





**INSTALLATION MANUAL  
FOR  
X-RAY RADIOGRAPHY STAND  
BR-120T**

This manual is for professional service engineers.  
It bears no relation to the usual operations.

**SHIMADZU CORPORATION**  
KYOTO JAPAN  
MEDICAL SYSTEMS DIVISION

## Categories of information

In this manual, safety or utilizable information is categorized as follows.

Symbol	Significance
 DANGER	Indicates critically hazardous situation that, if not avoided, may result in serious injury or death.
 WARNING	Indicates indirectly or potentially hazardous situation that, if not avoided, may result in serious injury or death.
 CAUTION	Indicates hazardous situation that, if not avoided, may result in minor or moderate injury, damage to the product, or fire.
 NOTE	Indicates information for proper use of the product.

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## Contents

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### Chapter 1 Introduction

---

1.1	Introduction .....	1-2
-----	--------------------	-----

---

### Chapter 2 Preparation for Installation

---

2.1	Conditions of Installation Room .....	2-2
2.2	Installation Tools .....	2-2
2.3	Unpacking .....	2-3

---

### Chapter 3 Floor Work

---

3.1	Introduction .....	3-2
3.2	Marking on Floor Surface .....	3-3
3.3	Placing of Anchor Bolts .....	3-3
3.4	Wall installation .....	3-4

---

### Chapter 4 Assembly and Installation

---

4.1	Assembly and Installation .....	4-2
4.2	Attachment and detachment of Bucky tray .....	4-12
4.3	Attachment the caps and seals.....	4-13

---

### Chapter 5 Adjustment

---

5.1	Introduction .....	5-2
5.2	Supply of Power.....	5-2
5.3	Adjustment of Balance.....	5-2
5.4	Measurement of Power Supply .....	5-3
5.5	Adjustment of the bucky tray .....	5-4
5.6	adjustment of the grid start position.....	5-5
5.6.1	Adjustment.....	5-5
5.6.2	Movement.....	5-5

---

## **Chapter 6    Installation of Optional Components**

---

6.1	Grip .....	6-2
6.2	Cassette Holder .....	6-3
6.3	Front Handle .....	6-5
6.4	Interlock Unit.....	6-6
6.4.1	Panel.....	6-6
6.4.2	SID detector .....	6-7
6.4.3	Potentiometer and micro switch to detect the tilt angle .....	6-9
6.5	Hand switch .....	6-10
6.6	Compression Band .....	6-13

---

## **Chapter 7    Installation of Photo Timer**

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7.1	Installation of Photo Timer .....	7-2
-----	-----------------------------------	-----

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## **Chapter 8    Inspection**

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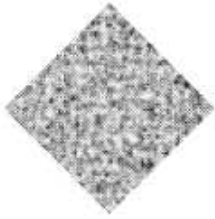
8.1	Inspection .....	8-2
-----	------------------	-----

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## **Chapter 9    Technical Information**

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9.1	Connection Diagram .....	9-2
9.2	PCB Information .....	9-3
9.2.1	BRC120.....	9-3
9.2.2	BFC.....	9-5



# Chapter *1*

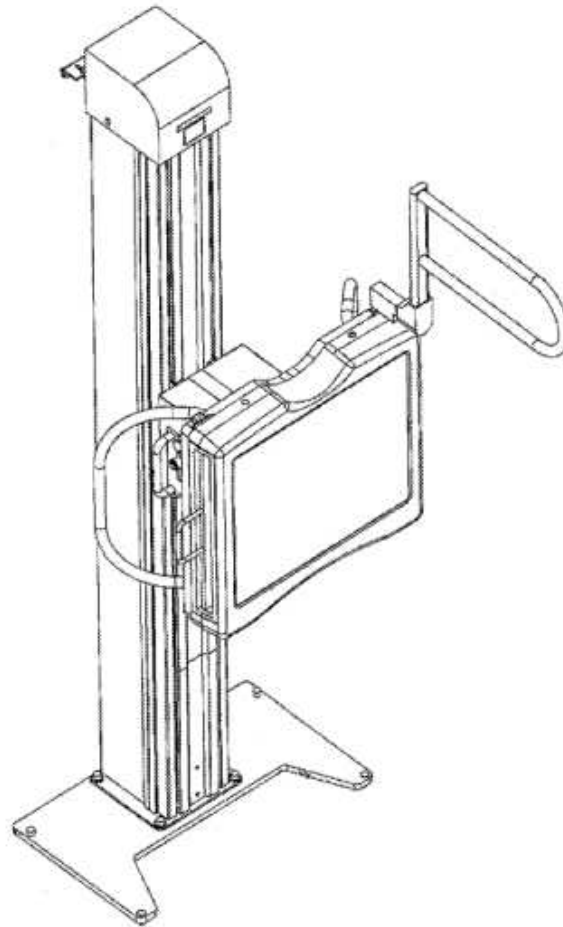
## Introduction

### *Chapter Contents*

#### ■ 1.1 Introduction

### 1.1 Introduction

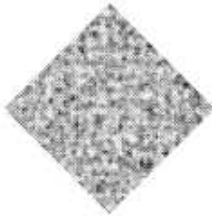
This document is an installation manual of the X-ray radiography stand BR-120T. This text describes required procedures in turn from installation to completion of adjustment. Make sure to read this manual thoroughly before starting the installation work.



**Fig. 1. 1**

#### **Cautions on installation**

1. Do not irradiate X-rays beyond necessity.
2. Make sure to turn off the power before starting the wiring work.
3. Take appropriate measures to prevent pinching of fingers, lumbago, or others, when handling heavy objects.
4. Make sure that stoppers have been attached when installing or disassembling the stand.



# Chapter 2

## Preparation for Installation

### *Chapter Contents*

- 2.1 Conditions of Installation Room
- 2.2 Installation Tools
- 2.3 Unpacking

### 2.1 Conditions of Installation Room

Check the installation room for the following points.

Item	Description
Outside dimensions	Refer to Equipment Drawing 503-06383
Installation floor area	W × D = 650 × 700 mm (Recommended)
Ceiling height	2,350 mm minimum
Mass	Approx. 160 kg
Power supply	Single phase 100 V, 0.1 kVA, 50/60 Hz

### 2.2 Installation Tools

Prepare the following tools for the installation.

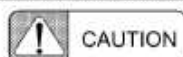
No.	Tool	Q'ty
1	Concrete drill	1
2	Measuring tape	1
3	Level	1
4	Phillips screwdriver	1 set
5	Tester	1
6	Hexagonal wrench	1 set
7	Locktite #242	As required



## 2.3 Unpacking

BR-120T consists of the following components.

No.	Tool	Q'ty
1	Stand	1 set
2	Bucky mount	1 set
3	Bucky unit	1 set
4	Bucky cover	1 pc.
5	Rear Cover R	1 pc.
6	Rear Cover L	1 pc.
7	Plate	1 pc.
8	Under Cover	1 pc.
9	Stopper Assy	1 set
10	Body Cover right 1	1 pc.
11	Body Cover left 1	1 pc.
12	Body Cover right 2	1 pc.
13	Body Cover left 2	1 pc.
14	Balance adjusting weight	1 set
15	Cable	1 set
16	Installation hardware	1 set
	Wall installation	1 set
	Anchor bolt, M12	4 pcs.
	Bolt, M12 x 20	4 pcs.
	Spare fuse, 250 V AC, 1 A	2 pcs.



CAUTION

During unpacking, check respective sections of the product for any abnormality, especially, broken or twisted element wires of wire ropes, rust, or others.

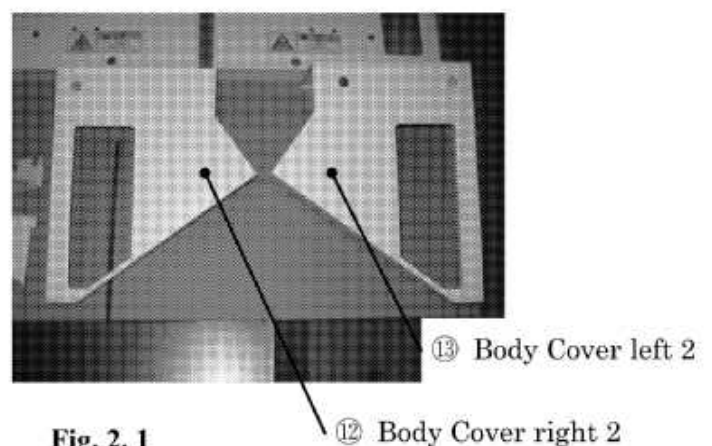
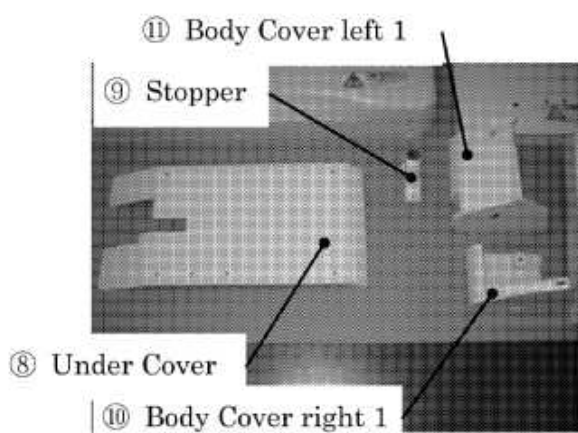
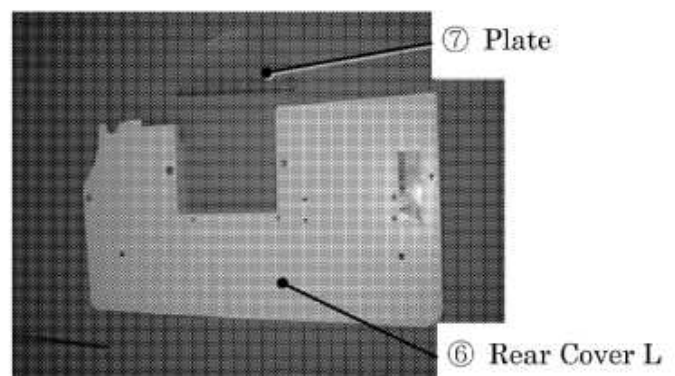
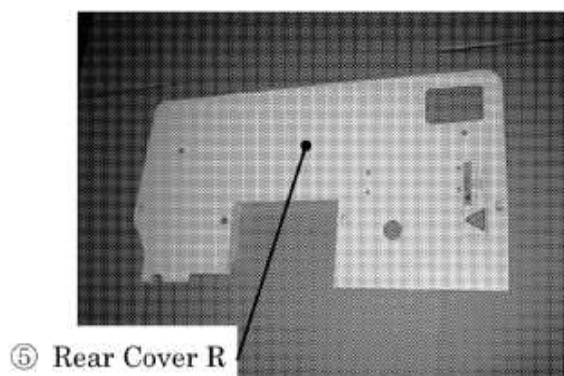
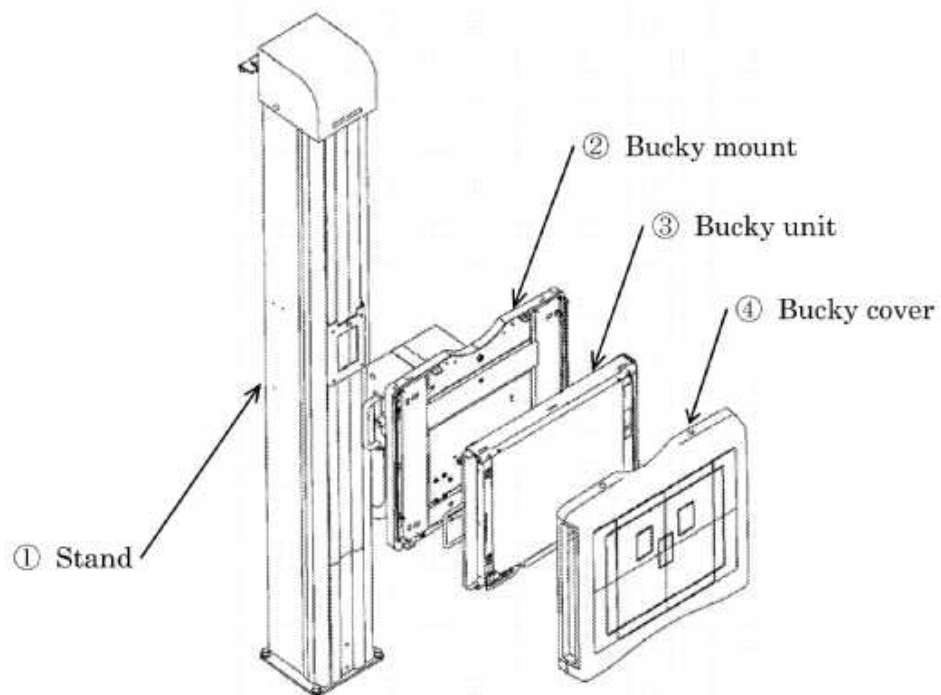
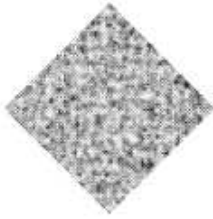


Fig. 2. 1



# Chapter 3

## Floor Work

### *Chapter Contents*

- 3.1 Introduction
- 3.2 Marking on Floor Surface
- 3.3 Placing of Anchor Bolts
- 3.4 Wall installation

### 3.1 Introduction

Prepare the floor for installation of the equipment. (Since this equipment is not a stand alone type, it must be secured on the floor.)

When installing the equipment, on a wooden floor or the like, reinforce the floor as required.

Actual load = 1960N (200 kgf)

Actual load = 1.25 × (maintenance load)

Maintenance load = 160 kg

The actual load is weighted by the factor of vibration of the apparatus.

BR-120T footprint = 0.06 m<sup>2</sup>

BR-120T unit load = 200/0.06 = 3333 kgf/m<sup>2</sup> = 0.3333 kgf/cm<sup>2</sup>



Reinforce the floor when its strength is lower than this value.

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#### Strength of concrete

In general, compression strength of concrete is 100 – 400 kg/cm<sup>2</sup>, and mostly 150 – 250 kg/cm<sup>2</sup>.

Its tensile strength is approximately 1/10 and its bend strength is approximately 15 – 20% of the compression strength.

(Mechanical Engineering Manual: Fifth Edition, edited by Japan Society of Mechanical Engineers)

## 3.2 Marking on Floor Surface

1. Mark the lines on the floor.(refer to Fig 3.1)
2. Align the center of stand mounting holes on the lines.

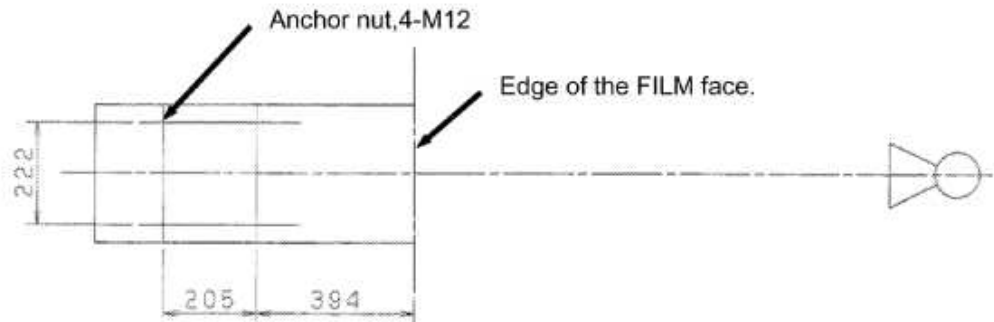


Fig. 3. 1

## 3.3 Placing of Anchor Bolts

When the marking on the floor, Section 3.2, is over, drill holes on the floor with a concrete drill and install the attached anchor bolts.

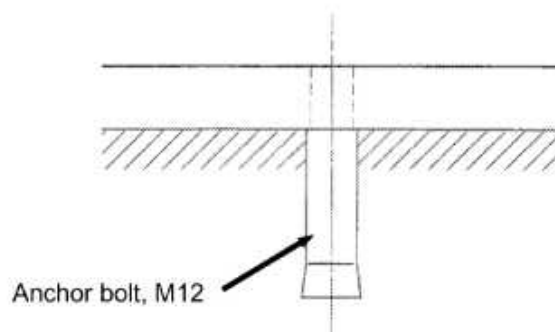


Fig. 3. 2

### 3.4 Wall installation

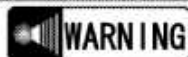
When the pull load of a screw for fixation on the floor is lower than  $9.8 \times 450\text{N}$  (450kgf), use the wall installation with fixation on the floor.

Wall actual load = 922N (94kgf)

Wall actual load =  $1.25 \times (\text{Maintenance load})$

Maintenance load  $\approx$  75kg

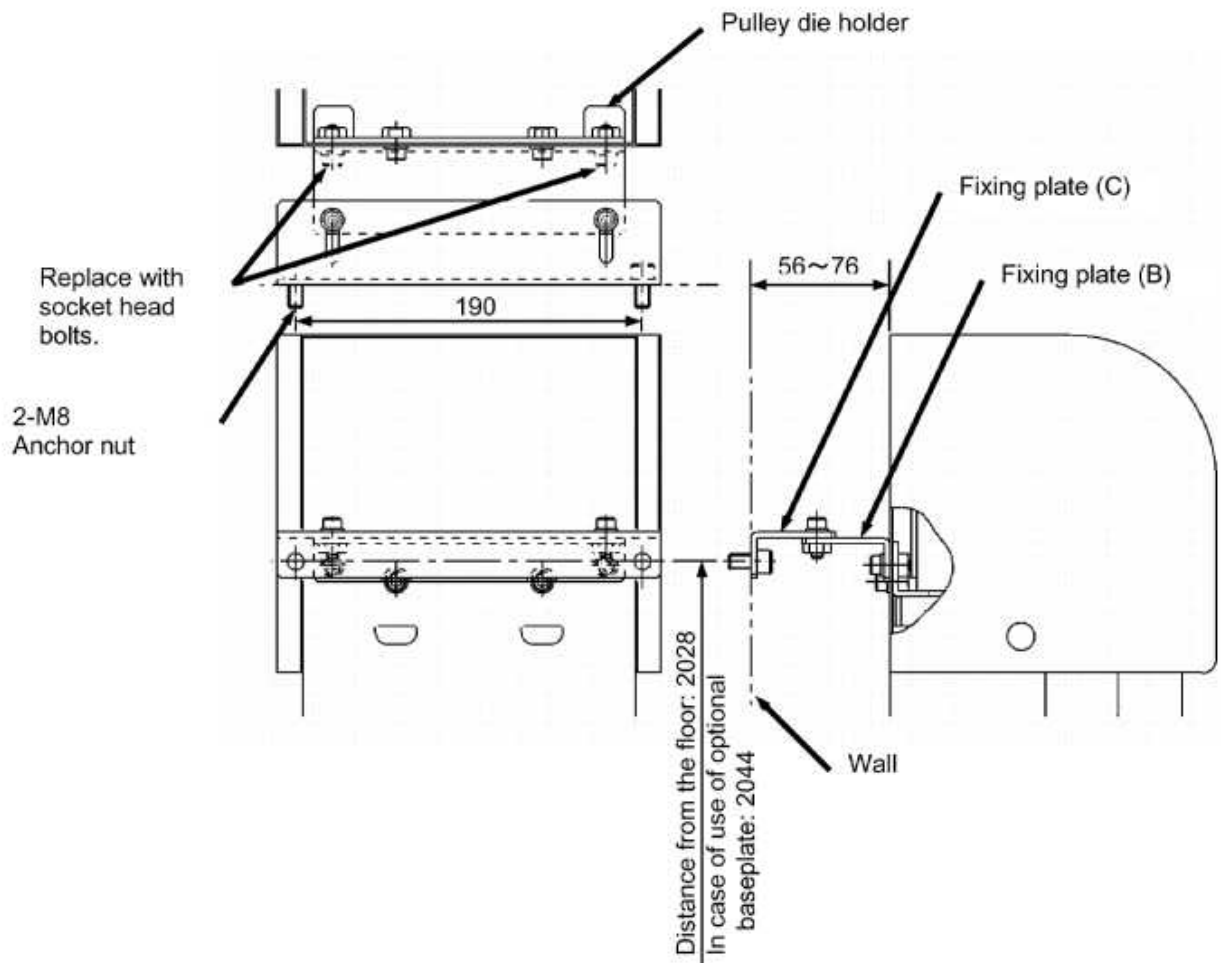
Wall actual load is weighted by the factor of vibration of the apparatus.



Reinforce the wall when its strength is lower than this value. When the wall isn't able to be reinforced, reinforce the floor and secure the pull load of a screw for fixation on the floor.

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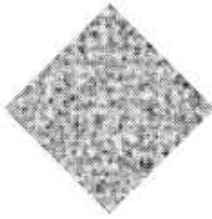
1. Remove socket head bolts for fixing the pulley die holder, 2 places at the outside.
2. Install the fixing plate (B) with a socket head bolt on the column.
3. Install the fixing plate (C) with a socket head bolt.
4. Adjust the distance from the wall and then fix the fixing plate (C) with a socket head bolt.



**Fig. 3.3**

No Text





# Chapter 4

## Assembly and Installation

### *Chapter Contents*

- 4.1 Assembly and Installation
- 4.2 Attachment and detachment of Bucky tray
- 4.3 Attachment the caps and seals.

## 4.1 Assembly and Installation

1. Remove the upper cover and the front cover (A) from the stand. Fix the stand on the floor. (When the floor surface is uneven, adjust it with liners, or others, and fix the stand only after confirming the levelness of stand. Confirm the levelness by contacting a level at the outer circumference of the column.)

When using a base plate, fix them on the floor surface before securing the column on the base plate.(Fig. 4. 1)

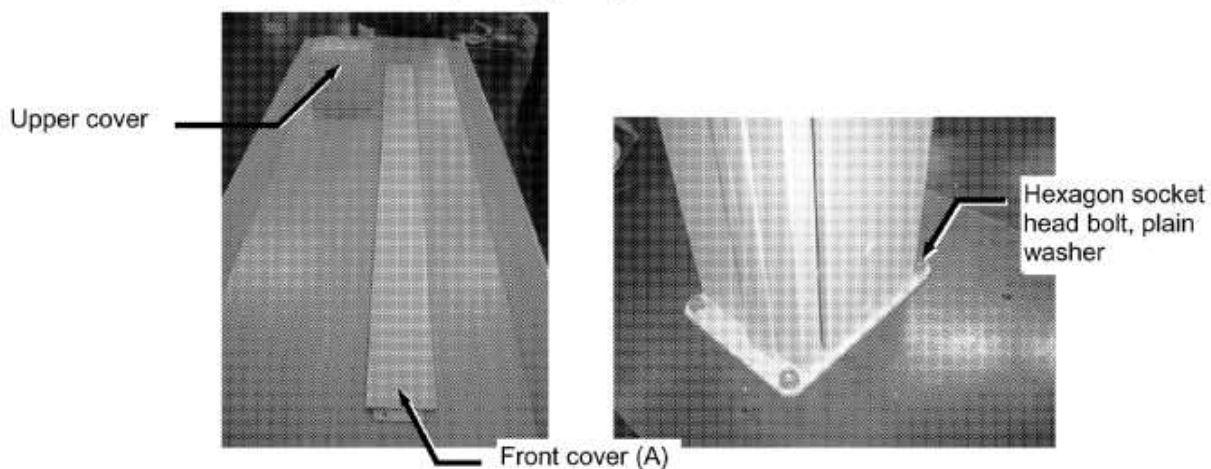


Fig. 4. 1

2. Install the bucky mount unit mount on the carriage of stand. Aligning the hole on the back of bucky mount unit and the screw on the carriage, mount the base temporarily and then fix with 4 pieces of hexagon socket head bolt (M8x12, M8x10).(Fig. 4. 2)

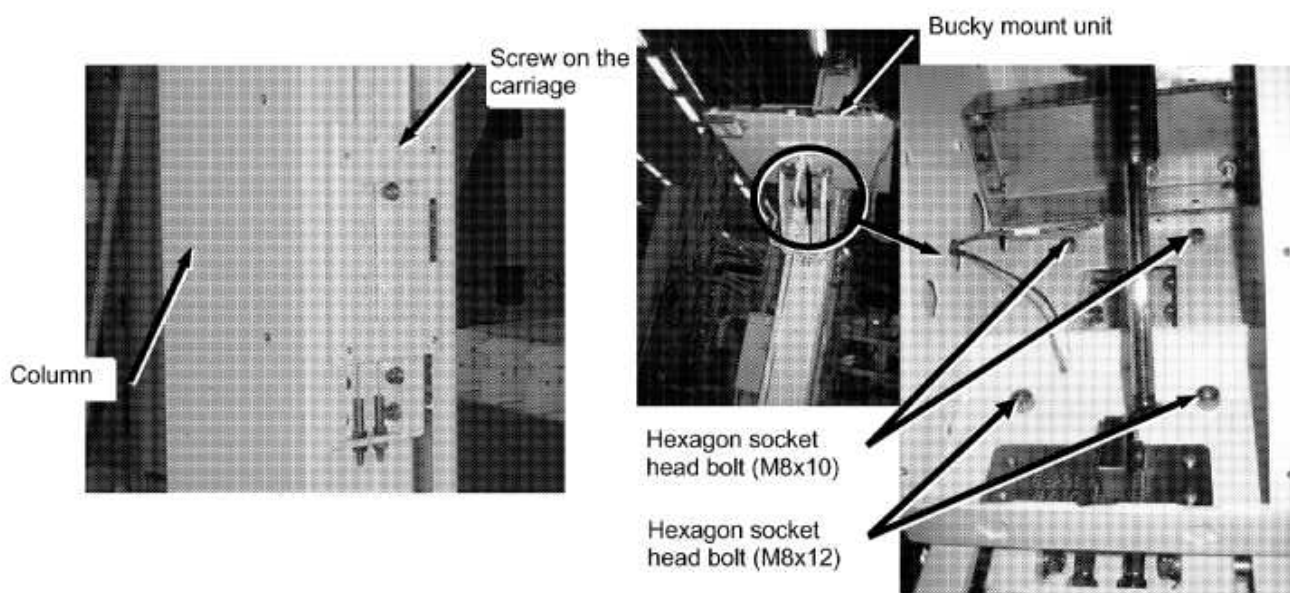
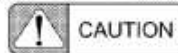


Fig. 4. 2



Note the length of the installation bolts.

The bolts of upper side are M8x10 and bottom are M8x12.

### 3. Determine the operating direction.

When the equipment is shipped from the factory, it is arranged to operate from the left-hand side in front of the equipment. If you wish to operate from the right-hand side, move the vertical movement switch and the handle from left to right and change the direction of opening on the bucky cover from left to right.(Fig. 4. 3)

- Vertical movement switch

Remove switch mount A, and B. Remove nuts and invert the right and left direction of the switch mounting board with the switch attached.

- Handle

Remove hexagon socket head bolts and invert the right and left direction of the handle.

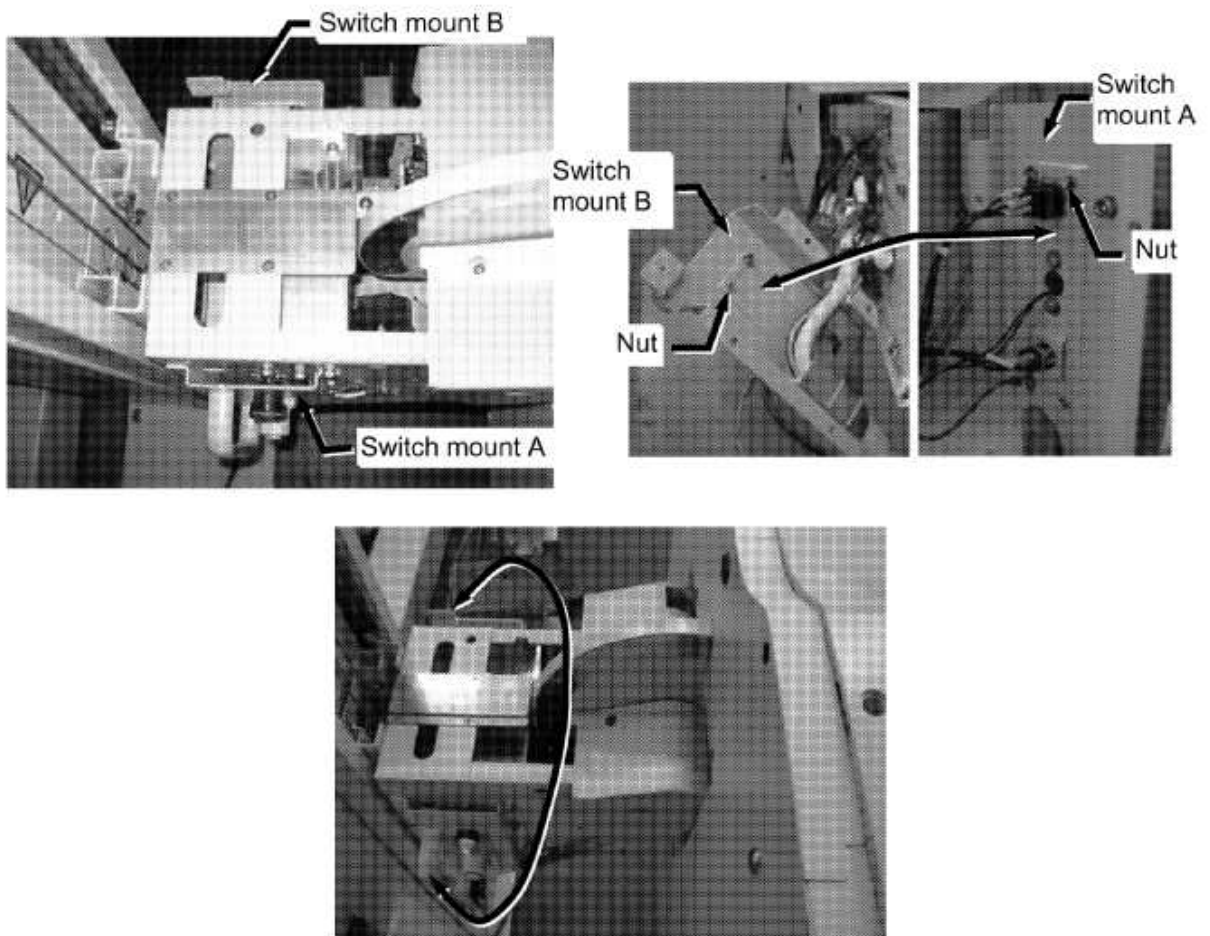
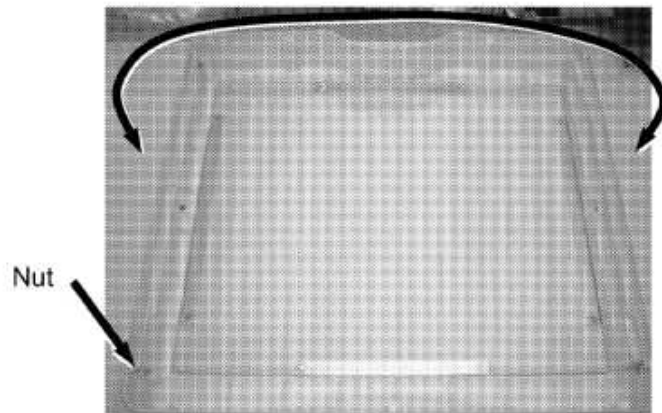


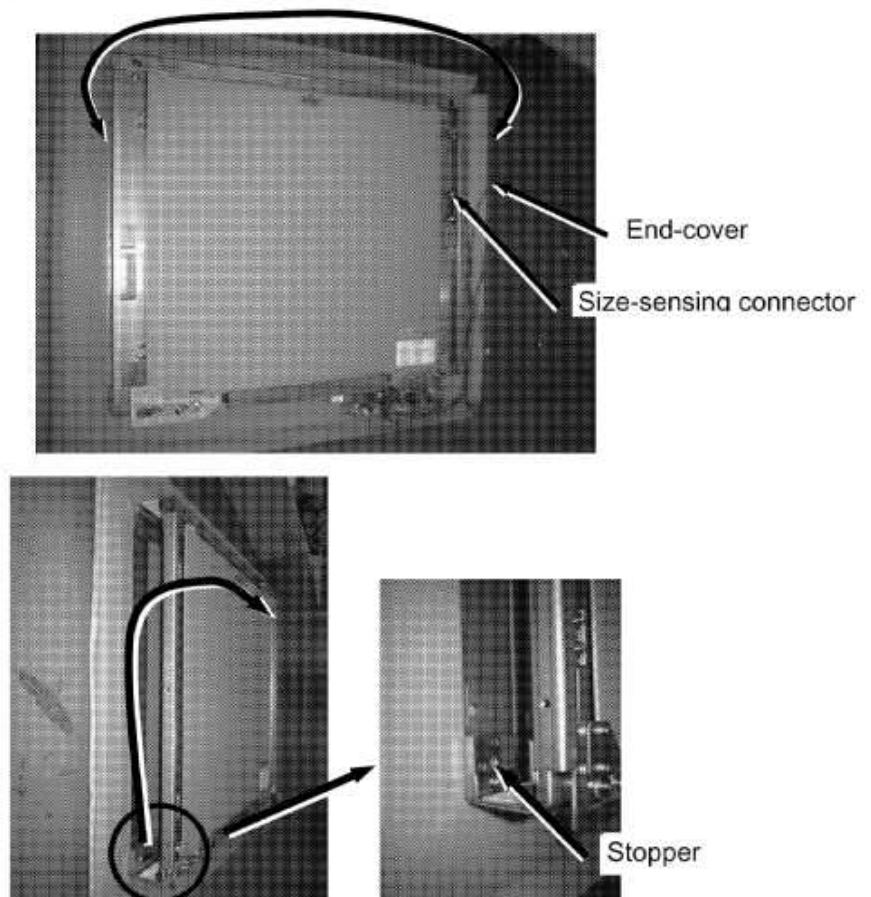
Fig. 4. 3

- Bucky cover  
Remove nuts and invert the right and left direction of the cover.(Fig. 4. 4)



**Fig. 4. 4**

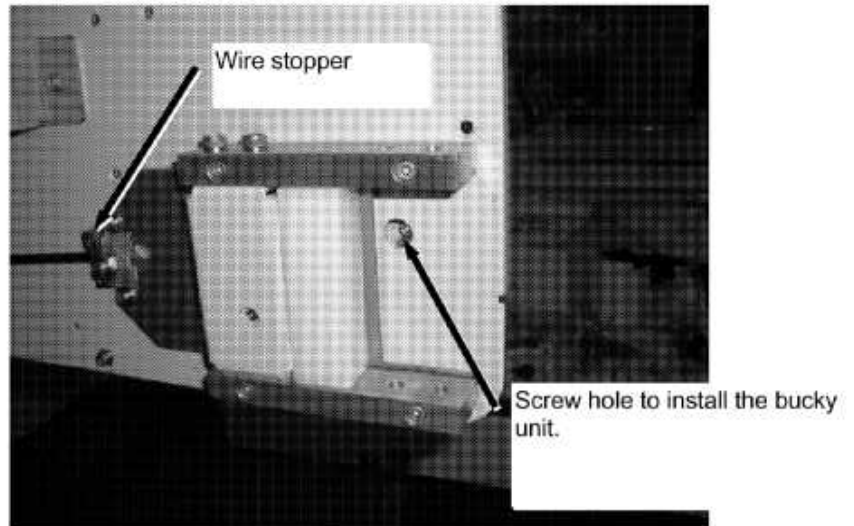
- Bucky unit  
Remove screws and invert right and left direction of the end-cover with size-sensing connector.  
Remove screws and invert upside down, right and left direction of the stopper.(Fig. 4. 5)



**Fig. 4. 5**

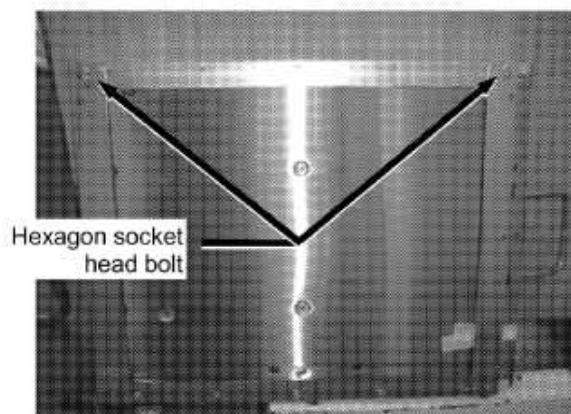
### 4. Install the bucky unit on the bucky mount.

- (1) Remove two bolts to install wire stopper to find the hole to install the bucky unit. (Fig. 4. 6)



**Fig. 4. 6**

- (2) Insert hexagon socket head bolts (M4X10 with washer and spring washer, 4 places) lightly in the upper two holes to mount the bucky. (Fig. 4. 7)

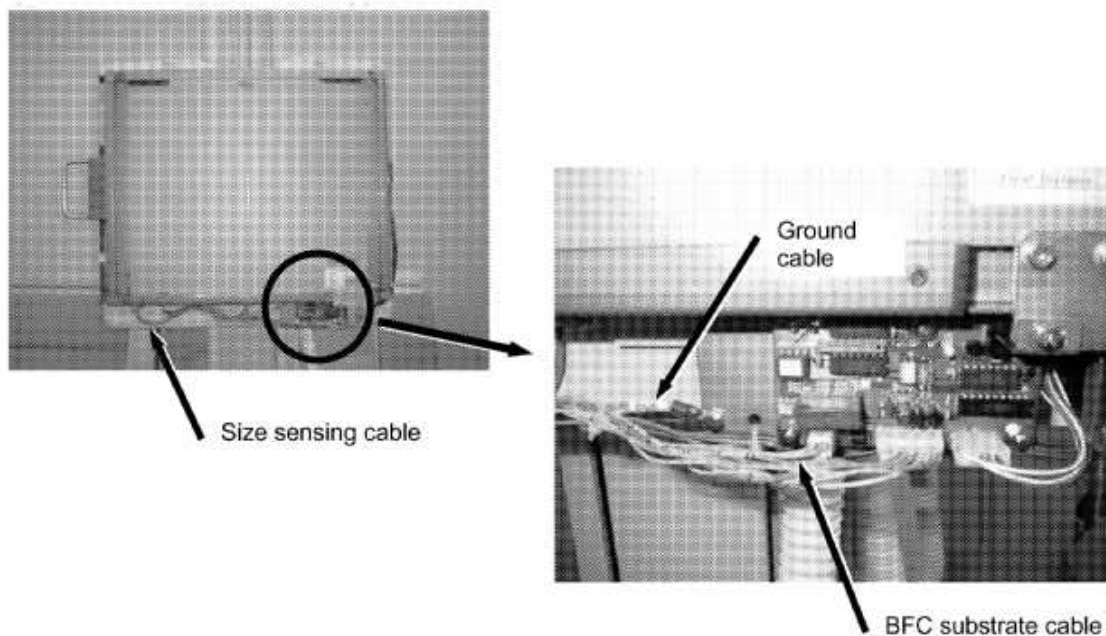


**Fig. 4. 7**

- (3) Aligning the hole on the bucky mount and the screw of (2) above, mount the bucky temporarily and then fix with 4 pieces of hexagon socket head screw.

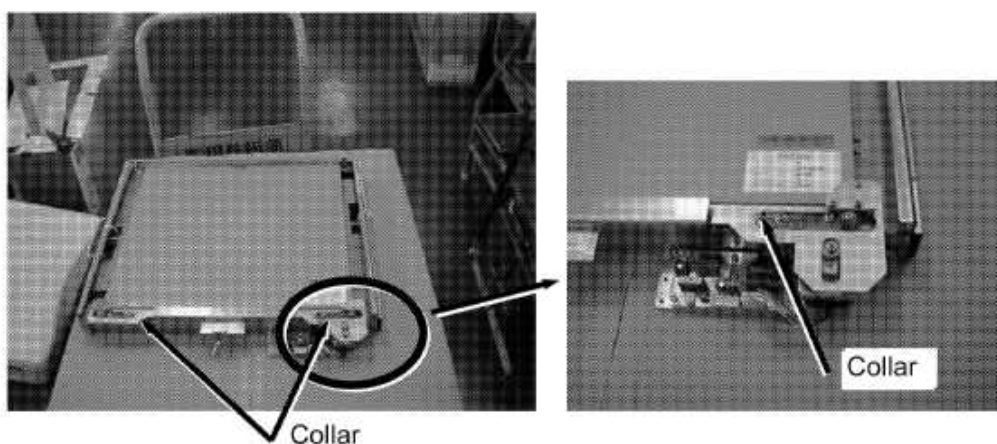
- (4) Install the wire stopper which was removed at procedure (1).

- (5) Connect the BFC substrate cable, size sensing cable and ground cable.(Fig. 4. 8)



**Fig. 4. 8**

- (6) Remove the collars for fixation of grid movement unit.(Fig. 4. 9)



**Fig. 4. 9**

- (7) When the optional photo-timer is installed, refer to the Chapter 7.

5. Wire the power cable, ground cable and signal cable and fix these cables with the cable fixtures at the cable outlet of control unit.(Fig. 4. 10)

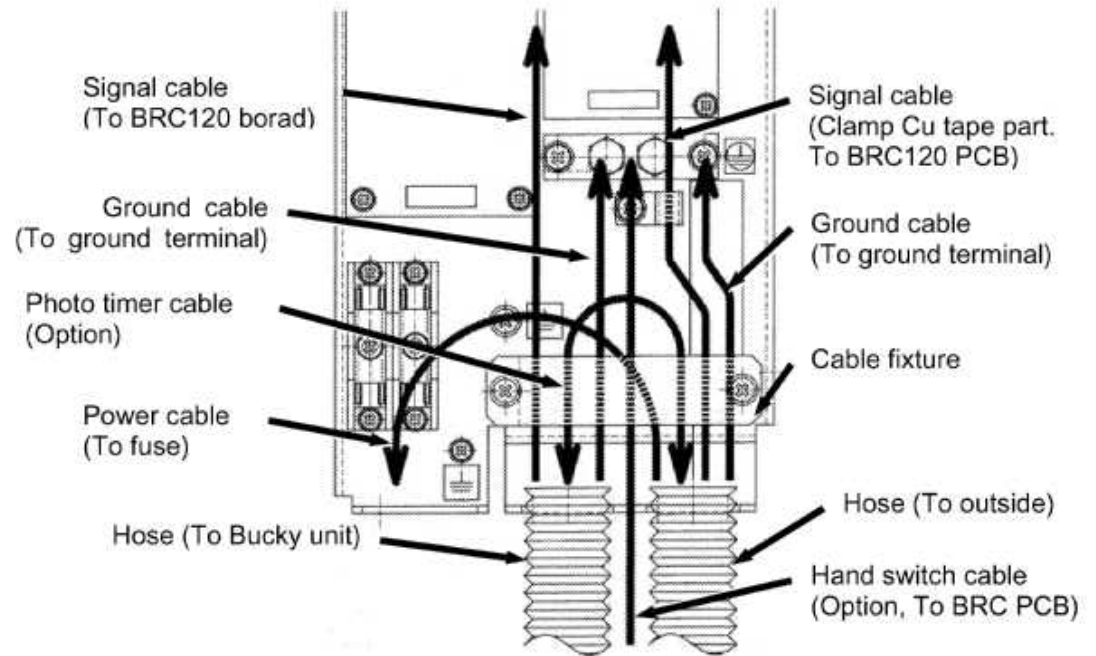


Fig. 4. 10

6. Install the cover on the control unit.(Fig. 4. 11)

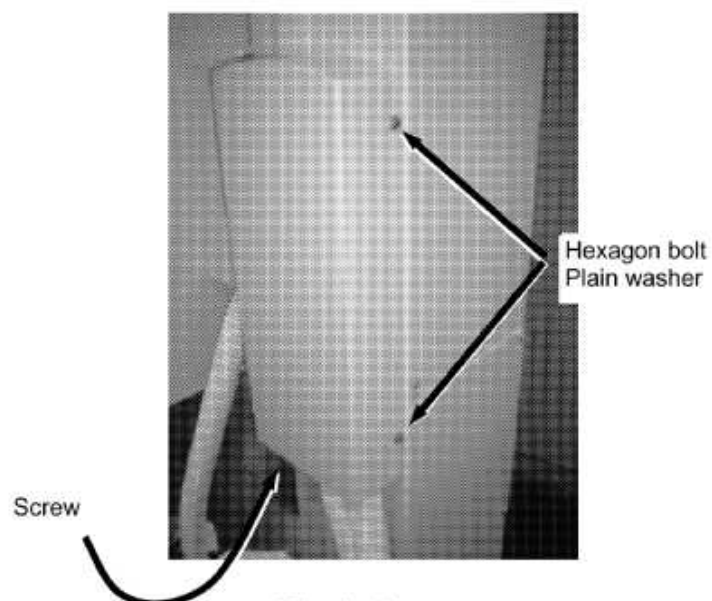


Fig. 4. 11



7. Install the cover on the bucky unit by binding screw M4x8, 11 places. (Fig. 4. 12)

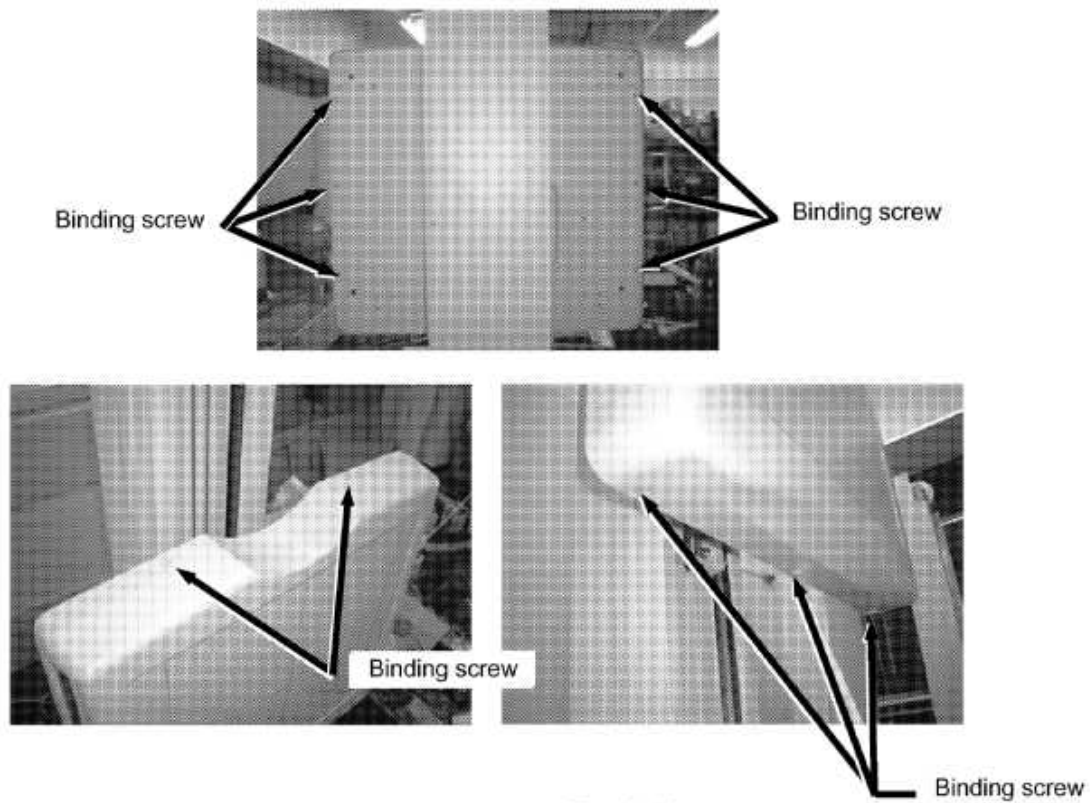


Fig. 4. 12

8. Install the four body covers. (Fig. 4. 13)

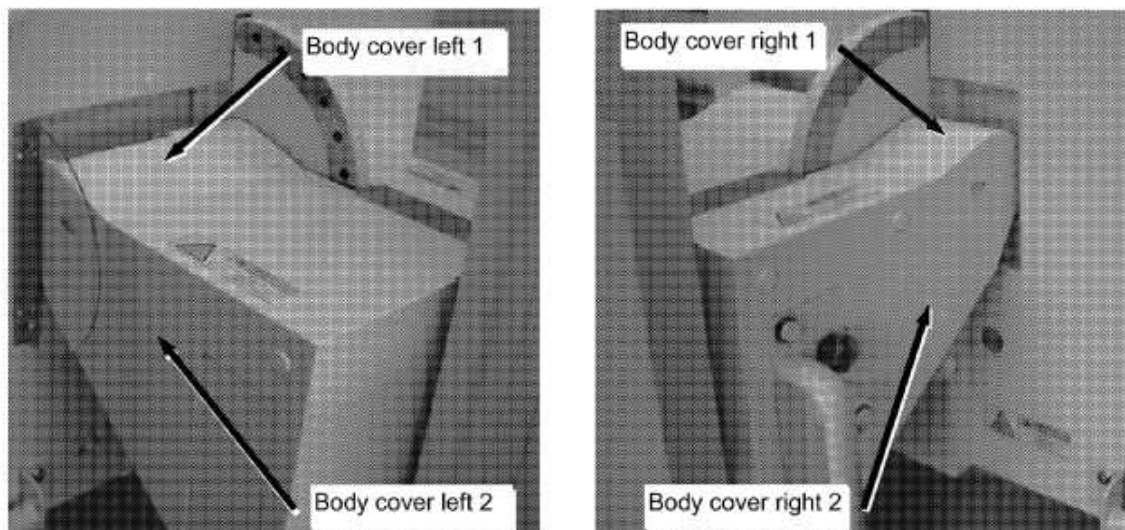


Fig. 4. 13



9. Fig. 4. Install the rear cover on the bucky unit.(Fig. 4. 14)

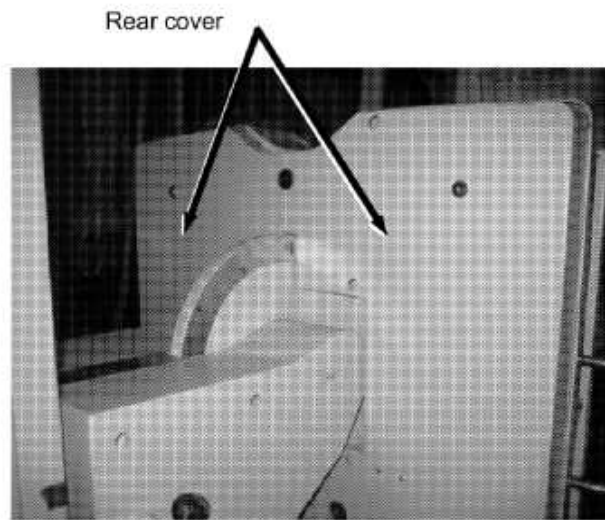


Fig. 4. 14

10. Install the plate (Binding screw M4X8,2places).(Fig. 4. 15)

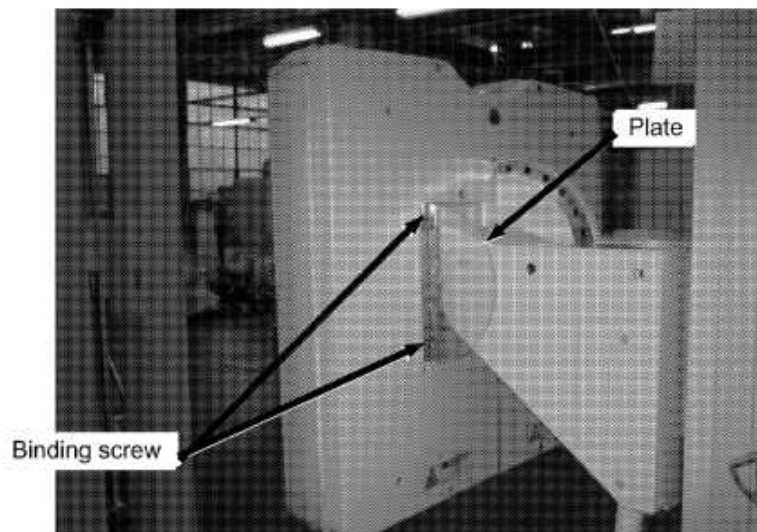
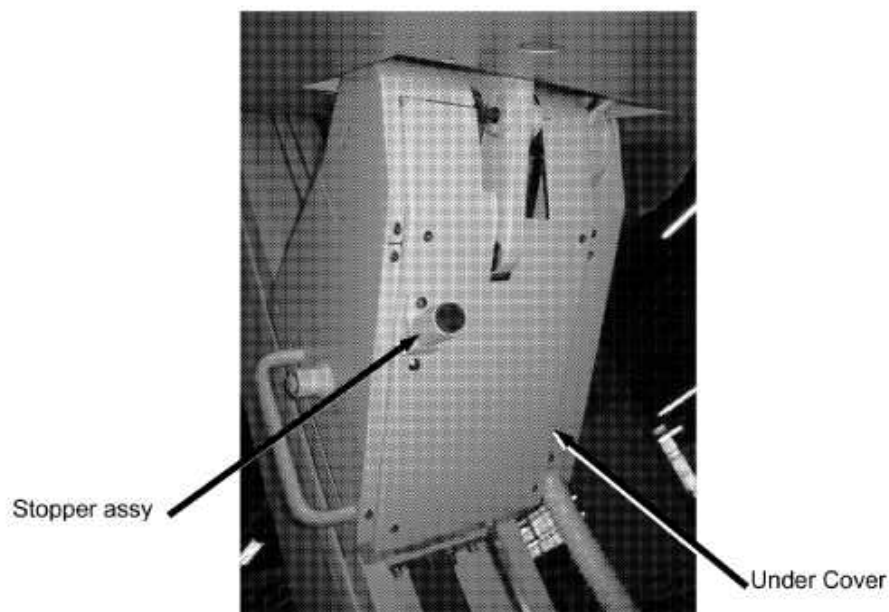


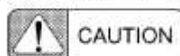
Fig. 4. 15

11. Install the under cover (Binding screw M4X8,4places) and stopper assy (Hexagon head bolt M4X10,2places).(Fig. 4. 16)



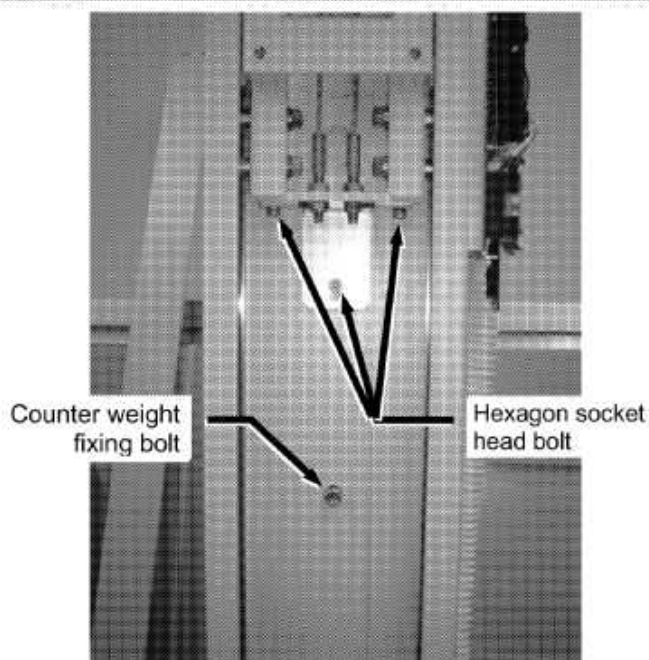
**Fig. 4.16**

12. Remove fixtures for transportation and the counter weight fixing bolt from the bottom of stand. (Fig. 4.17)



Make sure to attach the bucky unit first, and then remove the counter weight fixing bolts. Before removing the bucky unit, attach once again the counter weight fixing bolts to assure safety.

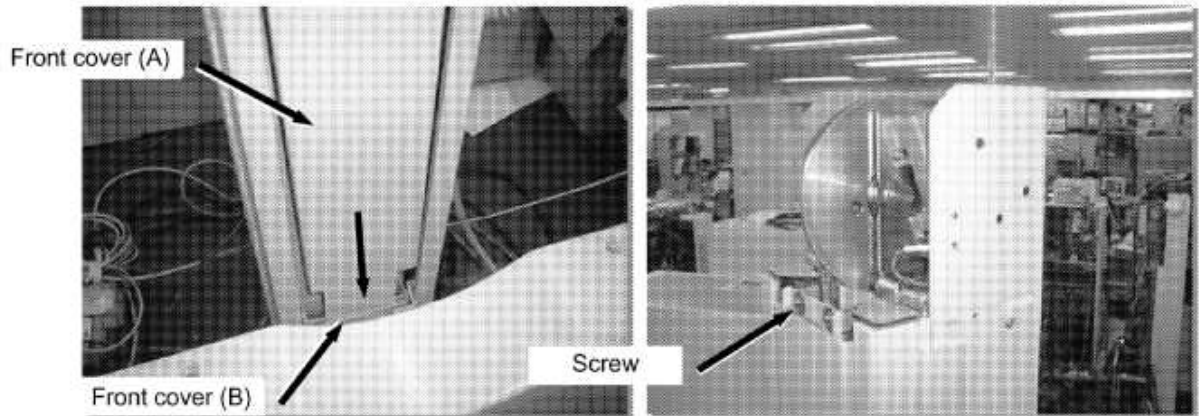
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**Fig. 4.17**

**13.** Install the front cover (A).

Bring down the bucky unit to the lowest position. Insert the front cover (A) in the recess of front cover (B) and mount on the cover die with screws.(Fig. 4. 18)



**Fig. 4. 18**

**14.** Install the upper cover.(Fig. 4. 19)



**Fig. 4. 19**

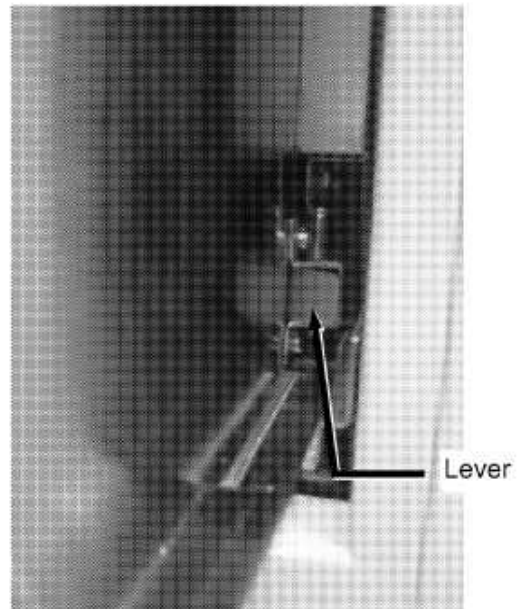
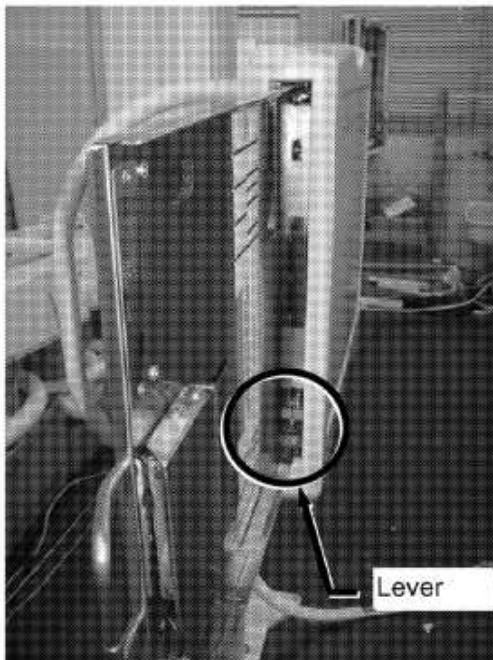
## 4.2 Attachment and detachment of Bucky tray

### 1. Attachment of bucky tray.

- Insert the bucky tray into the opening along the rail.

### 2. Detachment of bucky tray.(Fig. 4. 20)

- Remove the cassette. Pull the buck tray to the edge.
- Pull the bucky tray with pushing the lever.



Detail of lever

**Fig. 4. 20**

## 4.3 Attachment the caps and seals.

1. Put the white caps (13places).(Fig. 4. 21)

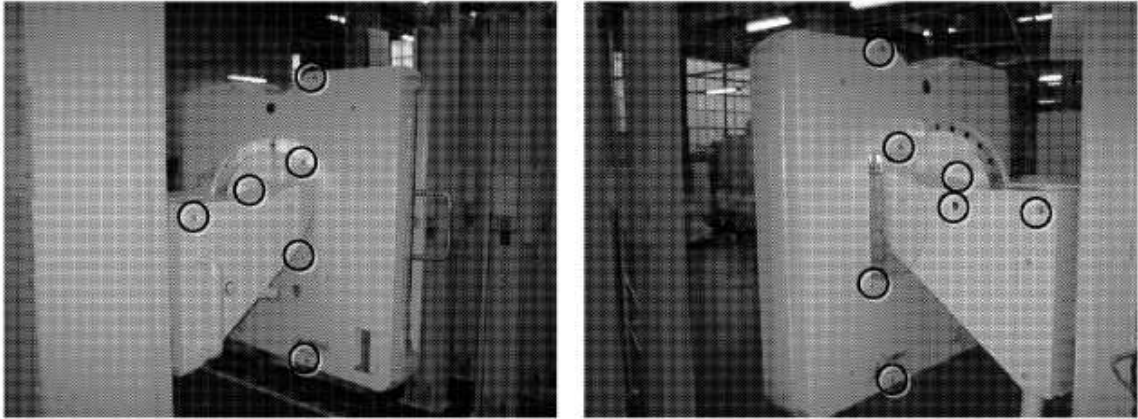


Fig. 4. 21

2. Put the blue caps (7places),(Fig. 4. 22)

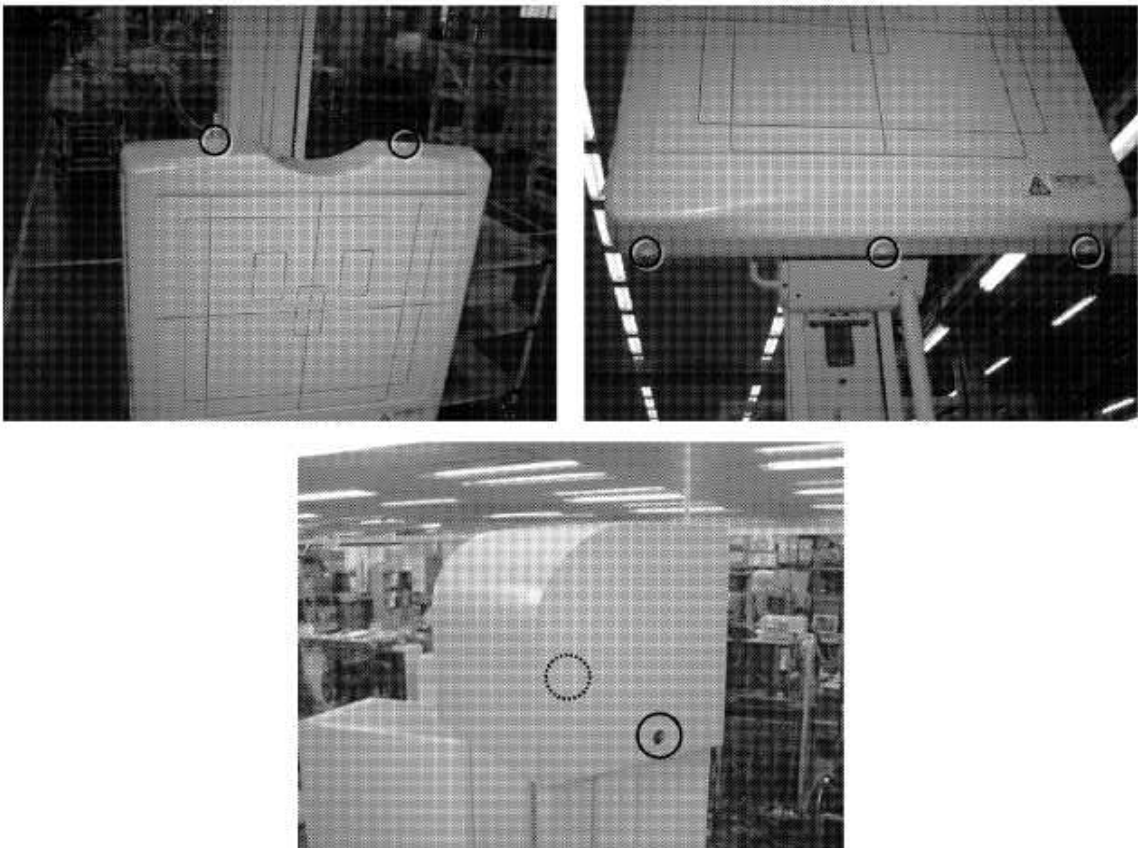
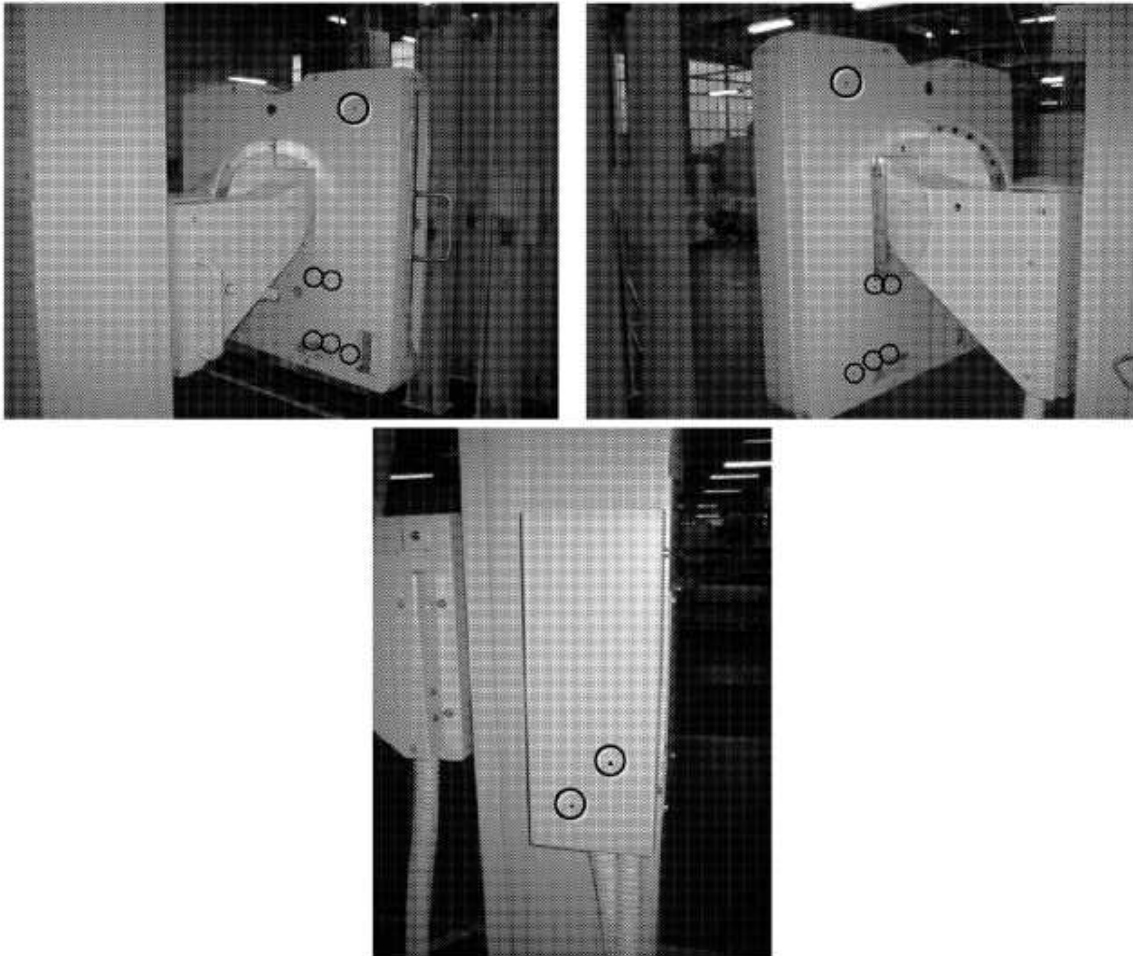
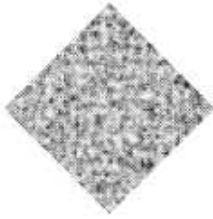


Fig. 4. 22

3. Affix the blind seals (14places). (Fig. 4. 23)



**Fig. 4. 23**



# Chapter 5

## Adjustment

### *Chapter Contents*

- 5.1 Introduction
- 5.2 Supply of Power
- 5.3 Adjustment of Balance
- 5.4 Measurement of Power Supply
- 5.5 Adjustment of the bucky tray
- 5.6 Adjustment of the grid start position

### 5.1 Introduction

Although the adjustments at necessary sections on the equipment are completed at the shipment from the factory, the adjustment values may be changed during assembling at site. Readjust them if necessary.

### 5.2 Supply of Power

After confirming that the cables are wired correctly, turn the power on.

### 5.3 Adjustment of Balance

Adjustment of balance must be conducted in the state that the large angle size cassette is mounted on the bucky unit.

■ **At the carriage side:**

Remove the cover from the bottom face of carriage. Remove the adjustment weights in the carriage and then adjust the balance.

■ **At the weight side:**

After removing the rear cover from the column adjust the balance by placing the adjustment weight.



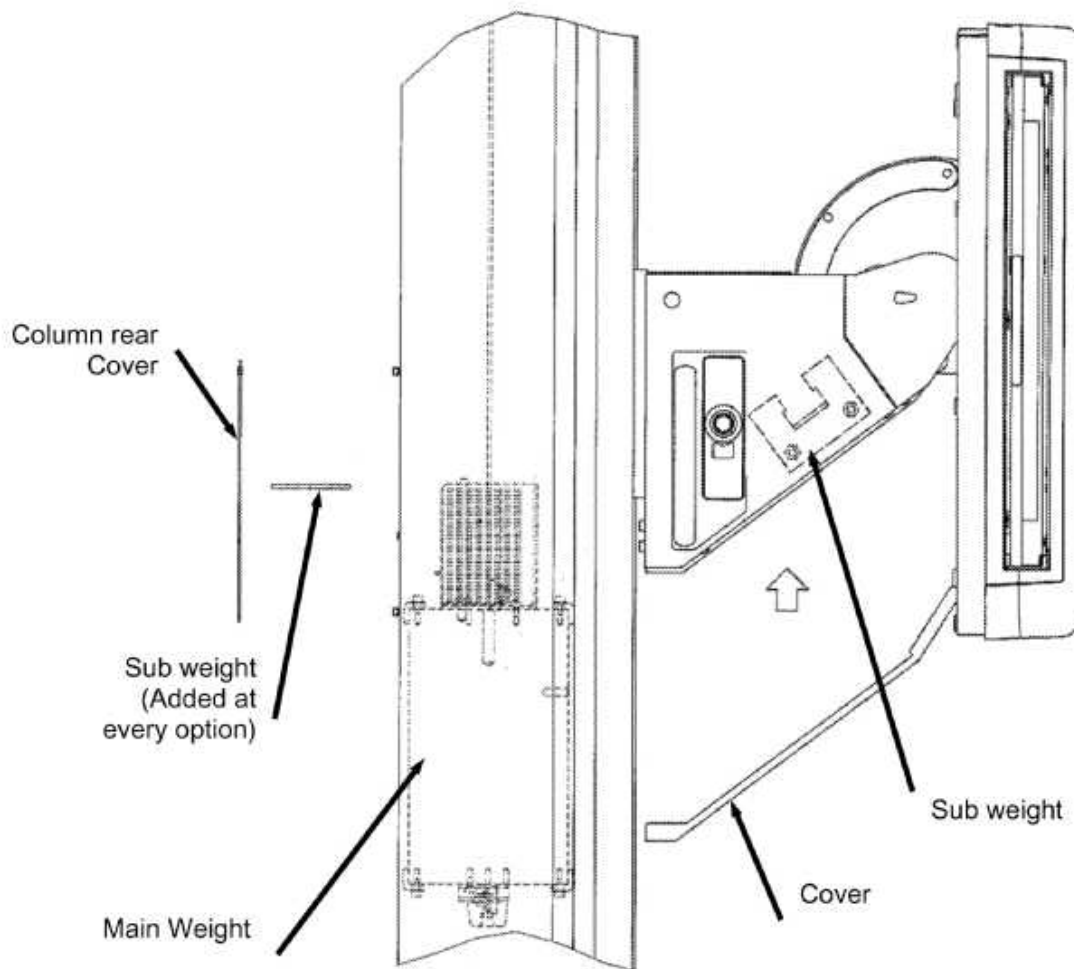


Fig. 5. 1

## 5.4 Measurement of Power Supply

Confirm the following voltage values at BRC120 PCB from PS1 and PS2.

■  $+24V \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix} V$  (CP3-CP4)

When the voltage is beyond the above value, adjust the voltage by the variable resistor VR1 of PS1.

■  $+5V \pm 0.1V$  (CP1-CP4)

When the voltage is beyond the above value, adjust the voltage by the variable resistor VR1 of PS2.

## 5.5 Adjustment of the bucky tray

When insertion and drawing of the buck tray are too firm or too light, adjust the position of the holder.

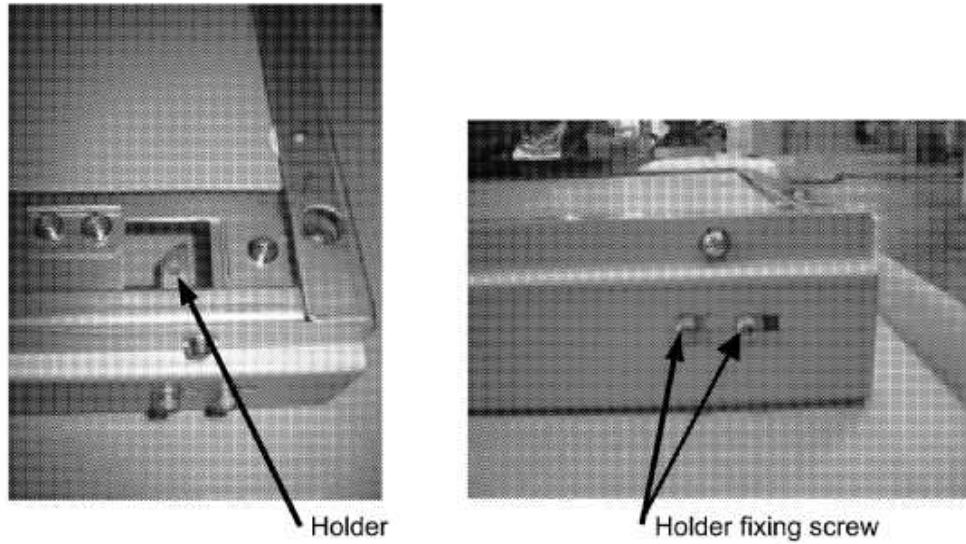


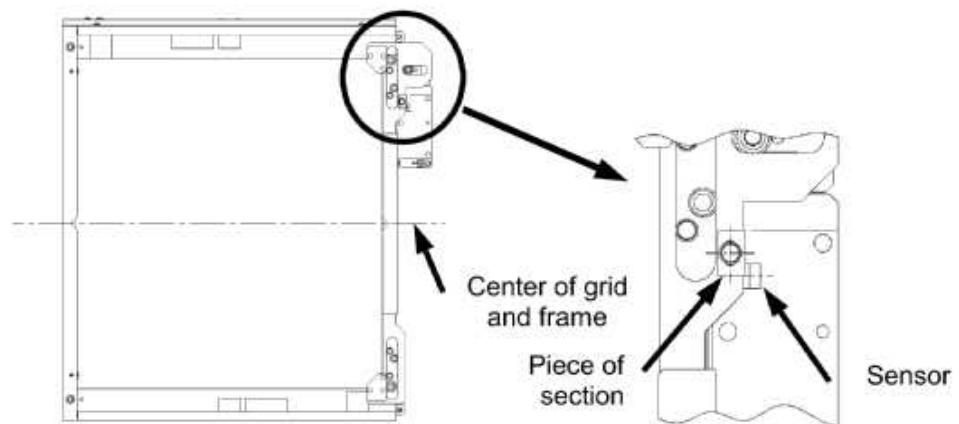
Fig. 5. 2

## 5.6 Adjustment of the grid start position

Although the grid start position has been adjusted at the factory before shipment, readjust it if necessary.

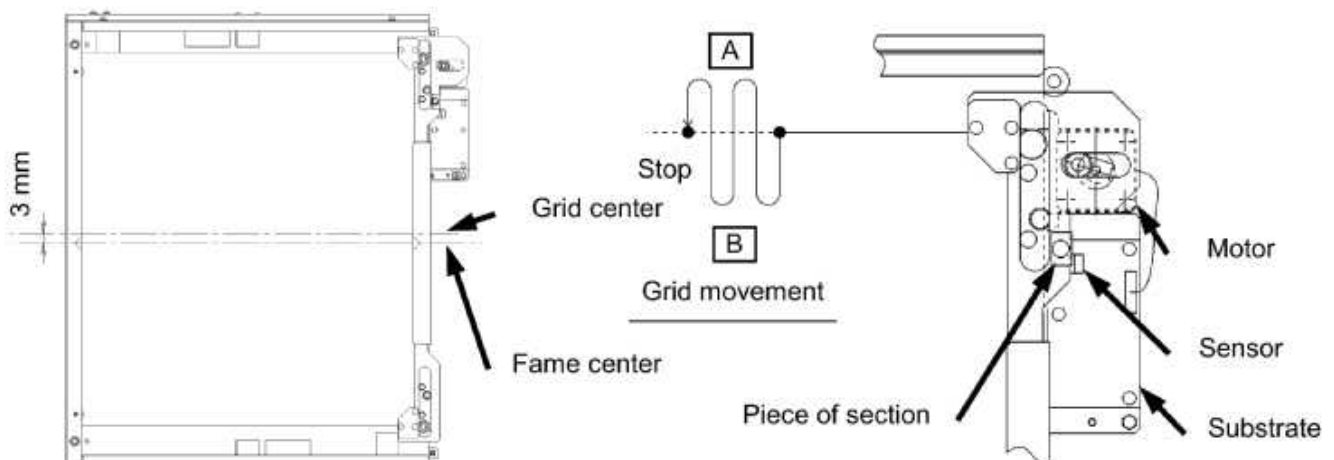
### 5.6.1 Adjustment

Turn the power off. In the condition that the centers of grid and frame are aligned, fix the piece of section at the position where its edge is positioned at the center of sensor. When the power is turned on, the motor starts and then stops at the start position.



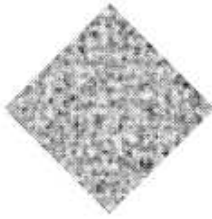
### 5.6.2 Movement

As B2 signal is received, the grid moves in "A" direction, returns in "B" direction, moves again in "A" direction and, as the B2 signal is turned off, stops at the start position. Centers of the grid center and the frame are dislocated by 3 mm at the start position.



No Text

No Text



# Chapter 6

## Installation of Optional Components

### *Chapter Contents*

- 6.1 Grip
- 6.2 Cassette holder
- 6.3 Front handle
- 6.4 Interlock unit
- 6.5 Hand switch
- 6.6 Compression band

## 6.1 Grip

1. Remove cover from rear cover L and rear cover R.(Fig. 6. 1)

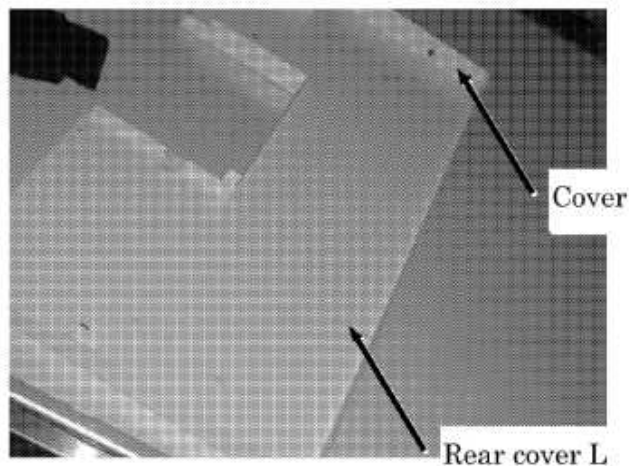


Fig. 6. 1

2. Install the spacer and the handle support on the bucky mount. (Fig. 6. 2)
3. Install the grip on the handle support.(Fig. 6. 2)

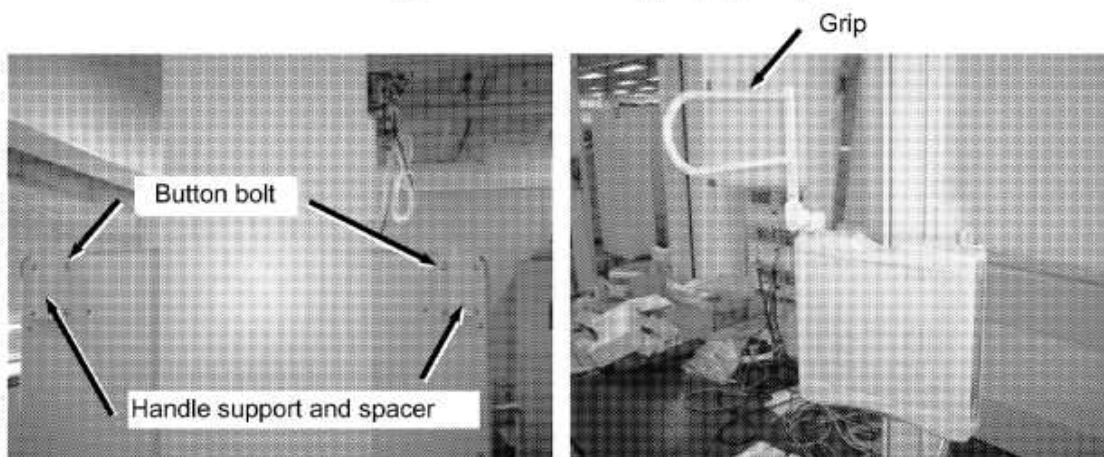


Fig. 6. 2

4. Install rear cover L and rear cover R.
5. Adjust the top and bottom balance by changing the numbers of the adjustment weight on the main weight and the adjustment weight on the bucky mount.

## 6.2 Cassette holder

1. Install the hanger and the plate on the bucky mount with socket head bolts.(Fig. 6. 3)

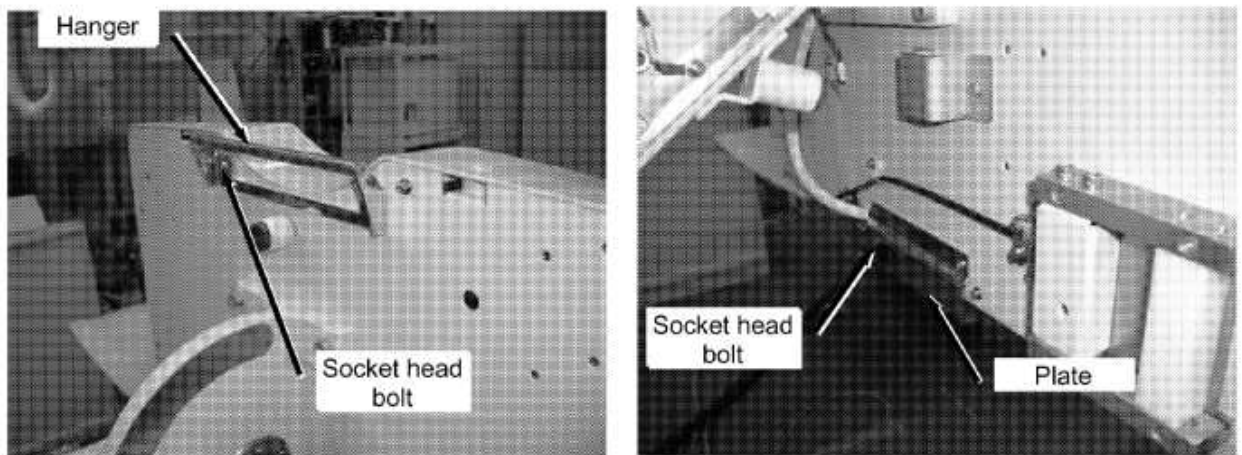


Fig. 6. 3

2. Remove the guard from the original rear cover L. And install it to the rear cover L for cassette holder.(Fig. 6. 4)

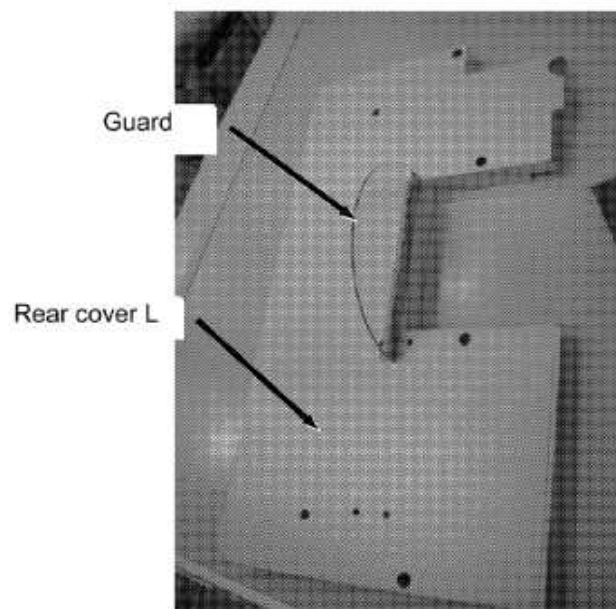


Fig. 6. 4

3. Install the rear cover L and rear cover R for cassette holder.
4. Adjust the top and bottom balance by changing the numbers of the adjustment weight on the main weight and the adjustment weight on the bucky mount.



### NOTE

38 sub weights can be installed on main weight. If more than 39 pieces are installed, sub weight will hit to pulley mount at the end of stroke.

If more sub weight is necessary for vertical balance, use the sub weight bracket which is same weight of 3 sub weights. (Fig. 6. 5)

At first install the necessary sub weight to sub weight bracket. Then install 37 sub weight and this bracket on the main weight.

If more than 39 sub weights are necessary, use sub weight bracket.

Install the sub weight on sub weight bracket.

Maximum 38 sub weights are installed on this portion.

Main weight

Fig. 6. 5

5. Hook the cassette holder on the rod of hanger and attach the bottom of cassette holder on the plate by the magnet.(Fig. 6. 6)

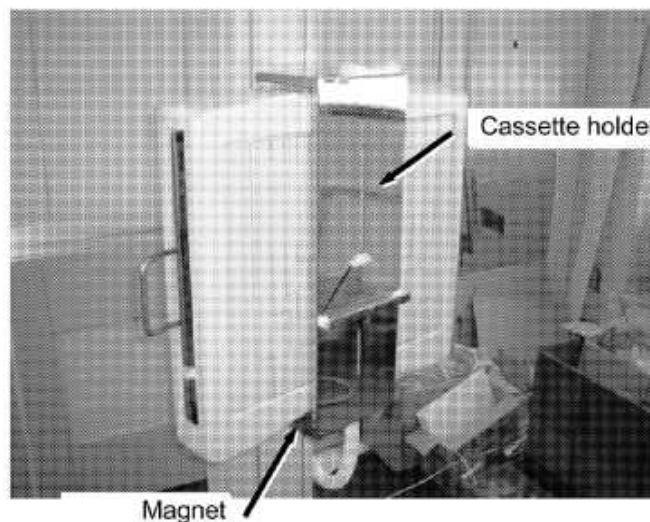


Fig. 6. 6



## 6.3 Front handle

1. Install the three handle brackets.(Fig. 6. 7)

Handle bracket

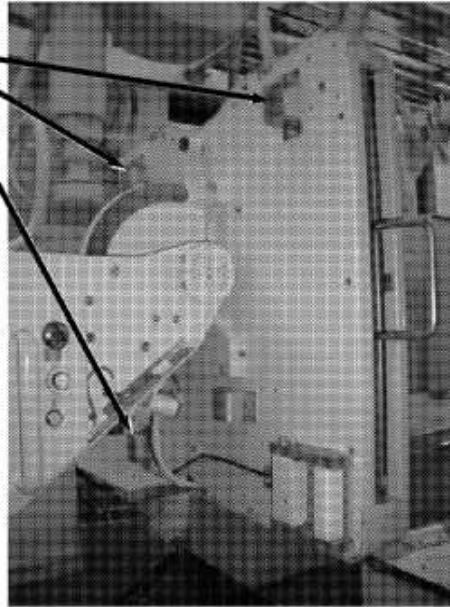


Fig. 6. 7

2. Install the rear cover L and rear cover R.
3. Fix the front handle on the rear cover of the bucky mount with cosmetic washers and flat head bolts.(Fig. 6. 8)

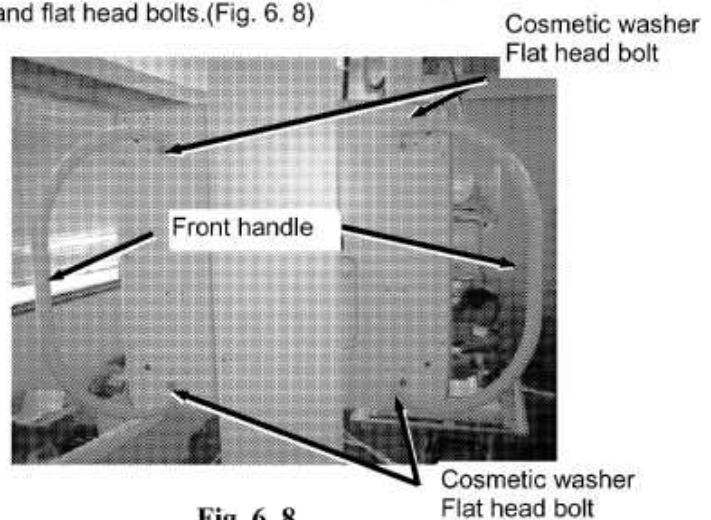


Fig. 6. 8

4. Adjust the top and bottom balance by changing the numbers of the adjustment weight on the main weight and the adjustment weight on the bucky mount.

### 6.4 Interlock unit

Interlock unit consists of the panel and SID detector.

#### 6.4.1 Panel

1. Remove the switch mounting plate from switch mount on the bucky mount.
2. Removing hexagon socket head bolt(s), disassemble the switch ASSY from the switch mounting plate.
3. Install the disassembled switch ASSY on the panel.(Fig. 6. 9)

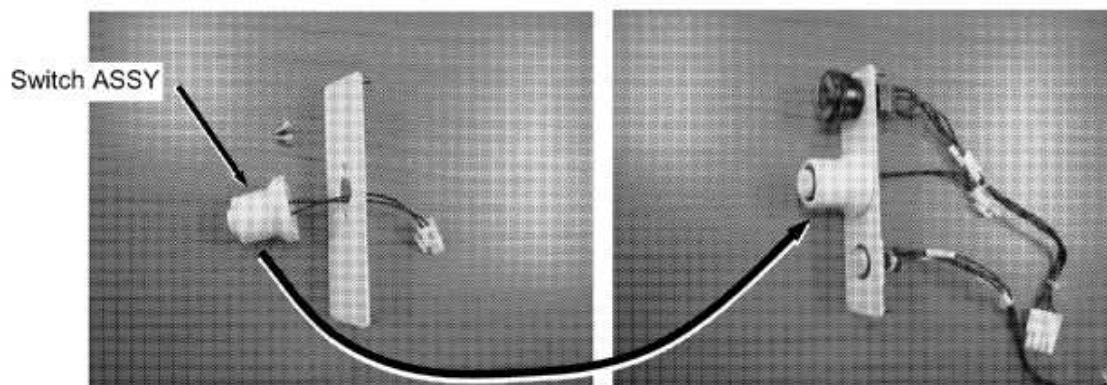


Fig. 6. 9

4. Fix the panel with nut on the switch mount.
5. Connect connectors of the emergency switch, vertical movement switch and interlock switch.(Fig. 6. 10)

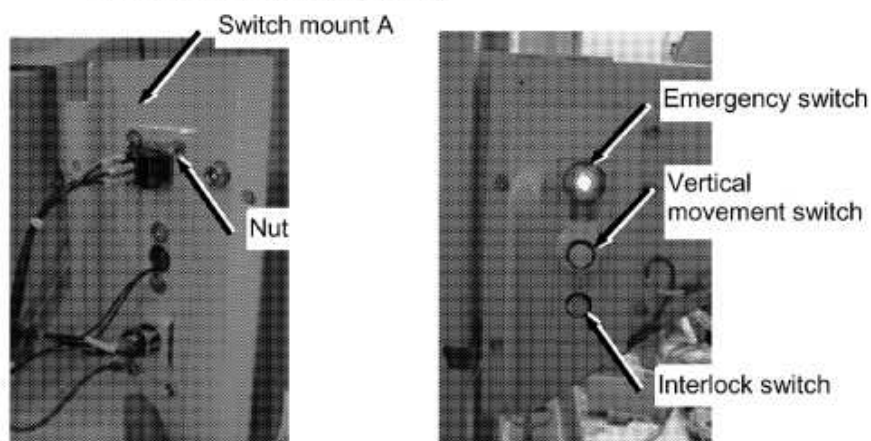


Fig. 6. 10

### 6.4.2 SID detector

1. Remove the column's upper cover and the front cover (A).(Fig. 6. 11)



Fig. 6. 11

2. Fix the SID detector with screw at the pulley on the column.(Fig. 6. 12)

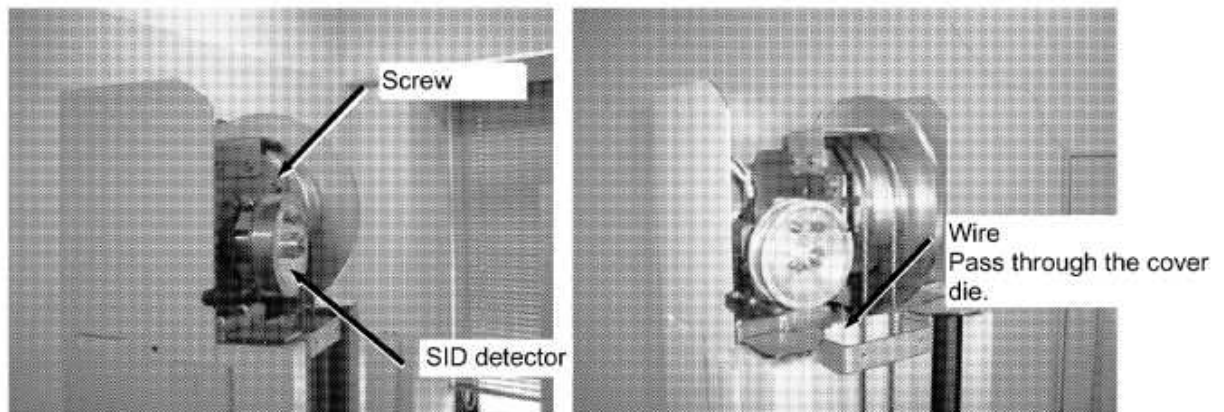
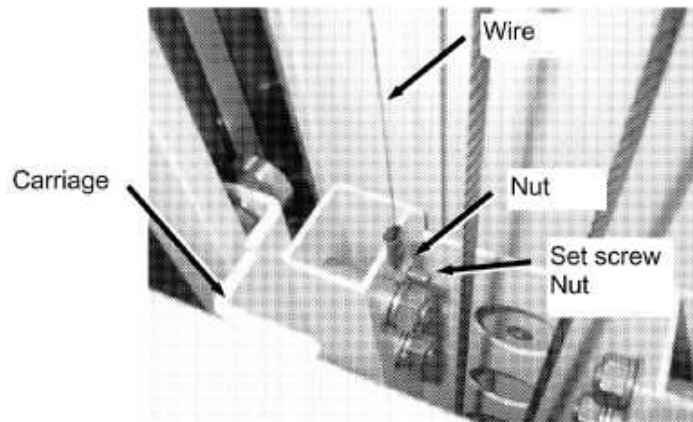


Fig. 6. 12

3. Installing a set screw at the upper part of carriage and install the wire end with a nut at the set screw on the carriage.(Fig. 6. 13)



**Fig. 6. 13**

4. Move the carriage up and down to see if it moves smoothly.
5. Install the cover.(Fig. 6. 14)



**Fig. 6. 14**

### 6.4.3 Potentiometer and micro switch to detect the tilt angle

#### 1. Install potentiometer unit

Perform the engagement adjustment while measure the voltage so that the potentiometer will not pass the breaking point across the entire stroke (from -20 to 90 degrees of tilting angle). (Fig. 6. 15)

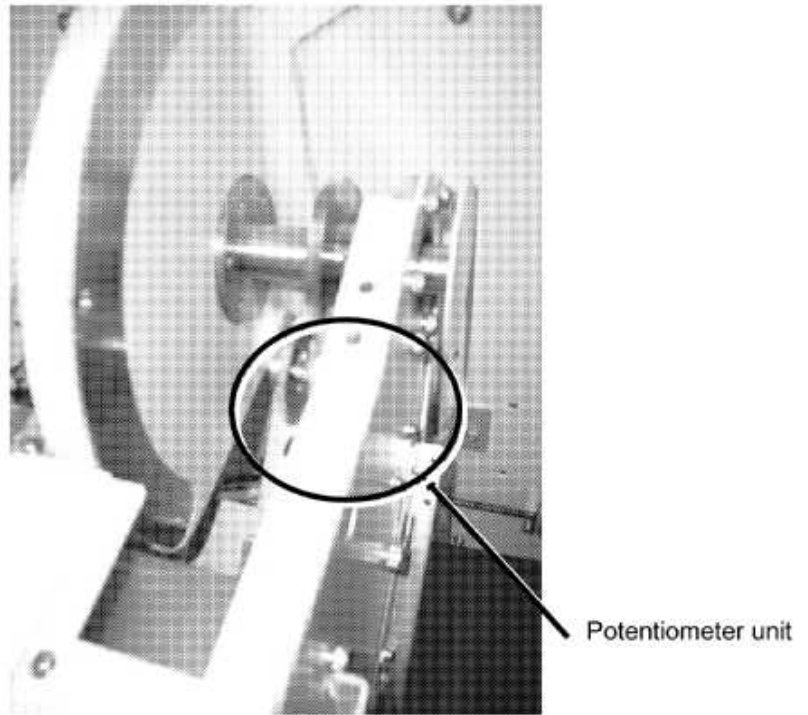


Fig. 6. 15

#### 2. Install micro switch unit.

This micro switch is to detect the detent position of tilt. Confirm that it detects at the detent position (-20, 0, 15, 30, 45, 60, 75 and 90 degrees) and does not detect at the other position.(Fig. 6. 16)

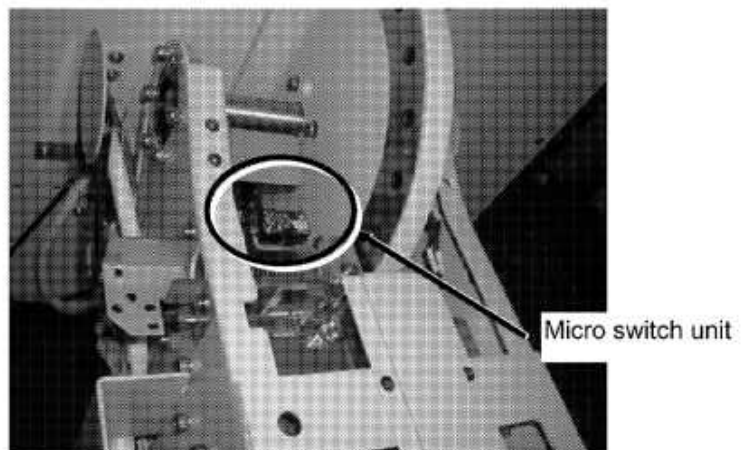


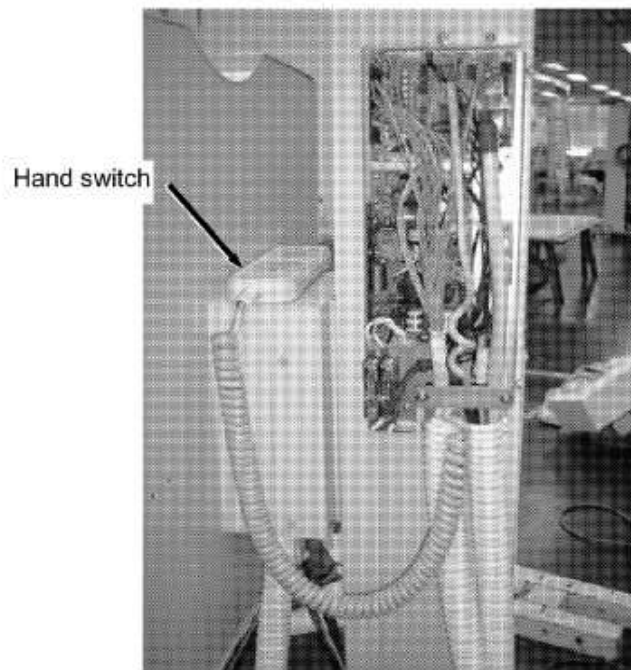
Fig. 6. 16

### 6.5 Hand switch

Hand switch can be installed either one of right or left side on the column.

**When installing at the right side of column:**

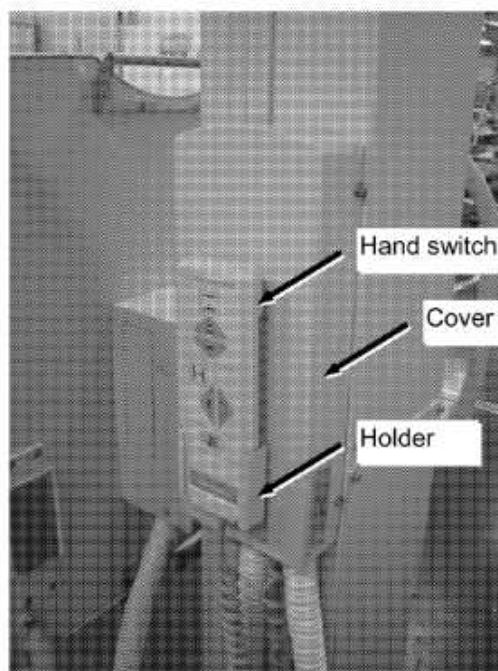
1. Remove the cover from the control unit.
2. Connect the hand switch connector with the BRC-120 substrate and fix the cable with the cable holder.(Fig. 6. 17)



**Fig. 6. 17**

3. Attach the holder on the cover of the control unit with screws and nuts.

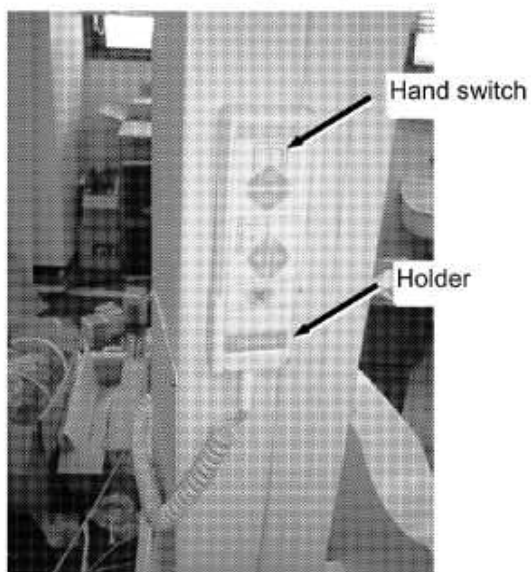
4. Insert the hand switch in the holder which is attached to the cover.(Fig. 6.18)



**Fig. 6. 18**

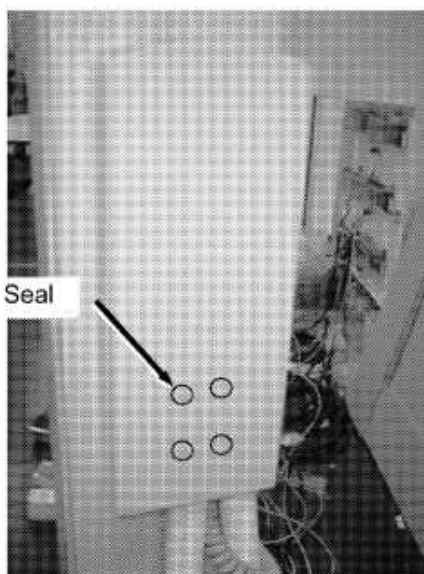
**When installing at the left side of column:**

1. Remove the cover from the control unit. (Same as the installation at the right side)
2. Connect the hand switch connector with the BRC-120 substrate and fix the cable with the cable holder. (Same as the installation at the right side)
3. Install the holder on the column.
4. Insert the hand switch in the holder.(Fig. 6. 19)



**Fig. 6. 19**

5. Install the cover on the control unit.
6. Close unnecessary holes with seals.(Fig. 6. 20)



**Fig. 6. 20**



## 6.6 Compression band

1. Install the two brackets.(Fig. 6. 21)

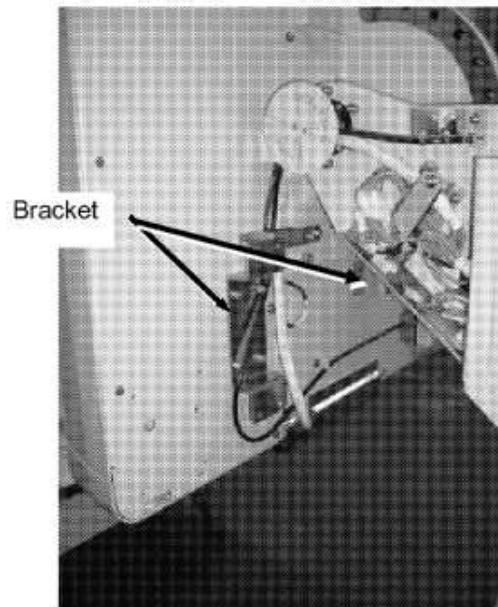


Fig. 6. 21

2. Install the rear cover L and rear cover R.
3. Install the compression band stopper.(Fig. 6. 22)

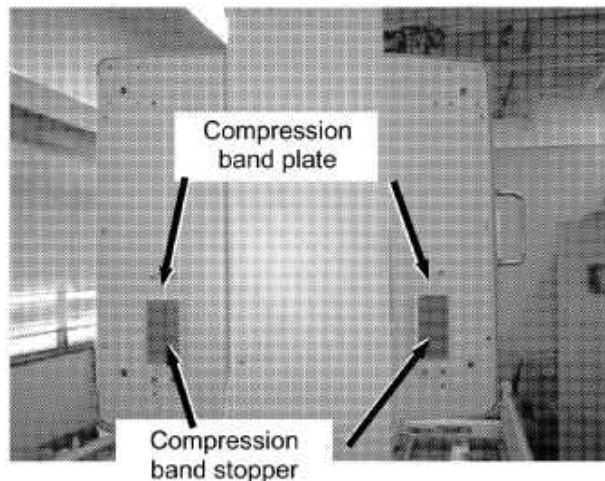


Fig. 6. 22

4. Adjust the top and bottom balance by changing the numbers of the adjustment weight on the main weight and the adjustment weight on the bucky mount..

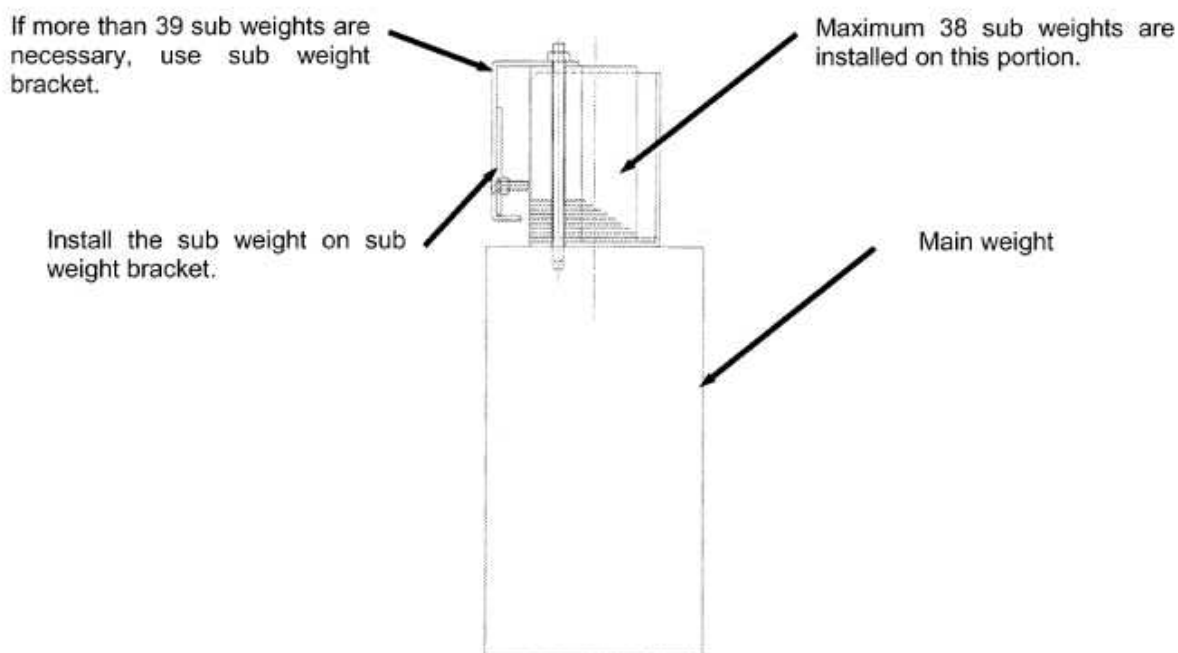


### NOTE

38 sub weights can be installed on main weight. If more than 39 pieces are installed, sub weight will hit to pulley mount at the end of stroke.

If more sub weight is necessary for vertical balance, use the sub weight bracket which is same weight of 3 sub weights. (Fig. 6. 23)

At first install the necessary sub weight to sub weight bracket. Then install 37 sub weight and this bracket on the main weight.

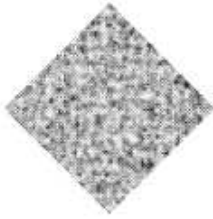


**Fig. 6. 23**

5. Fix the band by the Velcro provided on the fixing and the band sides.(Fig. 6. 24)



**Fig. 6. 24**



# Chapter 7

## Installation of Photo Timer

### *Chapter Contents*

- 7.1 Installation of Photo Timer

## 7.1 Installation of Photo Timer

1. Insert the photo timer into the bucky unit through the upper slit.

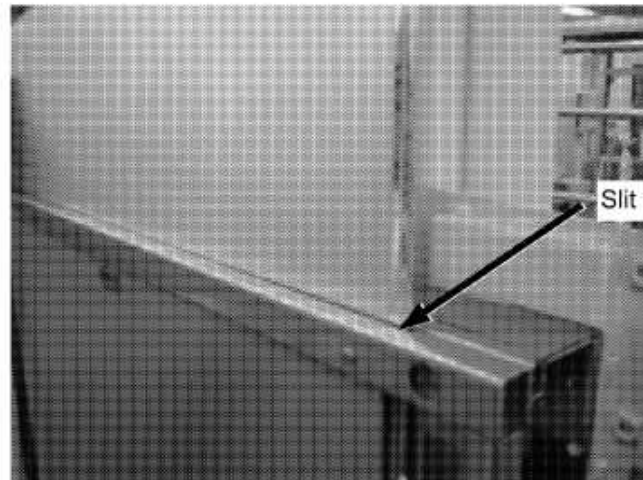


Fig.7. 1

2. Fix the photo timer with the fixtures.

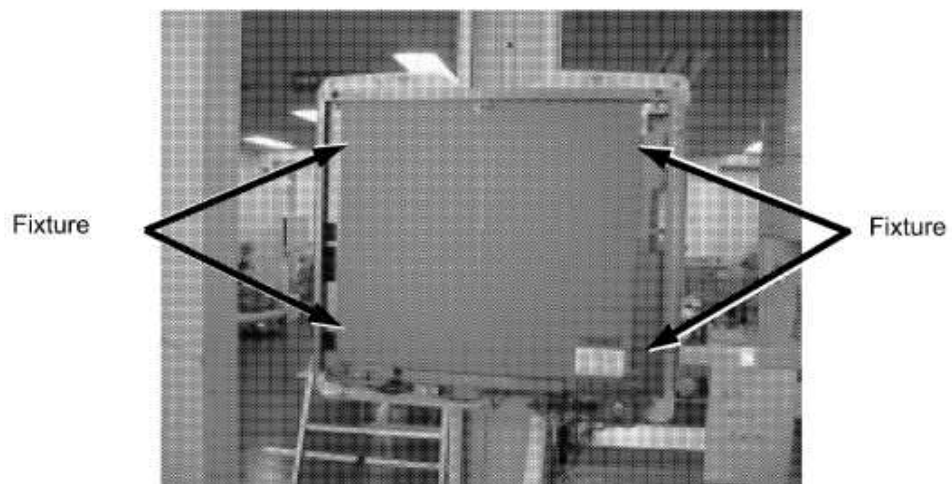
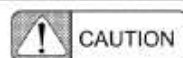
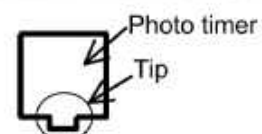


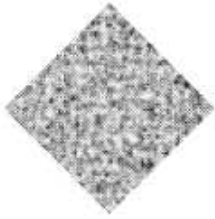
Fig.7. 2

3. Connect the photo timer cable with the photo timer.



Don't hold the tip of the photo timer.  
Don't stress the photo timer as installation.





# Chapter 8

## Inspection

### *Chapter Contents*

#### 8.1 Inspection

## 8.1 Inspection

Inspection is required on the following items.

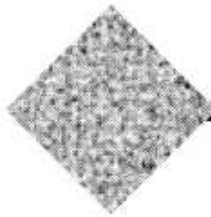
Item		Inspection Point
Loose fixing bolt		<ul style="list-style-type: none"> <li>The column and bearing fixing bolts.</li> </ul>
Check by removing the side cover	Wire rope	<ul style="list-style-type: none"> <li>Is the wire rope broken?</li> <li>Are there any flaws or frays on the wire rope?</li> <li>Is the wire rope corroded?</li> <li>Are there any flaws on the wire pulley?</li> <li>Are there any flaws or fouling on the rail or roller surfaces?</li> <li>Operation check of the broken wire detection switch and the broken wire warning display on the control panel.</li> <li>Be sure to apply specified oil on the wire rope during inspection.</li> </ul>
	Shafts and fastening parts such as pulleys and sprockets (pins, screws, etc.)	<ul style="list-style-type: none"> <li>Check for abrasion, deformation, breakage, looseness or missing.</li> </ul>
	Bearings, etc.	<ul style="list-style-type: none"> <li>Check for abrasion, corrosion or oil shortage.</li> </ul>
	Power supply	<ul style="list-style-type: none"> <li>Are input/output voltages adequate?</li> </ul>
	Electromagnetic	<ul style="list-style-type: none"> <li>Check for flaws or fouling on the surface.</li> </ul>
	Weight	<ul style="list-style-type: none"> <li>Apply grease on the weight guide.</li> </ul>
	Lock pin for tilting	<ul style="list-style-type: none"> <li>Is there any play when the pin is inserted?</li> <li>Does the pin insert smoothly?</li> </ul>
	Gas spring for tilting	<ul style="list-style-type: none"> <li>Is tilting unbalanced?</li> </ul>
	Wire for tilt operation	<ul style="list-style-type: none"> <li>Has the force required for operation become too great?</li> </ul>



### NOTE

Be careful not to splash the wire rope oil on the brake pulleys.

# Chapter 9

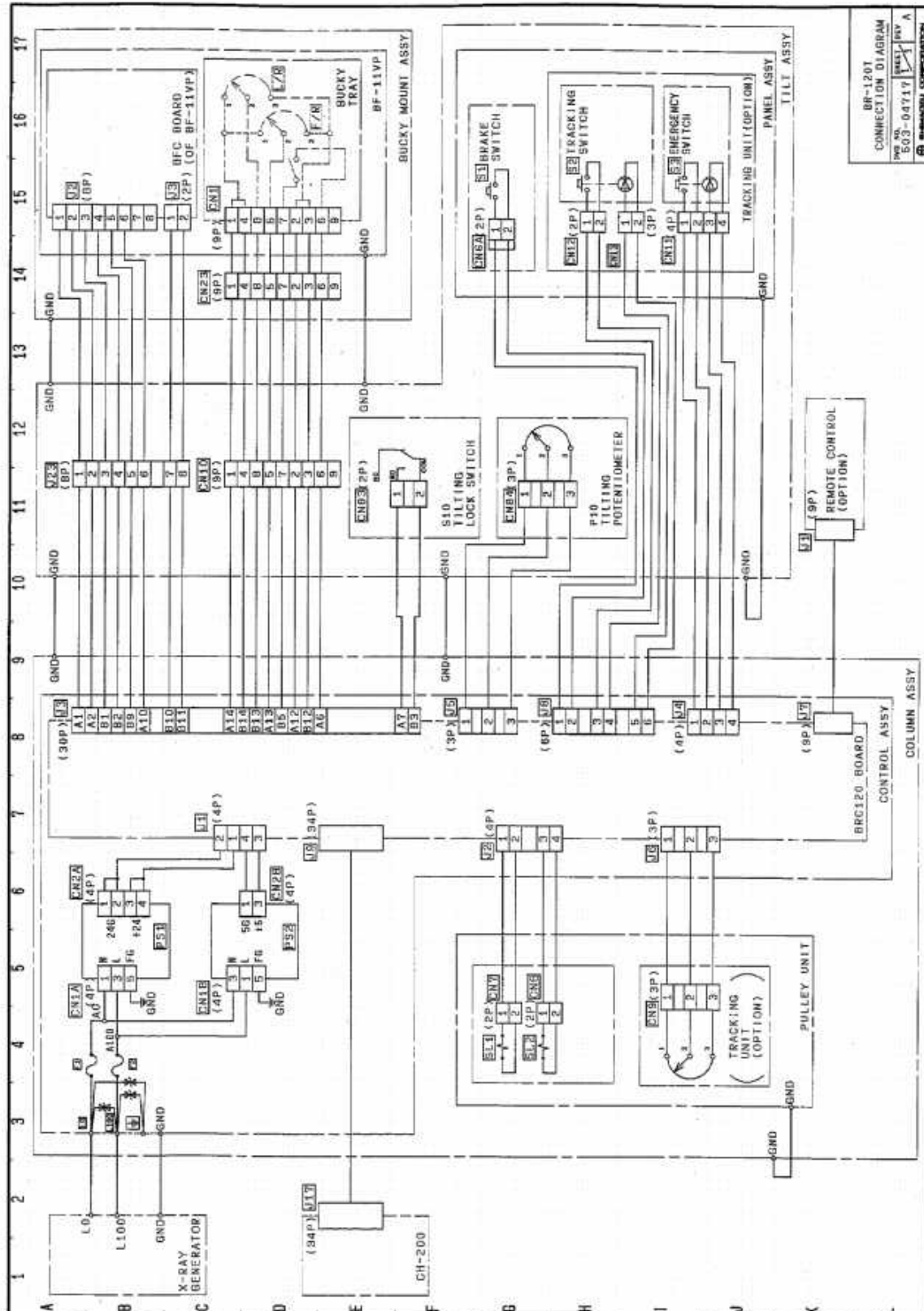


## Technical Information

### *Chapter Contents*

- 9.1 Connection Diagram
- 9.2 PCB Information

# 9.1 Connection Diagram



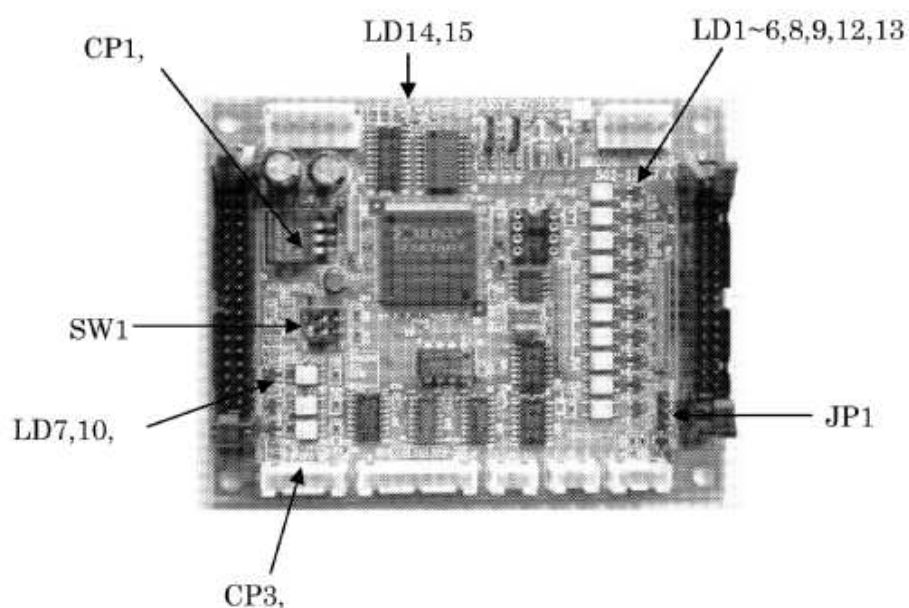


## 9.2 PCB Information

### 9.2.1 BRC120

BRC120 ASSY : (502-23586)

BOARD : (502-23587)



#### Function

BRV120 controls BRC-120.

#### Check Pins / LEDs

##### Check Pin

Ref. No.	Name	Description	Type	Range
CP1	+5V	+5V power supply	Power	+5V
CP2	+3.3V	+3.3V power supply	Power	+3.3V
CP3	+24V	+24V power supply	Power	+24V
CP4	GND	GND	GND	0V

##### LED

Ref. No.	Color	Description	IN/OUT	Destination	Status
LD1	赤	Bucky lock release SW	IN	BF-11VP	Lights at input
LD2	赤	BF B1	IN	BFC	Lights at input
LD3	赤	Cassette size detect 7 (spare)	IN	BF-11VP	Lights at input
LD4	赤	Cassette size detect 6 (spare)	IN	BF-11VP	Lights at input

## 9.2 PCB Information

Ref. No.	Color	Description	IN/OUT	Destination	Status
LD5	赤	Cassette size detect 5 (spare)	IN	BF-11VP	Lights at input
LD6	赤	Cassette size detect 4 (spare)	IN	BF-11VP	Lights at input
LD7	赤	BR B2	IN	CHC-200	Lights at input
LD8	赤	Cassette size detect 3 (spare)	IN	BF-11VP	Lights at input
LD9	赤	Cassette detect	IN	BF-11VP	入力時点灯
LD10	赤	Taracking SW	IN	Tracking unit	Lights at input
LD11	赤	EXP-TRIG	IN	CHC-200	Lights at input
LD12	赤	Cassette size detect 1 (spare)	IN	BF-11VP	Lights at input
LD13	赤	STOP SW input	IN	Tracking unit	Lights at input
LD14	緑	DC+5V input condition		DC power	Lights in normal condition
LD15	緑	DC+24V input condition		DC power	Lights in normal condition

### SW and Dip SW

#### SW1

No.	Name	Description	Factory Setting	
			OFF	ON
1		Not used	■	
2		Not used	■	



Return the setting of the Dip Switches to the state when shipping from factory.

Operation dangerous, as the error detection is not done, is occasionally done, when making the switches to other setting.

### Jumper

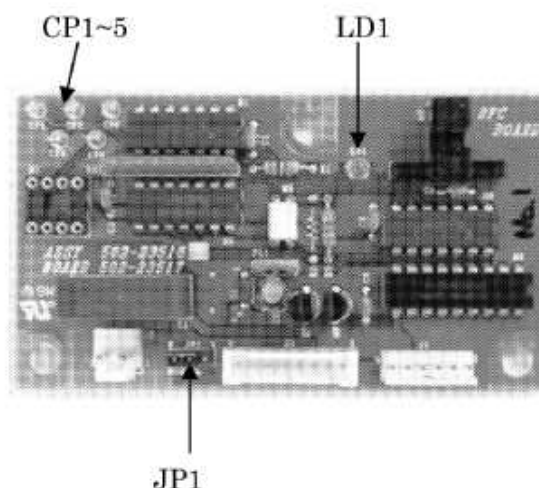
#### JP1

No	Name	Description	Factory Setting
1 - 2	—	BR only	Short-circuit 1-2 ■ ■ □
2 - 3	—	Combined with BK	

## 9.2.2 BFC

BFC ASSY : (502-23516)

BOARD : (502-23517)



## ■ Function

BFC controls the grid movement of BUCKY.

## ■ Check Pins / LEDs

## Check Pin

Ref. No.	Name	Description	Type	Range
CP1		Photosensor signal	Logic	0~+5V
CP2		B2 signal	Logic	0~+5V
CP3		B1 signal with delay	Logic	0~+5V
CP4		Signal for motor chopping	Logic	0~+5V
CP5		GND	GND	0V

## LED

Ref. No.	Color	Description	IN/OUT	Destination	Status
LD1	Green	DC+5V input condition	IN	DC power	Lights in normal condition

## ■ Jumper / Connector

## JP1

No	Name	Description	Factory Setting
1 - 2	Set delay of B1 signal	Not delay	Short-circuit 1-2 ■ ■ □
2 - 3		With 60msec delay	

No Text



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