2.2.2

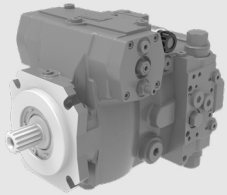
V40E SERIES

Swash-plate Type
Axial Piston Variable Displacement Pump

V40E series axial piston pump is a high pressure closed circuit pump, which can meet the application requirements of customers for harsh working conditions such as high pressure, high rotational speed and frequent impact.

Suitable for a high-pressure closed circuit

Size :	32	47	60	75	100	135
Rated pressure (bar):	420	420	420	420	420	420
Max. pressure (bar):	450	450	450	450	450	450



Contents

Features

- Variable axial piston pump of swashplate design for hydrostatic drives in closed circuit.
- Flow direction changes smoothly when the swashplate is moved through the neutral position.
- Two pressure relief valves are installed on the high-pressure side to prevent overload.
- The built-in charge pump acts as charge pump and control pump.
- The maximum charge pressure is limited by the built-in low pressure relief valve.
- New rotary components and bearings, make the transmission efficiency improved, and the input speed increased.
- Optimized shell design to reduce vibration and noise.
- Electric proportional displacement control meets the application requirements of multiple industries.
- Various oil outlet connection methods help to optimize pipeline connection.
- V40E pump can be optionally equipped with a flush valve, which can be directly installed on the pump body.

Technical data

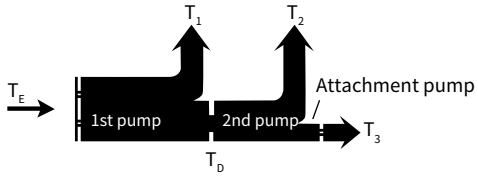
Size		32	47	60	75	100	135
Displacement (cc/rev)		32	47	60	75.6	100	135
Speed	Rated (rpm)	4250	3300	3600	3300	3000	2850
	Max. (rpm)	4500	3550	3900	3600	3300	3250
	Min. (rpm)	500	500	500	500	500	500
Pressure	Rated (bar)	420	420	420	420	420	420
	Max. (bar)	450	450	450	450	450	450
	Minimum low loop pressure (bar) (Above charge pump)	10	10	10	10	10	10
Charge pump displacement (cc/rev)		6.1	8.6/11.6	11.6	17/21/27		28.3/34
Charge pressure (relative to Charge pump)	Max. (bar)	40	35	40	40	40	40
Casting pressure	Rated (bar)	5	5	5	5	5	5
	Max. (bar)(Short-time peak pressure)	10	10	10	10	10	10
Suction pressure (Absolute pressure)	Rated (bar) Oil viscosity $\leqslant 30mm^2/s$	0.8	0.8	0.8	0.8	0.8	0.8
	Max. (bar)	5	5	5	5	5	5
Oil viscosity (mm^2/s)		10~1000, Best range: 16~36					
Oil temperature (°C)		-20~95					
Oil cleanliness		ISO 4406 Class 20/18/15 or higher					
Weight (w/o auxiliary flange) (Kg)		30	33	38	58	62	82

Technical data

Permissible input and through-drive torques								
Size			32	47	60	75	100	135
Torque at $V_{g\,max}$ and Δp = 400 bar Nm		T	287	287	382	477	636	859
Maximum input torque at drive shaft (Nm)								
ANSI B92.1b	1 in 15T 16/32DP	$T_{E\,max}$	272	272				
	1 1/4 in 15T 16/32 DP	$T_{E\,max}$			319			
	1 1/4 in 14T 12/24 DP	$T_{E\,max}$	552	552	602	630	630	
	1 3/8 in 21T 16/32 DP	$T_{D\,max}$			970	970		
	1 1/2 in 23T 16/32 DP	$T_{E\,max}$				1305	1305	
	1 3/4 in 13T 8/16 DP	$T_{E\,max}$				1500	1500	1640
	1 3/4 in 27T 16/32 DP	$T_{E\,max}$						1830
	2 in 15T 8/16 DP	$T_{E\,max}$						2670
	2 1/4 in 17T 8/16 DP	$T_{E\,max}$						4070
DIN 5480	W30×2×14×9g	$T_{E\,max}$			522			
	W35×2×16×9g	$T_{E\,max}$			912		912	
	W40×2×18×9g	$T_{E\,max}$				1460		1460
Maximum through-drive torque (Nm)		$T_{D\,max}$	314	314	521	660	822	1110

02

·Torque distribution



V40E	1st pump	T_1
	2nd pump	T_2
Attachment pump		T_3
Input torque		$T_E=T_1+T_2+T_3$
		$T_E < T_{E\,max}$
Through-drive torque		$T_D=T_2+T_3$
		$T_D < T_{D\,max}$

Type introduction

V40	E	100	E1	A	D	/	R	N	C8	2	F6	B4	3	F	G	2	-	S
①	②	③	④	⑤	⑥		⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯		⑰

Product series

①	Variable piston pump of swashplate in closed circuit	V40

Nominal pressure

②	nominal pressure 400/420 bar	E

Size

③	Size	32	47	60	75	100	135

Control mode

		32	47	60	75	100	135	Code
④	Proportional control (electric U = 12 V DC)	●	●	●	●	●	●	E1
	Proportional control (electric U = 24 V DC)	●	●	●	●	●	●	E2
	Proportional control (electric U = 12 V DC), explosion proof electromagnetic coil						●	E5
	Proportional control (electric U = 24 V DC), explosion proof electromagnetic coil						●	E6
	Electrical two-point control (electric U = 24 V DC		●					E3
	Electrical two-point control (electric U = 24 V DC		●					E4
	Mechanical servo control	●	●	●	●	●		H1
	Mechanical servo control, with neutral position switch*	●		●	●	●		H4
	Hydraulic pilot proportional control		●	○	●	●	●	H2
	Hydraulic control direct operated – optimized for hydraulic control		●		●	●		H3

Note: Both 5A/12V and 3A/24V power supplies are suitable for distribution.

DA control valve

		32	47	60	75	100	135	Code
⑤	Without swivel DA control valve	●	●	●	●	●	●	Blank
	Swivel DA control valve	●	●	●			●	A
	Swivel DA control valve，and integrate manual storage function*	●	●					B

Note: The default is clockwise. If counterclockwise is required, please contact Hengli.

Pressure cut-off

		32	47	60	75	100	135	Code
⑥	Without pressure cut-off	●	●	●	●	●	●	Blank
	Pressure cut-off		●	●	●	●	●	D
	AB port control (Only V40E100, V40E135)		●	●	●	●	●	T

Type introduction

Rotation

		32	47	60	75	100	135	Code
⑦	Right hand (clockwise)	●	●	●	●	●	●	R
	Left hand (counter-clockwise)	○	●	●	●	●	●	L

Sealing material

		32	47	60	75	100	135	Code
⑧	NBR (nitrile rubber) Shaft seal in FKM (fluoroelastomer)	●	●	●	●	●	●	N
	Cryogenic seal				●	●		W

Mounting flangew and drive shaft

	Mounting flange	Drive shaft	32	47	60	75	100	135	Code
⑨	SAE B J744-101-2	ANSI B92.1b 1 in 15T 16/32 DP	●	●					B3
		ANSI B92.1b 1 1/4 in 14T 12/24 DP		●					B4
	SAE C J744-127-2	ANSI B92.1b 1 1/4 in 15T 16/32 DP			●				C1
		ANSI B92.1b 1 1/4 in 14T 12/24 DP			●				C2
		ANSI B92.1b 1 3/8 in 21T 16/32 DP			●				C3
		DIN 5480 W30×2×14×9g			○				C4
		DIN 5480 W35×2×16×9g			●				C5
	SAE C J744-127-4	ANSI B92.1b 1 1/4 in 14T 12/24 DP				●	●		C6
		ANSI B92.1b 1 3/8 in 21T 16/32 DP				●			C7
		ANSI B92.1b 1 1/2 in 23T 16/32 DP				●	●		C8
		ANSI B92.1b 1 3/4 in 13T 8/16 DP				●	●		C9
		DIN 5480 W35×2×16×9g					●		CA
		DIN 5480 W40×2×18×9g				●			CB
		DIN 5480 W45×2×21×9g					●		CE
	SAE D J744-152-2/4	ANSI B92.1b 1 3/4 in 13T 8/16 DP						●	D1
		ANSI B92.1b 1 3/4 in 27T 16/32 DP						●	D2
		ANSI B92.1b 2 in 15T 8/16 DP						●	D3
		DIN 5480 W40×2×18×9g						●	D4
		DIN 5480 W45×2×21×9g						●	D5

Working port

	Working port	32	47	60	75	100	135	Code
⑩	Same-side SAE flange port A and B	●	●	●	●	●	●	1
	Off-side SAE flange port A and B		●	●	●	●	●	2
	Same-side SAE flange ports A, B and S thread oil port				●			5

Type introduction

Boost pump and rotary group configuration

	Standard rotary group, without boost pump								K
⑪	Standard rotary group, boost pump integrated	Charge pump displacement (cc/rev)	32	47	60	75	100	135	Code
		6.1	●						FE
		8.6		●					F0
		11.6		●	●				F2
		17				●	●		F5
		21				●	●		F6
		27				●	●		F8
		28.3						●	F9

Through drive

	Through drive		32	47	60	75	100	135	Code
	Without through drive		●	●	●	●	●	●	Blank
⑫	Flange	Splined shaft							
	SAE A J744-82-2	ANSI B92.1b 5/8 in 9T 16/32 DP	●	●	●	●	●	●	A1
		ANSI B92.1b 3/4 in 11T 16/32 DP	●	●	●	●	●		A2
	SAE B J744-101-2	ANSI B92.1b 7/8 in 13T 16/32DP		●	●	●	●	●	B1
		ANSI B92.1b 1 in 15T 16/32 DP		●	●	●	●		B3
		ANSI B92.1b 1 1/4 in 14T 12/24 DP				●	●		B4
	SAE C J744-127-2	ANSI B92.1b 1 1/4 in 14T 12/24 DP				●	●		C2
	SAE C J744-127-4	ANSI B92.1b 1 1/4 in 13T 8/16 DP					●		CF
		ANSI B92.1b 1 1/4 in 14T 12/24 DP				●	●		C6
	SAE C J744-127-2/4	ANSI B92.1b 1 1/4 in 14T 12/24 DP			●	●	●	●	CC
	SAE D J744-152-2/4	DIN 5480 N40×2×18×9g						●	D4

Remark: The "CF" axis is a non-standard customized version. If you need to select, please contact Hengli.

Relief valve

	Relief valve	Setting range Δp	32	47	60	75	100	135	Code
⑬	Pilot-operated high-pressure relief valve	100~420bar, with a bypass	●			●	●	●	1
	Direct-acting high-pressure relief valve, fixed setting	250~420bar, without a bypass		●	○	●	●		3
		250~420bar, with a bypass		●	●				5
		100~250bar, without a bypass		●	○				4
		100~250bar, with a bypass		○	○				6

Remark: V40E75 and V40E100 when selecting SAE flange ports A and B on the same side, code 1 (pilot-operated high-pressure relief valve) is not optional, and without bypass function.

Type introduction

Filtration boost circuit/external boost pressure supply

	Filtration boost circuit/external boost pressure supply	32	47	60	75	100	135	Code
⑭	External boost pressure supply (version without integrated boost pump)							Blank
	Filtration in the boost pump suction line	●	●	●	●	●	●	S
	Filtration in the boost pump pressure line (ports with external filter circuit)	●	●	●	●	●	●	D
	Filtration in the boost pump pressure line (with filter)			●	●	●	●	F
	Filtration in the boost pump pressure line (with filter, cold start valve, contamination indicator)			●	●	●	●	B

Remark: V40E75 and V40E100 when selecting SAE flange ports A and B on the same side, no cold start, with side oil channel.

Emergency return valve (Brake unloading valve)

		32	47	60	75	100	135	Code
⑮	No emergency return valve (Brake unloading valve)	●	●	●	●	●	●	Blank
	There is a 12V emergency return (brake unloading) valve, which works when powered on			●	●	●		G
	There is a 12V emergency return (brake unloading) valve, which works when power is lost				●	●		H
	There is a 24V emergency return (brake unloading) valve, which works when powered on				●	●	●	K
	There is a 12V emergency return (brake unloading) valve, which works when power is lost				●	●	●	L

Flushing valve

		32	47	60	75	100	135	Code
⑯	No flushing valve	●	●	●	●	●	●	Blank
	With flush valve，Flushing flow 5 (L/min)	●						7
	With flush valve，Flushing flow 10 (L/min)		●	●	●	●		2
	With flush valve，Flushing flow 12 (L/min)			●				6
	With flush valve，Flushing flow 15 (L/min)				●	●		3
	With flush valve，Flushing flow 20 (L/min)				●	●		4
	With flush valve，Flushing flow 25 (L/min)				●	●		5

Remark：Opening pressure 16bar, differential pressure ΔP=25bar.

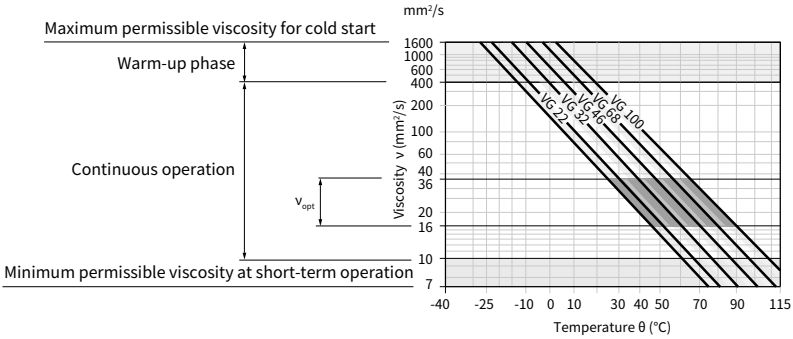
Standard / special version

		32	47	60	75	100	135	Code
⑰	Standard version	●	●	●	●	●	●	Blank
	pecial version	○	○	○	○	○	○	S

Remark：● = Available； ○ = On request

Hydraulic fluid

·Selection diagram



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Notes on selection of hydraulic fluid:

The hydraulic fluid should be selected such that the operating viscosity in the operating temperature range is within the optimum range (vopt see selection diagram).

Notice:

At no point of the component may the temperature be higher than 115 ° C. The temperature difference specified in the table is to be taken into account when determining the viscosity in the bearing. Please contact us if the above conditions cannot be met due to extreme operating parameters.

Hydraulic fluid

·Viscosity and temperature of hydraulic fluids

	Viscosity (mm^2/s)	Shaft seal	Temperature	Comment
Cold start	$v_{max} \leqslant 7400$ (1600)	NBR	$\theta St \geqslant -40°C$	t ⩽ 3min, without load(p ⩽ 725psi(50bar), n ⩽ 1000rpm Permissible temperature difference between axial piston unit and hydraulic fluid in the system maximum 45 °F (25 K).
		FKM	$\theta St \geqslant -25$ °C	
Warm-up phase	v = 7400 ··· 1850 (1600 ··· 400)			t ⩽ 15min, $p \leqslant 0.7 \times p_{nom}$ and $n \leqslant 0.5 \times n_{nom}$
Continuous operation	v = 1850 ··· 60 (400 ··· 10)	NBR	$\theta \leqslant +85$ °C	measured at port T
		FKM	$\theta \leqslant +110$°C	
	v_{opt} = 170 ··· 82 (36 ··· 16)			Range of optimum operating viscosity and efficiency
Short-term operation	v_{min} = 60 ··· 49 (10 ··· 7)	NBR	$\theta \leqslant +85$°C	t ⩽ 3min, $p \leqslant 0.3 \times p_{nom}$, measured at port T
		FKM	$\theta \leqslant +110$°C	

·Filtration of the hydraulic fluid

Finer filtration improves the cleanliness level of the hydraulic fluid, which increases the service life of the axial piston unit.

A cleanliness level of at least 20/18/15 is to be maintained according to ISO 4406.

At a hydraulic fluid viscosity of less than 10 mm^2/s (e.g. due to high temperatures during short-term operation) at the drain port, a cleanliness level of at least 19/17/14 according to ISO 4406 is required.

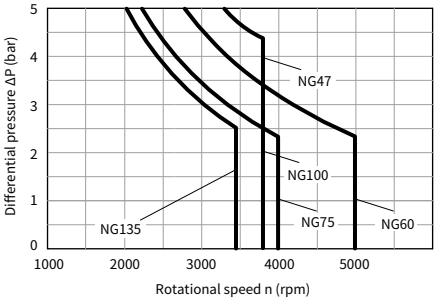
·Shaft seal

Notice

·Working pressure range valid when using hydraulic fluids based on mineral oils. Please contact us for values for other hydraulic fluids.

·In addition to the hydraulic fluid and the temperature, the service life of the shaft seal is influenced by the rotational speed of the axial piston unit and the case pressure.

Permissible pressure loading



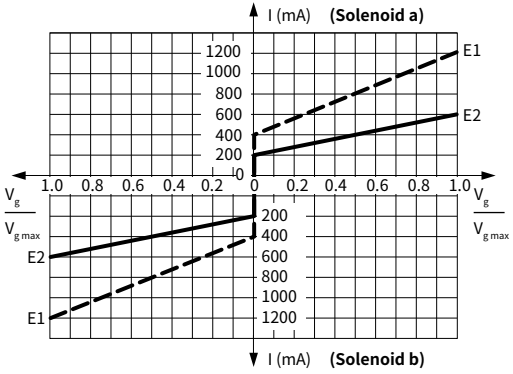
·The service life of the shaft seal decreases with increasing frequency of pressure peaks and increasing mean differential pressure.

·The case pressure must be greater than the ambient pressure.

E - Electrical displacement control

·Electrical displacement control principle

The output flow of the pump is infinitely variable between 0 and 100%, proportional to the electrical current sup-plied to solenoid a or b.
The electrical energy is converted into a force acting on the control spool.
This control spool then directs control oil into and out of the stroking cylinder to adjust pump displacement as required.
A feedback lever connected to the stroking piston main-tains the pump flow for any given current within the con-trol range.



Standard:
Proportional solenoid without manual emergency operation.
Supply as required:
Proportional solenoid with manual emergency operation and spring return.

Technical data, solenoid

Control		E1	E2
Voltage		12 V (±20%)	24 V (±20%)
Control current	Start of control at V_g=0	400 mA	200 mA
	End of control at $V_{g\,max}$	1200 mA	600 mA
Current limit		1540 mA	840 mA
Nominal resistance (at 68 °F (20°C)		5.5 Ω	21.7 Ω
Dither frequency		100Hz / 120Hz (120Hz only for the V40E175 closed pumps)	
Duty cycle		100%	
Type of protection		See connector version	

Note:
The spring-return device in the control module is not a safety device
The control module may be stuck in an uncertain position by internal impurities (hydraulic oil impurities, system component wear or sediment). As a result, the controller can no longer respond correctly to the instruction from the operator.
Check whether additional safety measures are required on your machine to move the drive actuator to a controlled safe position (emergency stop). When necessary, please ensure that these operations are implemented correctly.

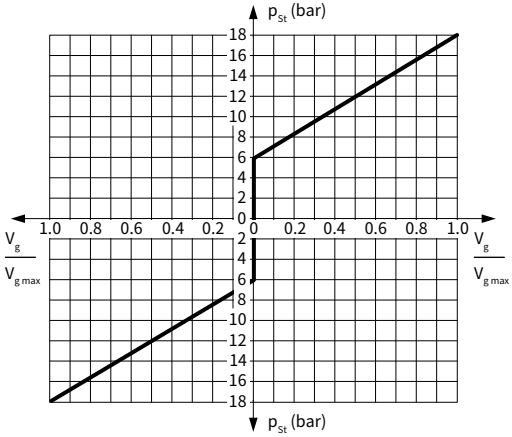
H2 - Proportional control, hydraulic, pilot-pressure related

·Hydraulic proportional control principle

The output flow of the pump is infinitely variable between 0 and 100%, proportional to the difference in pilot pres-sure applied to the two pilot pressure ports (Y1 and Y2). The pilot signal, coming from an external source, is a pressure signal. Flow is negligible, as the pilot signal acts only on the control spool of the control valve.

This control spool then directs control oil into and out of the stroking cylinder to adjust pump displacement as required.

A feedback lever connected to the stroking piston main-tains the pump flow for any given pilot signal within the control range.



Displacement at Vg = pSt

Displacement at Vg max = pSt = 18bar

Pilot signal pSt = 6 to 18 bar (at port Y1, Y2)

Initial control value at 6 bar pressure

Control termination value when the pressure is 18 bar

(The maximum displacement Vg max)

Note:

In the neutral position, the HD control module must be unloaded to reservoir via the external pilot control device.

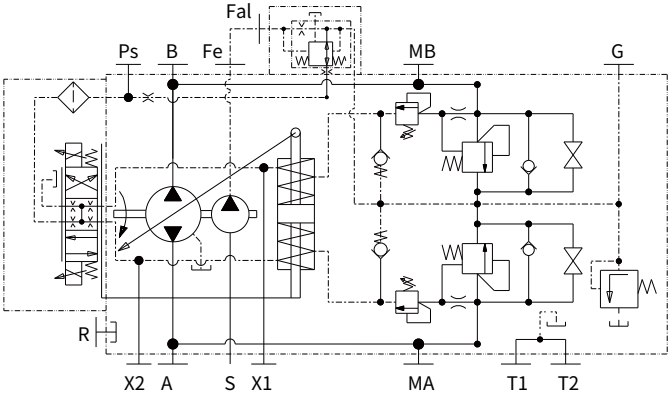
Note:

The spring-return device in the control module is not a safety device

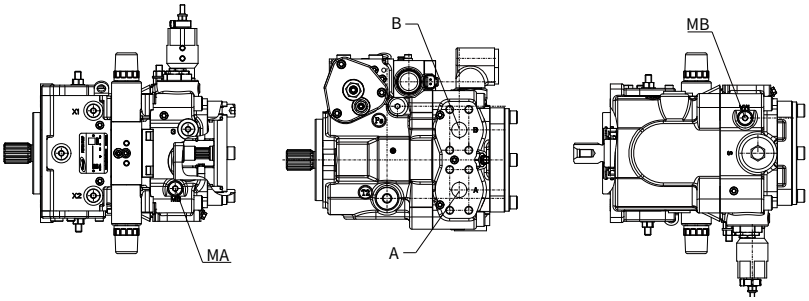
The control module may be stuck in an uncertain position by internal impurities (hydraulic oil impurities, system component wear or sediment). As a result, the controller can no longer respond correctly to the instruction from the operator.

Check whether additional safety measures are required on your machine to move the drive actuator to a controlled safe position (emergency stop). When necessary, please ensure that these operations are implemented correctly.

V40E 32 Control principle

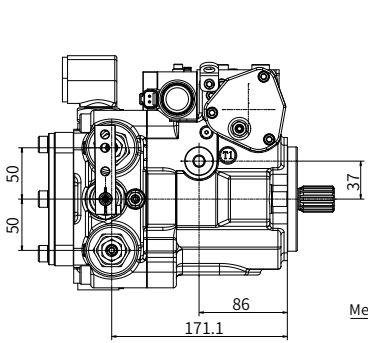


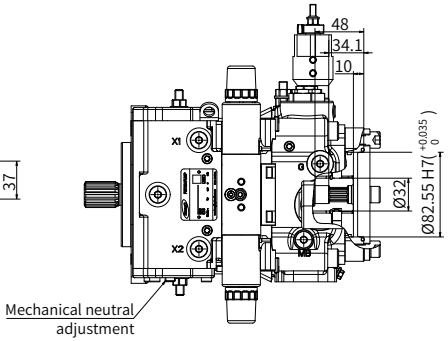
Direction of rotation	Clockwise		Counter-clockwise	
Actuation of proportional solenoid	a	b	a	b
Control pressure	X1	X2	X1	X2
Flow direction	A to B	B to A	B to A	A to B
Working pressure	MB	MA	MA	MB

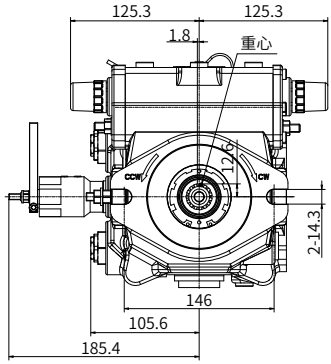


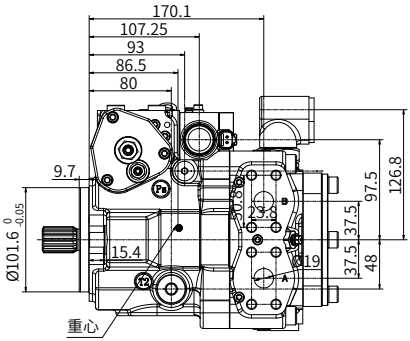
Installation size

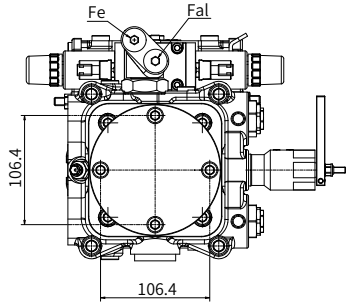
V40E 32 Installation size

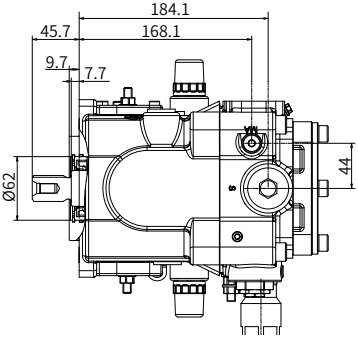












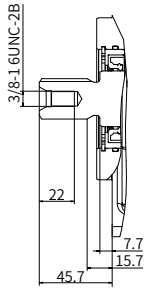
Installation size

·V40E 32 Port details

Port	Port Name	Standard	Oil Port Specification (thread depth)	Maximum pressure (bar)
A, B	Working port	SAE J518	3/4"	450
	Fastening thread	DIN 13	M10（depth17）	-
S	Suction port	DIN 3852	M33×2（depth18）	5
T1, T2	Drain port	DIN 3852	M22×1.5（depth14）	3
R	Air bleed port	DIN 3852	M12×1.5（depth12）	3
X1, X2	Control pressure port	DIN 3852	M12×1.5（depth12）	30
P_s	Pilot pressure port inlet	DIN 3852	M14×1.5（depth12）	30
MA, MB	Measuring port pressure A, B	DIN 3852	M12×1.5（depth12）	450
Fal	Boost pressure port inlet (installable filters)	DIN 3852	M18×1.5（depth14）	40
Fe	Charge pressure outlet	DIN 3852	M18×1.5（depth14）	40
G	Measuring port of slippage pump pressure	DIN 3852	M12×1.5（depth12）	40

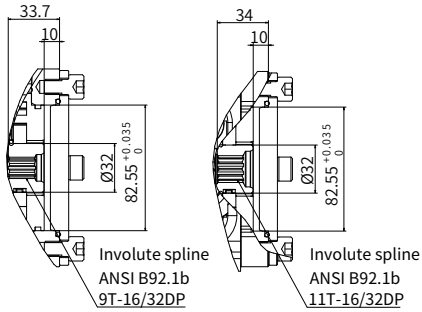
Installation size

·V40E 32 Shaft extension type



"B3" type spline shaft
ANSI B92.1b
1 in 15T 16/32DP

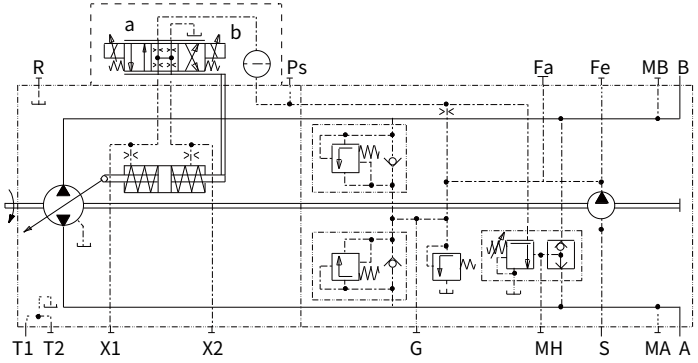
·V40E 32 Through shaft drive



“A1” type through drive

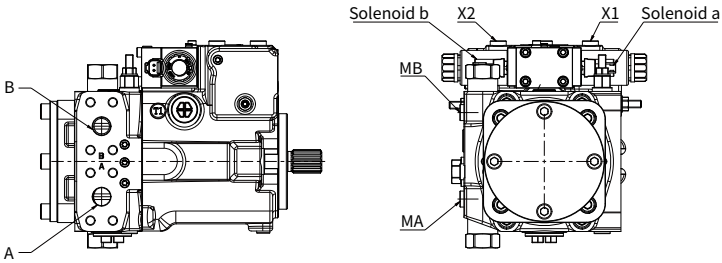
“A2” type through drive

V40E 47 Control principle



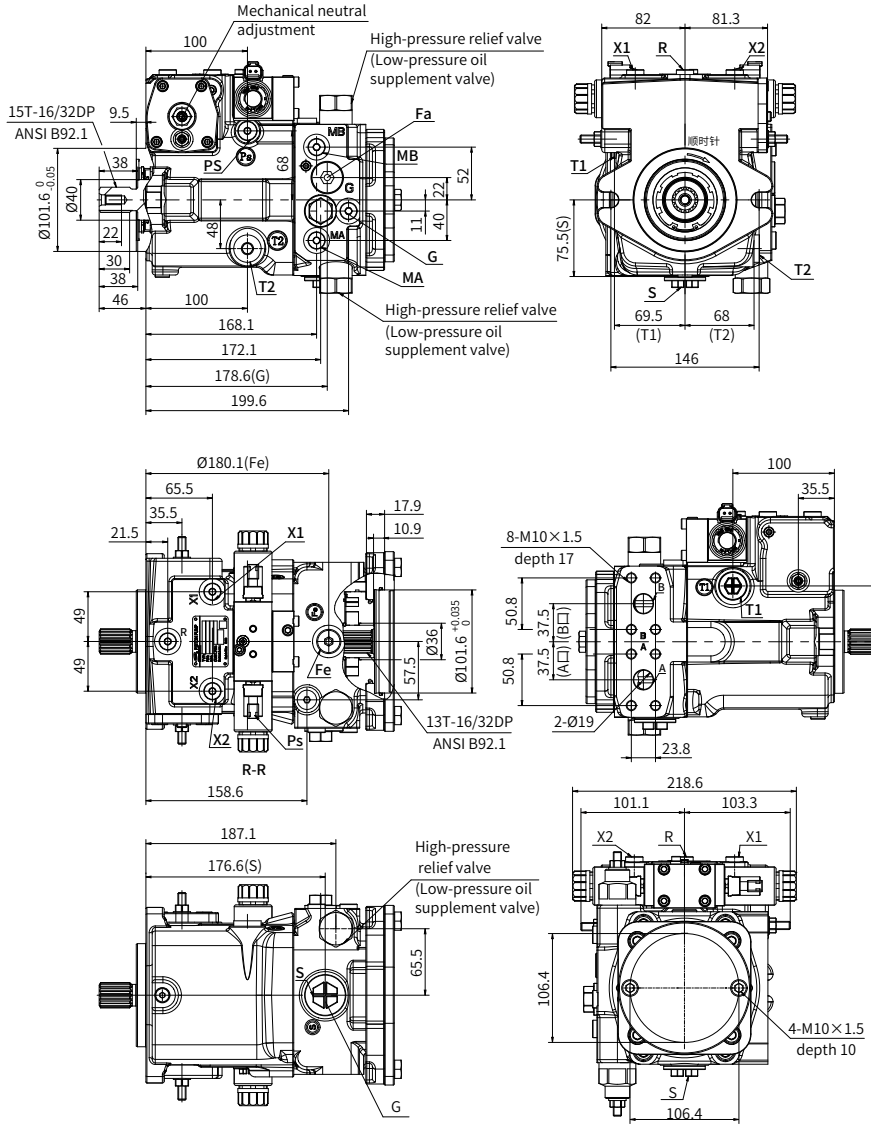
02

Direction of rotation	Clockwise		Counter-clockwise	
Actuation of proportional solenoid	a	b	a	b
Control pressure	X1	X2	X1	X2
Flow direction	A to B	B to A	B to A	A to B
Working pressure	MB	MA	MA	MB



Installation size

V40E 47 Installation size



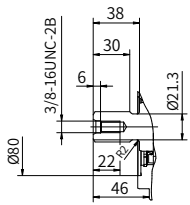
Installation size

·V40E 47 Port details

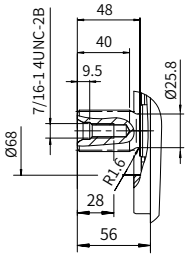
Port	Port Name	Standard	Oil Port Specification (thread depth)	Maximum pressure (bar)
A, B	Working port	SAE J518	3/4"	450
	Fastening thread	DIN 13	M10（depth17）	-
S	Suction port	DIN 3852	M33×2（depth18）	5
T1, T2	Drain port	DIN 3852	M22×1.5（depth14）	3
R	Air bleed port	DIN 3852	M12×1.5（depth12）	3
X1, X2	Control pressure port	DIN 3852	M12×1.5（depth12）	30
P_S	Pilot pressure port inlet	DIN 3852	M14×1.5（depth12）	30
MA, MB	Measuring port pressure A, B	DIN 3852	M12×1.5（depth12）	450
Fa	Boost pressure port inlet	DIN 3852	M18×1.5（depth12）	40
Fe	Charge pressure outlet	DIN 3852	M18×1.5（depth12）	40
G	Measuring port of slippage pump pressure	DIN 3852	M12×1.5（depth12）	40
MH	Measuring port of high pressure	DIN 3852	M12×1.5（depth12）	450

Installation size

·V40E 47 Shaft extension type

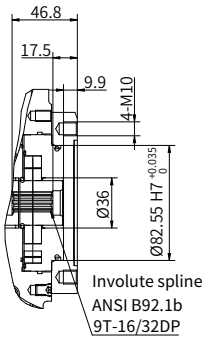


"B3" type spline shaft
ANSI B92.1b
1 in 15T 16/32DP

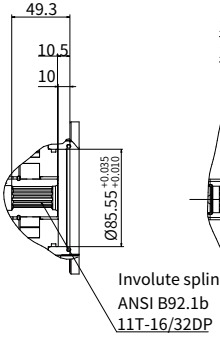


"B4" type spline shaft
ANSI B92.1b
1 1/4 in 14T 12/24DP

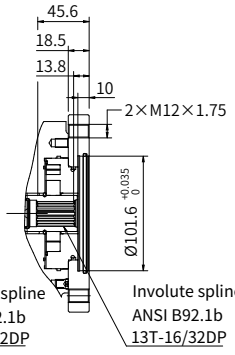
·V40E 47 Through shaft drive



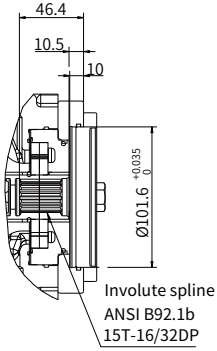
“A1” type through drive



“A2” type through drive

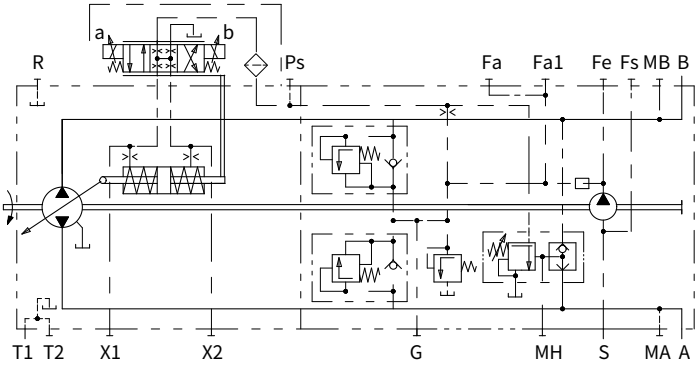


“B1” type through drive

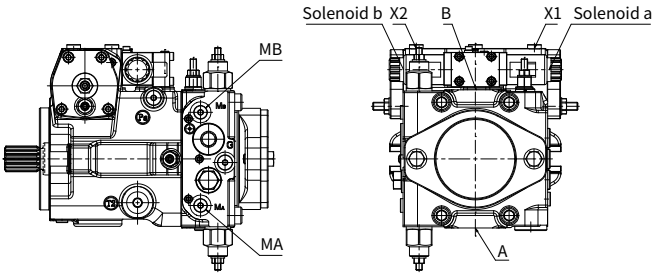


“B3” type through drive

V40E 60 Control principle

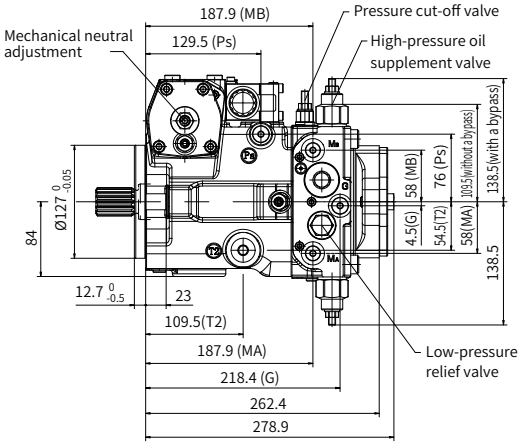


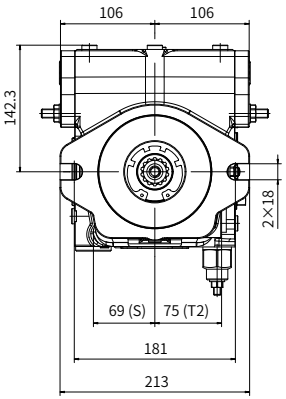
Direction of rotation	Clockwise		Counter-clockwise	
Actuation of proportional solenoid	a	b	a	b
Control pressure	X1	X2	X1	X2
Flow direction	A to B	B to A	B to A	A to B
Working pressure	MB	MA	MA	MB

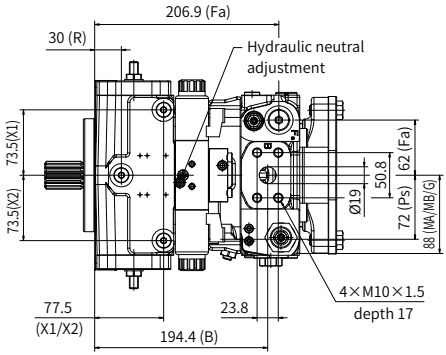


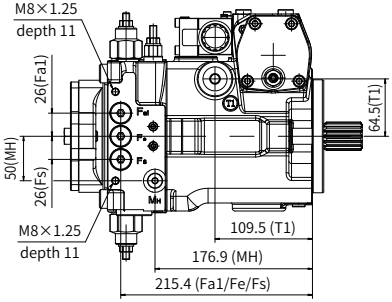
Installation size

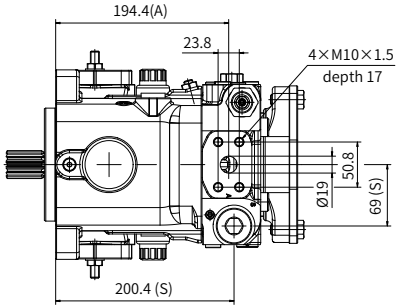
V40E 60 Installation size

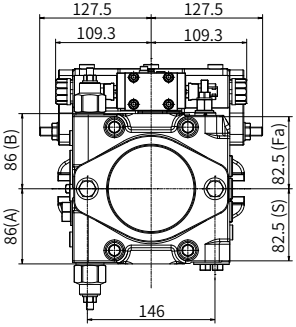












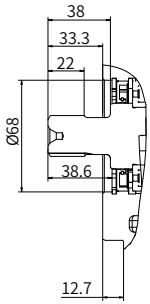
Installation size

·V40E 60 Port details

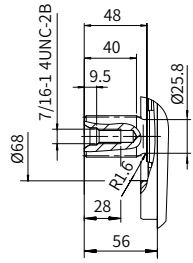
Port	Port Name	Standard	Oil Port Specification (thread depth)	Maximum pressure (bar)
A, B	Working port	SAE J518	3/4"	450
	Fastening thread	DIN 13	M10×1.5（depth 17mm）	-
S	Suction port	ISO 9974-1	M33×2（depth 18mm）	3
T1, T2	Drain port	ISO 9974-1	M22×1.5（depth 14mm）	3
R	Air bleed port	ISO 9974-1	M12×1.5（depth 12mm）	3
X1, X2	Control pressure port	ISO 9974-1	M12×1.5（depth 12mm）	40
G	Boost pressure port	ISO 9974-1	M14×1.5（depth 12mm）	40
P_s	Pilot pressure port inlet	ISO 9974-1	M14×1.5（depth 12mm）	40
MA, MB	Measuring port pressure A, B	ISO 9974-1	M12×1.5（depth 12mm）	450
MH	Measuring port, high pressure	ISO 9974-1	M12×1.5（depth 12mm）	450
Fa	Boost pressure port inlet	ISO 9974-1	M18×1.5（depth 12mm）	40
Fa1	Boost pressure port inlet(Filter can be installed)	ISO 9974-1	M18×1.5（depth 12mm）	40
Fe	Charge pressure outlet	ISO 9974-1	M18×1.5（depth 12mm）	40
Fs	From the filter to the oil suction line（at cold start）	ISO 9974-1	M18×1.5（depth 12mm）	40

Installation size

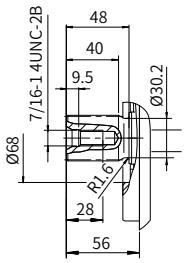
·V40E 60 Shaft extension type



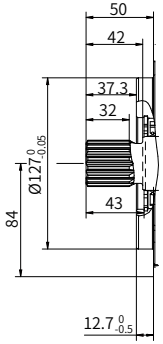
"C1" type spline shaft
ANSI B92.1b
1 1/4 in 15T 16/32DP



"C2" type spline shaft
ANSI B92.1b
1 1/4 in 14T 12/24DP



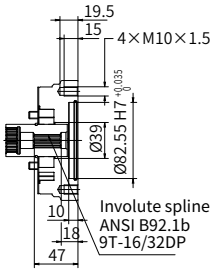
"C3" type spline shaft
ANSI B92.1b
1 3/8 in 21T 16/32DP



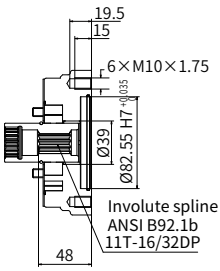
"C5" type spline shaft
DIN 5480
W35×2×16×9g

Installation size

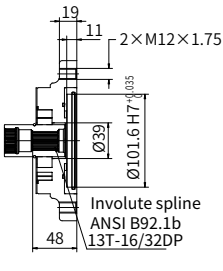
·V40E 60 Through shaft drive



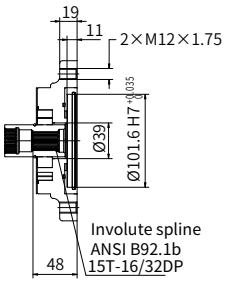
"A1" type through drive



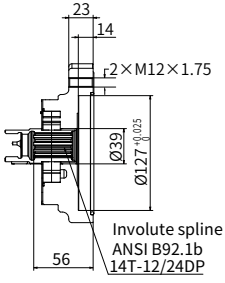
"A2" type through drive



"B1" type through drive

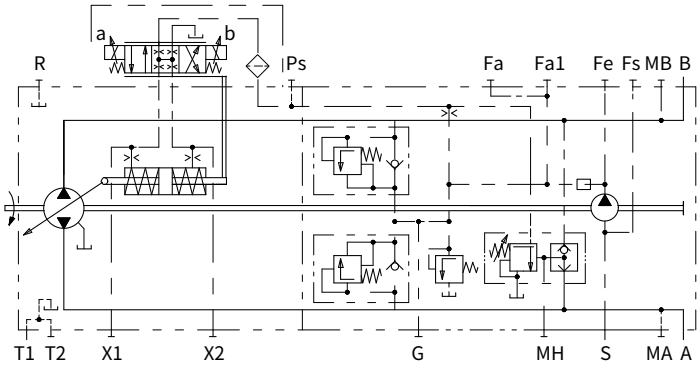


"B3" type through drive

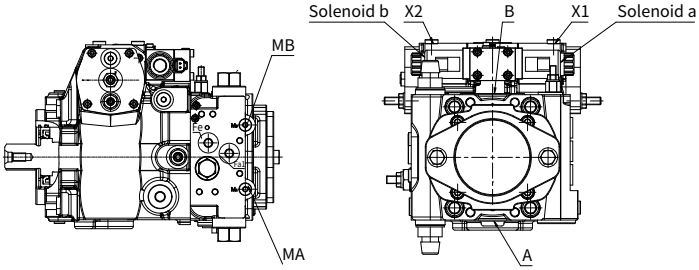


"CC" type through drive

V40E 75 Control principle

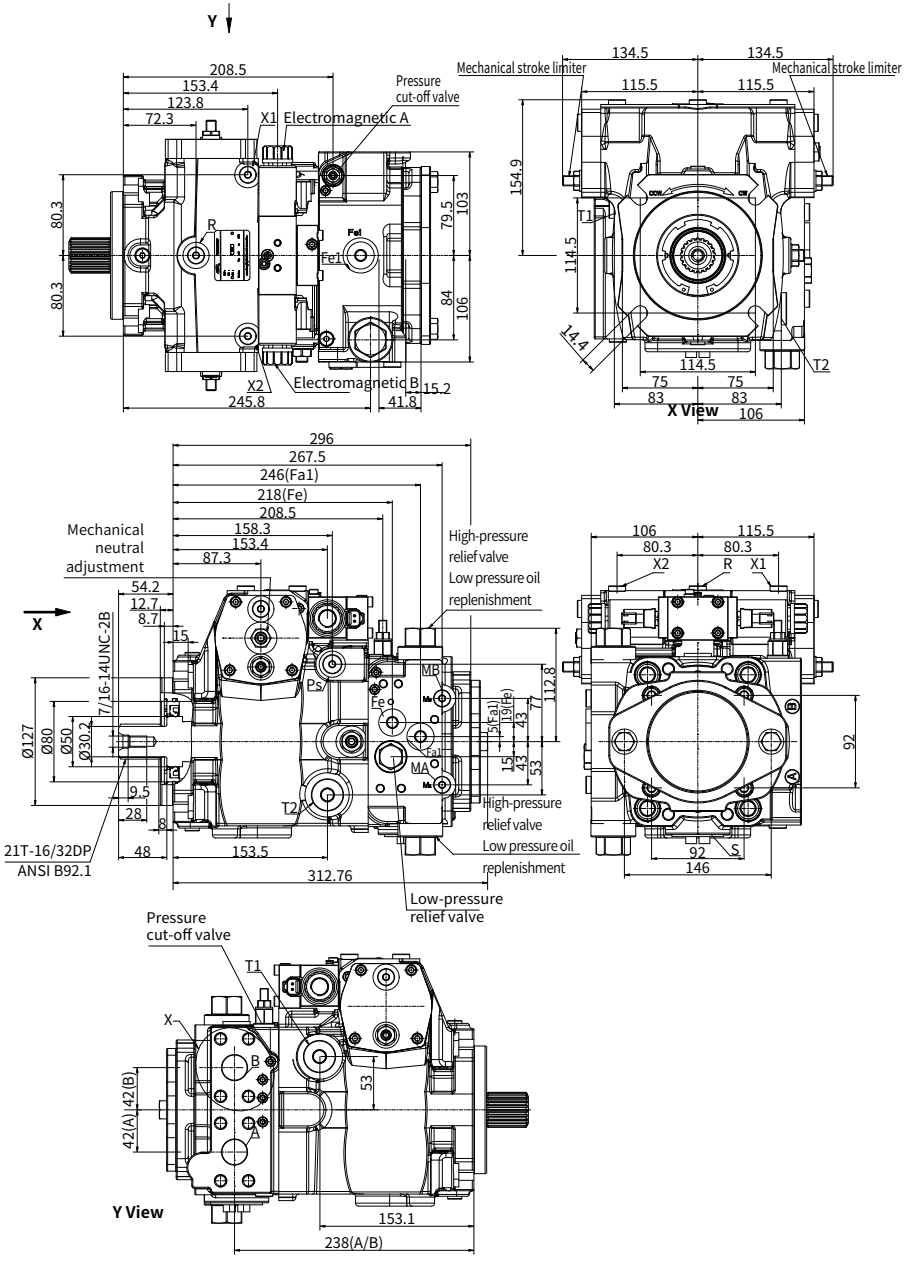


Direction of rotation	Clockwise		Counter-clockwise	
Actuation of proportional solenoid	a	b	a	b
Control pressure	X1	X2	X1	X2
Flow direction	B to A	A to B	A to B	B to A
Working pressure	MA	MB	MB	MA



Installation size

V40E 75 Installation size



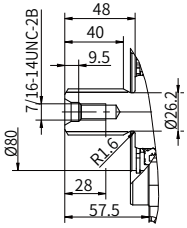
Installation size

·V40E 75 Port details

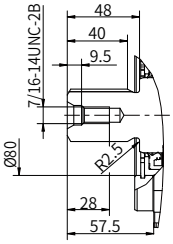
Port	Port Name	Standard	Oil Port Specification (thread depth)	Maximum pressure (bar)
A, B	Working port	SAE J518	1"	450
	Fastening thread	DIN 13	M12×1.75（depth 17）	-
S	Suction port	DIN 3852	M42×2（depth 20）	3
T1, T2	Drain port	DIN 3852	M26×1.5（depth 16）	3
R	Air bleed port	DIN 3852	M12×1.5（depth 12）	3
X1, X2	Control pressure port	DIN 3852	M12×1.5（depth 12）	40
G	Boost pressure port	DIN 3852	M18×1.5（depth 12）	40
P_S	Pilot pressure port inlet	DIN 3852	M14×1.5（depth 12）	40
MA, MB	Measuring port pressure A, B	DIN 3852	M12×1.5（depth 12）	450
MH	Measuring port, high pressure	DIN 3852	M12×1.5（depth 12）	450
Fa	Boost pressure port inlet	DIN 3852	M26×1.5（depth 16）	40
Fa1	Boost pressure port inlet (Filter can be installed)	DIN 3852	M22×1.5（depth 14）	40
Fe	Charge pressure outlet	DIN 3852	M22×1.5（depth 14）	40
Fs	From the filter to the oil suction line（at cold start）	DIN 3852	M22×1.5（depth 14）	40

Installation size

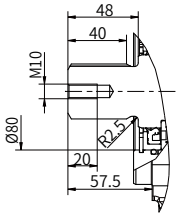
·V40E 75 Shaft extension type



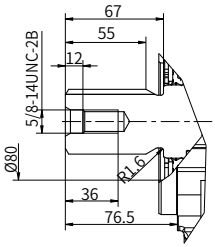
“C6” type spline shaft
ANSI B92.1b
1 1/4 in 14T 12/24DP



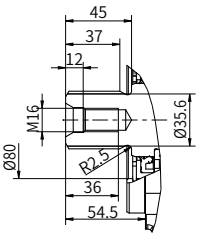
“C7” type spline shaft
ANSI B92.1b
1 3/8 in 21T 16/32DP



“C8” type spline shaft
ANSI B92.1b
1 1/2 in 23T 16/32DP



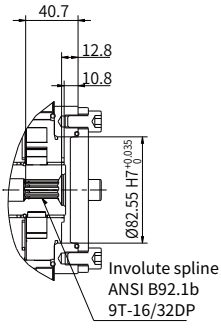
“C9” type spline shaft
ANSI B92.1b
1 3/4 in 13T 8/16DP



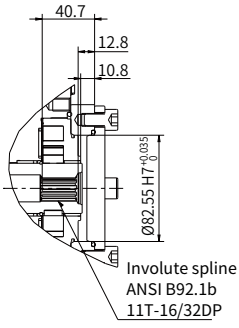
“CB” type spline shaft
DIN 5480
W40×2×18×9 g

Installation size

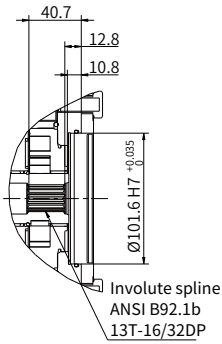
·V40E 75 Through shaft drive



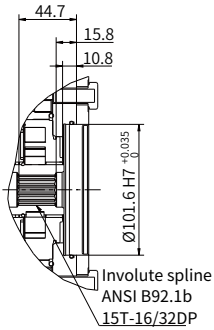
"A1" type through drive



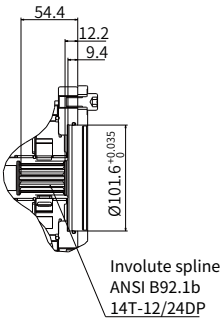
"A2" type through drive



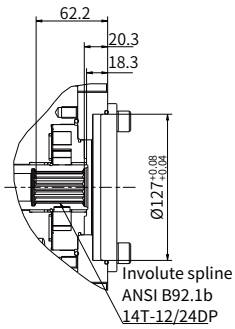
"B1" type through drive



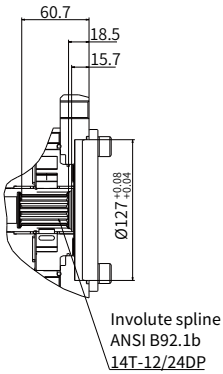
"B3" type through drive



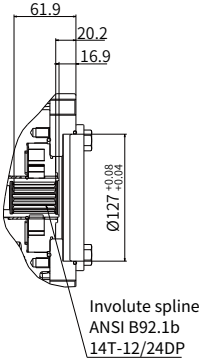
"B4" type through drive



"C2" type through drive



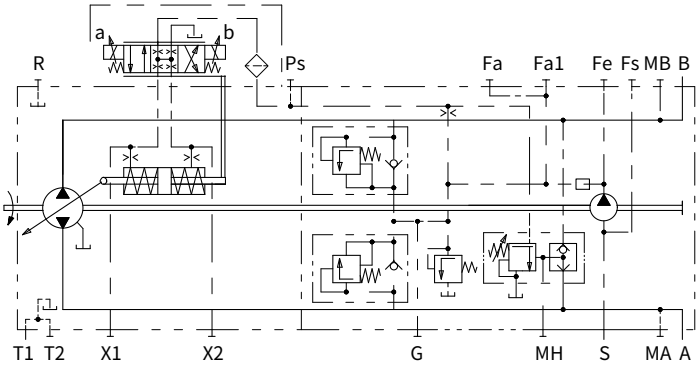
"C6" type through drive



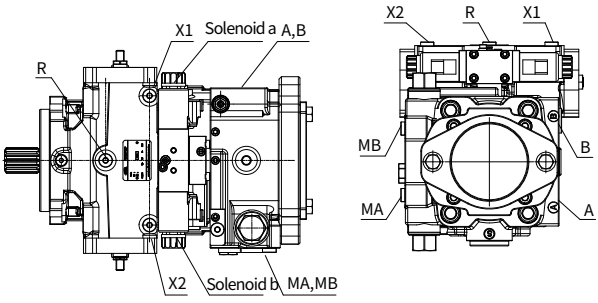
"CC" type through drive

V40E 100 Control principle

·V40E 100 Port details

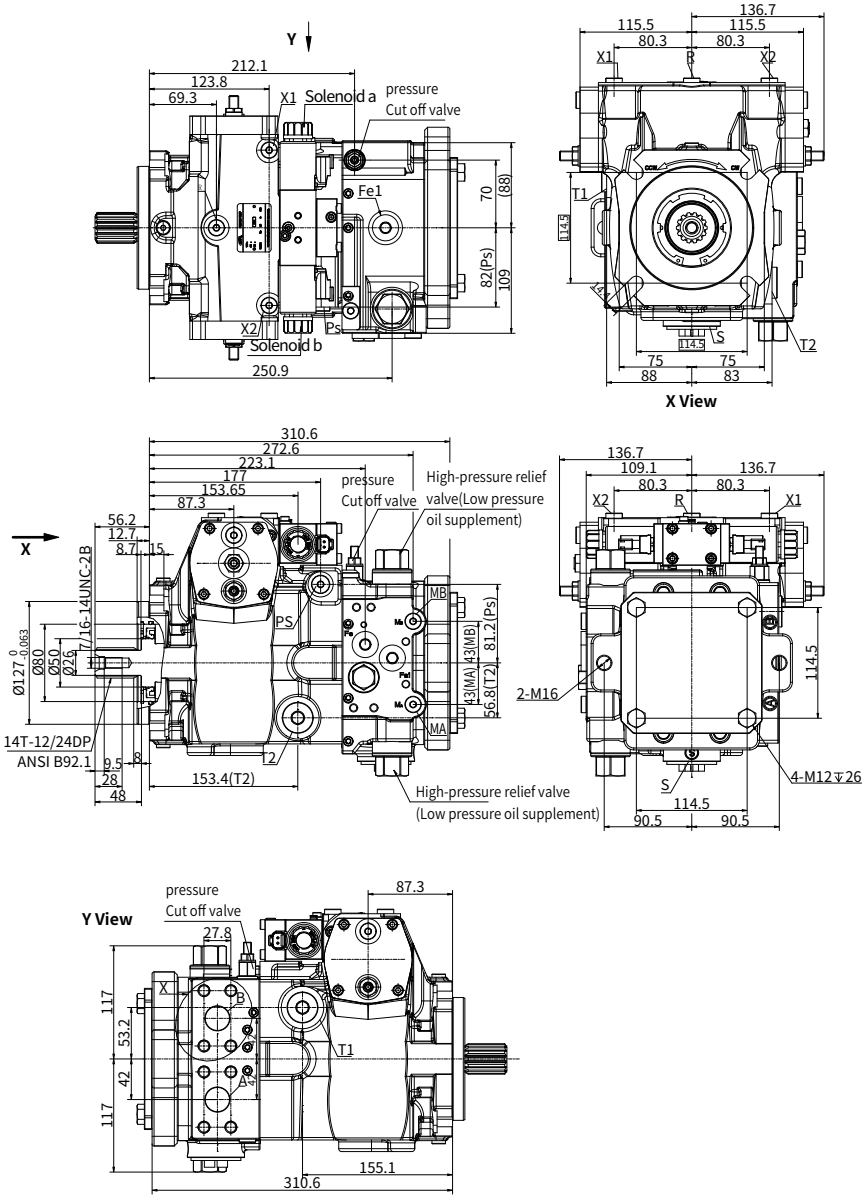


Direction of rotation	Clockwise		Counter-clockwise	
Actuation of proportional solenoid	a	b	a	b
Control pressure	X1	X2	X1	X2
Flow direction	B to A	A to B	A to B	B to A
Working pressure	MA	MB	MB	MA



Installation size

V40E 100 Installation size



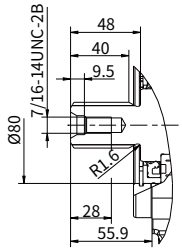
Installation size

·V40E 100 Port details

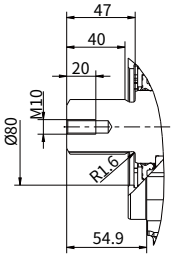
Port	Port Name	Standard	Oil Port Specification (thread depth))	Maximum pressure (bar)
A, B	Working port	SAE J518	1"	450
	Fastening thread	DIN 13	M12×1.75（depth 17mm）	-
S	Suction port	DIN 3852	M42×2（depth 20mm）	3
T1, T2	Drain port	DIN 3852	M26×1.5（depth 16mm）	3
R	Air bleed port	DIN 3852	M12×1.5（depth 12mm）	3
X1, X2	Control pressure port	DIN 3852	M12×1.5（depth 12mm）	40
P_S	Pilot pressure port inlet	DIN 3852	M14×1.5（depth 12mm）	40
MA, MB	Measuring port pressure A, B	DIN 3852	M12×1.5（depth 12mm）	450
Fa	Boost pressure port inlet	DIN 3852	M22×1.5（depth 14mm）	40
Fa1	Boost pressure port inlet (Filter can be installed)	DIN 3852	M22×1.5（depth 14mm）	40
Fe	Charge pressure outlet	DIN 3852	M22×1.5（depth 14mm）	40
Fs	From the filter to the oil suction line（at cold start)	DIN 3852	M22×1.5（depth 14mm）	40

Installation size

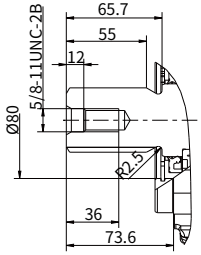
·V40E 100 Shaft extension type



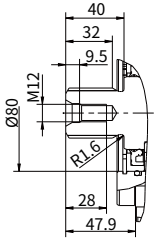
"C6" type spline shaft
ANSI B92.1b
1 1/4 in 14T-12/24DP



"C8" type spline shaft
ANSI B92.1b
1 1/2 in 23T-16/32DP



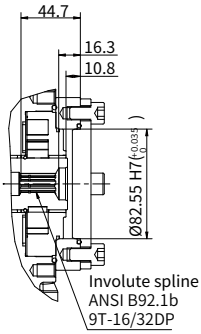
"C9" type spline shaft
ANSI B92.1b
1 3/4 in 13T-8/16DP



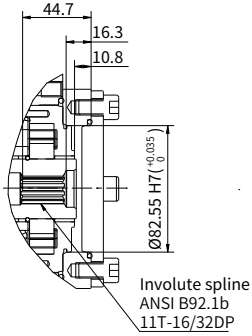
"CA" type spline shaft
DIN 5480
W35×2×16×9 g

Installation size

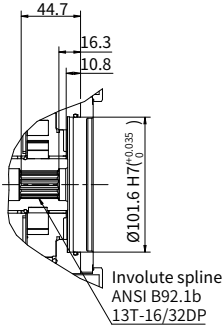
·V40E 100 Through shaft drive



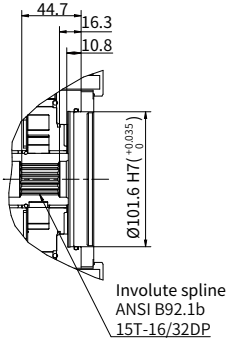
"A1" type through drive



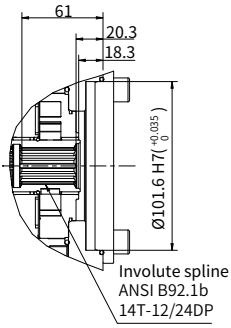
"A2" type through drive



"B1" type through drive



"B3" type through drive



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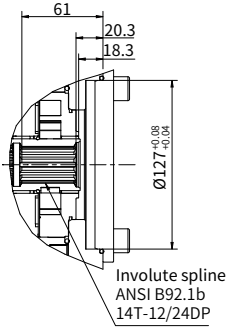
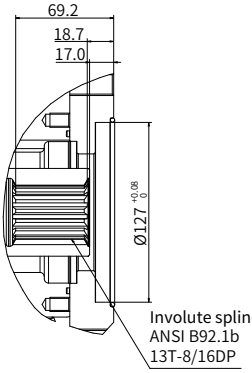
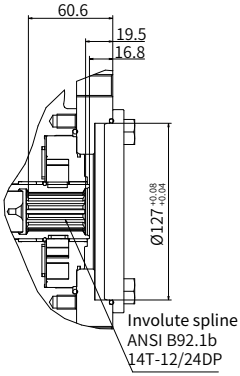


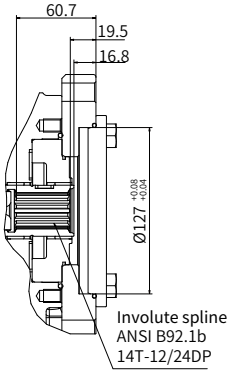
"C2" type through drive



"CF" type through drive

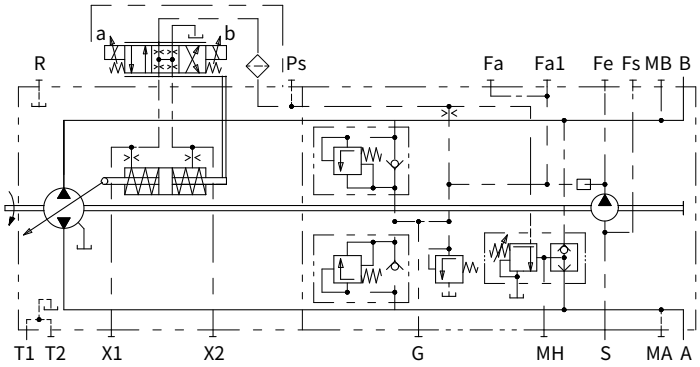


"C6" type through drive

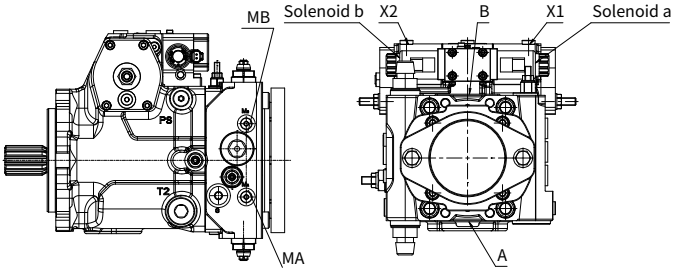


"CC" type through drive

V40E 135 Control principle

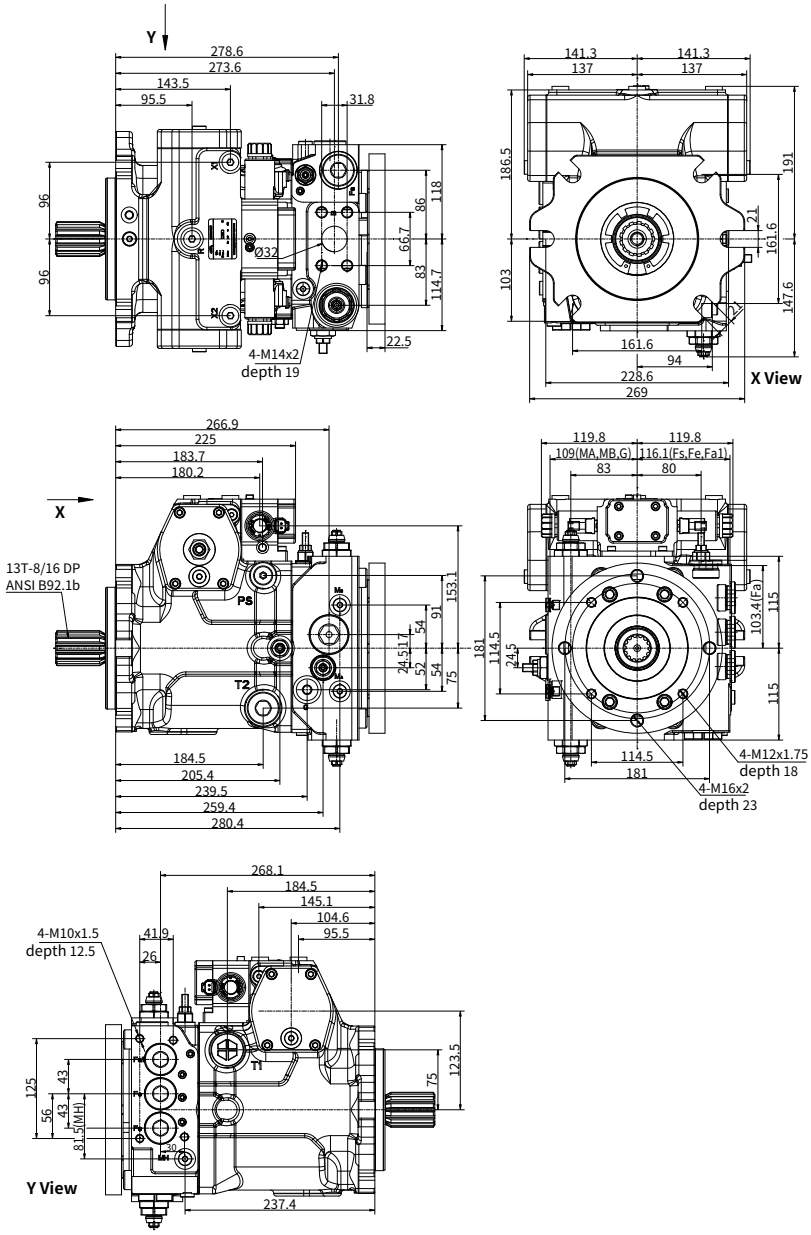


Direction of rotation	Clockwise		Counter-clockwise	
Actuation of proportional solenoid	a	b	a	b
Control pressure	X1	X2	X1	X2
Flow direction	B to A	A to B	A to B	B to A
Working pressure	MA	MB	MB	MA



Installation size

V40E 135 Installation size



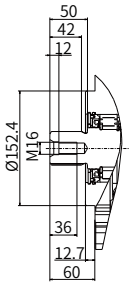
Installation size

·V40E 135 Port details

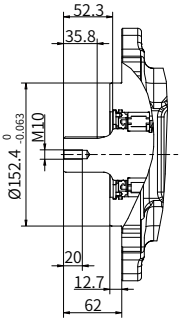
Port	Port Name	Standard	Oil Port Specification (thread depth)	Maximum pressure (bar)
A, B	Working port	SAE J518	1 1/4"	450
	Fastening thread	DIN 13	M14×2（depth 19）	-
S	Suction port	DIN 3852	M48×2（depth 22）	3
T1, T2	Drain port	DIN 3852	M33×2（depth 18）	3
R	Air bleed port	DIN 3852	M16×1.5（depth 12）	3
X1, X2	Control pressure port	DIN 3852	M16×1.5（depth 12）	40
G	Boost pressure port	DIN 3852	M22×1.5（depth 14）	40
P_S	Pilot pressure port inlet	DIN 3852	M18×1.5（depth 12）	40
MA, MB	Measuring port pressure A, B	DIN 3852	M12×1.5（depth 12）	450
MH	Measuring port, high pressure	DIN 3852	M12×1.5（depth 12）	450
Fa	Boost pressure port inlet	DIN 3852	M33×2（depth 18）	40
Fa1	Boost pressure port inlet (Filter can be installed)	DIN 3852	M33×2（depth 18）	40
Fe	Charge pressure outlet	DIN 3852	M33×2（depth 18）	40
Fs	From the filter to the oil suction line (at cold start)	DIN 3852	M33×2（depth 18）	40

Installation size

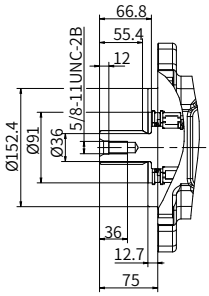
·V40E 135 Shaft extension type



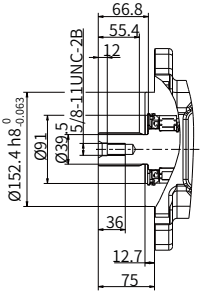
“D0” type spline shaft
ANSI B92.1b
1 1/2 in 23T 16/32 DP



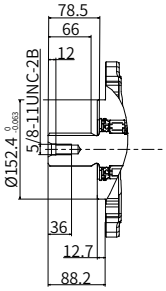
“D0” type spline shaft
ANSI B92.1b
1 1/2 in 23T 16/32 DP



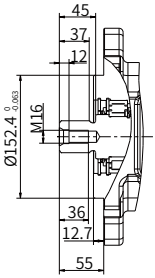
“D1” type spline shaft
ANSI B92.1b
1 3/4 in 13T 8/16 DP



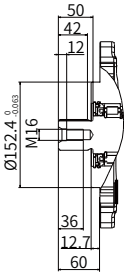
“D2” type spline shaft
ANSI B92.1b
1 3/4 in 27T 16/32 DP



“D2” type spline shaft
ANSI B92.1b
2 in 15T 8/16 DP



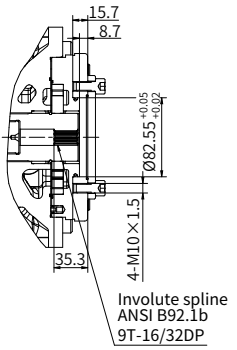
“D4” type spline shaft
DIN 5480
W40×2×18×9g



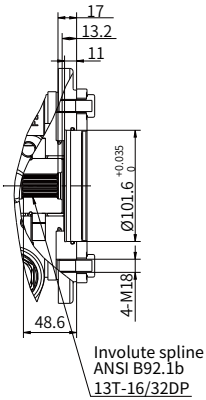
“D4” type spline shaft
DIN 5480
W45×2×21×9g

Installation size

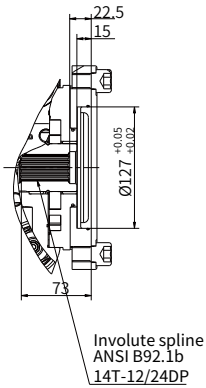
·V40E 135 Through shaft drive



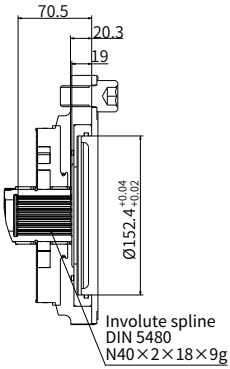
"A1" type through drive



"B1" type through drive



"CC" type through drive



"D4" type through drive

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