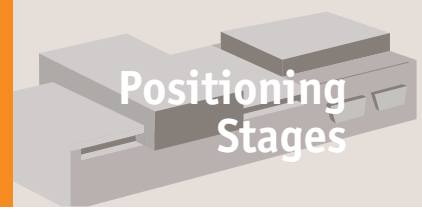




Motorised Linear & Rotary Stages

Overview



Positioning Stages

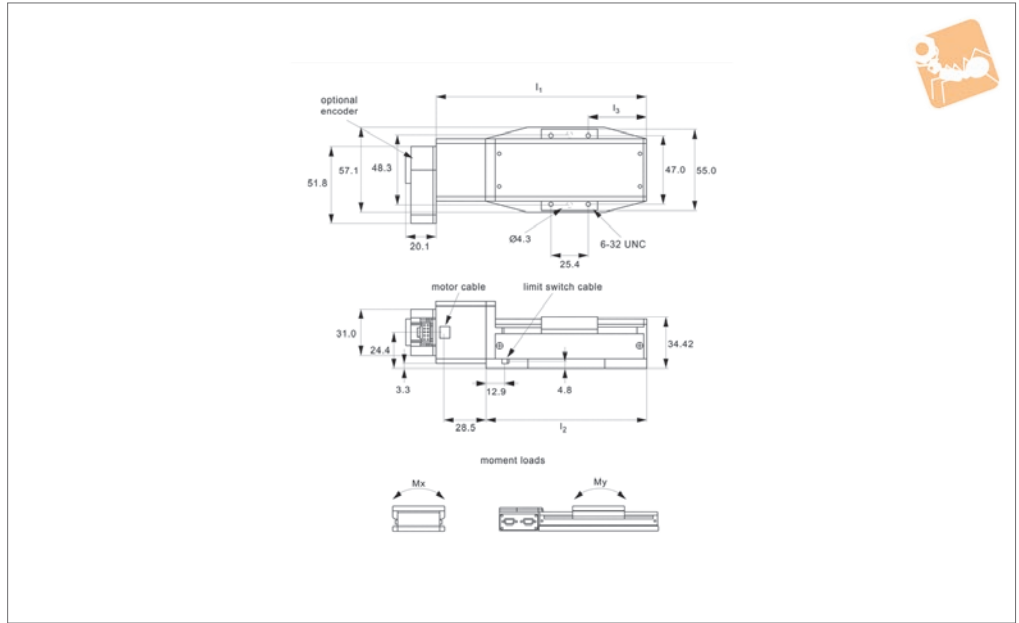
<p>L3500 Medium duty motorised stage</p> 	<p>L3504 Heavy-duty motorised stage</p> 	<p>L3505 Motorised linear stage</p> 	<p>L3506 Miniature motorised stage</p> 
<p>L3508 Motorised linear stage</p> 	<p>L3510 Motorised linear stage</p> 	<p>L3521 Single axis stepper controller</p> 	<p>L3522 Two axes stepper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

MOTORISED LINEAR STAGES

ov-motorised-stages-overview-a-rnh - Updated - 02-03-2023



L3506



Material

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

Technical Notes

Compact, high precision slide.
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.
Can be readily supplied in XY, XZ and XYZ
configurations.
Applications - research, semi-conductors,

fibre optics, automation etc.
Max. speed 8 mm/sec.
Accuracy $\pm 50\mu$. Uni-directional repeatability
 $\pm 5\mu$, resolution $\pm 0,7\mu$.

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
rotary encoder.
Intelligent stepper - Nema 17 high torque
1.8° stepper motor 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 commu-
nications. Input voltage 24VDC.
Limit switches are wired normally open.
Drawings show stepper motor configura-
tion. See special pages for further motor
options.

Important Notes

Max. moment loads:
M_x = 4,0 Nm
M_y = 6,5 Nm
For combined stages, add suffixes:
XY - for XY stage
XZ - for XZ stage
XYZ - for XYZ stage

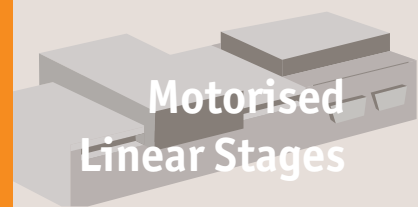
Order No.	Travel	Horizontal load kg max.	Axial load kg max.	Side load kg max.	Lead screw pitch	l ₁	Motor code	Motor type	Weight kg
L3506.025-STA	25	2.2	2.2	0.9	1.058	109.2	-STA	Stepper	0.46
L3506.050-STA	50	2.2	2.2	0.9	1.058	143.3	-STA	Stepper	0.59
L3506.025-STB	25	2.2	2.2	0.9	1.058	109.2	-STB	Stepper & enc.	0.46
L3506.050-STB	50	2.2	2.2	0.9	1.058	143.3	-STB	Stepper & enc.	0.59
L3506.025-IMA	25	2.2	2.2	0.9	1.058	109.2	-IMA	Int. stepper	0.46
L3506.050-IMA	50	2.2	2.2	0.9	1.058	143.3	-IMA	Int. stepper	0.59

Order No.	l ₂	l ₃	Speed mm/s max.	Resolution ±	Accuracy ±	Uni-directional repeatability ±
L3506.025-STA	83.9	41.9	8	0,7μ	50μ	5μ
L3506.050-STA	117.9	54.6	8	0,7μ	50μ	5μ
L3506.025-STB	83.9	41.9	8	0,7μ	50μ	5μ
L3506.050-STB	117.9	54.6	8	0,7μ	50μ	5μ
L3506.025-IMA	83.9	41.9	8	0,7μ	50μ	5μ
L3506.050-IMA	117.9	54.6	8	0,7μ	50μ	5μ



Miniature Motorised Stages

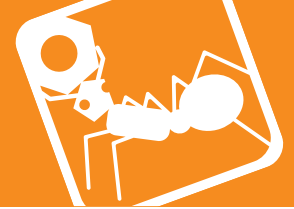
high precision



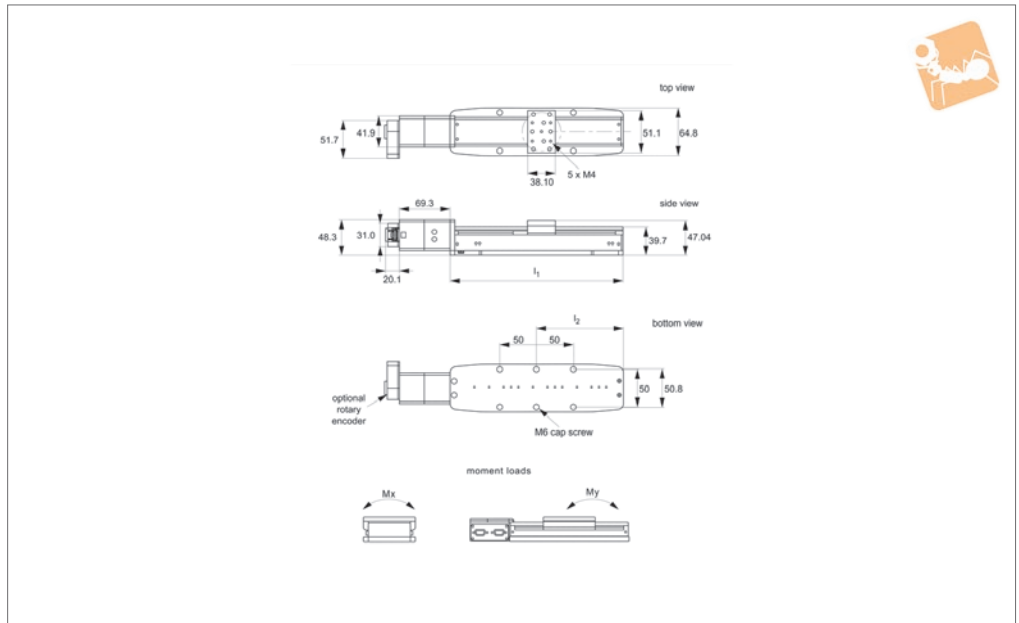
Motorised Linear Stages



MOTORISED LINEAR STAGES



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

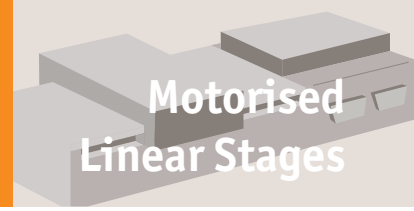
Max. moment loads:
 M_x = 12 Nm
 M_y = 8 Nm
 For combined stages, add suffixes:
 XY - for XY stage
 XZ - for XZ stage
 XYZ - for XYZ stage

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.	I 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



Motorised Linear Stages

high precision

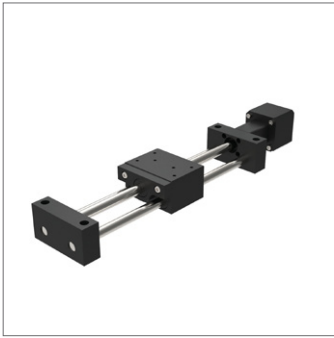


Motorised Linear Stages

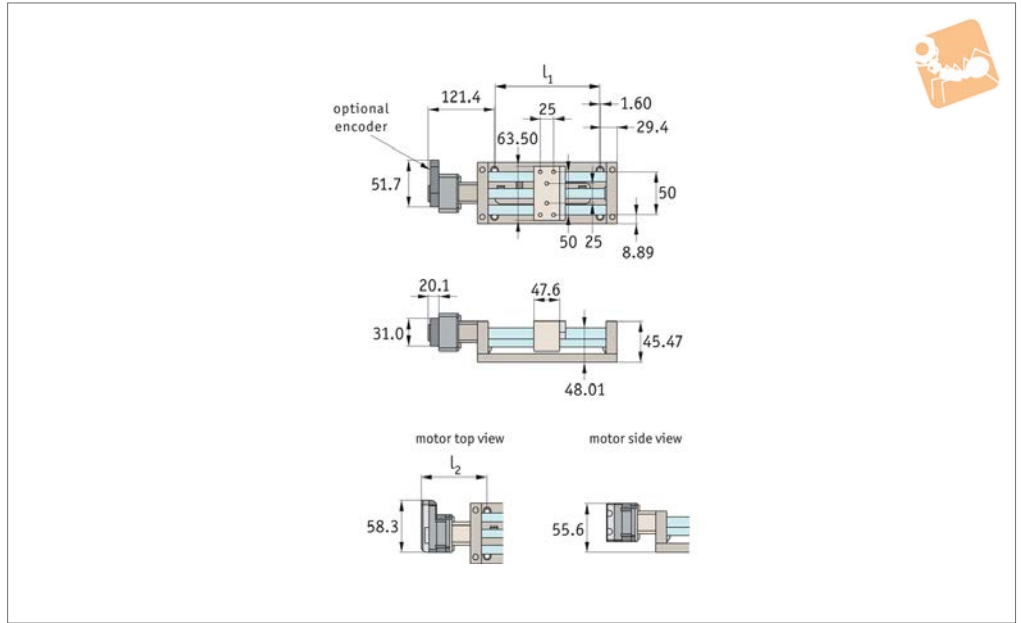
Order No.	Travel	Horizontal load kg max.	Accuracy mm ±	Repeatability ±	Lead screw pitch	Axial load (for 2mm lead screw) kg max.	Axial load (for 10mm lead screw) kg max.	I ₁	Weight kg
L3508.150-STC	150	4,5	0,6µ	5µ	2	2,5	0,5	236,0	1,01
L3508.150-STD	150	4,5	0,6µ	5µ	10	2,5	0,5	236,0	1,01
L3508.150-IMA	150	4,5	0,6µ	5µ	2	2,5	0,5	236,0	1,01
L3508.200-STC	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	I ₂	Speed mm/s	Resolution
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-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-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-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-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

MOTORISED LINEAR STAGES



L3510



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 you can also use your own pre-existing software with them such as Labview etc. Integrated limit switches are provided as standard. Can be readily supplied in XY, XZ and XYZ configurations (for travel lengths

<150mm).

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. RS422/485 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

For combined stages, add suffixes:

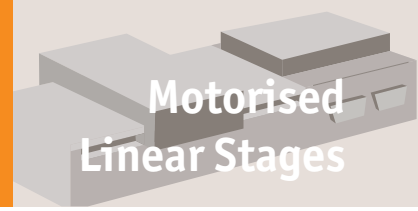
- XY - for XY stage
- XZ - for XZ stage
- XYZ - for XYZ stage

Order No.	Travel	Horizontal load kg max.	Accuracy mm ±	Repeatability ±	Lead screw pitch	l_1	Motor code	Motor type	Speed mm/s max.	Resolution µm ±	Weight kg
L3510.050-IMA	50	4,5	0,06µ	30µ	2	100	IMA	Int. stepper	20	0,04	1,1
L3510.050-IMB	50	4,5	0,06µ	30µ	12	100	IMB	Int. stepper	150	0,24	1,1
L3510.050-STA	50	4,5	0,06µ	30µ	2	100	STA	Stepper	20	0,04	1,1
L3510.050-STB	50	4,5	0,06µ	30µ	12	100	STB	Stepper	150	0,24	1,1
L3510.050-STC	50	4,5	0,06µ	30µ	2	100	STC	Stepper & enc.	20	0,04	1,1
L3510.050-STD	50	4,5	0,06µ	30µ	12	100	STD	Stepper & enc.	150	0,24	1,1
L3510.100-IMA	100	4,5	0,06µ	30µ	2	150	IMA	Int. stepper	20	0,04	1,5
L3510.100-IMB	100	4,5	0,06µ	30µ	12	150	IMB	Int. stepper	150	0,24	1,6
L3510.100-STA	100	4,5	0,06µ	30µ	2	150	STA	Stepper	20	0,04	1,1
L3510.100-STB	100	4,5	0,06µ	30µ	12	150	STB	Stepper	150	0,24	1,2
L3510.100-STC	100	4,5	0,06µ	30µ	2	150	STC	Stepper & enc.	20	0,04	1,3
L3510.100-STD	100	4,5	0,06µ	30µ	12	150	STD	Stepper & enc.	150	0,24	1,4
L3510.150-IMA	150	4,5	0,06µ	30µ	2	200	IMA	Int. stepper	20	0,04	1,5
L3510.150-IMB	150	4,5	0,06µ	30µ	12	200	IMB	Int. stepper	150	0,24	1,6
L3510.150-STA	150	4,5	0,06µ	30µ	2	200	STA	Stepper	20	0,04	1,1
L3510.150-STB	150	4,5	0,06µ	30µ	12	200	STB	Stepper	150	0,24	1,2
L3510.150-STC	150	4,5	0,06µ	30µ	2	200	STC	Stepper & enc.	20	0,04	1,3
L3510.150-STD	150	4,5	0,06µ	30µ	12	200	STD	Stepper & enc.	150	0,24	1,4
L3510.200-IMA	200	4,5	0,06µ	30µ	2	250	IMA	Int. stepper	20	0,04	1,5
L3510.200-IMB	200	4,5	0,06µ	30µ	12	250	IMB	Int. stepper	150	0,24	1,6



Motorised Linear Stages

economy



Motorised Linear Stages

Order No.	Travel	Horizontal load kg max.	Accuracy mm ±	Repeatability ±	Lead screw pitch	I ₁	Motor code	Motor type	Speed mm/s max.	Resolution µm ±	Weight kg
L3510.200-STA	200	4,5	0,06µ	30µ	2	250	STA	Stepper	20	0,04	1,1
L3510.200-STB	200	4,5	0,06µ	30µ	12	250	STB	Stepper	150	0,24	1,2
L3510.200-STC	200	4,5	0,06µ	30µ	2	250	STC	Stepper & enc.	20	0,04	1,3
L3510.200-STD	200	4,5	0,06µ	30µ	12	250	STD	Stepper & enc.	150	0,24	1,4
L3510.250-IMA	250	4,5	0,06µ	30µ	2	300	IMA	Int. stepper	20	0,04	1,5
L3510.250-IMB	250	4,5	0,06µ	30µ	12	300	IMB	Int. stepper	150	0,24	1,6
L3510.250-STA	250	4,5	0,06µ	30µ	2	300	STA	Stepper	20	0,04	1,1
L3510.250-STB	250	4,5	0,06µ	30µ	12	300	STB	Stepper	150	0,24	1,2
L3510.250-STC	250	4,5	0,06µ	30µ	2	300	STC	Stepper & enc.	20	0,04	1,3
L3510.250-STD	250	4,5	0,06µ	30µ	12	300	STD	Stepper & enc.	150	0,24	1,4
L3510.300-IMA	300	4,5	0,06µ	30µ	2	350	IMA	Int. stepper	20	0,04	1,5
L3510.300-IMB	300	4,5	0,06µ	30µ	12	350	IMB	Int. stepper	150	0,24	1,6
L3510.300-STA	300	4,5	0,06µ	30µ	2	350	STA	Stepper	20	0,04	1,1
L3510.300-STB	300	4,5	0,06µ	30µ	12	350	STB	Stepper	150	0,24	1,2
L3510.300-STC	300	4,5	0,06µ	30µ	2	350	STC	Stepper & enc.	20	0,04	1,3
L3510.300-STD	300	4,5	0,06µ	30µ	12	350	STD	Stepper & enc.	150	0,24	1,4

MOTORISED LINEAR STAGES



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.

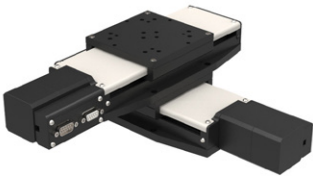
Programming for both the intelligent motor (less expensive) and the motion controllers is very simple and we provide free software and sample source code for Labview, VB, C++, OSX etc. It is also possible to download a stand-alone programmed to the device so it can run independently of a host.

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).

MOTORISED LINEAR STAGES

XY Assembly



XY Assembly



XY Assembly



Using intelligent motors

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

Using motion controllers

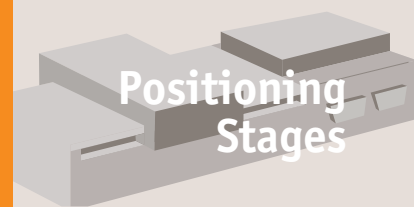
- RS-485 - USB connection.
- Can run independently from host.
- Joystick control option



Motorised Stages

Stepper + servo motors

Positioning Stages



Positioning Stages from Automotion Components

MOTORISED LINEAR STAGES

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

	<p>Stepper motor</p> <ul style="list-style-type: none"> • Standard • With rotary encoder (1000 line)
	<p>Intelligent stepper motor</p> <ul style="list-style-type: none"> • Standard • With rotary encoder (512 line)
	<p>Servo motor</p> <ul style="list-style-type: none"> • Standard • With rotary encoder (1000 line)

ov-stepper&servo-motors-rmh - Updated - 02-03-2023