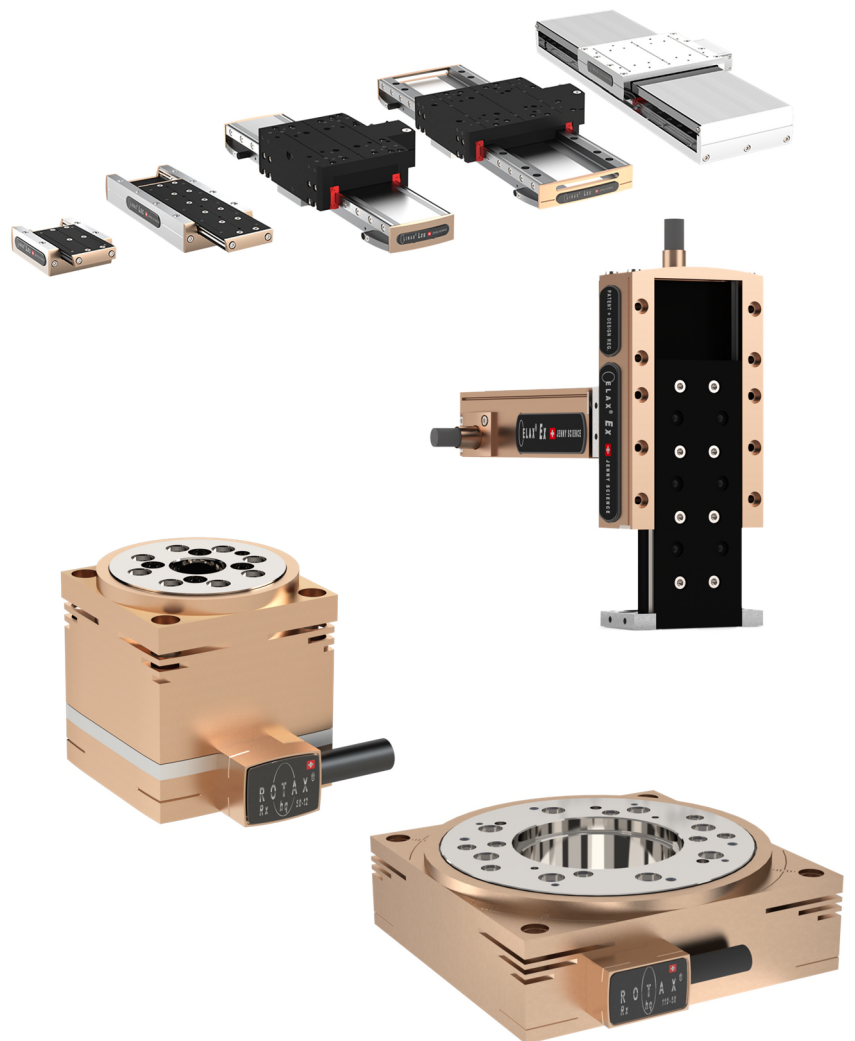


Safety and Handling notes
LINAX[®], ELAX[®] und ROTAX[®]

Edition January 2023



This documentation contains important safety and handling notes about LINAX[®] linear motor axis, ELAX[®] electric slide and ROTAX[®] rotary motor axis. Improper handling of these motors and non-observance of safety notes can lead to personal and material damage.


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1 Risks


1.1 Risk of electromagnetic radiation

The linear motor axes stages of Jenny Science AG are composed of permanent magnets. Persons with magnetically influenced implants or with prostheses that contain ferromagnetic components are at risk due to the magnetic fields (>0.5mT) and must respect a minimal distance of 50mm.

Shield	Location	Meaning
	Safety door in the area of the axis	Respect of minimum distance with pacemakers or implanted defibrillators

1.2 Risk from magnetic force


Due to the high magnetic field strengths, large attractive forces occur especially in the immediate vicinity (distance of approx. 50mm between the magnetic tracks). Therefore, it must be strictly observed that objects made of steel or iron (e.g. watches, rings, etc.) as well as technical devices (e.g. computers, credit cards, hard disks, etc.), which can be attracted, influenced or destroyed by the magnetic field, are not led into this area with the free hand. An appropriate safety distance must be maintained.

Shield	Location	Meaning
	Safety door in the area of the axis	Warning of magnetic field

1.3 Risk due to surface temperature

During operation, the surfaces of the motors can become correspondingly hot. The surface temperature of the motor can reach up to 80°C.

Monitoring devices and the error messages of the controllers must be checked continuously. If there are changes compared to normal operation, switch off the motor.

Shield	Location	Meaning
	Safety door in the area of the axis	Warning of surface temperature up to 80°C

2 General notes

2.1 ESD protective measures

Built-in components (e.g. temperature sensors, measuring system) may contain electrostatically sensitive components (ESD). Observe the ESD protective measures.



Do not touch electrostatically sensitive components / connection points!

2.2 Professionals

All transport, connection, commissioning and maintenance work must be carried out by qualified, responsible technical personnel.



3 Transport and packaging

Upon receipt, check if the system has been damaged during transport.

When unpacking the system, take care not to damage sensitive parts such as cables, connectors, encoder and motor.

The commissioning of damaged products is prohibited.

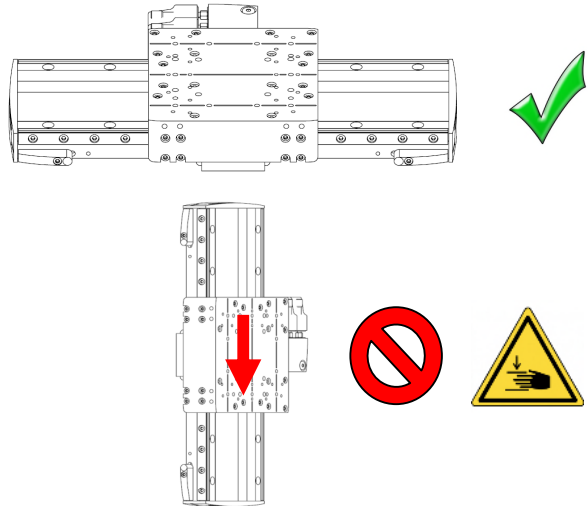
4 Environment Conditions

Storage and transport	No storage outside. Storage rooms have to be well-ventilated and dry. Storage temperature from -25°C bis +55°C
Operating temperature	5°C -50°C environment, after 40°C performance reduction
Operating humidity	10-90% non-condensing
Cooling	No external cooling needed. Dynamics can possibly be increased by mounting the slider case / flanch on a heat conductive ground plate.
Protection	IP 40 (For higher requirements please contact us)

5 Handling with Linearmotor-axis

5.1 Carriage

The linear motor axis should always be transported in a horizontal orientation, since the carriage of the linear motor is not self-locking in a vertical orientation.



For linear motors with cover (Lxe) is a risk to bend the steel cover plate. It is to be careful not to carry the linear motor on the cover plate.



5.2 Measuring system

Incorrect handling of the linear motor axes with a magnetic measuring system could erase parts of the magnetic measuring tape. Prevent magnets, e.g. from other motors, and measuring tape from colliding.



Incorrect handling of the linear motor axes with optical measuring system can scratch the glass scale and thus lead to errors. Keep it clean and do not touch it directly with your hand. To clean the optical measuring system, use a lint-free cloth and cleaning spirit.



6 Mechanical assembly

Use protective gloves and suitable tools for mechanical assembly.



The carriage of the linear motor axes must never be removed from the guide. This will cause irreparable damage.

Additional applications can be mounted using the tapped holes and fitting holes provided for this purpose (see data sheet of the corresponding motor).

6.1 Tightening torques

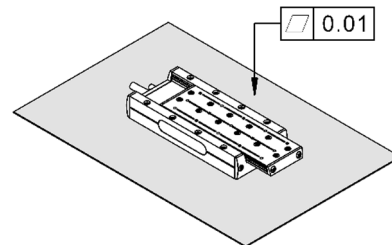
Static friction coefficient μT = Steel,
Aluminium alloy dry
Strength class (Screw) = 70

Threaded hole	Tightening torque [Nm]	Min. Screw-in Depth [mm]
M2.5	0.46 - 0.72	3.5
M3	0.80 - 1.26	3.3
M4	1.85 - 2.90	4.4
M5	3.60 - 5.70	5.5

6.2 Flatness for mounting on ground plate

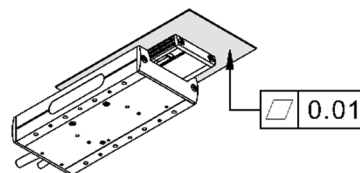
If the linear motor axes are mounted on a base plate, this must have a flatness of 0.01mm over a length of 200mm.

If the flatness is out of this tolerance, the LINAX® linear motor axis can be distorted when screwed to the ground plate which might cause the guides to seize. This increases the wear and tear, reduces the lifespan and might even destroy the guiding system.



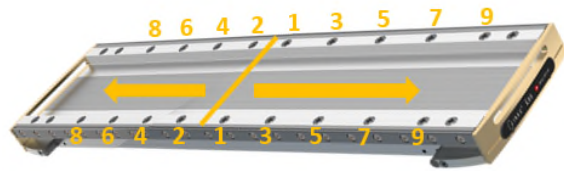
6.3 Flatness for mounting on slider

The same requirements apply to the contact surface of components that are screwed onto the slide of a linear motor axis. This contact surface must have a flatness of 0.01mm over a length of 200mm.



6.4 Screwing sequence

In order to avoid distortion of the motor during mounting to a base plate, it is important to observe the sequence of screwing. The screws must be tightened from the inside alternately left and right to the outside



6.5 Flatness practical test

Before mounting the ground plate or the slider, please test how smooth the slider can be moved by hand. After tightening the screws, move the slider again by hand.

There should not be any noticeable changes in smoothness, otherwise the contact surfaces have to be revised.

7 Electrical connection

A defective or incorrect power supply may result in irreparable damage to the machine.



An earthing cable must be connected to the system at all times.

Do not pull any plugs during operation!
There is a danger to life or injury and the risk of material damage.

Never disconnect electrical connections while they are under voltage. Before disconnecting, switch off the power supply and disconnect at least and wait at least 10 seconds.

The drives must not be connected to any other power supply than the one specified.

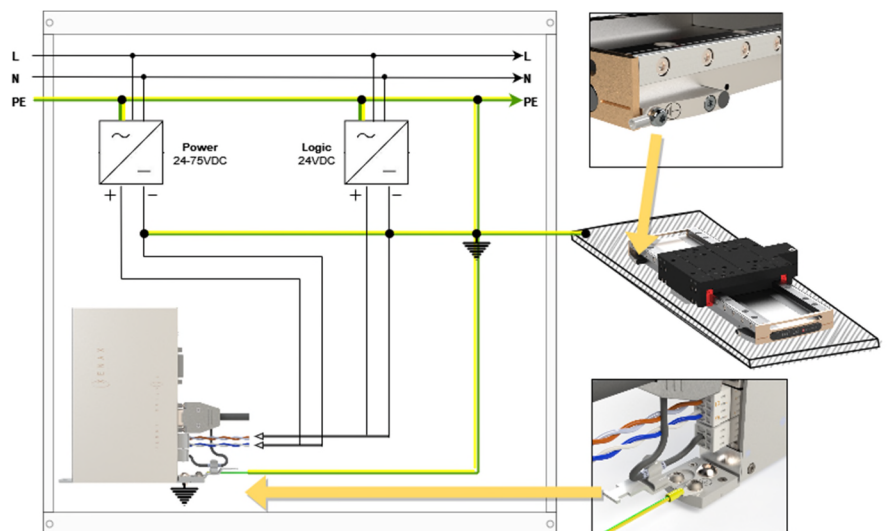
Connectors with a screw device, must be screwed down accordingly.

Use only original Jenny Science AG cables and do not modify them.

7.1 Earthing concept

Important:

- The **0 volt** connection of the logic supply (pin 1) and the 0 volt connection of the power supply (pin 3) have to be connected to the ground/chassis star point of the switch cabinet.
- The **base plate** of the Lxs/Lxu motors must be connected to the GND/chassis star point of the switch cabinet.
- The **XENAX® servo controller** must be screwed onto a conductive background, which is connected to the GND/chassis star point of the switch cabinet. The motor cable must be connected to the shield clamp.



Note:

If the Lxs/Lxu is mounted on a non-conductive base plate (e.g. granite), the protective earth must be connected directly to the motor.



8 Commissioning and running

During operation, motors can have hot surfaces. The temperature of the linear motor can reach up to 80°C.



Monitoring equipment and the error messages of the control devices must be continuously controlled.

Switch off the engine if deviations from normal operation occur, eg increased temperatures, unusual noises, increased vibrations, etc...

The slide of the linear motors in vertical alignment are not self-locking when switching off the power.

8.1 Weight compensation

Improper opening of the weight compensation is prohibited.

Make sure that during installation and maintenance work, the pneumatic supply has been turned off and are not the supply lines under pressure.

Use only clean and oil-free air.



8.2 Spring brake

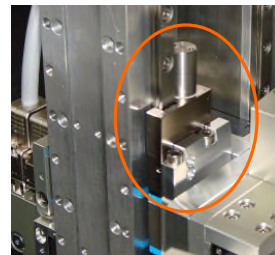
Improper opening of the spring brake on LINAX® Lxs/Lxu is prohibited.

Make sure that during installation and maintenance work, the pneumatic supply has been turned off and are not the supply lines under pressure.

Use only clean and oil-free air.

The air connections should be kept as short as possible.

The response time of the corresponding valve is to check with the respective manufacturer.



9 Service and maintenance

Maintenance work may only be carried out when the axes are completely stopped. The axes must not be in the regulation and must first be disconnected from the power supply.



The linear motor system must not be immersed or sprayed in liquids for cleaning.

Basically, coarse contamination should be removed with a soft brush or with oil-free compressed air.

10 Note

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Information in this instruction manual is subject to change.

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