

AFC90 SERIES LINEAR MODULE

- ▶ Compact design
- ▶ Self-lubricating linear guide
- ▶ Direct drive technology
- ▶ High precision optical encoder
- ▶ Stackable configuration

EN-24.3.1

AFC90 Series

Introduction

AFC90 series uses linear motor direct drive system. Compact module with dual linear guides, linear motor, encoder feedback, and aluminum housing. It is a high-precision positioning motion stage with flexible installation design.

Continuous Force $F_{cn} = 20N-34N$

Peak Force $F_{pk} = 55N-91N$

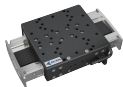


Features

- ▶ Direct-drive, compact design
- ▶ Self-lubricating linear guide
- ▶ Stroke up to 500mm
- ▶ Repeatability up to $\pm 0.5\mu m$
- ▶ Resolution of $0.05\mu m$
- ▶ It can be combined flexibly to form an XY stage

Applications

The AFC90 module is suitable for applications such as sub-micron positioning, optical alignment, and point-to-point high-speed positioning of automation equipment in various industries.

Typical applications include: Imaging systems that perform scanning operations, high-precision placement, semiconductor metrology, and wafer fabrication applications.

Linear Module	Linear Motor	■ Continuous Force (F_{cn}) ■ Peak Force(F_{pk})		Unit: N		Repeatability (μm)	Page	
		20.0	40.0	60.0	80.0			100.0
 AFC90	 CLC0001-025-B3	20.0					±0.5 for stroke no more than 50mm	03
	 CLC0001-025-B5	34.0					±1 for stroke more than 50mm	08

Note:

★ Products can be customized to meet specific working environments, please contact cust-service@akribis-sys.com.

AFC90-C13

Motor Specifications	Unit	Value
Motor	-	CLC0001-025-B3
Continuous Force @100°C ❶	N	20.0
Peak Force	N	55.0
Force Constant ±10%	N/Arms	8.1
Back EMF Constant ±10%	Vpeak/(m/s)	6.6
Resistance (L-L) @25°C ±10% ❷	Ω	1.7
Inductance (L-L) ±30% ❸	mH	0.8
Continuous Current (NC) @100°C ❹	Arms	2.5
Peak Current	Arms	7.5
Max. Bus Voltage	Vdc	100.0
Magnetic Period	mm	12.0
Mechanical Specifications	Unit	Value
Resolution	μm	0.05
Repeatability	μm	±0.5 for stroke no more than 50mm ±1 for stroke more than 50mm
Horizontal Straightness	μm	±3.0
Vertical Straightness	μm	±3.0
Rated Payload ❺	kg	5.0
No-load Moving Mass	kg	0.5
Max. Allowable Roll Moment	Nm	2.0
Max. Allowable Pitch Moment	Nm	3.0
Max. Allowable Yaw Moment	Nm	2.0

❶ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling.

❷ Resistance is measured by DC current with 0.5 m cable.

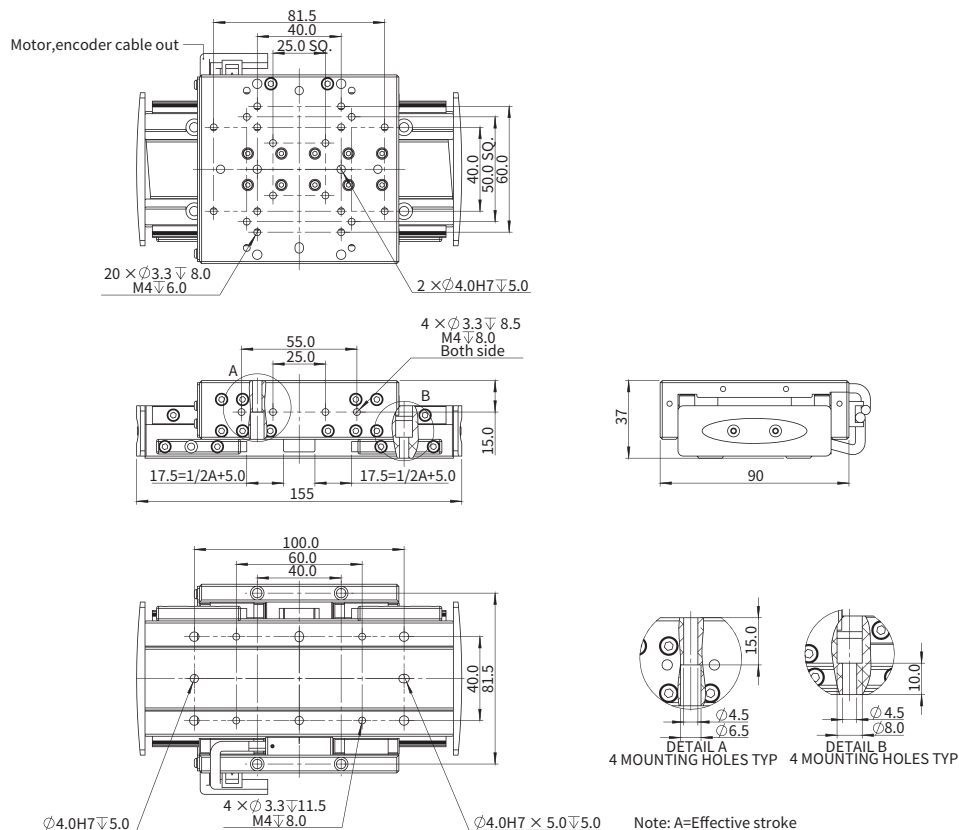
❸ Inductance is measured by current frequency of 1kHz.

❹ Load capacity of module without cantilever.

The contents of datasheet are subject to change without prior notice.

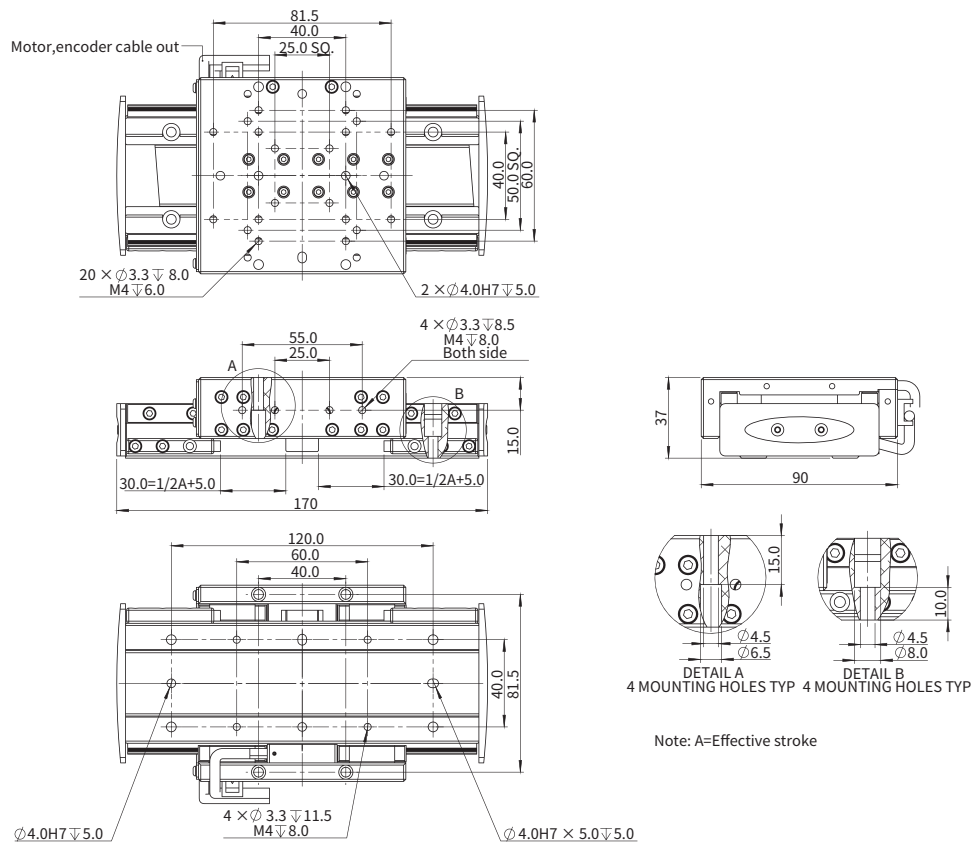
AFC90-C13 Series

■ AFC90-T02-C13 Dimensional Drawing

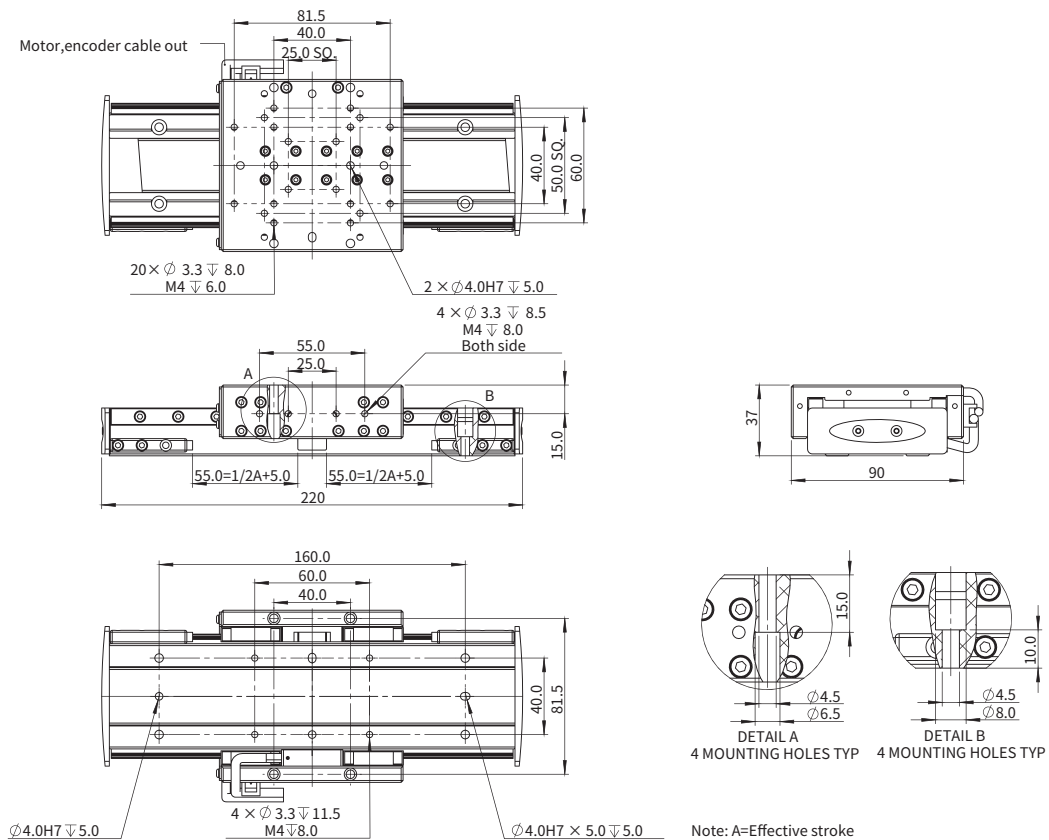


AFC90 Series

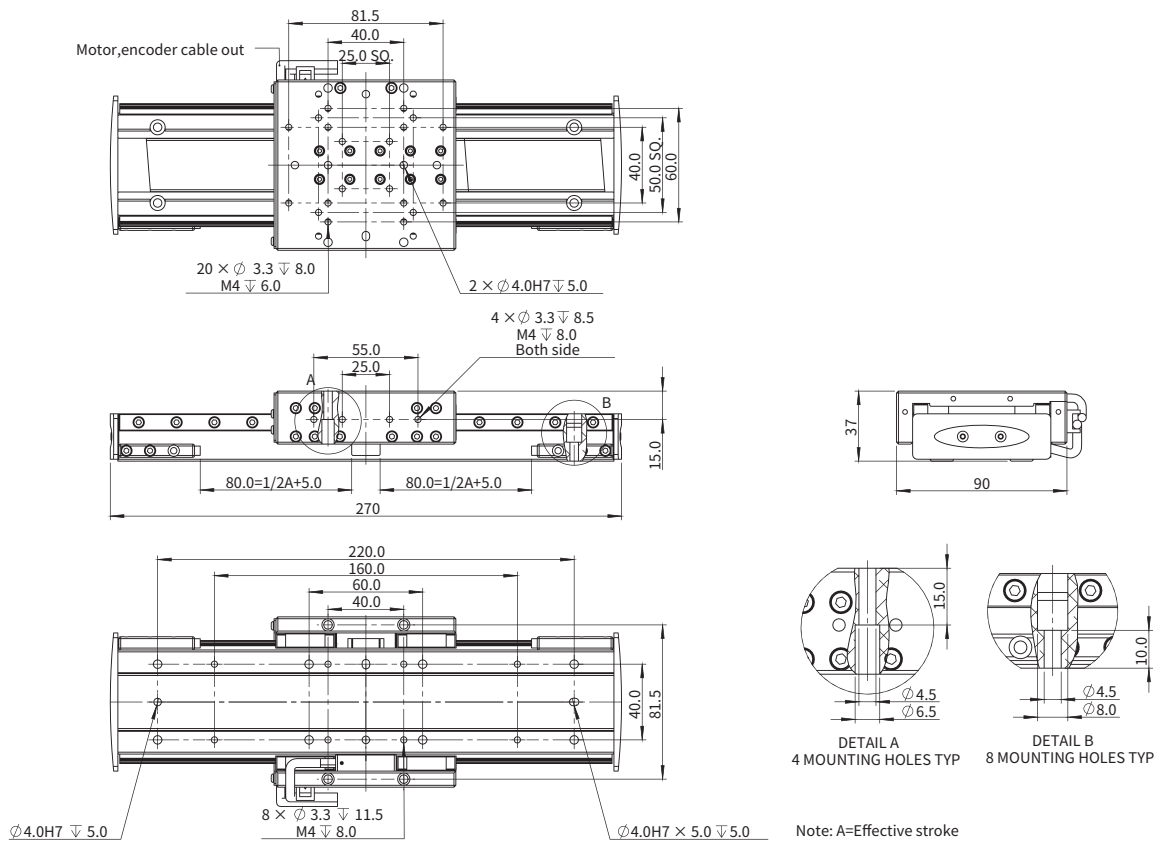
■ AFC90-T05-C13 Dimensional Drawing



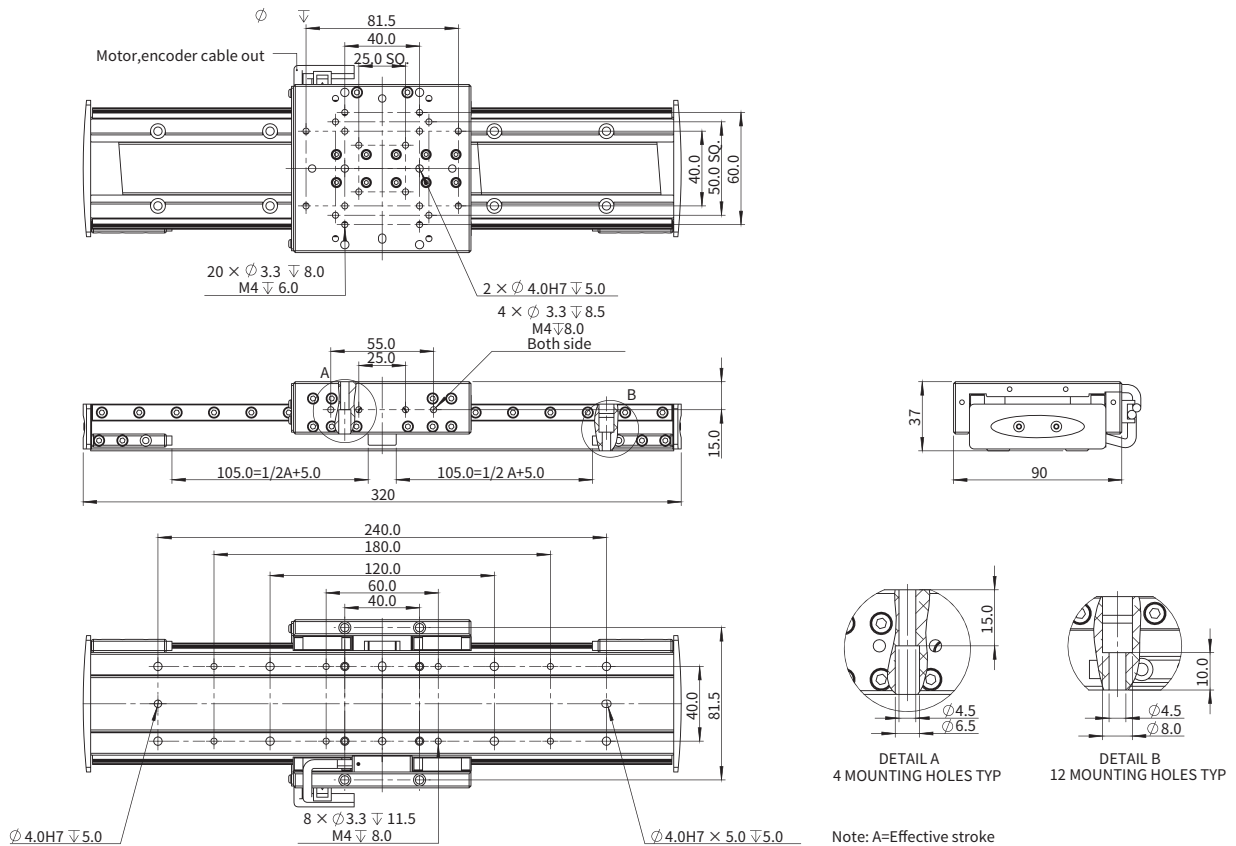
■ AFC90-T10-C13 Dimensional Drawing



■ AFC90-T15-C13 Dimensional Drawing

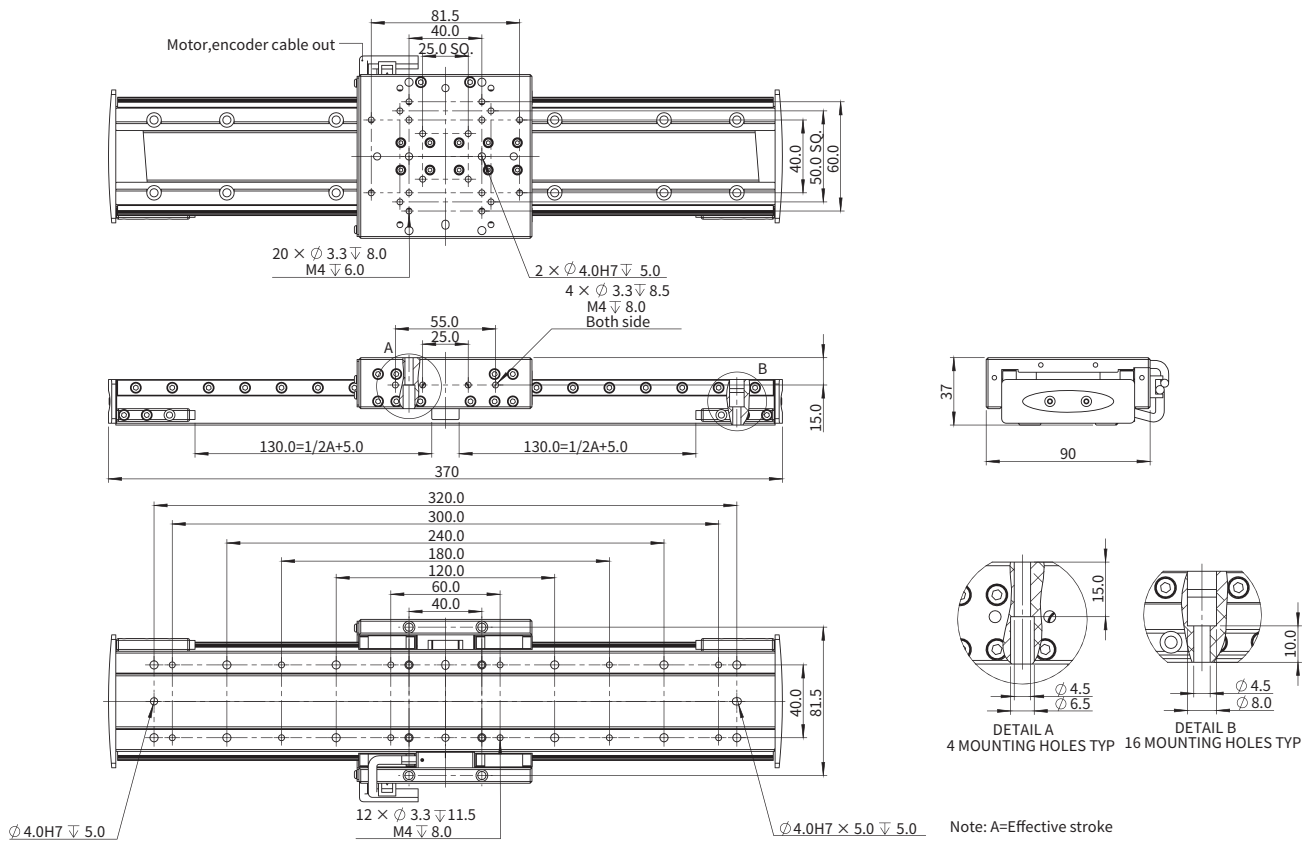


■ AFC90-T20-C13 Dimensional Drawing

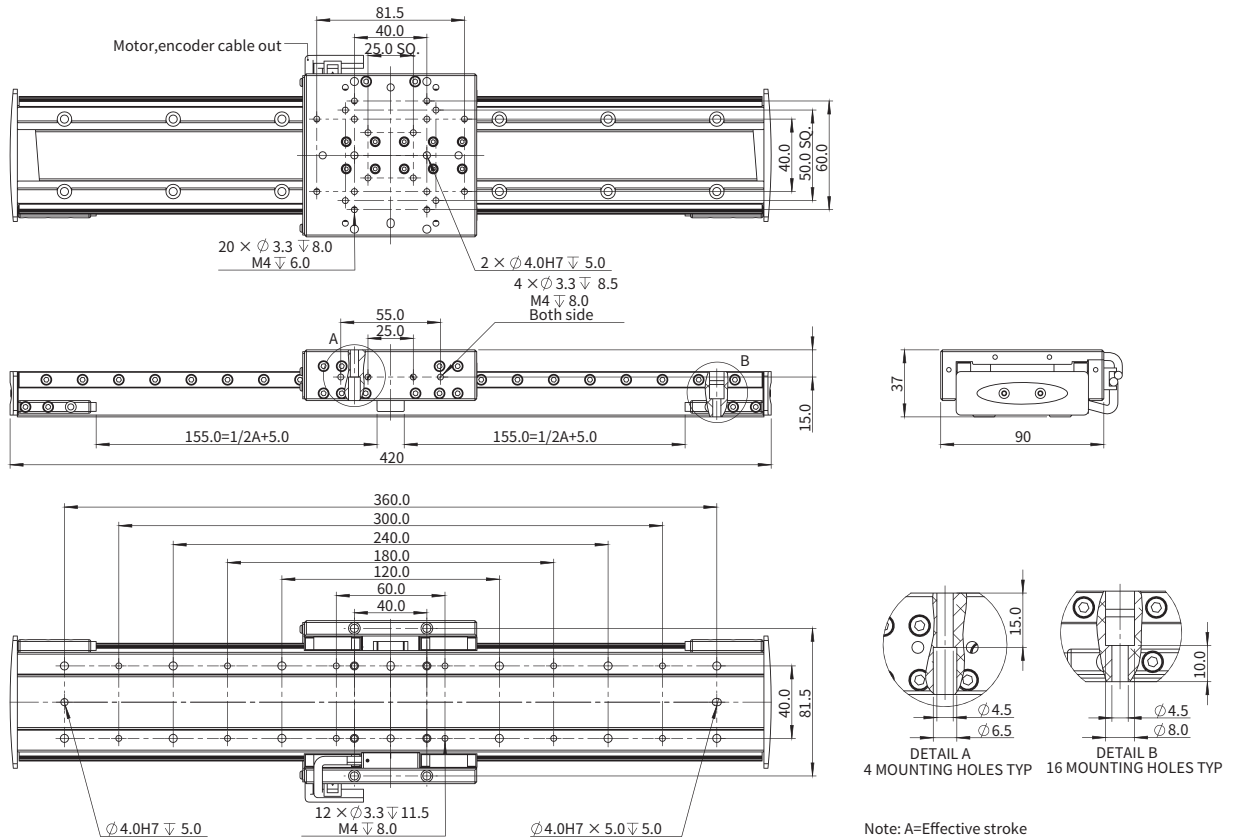


AFC90 Series

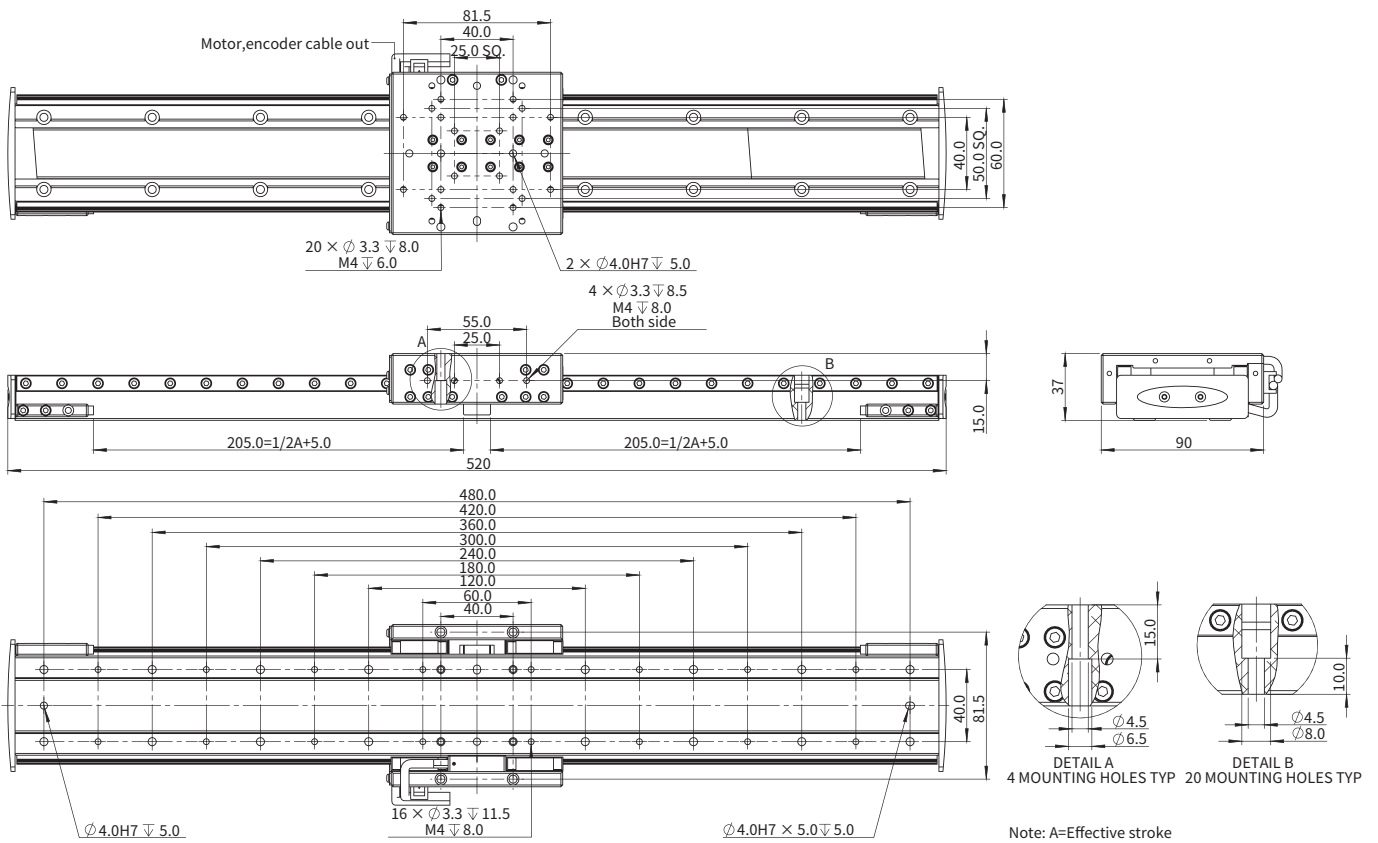
■ AFC90-T25-C13 Dimensional Drawing



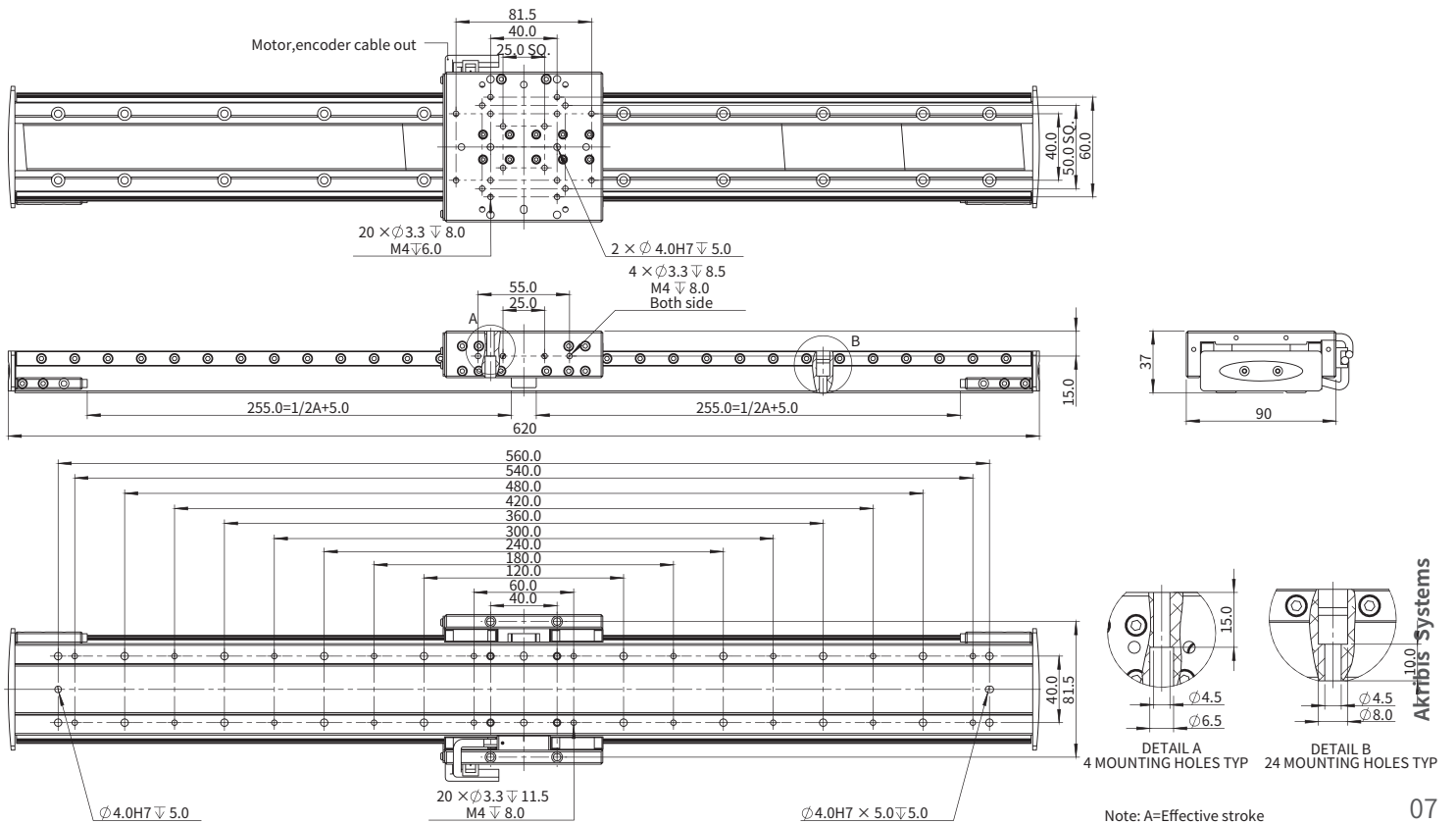
■ AFC90-T30-C13 Dimensional Drawing



■ AFC90-T40-C13 Dimensional Drawing



■ AFC90-T50-C13 Dimensional Drawing



AFC90 Series

AFC90-C15

Motor Specifications	Unit	Value
Motor	-	CLC0001-025-B5
Continuous Force @100°C ^①	N	34.0
Peak Force	N	91.0
Force Constant ±10%	N/Arms	13.5
Back EMF Constant ±10%	Vpeak/(m/s)	11.1
Resistance (L-L) @25°C ±10% ^②	Ω	2.8
Inductance (L-L) ±30% ^③	mH	1.4
Continuous Current (NC) @100°C ^④	Arms	2.5
Peak Current	Arms	7.5
Max. Bus Voltage	Vdc	48.0
Magnetic Period	mm	12.0
Mechanical Specifications	Unit	Value
Resolution	μm	0.05
Repeatability	μm	±0.5 for stroke no more than 50mm ±1 for stroke more than 50mm
Horizontal Straightness	μm	±3.0
Vertical Straightness	μm	±3.0
Rated Payload ^④	kg	7.0
No-load Moving Mass	kg	0.7
Max. Allowable Roll Moment	Nm	3.0
Max. Allowable Pitch Moment	Nm	4.0
Max. Allowable Yaw Moment	Nm	3.0

① Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling.

② Resistance is measured by DC current with 0.5 m cable.

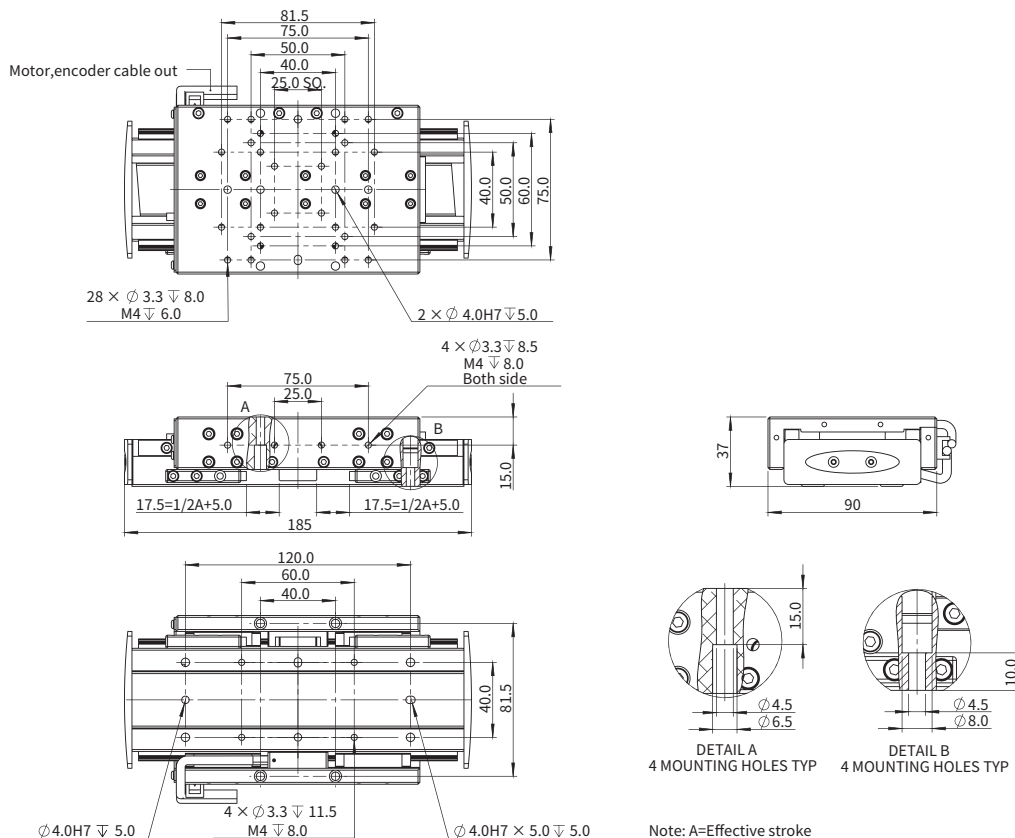
③ Inductance is measured by current frequency of 1kHz.

④ Load capacity of module without cantilever.

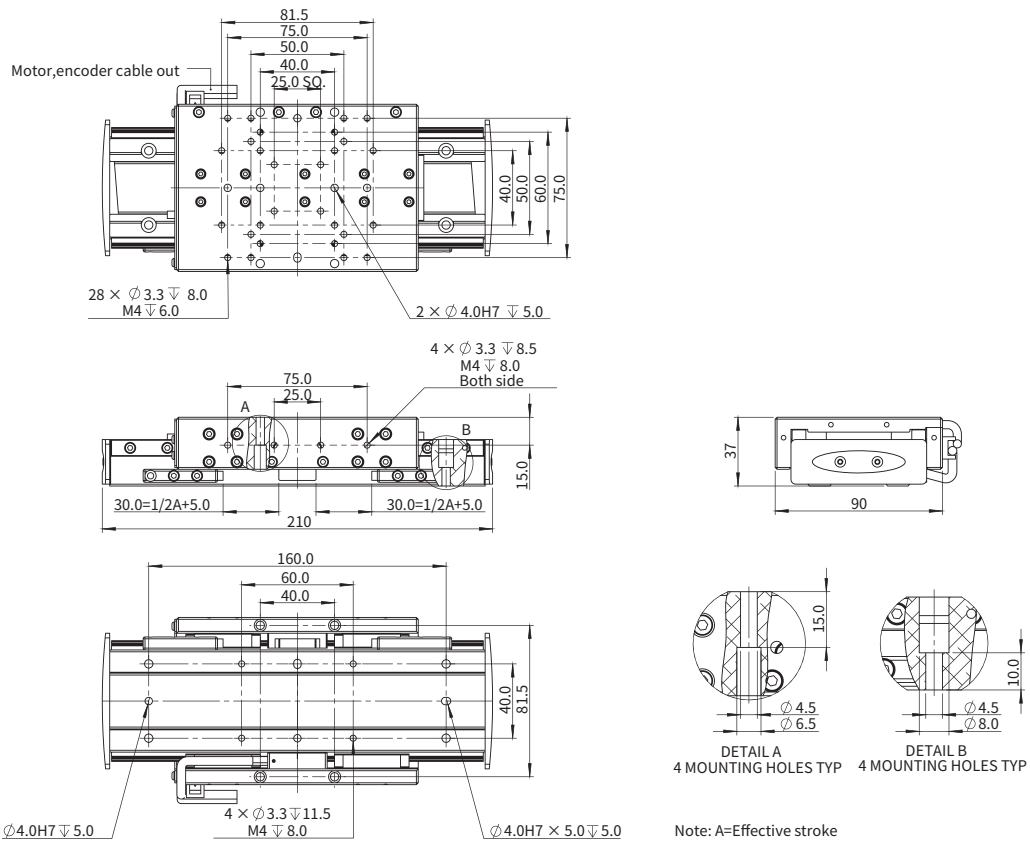
The contents of datasheet are subject to change without prior notice.

AFC90-C15 Series

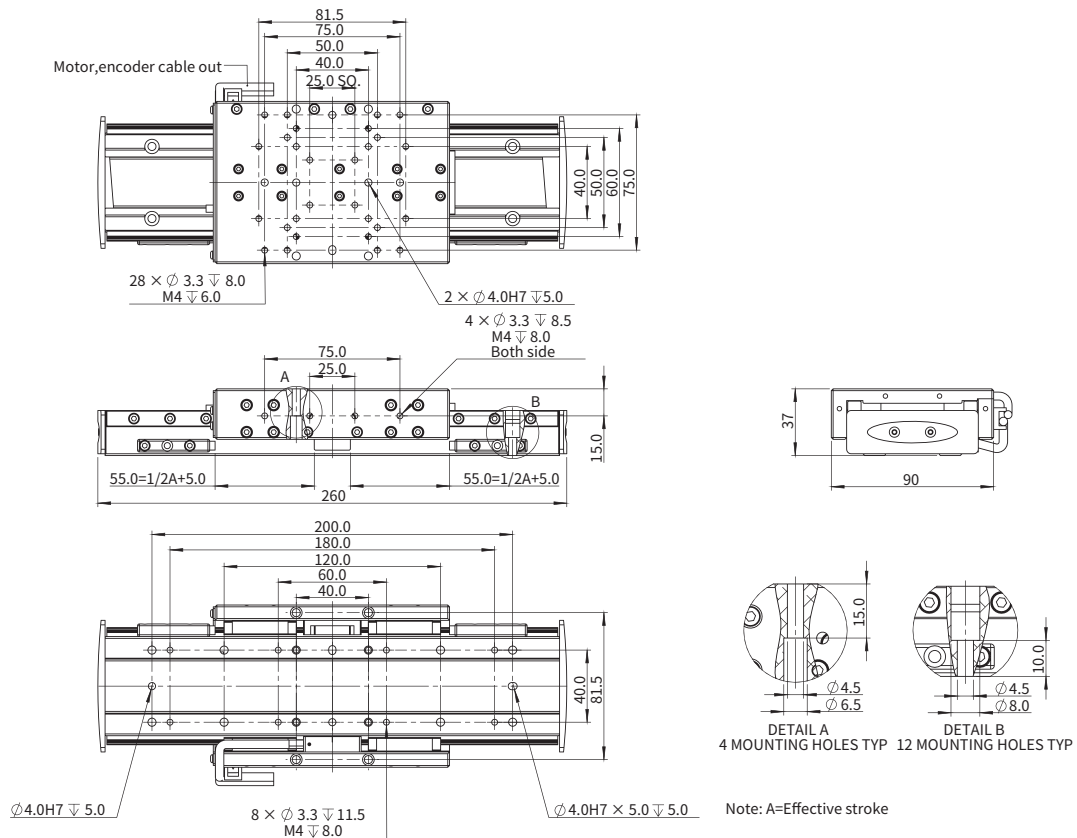
■ AFC90-T02-C15 Dimensional Drawing



■ AFC90-T05-C15 Dimensional Drawing

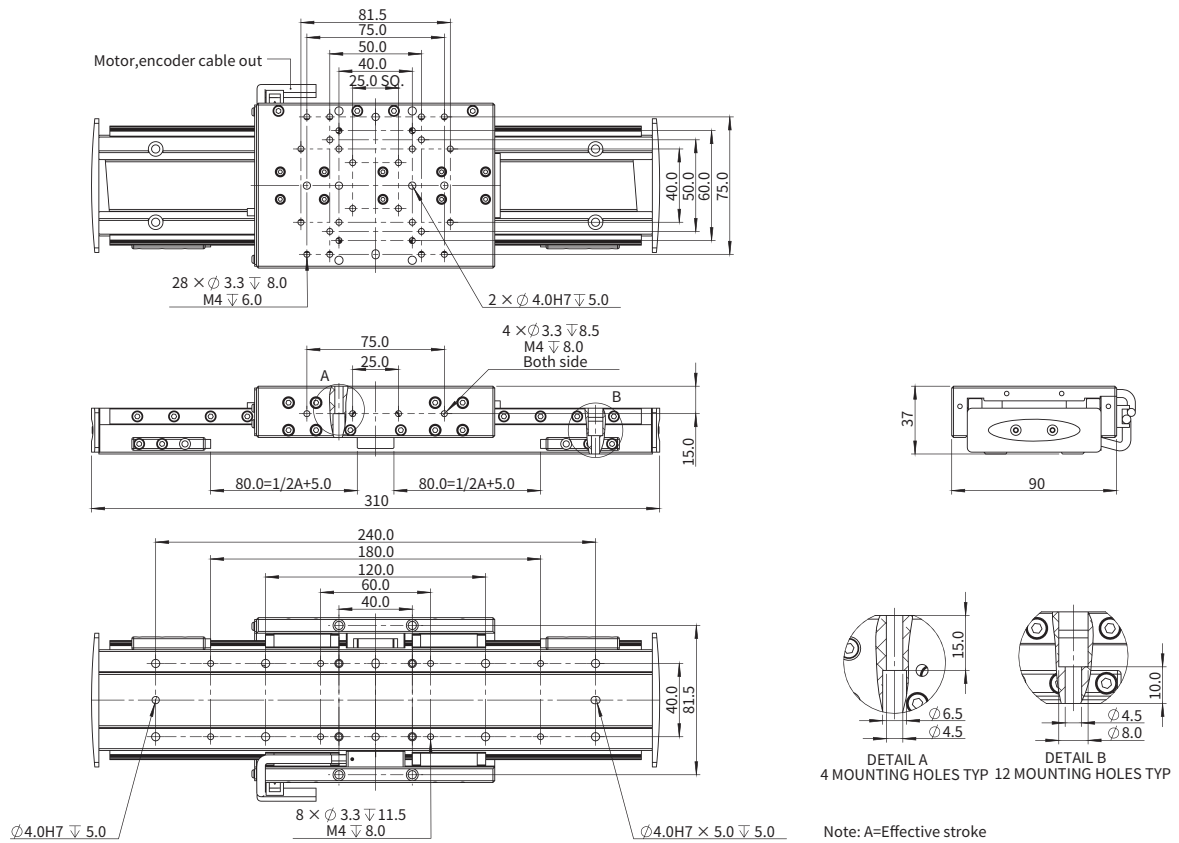


■ AFC90-T10-C15 Dimensional Drawing

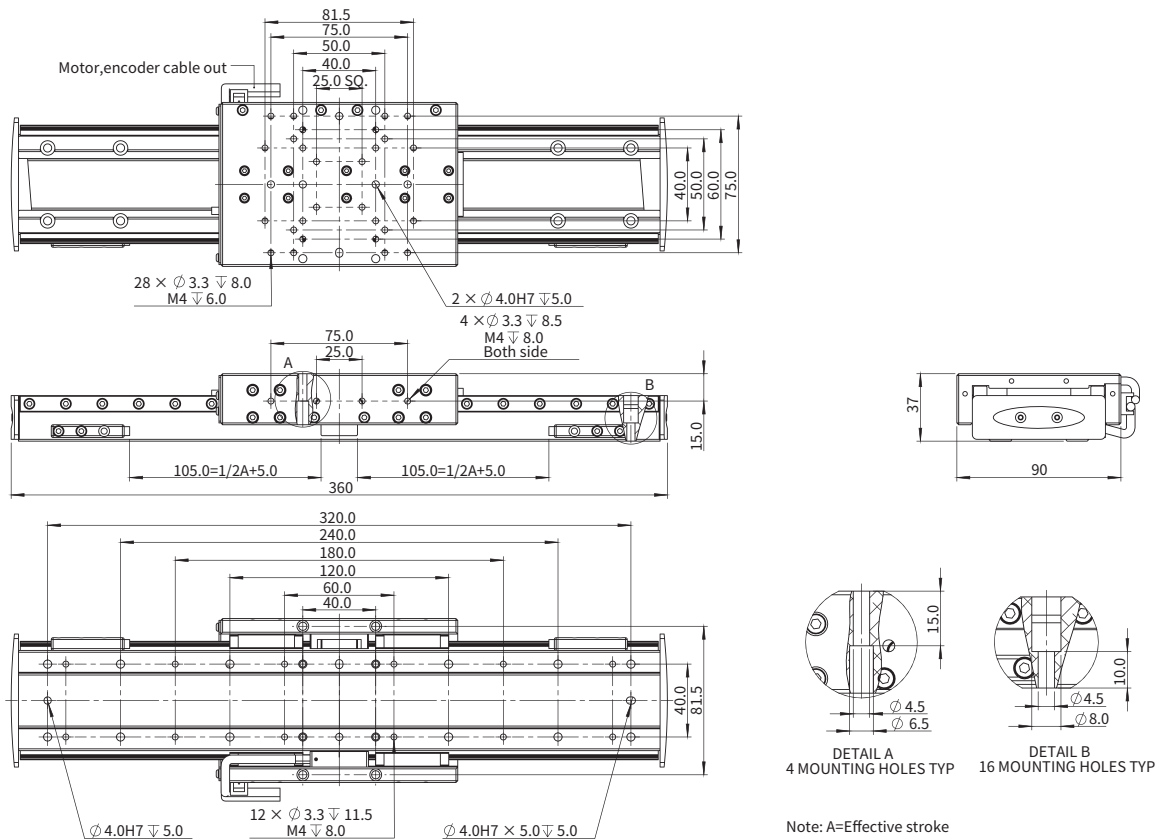


AFC90 Series

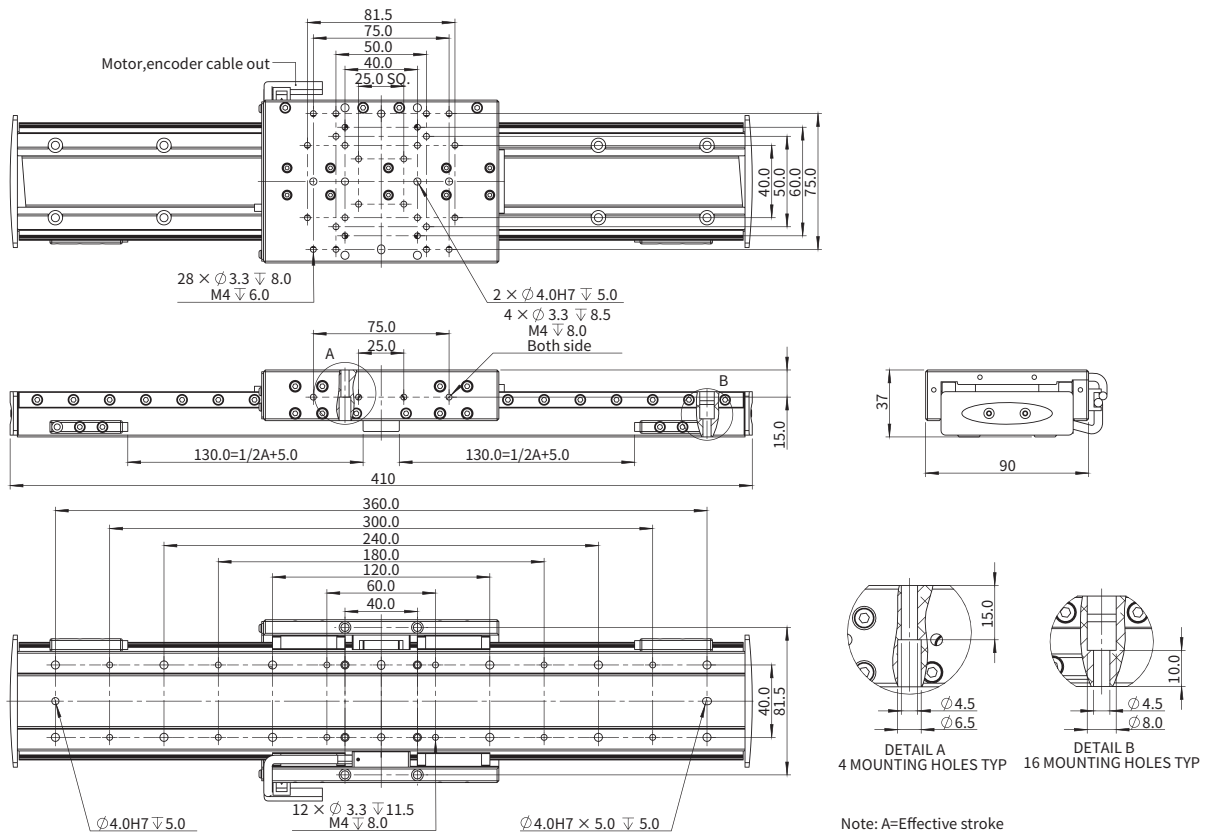
■ AFC90-T15-C15 Dimensional Drawing



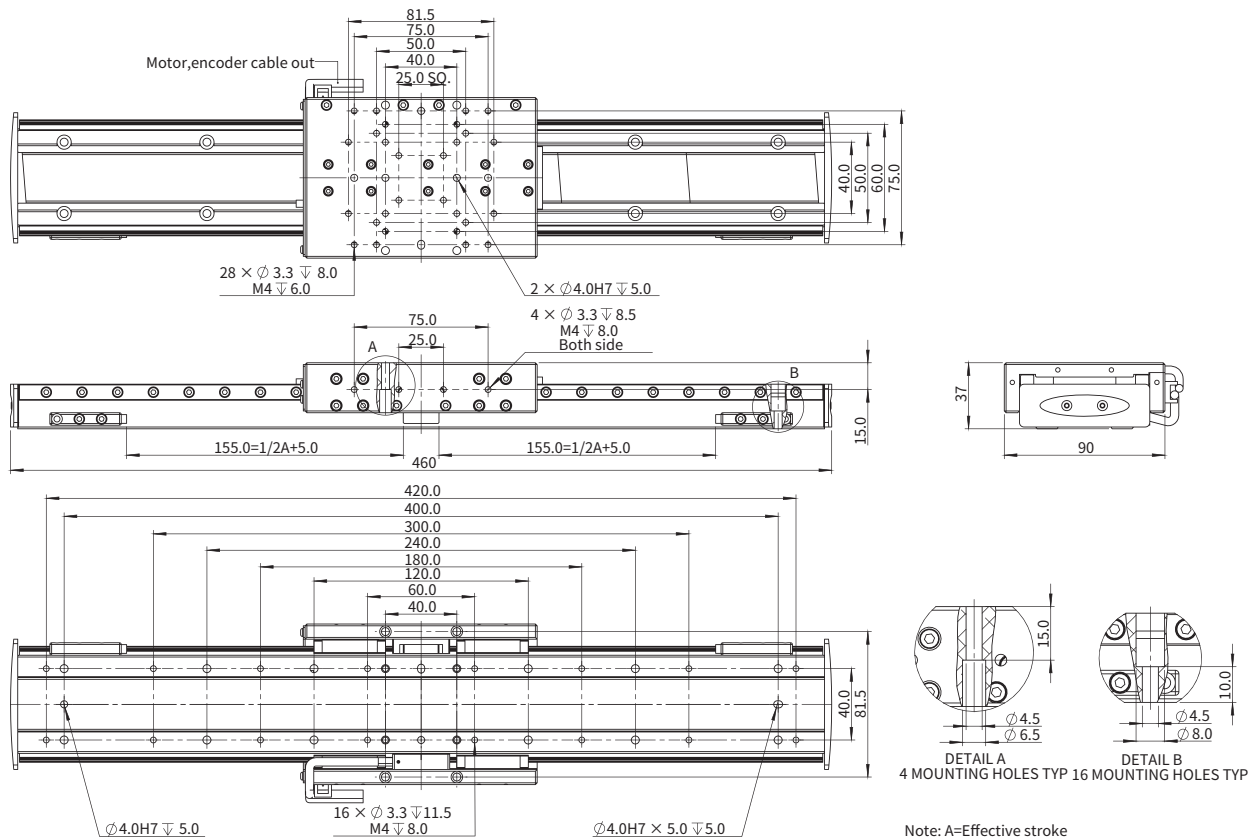
■ AFC90-T20-C15 Dimensional Drawing



■ AFC90-T25-C15 Dimensional Drawing

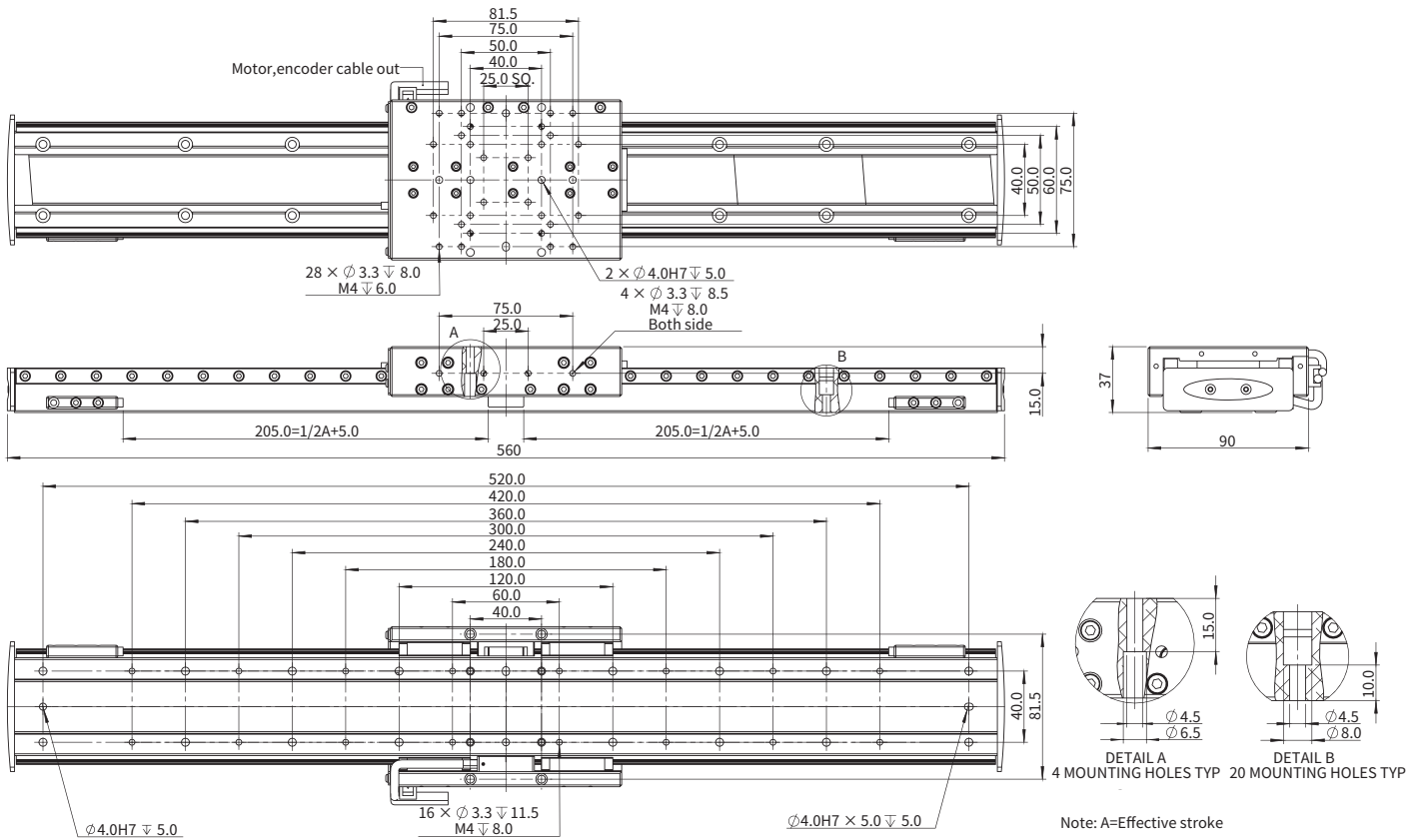


■ AFC90-T30-C15 Dimensional Drawing

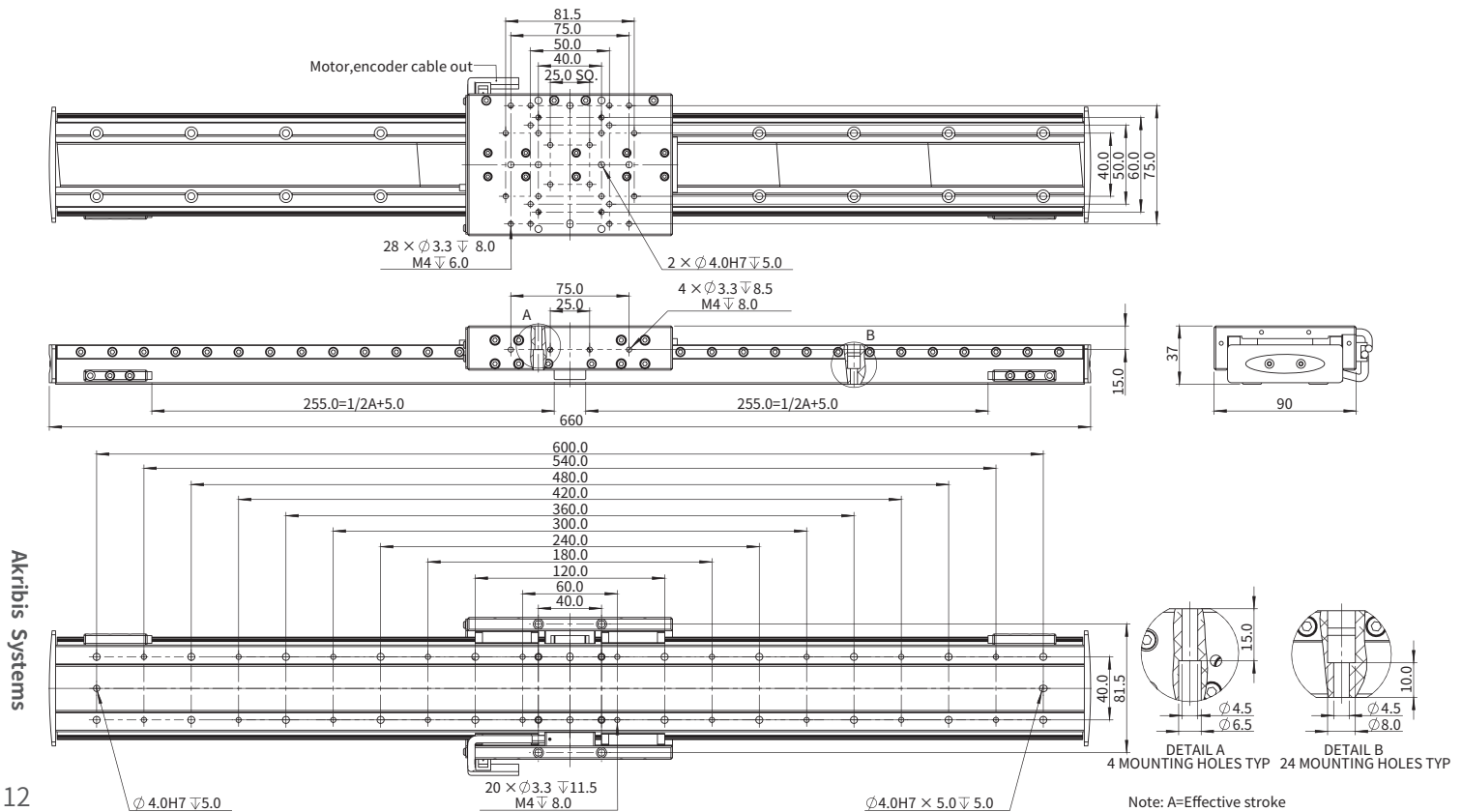


AFC90 Series

■ AFC90-T40-C15 Dimensional Drawing



■ AFC90-T50-C15 Dimensional Drawing



Ordering Part Number (OPN)

AFC90-T02-C13AD01-D1

Model:

AFC90

Cover Type:

T: Standard (Black Anodized)

Effective Stroke:

02: 25mm
 05: 50mm
 10: 100mm
 15: 150mm
 20: 200mm
 25: 250mm
 30: 300mm
 40: 400mm
 50: 500mm

Termination:

1: Motor: Flying Leads/Encoder: DSUB 15
 2: Motor: TYCO4/Encoder: DSUB 15

Cable Length:

B: 3.0m
 D: 1.0m

Scale Type:

1: Steel Tape, 11ppm/K

Encoder Type:

AD0: ABA-20 (0.05µm)

Motor Type:

C13: CLC0001-025-N-B3 (Peak Force: 55N)
 C15: CLC0001-025-N-B5 (Peak Force: 91N)