

# High-Resolution Linear Actuator with DC Motor

Highly dynamic, high forces up to 120 N



## M-235

- Travel ranges 20 and 50 mm
- Minimum incremental motion to 0.1  $\mu\text{m}$
- DC motor allows high velocities
- Push / pull force capacity up to 120 N
- MTBF >10,000 h

### Reference-class linear drive

Combines high precision, high forces, and high dynamics.

### High-quality components

Ball screw for high velocities and a high number of cycles. Nonrotating tip for uniform motion prevents wobble, torque, and wear at the point of contact. Incl. flat and spherical tip for decoupling forces. Noncontact limit switches protect the mechanics. A direction-sensing reference switch supports automation applications. Position-controlled variants with differential encoder driver in the connector for safe signal transfer over distances up to 10 m.

### Motor variants

- Highly dynamic, closed-loop DC motors reach high velocities
- Position-controlled DC motors with a gearhead and high-resolution rotary encoders allow for incremental motion of just 100 nm

### Application fields

Precision adjustment. External drive element for guided systems.

Motion	Unit		M-235.2DD	M-235.5DD	M-235.2DG	M-235.5DG
Active axes			X	X	X	X
Travel range in X	mm		20	50	20	50
Maximum velocity in X, unloaded	mm/s		30	30	2	2

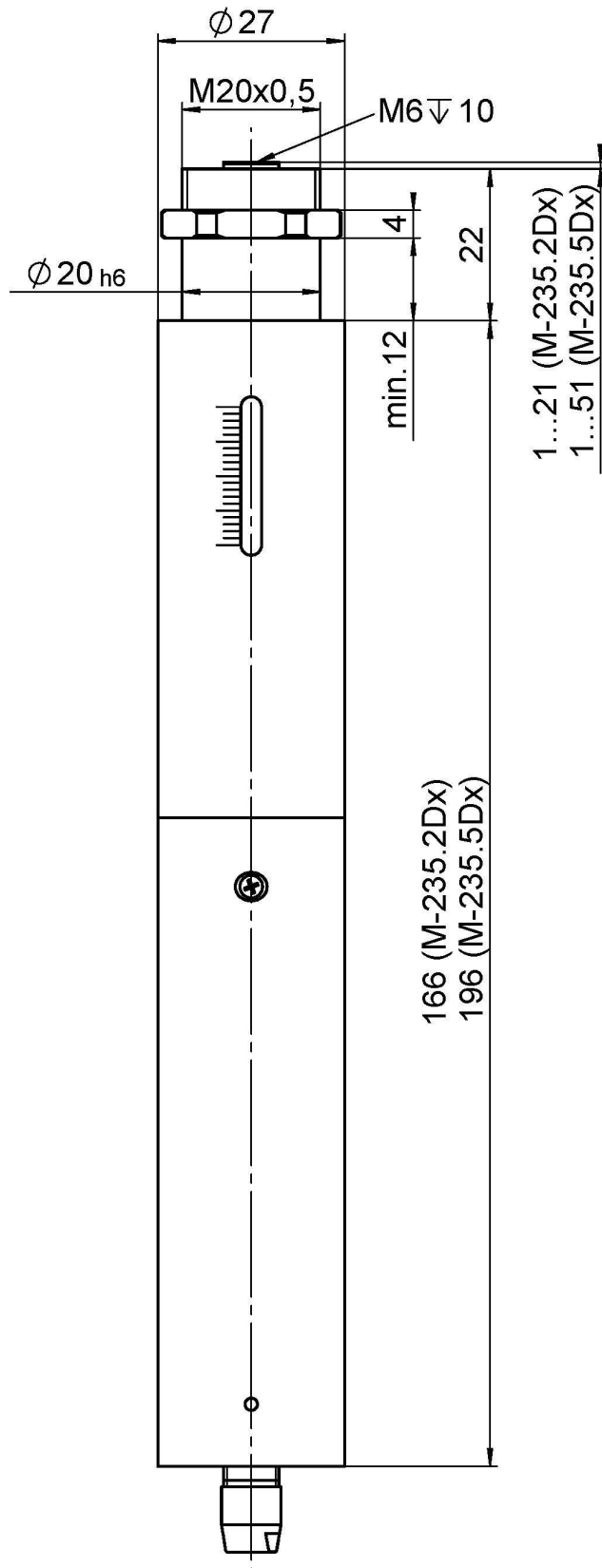
Positioning	Unit	Tolerance	M-235.2DD	M-235.5DD	M-235.2DG	M-235.5DG
Minimum incremental motion in X	$\mu\text{m}$	Typ.	1.5	1.5	0.1	0.1
Unidirectional repeatability in X	$\mu\text{m}$	Typ.	$\pm 0.5$	$\pm 0.5$	$\pm 0.1$	$\pm 0.1$
Backlash in X	$\mu\text{m}$	Typ.	2	2	2	2
Reference switch			Hall effect	Hall effect	Hall effect	Hall effect
Limit switches			Hall effect	Hall effect	Hall effect	Hall effect
Integrated sensor			Incremental rotary encoder	Incremental rotary encoder	Incremental rotary encoder	Incremental rotary encoder
Sensor resolution	Cts./rev.		2048	2048	2048	2048

Drive Properties	Unit	Tolerance	M-235.2DD	M-235.5DD	M-235.2DG	M-235.5DG
Drive type			DC motor	DC motor	DC gear motor	DC gear motor
Operating voltage	V		0 to $\pm 12$	0 to $\pm 12$	0 to $\pm 12$	0 to $\pm 12$
Drive force in X	N	Typ.	50	50	120	120

Mechanical Properties	Unit	Tolerance	M-235.2DD	M-235.5DD	M-235.2DG	M-235.5DG
Permissible push force in Y	N	Max.	8	8	8	8
Drive screw type			Ball screw	Ball screw	Ball screw	Ball screw
Drive screw pitch	mm		1	1	1	1
Gear ratio i					29,6 : 1	29,6 : 1
Overall mass	g		500	650	550	700
Material			Aluminum, anodized, chrome steel	Aluminum anodized, chrome steel	Aluminum anodized, chrome steel	Aluminum, anodized, chrome steel

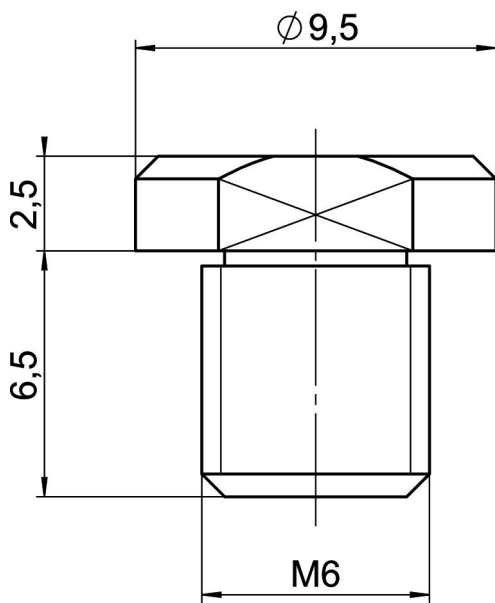
Miscellaneous	Unit		M-235.2DD	M-235.5DD	M-235.2DG	M-235.5DG
Operating temperature range	°C		-20 to 65	-20 to 65	-20 to 65	-20 to 65
Connector			D-sub 15-pin (m)	D-sub 15-pin (m)	D-sub 15-pin (m)	D-sub 15-pin (m)
Cable length	m		0.5	0.5	0.5	0.5
Recommended controllers / drivers			C-863.12 C-885 with C-863.20C885 C-884	C-863.12 C-885 with C-863.20C885 C-884	C-863.12 C-885 with C-863.20C885 C-884	C-863.12 C-885 with C-863.20C885 C-884

## Drawings / Images

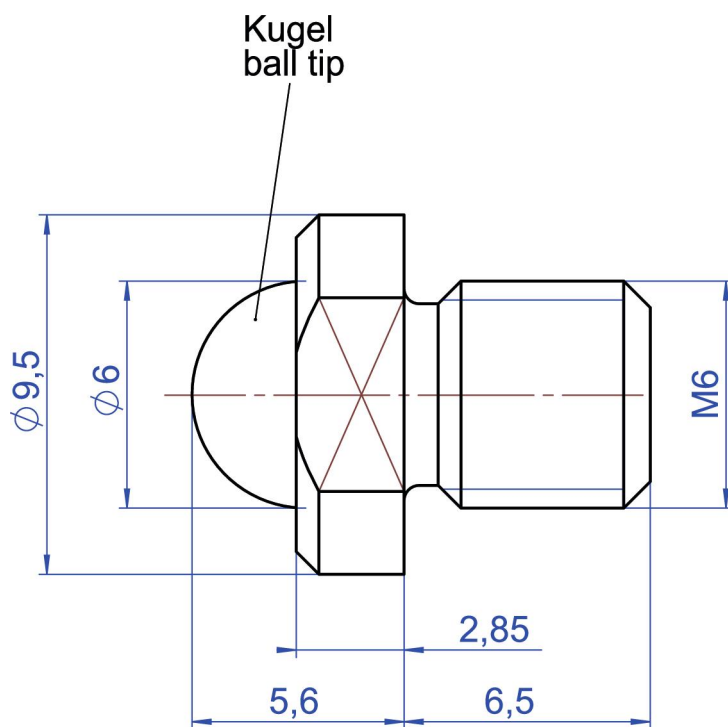


M-235.2DD, M-235.2DG, M-235.5DD, and M-235.5DG, dimensions in mm. Note that a comma is used in the drawing instead of a decimal point.

## Drawings / Images



Dimensions of the flat tip M23550107 (included). Note that a comma is used in the drawing instead of a decimal point.



Dimensions of the spherical tip M23550108 (included). Note that a comma is used in the drawing instead of a decimal point.

## Order Information

**M-235.2DD**

High-resolution linear actuator with DC motor; DC motor; 20 mm travel range; 50 N feed force; 30 mm/s maximum velocity; ball screw; incremental rotary encoder, 2048 counts/rev. sensor resolution; limit switches: Hall effect; 0.5 m cable length