

Manual For Handling the Device With Safety (Handbook for using Mini-table correctly and safely)

! Deliver the manual to those who actually use the device.
We sincerely appreciate purchase of our products. Read the manual before using the device correctly, and keep it carefully for future reference. Contact us if you found something not understandable.

1. Note for safety.

1.1 Description of signs

The manual includes notices marked by signs in order to prevent accident from being occurred due to incorrectly using the device.

Warning This sign means that there is a possibility of getting damaged or fatally injured if used incorrectly by ignoring the warning.

Caution This sign means that there is a possibility of getting injured or doing damage on other material if used incorrectly by ignoring the caution.

* Noted that the sign designated by **Caution** involves a grave consequences. Abide by the rule designated at the signs because they contain important descriptions.

What symbols mean

pictograph	meaning
	This sign includes content which notifies to force and instruct to do.
	This sign notifies to prohibit to do. This sign includes prohibited items in tangible terms. Ex. Representing pressure prohibited other than specified.

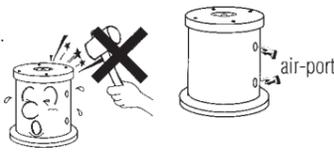
1.2. Transportation

- Caution** **!** **Positively hold in place upon transportation.**
- Device is precision machine. Don't give any strong impact and don't drop on ground.
 - It may be cause of breakdown.
 - When device drops, it may give damage on feet or hand of body.
 - Confirm type and weight of device upon transportation.

2. Setting

2.1 Handling

- Caution** **!** **Don't get in foreign matters**
- Don't admit metal chips of foreign matters via air-port hole.
 - It may cause internal damage.
 - **Don't turn forcibly.**
 - Don't forcibly turn table outside.
 - It may cause internal damage.
 - **Don't give unduly impact.**
 - Don't give strong impact to device. Be very careful when attaching load or the like.
 - It may cause internal damage, and fail to insure accurate index action.
 - Our products including Mini-table have been coated with rust preventing agent on the shaft to prevent rust temporarily. When mounting Mini-table to the machine, remove the rust preventing agent.
 - Rust preventing agent type : Oil-based varnish
 - 【How to remove the rust preventing agent】
 - Wipe with a cloth or the like soaked with alcohol for coating or white kerosene.



2.2 Installation

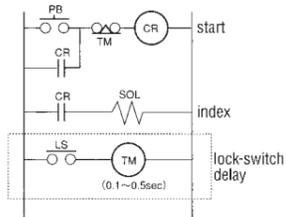
- Caution** **!** **Positively fix**
- Fix the device positively to machine. Attach the device in accordance with users' requirements and weight of the device.
 - If otherwise, the device may drop during operation or it may invite secondary disaster.
 - Don't install the device when it is broken.
 - If otherwise, it may invite injuries or secondary disaster.
 - **Protect device**
 - No measures are taken for the device to attach water proof and dust proof equipments. Protect the device against the water and dust with the use of a sheet cover or the like. (*measure is taken for protecting the device against the water drop and dust is compensated by special equipments)
 - If otherwise, it may invite malfunction or damage on the device.



3. Adjustment and reference circuit

3.1 Note for adjustment

- Warning** **!** **Make sure to do trial operation.** **Important**
- Confirm controller at each place before starting operation.
 - Otherwise, it may unexpectedly move depending on device, and invite very dangerous situation.
 - **Make sure to do adjustment.**
 - Raise speed gradually from low speed range so that shock or chattering would not occur at stoppage end.
 - When operated at high speed from start, it may invite internal damage or the like.
 - Don't do adjustment alteration excessively.
 - Otherwise, it may render movement unstable and dangerous. It may also be cause of breakdown.

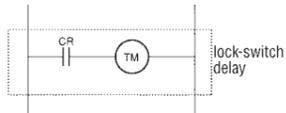


Circuit 1. Index switch (LS) is used,

3.2 Reference circuit (for single solenoid)

Explanation

- Actuate solenoid [ON] to rotate by 5-7 degrees left before entering index completion until ceased. This position is detected by index switch (LS) before turning off solenoid. Upon turning off solenoid, table turns rest of 5-7 degrees to complete lock(Circuit 1).
 - In order to positively make piston move, predetermine time of 1-0.5 sec after turning on limit switch instead of turning off valve soon after energizing limit switch.
- When implementing index action with some latitude, it is possible to use timer instead of employing limit switch. Upon setting timer, predetermine appropriate time (Circuit 2).



Circuit 2. Timer-control is implemented to control time without using index switch (LS),

4. Note upon usage

4.1 In use

- Warning** **!** **Contact prohibited in use**
- Don't touch rotary portions actuated. Make sure that heed should be paid for clothes not to be caught in.
 - It may be very dangerous when clothes or body is caught in.
 - **Pressure prohibited other than specified**
 - Abide by air (oil) pressure strictly specified.
 - To use pressure other than specified may invite very dangerous situation(breakage).
 - **Don't actuate where load is placed.**
 - When device stops, don't actuate where load is placed upon restarting.
 - When rotated forcibly, it may invite internal damage and lose normal function. It may also invite cause of breakdown.



4.2 Manners of action at emergency stop

Caution **!** **Manners become different in action at quick start and at emergency stop depending on selected valve.**

two-position, single solenoid valve

situation in emergency stop	manner of piston	situation of table	at time of restarting
in middle of index action	downward stroke instantly set	instantaneous stop in middle of index	restarting rest of index action
in middle of locking action	upward stroke instantly set	resuming locking action (moves by 5-7 degrees) !	restarting index action

two-position, double solenoid valve

situation in emergency stop	manner of piston	situation of table	at time of restarting
in middle of index action	resuming downward stroke	rotating until index action completed !	restarting index action
in middle of locking action	resuming upward stroke	resuming locking action (moves by 5-7 degrees) !	restarting index action

! Be careful because it does not stop immediately.

2.3 Attaching load

- Caution** **!** **Abide to screw depth**
- As for load-attaching screws, depth of four screws on table surface should be abided by dimensional list raised at right side.
 - If screw bolt is too long, interference occurs to disable rotational movement.
 - **Don't apply load more than allowable.**
 - Don't apply load weight exceeding an allowable value.
 - If otherwise, it may invite an internal breakage.
 - Upon laterally setting (axially horizontal), place load to be well-balanced right and left against rotational center.
 - Offset load like arm lever may cause to rotationally move preemptively.



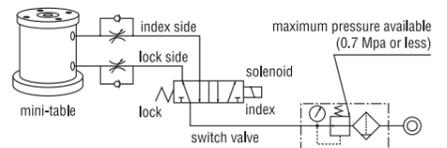
Type	Screw Size	Depth
MT70	M5	8mm
MT100	M6	10mm
MT125	M6	10mm
MT200	M10	20mm

2.4 Note for placing pipe and routing wire

- Warning** **!** **Install Emergency Stop Circuit**
- Do safety-emphasized design so that device is instantaneously ceased with quick interruption from air and electrical power source at emergency.
 - Otherwise, it may be very dangerous if rendered unable to stop device at emergency.
 - **Place pipe and route wire correctly.**
 - Read manual sufficiently before placing air pipe correctly.
 - Otherwise, it may invite damage, injury or malfunction.
 - Don't injure pipe, don't apply load forcibly and don't clamp pipe.
 - Otherwise, it may invite breakage.
 - Be sure not to mistake pipe for index and locking pipe.
 - Otherwise, it may invite runaway.
 - Don't use three-position to emergency stop circuit.
 - Otherwise, it may render starting speed unstable and invite internal damage.
 - Arrange pipe so that speed controller is located near device with exit side directed squeezably (meter-out circuit).
 - Otherwise, it may disable normal function.
 - Make always sure to sufficiently flush pipe before arranging pipe.
 - Otherwise, it may invite malfunction.
 - Positively secure limit switch or the like in right place.
 - Otherwise, it may invite runaway.

2.5 How to arrange pipe

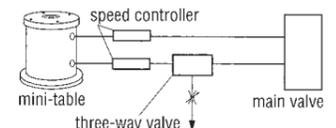
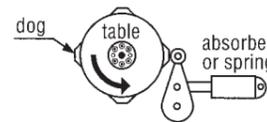
- Device has reciprocal piston internally. One single reciprocal movement corresponds to one single index action. Pipe is arranged in same manner as placing for reciprocal air-cylinder.
- Index air-port hole (forward side) is provided at turn table side, and lock air-port hole(backward side) provided at lower side (see drawing below). Set speed controller with meter-out circuit (exit-squeeze circuit).
- Use peripheral equipments in conformity with specification.



Cushion

Device uniformly rotates so that it induces impact at stoppage end when used at high speed with high load. With use of roller and dog attached to absorber or spring, it is possible to reduce shock in some degree.

Install three-way valve in exhaust circuit. Change three-way valve due to signal received immediately before end of rotation. This enables user to squeeze speed controller in bypass circuit.



2.6 How to implement electrical control

- Device needs two-step operation to implement predetermined index action.
- Device needs electrical signal to change valve, and controlled in same manner as air-cylinder in general.
- Dog used for sensor may be attached to table side or rear end of shaft (see left drawing). Dog corresponds to forward end switch in air-cylinder.
- When limit switch is not used, employ timer-control equipment to control time.
- Determine air-switch timing correctly. Be careful that switch is actuated before entering locking position particularly when operating at low speed. This instantaneously renders valve to change, thus failing to insure positioning lock.
 - In this case, use timer to take a little time upon turning on switch and implement to change valve.



5. Check and maintenance

5.1 How to cope with abnormal situation

- Warning** **!**
- Make sure to cut off electrical power source circuit when power failure occurs or dangerous situation is supposed.
 - Otherwise, it may be very dangerous if runaway or the like is induced when power failure is recovered.
 - Be careful that device does not cease immediately at emergency stop.
 - It may be very dangerous if get injury when mistakenly touch device with hand.
 - Make sure not to approach device when operated again.
 - Otherwise, it may unexpectedly move depending on device, and invite very dangerous situation.
 - Contact our company when abnormal situation arises under influence of overload, impact or the like.
 - It may invite unexpected secondary disaster.

5.2 Check and maintenance

- Caution** **!** Take safety measure when storing device.
- Upon storing unused machines and accessories in a place, don't keep them in the following places.
 - Where is accessed by child, where they are easily taken out, where temperature and humidity change abruptly, where is in high humidity environment, where admits direct sunshine, and where volatile liquid substance is deposited.
 - Disassemble and remodeling are prohibited.
 - Don't disassemble and improve the device.
 - If otherwise, we can't guarantee normal operation of the device.
 - Make sure to interrupt air, and release rest of air upon mounting and removing device.
 - Otherwise, it may invite injury or runaway.
 - Every internal seal is JIS-based component part. Wear and breakage of seal may be cause of air leakage and decline output power. In order to prevent secondary disaster due to breakdown, replacing seals in five-year terms would be recommended even when used under normal environment.
 - Don't take off label. Contact our company and replace with new one when label is likely to comes off.
 - Otherwise, it may fail to insure normal guarantee.



6. Other notice

6.1 Guarantee (Check the terms & contents of guarantee)

- On the understanding that the device (mini-table device) is used in accordance with our specification, we guarantee the period to repair the device free of charge until a time which earlier relapses after operating 2500 hours on delivery or within one year after delivery.
- If trouble or defect appears with in the guaranteed period of time obviously due to deteriorated quality of mini-table device, we guarantee to repair the device free of charge.
- Note that we charge device-related expenditures and expenses arisen from steps of detaching parts from and attach parts to the device.
- If the device is repaired, disassembled or improved at customers' side, Repair free of charge should be outside our guaranteed requirements.
- We don't have oversea maintenance and technological support in connection with the device.

6.2 After-Sales-Service

- For the sake of quality improvement, the specification may be subject to change without notice.
- As for our catalogue and other technological documents, contact sales department of our company.
- We are always ready to arrange technological inquiry and meeting, contact us by telephone without hesitation.

6.3 Repair and trouble

- In case of trouble or inquiry for repair, contact sales department of our company or sales shop where you purchased the device.
 - Sales department TEL +81-565-76-0029 FAX +81-565-76-0023
 - (* We hope that the catalogue will be of your help. Your inquiries and information would be highly appreciated. We always wait and welcome your direct contact.)

6.4 Disposal

- Dispose the device as general industrial wastes.



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