

## MCE 32

Mini electric cylinder MCE is a mini linear drive with a piston rod. By using an integrated precision ball screw drive, the rotary motion (rotation) of the drive shaft is converted to the linear motion (translation) of the piston rod with high mechanical efficiency and low internal friction.

A preassembled standard motor (in-line with a motor adapter and a coupling or in-parallel with a motor sidedrive and a timing belt) together with the standard drive, makes the system plug and play ready. Compact dimensions and optimally selected motor combinations cover a wide range of applications.

The aluminium cylinder profile includes T-slots on the bottom for fixing the electric cylinder, as well as side slots for clamping fixtures and magnetic field sensors.

Options, such as female piston rod end and extended piston rod, together with a wide range of accessories make this product highly flexible. There is also an option of the mini electric cylinder without the preassembled motor if an individual motor is required.

For applications, where higher resistance to lateral loads or torsional moments is required, a guiding unit GUC can be used. By using the guiding unit, which offers high precision guiding and positioning, the mini electric cylinders can easily be combined to the multi-axis systems.

Each MCE is optimally pre-lubricated and ready for a maintenance-free operating process.

### Note!

All the data of the dynamic load capacities (ball screw drive) stated in the tables are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety and service life.

We recommend a minimum dynamic safety factor of 5,0 or more. Please refer to the Ball screw drive section, where calculation of the safety factor of the ball screw drive and how the applied load affects the service life are presented.

Dimensions in mm.

Contact us for further information.

**Axial backlash:**  $\leq 0,06$

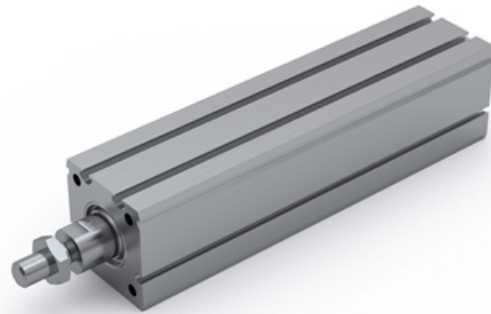
**Max. acceleration:** 20 m/s

**Protection class:** IP40

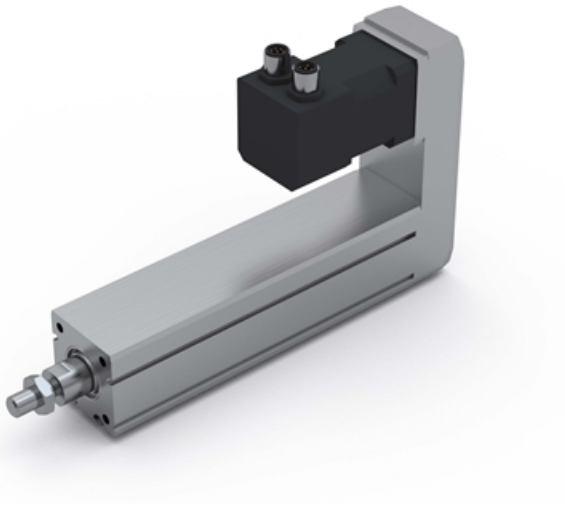
**Ambient temperature:** 0 °C – +50 °C

**Duty cycle:** 100%

**Maintenance:** Life-time pre-lubricated

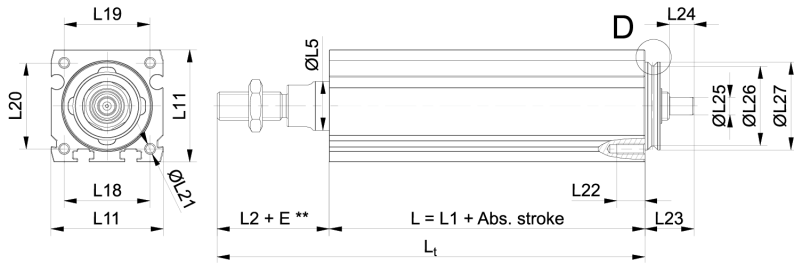


## MCE 32

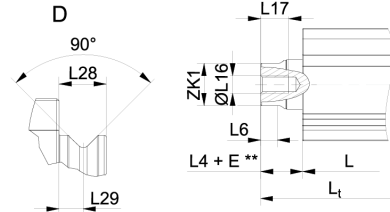


## Variant Data

### MCE without a motor

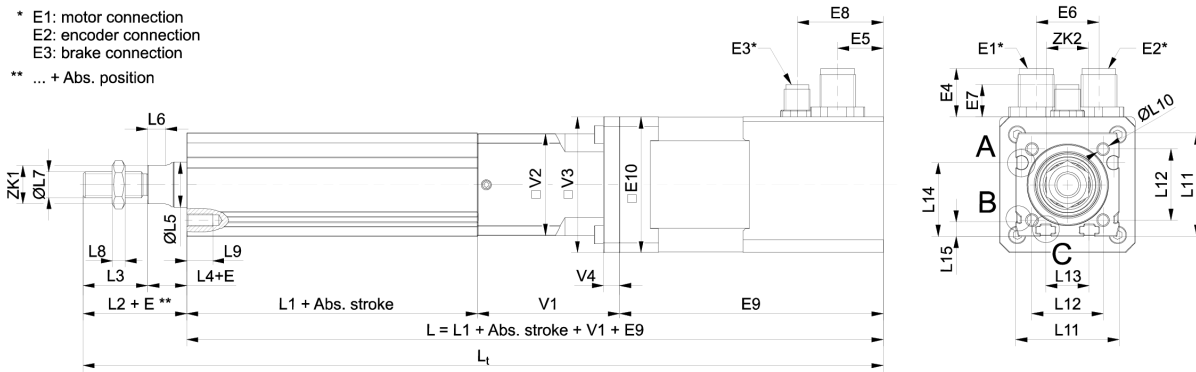


### Female thread

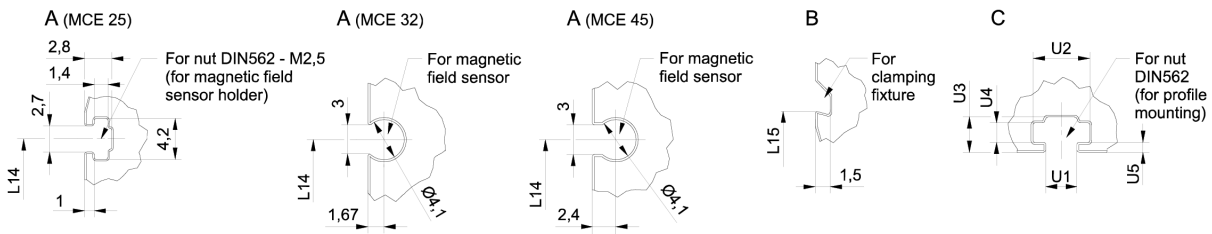


### MCE with motor adapter VK

- \* E1: motor connection
- E2: encoder connection
- E3: brake connection
- \*\* ... + Abs. position

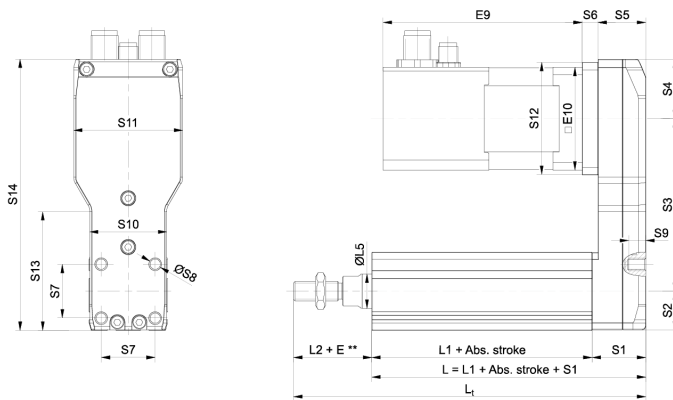


### MCE with motor adapter VK



## Variant Data

### MCE with motor side drive MSD



Designation	Description	Ball screw (d x l)	Max. Drive Torque $M_p$	Max. Travel Speed $V_{max}$	Max. Rotational Speed $n_{max}$ (min <sup>-1</sup> )
<b>MCE 32 - 8x2</b>	Without motor	8x2 mm	0,13 Nm	0,150 m/s	4500 rev/min
<b>MCE 32 - 8x8</b>	Without motor	8x8 mm	0,53 Nm	0,600 m/s	4500 rev/min
<b>MCE 32 - VK - 28 - 8x2</b>	With motor size 28 and motor adapter VK	8x2 mm	-	0,094 m/s	2810 rev/min
<b>MCE 32 - VK - 28 - 8x8</b>	With motor size 28 and motor adapter VK	8x8 mm	-	0,400 m/s	3000 rev/min
<b>MCE 32 - VK - 42 - 8x2</b>	With motor size 42 and motor adapter VK	8x2 mm	-	0,100 m/s	3000 rev/min
<b>MCE 32 - VK - 42 - 8x8</b>	With motor size 42 and motor adapter VK	8x8 mm	-	0,400 m/s	3000 rev/min
<b>MCE 32 - MSD - 28 - 8x2</b>	With motor size 28 and motor side drive MSD	8x2 mm	-	0,064 m/s	1920 rev/min
<b>MCE 32 - MSD - 28 - 8x8</b>	With motor size 28 and motor side drive MSD	8x8 mm	-	0,208 m/s	1560 rev/min
<b>MCE 32 - MSD - 42 - 8x2</b>	With motor size 42 and motor side drive MSD	8x2 mm	-	0,100 m/s	3000 rev/min
<b>MCE 32 - MSD - 42 - 8x8</b>	With motor size 42 and motor side drive MSD	8x8 mm	-	0,400 m/s	3000 rev/min

Designation	No Load Torque $M_0$	Axial dynamic load capacity $C_a$	Max. angle of piston rod rotation	Max. repeatability	Max. permissible axial load $F_{pa}$	Absolute stroke
<b>MCE 32 - 8x2</b>	0,04 Nm	2000 N	$\leq \pm 1^\circ$	$\pm 0,015$ mm	375 N	25, 50, 75, 100, 125, 150, 175, 200
<b>MCE 32 - 8x8</b>	0,05 Nm	1500 N	$\leq \pm 1^\circ$	$\pm 0,015$ mm	375 N	25, 50, 75, 100, 125, 150, 175, 200
<b>MCE 32 - VK - 28 - 8x2</b>	-	2000 N	$\leq \pm 1^\circ$	$\pm 0,015$ mm	215 N	25, 50, 75, 100, 125, 150, 175, 200
<b>MCE 32 - VK - 28 - 8x8</b>	-	1500 N	$\leq \pm 1^\circ$	$\pm 0,015$ mm	50 N	25, 50, 75, 100, 125, 150, 175, 200

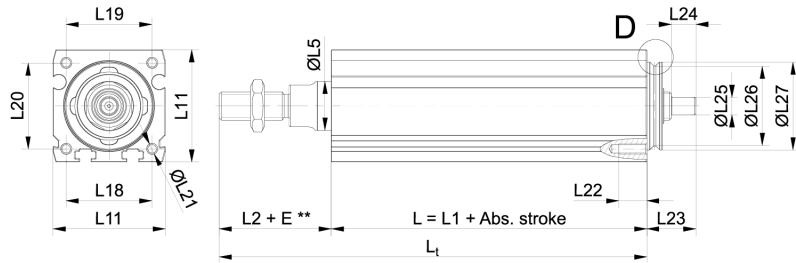
**Variant Data**

Designation	No Load Torque M <sub>0</sub>	Axial dynamic load capacity C <sub>a</sub>	Max. angle of piston rod rotation	Max. repeatability	Max. permissible axial load F <sub>pa</sub>	Absolute stroke
<b>MCE 32 - VK - 42 - 8x2</b>	-	2000 N	≤ ±1 °	±0,015 mm	375 N	25, 50, 75, 100, 125, 150, 175, 200
<b>MCE 32 - VK - 42 - 8x8</b>	-	1500 N	≤ ±1 °	±0,015 mm	200 N	25, 50, 75, 100, 125, 150, 175, 200
<b>MCE 32 - MSD - 28 - 8x2</b>	-	2000 N	≤ ±1 °	±0,015 mm	180 N	25, 50, 75, 100, 125, 150, 175, 200
<b>MCE 32 - MSD - 28 - 8x8</b>	-	1500 N	≤ ±1 °	±0,015 mm	40 N	25, 50, 75, 100, 125, 150, 175, 200
<b>MCE 32 - MSD - 42 - 8x2</b>	-	2000 N	≤ ±1 °	±0,015 mm	375 N	25, 50, 75, 100, 125, 150, 175, 200
<b>MCE 32 - MSD - 42 - 8x8</b>	-	1500 N	≤ ±1 °	±0,015 mm	175 N	25, 50, 75, 100, 125, 150, 175, 200

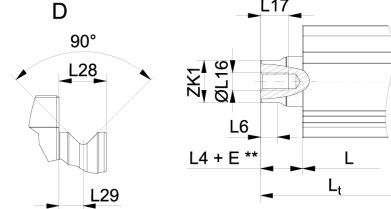
Designation	Max. permissible payload horizontal mph	Max. permissible payload vertical mpv	Max. permissible radial load on shaft F <sub>pr</sub>	Motor type	Motor size (mm)
<b>MCE 32 - 8x2</b>	126 kg	31 kg	50 N	-	-
<b>MCE 32 - 8x8</b>	126 kg	31 kg	50 N	-	-
<b>MCE 32 - VK - 28 - 8x2</b>	72 kg	18 kg	-	Stepper	28
<b>MCE 32 - VK - 28 - 8x8</b>	6,6 kg	4 kg	-	Stepper	28
<b>MCE 32 - VK - 42 - 8x2</b>	126 kg	31 kg	-	Stepper	42
<b>MCE 32 - VK - 42 - 8x8</b>	35 kg	17 kg	-	Stepper	42
<b>MCE 32 - MSD - 28 - 8x2</b>	60 kg	15 kg	-	Stepper	28
<b>MCE 32 - MSD - 28 - 8x8</b>	6,8 kg	3,1 kg	-	Stepper	28
<b>MCE 32 - MSD - 42 - 8x2</b>	126 kg	31 kg	-	Stepper	42
<b>MCE 32 - MSD - 42 - 8x8</b>	35 kg	15 kg	-	Stepper	42

# Dimensions

## MCE without a motor

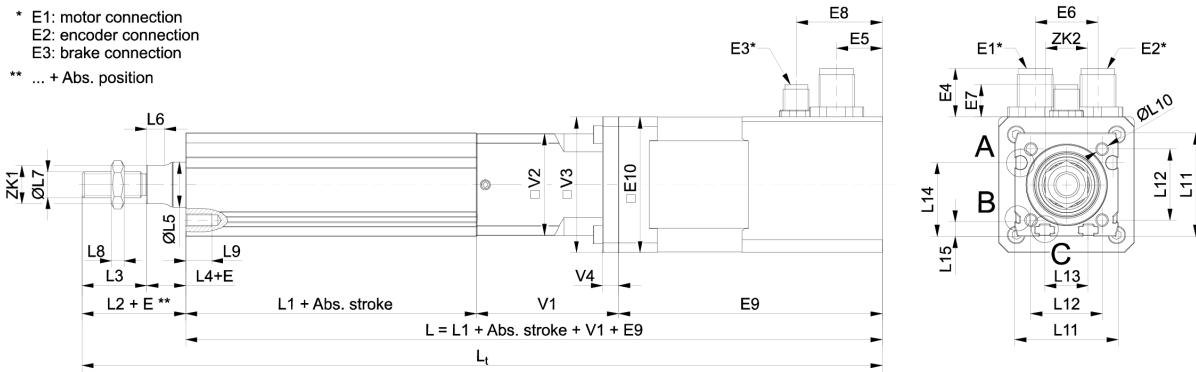


## Female thread

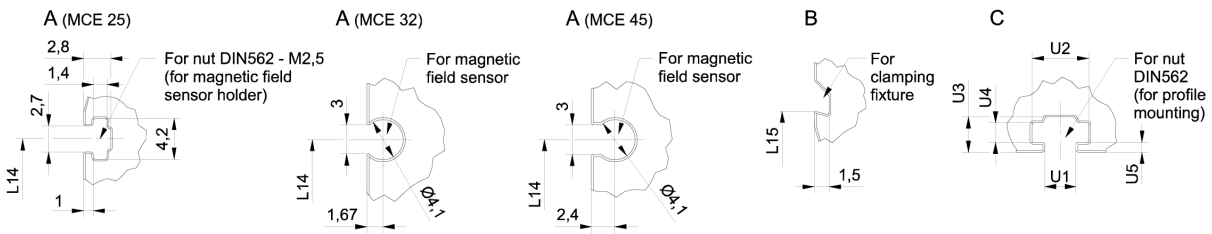


## MCE with motor adapter VK

- \* E1: motor connection
- E2: encoder connection
- E3: brake connection
- \*\* ... + Abs. position

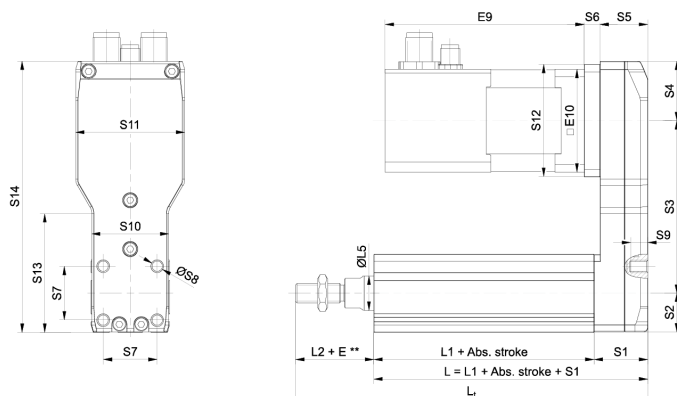


## MCE with motor adapter VK



## Dimensions

### MCE with motor side drive MSD



Designation	L1	L2	L3	L4	L5	L6	L7	L8	ZK1
<b>MCE 32 - 8x2</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - 8x8</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - VK - 28 - 8x2</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - VK - 28 - 8x8</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - VK - 42 - 8x2</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - VK - 42 - 8x8</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - MSD - 28 - 8x2</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - MSD - 28 - 8x8</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - MSD - 42 - 8x2</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12
<b>MCE 32 - MSD - 42 - 8x8</b>	65	32	20	12	Ø 14	5,50	Ø M8 x 1,25	4	12

Designation	ZK2	V1	V2	V3	V4	L9	L10	L11	L12	L13
MCE 32 - 8x2	13	-	-	-	-	8	Ø M4	32	22	13,50
MCE 32 - 8x8	13	-	-	-	-	8	Ø M4	32	22	13,50
MCE 32 - VK - 28 - 8x2	13	35	31,50	31,50	0	8	Ø M4	32	22	13,50
MCE 32 - VK - 28 - 8x8	13	35	31,50	31,50	0	8	Ø M4	32	22	13,50
MCE 32 - VK - 42 - 8x2	13	40	31,50	42	5,50	8	Ø M4	32	22	13,50
MCE 32 - VK - 42 - 8x8	13	40	31,50	42	5,50	8	Ø M4	32	22	13,50
MCE 32 - MSD - 28 - 8x2	13	35	31,50	31,50	0	8	Ø M4	32	22	13,50
MCE 32 - MSD - 28 - 8x8	13	35	31,50	31,50	0	8	Ø M4	32	22	13,50
MCE 32 - MSD - 42 - 8x2	13	40	31,50	42	5,50	8	Ø M4	32	22	13,50
MCE 32 - MSD - 42 - 8x8	13	40	31,50	42	5,50	8	Ø M4	32	22	13,50

## Dimensions

Designation	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23
MCE 32 - 8x2	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - 8x8	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - VK - 28 - 8x2	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - VK - 28 - 8x8	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - VK - 42 - 8x2	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - VK - 42 - 8x8	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - MSD - 28 - 8x2	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - MSD - 28 - 8x8	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - MSD - 42 - 8x2	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14
MCE 32 - MSD - 42 - 8x8	22,80	4,40	Ø M5	8	24,50	24,50	24,50	Ø M3	8	14



Designation	L24	L25	L26	L27	L28	L29	U1	U2	U3	U4
MCE 32 - 8x2	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - 8x8	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - VK - 28 - 8x2	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - VK - 28 - 8x8	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - VK - 42 - 8x2	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - VK - 42 - 8x8	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - MSD - 28 - 8x2	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - MSD - 28 - 8x8	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - MSD - 42 - 8x2	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2
MCE 32 - MSD - 42 - 8x8	7	Ø 5 (h7)	Ø 22,6	Ø 25 (h7)	4,50	2,30	3,20	5,80	3,60	2

Designation	U5	S1	S2	S3	S4	S5	S6	S7	S8	S9
MCE 32 - 8x2	1	-	-	-	-	-	-	-	-	-
MCE 32 - 8x8	1	-	-	-	-	-	-	-	-	-
MCE 32 - VK - 28 - 8x2	1	22	16	52,50	18,25	19,50	5,50	22	Ø M5	7
MCE 32 - VK - 28 - 8x8	1	22	16	52,50	18,25	19,50	5,50	22	Ø M5	7
MCE 32 - VK - 42 - 8x2	1	22	16	70,50	24,25	19,50	6,50	22	Ø M5	7
MCE 32 - VK - 42 - 8x8	1	22	16	70,50	24,25	19,50	6,50	22	Ø M5	7
MCE 32 - MSD - 28 - 8x2	1	22	16	52,50	18,25	19,50	5,50	22	Ø M5	7
MCE 32 - MSD - 28 - 8x8	1	22	16	52,50	18,25	19,50	5,50	22	Ø M5	7
MCE 32 - MSD - 42 - 8x2	1	22	16	70,50	24,25	19,50	6,50	22	Ø M5	7
MCE 32 - MSD - 42 - 8x8	1	22	16	70,50	24,25	19,50	6,50	22	Ø M5	7

Designation	S10	S11	S12	S13	S14	E1	E2	E3	E4	E5
MCE 32 - 8x2	-	-	-	-	-	-	-	-	-	-
MCE 32 - 8x8	-	-	-	-	-	-	-	-	-	-
MCE 32 - VK - 28 - 8x2	31,50	31,50	34	0	86,75	-	-	-	-	-
MCE 32 - VK - 28 - 8x8	31,50	31,50	34	0	86,75	-	-	-	-	-
MCE 32 - VK - 42 - 8x2	31,50	44,50	46	48	110,75	M12 5-pole	M12 8-pole	– (with brake: M8 3-pole)	14 ± 1	14 ± 0,3

## Dimensions

Designation	S10	S11	S12	S13	S14	E1	E2	E3	E4	E5
<b>MCE 32 - VK - 42 - 8x8</b>	31,50	44,50	46	48	110,75	M12 5-pole	M12 8-pole	– (with brake: M8 3-pole)	14 ± 1	14 ± 0,3
<b>MCE 32 - MSD - 28 - 8x2</b>	31,50	31,50	34	0	86,75	-	-	-	-	-
<b>MCE 32 - MSD - 28 - 8x8</b>	31,50	31,50	34	0	86,75	-	-	-	-	-
<b>MCE 32 - MSD - 42 - 8x2</b>	31,50	44,50	46	48	110,75	M12 5-pole	M12 8-pole	– (with brake: M8 3-pole)	14 ± 1	14 ± 0,3
<b>MCE 32 - MSD - 42 - 8x8</b>	31,50	44,50	46	48	110,75	M12 5-pole	M12 8-pole	– (with brake: M8 3-pole)	14 ± 1	14 ± 0,3

Designation	E6	E7	E8	E9	E10
<b>MCE 32 - 8x2</b>	-	-	-	-	-
<b>MCE 32 - 8x8</b>	-	-	-	-	-
<b>MCE 32 - VK - 28 - 8x2</b>	-	-	-	-	-
<b>MCE 32 - VK - 28 - 8x8</b>	-	-	-	-	-
<b>MCE 32 - VK - 42 - 8x2</b>	19,50	– (with brake: 9 ± 1)	– (with brake: 27 ± 0,3)	70,4 ± 1 (with brake: 106,4 ± 0,3)	42,30
<b>MCE 32 - VK - 42 - 8x8</b>	19,50	– (with brake: 9 ± 1)	– (with brake: 27 ± 0,3)	70,4 ± 1 (with brake: 106,4 ± 0,3)	42,30
<b>MCE 32 - MSD - 28 - 8x2</b>	-	-	-	-	-
<b>MCE 32 - MSD - 28 - 8x8</b>	-	-	-	-	-
<b>MCE 32 - MSD - 42 - 8x2</b>	19,50	– (with brake: 9 ± 1)	– (with brake: 27 ± 0,3)	70,4 ± 1 (with brake: 106,4 ± 0,3)	42,30
<b>MCE 32 - MSD - 42 - 8x8</b>	19,50	– (with brake: 9 ± 1)	– (with brake: 27 ± 0,3)	70,4 ± 1 (with brake: 106,4 ± 0,3)	42,30

## Mass and mass moment of inertia

### Mass and mass moment of inertia

Additional mass of an electric cylinder when combining the motor with the motor adapter VK or the motor side drive MSD

Designation	Motor		Motor without a brake		Motor with a brake	
	Type	Size □ [mm]	Mass of the motor and motor adapter VK $m_{VK+m}$ [kg]	Mass of the motor and motor side drive MSD $m_{MSD+m}$ [kg]	Mass of the motor and motor adapter VK $m_{VK+m}$ [kg]	Mass of the motor and motor side drive MSD $m_{MSD+m}$ [kg]
MCE 25	Stepper	28	Available soon			
MCE 32	Stepper	28	Available soon			
MCE 32	Stepper	42	0,52	0,62	0,65	0,75
MCE 45	Stepper	42	0,57	0,71	0,70	0,84
MCE 45	Stepper	56	1,31	1,49	1,50	1,68

### Planar moment of inertia

Designation	Cylinder profile	
	$I_y$ [cm <sup>4</sup> ]	$I_z$ [cm <sup>4</sup> ]
MCE 25	2,10	1,98
MCE 32	6,42	6,58
MCE 45	25,37	25,16

### Holding torque of a motor brake

Type	Motor	Holding torque (brake) [Nm]
	Size □ [mm]	
Stepper	28	Available soon
Stepper	42	0,4
Stepper	56	1,0

□ = Square cross section

Designation	Moved mass	Mass of the mini electric cylinder mMCE	Mass moment of inertia JMCE
<b>MCE 32 - 8x2</b>	$0,12 + 0,0005 \times \text{Abs. stroke} + 0,0005 \times E$ (kg)	$0,31 + 0,0023 \times \text{Abs. stroke} + 0,0005 \times E$ (kg)	" $0,70 + 0,0025 \times \text{Abs. stroke} + 0,00005 \times E + 0,1013 \times \text{mload}$ (10&#x207B;&#x00B2 kg cm&#x00B2)"
<b>MCE 32 - 8x8</b>	$0,12 + 0,0005 \times \text{Abs. stroke} + 0,0005 \times E$ (kg)	$0,31 + 0,0023 \times \text{Abs. stroke} + 0,0005 \times E$ (kg)	" $0,88 + 0,0033 \times \text{Abs. stroke} + 0,00077 \times E + 1,6211 \times \text{mload}$ (10&#x207B;&#x00B2 kg cm&#x00B2)"
<b>MCE 32 - VK - 28 - 8x2</b>	-	-	-
<b>MCE 32 - VK - 28 - 8x8</b>	-	-	-
<b>MCE 32 - VK - 42 - 8x2</b>	-	-	-
<b>MCE 32 - VK - 42 - 8x8</b>	-	-	-
<b>MCE 32 - MSD - 28 - 8x2</b>	-	-	-
<b>MCE 32 - MSD - 28 - 8x8</b>	-	-	-
<b>MCE 32 - MSD - 42 - 8x2</b>	-	-	-
<b>MCE 32 - MSD - 42 - 8x8</b>	-	-	-

