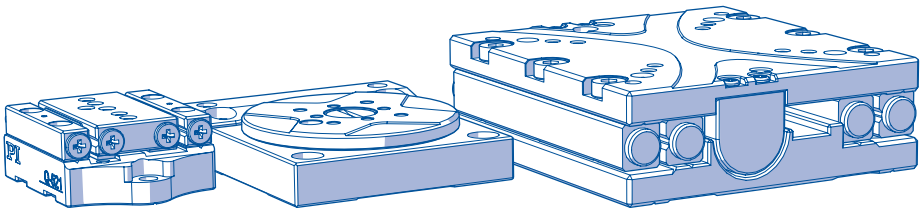
# Q-Motion® Positioners

Short Instructions

Q-5xx / Q-6xx



## User Information

These short instructions contain an overview of the most important safety and handling instructions for installing Q-Motion® positioners with electric motors with the product numbers specified above (x: any number).

Subject to change. These short instructions are superseded by any new release. The latest respective release is available for download on our website.

## Downloading and Reading the Manual

The actions during installation, startup, operation, and maintenance require additional information from the manuals of the positioner and/or the electronics.

Manuals may be titled as follows: "User Manual", "Technical Note".

### Downloading the Manuals from the Website

1. Open the website **www.pi.ws**.
2. Search the website for the product number (e.g., Q-521).
3. Click the corresponding product to open the product detail page.
4. Click the **Downloads** tab.
   The manuals are shown under **Documentation**.
5. Click the **ADD TO LIST** button for the desired manual and then click **REQUEST**.
6. Fill out the request form and click **SEND REQUEST**.
   The download link will then be sent to the email address entered.

If you cannot find the manual you are looking for or if you have any questions:
Contact our customer service department via service@pi.de.

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# General Safety Instructions

## Intended Use

The positioner is a laboratory device as defined by DIN EN 61010-1. It is intended for indoor use and use in an environment that is free of dirt, oil, and lubricants.

In accordance with its design, the positioner is intended for positioning loads at various velocities in interval mode. The positioner is not intended for applications in areas where failure would be a considerable risk for people or the environment.

It is only possible to use the positioner as intended when completely installed and connected, and in conjunction with suitable electronics. The positioner may only be installed, operated, maintained, and cleaned by authorized and appropriately qualified personnel.

## Installation

Electrostatic discharge can damage the positioner.

- Remove the ESD protective cap from the connector only after the positioner has been connected to the electronics.

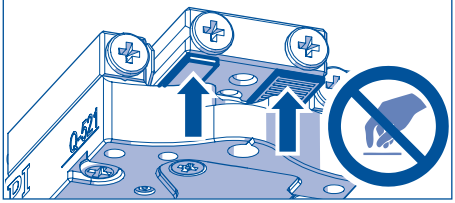
Mechanical forces can damage or misalign the positioner.

- Avoid shocks and drops.
- Pay attention to the maximum permissible forces (see manual).
- Pay attention to flat contact surfaces and similar thermal expansion properties for the base area and load (see manual).
- **Linear stage**: When the motion axis is oriented vertically, the load must be lower than the holding force of the drive (see manual).
  **Rotation stage**: When the stage is mounted vertically, the load must be lower than the maximum torque of the drive (see manual).
- The calculations must also include the masses of positioners moved in multi-axis systems.

The positioner could be damaged by contamination or ambient conditions that increase the electrical conductivity.

- Keep the positioner free of lubricants, dirt, condensation, and conductive materials.
- Do not operate a vacuum-compatible positioner during evacuation.
- Do not touch the encoder's scale or the ceramic rail of the Q-Motion® drive.

**The Encoder's Scale and the Ceramic Rail of the Q-Motion® Drive**



Incorrectly fitted screws and locating pins can cause damage.

- Pay attention to the maximum tightening torque (see manual).
- Do not allow screw heads to protrude.
- Select the screw length according to the depth of the mounting holes.
- Do not insert locating pins too deeply into the motion platform.

## Startup

If a protective earth conductor is not properly connected, touching the positioner in the case of malfunction can result in minor injuries from electric shock.

- Operate the positioner only with a properly connected protective earth conductor.
- Pay attention to the applicable standards for the protective earth conductor connection.

The surface of the positioner and the surroundings can heat up during operation. Touching the positioner can result in minor injuries from burning.

- If necessary, install touch protection.
- Avoid overheating the positioner, e.g., by reducing the stepping frequency (see manual) or cooling the surface area.

Excessively high or wrongly connected operating voltages can cause damage to the positioner.

- ▶ Use compatible electronics and cables only.
- ▶ Pay attention to the operating voltage range of the positioner (see manual).

A high operating frequency in step mode and continuous use of a short travel range can cause considerable wear on the positioner.

- ▶ If possible, reduce the operating frequency and duration.
- ▶ Stop the motion immediately if an electronics malfunction occurs.
- ▶ If possible, select another part of the travel range as working range at regular intervals.

### Handling Vacuum-Compatible Products

If the positioner is vacuum-compatible, attention must be paid to cleanliness.

- ▶ Touch the stage only with powder-free gloves.
- ▶ If necessary, wipe the positioner clean.

## Mounting the Positioner and Connecting to the Protective Earth Conductor

**CAUTION!**

If there is no protective earth conductor, there is a danger of minor injuries from electric shock.

- ▶ Operate the stage only with a properly connected protective earth conductor.
- ▶ Pay attention to the applicable standards for attaching the protective earth conductor .

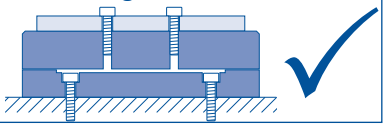
### Suitable Protective Earth Conductor

- Cross section of the protective earth conductor ≥0.75 mm².

### Mounting the Positioner

1. Use sufficiently conductive screws in all mounting holes to fix the stage to an underlying surface.
2. Tighten the mounting screws with at least 3 turns (see manual for torque).
3. Secure the screws against unintentional loosening, e.g., with locking paint
4. Make sure that the contact resistance is <0.1 Ω at 25 A at all protective earth conductor connections.
   If ground loops occur, contact the PI customer service department.
5. Hold the motion platform firmly or secure it against moving while mounting the load.
6. Fix the load to the mounting holes provided.

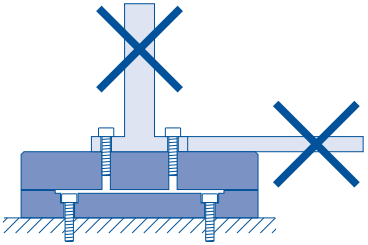
**Correct Mounting**



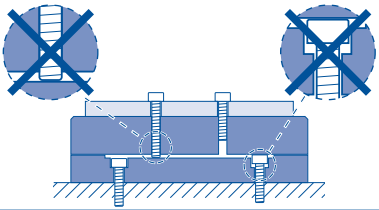
**Incorrect Mounting**

**Mounting on an uneven surface**

**Incorrect alignment of the load**



**Incorrectly fitting of the screws**



## Starting and Operating the Positioner

The instructions required for startup and operation are in the manual for the electronics.

## Positioner Maintenance

- Perform a maintenance run over the entire travel range every 10 million steps.

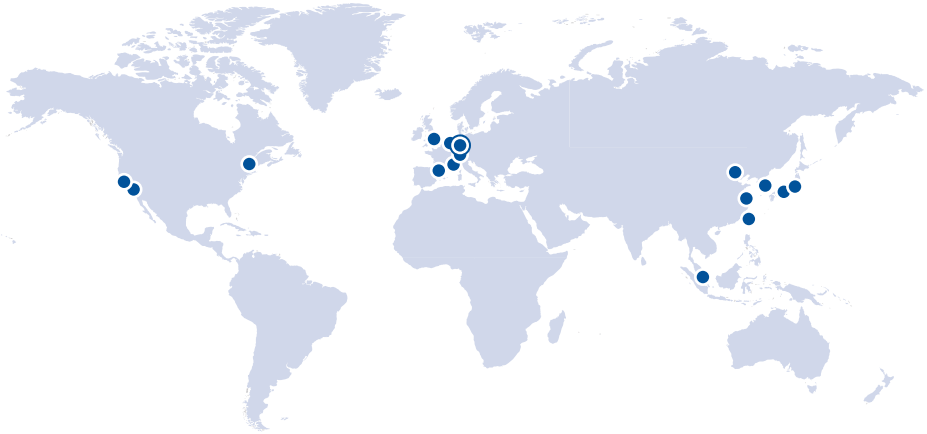
## Old Equipment Disposal

In accordance with EU law, electrical and electronic equipment may not be disposed of in EU member states via the municipal residual waste.

Dispose of your old equipment according to international, national, and local rules and regulations.

PI undertakes environmentally correct and free disposal of all old PI equipment made available to the market after 13 August 2005.

If you have an old device from PI, you can send it to PI free of charge.



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