3.3

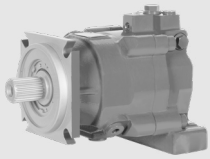
M70F(E) SERIES

Swash-plate Type
Axial Piston Fixed Displacement Motor

M70F(E) series swash plate axial piston motor is a kind of fixed displacement motor with wide application for open and closed circuit. The swashplate design allows a compact motor with high power density. This series is applicable to farm machinery, construction machinery and industrial vehicles.

Apply to open and closed hydraulic circuit

Displacements (cc/rev)	45	63	65	75	85	100	130
Rated pressure (bar)	280	400	280	400	400	400	400
Maximum pressure(bar)	350	450	350	450	450	450	450



Contents

Features

- **High speed operation and smooth starting characteristics:**
  Optimized rotary balance design high-speed performance and excellent starting characteristics.
- **Low speed operation:**
  Superior performance in low speed operation provides excellent controllability.
- **Compact size:**
  Swash plate conguration enables the motor to be much more compact.
- **Long bearing life:**
  Swash plate conguration results in longer bearing life.

Technical Data

Size		45	63	65	75	85	100	130
Max. Displacement: q_{max}	cm^3	45	63	65	75	85	100	130
Max. speed: N	min^{-1}	4000	5000	3400	4500	4500	3550	3400
Rated pressure: P_{nom} *1	bar	280	400	280	400	400	400	400
Max. pressure: P_{max} *2	bar	350	450	350	450	450	450	450
Theoretical output torque	N·m	200	401	289	478	542	636	830
Power	Kw	84	210	103	225	255	236	295
Max. Flow: Q	L/min	180	315	221	337	382	355	442
Moment of inertia	$kg.m^2$	0.0033	0.0072	0.0072	0.0072	0.011	0.015	0.025
Volume in the case	L	0.7	1	0.7	1	0.5	0.5	1.2
Mass	Kg	19.4	26	29.9	26.5	28.6	32.8	49.4
Temperature	℃	at drain port: -20 ~ +115 at inlet port: -20 ~ +90						

The data in the above table is the theoretical value.

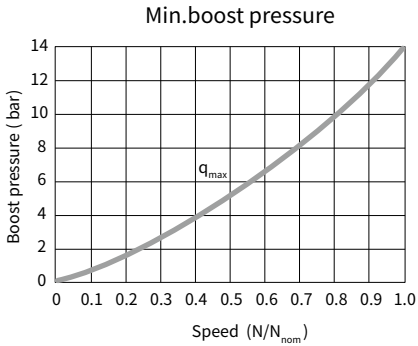
* 1: Nominal pressure corresponds to the design pressure to provide appropriate performance, function, and service life.

* 2: Summation of pressure on A and B port shall be 560bar or less.

Min.boost pressure

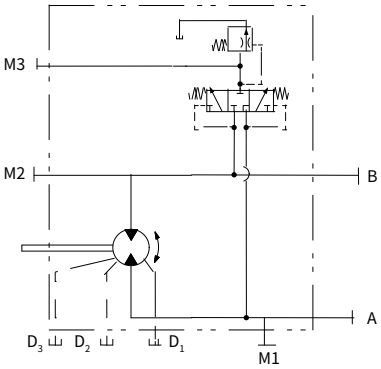
To prevent cavitation when the motor is operating in a pumping mode, a positive pressure is required at the suction port.

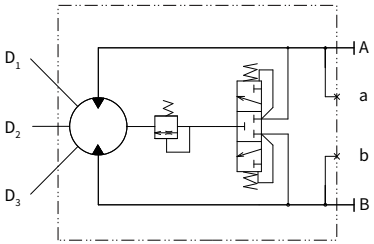
The figure above shows the minimum boost pressure requirement based on regular operation. In case of a rapid change of the ow, more boost pressure must be applied.



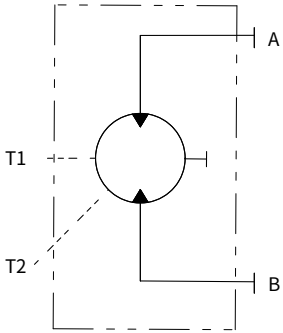
Principle

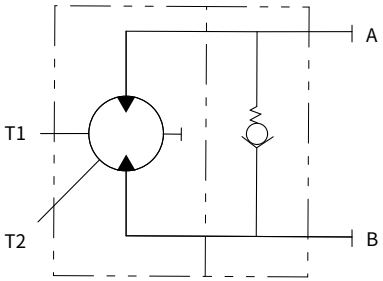
·M70F





·M70FE





Type introduction

M70F	85	A	A	M	A	L2	—	N
①	②	③	④	⑤	⑥	⑦		⑧

Product series

	Product series	45	63	65	75	85	100	130	Code
①	Swash-plate Type Axial Piston Fixed Displacement Motor（Flange-type motor)		●		●	●	●	●	M70F
	Swash-plate Type Axial Piston Fixed Displacement Motor（Plug-in motor)	●		●					M70FE

Displacement

②	Displacement	45	63	65	75	85	100	130

Port flange and port position

	Port flange	Port position	45	63	65	75	85	100	130	Code
③	ISO 6162-2 DN19	working ports A and B at side, opposite		●						1A
		working ports A and B, at bottom	●		●					1R
	ISO 6162-2 DN25	working ports A and B at side, opposite				●	●			2A
		working ports A and B, at bottom				●	●	●		2R
	ISO 6162-2 DN32	working ports A and B at side, opposite								3A
		working ports A and B, at bottom							●	3R

Thread connection type (except inlet and thread type of Flange Port)

		45	63	65	75	85	100	130	Code
④	UNC port, ISO 11926	●	●	●	●	●	●	●	A
	Metric port,ISO 6149		●		●	●	●		M
	Metric port,DIN 3852		●		●	●	●		E
	BSPPG thread, JIS B2351		●		●	●	●		G

Thread type of Flange Port

		45	63	65	75	85	100	130	Code
⑤	UNC threads (only for UNC port)		●		●	●	●		A
	Metric thread	●	●	●	●	●	●	●	M

Type introduction

Input Shaft

	Standard	Size	45	63	65	75	85	100	130	Code
	ANSI B92.1 A-1976	1 1/2 in 17T 12/24DP					○			1
	ANSI B92.1 A-1976	1 3/4 in 13T 8/16DP					○			2
	ANSI B92.1 A-1976	2 in 15T 8/16DP					○			3
	ANSI B92.1 A-1976	1 3/8 in 21T 16/32DP				●	●	○		4
	ANSI B92.1 A-1976	1 1/4 in 14T 12/24DP					○			5
⑥	DIN 5480	W35×2×16×9g		●			○			6
	DIN 5480	W40×2×18×9g					○			7
	DIN 5480	W45×2×21×9g					○			8
	DIN 5480	W50×2×24×9g					○			9
	ANSI B92.1 A-1976	23T 16/32DP				●	●	●		A
	SAE J498B	27T 16/32DP						○	●	B
	Taper（125：1000）		●		●					D

Mounting flange

	Mounting flange（M70F）		63		75	85	100	130	Code
	SAE J744 127-4		●		●	●	●		L2
⑦	SAE J744 152-4							●	L3
	Mounting flange(M70FE)	45		65					Code
	Special 2-Hole（135-2）	●		●					L1

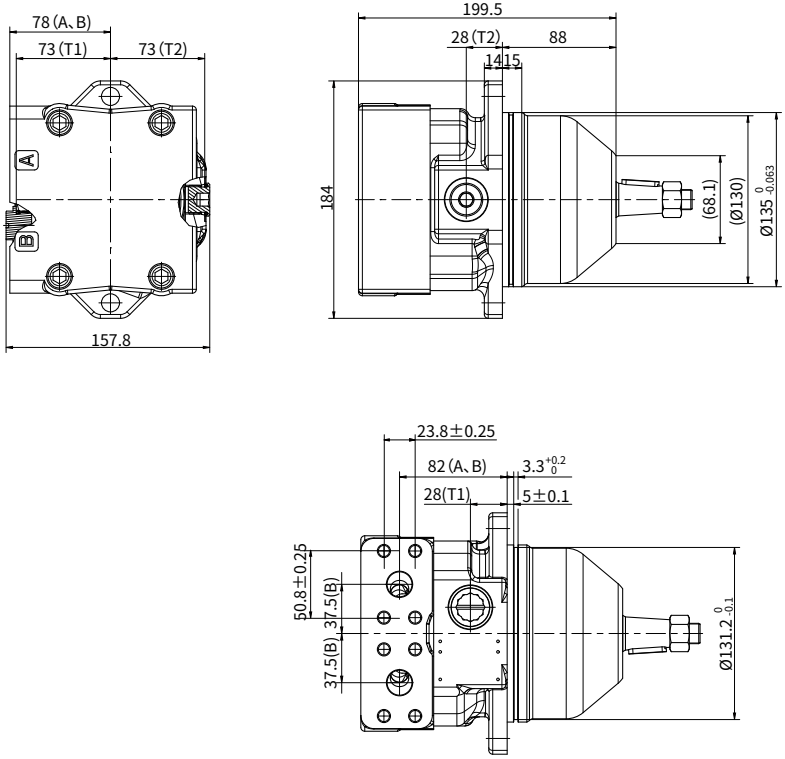
Flushing flow（L/min）

	Standard version								N
⑧	Special version	Withou flush valve **（Only M70F75、M70F85、M70F100、M70F130）**	Flushing flow	Code		Flushing flow	Code	Opening pressure 16bar, differential pressure ΔP=25bar	
			3.5	A		20	G		
			5	B		25	H		
			8	C		30	I		
			10	D		35	J		
			14	E		40	K		
			17	F					

Remark：● = Available； ○ = On request

Installation size

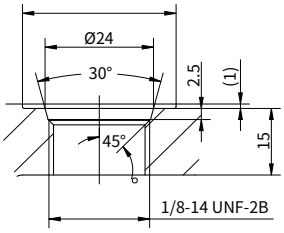
M70FE 45 Installation size



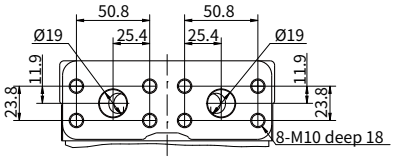
Control and Flow		Oil direction	
		Oil port A	Oil port B
Rotation direction	Clockwise rotution	Out	Inlet
	Counter clockwise rotution	Inlet	Out

Installation size

·M70FE 45 Port details



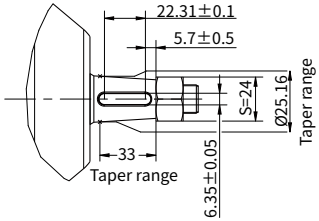
T1, T2 Port Details

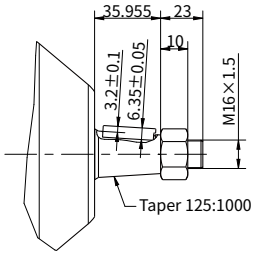


Port details

	Port name	Port size and description
A, B	Inlet port and Delivery port	SAE J518 3/4″ M10
TI, T2	Case drain port	ISO 11926 7/8-14 UNF-2B

· M70FE 45 Input shaft type



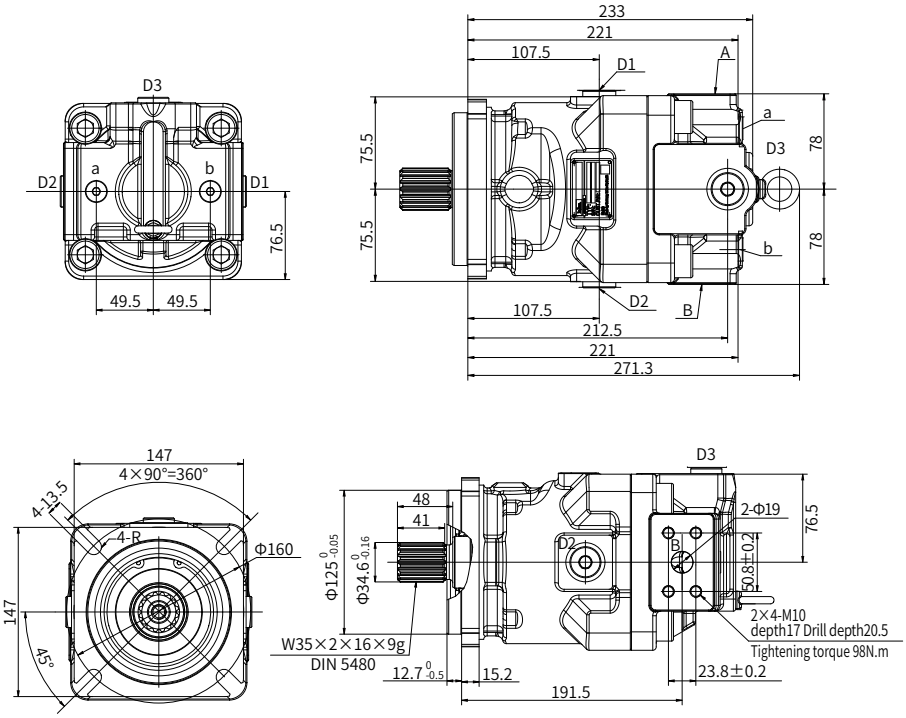


“D” type shaft

Installation size

M70F 63 Installation size

Working ports A and B at side, opposite



Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

Note: The rotation direction is looked from the shaft end.

Installation size

·Drain port and gauge port

Parallel piping thread type (Code : G)

	Symbol	Port size and description
a, b	Gauge port	G1/4
D1, D2, D3	Drain port	G1/2

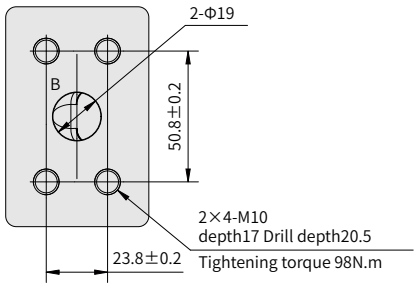
Metric thread type (Code : M)

	Symbol	Port size and description
a, b	Gauge port	M14×1.5
D1, D2, D3	Drain port	M27×2

ANSI thread type (Code : A)

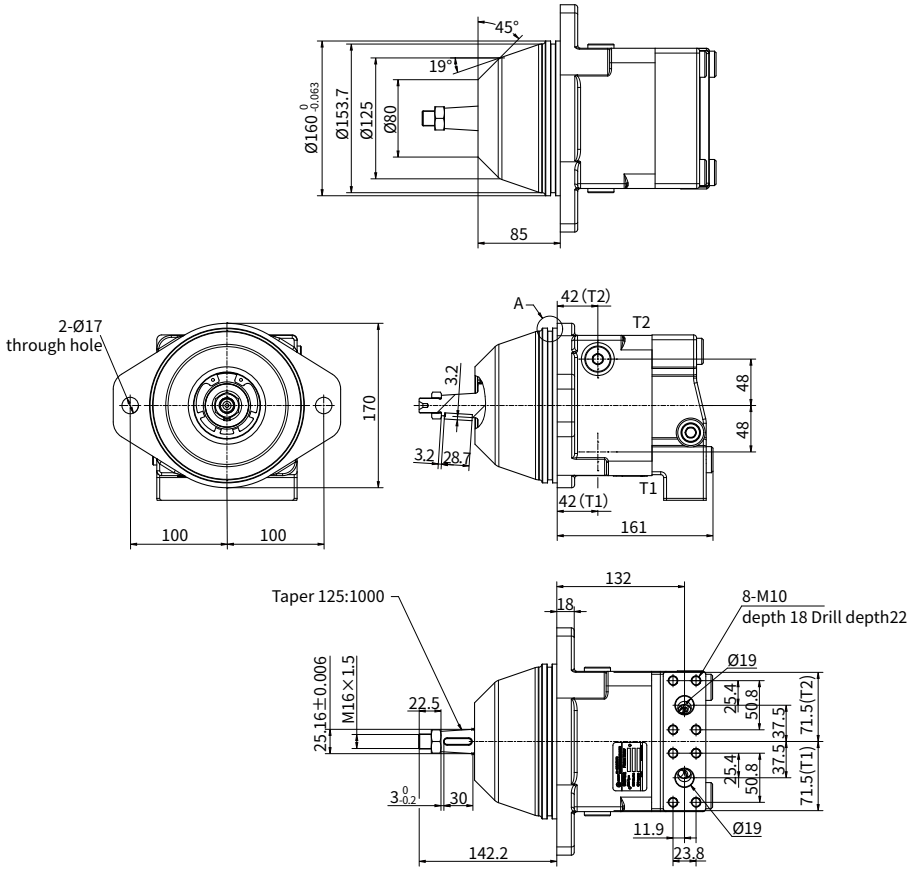
	Symbol	Port size and description
a, b	Gauge port	9/16-18UNF-2B
D1, D2, D3	Drain port	1-1/16-12UN-2B

·Port details



Installation size

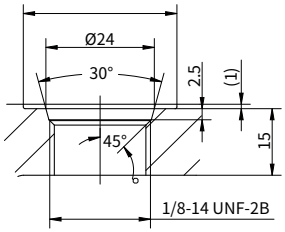
M70FE 65 Installation size



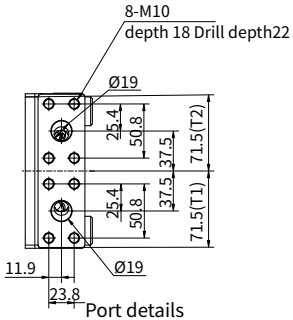
Control and Flow		Oil direction	
		Oil port A	Oil port B
Rotation direction	Clockwise rotution	Out	Inlet
	Counter clockwise rotution	Inlet	Out

Installation size

·M70FE 65 Port details



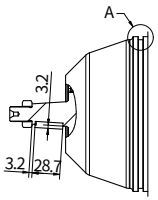
T1, T2 Port Details

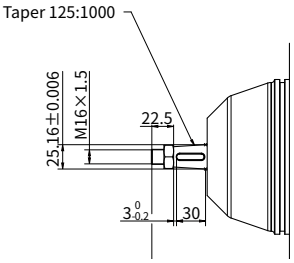


Port details

	Port name	Port size and description
A, B	Inlet port and Delivery port	SAE J518 3/4″ M10
TI, T2	Case drain port	ISO 11926 7/8-14 UNF-2B

· M70FE 65 Input shaft type



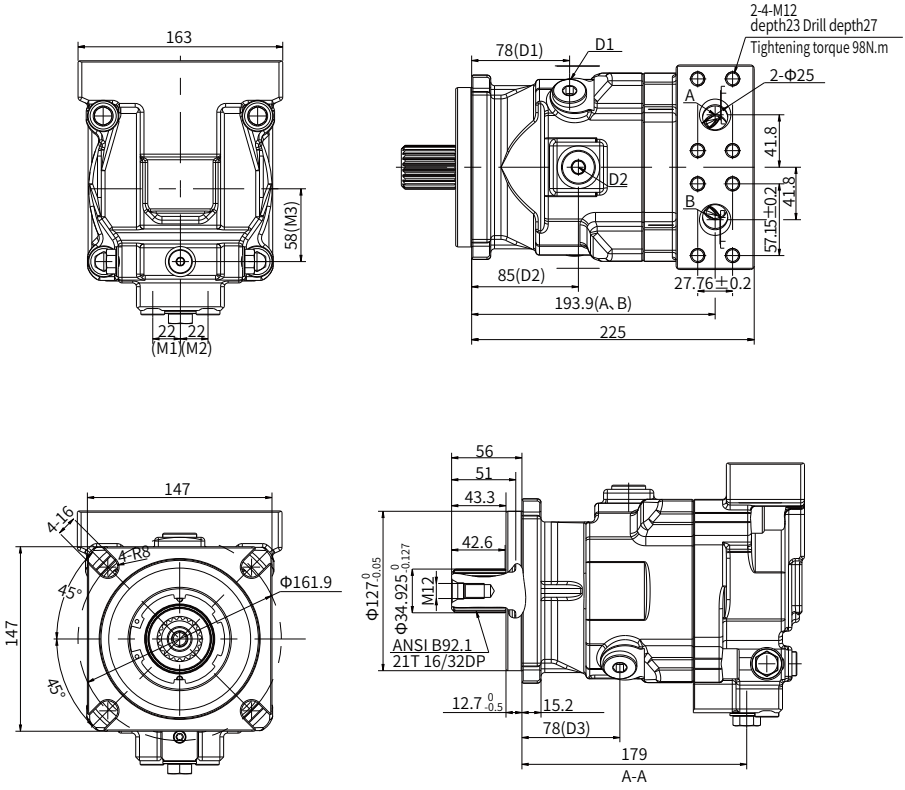


“D” type shaft

Installation size

M70F 75 Installation size

working ports A and B, at bottom



Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

Note: The rotation direction is looked from the shaft end.

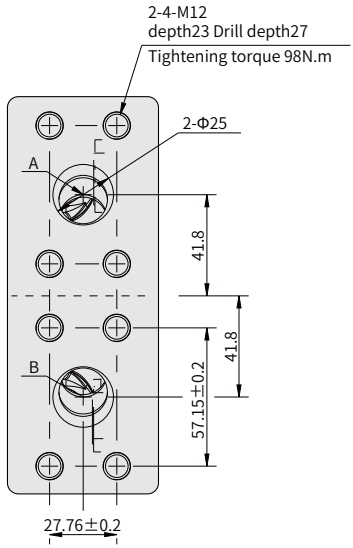
Installation size

·Drain port and gauge port

ANSI thread type (Code : A)

	Symbol	Port size and description
M1, M2, M3	Gauge port	9/16-18UNF-2B
D1, D2, D3	Drain port	1-1/16-12UN-2B

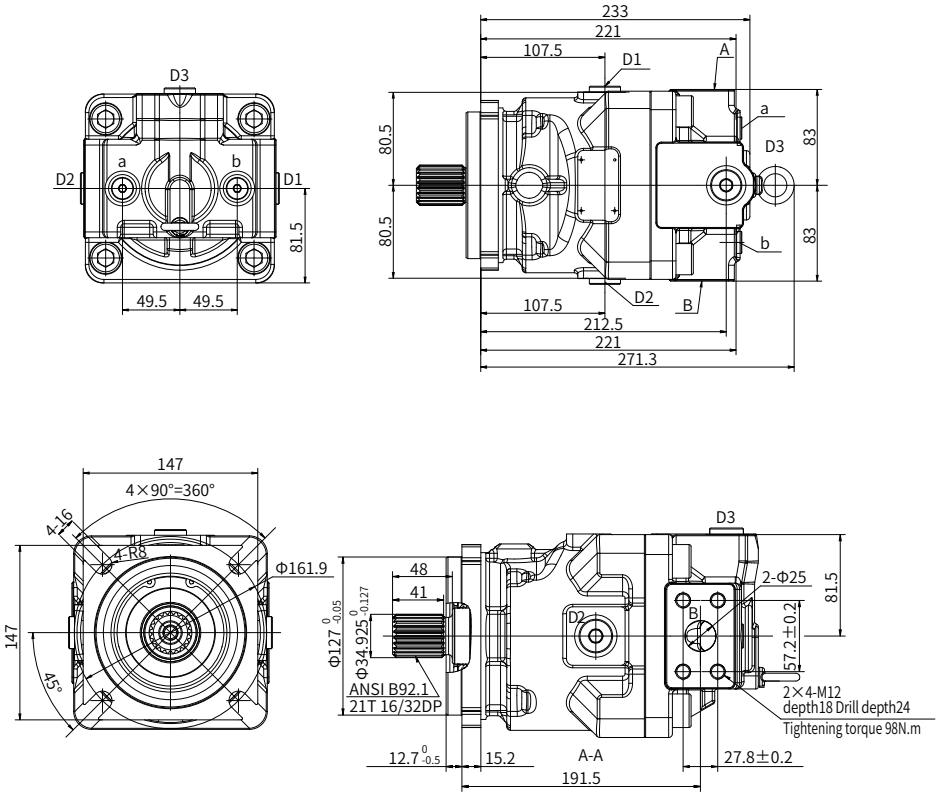
·Port details



Installation size

M70F 85 Installation size

working ports A and B at side, opposite



Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

Note: The rotation direction is looked from the shaft end.

Installation size

·Drain port and gauge port

Parallel piping thread type (Code : G)

	Symbol	Port size and description
a, b	Gauge port	G1/4
D1, D2, D3	Drain port	G1/2

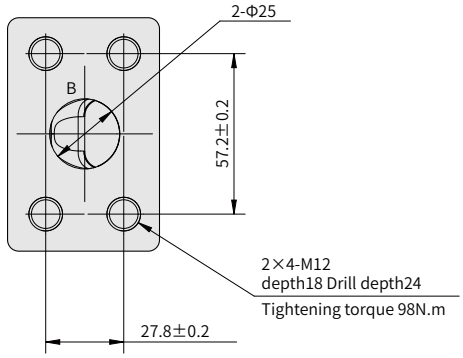
Metric thread type (Code : M)

	Symbol	Port size and description
a, b	Gauge port	M14×1.5
D1, D2, D3	Drain port	M27×2

ANSI thread type (Code : A)

	Symbol	Port size and description
a, b	Gauge port	9/16-18UNF-2B
D1, D2, D3	Drain port	1-1/16-12UN-2B

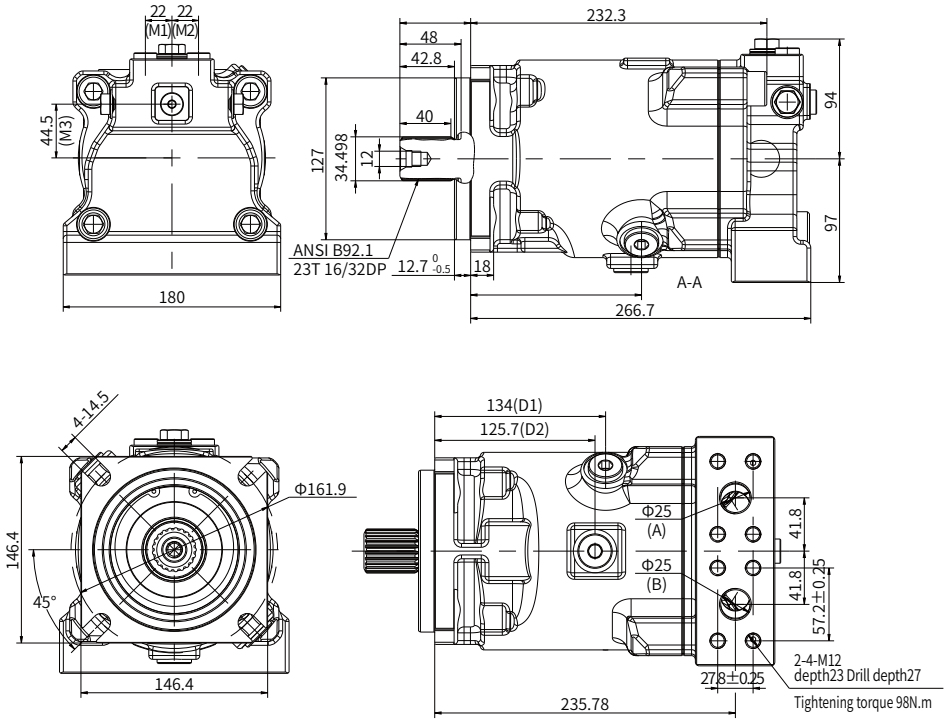
·Port details



Installation size

M70F 100 Installation size

working ports A and B, at bottom



Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

Note: The rotation direction is looked from the shaft end.

Installation size

·Drain port and gauge port

Parallel piping thread type (Code : G)

	Symbol	Port size and description
M1, M2, M3	Gauge port	G1/4
D1, D2, D3	Drain port	G1/2

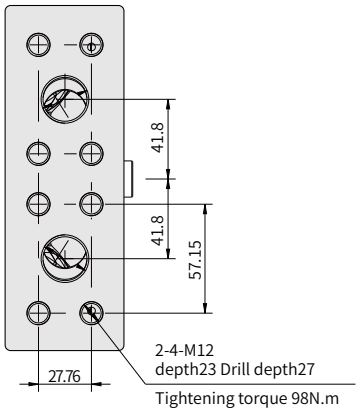
Metric thread type (Code : M)

	Symbol	Port size and description
M1, M2, M3	Gauge port	M14×1.5
D1, D2, D3	Drain port	M27×2

ANSI thread type (Code : A)

	Symbol	Port size and description
M1, M2, M3	Gauge port	9/16-18UNF-2B
D1, D2, D3	Drain port	1-1/16-12UN-2B

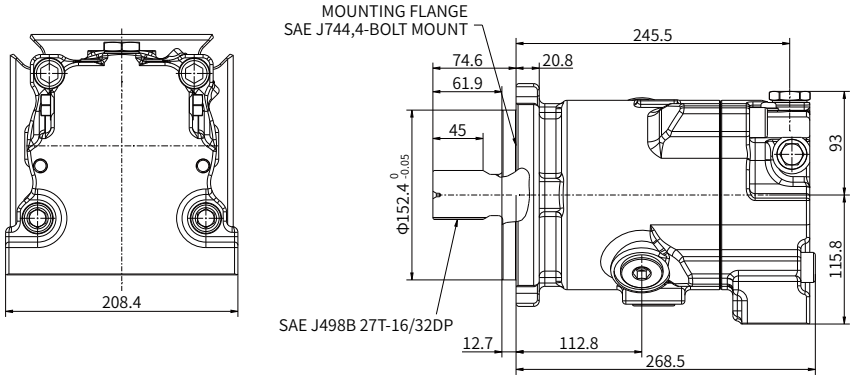
·Port details

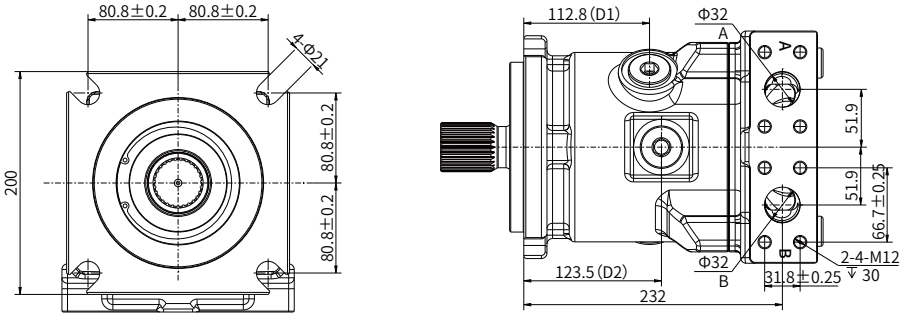


Installation size

M70F 130 Installation size

working ports A and B, at bottom





Inlet port	Outlet port	Rotation direction
A	B	Clockwise
B	A	Anti-clockwise

Note: The rotation direction is looked from the shaft end.

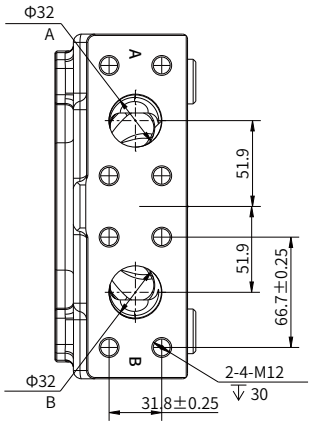
Installation size

·Drain port and gauge port

ANSI thread type (Code : A)

	Symbol	Port size and description
a, b	Gauge port	9/16-18UNF-2B
D1, D2, D3	Drain port	1-1/16-12UN-2B

·Port details



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