FAQ












Content

JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH ♦ Felsweg 18 ♦ 35435 Wettenberg ♦ Germany
Tel.: 0641-48017-0 ♦ Fax: 0641-48017-15 ♦ eMail: ja2@ja2-gmbh.de ♦ www.ja2-gmbh.de

1. General

1.1 Why do we not provide CAD files for download?

We have the following strategy: you describe your applications and with our experience, we will configurate the drive solution. If the application can be realized promisingly with our products, we will provide the construction data.

1.2 Why do we not provide free samples?

We offer an extensive range of linear motor systems and suitable accessories. Despite our systemic construction kit and the high modularity of our products, the diversity of parts is fairly large, but controllable with an ERP-system. Please note that we do not keep ready-to-use linear motor modules and guides on stock. Though we are able to mount and deliver all variations promptly, thanks to our trained and skilled staff. A significant amount of effort is put into the configuration, final assembly, initial setup, quality management and documentation of each linear motor module. Please understand why we do not provide free samples.

JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH ♦ Felsweg 18 ♦ 35435 Wettenberg ♦ Germany
Tel.: 0641-48017-0 ♦ Fax: 0641-48017-15 ♦ eMail: ja2@ja2-gmbh.de ♦ www.ja2-gmbh.de

2. Applications and their limits

2.1 When should our products be used?

Our products are located in the mid-price segment and are meant for high-dynamic applications, as well as applications with low and medium strokes. Applications with accurate operating processes in precision and measurement technology are not our world.

2.2 Are our products electric cylinders?

No, our products have nothing to do with the inexpensive, slow and high-force thread spindle drives (electric cylinders).

2.3 Can our products, compared to the diameter, be exchanged with pneumatic cylinders?

No, a pneumatic cylinder has a much larger constant force than a linear motor with a comparable diameter.

2.4 Which moving masses are possible and reasonable with our products with horizontal axes?

Depending on the model, up to approx. 20 kg are possible and reasonable.

2.5 Which moving masses are possible and reasonable with our products with vertical axes?

Linear motors do not have form locking between the moving and the still standing part. When the power is switched off, the moving motor part will fall to ground. However we do offer construction elements for weight force compensation. Depending on the model and the used weight force compensation, payloads up to 10 kg and a max. stroke of 350 mm is possible.

2.6 Which maximum stroke is available with our tubular linear motors?

For manufacturing reasons, the magnetic sliders are available up to a maximum length of 2.000 mm for this type of linear motor. Stringing together a sequence of magnetic sliders, similar to flat linear motors, is not possible in this case. With linear motor guides one should generally consider, that with increasing stroke, the costs increase as well, due to the needed magnetic material. However, with linear motor systems, applications can be resolved with several independent carriages on one long linear guide.

JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH ♦ Felsweg 18 ♦ 35435 Wettenberg ♦ Germany
Tel.: 0641-48017-0 ♦ Fax: 0641-48017-15 ♦ eMail: ja2@ja2-gmbh.de ♦ www.ja2-gmbh.de

2.7 Do our naked tubular (round) linear motors already have a guide?

No, tubular motors have an integrated plain bearing, which centers the magnetic slider in the stator. It has no anti-rotation lock and may not be used as guide for external loads. Integration of other guidance technologies in the motor is not possible because of the magnetic effects.

2.8 How long is the operational life of the integrated plain bearing?

With good environmental conditions and regular maintenance, up to three billion stroke cycles ($3 * 10^9$) are possible. Maintenance means, that the bearing combination, consisting of *Delrin* plain bushing and stainless steel slider, needs to be maintained on a regular basis, by applying a special grease.

2.9 Do our products have high-quality linear ball bearings?

Yes, almost all of our linear motor modules and guides are equipped with special monorail caged ball guides. They can endure extreme accelerations and high speeds in continuous operation. All of our guides are delivered with an initial long-lasting lubrication and have wipers against dusty conditions.This makes our modules and guides immediately useable as plug-and-play systems for special machine builders.

2.10 What are the application limits for the swiveling and rotary modules?

The maximum recommended external moments of inertia are specified in the data sheets of each module. Next to the rotational speed and the output torque, this is the most important selection criterion for these products.

JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH ♦ Felsweg 18 ♦ 35435 Wettenberg ♦ Germany
Tel.: 0641-48017-0 ♦ Fax: 0641-48017-15 ♦ eMail: ja2@ja2-gmbh.de ♦ www.ja2-gmbh.de

3. Environmental and operating conditions

3.1 For which temperature range are the modules and guides suitable?

Specified operating temperature is 0° to 40°C. Operations in higher and in sub-zero temperatures are possible. However, this is the user's responsibility and no warranty claims are given.

3.2 Are the systems suitable for clean room applications?

No!

3.3 Are the systems suitable for moist areas?

Generally no, because our motors and guides are neither rust-resistant, nor corrosion-resistant. This also makes our systems unsuitable for outdoor use. The exceptions are our stainless steel systems, though they are not inexpensive and the motors are fairly large.

3.4 Are the systems usable in extreme dusty conditions?

Yes, with our optional wiper technology for linear motors, this is possible. There are restrictions however, when it comes to abrasive and ferritic dust.

3.5 Are the systems usable in automobiles?

No, our systems are not suitable for the rough conditions in and around automobiles.

3.6 Are our systems suitable for operating voltages of 12 VDC or 24 VDC?

No! While our systems need a supply voltage of 24 VDC for the controller circuit, they also need an AC mains supply for the motor power supply.

3.7 Are our products suitable with servo amplifiers of third parties?

Yes and no, linear motors from our QuickShaft® and LinMot® ranges have low voltage (ELV) windings. The rated max. operating voltage is 72 V. Operation with servo amplifiers of third parties is not possible. Motors from our PackTube® range are 3-phase 400 VAC types and can be driven by servo amplifiers of third parties. Compatibility should be examined first, however.

JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH ♦ Felsweg 18 ♦ 35435 Wettenberg ♦ Germany
Tel.: 0641-48017-0 ♦ Fax: 0641-48017-15 ♦ eMail: ja2@ja2-gmbh.de ♦ www.ja2-gmbh.de

4. Homing, positioning accuracy and smooth motion

4.1 Is homing necessary?

Yes, all of our linear motors and linear motor systems are equipped with a relatively simple internal linear measuring system. The sensors of this system are integrated into the motor stator itself, sensing and measuring the magnetic fields of the drive magnets. This sensor technology is a quasi-absolute measurement, meaning that right after power on, motion can start with maximum speed and maximum force, although the drive is not homed and scale is not set to zero. Moving to a hard mechanical stop, homing can easily be done. Of course during this, the guide must be free of mechanical blockings. We also offer precisely measuring, incremental technology or absolute linear sensor technology, that need to be mounted externally, which is a cost issue.

4.2 How accurate is positioning with the internal linear measurement system?

The repeatability lies in the range of +/- 50 micron. The absolute accuracy and linearity of the system are in the range of +/- 0,1% up to +/- 0,5% of the maximum stroke of the desired motor, this means a few tenth of a millimeter. Further documentation is on our website.

4.3 How accurate is positioning with an external sensor system?

We offer external linear measuring systems with a repeatability of +/- 1,0 micron and an absolute accuracy and linearity of +/- 10,0 micron. However, one should note that all of our constructions are made with aluminum milled parts and have no claim on spacial accuracy.

4.4 What about smooth motion?

Smooth motion is particularly interesting at low speeds. Smooth motion depends on the resolution of the linear measuring system. Therefore smooth motion quality, with the internal simple sensors, is quite moderate, but very acceptable with an external linear measurement system.

JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH ♦ Felsweg 18 ♦ 35435 Wettenberg ♦ Germany
Tel.: 0641-48017-0 ♦ Fax: 0641-48017-15 ♦ eMail: ja2@ja2-gmbh.de ♦ www.ja2-gmbh.de

5. Tactile positioning, current to force dependency for mating and controlling

5.1 How accurate can the motor force be adjusted by controlling current?

While in linear motor systems proportionality of current-to-force is physically exactly describable, there are many considerable sources of error in practical applications. These are: mounting position, stick-slip effects, mechanical friction, cogging, dust and dirt, mechanical shrinkage, quality of the magnets, temperature, lubrication, etc. For **force controll**, current => force, the force output accuracy is approximately +/- 5% to +/- 10% of the specified motor peak force. This is a very realistic practical fact.

5.2 How accurate can the motor force be regulated with an additional force transducer?

A **force regulation** always needs a force transducer and a closed regulation loop. Because of the wide range of applications and wide range of requirements, we do not offer any solutions for this, nor can we make any statements on accuracy and regulation dynamics of such systems. The user must develop an appropriate solution by himself. Further documentation is on our website.

JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH ♦ Felsweg 18 ♦ 35435 Wettenberg ♦ Germany
Tel.: 0641-48017-0 ♦ Fax: 0641-48017-15 ♦ eMail: ja2@ja2-gmbh.de ♦ www.ja2-gmbh.de

6. Applications with vibration and oscillation

6.1 Are shaker applications feasible with tubular linear motors?

Generally, yes. The following chart shows the thermal limits for a horizontal motion and for sinusoidal continuous oscillation. However, one should consider, that with high frequencies, the life time of the plain bearings in linear motors is quickly reached.

payload [gramm]	amplitude peak-peak [mm]	max. continuous oscillation frequency [Hz]
10	1	90
	10	30
	20	21
	30	17
100	1	83
	10	29
	20	20
	30	16
1.000	1	50
	10	16
	20	11
	30	9
5.000	1	42
	10	12
	20	9
	30	7

JUNG ANTRIEBSTECHNIK U. AUTOMATION GMBH ♦ Felsweg 18 ♦ 35435 Wettenberg ♦ Germany
Tel.: 0641-48017-0 ♦ Fax: 0641-48017-15 ♦ eMail: ja2@ja2-gmbh.de ♦ www.ja2-gmbh.de