L3508
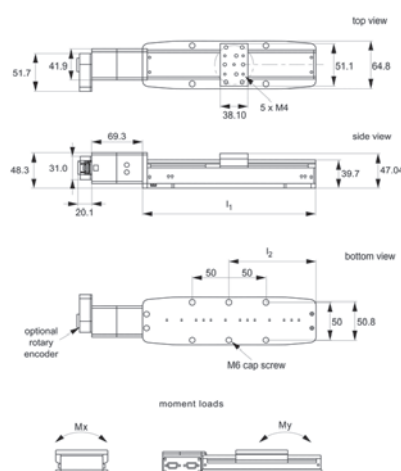
Material
Black anodised aluminium body (6061). Hardened linear guideways, stainless steel Acme lead screw (with internally lubricated anti-backlash nut).

Technical Notes
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 many pre-existing software packages (such as Labview) can be used. Integrated limit switches are provided as standard.
Can be readily supplied in XY, XZ and XYZ configurations.
Applications - research, semi-conductors, fibre optics, automation etc.

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

Tips
Motor options:
Stepper Nema 17, high torque, brushless. 0.95 Amp/phase, 5.0 Ohm/phase, 3.1 mH/phase, 1.8°/step. Option with 1000 line encoder.
Intelligent stepper - Nema 17 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. RS 422/485 communications. Input voltage 24VDC. Option with 512 line encoder.
Limit switches are wired normally closed. Drawings show stepper motor configuration. See special pages for further motor points.

Important Notes
Max. moment loads:
Mx = 12 Nm
My = 8 Nm
For combined stages, add suffixes:
XY - for XY stage
XZ - for XZ stage
XYZ - for XYZ stage

Order No.	Travel	Horizontal load kg max.	Accuracy mm ±	Repeatability ±	Lead screw pitch	Axial load (for 2mm lead screw) kg max.	Axial load (for 10mm lead screw) kg max.	l_1	Weight kg
L3508.025-STA	25	4,5	0,6µ	5µ	2	2,5	0,5	109,0	0,73
L3508.025-STB	25	4,5	0,6µ	5µ	10	2,5	0,5	109,0	0,73
L3508.025-STC	25	4,5	0,6µ	5µ	2	2,5	0,5	109,0	0,73
L3508.025-STD	25	4,5	0,6µ	5µ	10	2,5	0,5	109,0	0,73
L3508.025-IMA	25	4,5	0,6µ	5µ	2	2,5	0,5	109,0	0,73
L3508.050-STA	50	4,5	0,6µ	5µ	2	2,5	0,5	134,4	0,77
L3508.050-STB	50	4,5	0,6µ	5µ	10	2,5	0,5	134,4	0,77
L3508.050-STC	50	4,5	0,6µ	5µ	2	2,5	0,5	134,4	0,77
L3508.050-STD	50	4,5	0,6µ	5µ	10	2,5	0,5	134,4	0,77
L3508.050-IMA	50	4,5	0,6µ	5µ	2	2,5	0,5	134,4	0,77
L3508.100-STA	100	4,5	0,6µ	5µ	2	2,5	0,5	185,2	0,89
L3508.100-STB	100	4,5	0,6µ	5µ	10	2,5	0,5	185,2	0,89
L3508.100-STC	100	4,5	0,6µ	5µ	2	2,5	0,5	185,2	0,89
L3508.100-STD	100	4,5	0,6µ	5µ	10	2,5	0,5	185,2	0,89
L3508.100-IMA	100	4,5	0,6µ	5µ	2	2,5	0,5	185,2	0,89
L3508.150-STA	150	4,5	0,6µ	5µ	2	2,5	0,5	236,0	1,01
L3508.150-STB	150	4,5	0,6µ	5µ	10	2,5	0,5	236,0	1,01

Order No.	Travel	Horizontal load kg max.	Accuracy mm ±	Repeatability ±	Lead screw pitch	Axial load (for 2mm lead screw) kg max.	Axial load (for 10mm lead screw) kg max.	l_1	Weight kg
L3508.150-STC	150	4,5	0,6µ	5µ	2	2,5	0,5	236,0	1,01
L3508.150-STD	150	4,5	0,6µ	5µ	10	2,5	0,5	236,0	1,01
L3508.150-IMA	150	4,5	0,6µ	5µ	2	2,5	0,5	236,0	1,01
L3508.200-STA	200	4,5	0,6µ	5µ	2	2,5	0,5	286,8	1,13
L3508.200-STB	200	4,5	0,6µ	5µ	10	2,5	0,5	286,8	1,13
L3508.200-STC	200	4,5	0,6µ	5µ	2	2,5	0,5	286,8	1,13
L3508.200-STD	200	4,5	0,6µ	5µ	10	2,5	0,5	286,8	1,13
L3508.200-IMA	200	4,5	0,6µ	5µ	2	2,5	0,5	286,8	1,13

Order No.	Motor code	Motor type	l_2	Speed mm/s	Resolution
L3508.025-STA	-STA	Stepper	54.5	25	0,04µ
L3508.025-STB	-STB	Stepper	54.5	100	0,2µ
L3508.025-STC	-STC	Stepper & enc.	54.5	25	0,04µ
L3508.025-STD	-STD	Stepper & enc.	54.5	100	0,2µ
L3508.025-IMA	-IMA	Int. stepper	54.5	25	0,04µ
L3508.050-STA	-STA	Stepper	67.2	25	0,04µ
L3508.050-STB	-STB	Stepper	67.2	100	0,2µ
L3508.050-STC	-STC	Stepper & enc.	67.2	25	0,04µ
L3508.050-STD	-STD	Stepper & enc.	67.2	100	0,2µ
L3508.050-IMA	-IMA	Int. stepper	67.2	25	0,04µ
L3508.100-STA	-STA	Stepper	62.6	25	0,04µ
L3508.100-STB	-STB	Stepper	62.6	100	0,2µ
L3508.100-STC	-STC	Stepper & enc.	62.6	25	0,04µ
L3508.100-STD	-STD	Stepper & enc.	62.6	100	0,2µ
L3508.100-IMA	-IMA	Int. stepper	62.6	25	0,04µ
L3508.150-STA	-STA	Stepper	67.2	25	0,04µ
L3508.150-STB	-STB	Stepper	67.2	100	0,2µ
L3508.150-STC	-STC	Stepper & enc.	67.2	25	0,04µ
L3508.150-STD	-STD	Stepper & enc.	67.2	100	0,2µ
L3508.150-IMA	-IMA	Int. stepper	67.2	25	0,04µ
L3508.200-STA	-STA	Stepper	92.6	25	0,04µ
L3508.200-STB	-STB	Stepper	92.6	100	0,2µ
L3508.200-STC	-STC	Stepper & enc.	92.6	25	0,04µ
L3508.200-STD	-STD	Stepper & enc.	92.6	100	0,2µ
L3508.200-IMA	-IMA	Int. stepper	92.6	25	0,04µ

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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

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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).
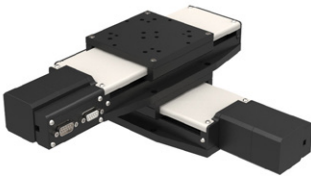
XY Assembly **XY Assembly** **XY Assembly**

Using intelligent motors

Using motion controllers

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

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

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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.
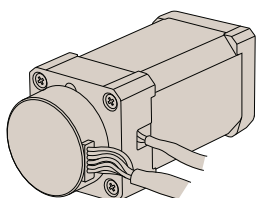
Motor options
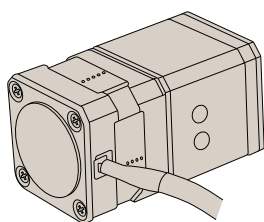
Stepper motor
- Standard
- With rotary encoder (1000 line)
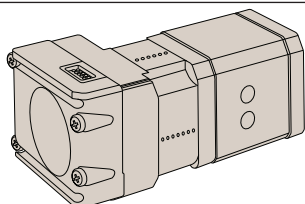
Intelligent stepper motor
- Standard
- With rotary encoder (512 line)

Servo motor
- Standard
- With rotary encoder (1000 line)

MOTORISED LINEAR STAGES

Positioning Stages from Automotion Components

ov-stepper&servo-motors-rnh – Updated – 02-03-2023