

INSTRUCTION MANUAL

SQUARE BALANCER

BS3W / BS3N

BS5W / BS5N

BS7W / BS7N

 WARNING

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

ENDO KOGYO CO., LTD.

Copyright and liabilities

The copyright for this manual belongs to Endo Kogyo Co., Ltd.

The manual is provided for the limited purpose of supporting the safe and proper use of the product. It cannot be used for other purposes.

The customer may not use or make copies of this manual, in whole or in part, outside of this purpose without receiving prior consent from Endo Kogyo Co., Ltd.

The customer is also prohibited from translating or modifying the content of the manual, in whole or in part.

The content described in the manual is subject to change without advance notice.

Please note this in advance.

ENDO KOGYO CO., LTD.

Copied digital data
from <https://www.endo-kogyo.co.jp/>

SAFETY ALERT SYMBOL AND ALERT 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 mechanical loss.
Either during or after the warranty period, mechanical 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	2
6. Inspections	4
7. Rope replacement	5
8. Spring replacement	5
9. Spring disposal	6
10. Parts list	7

Copied digital data
from <https://www.endo-kogyo.co.jp/>

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 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

- BS3W/BS3N...Approx.2.3kg
- BS5W/BS5N...Approx.4.0kg
- BS7W/BS7N...Approx.6.0kg

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.)

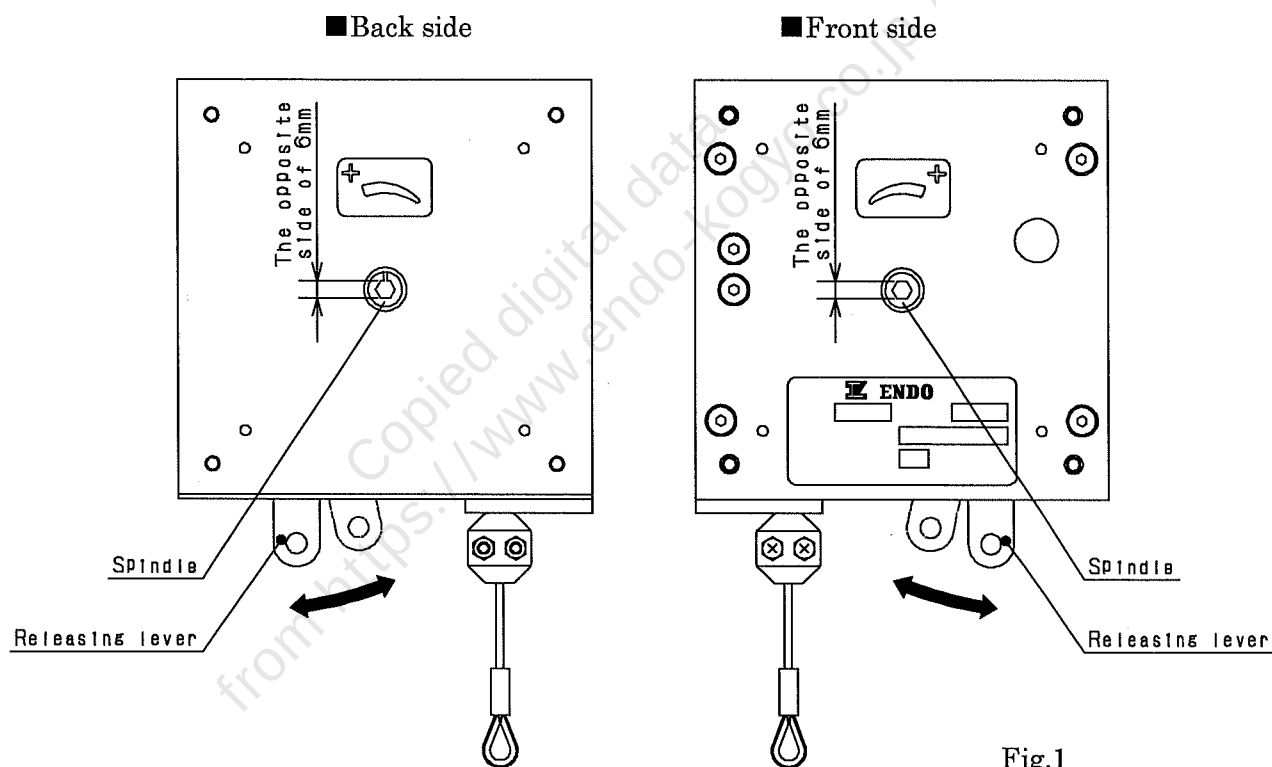
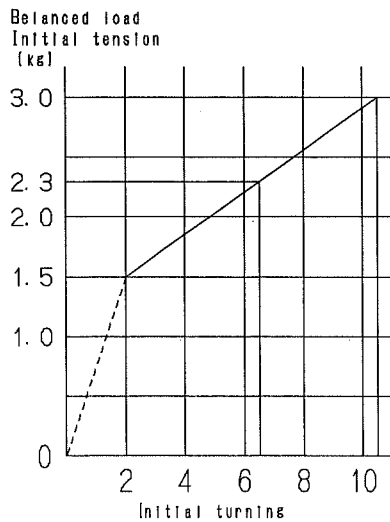
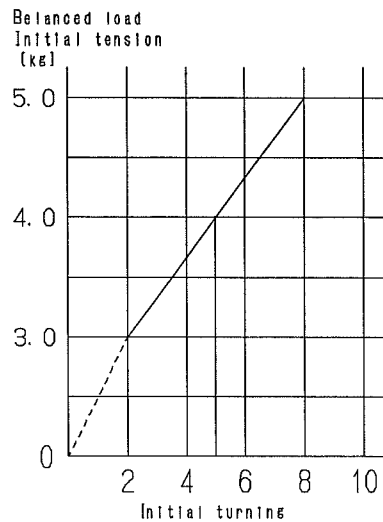


Fig.1

Model BS3W/BS3N



Model BS5W/BS5N



Model BS7W/BS7N

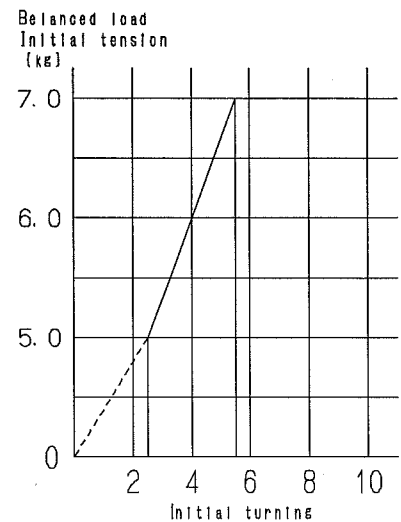


Fig.2

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

Use in the range of dotted line will lose balance.

E.g. When setting BS5W in 4kgf

Turning the spindle 5 times from the condition that rope is fully retracted into drum and spring tension is released.

※The graph shows a reference level.

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 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 plate. It will cause recovery problem resulting in uneven winding.
- Nylon rope type: attach surely so that wire does not come loose with the tension of the balancer.
- Fix the main body in two M5 bolts or more.

The bolt length

6-10mm: cover and case (front and back side)

8-10mm: side of case (see fig.3)

Clamping torque: 3N·m

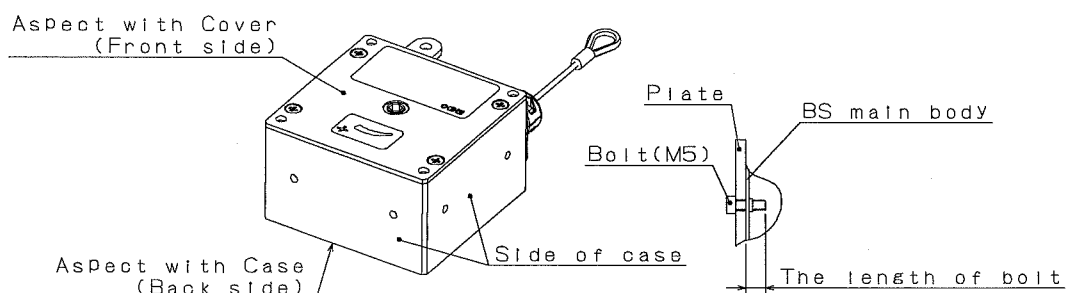


Fig.3

6. Inspections



WARNING

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



CAUTION

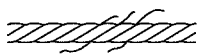
Always use genuine parts for replacement.

- 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.

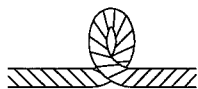
■ Items to be inspected

● Wire rope type

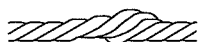
- Is there any broken wire, deformation or kink in wire?



Broken wire



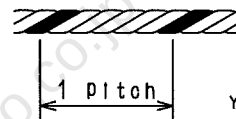
Kink



Deformation

YBM000017

Allowable number of broken
wires in 1 pitch 13.



YBM000017

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

Standard dimension: 2.5mm
Limit dimension : 2.3mm



YBM000017

- 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. Rope replacement

- 1) Get rid of the spring tension by moving releasing lever in right and left.
See Chapter 4 "Spring tension attachment".



WARNING

Do not take the body apart before tensility of the spring disappears.
It take it apart, the rope will snap back and could cause personal injury.

- 2) Remove Hex. Head screw (6) then remove cover (1).
- 3) Remove old rope from the drum.
- 4) Insert the lock tube of the new rope from the A side of the plate (1).
Then install lock tube to the hook ditch of the drum (13). (see Fig.4)
- 5) Reassemble in reverse order.
- 6) Turn spindle (12) and wind the rope.
Be careful that a rope does not come off from the ditch of the drum.

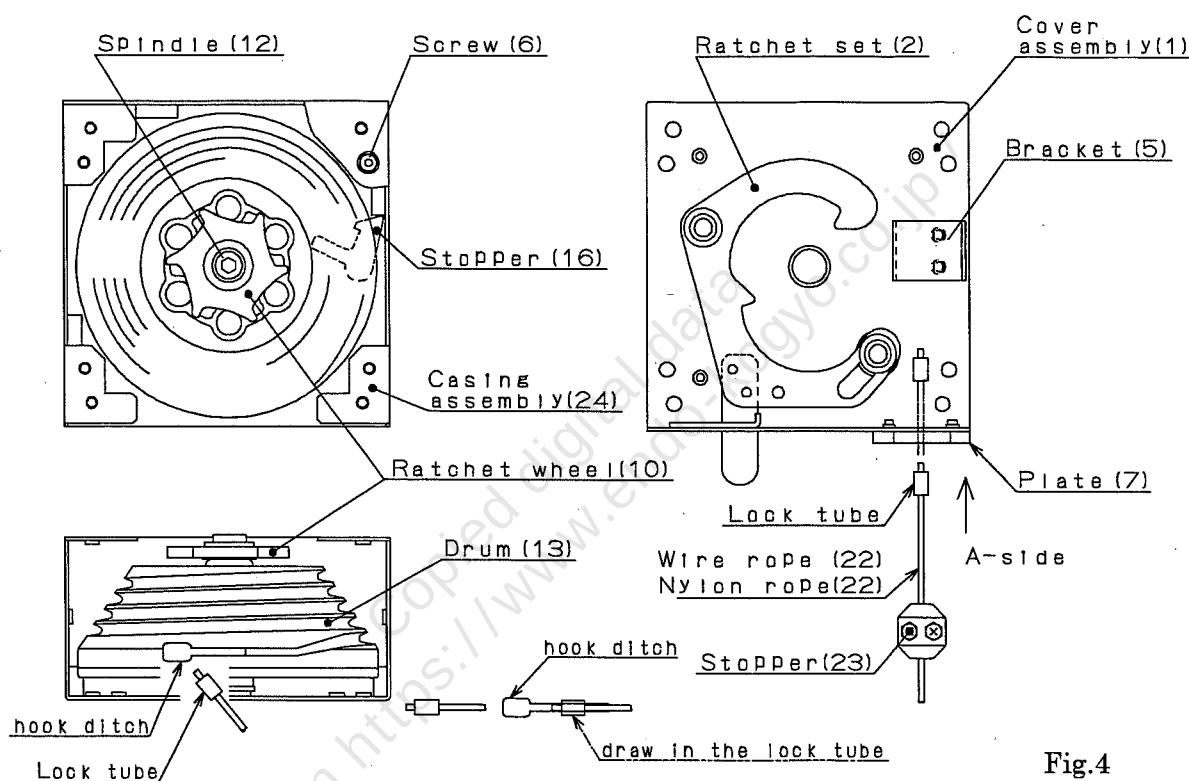


Fig.4

8. Spring replacement

Never remove the spring from the drum unless the replacement is required.



WARNING

- The spring is extremely dangerous. Be careful when handling the spring.
- Never pull the center of the spring when removing the spring from the drum.
If pulled, the spring will expand explosively and cause personal injury.

Referring to the disassembly drawing (on page 7),

- 1) Remove the balancer when in the state that rope rolled up.
- 2) Check the spring tension by pulling rope.
If the tension is left, of the tension by moving ratchet set lever (2) in right and left.
Tension should not be left. See clause 4 " spring tension attachment" ,
- 3) Remove Hex. Head screw (6) then remove cover (1).

- 4) Remove the set of drum (15) and plate (15) from casing assembly (24).
- 5) Remove rope (22) from drum.
- 6) Loosen Screws (21) and remove Plate (15) from Drum (13).
- 7) Check spring (14) fracture point and rivet condition.
 If fracture caused in the inside, remove spring.
 If fracture caused near outer periphery or rivet of spring is broken. do not remove spring.
 Reassemble the plate (15) to drum (13), then contact to the store. (see Fig.5)
- 8) Remove spring (14) from drum (13).

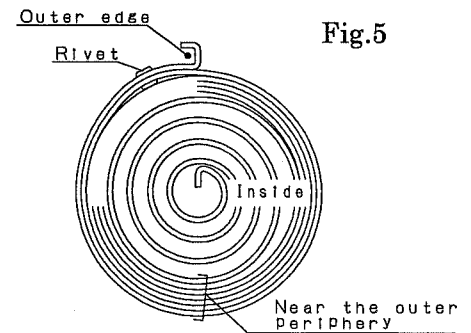


Fig.5



WARNING

Never remove Spring (14) from Drum (13) when Spring is broken near the outer periphery or the rivet of Spring is broken (see Fig.5).
 If removed, Spring will expand explosively and cause personal injury.

- 9) Reassemble in reverse order.
 - After drum (13) assembling, install spring (14).
 - After assembling new Spring (14), lubricate Spring with grease.
 - When installing Plate (15) on Drum (13), place Stopper (16) in the outer edge Spring (14). (see Fig.6)
 Check Stopper can move smoothly after installing Plate.
NOTE : Turn spindle (13) and wind rope (22).
 Be careful that a rope does not come off from the ditch of the drum.

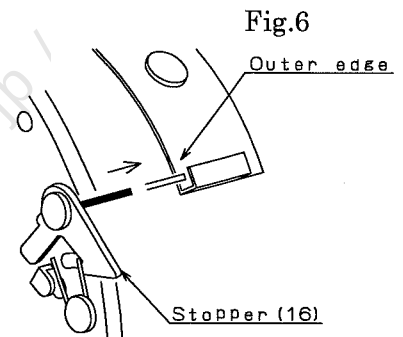


Fig.6

9. Spring disposal

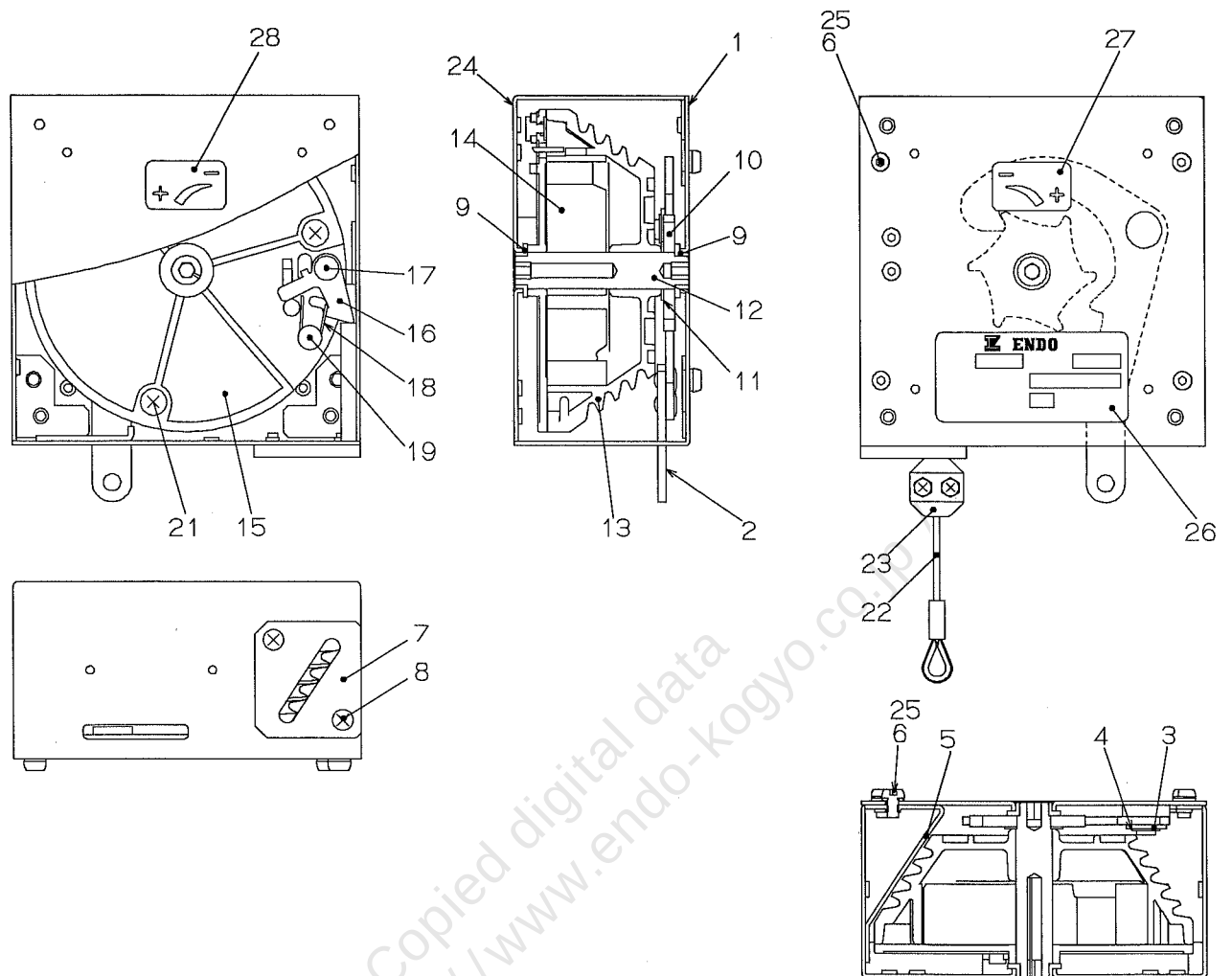


WARNING

The spring is dangerous due to remaining tension even if it is broken.

Give a warning to disposal companies that the spring will expand explosively and cause danger if the spring is treated roughly or the center of the spring is pulled.

10. PARTS LIST



Ref.No.	Part No.	Description	Quantity					
			BS3W	BS3N	BS5W	BS5N	BS7W	BS7N
1	LBP001776	Cover assembly	1	1	1	1	1	1
2	LBP001777	Ratchet set	1	1	1	1	1	1
3	KA30220800	Plain washer	2	2	2	2	2	2
4	KA40310060	Retaining ring	2	2	2	2	2	2
5	P2B301333	Bracket	1	1	1	1	1	1
6	P2B402102	Hex. socket button bolt	6	6	6	6	6	6
7	P2B402092	Plate	1	1	1	1	1	1
8	KA10220410	Screw	2	2	2	2	2	2
9	P2B402093	Bushing	2	2	2	2	2	2
10	P2B301336	Ratchet wheel	1	1	1	1	1	1
11	P2B402034	Washer	1	1	1	1	1	1
12	P2B301337	Spindle	1	1	1	1	1	1
13	P2B100163	Drum	1	1	1	1	1	1
14	P2B300089	Spring	1	1	—	—	—	—
14	P2B300507	Spring	—	—	1	1	—	—
14	P2B300508	Spring	—	—	—	—	1	1
—	LBP000750	Plate assembly	1	1	1	1	1	1
15	—	—Plate	1	1	1	1	1	1
16	—	—Stopper	1	1	1	1	1	1
17	—	—Rivet	1	1	1	1	1	1

Ref.No.	Part No.	Description	Quantity					
			BS3W	BS3N	BS5W	BS5N	BS7W	BS7N
1 8	—	—Spring	1	1	1	1	1	1
1 9	—	—Rivet	1	1	1	1	1	1
2 1	KA10220512	Screw	3	3	3	3	3	3
—	LBP001668	Wire rope assembly	1	—	1	—	1	—
—	LBP001868	Nylon rope assembly	—	1	—	1	—	1
2 2	—	—Wire rope	1	—	1	—	1	—
2 2	—	—Nylon rope	—	1	—	1	—	1
2 3	LBP000924	—Stopper	1	1	1	1	1	1
2 4	LBP001778	Casing assembly	1	1	1	1	1	1
2 5	KA31120500	Spring washer	6	6	6	6	6	6
2 6	P2B301342	Name plate	1	—	—	—	—	—
2 6	P2B301418	Name plate	—	1	—	—	—	—
2 6	P2B301343	Name plate	—	—	1	—	—	—
2 6	P2B301419	Name plate	—	—	—	1	—	—
2 6	P2B301344	Name plate	—	—	—	—	1	—
2 6	P2B301420	Name plate	—	—	—	—	—	1
2 7	P2B301347	Label	1	1	1	1	1	1
2 8	P2B301348	Label	1	1	1	1	1	1

NOTE) When placing an order, clearly specify the product model, part number and description.
Parts without a part number cannot be supplied individually.
Please purchase a set or complete unit.

ENDO 遠藤工業株式会社

〒959-1261 新潟県燕市秋葉町3丁目14番7号
TEL:0256-62-5133 FAX:0256-62-5772
<https://www.endo-kogyo.co.jp>

事業所情報につきましては、
二次元バーコードよりご確認ください。



ENDO ENDO KOGYO CO., LTD.

3-14-7, Akiba cho, Tsubame, Niigata 959-1261, Japan
<https://www.endo-kogyo.co.jp/english> TEL: 81-256-62-5133

- 本書ならびに本商品の仕様は改善のために予告なしに変更することがあります。
- 本書の内容の無断転載を禁止します。
- This manual and the specifications of this product are subject to change for improvement without advance notice.
- It is strictly prohibited to reprint or copy any information contained in this manual.