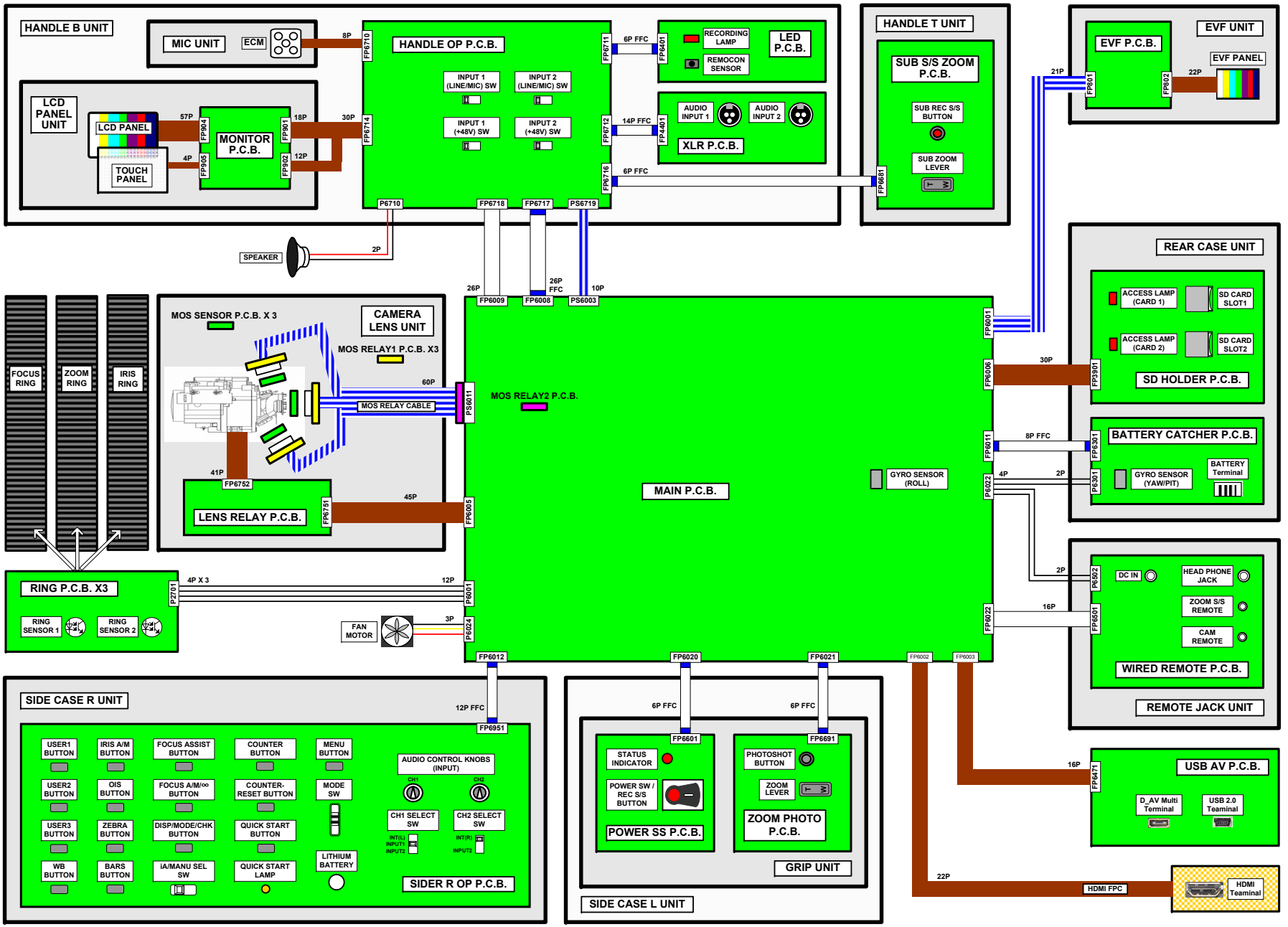
5-3. Adjustment after replacement of major parts

When the following parts are exchanged showing in the table, the adjustment and confirmation are required follow the items shown by mark **"X"** in the table.
The adjustment procedure has been described to item **"3-5. Adjustment function for service"** of service information (SECTION 1).

ADJISTMENT ITEM	PARTS NAME			
	*MAIN P.C.B.		CAMERA LENS U	GRIP U
	When back up adjustment data	When no back Up Adjustment data		ZOOM PHOTO P.C.B.
Zoom lever adjustment		X		X
Camera adjustment		X	X	
Tracking adjustment		X	X	
White balance adjustment (3100K)		X	X	
White balance adjustment (5100K)		X	X	

X: Adjustment / Confirmation Required

***** The method of data backup has been described to the item **"3-5-2. Backup the adjustment data"** of service information (SECTION 1).


HANDLE B UNIT
MIC UNIT
ECM
8P
FP6710
HANDLE OP P.C.B.
INPUT 1 (LINE/MIC) SW
INPUT 2 (LINE/MIC) SW
INPUT 1 (+48V) SW
INPUT 2 (+48V) SW
FP6711
6P FFC
FP6401
RECORDING LAMP
REMOCON SENSOR
LED P.C.B.
FP6712
14P FFC
FP4401
AUDIO INPUT 1
AUDIO INPUT 2
XLR P.C.B.
FP6716
6P FFC
LCD PANEL UNIT
LCD PANEL
57P
FP904
TOUCH PANEL
4P
FP905
MONITOR P.C.B.
FP901
18P
FP902
12P
30P
FP6714
P6710
FP6718
FP6717
PS6719
SPEAKER
2P
HANDLE T UNIT
SUB S/S ZOOM P.C.B.
SUB REC S/S BUTTON
SUB ZOOM LEVER
FP6581
EVF P.C.B.
EVF UNIT
EVF PANEL
21P
FP801
22P
FP802
REAR CASE UNIT
ACCESS LAMP (CARD 1)
SD CARD SLOT1
ACCESS LAMP (CARD 2)
SD CARD SLOT2
SD HOLDER P.C.B.
FP3901
30P
FP6006
BATTERY CATCHER P.C.B.
FP5301
BATTERY Terminal
GYRO SENSOR (YAW/PIT)
P5301
GYRO SENSOR (ROLL)
FP6011
8P FFC
P6022
4P
2P
26P
FP6009
26P FFC
FP6008
10P
PS6003
FP6001
MOS SENSOR P.C.B. X 3
CAMERA LENS UNIT
MOS RELAY1 P.C.B. X3
60P
MOS RELAY CABLE
PS6011
MOS RELAY2 P.C.B.
MAIN P.C.B.
FOCUS RING
ZOOM RING
IRIS RING
41P
FP6752
LENS RELAY P.C.B.
FP6751
45P
FP6005
RING P.C.B. X3
RING SENSOR 1
RING SENSOR 2
P2701
4P X 3
12P
P6001
FAN MOTOR
3P
P6024
FP6012
FP6020
FP6021
FP6032
FP6003
REMOTE JACK UNIT
P5302
DC IN
HEAD PHONE JACK
ZOOM S/S REMOTE
CAM REMOTE
FP6601
WIRED REMOTE P.C.B.
16P
P6022
USB AV P.C.B.
FP6471
D_AV Multi Terminal
USB 2.0 Teaminal
HDMI FPC
22P
HDMI Teaminal
SIDE CASE R UNIT
12P FFC
FP6951
USER1 BUTTON
IRIS A/M BUTTON
FOCUS ASSIST BUTTON
COUNTER BUTTON
MENU BUTTON
USER2 BUTTON
OIS BUTTON
FOCUS A/M/∞ BUTTON
COUNTER-RESET BUTTON
MODE SW
USER3 BUTTON
ZEBRA BUTTON
DISP/MODE/CHK BUTTON
QUICK START BUTTON
WB BUTTON
BARS BUTTON
iA/MANU SEL SW
QUICK START LAMP
LITHIUM BATTERY
AUDIO CONTROL KNOBS (INPUT)
CH1
CH2
CH1 SELECT SW
CH2 SELECT SW
INT(L) INPUT1 INPUT2
INT(R) INPUT2
SIDER R OP P.C.B.
SIDE CASE L UNIT
6P FFC
6P FFC
FP6601
STATUS INDICATOR
POWER SW / REC S/S BUTTON
POWER SS P.C.B.
FP6691
PHOTOSHOT BUTTON
ZOOM LEVER
ZOOM PHOTO P.C.B.
GRIP UNIT

7. P.C.Board Location