

# POWERMASTER

## INSTRUCTION MANUAL

### SPRING BALANCER

SEW – 1 / 2 / 3 / 5




SLR – 3 / 5 / 9

 **WARNING**

**READ THIS INSTRUCTION MANUAL BEFORE USE**

## SAFETY ALERT SYMBOL AND ALERT SIGNS

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

 <b>This SAFETY ALERT SYMBOL</b> 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.
 <b>WARNING:</b> WARNING indicates a hazardous situation which, if not avoided could result in death or serious injury.
 <b>CAUTION:</b> CAUTION indicates a hazardous situation which, if not avoided could result in minor or moderate injury, damage or destruction of the equipment and others.
<b>NOTE:</b> NOTE indicates a special instruction in operation or maintenance.

### 1. Specification

Model	Capacity range (kg)	Travel (m)	Mass (kg)
SEW-1	0.25 - 1.5	1.5	10.5
SEW-2	1.0 - 2.0	1.5	11.2
SEW-3	1.0 - 3.0	1.5	12.6
SEW-5	2.5 - 5.0	1.5	13.2

Model	Capacity range (kg)	Travel (m)	Mass (kg)
SLR-3	1.0 - 3.0	2.5	16.5
SLR-5	2.5 - 5.0	2.5	20.5
SLR-9	5.0 - 9.0	2.5	21.0

### 2. Balancer installation

#### **WARNING**

- Install the Balancer correctly. Incorrect installation could cause personal injury or damage to the balancer or other equipment.
- Always attach a secondary support cable or chain. It is required to protect personnel in case of failure of the top hook or the fittings.

- a. Prepare a fitting strong enough to support the balancer with maximum capacity load.

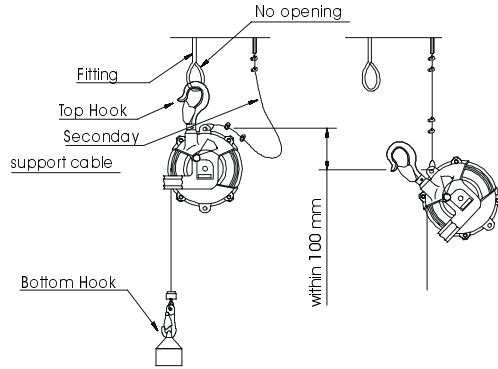
**NOTE:** The fitting must have no opening as shown in fig.1 to prevent the balancer from disengaging when it swings.

- b. Attach the balancer to the fitting and check the balancer does not hit surrounding objects. Make the mounting height different for each balancer to avoid collision.
- c. Check the top hook can swivel freely.

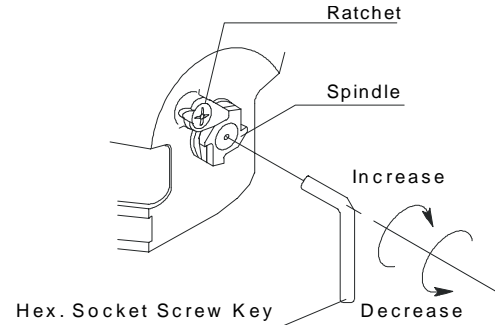
- d. Prepare a secondary support cable or chain that can support at least 10 times the maximum capacity of the balancer.
- e. As shown in fig. 1, attach an end of the secondary support chain to the balancer body, and attach the other end to a separate fitting, which does not support the balancer.

**NOTE:** Leave some slack in the secondary support cable or chain to allow the balancer to rotate freely. The slack must be a suitable length so that the balancer will stop within 100 mm when falling in case of failure of the top hook or the fitting.

**Fig. 1**



**Fig. 2**



### 3. Tool/device attachment, replacement and spring tension adjustment. (Fig. 1 & 2)

#### WARNING

It is very dangerous to attempt to replace any parts before making sure the pulley is locked by the stopper to prevent the spring snatching back. Lock the spindle using the ratchet at every 1/4 turn.

- a. Before attaching, check the mass (weight) of the complete tool/device, including all accessories is within the capacity range of the balancer.
- b. Adjust the spring tension by turning the spindle & using ratchet at every 1/4 turn. Turn clockwise for increasing the spring tension & counter clockwise for reducing.
- c. Attach the weight (tool/device) & release it slowly. Adjust tensions for smooth operation.
- d. For replacement of any tool/device lift the weight to wind in the cable until pulley movement is stopped.
- e. Replace the tool and readjust the spring tension to new weight.

**NOTE:** Over tensioning could cause damage to the balancer spring.

#### 4. Use



##### **WARNING**

- *Never remove tool/device from the bottom hook while the wire rope is extended.*
- *Never stand under the suspended tool/device.*



##### **CAUTION**

- *Always use within the capacity range of the balancer and adjust the spring tension before use.*
- *Do not pull the wire rope at an angle.*

#### 4. Disassembly (Fig. A)



##### **WARNING**

\* *A spiral spring is installed inside the balancer body. If the balancer is disassembled without care, the internal spring could pop out and cause personal injury.*

- a. Release all spring tension before disassembly by turning spindle (7) counter-clockwise.
- b. Remove wire rope (14) by removing grub screw (20) from drum pulley (11).
- c. Remove ratchet (8) and pull out the spindle (7) from the body (1).
- d. Disassemble by removing securing screws (28) & spring washers (29).
- e. Open the screws (13) on pulley/case cover & carefully remove the cover (26).
- f. If required, carefully remove the spring (21) from the spring case (12)/pulley (11).

#### 5. Assembly (Fig. A)



##### **WARNING**

\* *Handle the spiral spring carefully. Never remove the wire securing spare spiral spring.*

- a. Place the spiral spring (21) over the pulley (11)/casing (12), without removing the securing wire and press the spring using flat bar. Carefully remove the securing ring/wire.
- b. Fit pulley cover (26) using screws (13).
- c. Place pulley (11) inside body (1). Place body cover (27) over body case and secure using screws (28) & spring washers (29).
- d. Insert top end of the wire assembly (14) into the pulley (11) & lock using grub screw (20).
- e. Fit centre shaft (7) by sliding the shaft from body end.
- f. Fit ratchet (8) using screw (9).
- g. Hang the balancer using top hook (2) & increase spring tension by turning centre shaft (7), using an Allen key.
- h. Check for smooth operation for complete range of the balancer.

## 6. Inspection

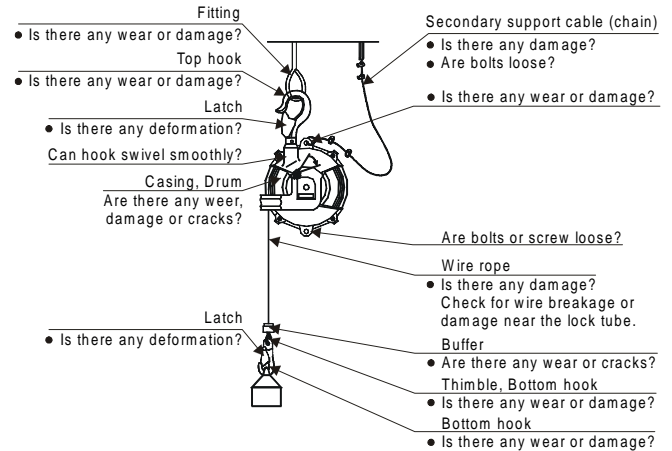
Periodicity: -

Inspect balancer once a month. Make inspection period shorter when operating frequently or in hostile environment.

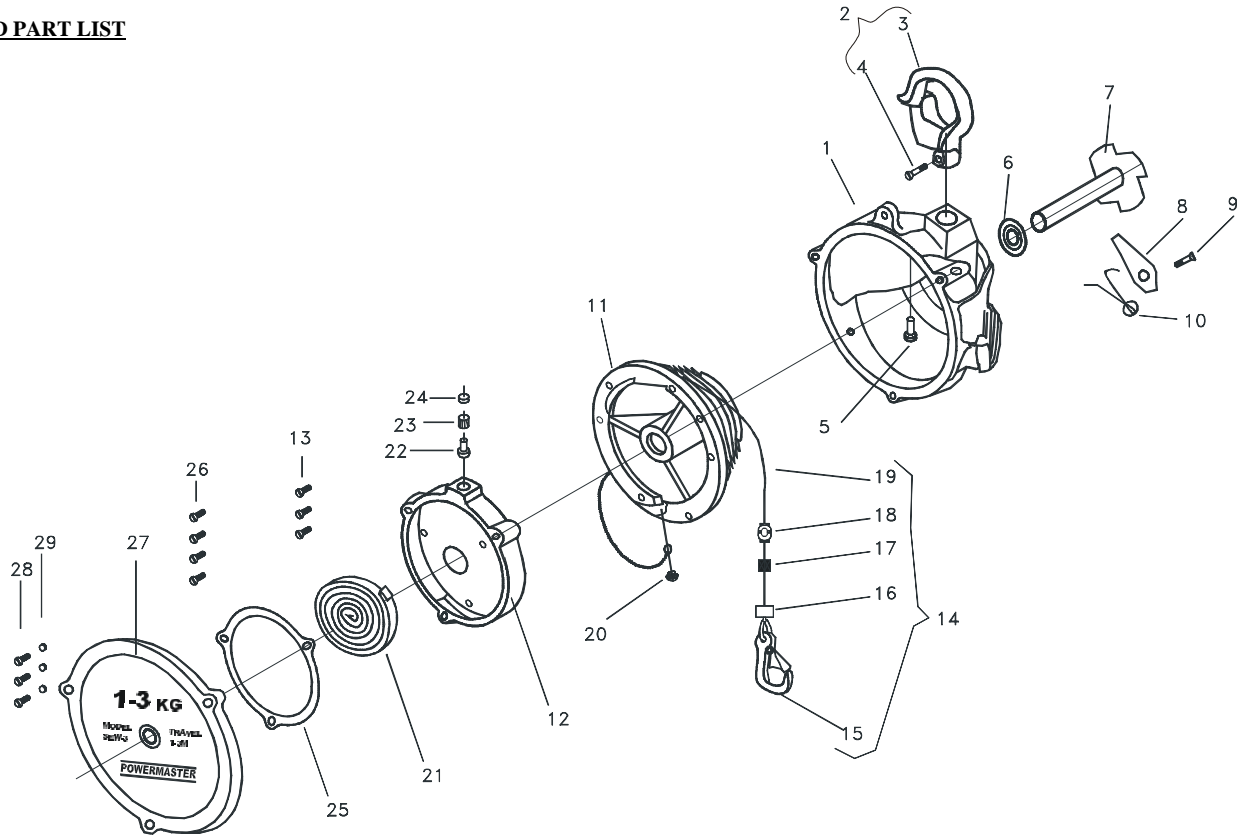
Procedure: -

- Visually inspect the assembly for general material state.
- Check both hooks for wear, damage and deformation.
- Check for 360° movement of top hook.
- Check wire rope assembly for kinks, broken wires per pitch, wear & damages to thimble & other sub parts.
- Check rubber shocker for material state.
- Check pulley for wear, damage and distortion.
- Functionally check smooth operation of balancer for complete range.

**Fig. 3**



**ILLUSTRATED PART LIST**



**Fig. A SPRING BALANCERS (SEW - 1/2/3/5 & SLR - 3/5/9)  
AMENDMENT No. : 10/2001**

**PART LIST FOR SEW - 1/2/3/5 & SLR - 3/5/9 SPRING BALANCERS**

Item No.	Description	Qty	Part No.						
			SEW 1	SEW 2	SEW 3	SEW 5	SLR 3	SLR 5	SLR 9
1	Body Casing	1	101	101	301	301	301L	301L	301L
2	Hook Assy.	1	102	102	302	302	902	902	902
3	*Hook	1	102-1	102-1	302-1	302-1	902-1	902-1	902-1
4	*Rivet	1	102-2	102-2	302-2	302-2	902-2	902-2	902-2
5	*Shaft, Hook	1	102-3	102-3	302-3	302-3	902-3	902-3	902-3
6	Washer, Shaft	1	124	124	324	324	324L	324L	324L
7	Centre Shaft	1	109	109	309	309	309L	309L	309L
8	Ratchet	1	125	125	325	325	325L	325L	325L
9	Screw	1	127	127	327	327	327L	327L	327L
10	Spring, Ratchet	1	126	126	326	326	326L	326L	326L
11	Drum Pulley	1	104	104	304	304	304L	304L	304L
12	Casing	1	-	-	-	-	304L-1	304L-1	304L-1
13	Screw, Casing	3	-	-	-	-	304L-2	304L-2	304L-2
14	Wire Rope Assy.	1	105	105	305	305	305L	305L	305L
15	*Bottom Hook	1	105-1	105-1	305-1	305-1	305L-1	305L-1	305L-1
16	*Al Boss	1	105-2	105-2	305-2	305-2	305L-2	305L-2	305L-2
17	* Bumper	1	105-3	105-3	305-3	305-3	305L-3	305L-3	305L-3
18	*Limit Stop	1	105-4	105-4	305-4	305-4	305L-4	305L-4	305L-4
19	*Wire Rope	1	105-5	105-5	305-5	305-5	305L-5	305L-5	305L-5
20	Grub Screw	1	108	108	108	108	108	108	108
21	Spiral Spring	1	106	206	306	506	306L	506L	906L

Item No.	Description	Qty	Part No.						
			SEW 1	SEW 2	SEW 3	SEW 5	SLR 3	SLR 5	SLR 9
22	Stopper Pin	1	-	-	-	-	3015L	3015L	3015L
23	Spring, Stopper	1	-	-	-	-	3016L	3016L	3016L
24	Nut, Stopper	1	-	-	-	-	3017L	3017L	3017L
25	Cover	1	118	118	318	318	318L	318L	318L
26	Screw, Cover	3/4	118-1	118-1	318-1	318-1	318L-1	318L-1	318L-1
27	Cover, Body	1	102	102	302	302	302L	302L	302L
28	Screw	3	102-1	102-1	302-1	302-1	302L-1	302L-1	302L-1
29	Washer Spring	3	102-2	102-2	302-2	302-2	302L-2	302L-2	302L-2

\*\_ Sub Assembly  
Amendment :-10/2001

## **POWERMASTER INDUSTRIAL EQUIPMENTS PVT. LTD.**

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