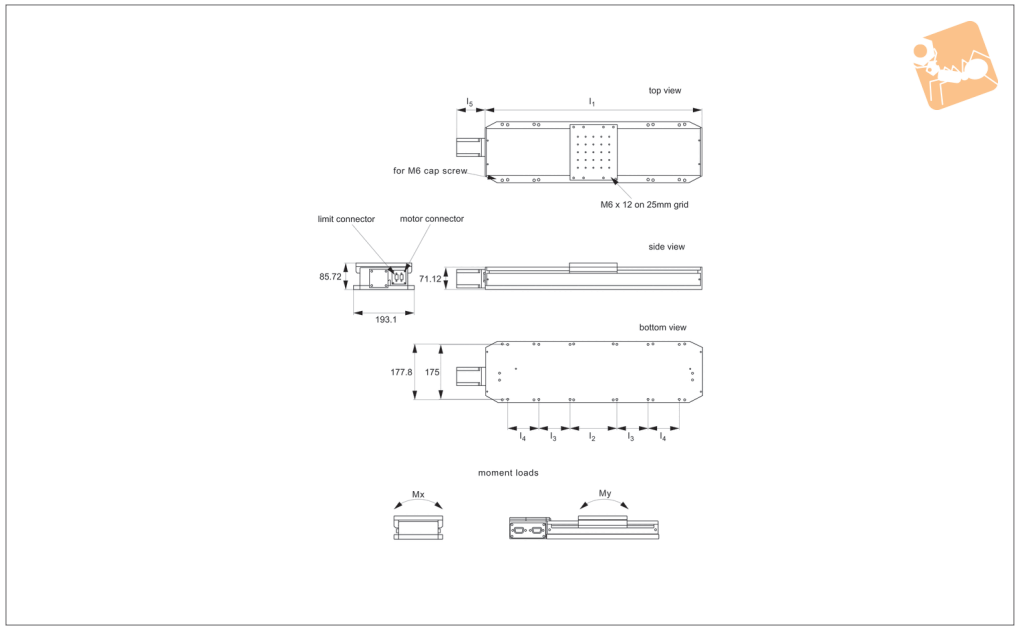


L3504

Material

Black anodised aluminium body (6061). Hardened linear guideways, stainless steel Acme lead screw with internally lubricated anti-backlash nut.

Technical Notes

These are smooth running, precise and stiff linear stages. For ease of use they have separate connections for motor power and limit/encoder signals. Integrated limit switches are provided as standard.
Easy plug and play system. Controllable from PC or PLC when used in conjunction with a motion controller. Controllers come with their own software but you can also use your own pre-existing software with them such as Labview etc.

Replace -XXX in part number with the code for your preferred motor type. See the second data table for these codes and the specifications of these motors.

Tips

Motor options:
Stepper - Nema 23, high torque. 2.8 Amp/phase, 0.9 Ohm/phase, 2.5 mH/phase, 1.8°/step. Optionally with optical linear encoder or 1000 line rotary encoder.
Servo - Nema 23 brushless DC motor. Continuous stall torque 0.51Nm, peak torque 1.34 Nm. Option with 4000 count/rev optical rotary encoder with index mark.
Intelligent stepper - Nema 23 with a fully programmable motion controller inbuilt (ie no need for an external motion controller). Two +5 to +24VDC I/O lines. One 10 bit analogue input selectable 0 to +10VDC, 0 to +5VDC. RS422/485 communications. Input voltage +24VDC.
Limit switches are wired normally closed. Drawings show stepper motor configuration. See special pages for further motor options.

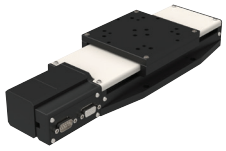
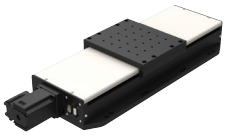
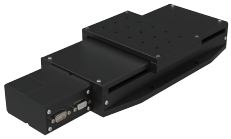
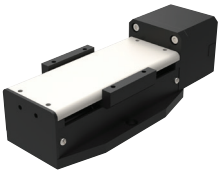
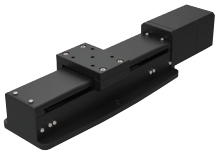
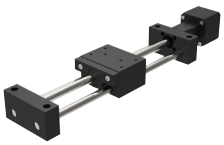
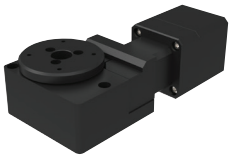
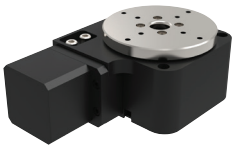
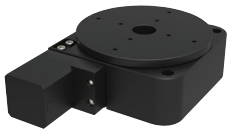
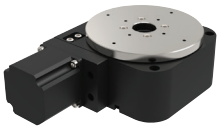
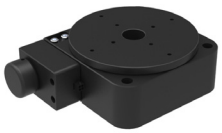
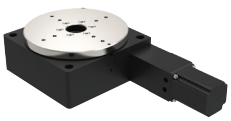
Important Notes

Max. moment loads:
Mx = 200 Nm
My = 280 Nm
For combined stages, add suffixes:
XY - for XY stage
XZ - for XZ stage
XYZ - for XYZ stage

Order No.	Travel	Motor type	Motor code	Horizontal load kg max.	Vertical load kg max.	Accuracy ± /200m	Side load kg max.	Lead screw pitch	Speed mm/s max.	l_1	Weight kg
L3504.200-STA	200	Stepper	-STA	113	36	30µ/200mm	36	4	25	389	9
L3504.200-STB	200	Stepper & rot. enc.	-STB	113	36	30µ/200mm	36	4	25	389	9
L3504.200-STC	200	Stepper & lin. enc.	-STC	113	36	5µ	36	4	25	389	9
L3504.200-IMA	200	Int. stepper	-IMA	113	36	30µ/200mm	36	4	25	389	9
L3504.300-STA	300	Stepper	-STA	113	36	30µ/200mm	36	4	25	490	10
L3504.300-STB	300	Stepper & rot. enc.	-STB	113	36	30µ/200mm	36	4	25	490	10
L3504.300-STC	400	Stepper & lin. enc.	-STC	113	36	5µ	36	4	25	490	10
L3504.300-IMA	500	Int. stepper	-IMA	113	36	30µ/200mm	36	4	25	490	10
L3504.400-STA	400	Stepper	-STA	113	36	30µ/200mm	36	4	25	592	12
L3504.400-STB	400	Stepper & rot. enc.	-STB	113	36	30µ/200mm	36	4	25	592	12
L3504.400-STC	400	Stepper & lin. enc.	-STC	113	36	5µ	36	4	25	592	12
L3504.400-IMA	400	Int. stepper	-IMA	113	36	30µ/200mm	36	4	25	592	12
L3504.500-STA	500	Stepper	-STA	113	36	30µ/200mm	36	4	25	694	14
L3504.500-STB	500	Stepper & rot. enc.	-STB	113	36	30µ/200mm	36	4	25	694	14
L3504.500-STC	500	Stepper & lin. enc.	-STC	113	36	5µ	36	4	25	694	14
L3504.500-IMA	500	Int. stepper	-IMA	113	36	30µ/200mm	36	4	25	694	14

Heavy-Duty Motorised Stages
high precision

Order No.	l_2	l_3	l_4	l_5	Resolution	Uni-directional repeatability
L3504.200-STA	150	-	-	70	0,08µ	1,0µ
L3504.200-STB	150	-	-	70	1,0µ	1,0µ
L3504.200-STC	150	-	-	70	1,0µ	1,0µ
L3504.200-IMA	150	-	100	70	1,0µ	1,0µ
L3504.300-STA	150	100	-	156	0,08µ	1,0µ
L3504.300-STB	150	100	-	156	1,0µ	1,0µ
L3504.300-STC	150	100	-	156	1,0µ	1,0µ
L3504.300-IMA	150	100	-	156	1,0µ	1,0µ
L3504.400-STA	150	100	-	112	0,08µ	1,0µ
L3504.400-STB	150	100	-	112	1,0µ	1,0µ
L3504.400-STC	150	100	-	112	1,0µ	1,0µ
L3504.400-IMA	150	100	100	112	1,0µ	1,0µ
L3504.500-STA	150	100	100	70	0,08µ	1,0µ
L3504.500-STB	150	100	100	70	1,0µ	1,0µ
L3504.500-STC	150	100	100	70	1,0µ	1,0µ
L3504.500-IMA	150	100	100	70	1,0µ	1,0µ

L3500 **Medium duty motorised stage** 	**L3504** **Heavy-duty motorised stage** 	**L3505** **Motorised linear stage** 	**L3506** **Miniature motorised stage** 
L3508 **Motorised linear stage** 	**L3510** **Motorised linear stage** 	**L3521** **Single axis stepper controller** 	**L3522** **Two axes stepper controller** 
L3524 **Multi-axes stepper controller** 	**L3525** **Single axis servo controller** 	**L3550** **Motorised rotary stage Ø50** 	**L3552** **Motorised rotary stage Ø75** 
L3554 **Motorised rotary stage Ø75** 	**L3556** **Motorised rotary stage Ø125** 	**L3558** **Motorised rotary stage Ø125** 	**L3559** **Manual rotary stage Ø125** 
L3562 **Motorised rotary stage Ø200** 	**L3569** **High speed rotary table** 	**L3591** **Vertical lift stage motorised** 	**L3592** **Vertical lift stage motorised** 

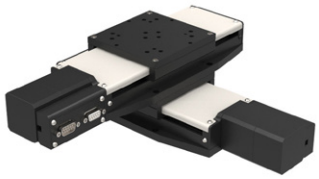
Motorised Stages

Overview

Our motorised linear stages are precise, heavy duty and available from 25mm stroke to 800mm.
They can be easily controlled either with an Intelligent motor (this is a motor with an inbuilt driver and controller) or with a motor and one of our motion controller stages.
Programming for both the intelligent motor (less expensive) and the motion controllers is very simple and we provide free software and sample source code for Labview, VB, C++, OSX etc. It is also possible to download a stand-alone programmed to the device so it can run independently of a host.
We also offer a Joystick controller.

The stages can be readily supplied in X, XY, XZ and XYZ configurations and can also be used with our range of rotary tables (L3550 to L3562).

XY Assembly



XY Assembly

XY Assembly

Using intelligent motors

- RS-485 - USB connection.
- Can run independently from host.
- Joystick control option

Using motion controllers

- RS-485 - USB connection.
- Can run independently from host.
- Joystick control option

Stepper limitations

For all of their advantages, stepper motors have a number of limitations which can cause significant implementation and operational issues depending on your application. Stepper motors do not have any reserve power. In fact, stepper motors lose a significant amount of their torque as they approach their maximum driver speed. A loss of 80% of the rated torque at 90% of the maximum speed is typical.

Stepper motors are also not as good as servo motors in accelerating a load. Attempting to accelerate a load too fast where the stepper cannot generate enough torque to move to the next step before the next drive pulse will result in a skipped step and a loss in position. If positional accuracy is essential, either the load on the motor must never exceed its torque or the stepper must be combined with a position encoder to ensure positional accuracy.

Stepper motors may also suffer from vibration and resonance problems. At certain speeds, partially depending on the load dynamics, they may resonate and be unable to drive the load. This may result in skipped steps, stalled motors, excessive vibration and noise.

Servo limitations

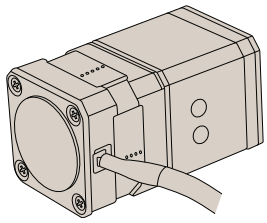
Servo motors are capable of delivering more power than stepper motors, but do require much more complex drive circuitry and positional feedback for accurate positioning. Servo motors are also much considerably expensive than stepper motors and are often harder to find. Servo motors often require gear boxes, especially for lower speed operation.

The requirement for a gearbox and a position encoder makes servo motor designs more mechanically complex and increases the maintenance requirements for the system. To top it all off, servo motors are more expensive than stepper motors before adding on the cost of a position encoder.

Summary

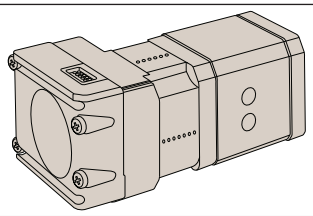
Selecting the best motor for your application depends on a few key design criteria for your system including cost, positional accuracy requirements, torque requirements, drive power availability, and acceleration requirements. Overall, servo motors are best for high speed, high torque applications while stepper motors are better suited for lower acceleration, high holding torque applications as well as generally being less expensive and easier to control.

Motor options



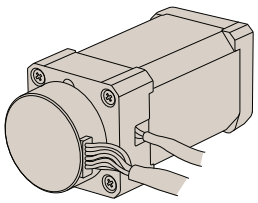
Stepper motor

- Standard
- With rotary encoder (1000 line)



Intelligent stepper motor

- Standard
- With rotary encoder (512 line)



Servo motor

- Standard
- With rotary encoder (1000 line)