

## A4VTG Series

### Axial piston variable pump

#### ■ Product show and brief introduction

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##### closed circuits

Series 33  
Sizes 90 and 100  
Nominal pressure 40MPa  
Maximum pressure 45MPa



#### ■ Features

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- Variable axial piston pump of swashplate design for hydrostatic drives in closed circuit
- The flow is proportional to the drive speed and displacement.
- The flow increases as the angle of the swashplate is adjusted from zero to its maximum value.
- Flow direction changes smoothly when the swashplate is moved through the neutral position.
- Two pressure-relief valves are provided on the high pressure ports to protect the hydrostatic transmission (pump and motor) from overload.
- The high-pressure relief valves also function as boost valves.
- The integrated boost pump acts as a feed pump and control pressure supply.
- The maximum boost pressure is limited by a built-in boost pressure-relief valve.
- Tapered shaft option for direct drive shaft yoke installation.

## Model Code

A4VT	G	90	HW	M	T	/33	R	-N	S	D	10	F	02	5	S
Axial piston unit	Operating mode	Size	Control unit	Mechanical stroke limiter	stroking chamber pressure port	series	Direction of rotation	Seals	Drive shaft	Mounting flange	Working port	Boost pump	Through drive	High-pressure relief valve	Filtration
A4VT: swash-plate design, variable	G: pump; closed circuit	90 100	See below	No code: without mechanical stroke limiter M: with mechanical stroke limiter	No code: without stroking chamber pressure port X <sub>3</sub> , X <sub>4</sub> T: stroking chamber pressure port X <sub>3</sub> , X <sub>4</sub>	33	(Viewed on drive shaft) R: clockwise L: counter-clockwise	NBR (nitrile rubber), shaft seal made of FKM (fluorocarbon rubber)	See below	D: SAE J744 4-hole	SAE working port A and B, same side right, suction port S at top	Integrated boost pump	See below	High-pressure relief valve direct operated, fixed setting, with bypass	Filtration in the boost pump suction line

## Control unit

Size		90	100	
Proportional control hydraulic	mechanical servo	✓	✓	HW
Proportional control electric	with proportional solenoid without inlet filtration	U=12V	✓	EP1
		U=24V	✓	EP2

## Drive shafts

Size		90	100	
Splined shaft ANSI B92.1a-1976	without connecting flange	✓	✓	S
	with connecting flange	✓	✓	L

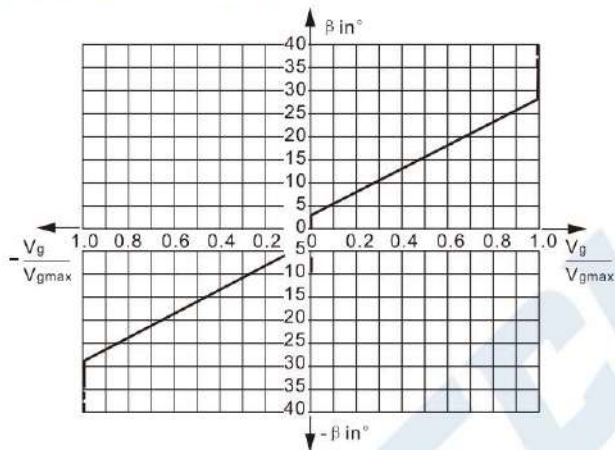
## Technical Data

size				90	100
Displacement	variable pump	$V_{gmax}$	mL/r	90	100
	boost pump(at P=20bar)	$V_{gsp}$	mL/r	28.3	28.3
Speed	maximum at $V_{gmax}$	$n_{nom}$	rpm	3050	3050
	minimum	$n_{min}$	rpm	500	500
Flow	at $n_{nom}$ and $V_{gmax}$	$q_{vmax}$	L/min	275	305
Power	at $n_{nom}$ $V_{gmax}$ and $\Delta P=40MPa$	$P_{max}$	kW	183	204
Torque	at $V_{gmax}$ and $\Delta P=40MPa$	$T_{max}$	Nm	572	637
	$\Delta P=10MPa$	$T$	Nm	143	159
Moment of inertia rotary group		J	kgm <sup>2</sup>	0.0106	0.0106
Weigh(without through drive) approx.		m.	kg	48	48

## HW-Proportional control hydraulic,mechanical servo

The output flow of the pump can be steplessly varied in the range between 0 to 100%,proportional to the rotation of the control lever between  $0^\circ$  and  $\pm 29^\circ$ .

A feedback lever connected to the stroke piston maintains the pump flow for any given position of the control lever between  $0^\circ$  and  $29^\circ$



Swivel angle  $\beta$  at the control lever for deflection:

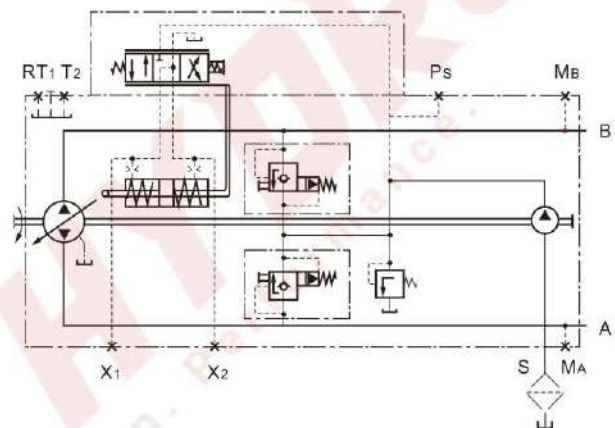
Start of control at  $\beta = 3^\circ$

End of control at  $\beta = 29^\circ$  (maximum displacement  $V_{gmax}$ )

Mechanical stopfor:  $\beta = \pm 40^\circ$

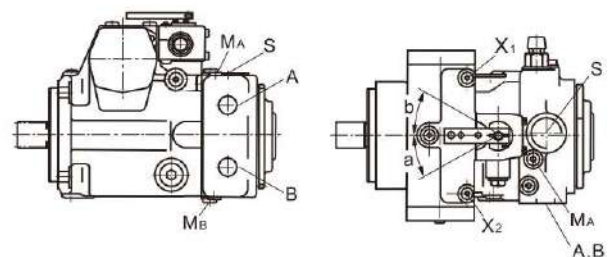
The maximum required torque at the lever is 170 Ncm.

To prevent damage to the HW control unit,a positive mechanical stop must be provided for the HW control lever.



Direction of rotation - Control - Flow direction

Direction of rotation	CW		CCW	
Lever direction	a	b	a	b
Control pressure	X <sub>2</sub>	X <sub>1</sub>	X <sub>2</sub>	X <sub>1</sub>
Flow direction	B to A	A to B	A to B	B to A
Operating pressure	MA	MB	MB	MA



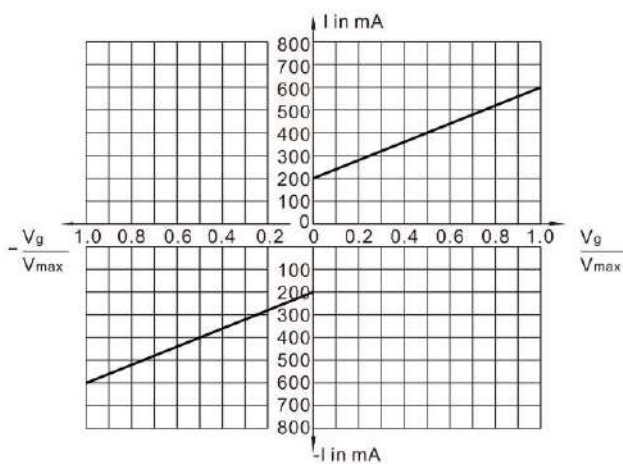


## ■ EP- Proportional control electric

The output flow of the pump can be steplessly varied in the range between 0 to 100%, proportional to the electrical current supplied to solenoid a or b.

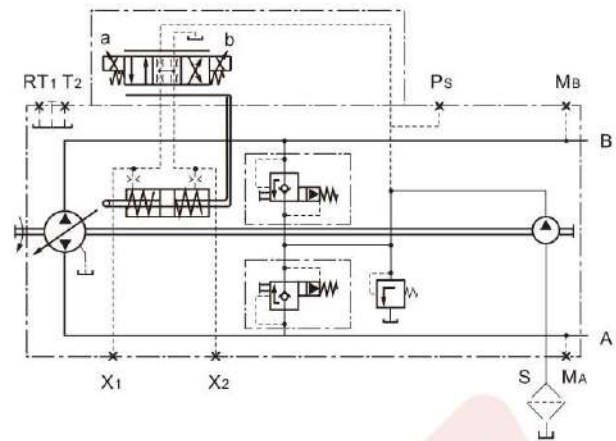
The electrical energy is converted into a force acting on the control piston. This control piston then directs control hydraulic fluid into and out of the stroke cylinder to adjust pump displacement as required.

A feedback lever connected to the stroke piston maintains the pump flow for any given current within the control range.



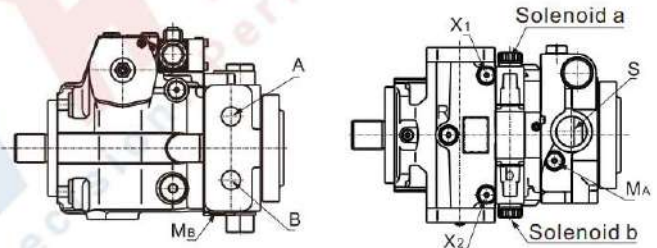
size	Voltage	Control current	
		Start of control at $V_{g0}$	End of control at $V_{g0}$
EP1	12V	400mA	1200mA
EP2	24V	200mA	600mA

比例电磁铁

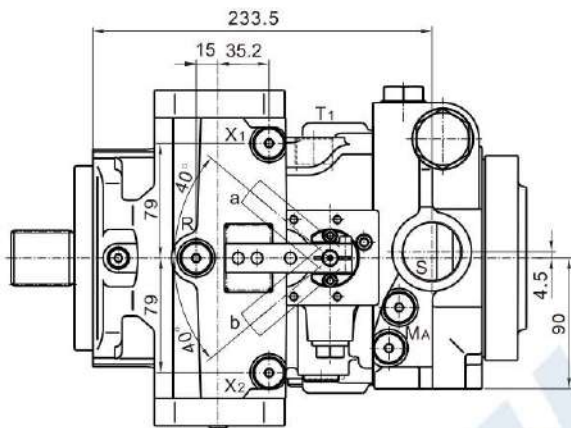
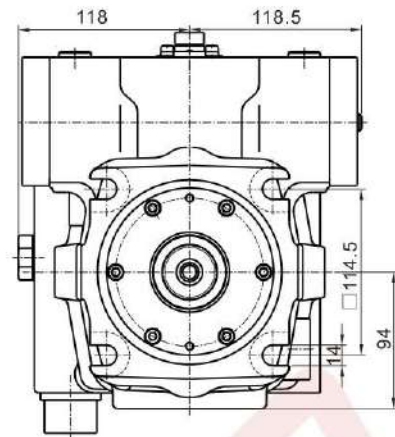
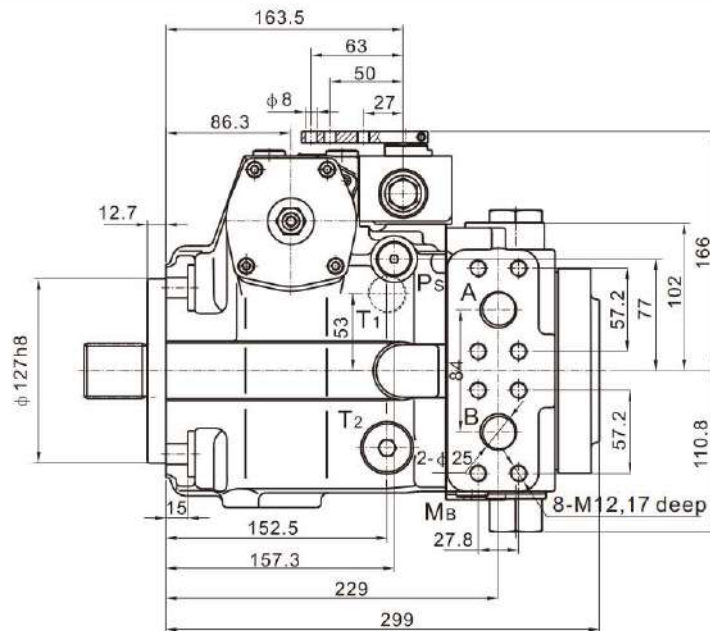


Direction of rotation - Control - Flow direction

Direction of rotation	CW		CCW	
Actuation of solenoid	a	b	a	b
Control pressure	X1	X2	X1	X2
Flow direction	A to AB	B to A	B to A	A to B
Operating pressure	M <sub>B</sub>	M <sub>A</sub>	M <sub>A</sub>	M <sub>B</sub>



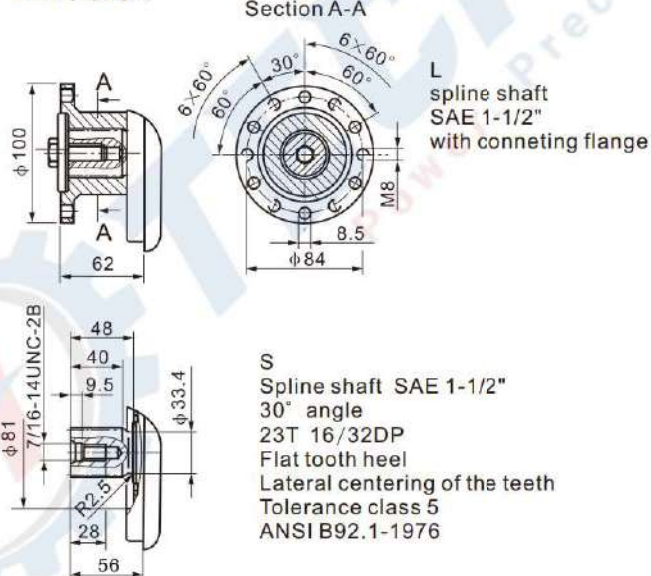
## Installation Dimensions



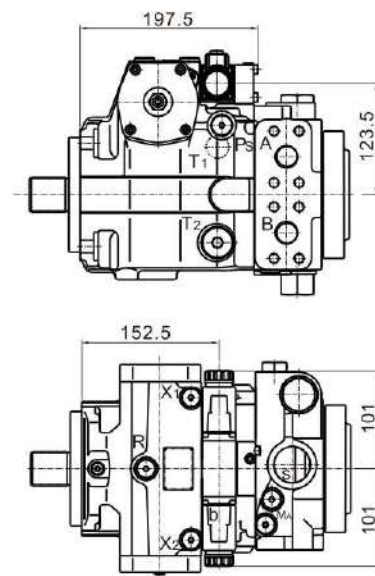
### Ports

A,B	Service line	25
T1	Tank	M26x1.5, 16 deep
T2	Tank	M26x1.5, 16 deep
MA,MB	Measuring pressure A,B	M12X1.5, 12 deep
R	Air bleed	M12X1.5, 12 deep
S	Suction	M42x2, 18 deep
X1,X2	Control pressure	M12X1.5, 12 deep
Ps	Poil pressure,inlet	M14X1.5, 12 deep

### Drive shaft

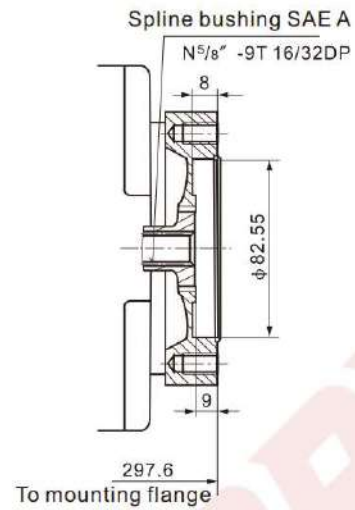
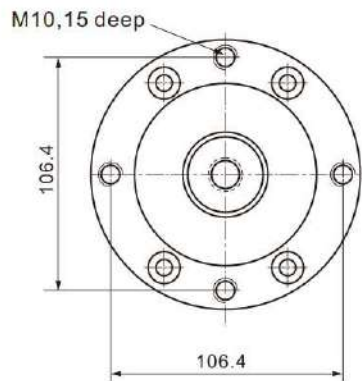


### EP Electrical control with proportional solenoid

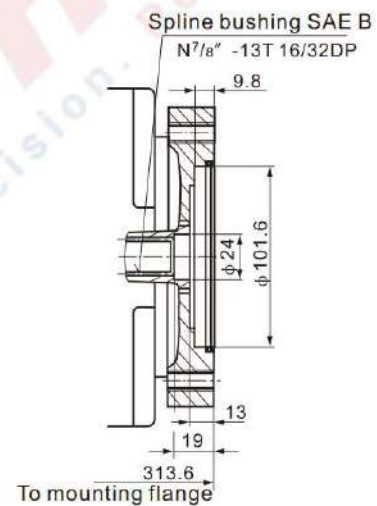
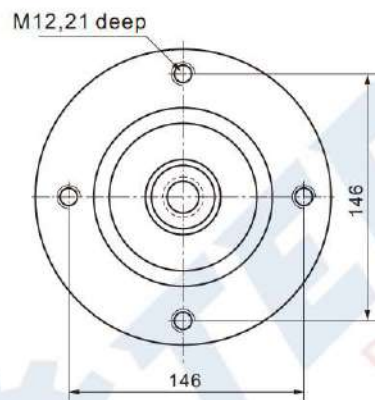


## Through drive dimensions

### Through drive SAE A(F01)



### Through drive SAE B(F02)





*FOR MORE INFORMATION PLEASE CONTACT US*

*SALES@TECHYDRO.COM.CN*



**TECHYDRO**

+86-15869517019

SALES@techhydro.com.cn

WWW.TECHYDRO.COM.CN

whatsapp/Wechat: +86-15869517019

TEL: +86(0574) -87021030