

FPB30

SYNCHRONOUS
BELT DRIVE

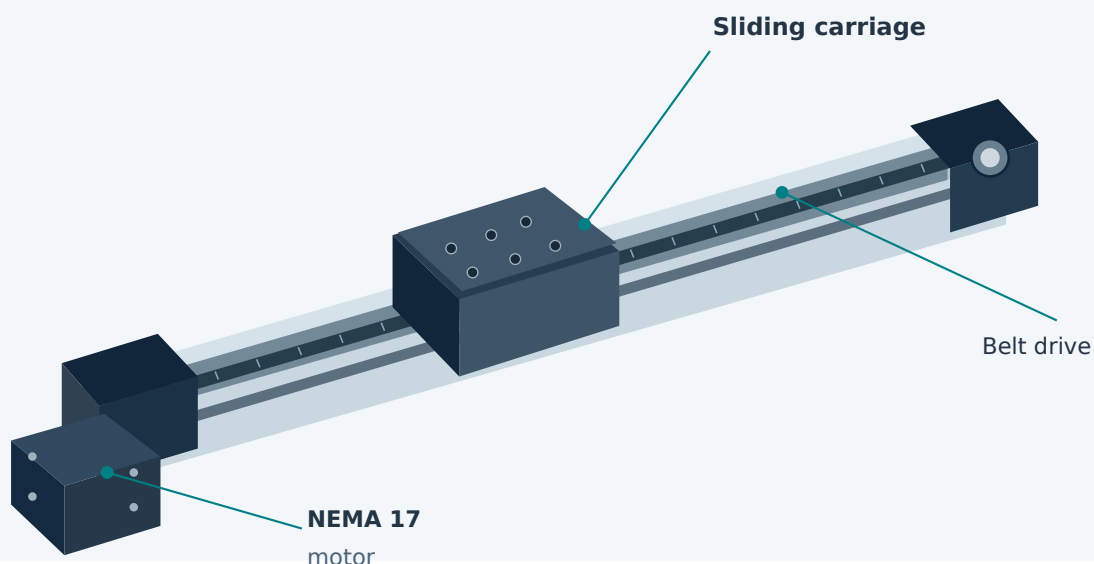
Belt-Driven Linear Stage

Compact dual-guide motion module with NEMA 17 stepper motor

Technical datasheet / English edition

CONCEPTUAL ASSEMBLY VIEW

Not to scale

**30 mm**

Body width

1000

mm/s peak speed

8 kg

Horizontal load*

NEMA 17

Standard motor

DESIGN SUMMARY

The FPB30 is a compact synchronous-belt linear-motion module. Its moving carriage is guided by a dual-guide structure and powered through a side-mounted stepper motor. It is suitable for high-speed positioning where long travel and a narrow profile are priorities.

Specification convention. Performance values are published reference figures, not acceptance-test certificates. Verify the selected stroke, operating orientation, payload moment, motor, and controls before installation.

Mechanical and performance data

01 Construction and motion

Product series	FPB30 belt-driven linear stage
Drive mechanism	Synchronous toothed belt and pulley
Guide system	Dual-guide / dual-shaft-core carriage architecture
Main body	Precision aluminum extrusion; 30 mm nominal width
Standard drive motor	NEMA 17 stepper motor (42 mm frame class)
Listed working stroke	100-3500 mm (configuration-dependent)
Overall rail length	$L = S + 177\text{ mm}$; $S = \text{working stroke}$
Repeat positioning	$\pm 0.05\text{ mm}$, published reference figure
Maximum speed	Up to 1000 mm/s, nominal/light-load operating condition
Speed at maximum load	600 mm/s is reported in some listings; verify
Acoustic level	$\leq 65\text{ dB}$ reported; other listings state $\leq 70\text{ dB}$

02 Payload by installation direction

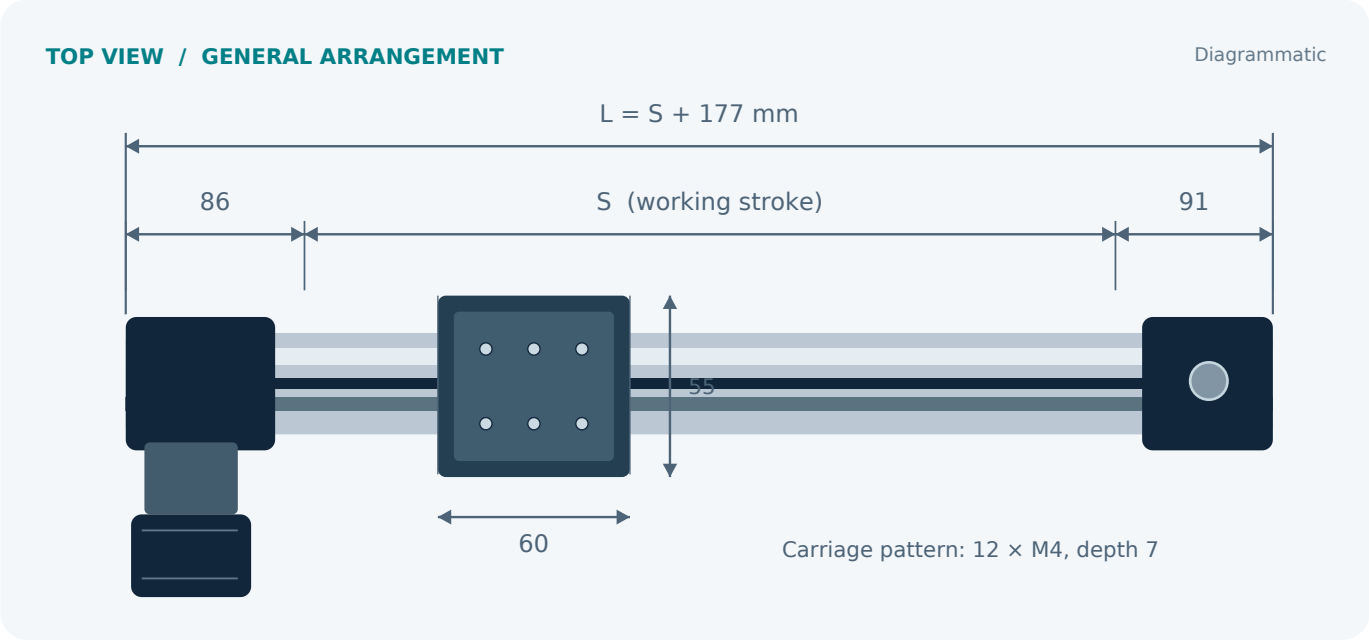
Mounting	Primary listing	Specification caution
Horizontal	8 kg	Common published value
Vertical	5 kg	Other published figures: 3 kg / 2 kg
Side-mounted	7 kg	Alternate vendor lists 4 kg
Inverted / flip	8 kg	Alternate vendor lists 4 kg

LOAD SELECTION NOTE

Published payload values vary between suppliers. Use the conservative value applicable to the exact assembly until an approved, orientation-specific load/moment chart is available. These masses do not specify allowable cantilever moment or acceleration.

Reference geometry and stroke

Dimensional values below are transcribed from the published FPB30 reference arrangement. The illustrations are explanatory redrawings and must not replace an approved machining drawing.



03 Length calculation

Rail assembly length: $L \text{ (mm)} = \text{nominal stroke } S \text{ (mm)} + 177 \text{ mm}$. The 86 mm and 91 mm end allowances are represented in the reference drawing; they should not be treated as motor-envelope dimensions.

Working stroke S	Rail length L	Status
100 mm	277 mm	Formula-based estimate
200 mm	377 mm	Formula-based estimate
300 mm	477 mm	Formula-based estimate
500 mm	677 mm	Formula-based estimate
600 mm	777 mm	Formula-based estimate
1000 mm	1177 mm	Formula-based estimate
1500 mm	1677 mm	Formula-based estimate
3500 mm	3677 mm	Formula-based estimate

Fabrication check: Confirm the exact end-cap envelope, hole spacing, wiring exit, motor projection, and mounting clearances on the selected stroke before drilling mating parts.

Integration and configuration

04 Interfaces and control



Drive

Synchronous belt provides rapid travel and may allow back-driving when power is removed.



Motor

NEMA 17 identifies the frame size, not winding current, torque or wiring pinout.



Limits

Confirm home/limit sensing provisions and add application-specific end-stop protection.



Controls

Specify driver, supply voltage, cable routing and step/direction controller separately.

05 Procurement specification checklist

1 Stroke and orientation

State working stroke S, horizontal/vertical/side/inverted installation and approach clearance.

2 Load and dynamics

State payload mass, center-of-gravity offset, acceleration, duty cycle and desired speed.

3 Motor assembly

Request motor model, rated phase current, holding torque, winding diagram and cable exit.

4 Controls and sensors

Confirm driver compatibility, supply voltage, home/limit devices and connector details.

5 Mounting details

Request approved CAD/2D drawing for carriage M4 threads, base fixtures and end-cap sizes.

ENGINEERING QUALIFICATION

Rated speed, load and repeatability are conditional on the actual drive, stroke, duty cycle and installation. Do not use published mass limits as a substitute for force and overturning-moment calculations.