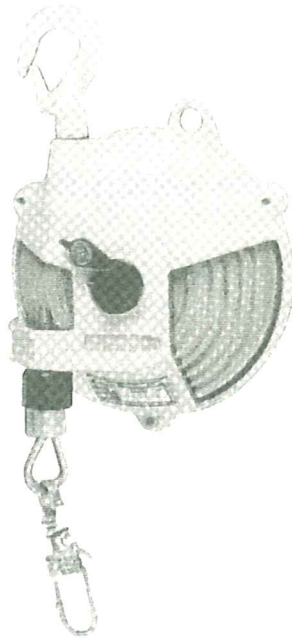


SPRING BALANCERS

TW - 3

TW - 5



INSTRUCTION MANUAL



NITTO KOHKI - MIJIN CO., LTD.

III. Operating Procedure

1. Selection and Installation

● Hanging Hook :

Use this hook to lower the main hanger so that it does not collide with another hanger when laterally travelled by trolley, etc.

● Main Hanger :

The main hanger must be able to follow the oblique operation and its movement must not be hampered. Further it must not get off and drop even if it suffers a spring-up reaction.

Note Secondary hanger must be used for the protection purpose.

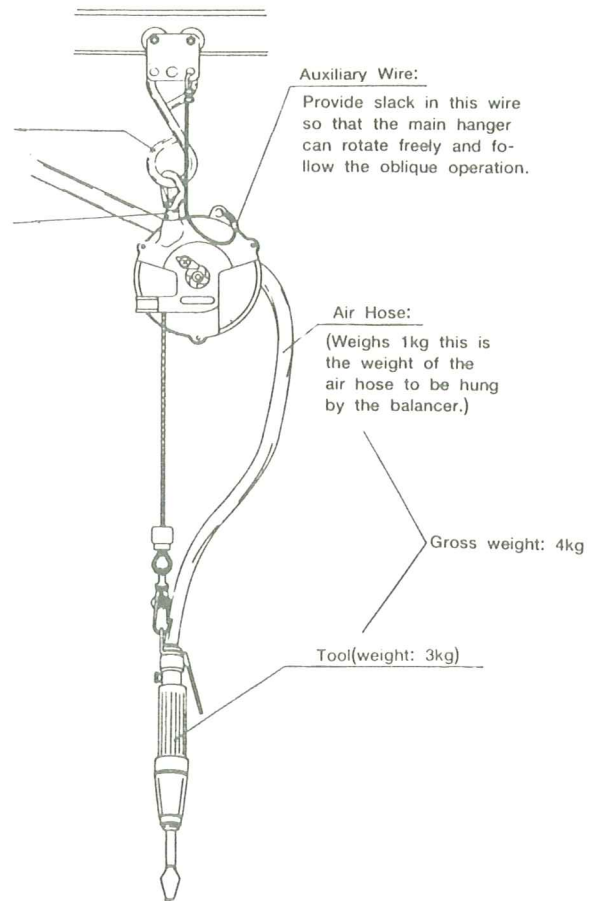
● Selection

Weight of body + weight of access = gross weight
3kgs + 1kgs = 4kgs

(Not the total weight of the air hose but its weight to be hung by the balante should be added to the weight of the body.) In this case select TW-5 whose capacity is for 2.5-5kg.

Note: When the weight of a hung load and the hanging tool can apply to two types, select the larger type.

Fig. 1

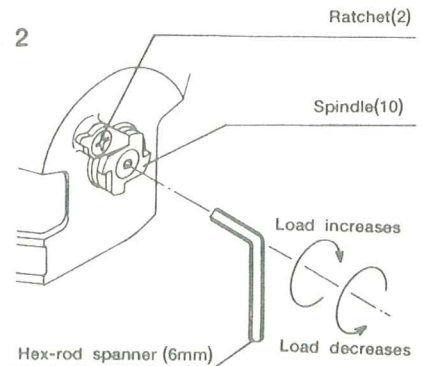


2. Adjustment of Spiral Spring

Adjust the spiral spring by turning the spindle (10) to ensure that it conforms to the hung load. Turn it to the right to increase the load, and to the left to decrease the load (Fig. 2). Note that the factory setting is in the middle of capacity

Note : The spring should be set to the exact capacity level. Setting the spring in excess of the capacity will cause it to be tightened more than required, making it difficult to obtain the desired stroke, and possibly shortening its life. If the spring is set under capacity, the cable will not be fully wound, providing a shorter stroke and a improper balance.

Fig. 2



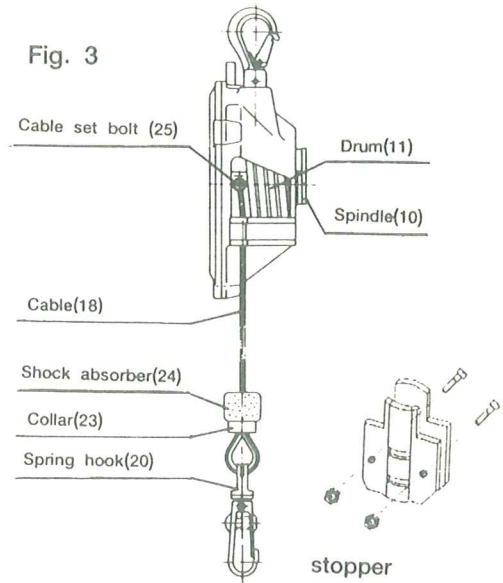
IV. Disassembling and Assembling

1. Replacement of cable

1. With the cable wound, remove the hung load and hanging tool from the spring hook (20)

Note : This procedure must be strictly observed to ensure the safety of the operator, because if the hung load and hanging tool are removed with the cable extended, the cable will rapidly wind up, which may be very dangerous.

2. Loosen the spiral spring (12) by turning the spindle (10) to the left until the cable is sent out and the cable set bolt (25) appears at the position shown in Fig-3.
3. Remove the cable set bolt, and then remove the cable from the drum (11)
4. Remove the collar (23) and the shock absorber (24) from the cable and set them to a new cable.
5. Attach the new cable to the drum by firmly tightening the cable set bolt.
6. Tighten the spiral spring by turning the spindle to the right. Adjust the tightness of the spring to ensure that it conforms to the hung load.



2. Procedures of disassembling/assembling

When the balancer is to be disassembled, perform the following procedures by referring to the sketch drawing. (page 2)

1. Remove the load and hanging tool from the spring hook (20). Remove the balancer from the beam or the trolley.
2. Remove the cable (18) from the drum (11), according to the cable replacement procedures.
3. Remove the cover (15). Take off the drum cover (13), the spiral spring (12), and the drum (11) together from the case (1).
4. Remove the drum cover from the drum and take out the spiral spring.
Note : When removed, the spiral spring will rapidly expand. Use proper case.
5. Remove the spindle (10) from the case.
6. The assembly procedure is the opposite sequence to disassembly.

3. Load and operation inspection

1. Wind the spiral spring by turning the spindle to the right.
2. Hang the balancer and adjust the spiral spring. Attach the weight within the proper capacity range (the middle load of the capacity) to the spring hook (20). Adjust the spiral spring by performing the operation inspection for all the strokes. (It will make the adjustment easier if the set load of the balancer is preset for reassembling.)

V. Inspection and Repair

Perform monthly inspection in order to prevent the balancer from dropping.

Check the balancer for :

- loose bolts
- worn hanger and/or spring hook, and
- worn and damaged cable(check especially whether any wire threads have unravelled or not, or if the terminal is worn and/or damaged).

VI. After Service

If the balancer is out of order, please contact an appropriate agent for repair.

VII. Specifications

Model	Capacity				Cable Travel		Net Weight	
	Minimum		Maximum		meters	feet	Kgs	Lbs.
	Kgs	Lbs.	Kgs	Lbs.				
TW - 0	0.5	1.1	1.5	3.3	1.0	3.3	0.5	1.1
TW - 3	1.0	2.2	3.0	6.6	1.3	4.3	1.4	3.08
TW - 5	2.5	5.5	5.0	11	1.3	4.3	1.5	3.30