

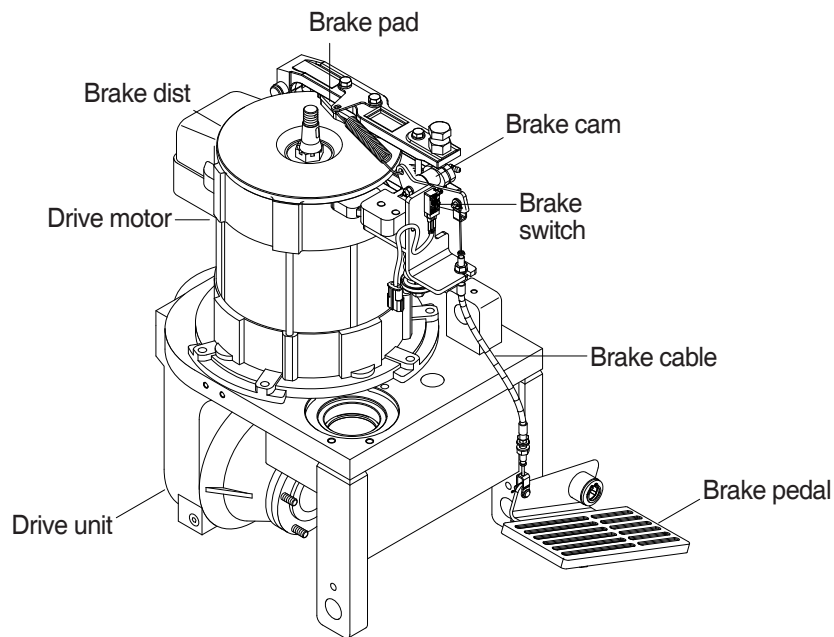
## CHAPTER 4 BRAKES

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# SECTION 4 BRAKE SYSTEM

## GROUP 1 STRUCTURE AND FUNCTIONS

### 1. INTRODUCTION



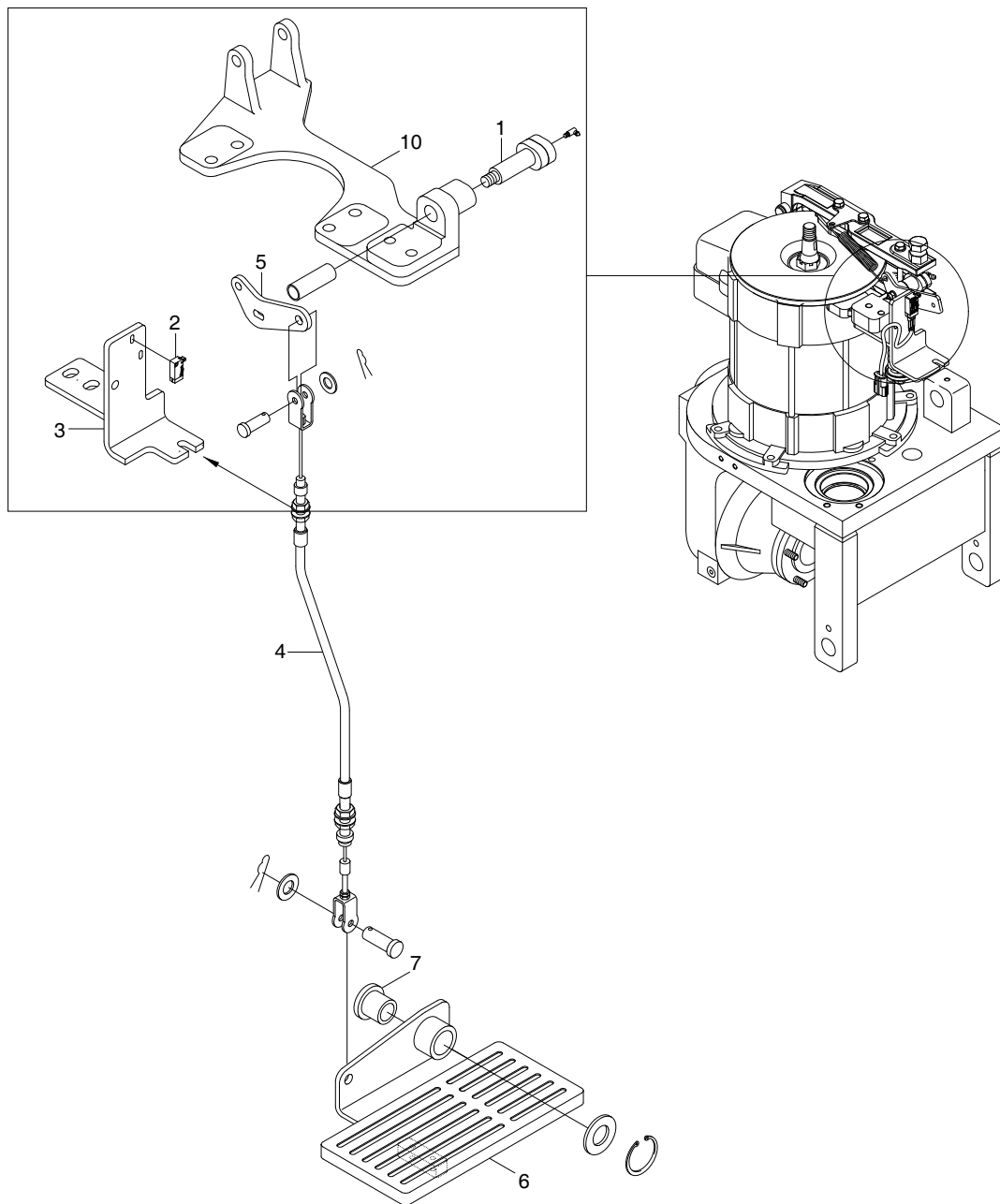
15BRXBS01

### 2. SPECIFICATION

| Item                                |                     | 15/18BR-X               | 20/25BR-X |
|-------------------------------------|---------------------|-------------------------|-----------|
| Type                                |                     | Deadman Type Disk Brake |           |
| Brake pad                           | Material            | Non-asbestos            |           |
|                                     | Thickness (mm)      | 9                       | ←         |
|                                     | Min. Thickness (mm) | 4.5                     | ←         |
| Disk (Outside Diameter × Thickness) |                     | Ø225 × 10               | ←         |
| Pedal Height (mm)                   |                     | 64                      | ←         |
| Spring Length (mm)                  |                     | 118                     | 110       |
| Braking Distance                    | Non-load            | Max. 5.0 m              |           |
|                                     | Load                | Max. 2.5 m              |           |

### 3. BRAKE PEDAL AND CABLE

#### 1) STRUCTURE



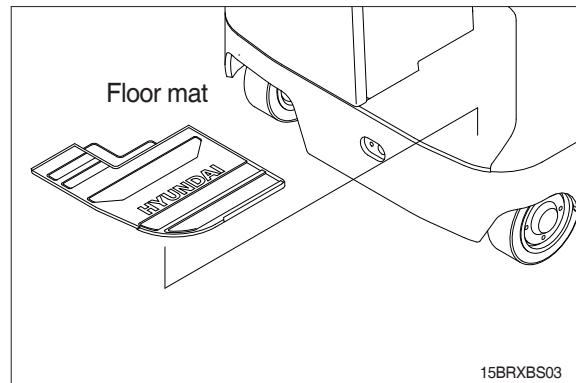
15BRXBS02

- |   |                |    |                 |
|---|----------------|----|-----------------|
| 1 | Brake cam      | 5  | Brake cam lever |
| 2 | Brake switch   | 6  | Brake pedal     |
| 3 | Switch bracket | 7  | Pin             |
| 4 | Brake cable    | 10 | Brake support   |

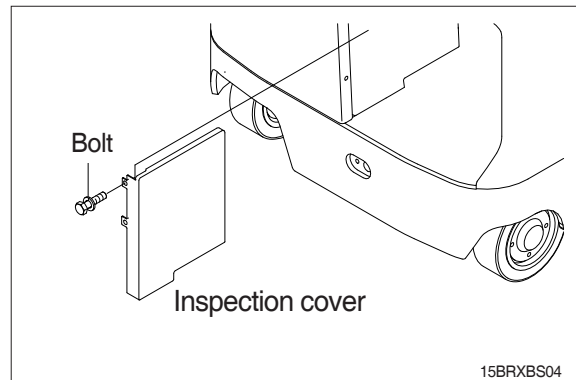
## 2) DISASSEMBLING AND ASSEMBLING

### (1) Disassembling

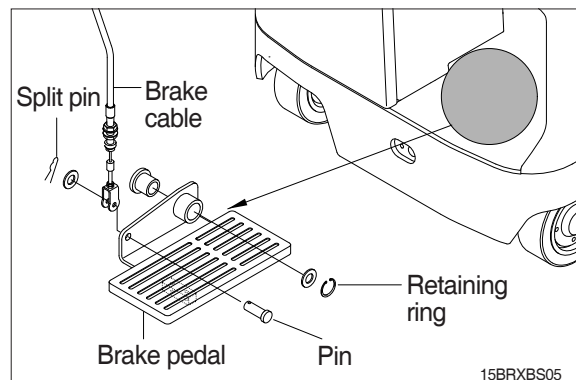
- ① Disassemble the floor mat and floor plate.



- ② Unfasten the bolt to disassemble the inspection cover



- ③ Split pin and clevis pin are disassembled to separate the brake cable.
- ④ Disassemble the retaining ring to remove the brake pedal.



### (2) Assembling

Assemble the parts in reverse order of disassembling.

## 1) STRUCTURE

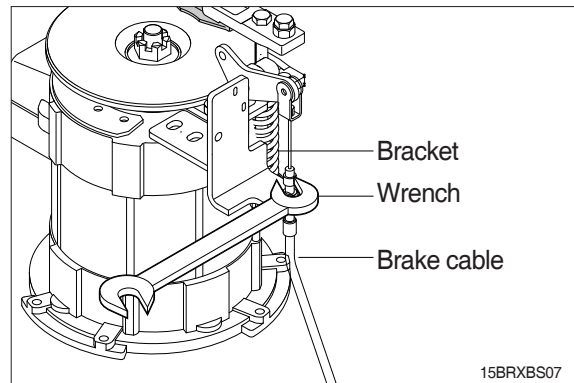


- 4-4

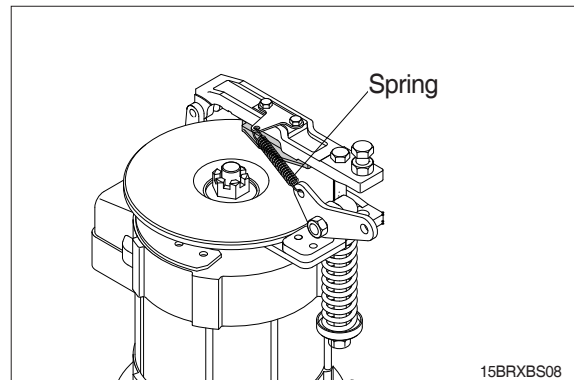
## 2) DISASSEMBLING AND ASSEMBLING

### (1) Disassembling

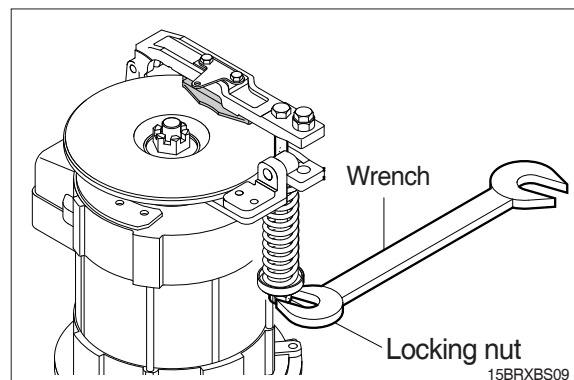
- ① Disassemble the bracket cable from the bracket.



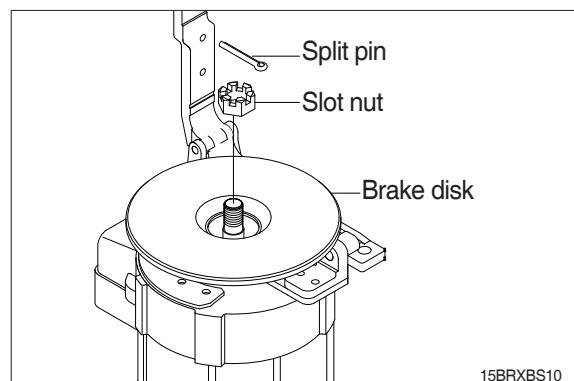
- ② Disassemble the spring from the cam lever.



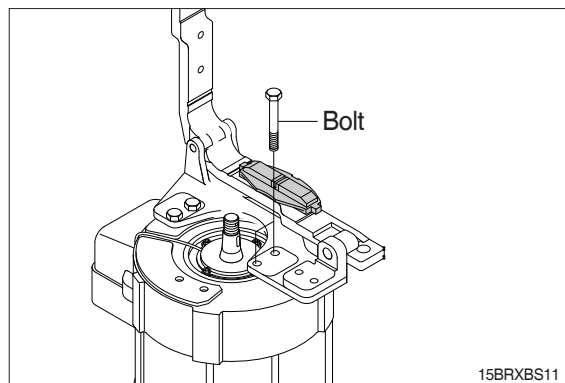
- ③ Disassemble the locking nut on the brake spring to remove the rod bolt and spring.



- ④ Remove the split pin from the motor shaft to take out the slot nut.
- ⑤ Remove the brake disk from the motor shaft.



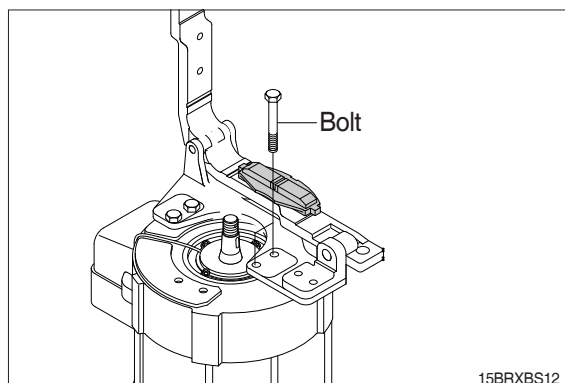
- ⑥ Bolt is removed from the brake support.



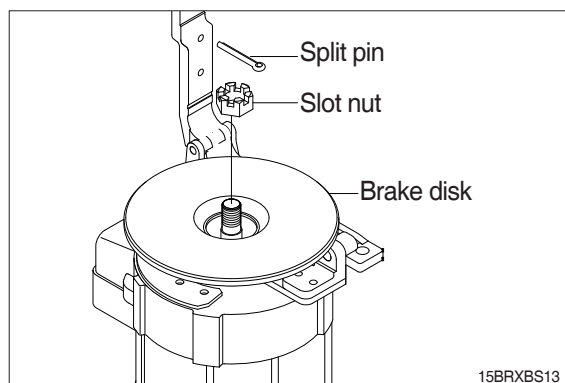
## (2) Assembling

Assembling is done in reverser order of disassembling, and the following cautions shall be taken.

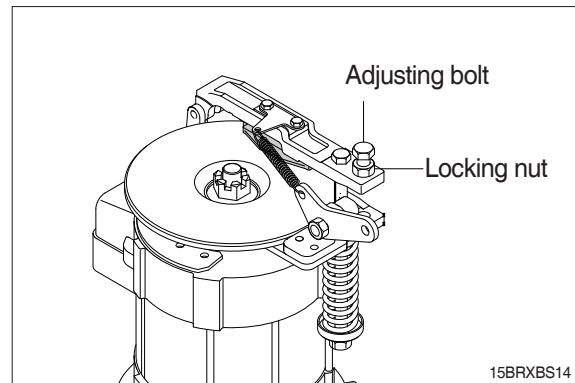
- ① Brake support mounting bolt.  
· Fastening torque (M10×1.5)  
7.5~8.5 kgf·m



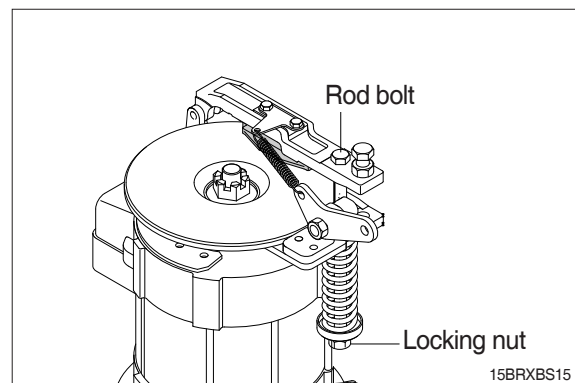
- ② Brake disk mounting slot nut.  
· Fastening torque  
14~16 kgf·m



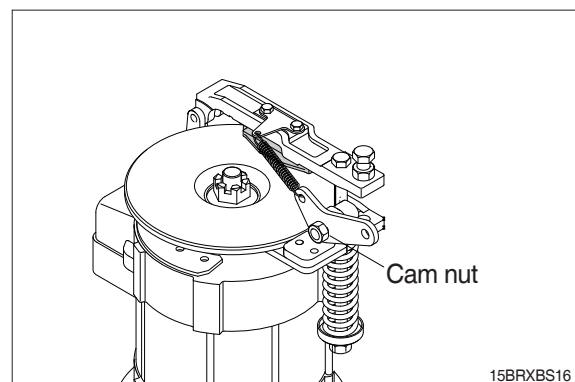
- ③ Adjusting bolt locking nut.  
· Fastening torque (M16 × 1.5)  
1.14~1.26 kgf·m



- ④ Rod bolt locking nut.  
· Fastening torque (M8 × 1.25)  
1.8~2.7 kgf·m



- ⑤ Cam nut.  
· Fastening torque (M6 × 1.0)  
0.3~0.8 kgf·m



## 5. CHECKING

### 1) BRAKE PAD INSPECTION

- (1) Is it in normal contact?
- (2) Are there any damaged parts?
- (3) Is only one part in contact?
- (4) Service Limit : 4.5 mm

### 2) BRAKE DISK INSPECTION

- (1) Are there any damaged or worn out parts?  
If so, it is flattened to fix the disk.

### 3) SPRING INSPECTION

- (1) Is the spring weakened or damaged?



## GROUP 2 OPERATION INSPECTION, FAILURE DIAGNOSIS AND

### 1. OPERATION INSPECTION

#### 1) BRAKE PEDAL OPERATION

- (1) The lift truck shall stop immediately after releasing the pedal.
- (2) Pedal height is checked whether it is 64~69 mm .

#### 2) BRAKE SYSTEM OPERATION

- (1) Operation of the brak cam is checked.
- (2) Lining is checked on the point with most severe abrasion to check whether the lining thickness is minimum of 4.0 mm (0.16 in).

#### 3) BRAKING FORCE

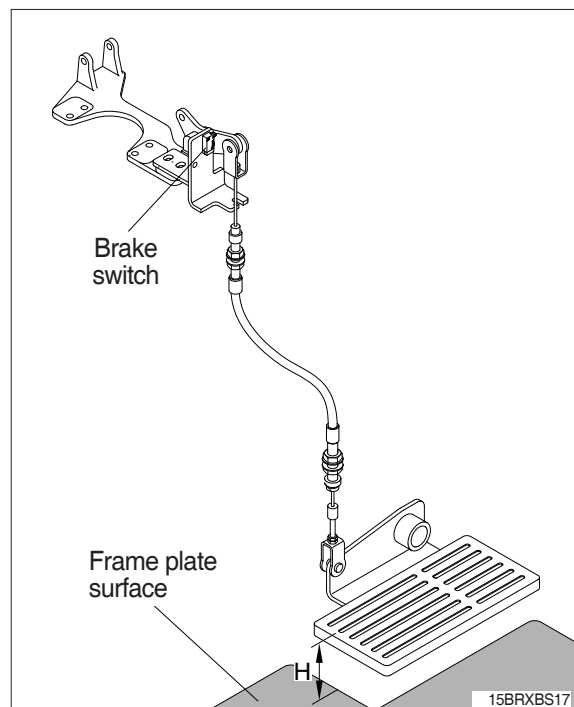
- (1) Dry and flat paved surface is selected to drive the lift truck in the maximum speed when the signal is given to stop immediately, and the distance from the point given with the signal to the point that the lift truck stopped is measured (Non-load).
  - Stopping distance : Within 5 m
- (2) Make sure that there is no inclination of steering wheel or brake, or no noise during sudden braking.

#### 4) INSPECTION AND ADJUSTMENT OF THE SERVICE BRAKE SYSTEM

- (1) Check the pedal height (H).

| Model           | Height (mm) |
|-----------------|-------------|
| 15/18/20/25BR-X | 93±5        |

- (2) Check the normal operation of the brake switch while the pedal is pressed.



- (3) Check the gap between the brake cam and adjusting bolt (B).

· B : 0.1~0.5 mm

Set the adjusting bolt when the gap is too big or small.

· Adjusting nut fastening torque

1.14~1.26 kgf·m

Check the operation of the cam and bolt to apply grease on the cam and bolt.

- (4) Check the abrasion or damage on the brake pad.

The pad must also be replaced when one side of the brake pad is in contact, or when the pad thickness is 4.5 mm.

· Brake pad bolt tightening torque

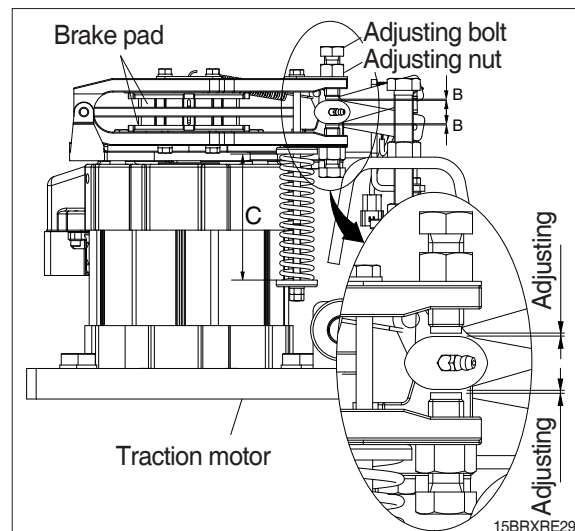
1.8~2.7 kgf·m

- (5) Check the height (C) of the brake spring, and adjust the spring.

| Model     | Height (mm)   |
|-----------|---------------|
| 15/18BR-X | $118 \pm 1.0$ |
| 20/25BR-X | $110 \pm 1.0$ |

· Spring nut fastening torque

1.8~2.7 kgf·m



## 2. FAILURE DIAGNOSIS AND TROUBLESHOOTING

| Nature of Trouble                                | Cause                                                                                     | Remedy                             |
|--------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------|
| Brake pad is not released                        | · Pedal stroke is insufficient                                                            | · Check and adjust                 |
|                                                  | · The distance between the cam and adjusting bolt is insufficient                         | · Check and adjust                 |
| High resistance when stepping on the brake pedal | · Brake spring is fastened excessively                                                    | · Check and adjust                 |
|                                                  | · Cable adjustment fault                                                                  | · Check and adjust                 |
| Poor braking effect                              | · Brake spring damage or decrease in performance                                          | · Repair or replace                |
|                                                  | · Pedal stroke is insufficient                                                            | · Check and adjust                 |
|                                                  | · Brake pad abrasion                                                                      | · Check and replace when defective |
|                                                  | · Inappropriate return due to the rust on the part                                        | · Repair or replace                |
|                                                  | · The distance between the cam and adjusting bolt is insufficient                         | · Check and adjust                 |
| Metal noise (creaking sound)                     | · Brake pad is becomes shiny, contaminated, worn out, or dust is accumulated on the brake | · Check and replace when defective |
|                                                  | · Brake disk is bending, occurred with crack or accumulated with dust                     | · Check and replace when defective |
| Driving not possible                             | · Micro-switch damaged, inappropriate position                                            | · Repair or replace                |
| Brake is not operating                           | · Deviating from the brake spring height and adjustment range                             | · Check and adjust                 |
|                                                  | · Brake spring damaged                                                                    | · Replacing                        |
|                                                  | · The distance between the cam and adjusting bolt is outside the adjustment range.        | · Check and adjust                 |
|                                                  | · Disk is removed or worn out                                                             | · Repair or replace                |
|                                                  | · Brake switch is not operating                                                           | · Check and replace when defective |
|                                                  | · Pedal stroke is insufficient                                                            | · Check and adjust                 |
|                                                  | · Cable adjustment fault                                                                  | · Check and adjust                 |
|                                                  | · Motor damage                                                                            | · Repair or replace                |
|                                                  | · Motor shaft is damaged                                                                  | · Repair or replace                |