POWERMASTER

INSTRUCTION MANUAL

SPRING BALANCER

SEW – 9 / 15 / 22 / 30 / 40 / 50 / 60 / 70 / 85 / 100 / 120

SLR – 15 / 22 / 30 / 40 / 50 / 60 / 70

WARNING

READ THIS INSTRUCTION MANUAL BEFORE USE

SAFETY ALERT SYMBOL AND ALERT SIGNS

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 of the equipment and others.*
NOTE: NOTE *indicates a special instruction in operation or maintenance.*

1. **Specification**

Model	Capacity range (kg)	Travel (m)	Mass (kg)
SEW-9	4.5 - 9	1.3	4.2
SEW-15	9 - 15	1.3	4.5
SEW-22	15 - 22	1.5	9.0
SEW-30	22 - 30	1.5	9.0
SEW-40	30 - 40	1.5	10.5
SEW-50	40 - 50	1.5	11.2
SEW-60	50 - 60	1.5	12.6
SEW-70	60 - 70	1.5	13.2
SEW-85	70 - 85	1.5	22.0
SEW-100	85 - 100	1.5	24.5
SEW-120	100 - 120	1.5	26.5

Model	Capacity range (kg)	Travel (m)	Mass (kg)
SLR-15	9 - 15	2.5	9.5
SLR-22	15 - 22	2.5	10.5
SLR-30	22 - 30	2.5	15.5
SLR-40	30 - 40	2.5	16.5
SLR-50	40 - 50	2.5	20.5
SLR-60	50 - 60	2.5	21.0
SLR-70	60 - 70	2.5	21.5

2. Balancer installation (Fig. 1)

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. 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.

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

b. Check the top hook can swivel freely.
c. Secure the balancer with a secondary support cable or chain strong enough to sport maximum capacity of the balancer.
d. As shown in fig. 1, attach an end of the secondary support chain to the balancer body, and 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

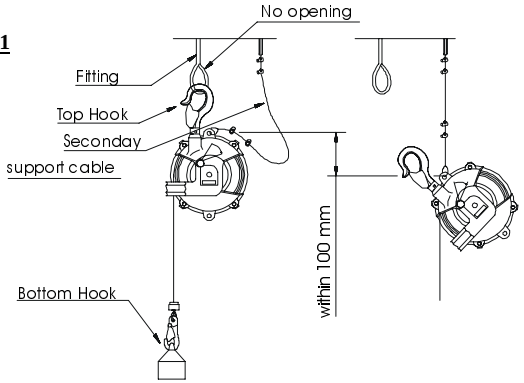
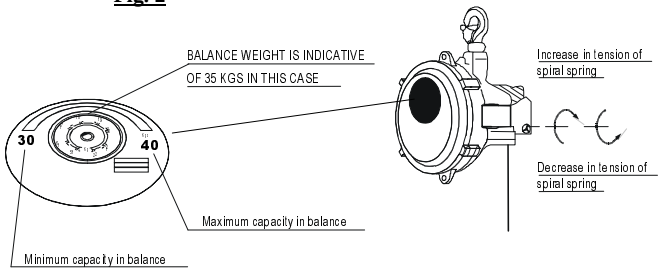


Fig. 2



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

a. Before attaching, check the 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 worm drive. Turn clockwise for increasing the spring tension and turn counterclockwise for reducing. You can judge the approximate loading through the plastic gauge. (fig. 2)
c. Attach the weight (tool/device) & release it slowly. Adjust tensions for smooth operation.
d. For replacement of any tool/device pull all length of cable (wire rope) out of pulley, and set stopper at a groove as illustrated on fig.3 and lock the pulley.

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.*

e. Replace the tool and readjust the spring tension to new weight.
NOTE: *Over tensioning could cause damage to the balancer body or the wire rope.*

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*
- .

5. Disassembly (Fig. B & Fig.3)

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. Pull out the complete wire rope assy. (34) from pulley (33), and set the stopper pin (10) at the groove as illustrated on fig.3 to lock the pulley.
b. Remove the load from the hook (42) and release the tension by turning worm (50) counterclockwise.
c. Remove the cable (34) from drum by removing grub screw (47).
d. Remove worm (50) and washer thrust (51) from balancer.
e. Remove the dial (31) by opening screw (32)
f. Open the screw (29) and remove the body cover (48). Take out spring assembly (18), drum pulley (33) and center shaft (14) from body casing.
g. Press out the center shaft (14) from pulley (33).
h. Open screw (22) and carefully remove spring casing (18) from pulley (33).

6. Assembly (Fig. B & Fig.3)

a. Fit spring assembly (18) to pulley (41) by screw (22) and spring washer (23).
b. Fit center shaft (14) along with worm gear (16) into the pulley (33) and spring assembly (18).
c. Fit drum lock pin (8) onto the body casing (1).
d. Place the pulley (33) into body casing (1), along with assemble parts.
e. Fit cover (48) onto body (2) with bolt (29) and spring washer (30).
f. Fit wire rope assembly (34) onto pulley (33) with grub screw (47).
g. Fit worm shaft (50) with washer (51) onto body (2) and turn clockwise to wind the rope assembly (34) over pulley (33).
h. Hang the balancer from top hook and check for the tension loading of spring by hanging weight at bottom hook (42).
i. Fit dial gauge (31) with reference to load. Increase the tension of spring and set at middle / required range.

7. Inspection

Periodicity : -

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

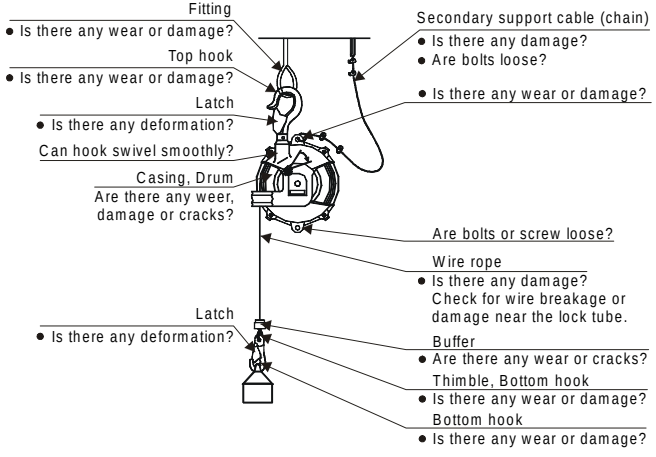
Procedure : -

- 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.

Functional Checks :-

- Check for smooth operation of balancer for complete range.
- Check for drum lock pin operations.
- Check for safety lock pin operations by decreasing spring tension below minimum range. The safety lock pin (24) should pop out and butt against lock pin (49) to stop the movement of pulley.

Fig. 3



ILLUSTRAED PART LIST

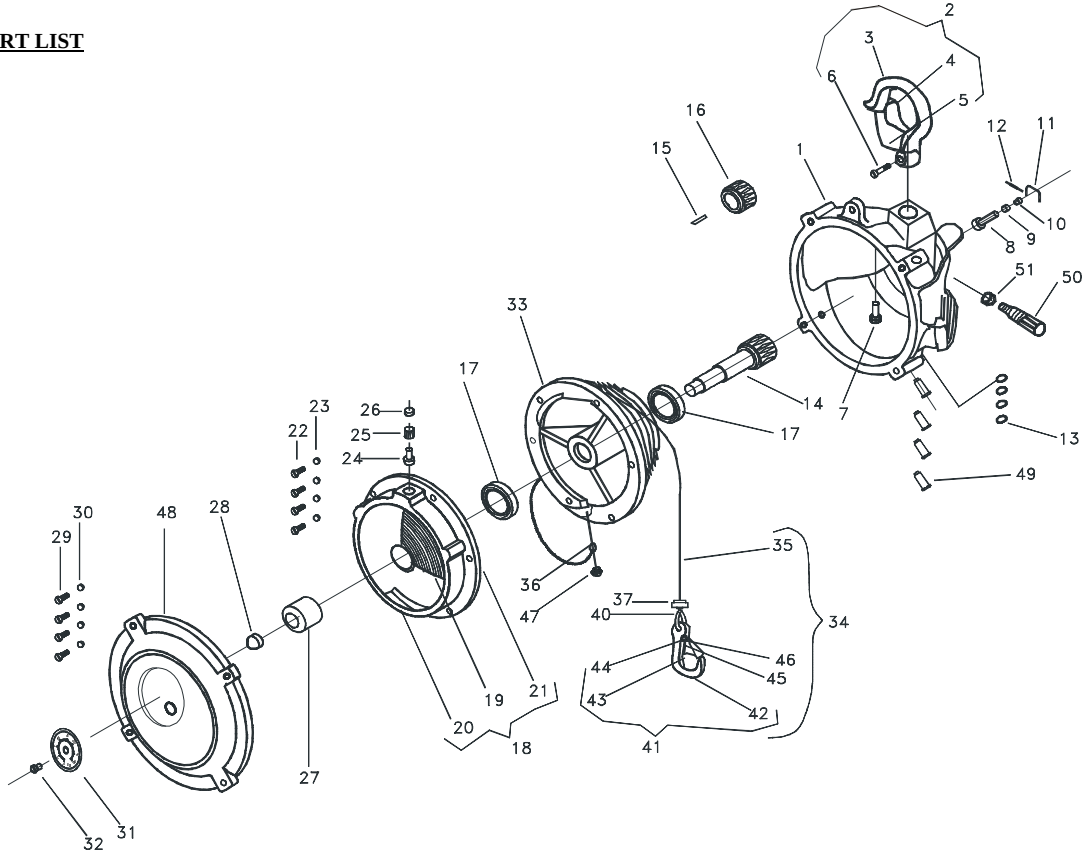


Fig. B SPRING BALANCERS (SEW - 9/15/22/30/40/50/60/70/85/100/120 & SLR - 15/22/30/40/50/60/70)
AMENDMENT No. : 10/2001

PART LIST FOR SEW - 9/15/22/30/40/50/60/70/85/100/120 & SLR - 15/22/30/40/50/60/70 SPRING BALANCERS

Item No.	Description	Qty
1	Body Casing	1
2	Hook Assy.	1
3	*Hook	1
4	*Latch	1
5	*Spring, Latch	1
6	*Rivet	1
7	*Shaft, Hook	1
8	Stopper	1
9	Spring, Stopper	1
10	Nut, Stopper	1
11	Lever, Stopper	1
12	Pin, Lever	1
13	Grub Screw	4
14	Center Shaft	1
15	Key	1
16	Worm Wheel	1
17	Bearings	2

Item No.	Description	Qty
18	Spring Assy.	1
19	*Spiral Spring	1set
20	*Casing, Spring	1
21	*Cover, Spring	1
22	Screw	6
23	Washer Spring	6
24	Pin, Safety	1
25	Spring, Pin	1
26	Nut, Safety Pin	1
27	Al. Spacer	1
28	Spacer, Cover	1
29	Screw	4
30	Washer Spring	4
31	Dial Gauge	1
32	Screw	1
33	Pulley	1
34	Wire Rope Assy.	1

Item No.	Description	Qty
35	*Wire	1
36	*Ferrule S/W	1
37	*Ferrule D/W	1
38	*Shock Abs.	1
39	*Al. Stopper	1
40	*Thimble	1
41	*Hook Assy.	1
42	**Hook	1
43	**Latch	1
44	**Spring, Latch	1
45	**Pin, Latch	1
46	**Rivet	1
47	Grub Screw	1
48	Body Cover	1
49	Lock Pin	4
50	Worm	1
51	Washer, Thrust	1

*- Sub Assembly **- Sub Sub-Assembly

NOTE:- For demanding spares please give complete details of item e.g. Body Cover for SEW-22, Fig. B, Item No 48.

Amendment:- 10/2001

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