

**HIWIN®**



# Linear Planar Servo Motor

Installation Manual

## Content

|  |   |
|--|---|
| 1. Motor maintenance.....                        | 5 |
| 2. Air Supply.....                               | 5 |
| 3. Design requirements on motor peripherals..... | 6 |
| 4. Assemble/disassemble the forcer & stator..... | 8 |
| 5. Cable chain installation.....                 | 9 |

## Pre-installing cautions:

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|  | Caution | Before using this product, be sure to read this manual first. We will not be responsible for any damages, accidents or injuries if the installation regulation hadn't been followed. |
|---|---------|--|

1. HIWIN STAGE was fixed by mounting bracket and crate. After LMSP has been moved out from the crate, check the outer appearance to see whether or not there is any damage; if yes, please contact with us immediately.
2. Ensure that the motor model is correct.
3. Check the completeness of cables and other attachments.
4. The forcer has strong magnetic field. Please keep out from any magnetic substances.
5. There is a strong magnetic force between the forcer and stator; be careful while assembling, disassembling or using them.
6. Products must be assembled/disassembled by professional person.
7. We will not be responsible on any damages, accidents or hurts made by replacing parts and disassembling the product that causes the forcer or stators damaged.
8. Cautions on transporting
  - a. To move the LMSP from crate to the installation platform, avoid LMSP from being dropped down or collision.
  - b. Don't drill on the LMSP; if additional mounting holes are required, contact our staff or the dealer.
  - c. Keep the LMSP from being hit by hard objects that would damage the LMSP.
  - d. Avoid the LMSP from being penetrated by any liquid that would damage the LMSP.
9. We offer one-year warranty to this product since its delivery date. Any incorrect operation or force majeure that causes the LMSP's damage is out of our responsibility for free-charge replacing or repairing this product within the available warranty time period.

## 1. Motor maintenance

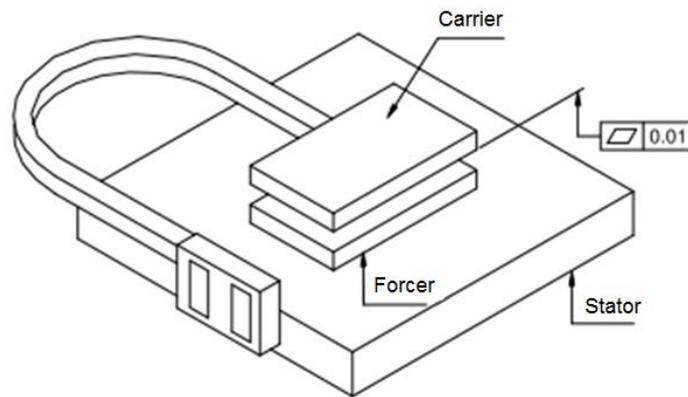
- a. Prior to run, thoroughly clean the motor surface by compressed air or soft cloth.
- b. Avoid from impacting or shocking the forcer and stator.
- c. Before the first run, turn on the compressed air source, move the forcer by hand to ensure that it can move smoothly. If it's doesn't move smoothly moving by hand, re-clean up the stator surface and check for the normal output of air supply.
- d. Keep the stator from being hit or dropped by foreign matters; timely notice whether the stator surface is dirty, stuck by foreign matter or scratched.
- e. Clean the stator surfaces by the cleaning cloth dipped in 95% industrial alcohol; then, coat it by anti-rust oil or wax; We recommend doing this procedure once per week.
- f. Do not wipe the stator surface by solvent; if the surface is rusted, de-rust it by suitable oil and then coat up an anti-rust oil film on it.
- g. Beware that the working environment might pollute the stator surface.
- h. For long-term preservation, coat up an anti-rust oil film or wax on the stator surface. Be sure to remove the said coating film prior to next running.
- i. Don't try to change the wiring while the drive is power on; it would cause the danger of electric shock.

## 2. Air Supply

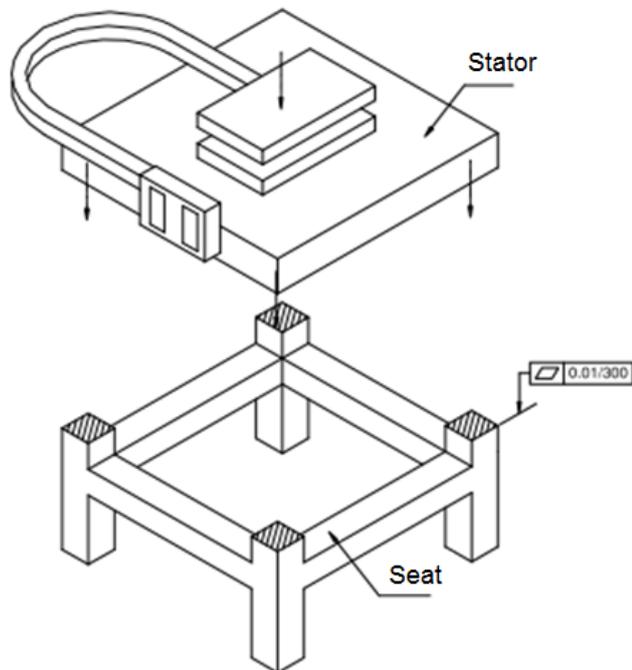
- a. Equip the filtering device upstream of the air supply, which can screen out moisture and foreign matters and supply clean air; air pressure is normally set at 3~4 bar.
- b. Normally the air-gap made between stator and forcer is set within 10~15 $\mu$ m; If the air pressure is too small (< 3 bar), the stator surface will be scratched. If the air pressure is too big (> 4 bar), it would reduce the force and rigidity and cause pneumatic-hammer that results in vibration.

### 3. Design requirements on motor peripherals

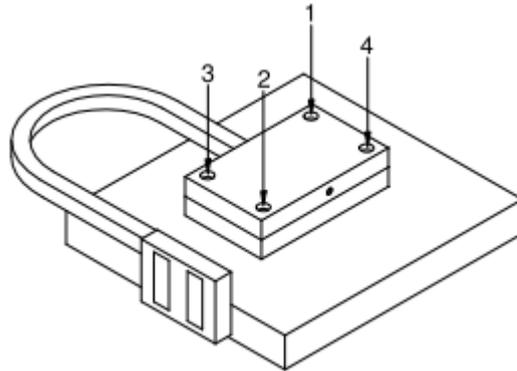
- a. Flatness on vehicle mounting surface should be less than 0.01mm; otherwise, forcer might be deformed that would cause abnormal actions or resonant of air bearings.



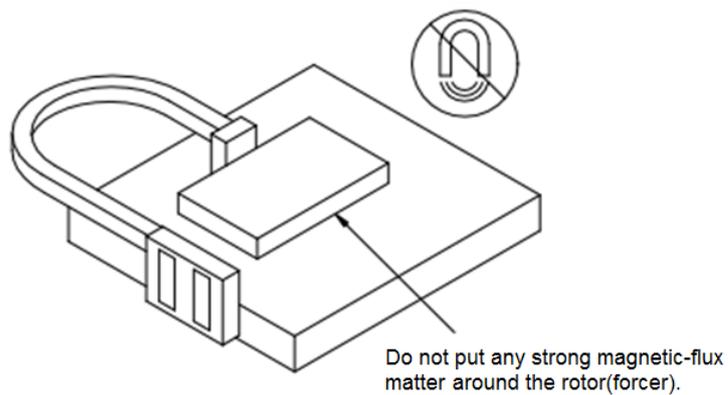
- b. Same case, the flatness of stator-seat surface should be less than 0.01mm/300mm; otherwise, stator may deform.



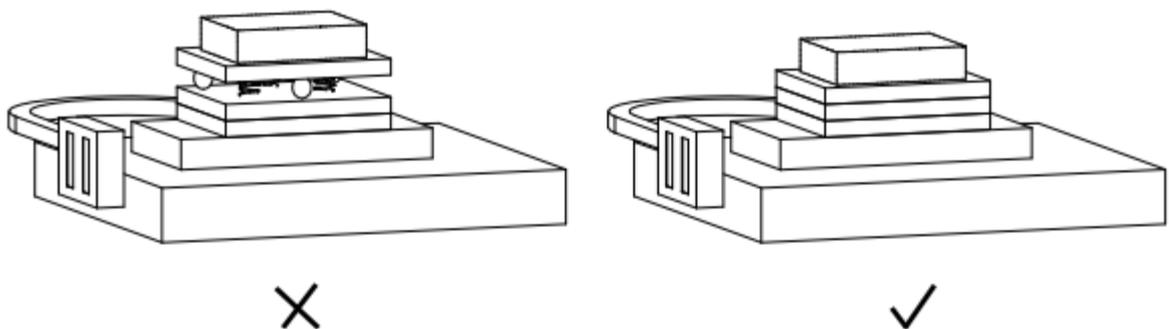
- c. In order to ensure a tight and balanced touch between the carrier and forcer, follow the order 1, 2, 3 and 4 to lock the screws separately. The gravity center of load lies at middle point of forcer as low as possible, which can improve the motion quality.



- d. Do not put any strong magnetic substance around the forcer that would affect the normal moving of forcer.



- e. Do not take point-contact in modulating the load leveling; use the surface-contact instead.



## 4. Assemble/disassemble the forcer & stator

### Assembly

Step 1: Clean up dirt and foreign matters from stator surface.

Step 2: Assemble the side-bars at three sides of stator.

Step 3: After certifying the forcer surface is cleaned up, supply maximum air pressure (>6bar) to forcer.

Step 4: Slowly push forcer into stator.

Step 5: Assemble the last side-bar of stator; mount the connector mount-seat onto stator.



### Disassembly

Step 1: Clean up dirt and foreign matters from stator surface.

Step 2: Dismantle the forcer's connector mount-seat from stator.

Step 3: Remove one side-bar from stator.

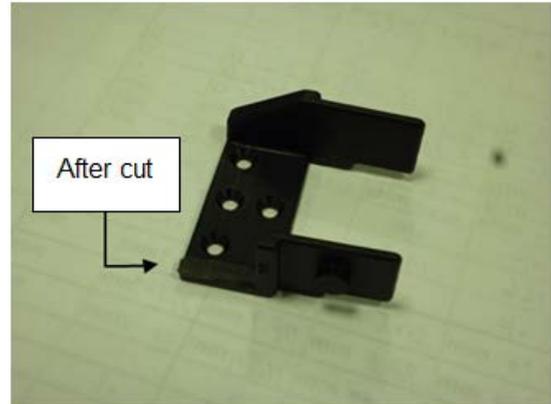
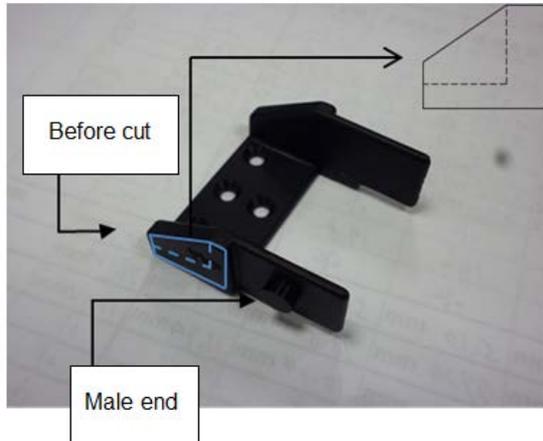
Step 4: Supply maximum air pressure (>6bar) to forcer.

Step 5: Slowly push forcer away from stator.

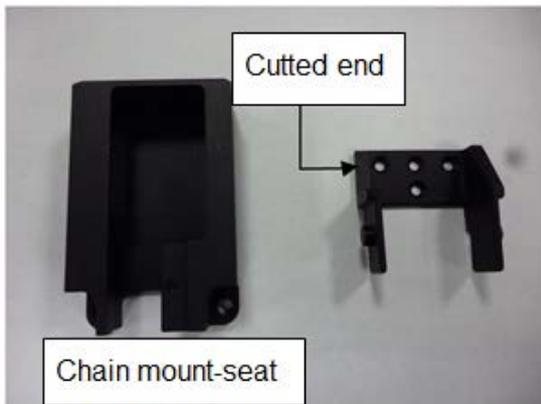
Step 6: Turn off the air Supply of forcer.

## 5. Cable chain installation

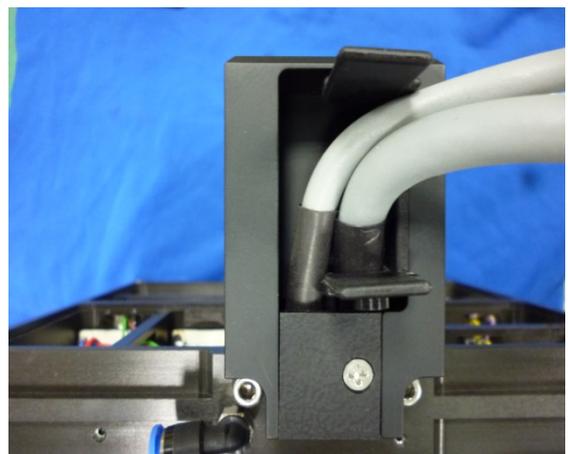
Step 1: Cut the square chain flange (male end) along the dashed line.



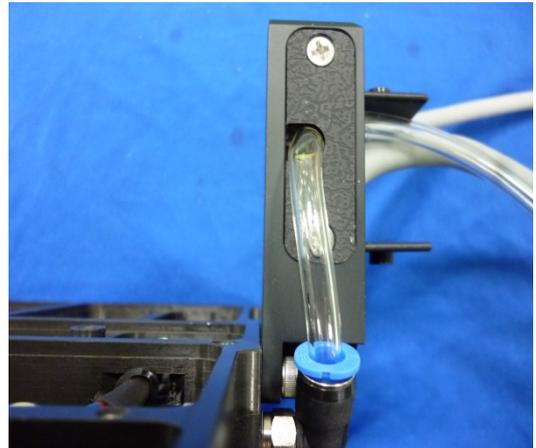
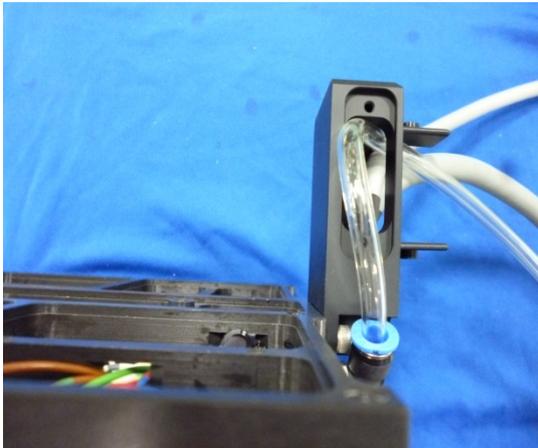
Step 2: Lock the square chain flange (male end) onto the chain mount-seat.



Step 3: Lock the cover after motor-wiring is connected.



Step 4: Lock the cover after air tubing is connected.



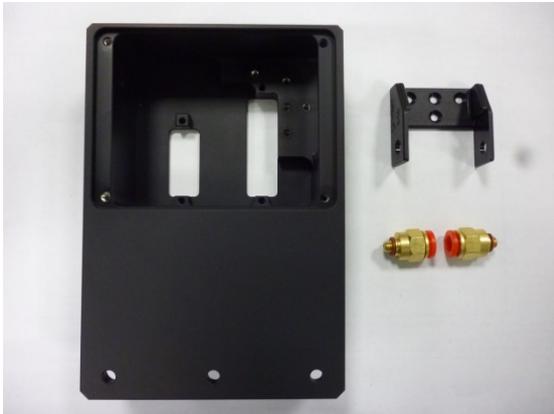
Step 5: After the square chain and flange (male end) are connected, fix the tubes and square chain by cable-tie.



Step 6: One-by-one assemble the square chain pieces from the chain mount-seat until 5~6 pieces are left.



Step 7: Lock the square chain flange (female end) and pneumatic connector onto the connector-mount-seat.



Step 8: Put motor cable connector pass through the connector-mount-seat; mount the connector by the copper roller (just fasten the copper roller; don't break the roller).



Step 9: After the square chain and chain flange (female end) are connected, fix the tubes and square chain by cable-tie. Then, assemble the left 5~6 chain pieces and lock down the connector-mount-seat cover.

