



**TW-Series
Spring Balancer
Operations Manual**

MODELS TW-3 and TW-5



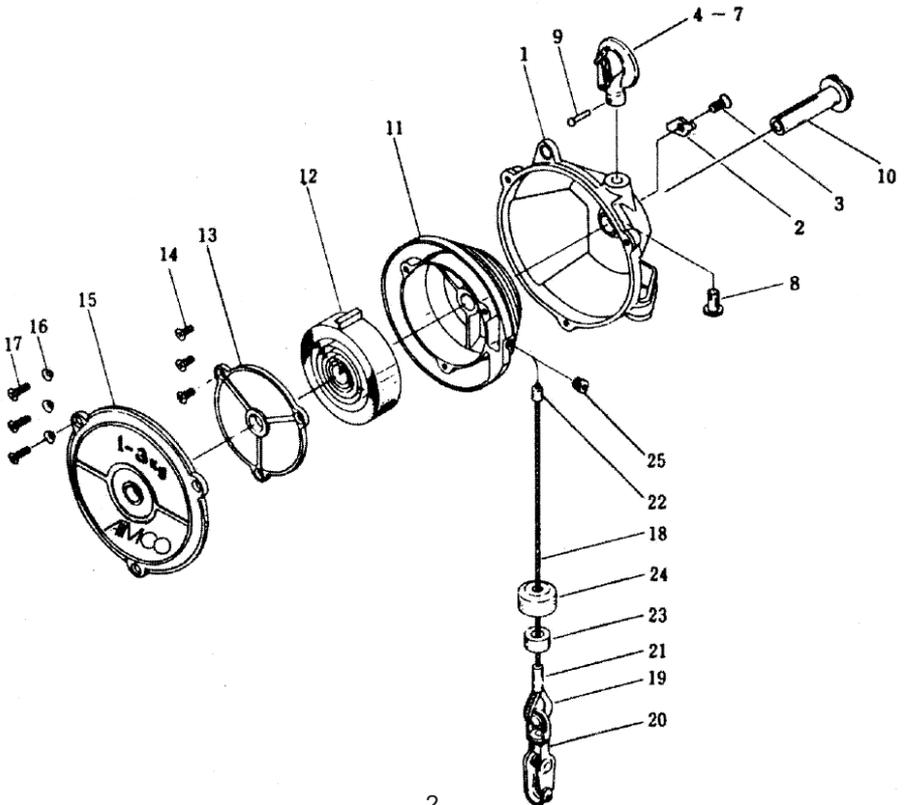
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PARTS BREAKDOWN DRAWING



PARTS LIST

INDEX NO.	DESCRIPTION	PART NO.
1	Case	3001
2	Ratchet	3002
3	Cross-recessed flat head machine screw	SC614
	Hanger Set	3004
4	Hanger	-
5	Hanger stopper	-
6	Hanger spring	-
7	Button-head rivet	-
8	Hanger shaft	3005
9	Button-head rivet	RR318
10	Spindle	3007
11	Drum	3008
12	Spiral spring (TW-3)	3009
12	Spiral spring (TW-5)	5009
13	Drum Cover	3010
14	Cross-recessed flat head machine screw	SC512
15	Cover (TW-3)	3012
15	Cover (TW-5)	5012
16	Flat-toothed lock washer	WT5
17	Cross-recessed flat head machine screw	SC516
	Cable set	3015
18	Cable	-
19	Thimble	-
20	Spring hook	-
21	Safe-lock tube	-
22	Aluminum lock tube	-
23	Collar	3016
24	Shock absorber	3017
25	Cable set bolt	PH1/8

Note: When ordering spare parts, please specify index number, part name, and applicable model.

OPERATING PROCEDURES

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: Use the auxiliary hanger for the protective purpose.

Selection Example:

Weight of tool	+	Weight of access	=	Gross Weight
3 kg	+	1 kg	=	4 kg

(Not the total weight of the air hose but its weight to be hung by the balancer should be added to the weight of the tool.)

In the example above, select TW-5 with the capacity range of 2.5 - 5.0 kg. See page 7 for capacity specifications.

Note: When the weight of a hung load and the hanging tool applies to two models, select the larger model.

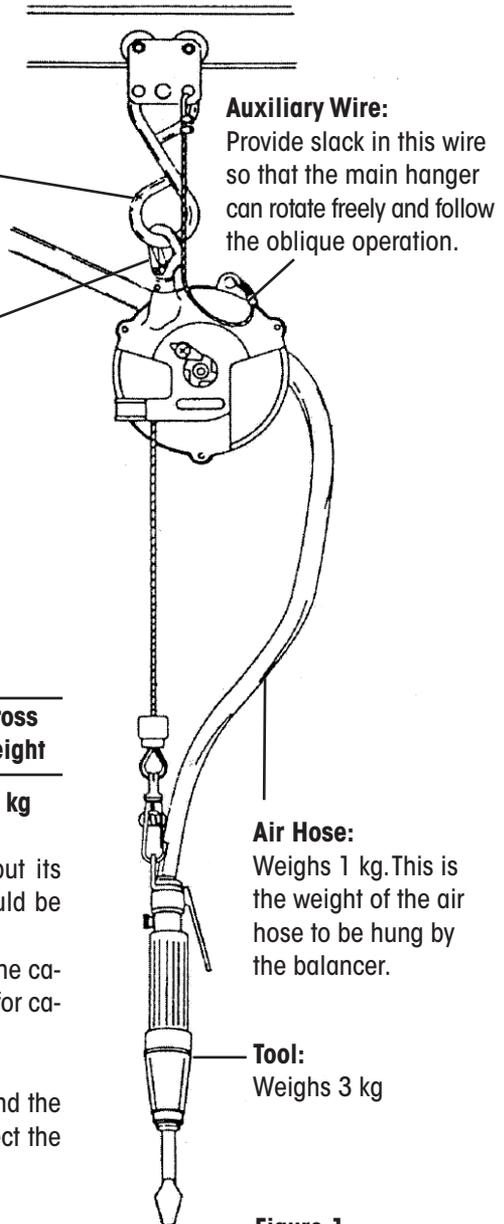


Figure 1

OPERATING PROCEDURES

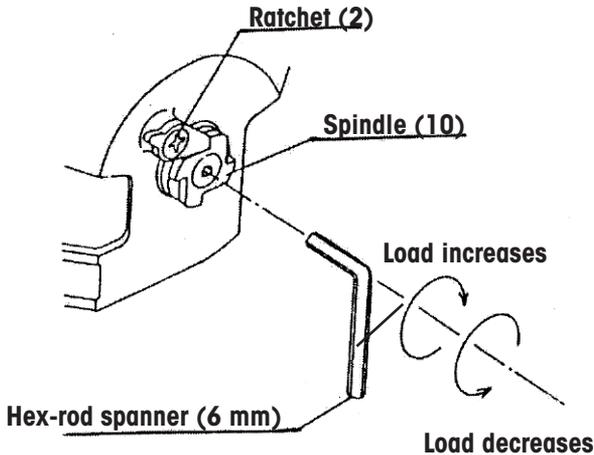


Figure 2

ADJUSTMENT OF SPIRAL RING

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 the capacity range.

Note: The spring should be set to the exact capacity level. Setting the spring in excess of the capacity range 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 an improper balance.

ASSEMBLING AND DISASSEMBLING

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 Figure 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.

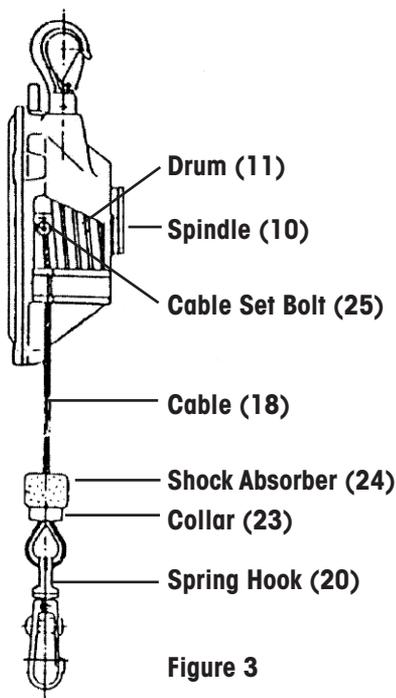


Figure 3

DISASSEMBLY / ASSEMBLY

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

1. Remove the load and hanging tool from the spring hook (20). Remove the balancer from the beam of the trolley.
2. Remove the cable (18) from the drum (11) (Refer to directions for replacing the cable on page 6)
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 care.
5. Remove the spindle (10) from the case.
6. For assembly, reverse the steps in disassembly directions.

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 for all the strokes. (It will make the adjustment easier if the set load of the balancer is preset for reassembling.)

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
- Worn and damaged cable (check whether any wire threads have unravelled, or if the terminal is worn and/or damaged).

SERVICE

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

SPECIFICATIONS

MODEL	CAPACITY				CABLE TRAVEL		NET WEIGHT	
	MINIMUM		MAXIMUM		ft	m	lb	kg
	lb	kg	lb	kg				
TW-0	1.1	0.5	3.3	1.5	3.3	1.0	1.10	0.5
TW-3	2.2	1.0	6.6	3.0	4.3	1.3	3.08	1.4
TW-5	5.5	2.5	11.0	5.0	4.3	1.3	3.30	1.5



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