



Precision Actuators

4.140 Micro Actuator MA-35



FACTS

Load characteristics	$F_{x(N)}$	$F_{y(N)}$	$F_{z(N)}$
DC-B-013	10	500	10
DC-B-031	10	200	10
2Phase-045	10	300	10



KEY FEATURES

- Travel range 52 mm (2")
- Uni-directional repeatability down to 0.2 μm
- Maximum speed 100 mm/sec
- Force max. 500 N
- Integrated hall / mechanical limit switches
- High resolution

from the drive. Compared to other pushers, the standard force is very high (200 N) and can be increased. The MA-35 actuators are motorized with DC gear-motor with encoder or 2-phase gear-motor combination or as direct drive DC with encoder or 2-phase stepper motor. The motorized drives can be combined with a ground preloaded re-circulating ball screw with 1 mm or 2 mm pitch. Depending on the requirement, the actuator can be configured for high pushing forces, high resolution or high speed. The travel range is 52 mm (2"). Two integrated mechanical or optional hall limit switches prevent damage from accidental over-travel. All critical elements are made of stainless steel.

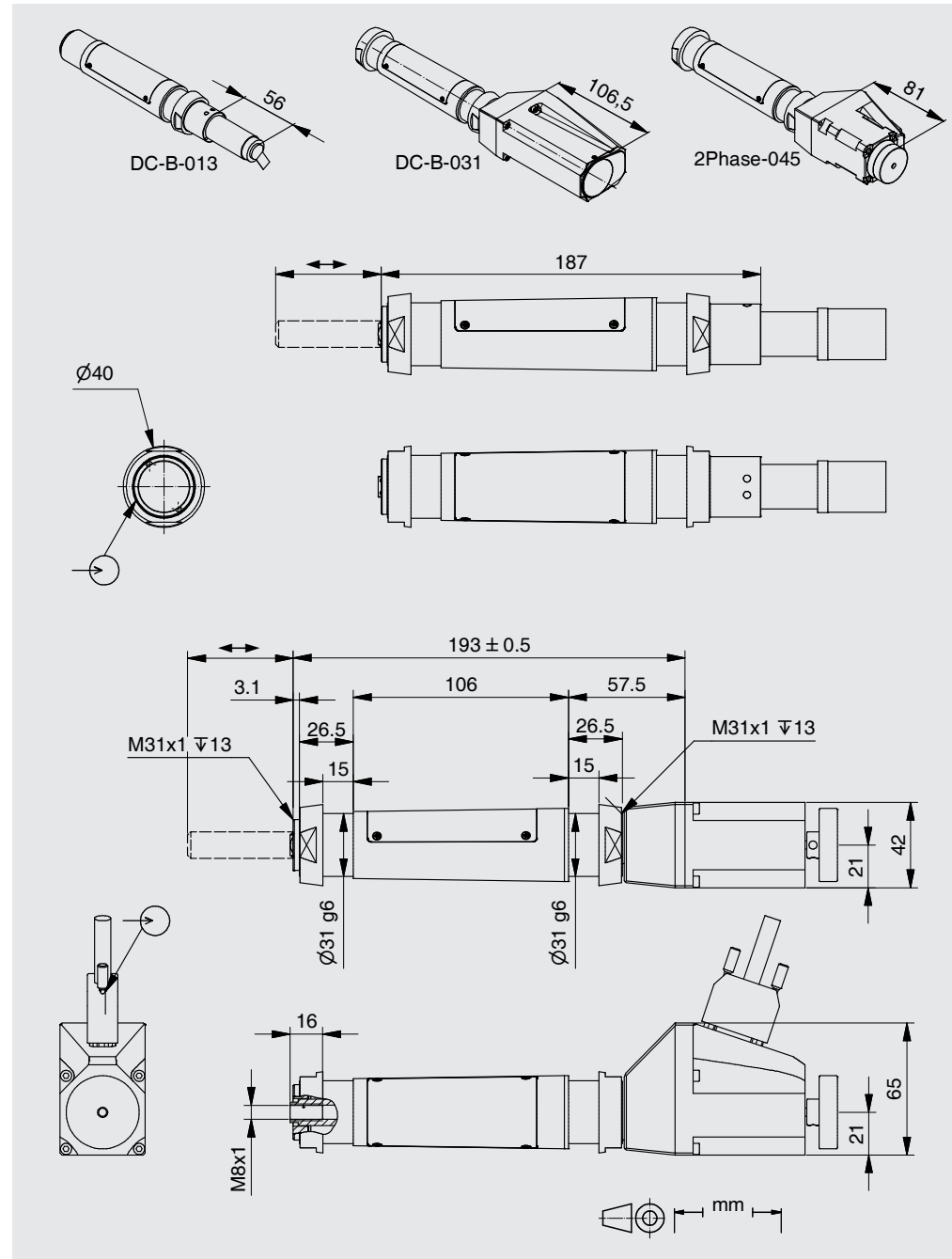
The MA-35 micro actuator was designed for applications with limited space conditions or where high precision actuators must be positioned decoupled

TECHNICAL DATA

Travel range (mm)	52					
Weight (kg)	2					
Motor (Pitch 1 2 mm)	DC-B-013		DC-B-031		2Phase-045	
Speed max. (mm/sec)	2.5	5	50	90	25	45
Resolution calculated (μm)	0.0164726	0.0329 (RE)	0.5	1 (RE)	5	10 (FS)
Resolution typical (μm)	0.1	0.2	0.5	1	0.1	0.2
Bi-directional Repeatability (μm)	± 1		± 1		± 1	
Uni-directional Repeatability (μm)	0.2		0.5 1		0.2	
Nominal Current (A)	0.28		1.96		1.2	
Voltage Range (V)	24		24			
Accuracy	on request					
Velocity range (mm/sec)	0.001 ... 100					
Material	Stainless steel					

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change



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- MP-20
- MP-20 B
- MP-15
- ASS SE

Order No.	5702-9-			0
DC-B-013		1		
DC-B-031		2		
2Phase-045		5		
52 mm (2")		1		
Pitch 1 mm / mechanical limit switches		0		
Pitch 2 mm / mechanical limit switches		1		
Pitch 1 mm / hall limit switches		2		
Pitch 2 mm / hall limit switches		3		

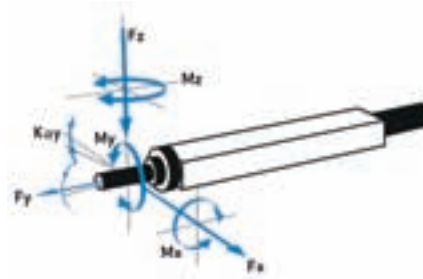
4.142 Micro Pusher MP-20

NEW

V

FACTS

Load characteristics	$F_{x(N)}$	$F_{y(N)}$	$F_{z(N)}$
DC-B-010	1	125	1
2Phase-010	1	125	1
2Phase-017	1	30	1



The new MP-20 micro pusher is designed to motorize manual drives or mirror mounts and it is an ideal component for limited space conditions. Small light components such as mirrors and diodes can be directly mounted to the tip. The MP-20 micro pusher is equipped with a recirculating ball screw for a quiet, precise and homogeneous smooth motion and has a non-rotating tip. The MP-20 micro pushers are offered with DC or 2-phase geared stepper motor combination or with a gearless 2-phase stepper motor. Round or flat ground inserts can be attached to the tip. The side-mounted design of model MP-20 B results in much shorter length.

KEY FEATURES

- Travel range up to 72 mm (3")
- Uni-directional repeatability down to 0.3 μm
- Maximum speed 12 mm/sec
- Force max. 125 N
- Integrated hall limit switches

TECHNICAL DATA

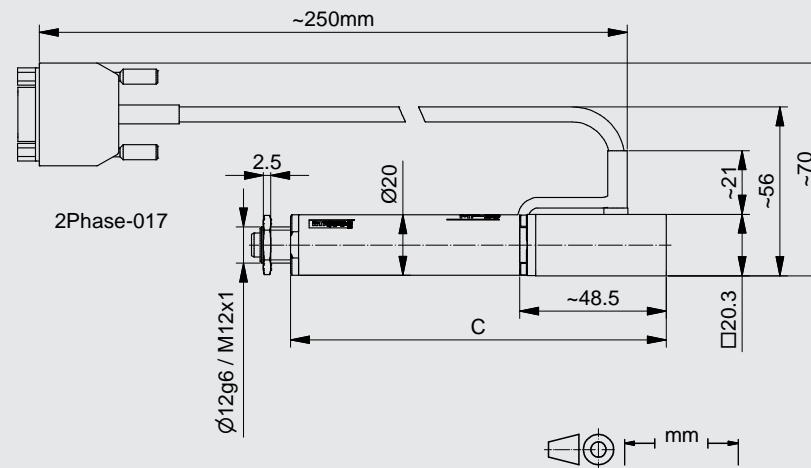
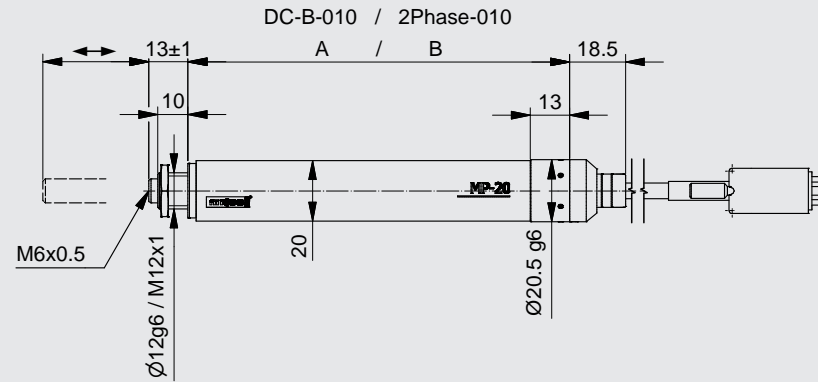
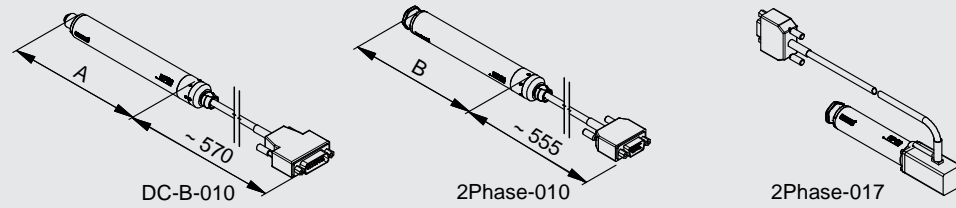
Travel range (mm)	13	26	52	76
Motor (Pitch 1 mm)	DC-B-010	2Phase-010	2Phase-017	
Speed max. (mm/sec)	3.5	0.8	12	
Resolution calculated (μm)	0.0221608 (RE)	0.5490171 (FS)	5 (FS)	
Resolution typical (μm)	0.1	0.1	0.1	
Bi-directional Repeatability (μm)	± 1	± 1	± 1	
Uni-directional Repeatability (μm)	0.3	0.3	0.3	
Nominal Current (A)	0.32	0.25	0.6	
Voltage Range (V)	12			
Accuracy	on request			
Velocity range (mm/sec)	0.001 ... 12			
Material	Stainless steel			

Note: FS = full step, RE = rotary encoder

More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

Travel (mm)	13	26	52	76
A	133	146.5	171.5	196.5
B	126	139.5	164.5	189.5
C	124.5	137.7	162.7	187.7



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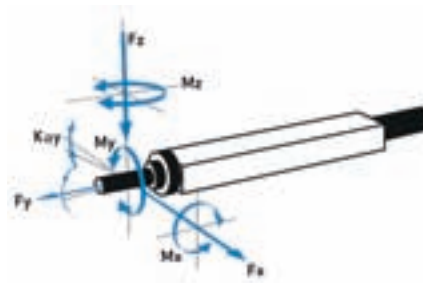
Order No.	5701-9-		0	1
DC-B-010		1		
2Phase-010		2		
2Phase-017		3		
13 mm (1/2")		1		
26 mm (1")		2		
52 mm (2")		3		
72 mm (3")		4		
12g6		1		
M12x1		2		

4.144 Micro Pusher MP-20 B

NEW

FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$
DC-B-010	1	110	1
2Phase-010	1	110	1
2Phase-017	1	25	1



The new MP-20 B micro pusher is designed to motorize manual drives or mirror mounts and it is an ideal component for limited space conditions. Small light components such as mirrors and diodes can be directly mounted to the tip. The MP-20 B micro pusher is equipped with a re-circulating ball screw for a quiet, precise and homogeneous smooth motion and has a non-rotating tip. The MP-20 B micro pushers are offered with DC or 2-phase geared stepper motor combination or with a gearless 2-phase stepper motor. Round or flat ground inserts can be attached to the tip. The side-mounted design of model MP-20B results in much shorter length.



KEY FEATURES

- Travel range up to 76 mm (3")
- Uni directional repeatability down to 0.3 μm
- Max. speed 10 mm/sec
- Force 110 N
- Integrated limit switches (hall)

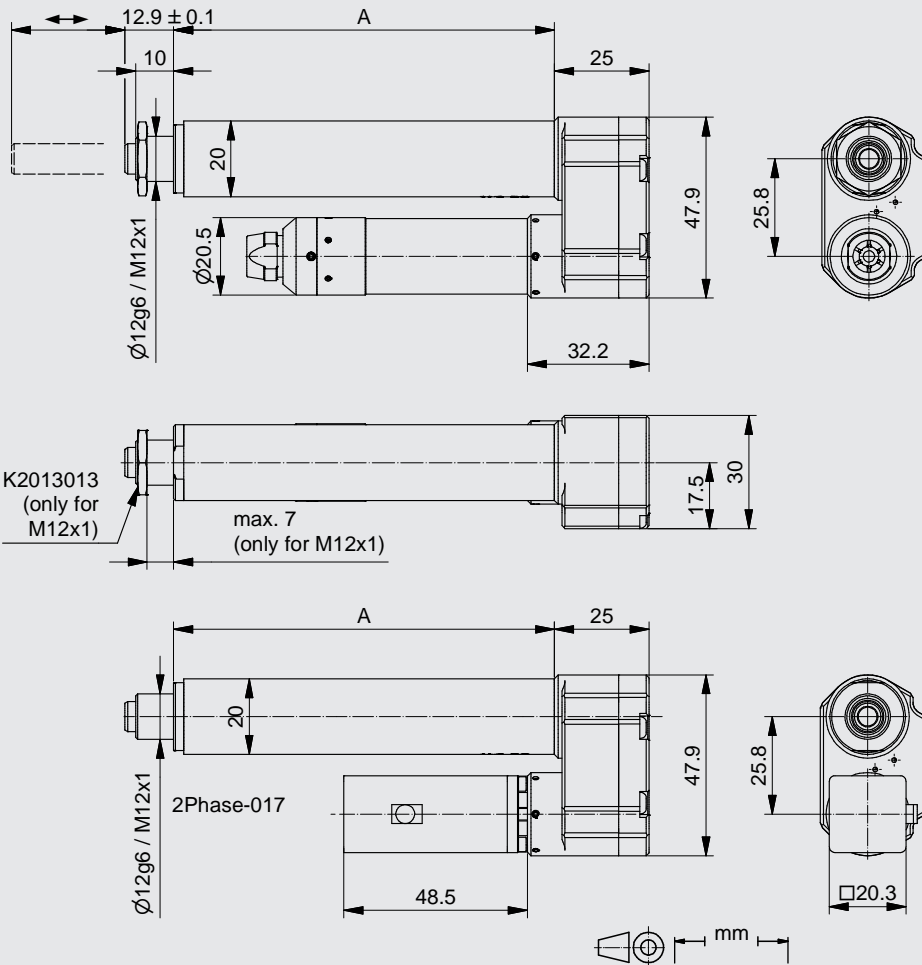
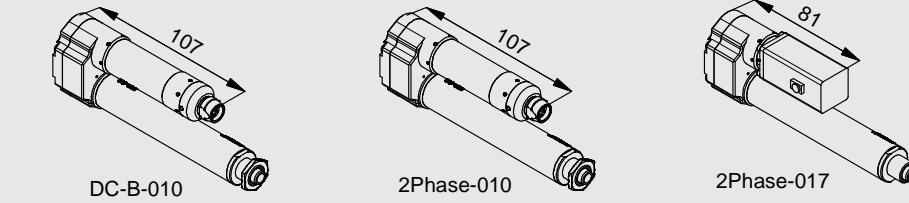
TECHNICAL DATA

Travel range (mm)	13	26	52	76
Motor (Pitch 1 mm)	DC-B-010	2Phase-010	2Phase-017	
Speed max. (mm/sec)	2.5	0.6	10	
Resolution calculated (μm)	0.0221608	0.5490171 (FS)	5 (FS)	
Resolution typical (μm)	0.2	0.2	0.2	
Bi-directional Repeatability (μm)	± 1.5	± 1.5	± 1.5	
Uni-directional Repeatability (μm)	0.5	0.5	0.5	
Nominal Current (A)	0.32	0.25	0.6	
Voltage Range (V)	12			
Accuracy			on request	
Velocity range (mm/sec)			0.002 ... 10	
Material			Stainless steel	

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

Travel (mm)	13	26	52	76
A	63	76	101	126



Order No.	5696-9-			0	1
DC-B-010				1	
2Phase-010				2	
2Phase-017				3	
13 mm (1/2")				1	
26 mm (1")				2	
52 mm (2")				3	
72 mm (3")				4	
12g6				1	
M12x1				2	

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- VT-80
- LS-40
- VT-215
- CS-430
- MS-8
- MS-4
- KT-120
- MS-bio
- NPE-200
- UPL-120
- ES-100
- ES-82
- ES-70
- ES-50
- MA-35
- MP-20

MP-20 B

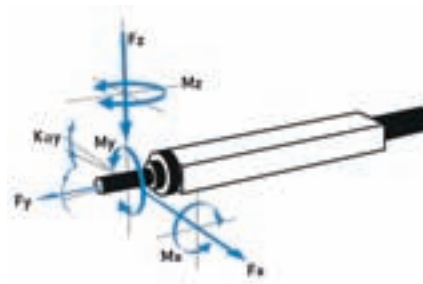
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4.146 Micro Pusher MP-15



FACTS

Load characteristics	$F_x(N)$	$F_y(N)$	$F_z(N)$
DC-B-008	0	10	0
2Phase-005	0	10	0



The MP-15 micro pusher was specifically designed to motorize manual drives or mirror mounts. It is an ideal component for limited space conditions. The MP-15 micro pusher is equipped with a 0.5 mm fine-pitch screw thread resulting in a quiet and homogeneous smooth motion. The MP-15 is offered with DC or 2-phase geared stepper motor and is delivered with two integrated limit switches.



KEY FEATURES

- Travel range up to 12.7 mm
- Uni-directional repeatability down to 0.5 μm
- Maximum speed 0.3 mm/sec
- Force max. 10 N
- Integrated hall limit switches

TECHNICAL DATA

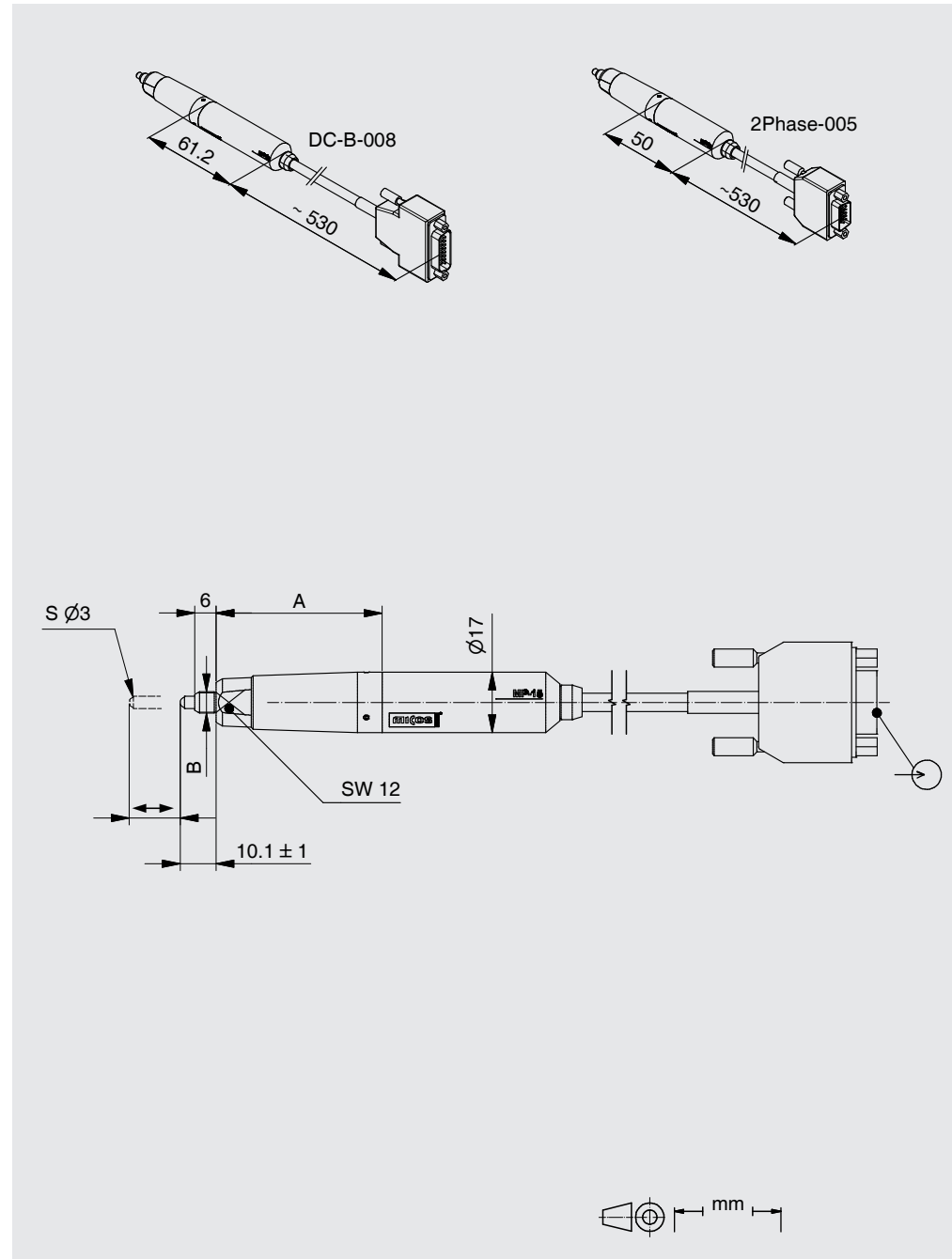
Travel range (mm)	6	12.7
Weight (kg)	0.1	0.15
Motor (Pitch 0.5 mm)	DC-B-008	2Phase-005
Speed max. (mm/sec)	0.3	0.1
Resolution calculated (μm)	0.0488281 (RE)	0.0976563 (FS)
Resolution typical (μm)	0.2	0.2
Bi-directional Repeatability (μm)	± 10	± 10
Uni-directional Repeatability (μm)	0.5	0.5
Nominal Current (A)	0.08	0.25
Voltage Range (V)	12	
Accuracy	on request	
Velocity range (mm/sec)	0.001 ... 0.3	
Material	Aluminum, black anodized	

Note: FS = full step, RE = rotary encoder
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

Travel (mm)	6	12.7
A	33.5	47

Order No.	5663-9-		0	
DC-B-008		1		
2Phase-005		2		
6 mm		1		
12.7 mm		2		
HLS-010, Hall limit switches		1		
Mounting surface B=Ø6 mm		1		
Mounting surface B=Ø9.5 mm		2		
Mounting surface B=M8x0.35 mm		3		
Mounting surface B=M6x0.5 mm		4		



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- MP-15**
- ASS SE



KEY FEATURES

- Uni-directional repeatability down to 0.1 μm
- Maximum speed 0.8 mm/sec
- Integrated mechanical limit switches
- Maximum aperture 5 mm
- High resolution

The ASS 5E slit and ADS 5E cross slits are high quality instruments for industrial and research applications, specifically in the areas of laser and radiology applications. The slits are provided with a DC or stepper motor driven apertures with a maximum opening of 5 mm. With an aperture of 1 mm, the slit can be positioned

asymmetrically by ± 2.5 mm from the optical axis. The slits are standard made from aluminum alloy or stainless steel. For high energy radiation, slits up to 3 mm thickness made from tungsten, titanium or stainless steel are optionally available. All slits are calibrated in pairs and lobed. High-precision, selected preloaded recirculating ball screws guarantee a parallel opening and closing of the slits. To avoid collision or damage, the slits are protected by a safety clutch and a limit switch. By combining two single slits, one cross slit can be easily configured. Slit jaws are not included in the standard product and must be ordered separately. The slit yaws are listed on page 8.239.

TECHNICAL DATA

Travel range (mm)	5			
Weight (kg)	0.4			
Motor (Pitch 0.25 mm)	DC-B-010		2Phase-010	
Speed max. (mm/sec)	0.4	0.8	0.1	0.2
Resolution calculated (μm)	0.0027701	0.0055402 (RE)	0.0686271409	0.1372543 (FS)
Resolution typical (μm)	0.2		0.2	
Bi-directional Repeatability (μm)	± 4		± 4	
Uni-directional Repeatability (μm)	0.2		0.2	0.1
Nominal Current (A)	0.32		0.25	
Voltage Range (V)	12			
Reduction belt	1:2 (open/close) 1:1 (parallel)			
Accuracy	on request			
Velocity range (mm/sec)	0.001 ... 0.8			
Material	Aluminum, black anodized			

Note: FS = full step, RE = rotary encoder

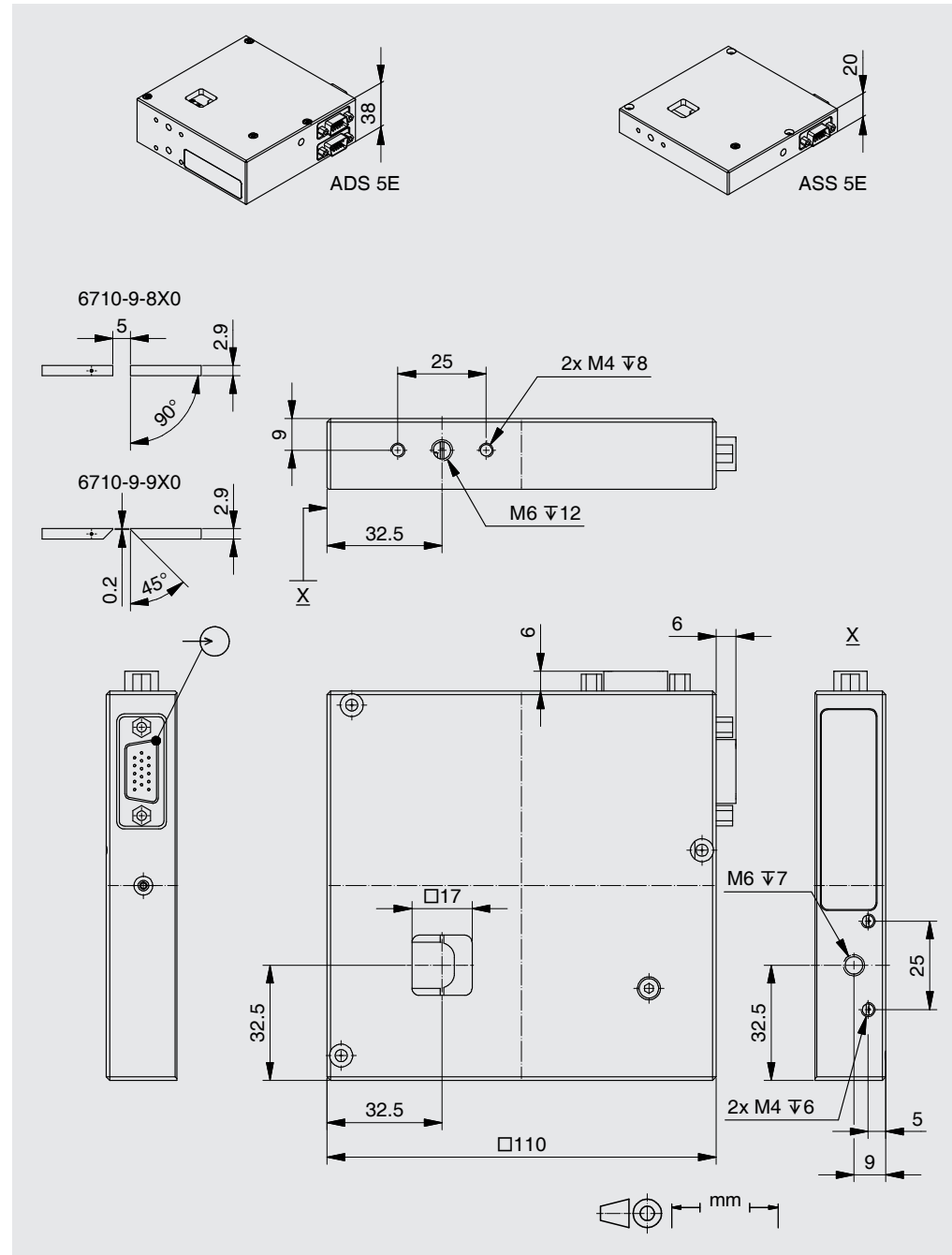
More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

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- UPL-120
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- ES-82
- ES-70
- ES-50
- MA-35
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- MP-15

ASS 5E



Order No.	6710-9-			0
DC-B-010		1		
2Phase-010		2		
Single Slide (ASS 5E)		1		
Double Slide (ADS 5E)		2		

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