

# OPERATOR' S MANUAL

## A i r B a l a n c e r

B T A 8 0 A

B T A 1 2 0 A

- Read this manual before installation, operation, and maintenance.
- Always keep this manual available.

SAN-EI SEIKI SEISAKUSHO CO. , LTD.

# CONTENTS

|   | Page |
|---|------|
| 1. FOR SAFE USE -----                   | 1    |
| 2. SPECIFICATIONS -----                 | 2    |
| 3. TYPES -----                          | 3    |
| 4. PARTS NAMES -----                    | 3    |
| 5. NECESSARY TOOLS FOR INSTALLATION --- | 4    |
| 6. LOCATIONS FOR INSTALLING -----       | 4    |
| 7. INSTALLING METHODS -----             | 5    |
| 8. PIPING -----                         | 10   |
| 9. ADJUSTING -----                      | 11   |
| 10. BEFORE OPERATION -----              | 13   |
| 11. OPERATION -----                     | 13   |
| 12. INSPECTION -----                    | 14   |
| 13. MAINTENANCE -----                   | 16   |
| 14. STORAGE -----                       | 18   |
| 15. TROUBLE SHOOTING -----              | 18   |
| 16. RECORD KEEPING -----                | 19   |

**I m p o r t a n t**

- Read this Operator's Manual carefully before installation of "my hand".
- Always keep the Operator's Manual at hand.
- Always follow the instructions of this manual when replacing parts and servicing.

1. For safe use

"my hand" uses compressed air as the power source.

"my hand" is an air balancer with a built-in load detector.

Follow the instructions to avoid accidents.

**WARNING:**Death or serious injuries may result from improper use of "my hand".

To avoid these hazards:

(1) General handling

- Never use any personnel who is not familiar with the contents of the Operator's Manual.
- Install "my hand" in safe location.
- Maintain air pressure below 6kgf/cm<sup>2</sup>.
- Never breakup or alterate "my hand". It may cause accidents and a breakdowns.
- Always use the attached filter regulator. Failure to use it may cause breakdowns.
- Always perform daily inspection prior to work and periodic checkups.
- Use a bogie traveling type(standard type) transporter after fixation of the bogie by a level adjuster.

(2) Running and an operation

- Never hoist load larger than the maximum suspension load indicated.
- Never use "my hand" for personals.
- Never pull "my hand" aslant.
- Since it can not do an accurate load detection, it is very danger and hastens deterioration of parts.
- Always hang Hang load on Hook.  
When Hang load becomes loose, it is very dangerous.
- Never stay or get under Hang load.
- Never bring your face close to the load detector. The load detector could jump up.
- Never leave Hang load with suspended load.
- Never collide "my hand" with any structures or fixtures.
- Never shake Hang load.
- Release compressed air from "my hand" when running has ended at the end of work day.
- Never release compressed air from "my hand" while in operation. Hang load may fall.

**Note:**Contact SAN-EI for more information on the use of "my hand", if necessary.

2. Specifications

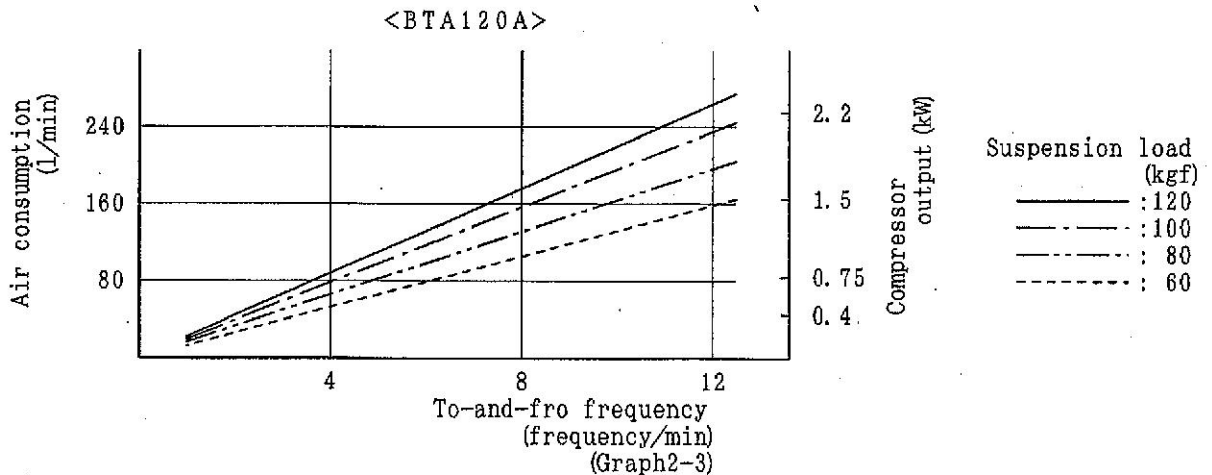
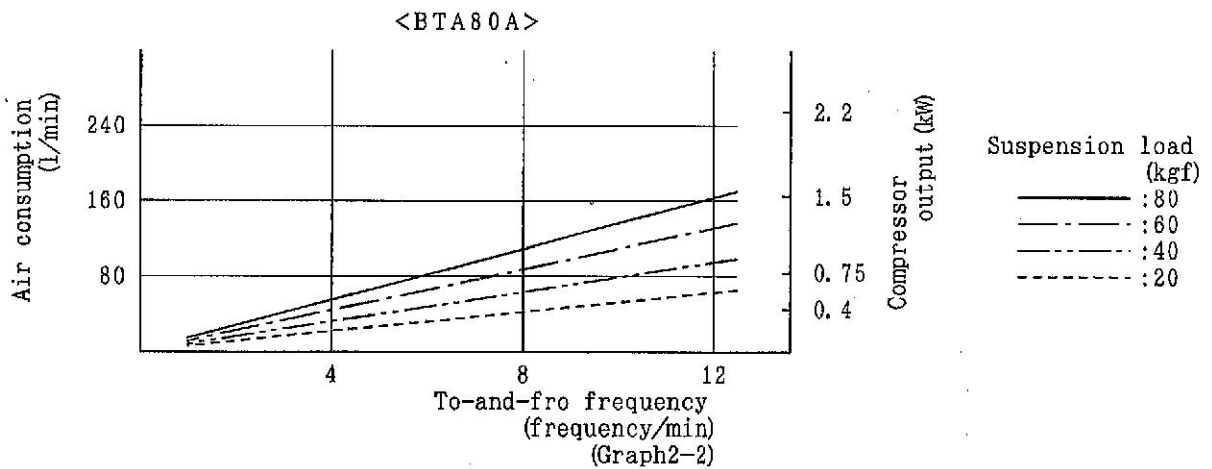
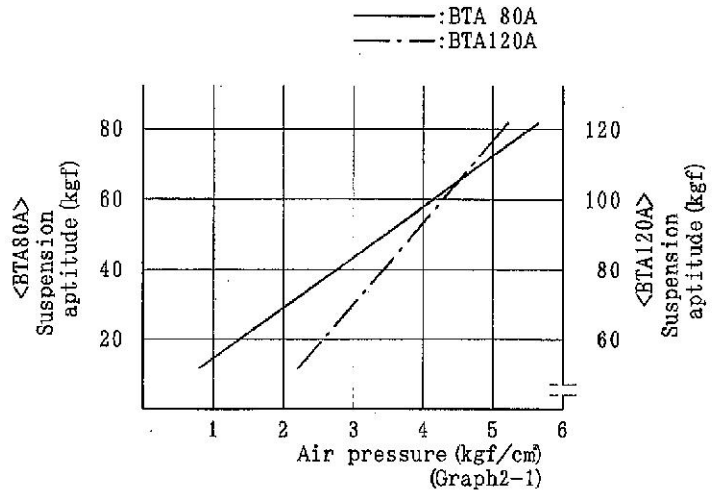
|          | Operating radius<br>vertical movement range<br>mm | Suspension stroke<br>mm | Maximum<br>suspension load<br>kgf | Air pressure<br>kgf/cm <sup>2</sup> |
|----------|---|-------------------------|-----------------------------------|-------------------------------------|
| BTA 80A  | Radius<br>160~2,060                               | 1,500                   | 80                                | 3~6                                 |
| BTA 120A | Radius<br>202~2,138                               | 1,500                   | 120                               | 3~6                                 |

Graph(2-1) : The relation between air pressure and suspension aptitude.

Graph(2-2, 3) : The relation between air consumption and suspension load.

The relation between air consumption and frequency of use.

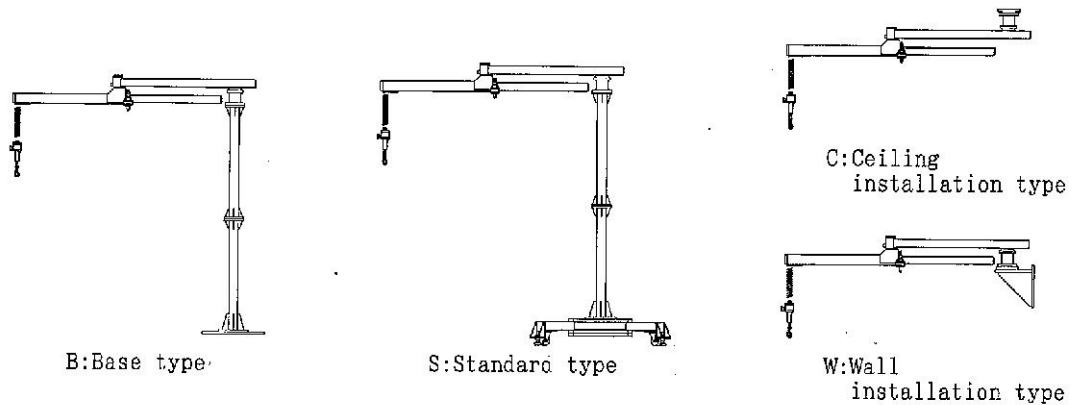
Select an appropriate compressor to match the frequency of use expected.



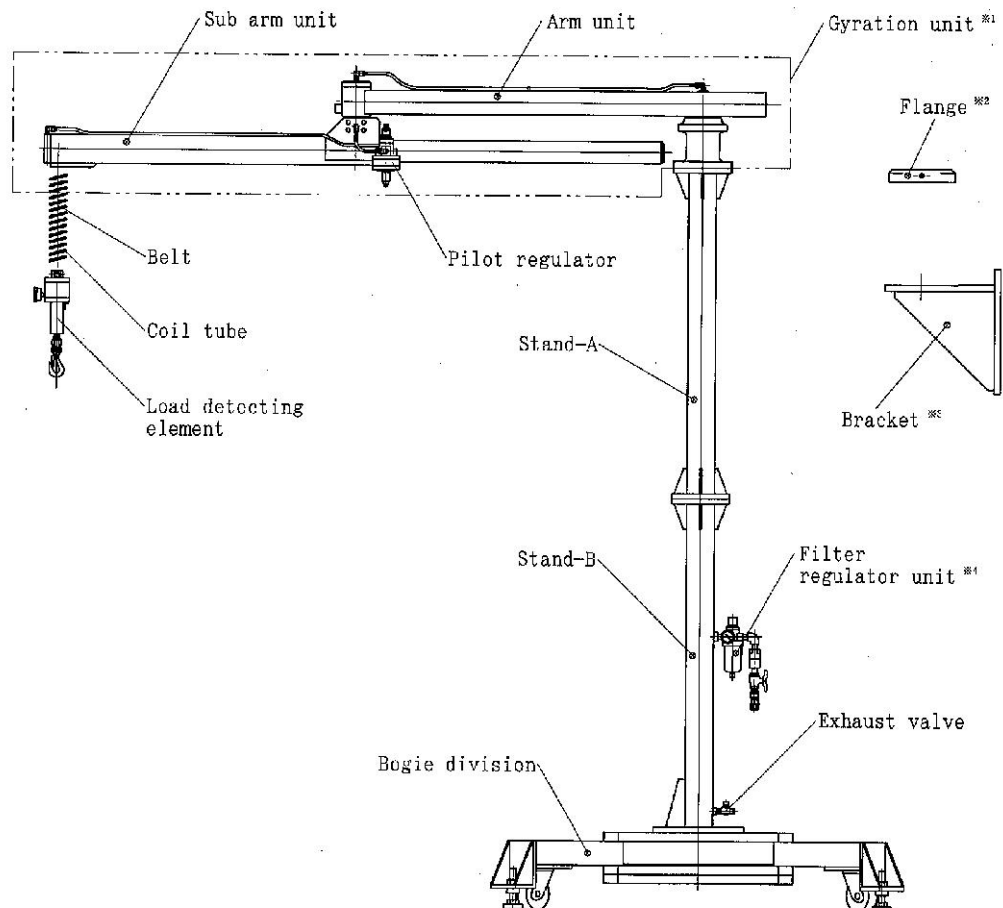
3. Types

The following types are classified by the installing method.

BTA80A-\*, BTA120A-\*



4. Parts names



\*1: In "BTA\*\*\*-C", the installation direction is in reverse order.

\*2: Use \*2 for "BTA\*\*\*-C" and "BTA\*\*\*-W".

\*3: Use \*3 for "BTA\*\*\*-W".

\*4: "BTA\*\*\*-C" and "BTA\*\*\*-W" come with an installation stay.

## 5. Necessary tools for installation

## Tools list

| Tools                         | Quantity | Types (BTA 80A- <del>※</del> )<br>(BTA120A- <del>※</del> ) |   |   |   | Uses                            |
|-------------------------------|----------|--|---|---|---|---------------------------------|
|                               |          | B  | S | C | W |                                 |
| Open ended spanner (24)       | 2        | ○  | ○ | ○ | ○ | Installing of the gyration unit |
| Open ended spanner (30)       | 1        | —  | ○ | — | — | Adjusting of adjuster bolts     |
| Open ended spanner (14)       | 1        | ○  | ○ | — | — | Installing of exhaust valve     |
| Open ended spanner (12)       | 1        | ○  | ○ | ○ | ○ | Connection of coil tube         |
| Open ended spanner (11)       | 1        | ○  | ○ | ○ | ○ | Adjusting of pilot regulator    |
| Hexagon socket screw key (14) | 1        | —  | — | ○ | ○ | Installing of flange (BTA120A)  |
| Hexagon socket screw key (10) | 1        | —  | — | ○ | ○ | Installing of flange (BTA 80A)  |
| Hexagon socket screw key (6)  | 1        | ○  | ○ | ○ | ○ | Adjusting of brake              |
| Screw driver                  | 1        | ○  | ○ | ○ | ○ | Adjusting of pilot regulator    |

## 6. locations for installation

(1) Install "BTA~~※※※~~-B" and "BTA~~※※※~~-S" on the flat and firm floor.

Install "BTA80A-C" on a ceiling beam.

(When installing on a H beam, 100×100 or more is necessary.

When installing on an I beam, 180×100 or more is necessary.)

Install "BTA80A-C" in a ceiling beam.

(When installing on a H beam, 125×125 or more is necessary.

When installing on an I beam, 150×125 or more is necessary.)

Install "BTA80A-W" in works manufacture building column.

(When installing on a H beam, 150×150 or more is necessary.

When installing on an I beam, 200×150 or more is necessary.)

Install "BTA120A-W" in works manufacture building column.

(When installing on a H beam, 175×175 or more is necessary.

When installing on an I beam, 200×150 or more is necessary.)

(2) Temperature range of installation location must be between 5~40℃.

When used in location outside of this temperature range

and high humidity, it may result in a jam or malfunctions.

(3) Never install "my hand" outdoors.

### C a u t i o n

- When the intension of installing location is insufficient, it is very dangerous.
- Install it in the location where the main unit does not collide with any fixed structures.
- Since blemish of every part will be quicker when located with improper conditions, more frequent periodic inspection will be necessary.

## 7. Installing method

7-1. Confirm if all the parts listed below are present before installing.

Confirm if all the parts are free from damages by accidents in transportation.

| Parts names                            | Quantity | Type (BTA 80A-※) |    |   |   | Type (BTA120A-※) |    |   |   |
|--|----------|------------------|----|---|---|------------------|----|---|---|
|  |          | B                | S  | C | W | B                | S  | C | W |
| Gyration unit                          | 1        | ○                | ○  | ○ | ○ | ○                | ○  | ○ | ○ |
| Stand-A                                | 1        | ○                | ○  | — | — | ○                | ○  | — | — |
| Stand-B                                | 1        | ○                | ○  | — | — | ○                | ○  | — | — |
| Bogie division                         | 1        | —                | ○  | — | — | —                | ○  | — | — |
| Base plate                             | 1        | ○                | —  | — | — | ○                | —  | — | — |
| Coil tube                              | 1        | ○                | ○  | ○ | ○ | ○                | ○  | ○ | ○ |
| Load detecting element                 | 1        | ○                | ○  | ○ | ○ | ○                | ○  | ○ | ○ |
| Flange                                 | 1        | —                | —  | ○ | ○ | —                | —  | ○ | ○ |
| Bracket                                | 1        | —                | —  | — | ○ | —                | —  | — | ○ |
| Filter regulator unit                  | 1        | ○                | ○  | ○ | ○ | ○                | ○  | ○ | ○ |
| Exhaust valve                          | 1        | ○                | ○  | — | — | ○                | ○  | — | — |
| Hexagon head bolt (M16×40)             | —        | 8                | —  | — | — | 12               | —  | — | — |
| Hexagon head bolt (M16×45)             | 4        | —                | —  | — | — | —                | ○  | — | — |
| Hexagon head bolt (M16×60)             | —        | 16               | 16 | 8 | 8 | 16               | 16 | 8 | 8 |
| Hexagon nut (M16)                      | —        | 20               | 16 | — | — | 20               | 16 | — | — |
| Spring washer (16)                     | —        | 20               | 16 | 8 | 8 | 24               | 20 | 8 | 8 |
| Hexagon socket head cap screw (M12×45) | 8        | —                | —  | ○ | ○ | —                | —  | — | — |
| Hexagon socket head cap screw (M16×45) | 8        | —                | —  | — | — | —                | —  | ○ | ○ |
| O-ring (G115)                          | —        | 2                | 2  | 1 | 1 | —                | —  | — | — |
| O-ring (G130)                          | —        | —                | —  | — | — | 2                | 2  | 1 | 1 |

Note: The above enumeration does not always apply for custom-order customers.

### C a u t i o n

•Make sure to use a crane or a fork lift to avoid accident during installing.

## 7-2. Installing BTA\*\*\*-B

(1) Build a strong foundation. (Refer to fig.7-1 for specifications)

When using grip anchor bolts, choose the ones with sufficient intension.

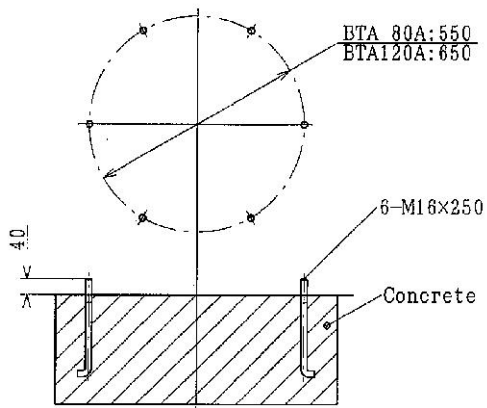
(2) Installing Stand-B (Refer to fig.7-2)

Install stand-B ② to base plate ① using bolts ③ and spring washers ④.

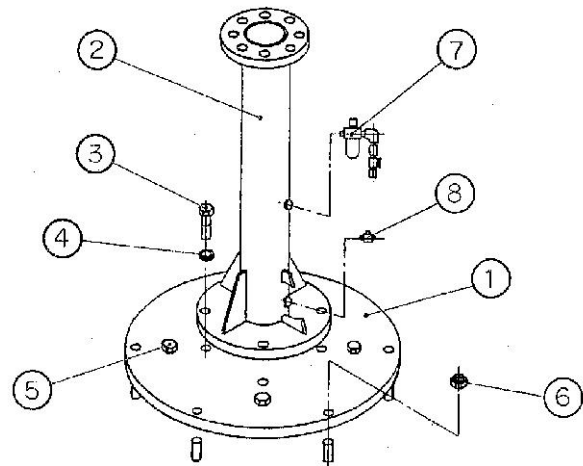
Level the flange surface by adjusting the adjuster bolts ⑤.

Then put the lines in, and bolt them down with anchor nuts ⑥. (Not included in the package)

Install filter regulator unit ⑦ and exhaust valve ⑧ to stand-B ②.



(Fig. 7-1)



(Fig. 7-2)

### C a u t i o n

- Provide solid foundation.
- Make sure all the nuts are in the place and tightened.

(3) Installing of stand-A and the gyration unit

Refer to (7-4).

(4) Installation of the load detecting element

Refer to (7-7).



## 7-3. Installing of BTA\*\*\*-S

(1) Installing of stand-B and a bogie division (Refer to fig.7-3)

<BTA 80A>

Install stand-B ① to bogie unit ② by bolts ③, spring washers ④ and nuts ⑤.

Level the flange surface by adjusting the adjuster bolts ⑥.

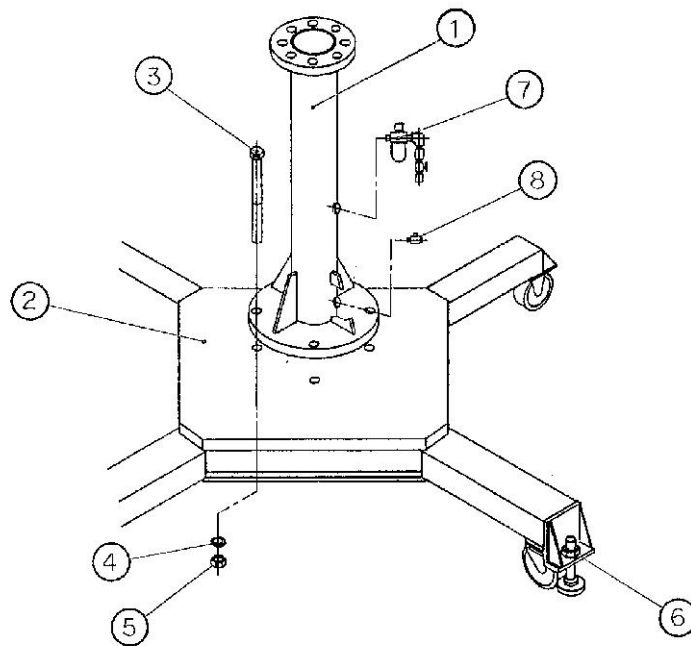
Install filter regulator unit ⑦ and exhaust valve ⑧ to stand-B.

<BTA120A>

Install stand-B to bogie unit by stud bolts, bolts (M16×45), spring washers and nuts.

Level the flange surface by adjusting the adjuster bolts ⑥.

Install filter regulator unit ⑦ and exhaust valve ⑧ to stand-B.



(Fig.7-3)

### Caution

·Make sure all the nuts are in the place and tightened.

(2) Installing of stand-A and the gyration unit

Refer to (7-4).

(3) Installation of load detecting element

Refer to (7-7).

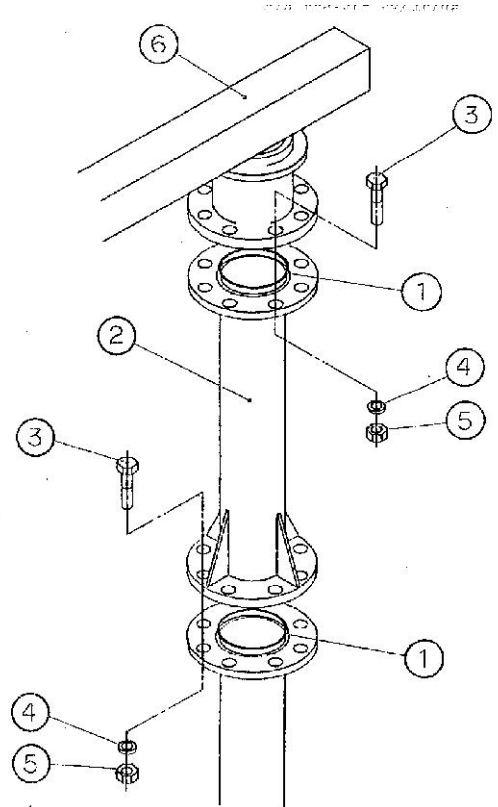
7-4. Installing of stand-A and the gyration unit (Refer to fig.7-4)

- (1) Put o-rings ① into flange surface of stand-B.  
Install stand-A ② to stand-B by bolts ③, spring washers ④ and nuts ⑤.
- (2) Put o-rings ① into flange surface of stand-A.  
Install gyration unit ⑥ to stand-A by bolts ③, spring washers ④ and nuts ⑤.

**C a u t i o n**

- Set the o-rings so they are not biting.
- Use some grease in groove for fixation of the o-rings for easy installing.
- Make sure all the nuts are in the place and tightened.

- (3) Installation of load detecting element  
Refer to (7-7).



[Optional]

(Fig.7-4)

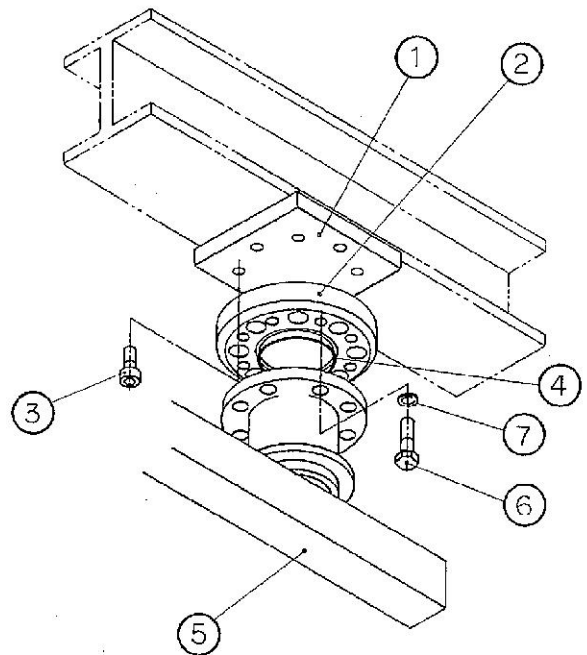
7-5. Installing of BTA\*\*\*-C (Refer to fig.7-5)

- (1) Furnish on a ceiling beam with bracket ① (This part-optional)  
by welding or bolts (Not included in this package).  
Attach it so that the flange surface is horizontal.
- (2) Install flange ② by bolts ③.  
Attach it so that the flange surface is horizontal.
- (3) Put o-rings ④ into flange surface.  
Install gyration unit ⑤ by bolts ⑥ and spring washers ⑦.

**C a u t i o n**

- Set the o-rings so they are not biting.
- Use some grease in groove for fixation of the o-rings for easy installing.
- Make sure all the nuts are in the place and tightened.

- (4) Installation of load detecting element  
Refer to (7-7).



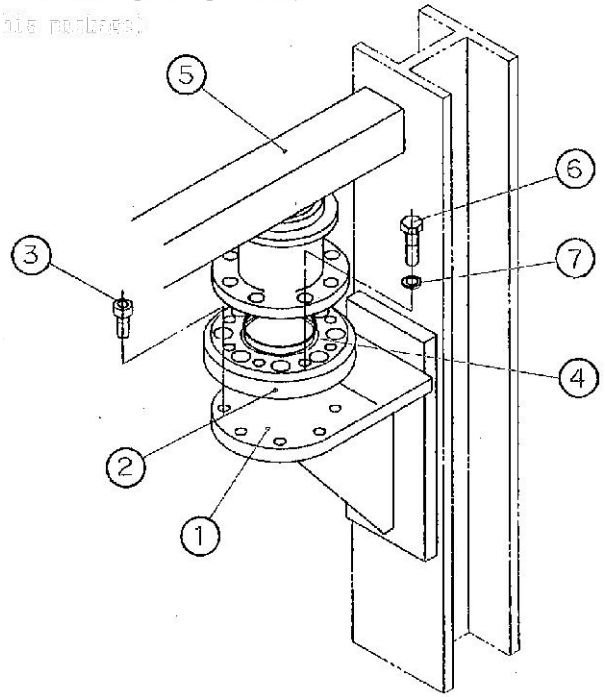
(Fig.7-5)

7-6. Installing of BTA\*\*\*-W (Refer to fig.7-6)

- (1)Furnish the building column with bracket ① (This part-optional) by welding or bolts. (Not included in this package)
- (2)Install flange ② by bolts ③.  
Install it so that the flange surface is horizontal.
- (3)Put o-rings ④ into flange surface.  
Install gyration unit ⑤ by bolts ⑥ and spring washers ⑦.

**C a u t i o n**

- Set the o-rings so they are not biting.
- Use some grease in groove for fixation of the o-rings for easy installing.
- Make sure all the nuts are in the place and tightened.



(Fig.7-6)

- (4) Installation of load detecting element  
Refer to (7-7).

7-7. Installation of load detecting element (Refer to fig.7-7)

(1)Installation of belt

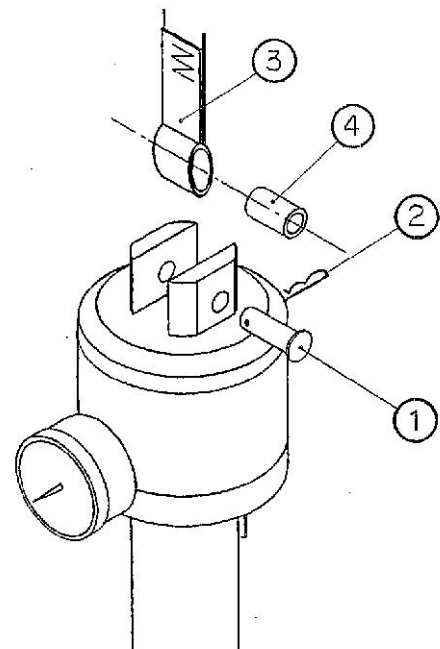
Remove belt pin ① from the upper part of load detecting element after removing snap pin ②.  
Connect coil tube on the end of sub arm section.  
Pass belt ③ hanging from the end of sub arm section through coil tube.  
The end of the belt is shaped like a circle.  
Puts belt collar ④ into this circle.  
Pass belt pin through belt collar ④ and fix it by snap pin.

(2)Connection of coil tube

Connect the end of sub arm section and load detecting element by coil tube.  
The end of sub arm section and load detecting element have clear markings.  
Match the markings when connecting.

**C a u t i o n**

- Make sure to match the markings when connecting.



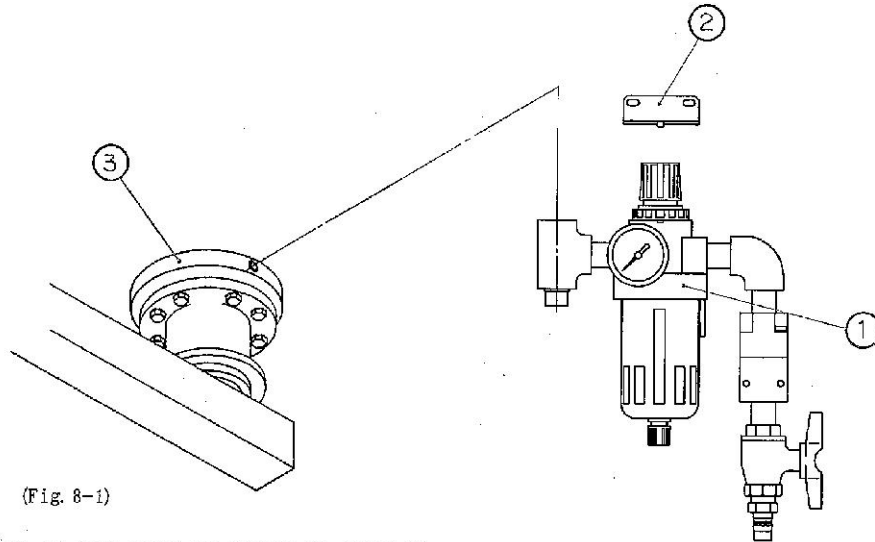
(Fig.7-7)

- (3)Insertion method of coil tube  
Refer to (13-2).

8.Piping

(1)Piping of filter regulator unit and flange (BTA\*\*\*-W,BTA\*\*\*-C) (Refer to Fig.8-1)

Installation stay ② is attached to filter regulator unit ①.  
 Install filter regulator unit ① closely from phase flange ③.  
 Connect phase flange ③ and filter regulator unit ①  
 by fixation piping or air hose. (Port Rc3/8)



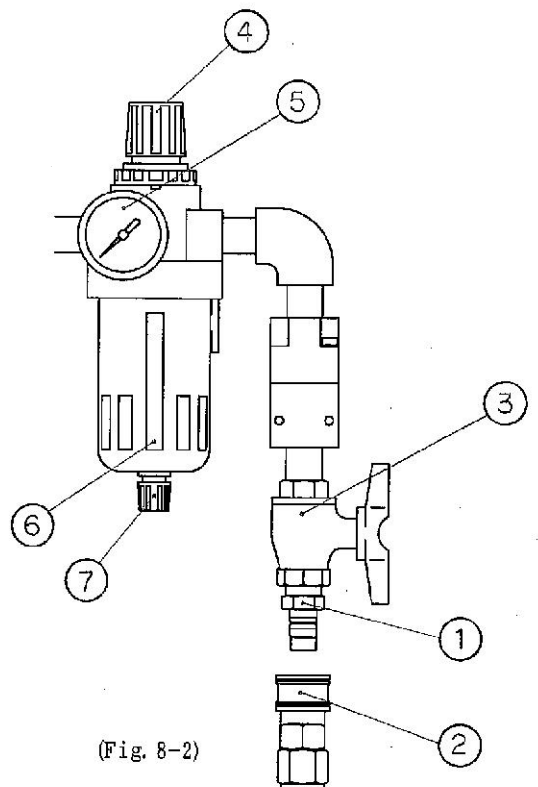
(Fig. 8-1)

(2)Connection of hose coupling (Refer to fig.8-2)

Hose coupling ① is included for connection  
 of air inlet port and filter regulator unit.  
 Connect hose coupling ② using its hose fitting.

**C a u t i o n**

•Use air hose of bore more than 8mm.  
 •Blows off dust within pipe before use.



(Fig. 8-2)

## (3) Pressure regulation (Refer to fig.8-2)

Open ball valve ③, then pull knob ④ located in the upper part of filter regulator.  
Adjust the display pressure gauge ⑤ until it shows 6.0kgf/cm<sup>2</sup> by knob ④.  
(When knob ④ is turned clockwise, the reading of display pressure gauge ⑤ rises.)  
Push down knob ④ after adjustment.

**C a u t i o n**

•Maintain the air supply pressure value below 6.0kgf/cm<sup>2</sup>.

When used for a long time, moisture in compressed air gathers in bowl ⑥.  
Loosen drain cock ⑦ and drain water occasionally.

## 9. Adjusting

## 9-1. Adjusting of pilot regulator (Refer to fig.9-1)

Since adjustment is done at the time of shipments from factory,  
there will not be a need for adjustment.

However, if it does not balance, it needs to be readjusted by use of pilot regulator.

To do this:

(1) Feed compressed air.

(2) Do not hang any load on the load detecting element.

(3) Loosen lock nut ② of pilot regulator ①.

(BTA120A has 2 pieces pilot regulator ① equipped.)

(4) When load detecting element tends to be lower.

Turns setting screw ③ of pilot regulator in a clockwise rotation  
in angle of 2~5° by a screw driver.

(When adjustment is done through one of the two pilot regulators  
in the case of BTA120A, compressed air is exhausted from  
the other pilot regulator. Stop the outflow of the compressed air  
by adjusting the pilot regulator which releases the compressed  
air.)

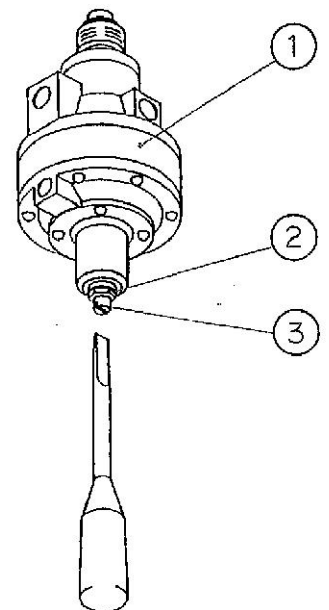
(5) When load detecting element tends to be higher.

Turns setting screw of pilot regulator in an anti clockwise  
rotation by screw driver.

(compressed air is exhausted from the pilot regulator  
during the regulation in the case of BTA120A.

Adjust the other pilot regulator to stop the air flow.)

(6) When the load detecting element stabilizes in a balance state,  
fix the setting screw by lock nut.



(Fig.9-1)

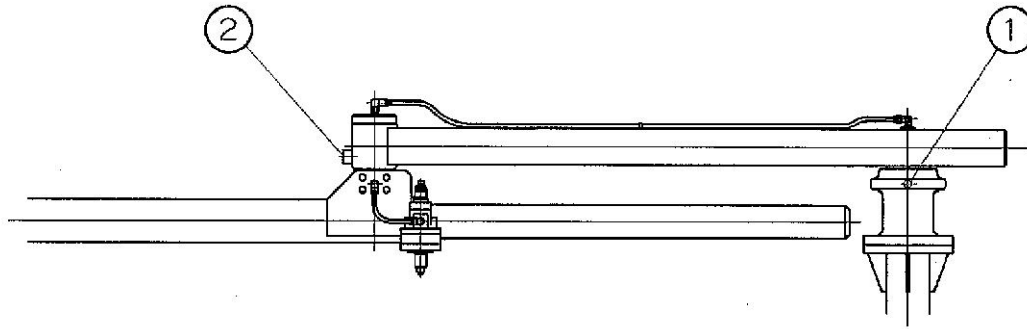
**C a u t i o n**

•Fix the setting screw by lock nut after adjustments.  
•Adjust each of the 2 pieces of pilot regulators in the same setting  
in the case of "BTA120A".

## 9-2. Adjusting of brake (Refer to fig.9-2)

When you want to slow the operation speed of gyration by the work state, you can adjust the speed of gyration by the brake adjustment .

- (1) There are two places for adjustment in the gyration unit.
- (2) When you want to slow the gyration speed of the arm section, tighten bolt ①.
- (3) When you want to slow the gyration speed of the sub arm section, tighten bolt ②.



(Fig. 9-2)

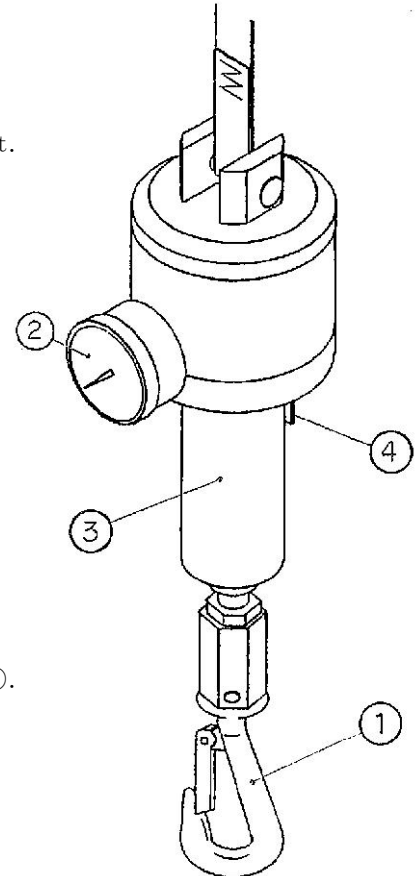
**C a u t i o n**

- When bolt ① and bolt ② are excessively tightened, gyration will be difficult to make.
- The brake is not the device that stop gyring completely.

## 10. Before operation\*

Check to see if it operates without problems after installing and piping were completed. (Refer to fig.10-1)

- (1) Feed compressed air.
- (2) Do not leave any load on the hook ① of load detecting element.  
Load gauge ② should indicate 0kgf.
- (3) Hold the grip ③.
- Pull hook ① by hand while pulling lever ④ by finger.
- (4) See to that the load detecting element rises.
- (5) Pull lever ④ by finger again and let go of your hand from load detecting element.
- (6) See to that load detecting element stabilizes balanced.



(Fig.10-1)

## 11. Operation\*

- (1) Hang a load on hook ① of load detecting element.
- (2) Hold the grip ③ and pull lever ④  
by finger to lift the load gradually.
- (3) When the load has left the floor, release finger from lever ④.
- (4) Load gauge should show the weight of the load.
- (5) It should come to a balance.

When it does not stabilize in a balance state,  
pull lever ④ by finger once more.

- (6) When balanced, release your hand from load detecting element,  
then the load can be moved directly by hand.
- (7) When trying to set down the load, hold the grip ③ while  
pulling lever ④ by finger, until the load reaches the floor softly.
- (8) Remove the load from hook ① after confirming that load gauge indicates 0kgf.

**C a u t i o n**

• Load detecting element does not detect the weight of the load accurately when it is used for purposes such as detaching the load from a lathe.

- (1) Observing the load gauge, lift the load softly.
- (2) When load gauge indicates the weight of load, release your finger from lever ④.
- (3) Detach the load from fixed in a chuck.
- (4) After detaching the load and balanced, pull lever ④ by finger again,  
for accurate weight of the load.

Adjust air pressure (A display pressure of filter-regulator) to load weight when repeating detachment of load of the same weight. (refer to Graph 2-1)  
Since it can not raise a heavier thing than load weight, it prevents jumping.

**Note:** Refer to separate Operator's Manual when using this for a special hoisting accessory specification.

## 12. Inspection

### 12-1. Daily inspection

Inspect daily before use.

Inspect for if it:

- Gathers water on filter regulator?
- Has the air pressure between 3~6kgf/cm<sup>2</sup>?
- Has damages or cracks on hook?
- Has safety plate on the hook damaged?
- Goes up and down smoothly?
- Runs without unusual noise?

### **C a u t i o n**

·Never use the hoist if any of the above items is found.

### 12-2. Periodic inspection

Carry out a monthly inspection.

Keep the record of the results of inspections.

<Inspection of air leakage>

Inspect for air leakage resulting from loosely connected o-rings and coil tube.

Inspection contents:

- (1)Feed compressed air.
- (2)Hoists a load and then balance.
- (3)Close ball valve of filter regulator unit.
- (4)Leave the load balanced for 30 seconds.

### **C a u t i o n**

- Do not leave it balanced unattended, longer than necessary.
- Confirm that it is balanced.

- (5)When the balance is not maintained for 30 seconds, air may be leaking.

Use soapy water to find the location of the air leakage.

- (6)If there is an air leakage, a reconnection of tube and replacing of o-rings may be necessary.
- (7)Adjust pilot regulator again if there is no air leakage.

### **C a u t i o n**

·Do not try to operate till the cause becomes clear.



**C a u t i o n**

•Carry out the following inspections after completely removing the compressed air from "my hand".

- (1)Close ball valve of filter regulator unit.
- (2)Remove the compressed air from "my hand". (Use exhaust valve on BTA\*\*\*-B and BTA\*\*\*-S.)
- (3)Confirm that load detecting element does not lift up when you pull the hook, pulling the lever of the load detecting load element by finger.  
(In BTA\*\*\*-C and BTA\*\*\*-W, the load detecting element goes up and down several times before it gradually stabilizes balanced.)

<Inspection of tube>

Instantly replace the tube if there is any deterioration or crack observed.

<Inspection of filter regulator unit>

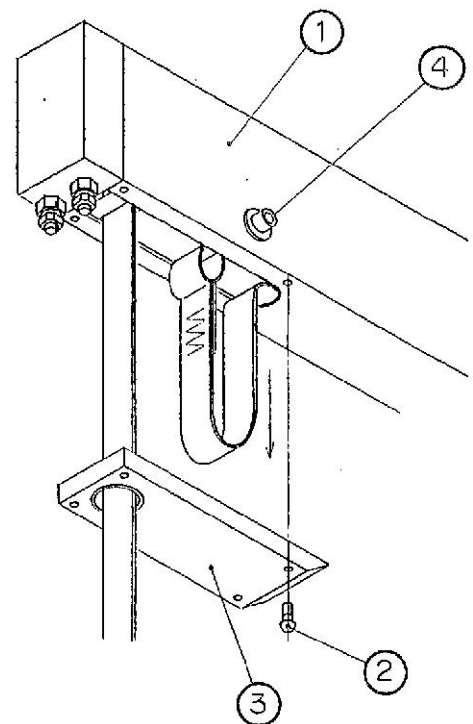
Remove bowl of filter for inspection of dirt in filter element.

When filter element clogs up, it blocks smooth air flow and causes the performance to fall.

Blow off dust by compressed air.

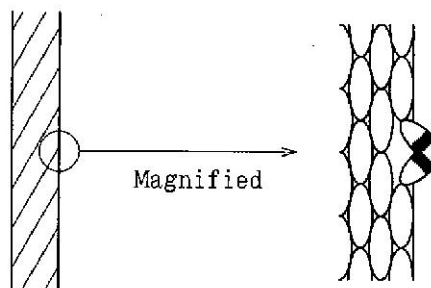
<Inspection of belt>

- (1)Remove coil tube and belt from load detecting element.
- (2)Loosen screws ② of sub arm ① end and remove belt guide ③.  
(Note:never pull out guide bolt ④.)
- (3)Inspection verge of belt.  
(Pull the hidden part of belt within sub arm ① in the direction of arrow head for inspection.) (Refer to fig.12-1)



(Fig. 12-1)

Instantly replace the belt if it has deteriorated as indicated, in fig.12-2.



(Fig. 12-2)

## 13. Maintenance

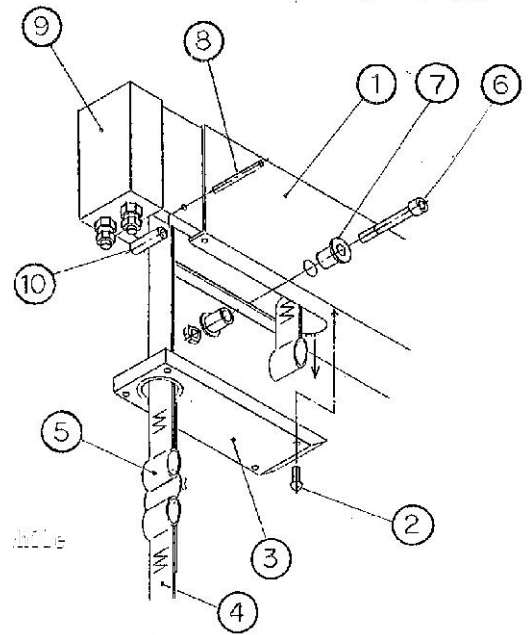
## 13-1. Replacing belt (Refer to fig.13-1)

Promptly replace the belt if the belt itself or any stitching part has begun to wear off.

**C a u t i o n**

- Belts are consumable supplies.
- Do not attempt to use beyond their duration.
- Replacing belts at regular intervals is recommend.

- (1)Close ball valve of filter regulator unit.
- (2)Completely remove compressed air from "my hand".  
(An exhaust valve comes with BTA\*\*\*-B and BTA\*\*\*-S.)
- (3)Confirm that load detecting element does not lift up while you pull the hook, pulling the lever of load detecting element by finger.  
(In BTA\*\*\*-C and BTA\*\*\*-W, the load detecting element goes up and down several times before it gradually stabilizes balanced.)
- (4)Remove coil tube and belt from load detecting element.
- (5)Loosen screws ② of sub arm ① end and remove belt guide ③.
- (6)Turn the belt manually by holding the turn of the stitching part in the same directions and tie the old belt ⑤ with new belt ④ by a thin string.
- (7)Pull out guide bolt ⑥ and remove old belt ⑤ from sub arm ①.  
Heed so that an end of the old belt ⑤ does not enter the sub arm ①.
- (8)Remove guide bolt sleeve ⑦.  
Draw out the belt guide ⑨ until counter roller pin ⑧ can be removed.
- (9)Pull out counter roller pin ⑧ and remove counter roller ⑩.
- (10)Keep the belt straight and pull the old belt ⑤ toward arrow head, and the new belt ④ enters sub arm ①.
- (11)Install counter roller ⑩ by counter roller pin ⑧.
- (12)Put the belt guide back in its place ⑨ and then put the guide bolt sleeve ⑦ back on.
- (13)Remove the string that connected new belt ④ with old belt ⑤.
- (14)Bolt down the new belt's end ④ which connects it to the old belt ⑤ on sub arm ① by guide bolt ⑥.
- (15)Install belt guide ⑨.
- (16)Install load detecting element and connect coil tube.



(Fig.13-1)

**C a u t i o n**

- Replace parts with genuine parts of our company.  
Contact us for information on the genuine parts, if necessary.
- We will not be responsible for any troubles or damages resulted from the use of non-genuine parts.
- Replace parts after completely removing compressed air from "my hand".
- Inspect and regulate "my hand" after each part replacement.

## 13-2. Replacing of tube

"my hand" uses polyurethane tube for piping of compressed air.

When the tube is excessively pulled or damaged, air leakage may be caused.

Instantly replace it if damage is found or an air leakage is spotted on tube.

## (1) Instant tube fitting (Refer to fig.13-2)

## •Removal of tube

Push in the tube ①, and then pull it out pushing release ring ② in a parallel manner.

## •Insertion of tube

If there is damage at the tip of the tube, detached it, and then cut the damaged part rectangularly.

Insert the tube firmly.

Try to pull it out lightly to check if it is in place solidly and correctly.

## (2) Brass tube fitting (Refer to fig.13-3)

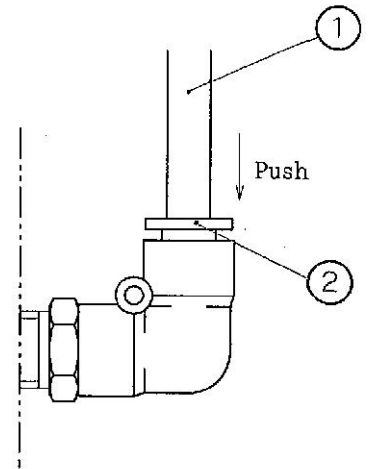
## •Removal of tube

Loosen ball head lock nut ② and extract the tube ①.

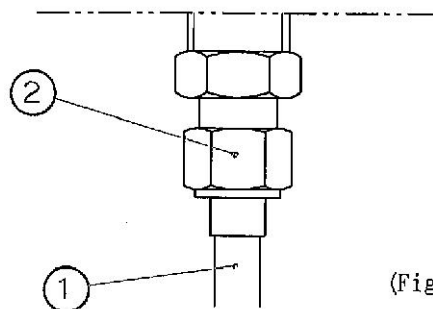
## •Insertion of tube

Clamp the plug ball head lock nut ② by hand till tube touches base of the joint.

Tighten it by spanner. (2 revolutions)



(Fig. 13-2)



(Fig. 13-3)

**C a u t i o n**

- Replace parts with genuine parts of our company.
- Contact us for information on the genuine parts.
- We will not be responsible for any troubles or damages resulted from the use of non-genuine parts.
- Replacement parts after completely removing compressed air from "my hand".
- Inspect and regulate "my hand" after each part replacement.

## 14. Storage

- Store "my hand" away from moisture in a stop period.
- Never leave "my hand" that may be exposed to rain or dew in a stop period.
- If "my hand" is not operated for over a month,do no-load and load running ten and several times at least once a month.It makes a difference to prevent inner fastness.
- If moisture is inclusive in compressed air,rust boils up internally in a stop period and becomes the source of giving up the ghost for fastness by setting.
- Even if a stop period is for over a month or within a month.In that case,you need to do overhaul or change parts.
- Skilled technician is required when "my hand" is disassembled.Contact our staff or dealer if an overhaul is needed or an abnormality is found in "my hand".

## 15. Trouble shooting

Do the following inspections again when a jam is suspected.

(1)When it does not detect loadweight.

| Possible caus                                    | Inspections   |
|--|---|
| ①Compressed air is not supplied.                 | <ul style="list-style-type: none"> <li>•Is the piping to feed compressed air correctly connected?</li> <li>•Is ball valve of filter regulator open?</li> <li>•Is a display pressure of filter regulator showing 6kgf/cm<sup>2</sup>?</li> </ul> |
| ②Wrong piping.                                   | <ul style="list-style-type: none"> <li>•Is not the tube connection wrong?</li> </ul>  |
| ③The load weighs more than the hanging capacity. | <ul style="list-style-type: none"> <li>•Hanging capacity alterates by air pressure supplied. (Refer to graph 2-1)</li> </ul>  |

(2)When it dose not balance.

Transfer of balanced load is extremely heavy.

| Possible caus                              | Inspections  |
|--|--|
| ①There is an air leakage in piping.        | •Hold air leakage inspection again.  |
| ②Improperly regulated pilot regulator.     | •Hold a regulation of pilot regulator again.   |
| ③The compressed air has moisture and dust. | •Water may be gathering in bowl of filter regulator.   |
| ④Pressure of compressed air alternates.    | •When air pressure fluctuate frequently, it sometimes does not balance.<br>Check the compressor output.<br>(Refer to graph 2-2, 3) |

**Note:**Contact us when the cause of operation failure does not become clear.

#### 16. Record keeping

|                       |                              |
|-----------------------|------------------------------|
| Installation records  |                              |
| Purchased from: _____ | Date of purchase: _____      |
| Serial number: _____  | Type: _____                  |
| Location: _____       | Date of installation : _____ |

SAN-EI SEIKI SEISAKUSHO CO. , LTD.

Factory :1, Kariya, Kori-Machi, Date-Gun, Fukushima Pref, Japan

Phone: 024-582-3144 Fax: 024-582-3521

Tokyo Office :28-2, Asakusabashi, 3-Chome, Taitou-Ku, Tokyo, Japan

Phone: 03-3864-8071 Fax: 03-3864-8074

Osaka Office :1-4, 5-chome, Nishinakajima, Yodogawa-ku, Osaka-Shi, Osaka, Japan

Phone: 06-6195-4666 Fax: 06-6195-6677