

# **INSTRUCTION MANUAL**

# **SQUARE BALANCER**

**SBS3W**

**SBS3N**

**SBS5W**

**SBS5N**



## **WARNING**

- Read this manual before use.
- Keep this manual available.

**ENDO KOGYO CO., LTD.**

## **Copyright and liabilities**

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Please note this in advance.

November 2019 ENDO KOGYO CO., LTD.

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## SAFETY ALERT SYMBOL AND ALERT SIGNS SIGNS

Please read this manual carefully and follow its instructions.

The SAFETY ALERT SYMBOL , WARNING, CAUTION, and NOTE carry special messages.



This SAFETY ALERT SYMBOL is used to call your attention to items or operations that could be dangerous to you or other persons using this equipment.

Please read these messages and follow these instructions carefully.



**WARNING** :WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.




**CAUTION** :CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury, damage or destruction of the equipment and others.

**NOTE** : NOTE indicates a special instruction in operation or maintenance.

# Scope of warranty and liabilities for the equipment

1. We will repair or replace the product free of charge if a failure due to manufacturing defects occurs under proper usage during the warranty period.  
For details, contact us or your dealer.
2. The warranty will be void in the following cases:
  - 1) Change in ownership.
  - 2) Repair, adjustment, or modification performed by a party other than the manufacturer, agents, or dealers.
3. Warranty period is 1 year from your purchase.  
However, wire rope, wire guide and spring are not covered by warranty.
4. Repairs applicable to any of the following shall be charged even during the warranty period:
  - 1) Failure/damage caused by incorrect use.
  - 2) Failure/damage caused by use of non-genuine parts.
  - 3) Failure/damage caused by fire, earthquake, natural disaster, or other unexpected incident.
  - 4) Incident caused by fall, shock, negligence, or by inadequate storage.
  - 5) Failure/damage caused by use of parts or other equipment that are not included in this product.
  - 6) Replacement of consumables.
  - 7) Usage in violation of dangers or cautions stipulated in this Instruction Manual or the warning labels.
  - 8) Failure/damage caused by any reason that is not attributable to the manufacturer.
5. Warranty exclusions such as opportunity loss.  
Either during or after the warranty period, opportunity loss, damage to anything other than our product(s), or other duties incurred on you/your customer as a result of the failure of our product(s) are outside the scope of the warranty.

# CONTENTS

1.  Safety instructions-----	1
2. Specifications-----	1
3. Drawing-----	1
4. Spring tension attachment-----	2
5. Safety instructions on use-----	3
6. Inspections-----	4
7. Parts list-----	5

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## 1. Safety Instructions

### WARNING

- Incorrect use of the spring balancer could cause personal injury.
- Observe instructions in the manual and use the balancer correctly.
- Install the balancer correctly.
- Never use overhead or at the place where may cause an accident in case of suspended load falling.
- Never place hands, feet, etc., under suspended loads or movable range of rope.
- Never alter the balancer.
- Periodically inspect the balancer.

## 2. Specifications

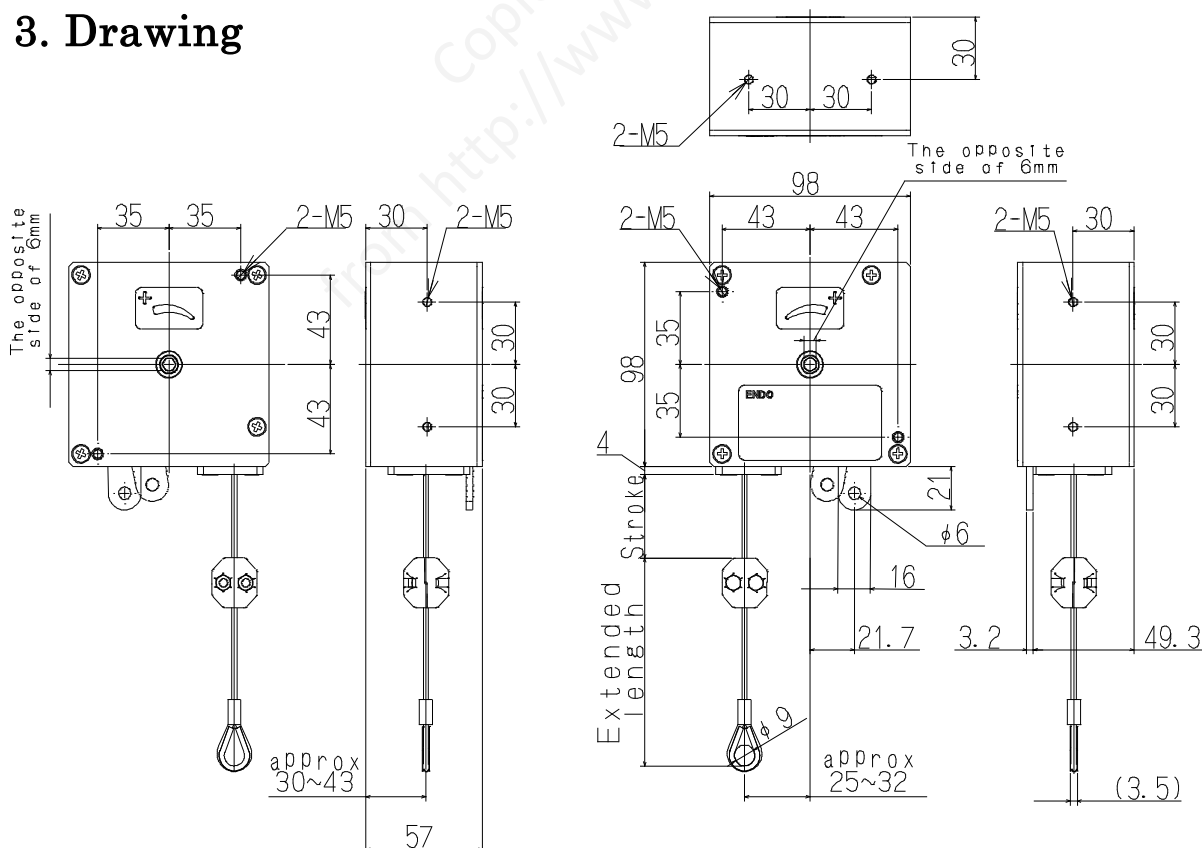
Model	Capacity range(kg)	Stroke(m)	Extended length(m)	Type of rope	Mass(kg)
SBS3W	1.5~3.0	0.5	0.1	Wire rope With thimble	Approx.0.8
SBS5W	3.0~5.0				
SBS3N	1.5~3.0	0.5	3.0	Nylon rope Without thimble	Approx0.8
SBS5N	3.0~5.0				

■ Working conditions

Application area : Indoor and normal atmospheric conditions

Temperature range : -10℃ to +50℃

## 3. Drawing



※On the tip of nylon rope is in a rough-hewn state.

## 4. Spring tension attachment



### CAUTION

- Never move releasing lever with inserting hexagon socket screw key (adjustment tool).

- 1) Confirm that the weight of suspended load is within the capacity range of the balancer when you suspend tool/device or when you pull wire rope sideways.
- 2) Increase the spring tension by turning the spindle to the + side with a hexagon socket screw key. (see Fig.1)

CAUTION: turn it to the opposite direction, the spring will break.

Please confirm indication of main body, the direction of two sides is not same.

Decrease the spring tension by moving releasing lever in right and left.

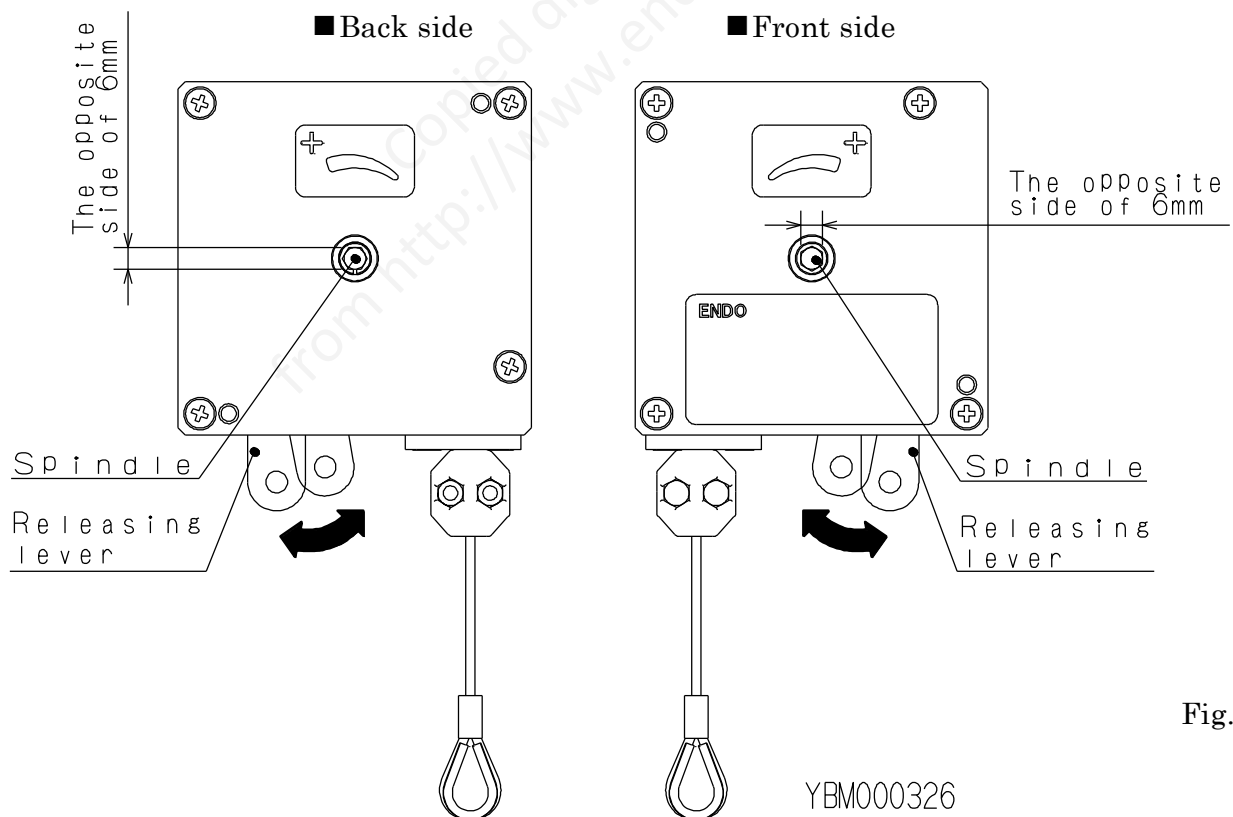
NOTE : Factory setting of spring tension

- SBS3W/SBS3N...Approx.2kg

- SBS5W/SBS5N...Approx.4kg

Refer to graph and adjust tension that load is balanced. (see Fig.2)

("0" indicates the condition that wire rope is fully retracted into drum and all spring tension is released.)



Model : SBS3W/SBS3N

Model : SBS5W/SBS5N

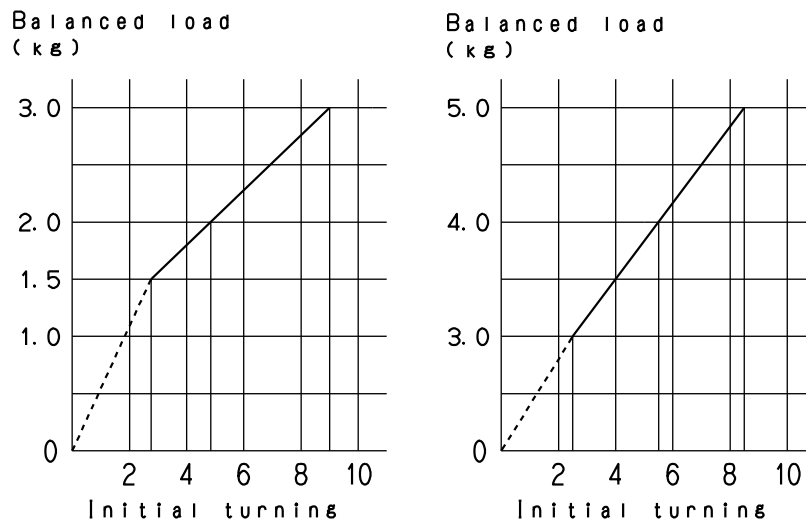


Fig.2

CAUTION: Initial tension indicates the number of revolutions of the spindle when wire rope is fully retracted into drum.

Use in the range of dotted line will lose balance.

## 5. Safety instructions on use

### ⚠ WARNING

- Never use overhead or at the place might lead to injury accident when load dropped.
- Never place hands, feet, etc., under suspended loads or movable range of each rope.
- Never alter the balancer.

### ⚠ CAUTION

- Always use within maximum spring tension.
- Always adjust the spring tension before use.
- Do not extend the rope past the maximum cable travel.
- Do not pull the rope at an angle.
- Fix main body so that rope does not touch to wire guide. It will cause recovery problem resulting in uneven winding.
- Fix main body with M5 bolt.
- Adjust the length of bolt inside main body to 8-10mm from aspect with plate, 6-10mm from side of case.(see Fig.3)
- Fix the bolt with 2.4N · m torque.

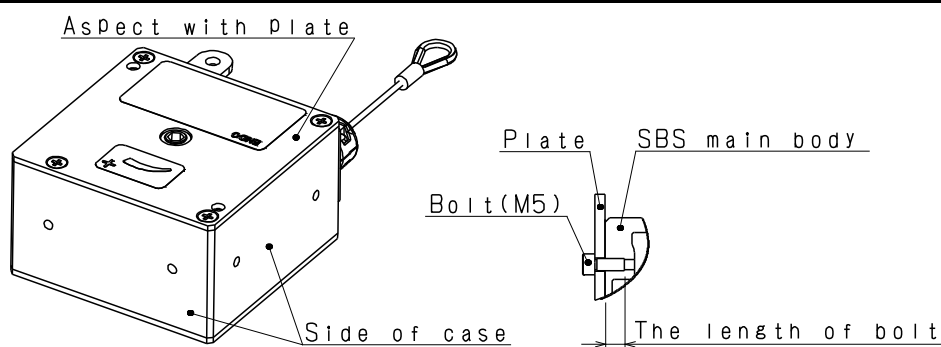


Fig.3



## 6. Inspections



### WARNING

- Periodically inspect the balancer, and replace any worn or damaged parts.



### CAUTION

- Always use genuine parts for replacement.

#### ■ Inspect the balancer at least once a month.

Correct and repair any problems which are detected.

Make the inspection interval shorter when operating frequently or under hostile environments.

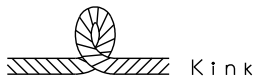
#### ■ Items to be inspected

##### ● Wire rope type

- Is there any broken wire, deformation or kink in wire?



Broken wire



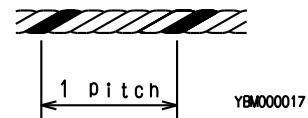
Kink



Deformation

YBM000017

Allowable number of broken wires  
In 1 pitch 13.



- Is there any part of wire rope worn beyond service limit?

Standard dimension: 2.5mm  
Limit dimension : 2.3mm



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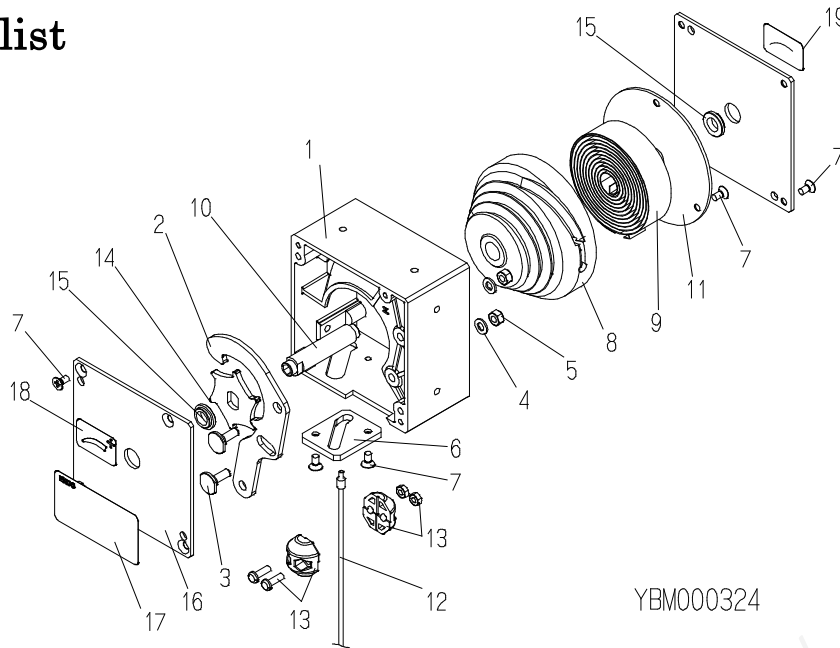
- Is there any remarkable wear of thimble?

##### ● Nylon rope type

- Is there any broken fiber or damage (kink, fuzzing)?
- Is there any loosen on the rope attaching device?
- Is there any melting by heat?

- Is there any loosen screws?

## 7. Parts list



YBM000324

Ref. No.	Part No.	Description	Quantity			
			SBS3W	SBS3N	SBS5W	SBS5N
1	P2B100186	Case	1	1	1	1
2	P2B301373	Ratchet	1	1	1	1
3	P2B402223	Screw	2	2	2	2
4	KA30220500	Plain washer	2	2	2	2
5	KA25520502	U-nut	2	2	2	2
6	P2B402337	Plate	1	1	1	1
7	KA10220408	Machine screw	13	13	13	13
8	P2B200259	Drum	1	1	1	1
9	P2B301374	Spring	1	1	—	—
9	P2B301375	Spring	—	—	1	1
10	P2B301376	Shaft	1	1	1	1
11	P2B402219	Plate	1	1	1	1
—	LBP001848	Wire rope assembly	1	—	1	—
—	LBP001850	Nylon rope assembly	—	1	—	1
12	—	— Wire rope	1	—	1	—
12	—	— Nylon rope	—	1	—	1
13	LBP000924	— Stopper set	1	—	1	—
14	P2B301377	Ratchet wheel	1	1	1	1
15	P2B402224	Bushing	2	2	2	2
16	P2B301372	Plate	2	2	2	2
17	P2B301378	Name plate	1	—	—	—
17	P2B301379	Name plate	—	1	—	—
17	P2B301381	Name plate	—	—	1	—
17	P2B301382	Name plate	—	—	—	1
18	P2B301347	Label	1	1	1	1
19	P2B301348	Label	1	1	1	1

NOTE) When placing and order, clearly specify the product model, part number and description.

Parts without a part number cannot be supplied individually.

Please purchase a set of complete unit.

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