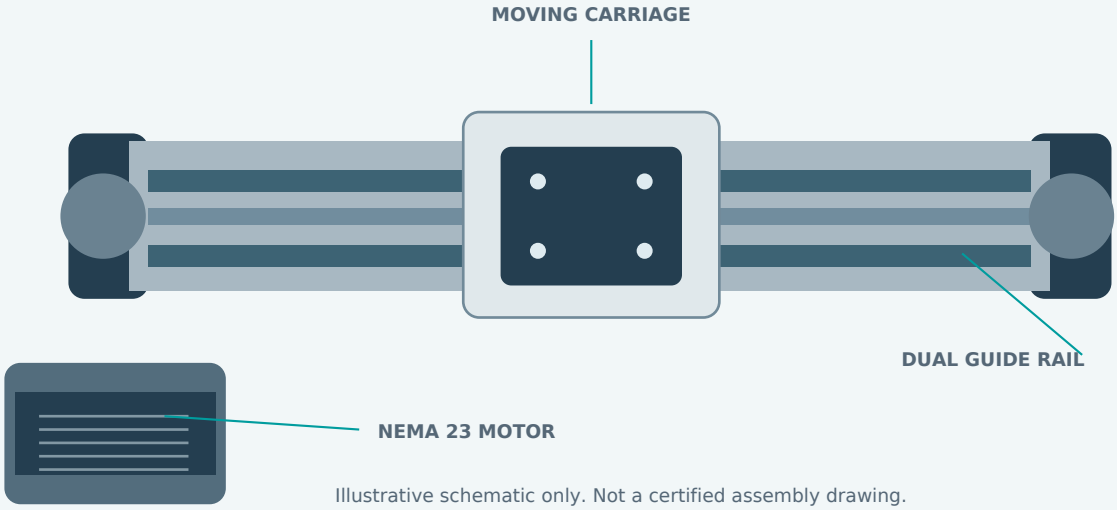
# FPB50

## BELT-DRIVEN LINEAR STAGE

NEMA 23 STEPPER MOTOR | DUAL-RAIL GUIDE | LONG STROKE

**PRODUCT SERIES: FPB50**

### MECHANICAL LAYOUT / CONCEPT SKETCH




Illustrative schematic only. Not a certified assembly drawing.

| 100-2000 | 15 kg | ±0.05 | 95 mm |
|---|---|---|---|
| STANDARD STROKE (mm) | HORIZONTAL LOAD* | POSITION ACCURACY (mm) | TRAVEL / REVOLUTION |

### OVERVIEW

Compact 50 mm wide synchronous-belt linear module with a dual-rail carriage and a folded-motor arrangement. Designed for long-travel positioning, materials handling and automated machine axes.

*15 kg is the maximum horizontal load advertised for the supplied stepper configuration; achievable speed depends on load and drive settings.

01 / TECHNICAL DATA

# Performance and configuration

Published product-listing ratings are separated from motor-specific reference performance.

| PARAMETER | PUBLISHED SPECIFICATION |
|---|---|
| **Series / Model** | FPB50 |
| **Motion transmission** | Synchronous timing belt, dual linear guide rails |
| **Nominal module width** | 50 mm (profile series designation) |
| **Standard offered stroke** | 100-2000 mm |
| **Extended stroke capability** | Up to 3500 mm; availability to be confirmed |
| **Position accuracy** | ±0.05 mm (published module specification) |
| **Nominal belt travel** | 95 mm per motor/pulley revolution |
| **Standard motor** | NEMA 23 stepper (57-frame); exact winding not specified |
| **Maximum horizontal load** | 15 kg - advertised for stepper-equipped offering |
| **Listing maximum speed** | 2000 mm/s - not a guaranteed loaded stepper speed |
| **Optional motor drive** | 400 W AC servo motor, configuration dependent |

### STEPPER DRIVE: HORIZONTAL REFERENCE SPEED

| CARRIED LOAD | REFERENCE SPEED (UP TO) |
|---|---|
| **5 kg** | **1000 mm/s** |
| **10 kg** | **800 mm/s** |
| **15 kg** | **500 mm/s** |

**PERFORMANCE INTERPRETATION**

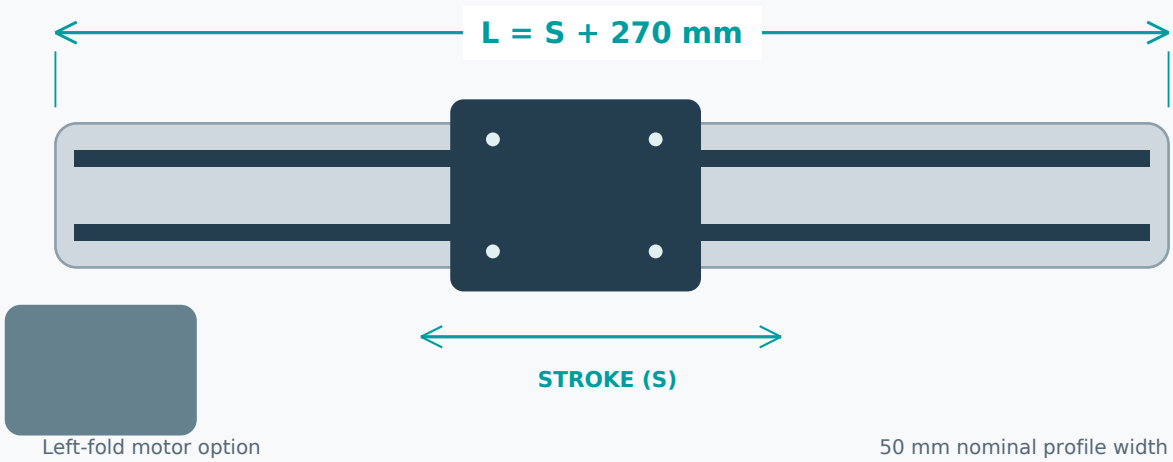
The 2000 mm/s headline value is a listing-level maximum, while the 5/10/15 kg speeds above are model-series references for a 57 x 76 mm stepper. Actual performance depends on load, stroke, acceleration, controller, motor and installation orientation.

02 / DIMENSIONAL REFERENCE

# Travel and installation envelope

Reference for the folded-motor, left-side configuration; confirm final drawings before machining.

REFERENCE ENVELOPE / NOT TO SCALE




## STANDARD STROKE-TO-LENGTH REFERENCE

L values are calculated from L = S + 270 mm.

| STROKE S (mm) | L (mm) |
|---|---|
| 100 | 370 |
| 200 | 470 |
| 300 | 570 |
| 400 | 670 |
| 500 | 770 |
| 600 | 870 |

| STROKE S (mm) | L (mm) |
|---|---|
| 800 | 1070 |
| 1000 | 1270 |
| 1500 | 1770 |
| 2000 | 2270 |
| 2500 | 2770 |
| 3500 | 3770 |

Important: Values above refer to the published reference configuration. Motor-fold direction, motor housing and cable clearance may change the installed envelope. Obtain a released mounting drawing before drilling.

03 / SYSTEM INTEGRATION

# Installation and commissioning

Practical engineering notes for selecting and operating the supplied NEMA 23 linear stage.

## MOTOR AND CONTROL INTERFACE

| | |
|---|---|
| **Motor form factor** | NEMA 23 frame; series reference motor size 57 x 76 mm. |
| **Electrical data** | Winding current, resistance, phase count and connector pinout: not specified for the selected SKU. |
| **Drive electronics** | Use a matching stepper driver, power supply and motion controller; purchase bundle contents vary. |
| **Feedback / limits** | Limit switches, homing sensor, encoder and brake are configuration-dependent; verify before order. |

## COMMISSIONING CHECKLIST

01 Verify motor label, winding current and driver settings.

02 Confirm travel clearance across the entire stroke.

03 Secure the extrusion to a flat, rigid mounting base.

04 Set a safe homing sequence and soft travel limits.

05 Check belt alignment and tension before running.

06 Start with a low speed and conservative acceleration.

07 Test the axis under the actual payload and orientation.

08 Recheck fastener torque and cable strain relief.

## APPLICATION AND SAFETY LIMITATIONS

- A timing belt is not self-locking. For vertical mounting, use an appropriate holding brake and fall-prevention measures.
- Load ratings are not interchangeable between stepper and servo configurations. Verify the required speed, duty cycle and acceleration at operating load.
- This compiled reference is not a released manufacturing or safety-certification drawing.