

# SPRING BALANCERS

HW - 0

HW - 3


HW - 5

## INSTRUCTION MANUAL

**Mijjin system** Mijjin system Co.,LTD.

# 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. Keep this manual available.



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.

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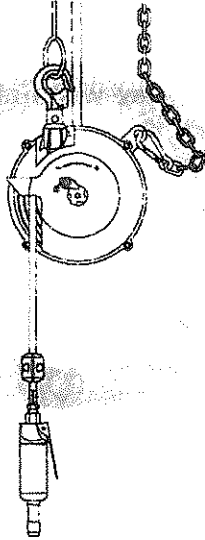
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# 1. ⚠ SAFETY INSTRUCTIONS

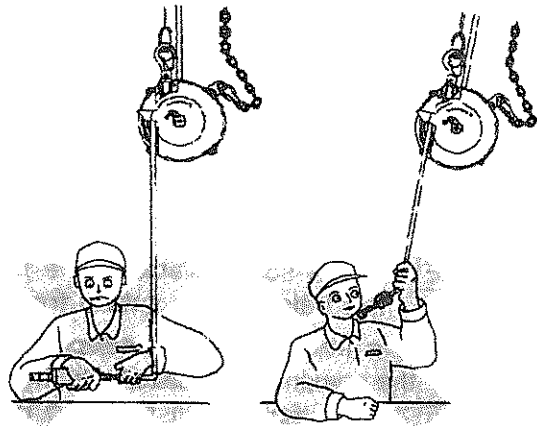
## ⚠ WARNING

- Incorrect use of the spring balancer could cause personal injury.
- Observe instructions in this manual and use the balancer correctly.

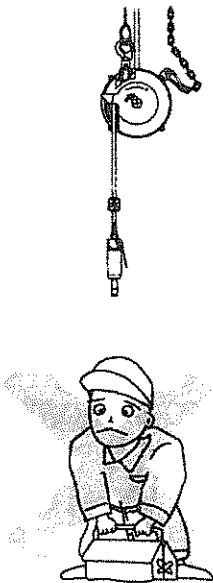
- Install the balancer correctly.
- Always attach a secondary support chain or cable.



- Never remove tool/device while the hose is extended.
- Never pull the hose when unloaded.



- Never stand under the suspended tool/device.



- Never remove the spring from the drum.



- Periodically inspect the balancer.
- Never alter the balancer.
- Lock the spindle using the ratchet at every 1/4 turn when adjusting the spring tension.

## 2. INSTALLATION

### 2-1. BALANCER INSTALLATION

#### WARNING

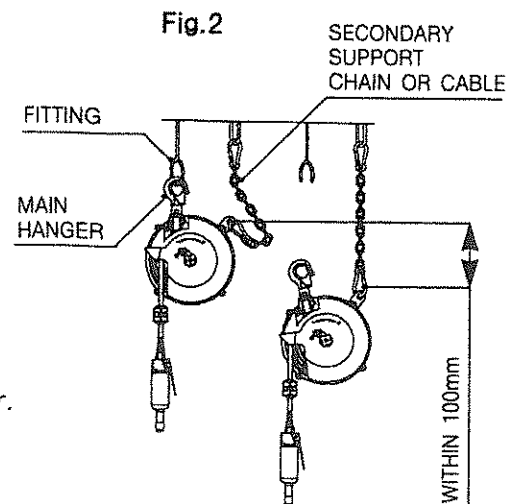
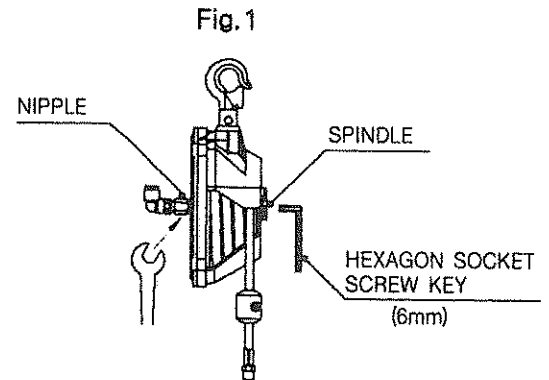
- Install the balancer correctly.  
Incorrect installation could cause personal injury or damage to the balancer or other equipment.
- Always attach a secondary support chain or cable.  
It is required to protect personnel in case of failure of the main hanger or the fitting.

#### CAUTION

- Fasten the spindle using a 6 mm hexagon socket screw key when attaching or removing the nipple.
- Never supply air before attaching the tool/device.

- 1) Attach the nipple to the balancer (see Fig. 1).
- 2) Connect the air supplying hose to the nipple.  
**NOTE**: Leave some slack in the hose to allow the balancer to rotate freely.
- 3) Prepare a fitting that can support at least 10 times the maximum capacity of the balancer.  
**NOTE**: The fitting must have no opening as shown in Fig. 2 to prevent the balancer from disengaging when it swings.
- 4) Attach the main hanger of the balancer directly to the fitting. Check the latch is closed.  
**NOTE**: Take care the balancer does not hit surrounding objects.  
Make the mounting height different for each balancer to avoid collision.

- 5) Check the main hanger can swivel freely.  
**NOTE**: Do not fasten the main hanger to the balancer body.
- 6) Prepare a secondary support chain or cable that can support at least 10 times the maximum capacity of the balancer.
- 7) As shown in Fig. 2, attach an end of the secondary support chain or cable 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 chain or cable 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 main hanger or the fitting (see Fig. 2).



## 2-2. TOOL/DEVICE ATTACHMENT AND SPRING TENSION ADJUSTMENT

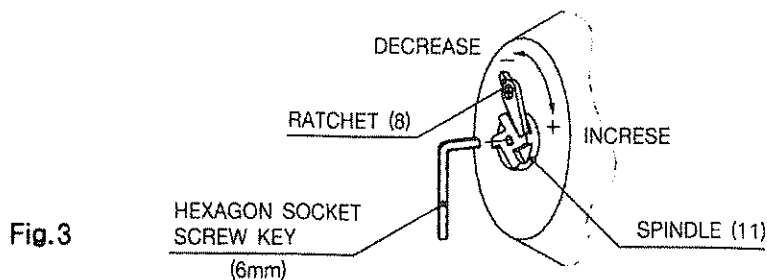
### **WARNING**

- Never pull the hose when unloaded.  
If the hose is released when extended with no load, it will snap back and could cause personal injury.
- Take care when adjusting the spring tension. A torque is on the spindle and it could move the adjusting tool you are holding.  
Lock the spindle using the ratchet at every 1/4 turn.

### **CAUTION**

If the spring tension is set over the maximum capacity, the balancer can not provide the specified hose travel and the spring life will be shortened.  
If the spring tension is set under the minimum capacity, the balancing operation will be extremely poor.

- 1) Before attaching, check the mass (weight) of the complete tool/device, including all accessories, is within the capacity range of the balancer.
- 2) Lift the complete tool/device up to the nipple and attach it.  
Never pull the hose down to the tool/device.  
**NOTE**: The suspended tool/device will drop down if the spring tension is not enough.  
Lower the tool/device slowly by hand.
- 3) Adjust the spring tension by turning the spindle with a hexagon socket screw key.  
Turn clockwise for increasing the spring tension,  
turn counterclockwise for decreasing (see Fig. 3)
- 4) Check the tool /device is balanced.  
**NOTE**: Over-tensioning could cause damage to the balancer body or the hose.



## 2-3. WORKING STROKE (HOSE TRAVEL) CHECK

### **CAUTION**

Extending the hose past the maximum hose travel could cause damage to the balancer.

- 1) Check the hose travel is long enough for the application.
- 2) If necessary, lower the mounting height of the balancer.

### 3. USE

#### 3-1. SAFETY INSTRUCTIONS ON USE



#### **WARNING**

- Never remove tool/device while the hose is extended.
- Never stand under the suspended tool/device.
- Never alter the balancer.



#### **CAUTION**

- Always use within the capacity range of the balancer.
- Always adjust the spring tension before use.
- Do not extend the hose past the maximum hose travel.
- Do not pull the hose at an angle.

#### 3-2. TOOL/DEVICE REPLACEMENT



#### **WARNING**

Never remove the suspended tool/device while the hose extended.  
If removed, the hose will snap back and could cause personal injury.

- 1) Lift then remove the suspended tool/device when the hose is fully retracted.
- 2) Attach a new tool/device according to Chapter 2-2 "Tool/device attachment and spring tension adjustment".

## 4. INSPECTIONS

### WARNING

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

### CAUTION

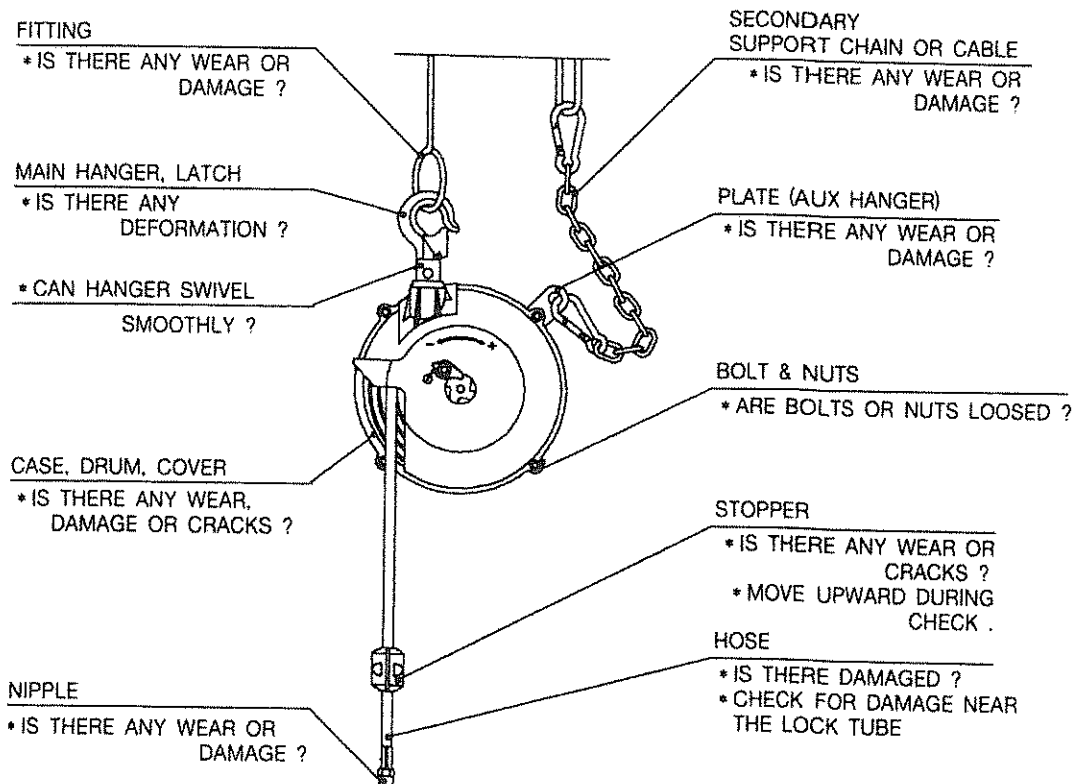
Always use genuine parts for replacement.

⊙ 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. (See Fig. 4.)

Fig.4



## 5. HOSE REPLACEMENT



### WARNING

- Shut off the air supply and release the pressure in the hose before starting replacement,
- Never remove the suspended tool/device while the hose is extended.
- Take care when releasing the spring tension. A torque is on the spindle and it could move the tool you are holding.  
Lock the spindle using the ratchet at every 1/4 turn.

Referring to the disassembly drawing (on chapter 8), replace the hose using the following procedure.

- 1) Remove the air supplying hose from One touch nipple (36).
- 2) Lift then remove the tool/device from Nipple (23) when Hose (18) is fully retracted into Drum (12).
- 3) Remove the balancer from the fitting and place on the floor.
- 4) Release all spring tension by turning Spindle (11) counterclockwise with a hexagon socket screw key.  
Turn Spindle until Hose (18) is fully extended.
- 5) Remove One touch nipple (36) while fastening Spindle (11) by a hexagon socket screw key.
- 6) Remove Retaining ring (34).
- 7) Remove Screws (32), and remove Cover (29).
- 8) Remove Screw (27) and remove Rotary joint(16) from Spindle (11).
- 9) Remove old Hose (18) from Rotary joint (16) and attach a new one.
- 10) Reassemble removed parts in reverse order.

## 6. SPRING, DRUM REPLACEMENT



### WARNING

- Never remove the spring from the drum.  
If removed, the spring will expand explosively and cause personal injury.
- Only allow well trained personal to replace the spring, or contact the dealer.

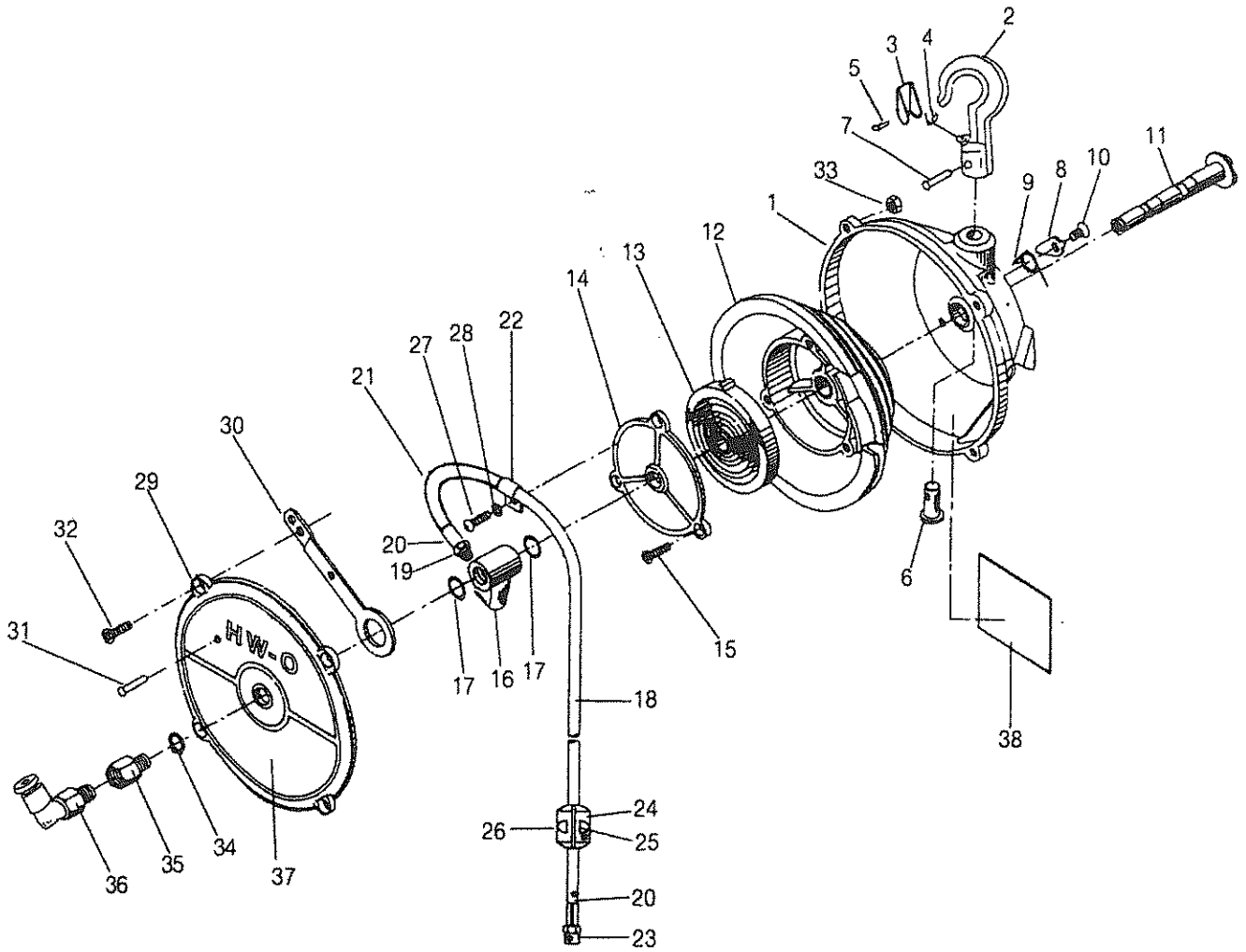


## 7. SPECIFICATIONS

Model	Capacity (kg)	Hose travel (m)	Hose inside diameter (mm)	Mass (kg)
HW - 0	0.5 - 1.5	1.3	6.5	1.6
HW - 3	1.5 - 3.0	1.3	6.5	1.7
HW - 5	3.0 - 5.0	1.3	6.5	1.8

Working conditions Application area : Indoor and normal atmospheric conditions  
Temperature range : -10 °C to + 40 °C  
Application fluid : Air  
Maximum air pressure : 10 kgf/cm<sup>2</sup>

## 8. PARTS LIST



(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.

INDEX No.	PARTS NAME	PARTS NO.	QUANTITY			REMARKS
			HW - 0	HW - 3	HW - 5	
	CASE ASSEMBLY	H962001A	1	1	1	
1	-- CASE	H962002	1	1	1	
	-- HANGER ASS'Y	H962003A	1	1	1	
2	--- HANGER	-	1	1	1	
3	--- LATCH	-	1	1	1	
4	--- SPRING	-	1	1	1	
5	--- RIVET	-	1	1	1	
6	--- SHAFT	-	1	1	1	
7	--- RIVET	-	1	1	1	
8	-- RATCHET	H962004	1	1	1	
9	-- SPRING	H962005	1	1	1	
10	-- SCREW	SC612	1	1	1	
11	SPINDLE	H962006	1	1	1	
12	DRUM	H962007	1	1	1	
13	SPRING	H962008	1			
	SPRING	H962308		1		
	SPRING	H962508			1	
14	DRUM COVER	3010	1	1	1	
15	SCREW	SC514	2	2	2	
16	ROTARY JOINT	H962009	1	1	1	
17	O - RING	P14	2	2	2	
	HOSE ASSEMBLY	H962010A	1	1	1	
18	-- HOSE	-	1	1	1	
19	-- NIPPLE	-	1	1	1	
20	-- LOCK TUBE	-	2	2	2	
21	-- TUBE	-	1	1	1	
22	-- SADDLE	-	1	1	1	
23	-- NIPPLE	-	1	1	1	
	STOPPER ASS'Y	H962011A	1	1	1	
24	-- STOPPER	H961010	1	1	1	
25	-- BOLT	SH520	1	1	1	
26	-- NUT	M5	1	1	1	
27	SCREW	SC516	1	1	1	
28	SPRING WASHER	WS52	1	1	1	
	COVER ASSEMBLY	H962012A	1	1	1	
29	-- COVER	H962013	1	1	1	
30	-- PLATE	H962014	1	1	1	
31	-- RIVET	RR311	1	1	1	
32	SCREW	SC516	4	4	4	
33	NUT	M5	4	4	4	
34	RETAINING RING	13	1	1	1	
35	NIPPLE	H962015	1	1	1	
36	ONE TOUCH NIPPLE	H962016	1	1	1	
37	NAME PLATE	H962017	1			
	NAME PLATE	H962317		1		
	NAME PLATE	H962517			1	
38	LABEL	H962018	1	1	1	