

Axial Piston Variable Pump HK3VL Series B

Size: 80 mL/r
Rated pressure: 32 MPa
Max.pressure: 35 MPa



Features

- Axial piston variable pump of swashplate design for open circuits
- Continuous high pressure
- High power to weight ratio
- Excellent suction characteristics
- Diverse control options, short control response time
- Low pulsation, low noise
- High reliability and long service life

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> Model Code

	A		C	D		H	J	K	M	P		S		U		Y
HK3VL	80	/	B		—	1					—		—		—	

Axial piston unit

—	Swashplate design, variable piston pump	HK3VL
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Displacement

A	Geometric displacement, in mL/r	80	
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Series

C	Series B	B
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Sealing material

D		80	
	NBR seal + NBR Shaft seal	●	N
	NBR seal + FKM Shaft seal	●	P
	FKM seal + FKM Shaft seal	●	V

Operation

H		80	
	Open circuit	●	1

Drive shaft

J		80	
	Without through drive	●	O
	With auxiliary pump	○	N
	Mounting flange	Splined shaft SAE J744	
	SAE J744 A 82-2	16-4 9T 16/32DP	○ A
		19-4 11T 16/32DP	○ AJ
	SAE J744 B 101-2	22-4 13T 16/32DP	○ B
		25-4 15T 16/32DP	○ BB
	SAE J744 C 127-2	32-4 14T 12/24DP	○ C
		38-4 17T 12/24DP	○ CC

Direction of rotation

K		80	
	CW	●	R
	CCW	●	L

Mounting flange

M		80	
	SAE J744 C 127-2	32-4 14T 12/24DP	● H
		25-4 15T 16/32DP	● S
		JIS D 2001 32×11×2,5	○ J
		32-1 B7.94×44 Parallel keyed shaft	○ K
	ISO 3019-2 125,2-hole	32-1 B7.94×44 Parallel keyed shaft	○ M

> Model Code

	A		C	D		H	J	K	M	P		S		U		Y
HK3VL	80	/	B		—	1					—		—		—	

Metric															
P													80		
	Metric thread												●	M	
	UNC												●	S	

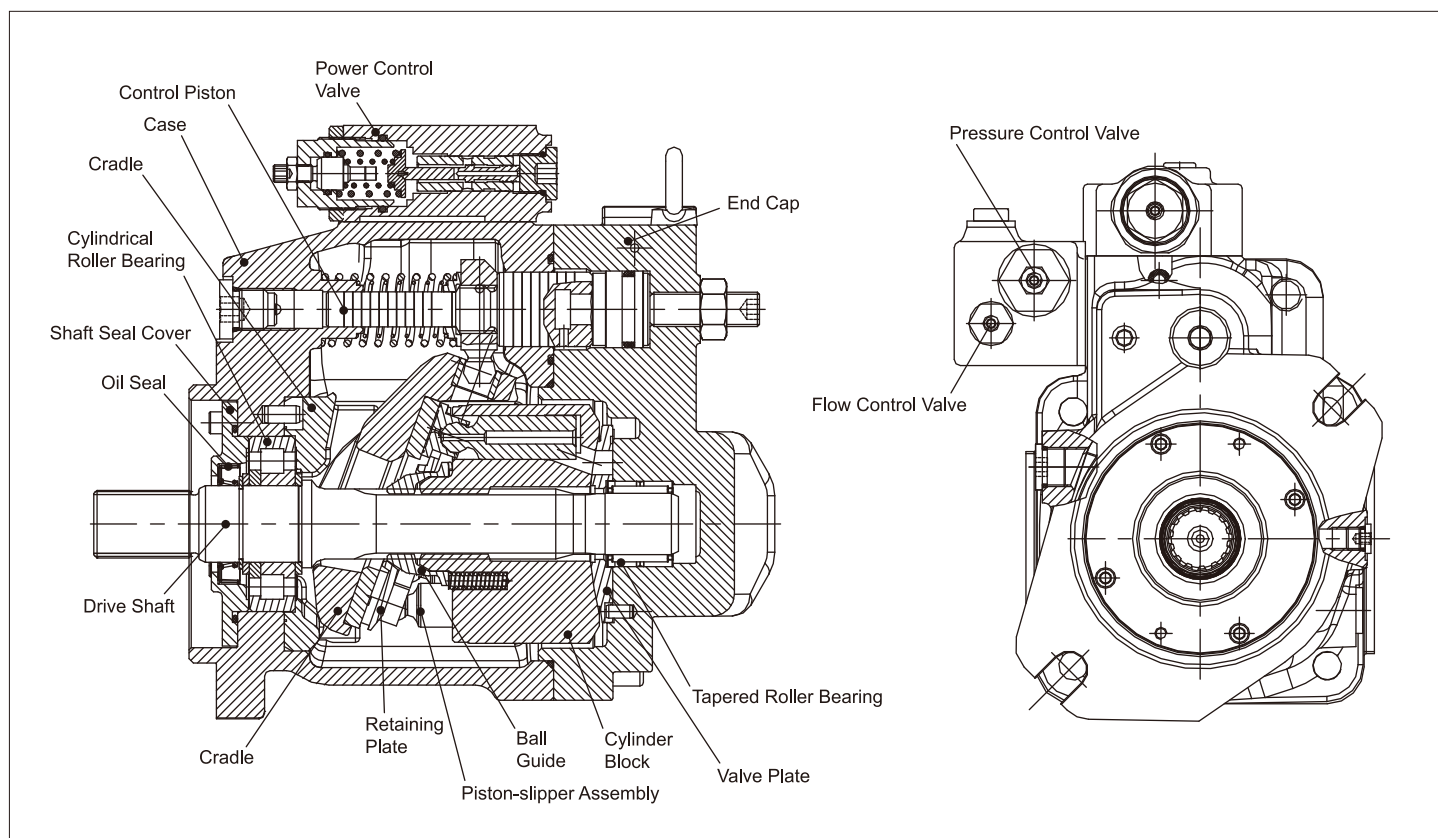
Control method															
S													80		
	load sensitive control + pressure control												○	L1	
	load sensitive control + pressure control + power control												●	L1/1	
	electric proportional power control + load sensitive control + pressure control									U=12V			●	L1/1-E1	
													●	L1/1-E2	

Connector for solenoids															
U													80		
	Without connector(without code)												●		
	DEUTSCH DT04-2P,2-pin plastic connector												○	D	
	AMP Junior timer,2-pin plastic connector,												●	A	
	DIN EN175301-803,3-pin plastic connector,												○	H	

Special configuration															
Y													80		
	Without special configuration (without code)												●		
	Special configuration												●	***	

● Available ○ On request — Not available ■ Recommended model

> Structure



➤ Hydraulic Fluid

Mineral oil

➤ Working Viscosity

In order for the optimum efficiency and service life, it is recommended to select the working viscosity at working temperature within the range below:

$$V_{opt} = \text{optimal working viscosity } 16 \dots 36 \text{ mm}^2/\text{s}$$

It is subject to the reservoir temperature of an open circuit.

➤ Limit Viscosity

Limit viscosity:

$$V_{min} = 10 \text{ mm}^2/\text{s}$$

Short-term operation, at permissible maximum leakage temperature of 90 °C

$$V_{max} = 1000 \text{ mm}^2/\text{s}$$

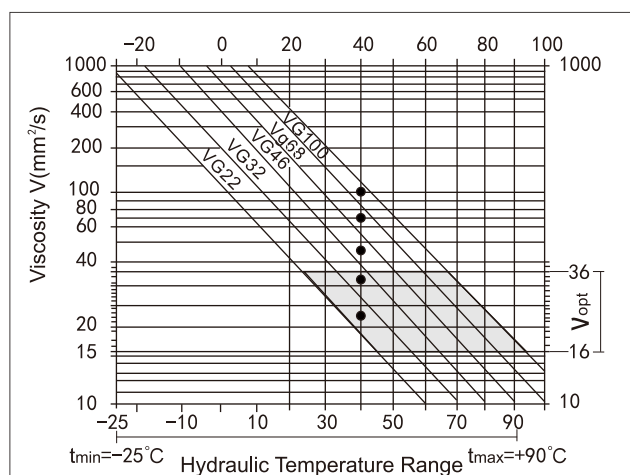
Short-term operation, cold start

➤ Temperature Range

$$t_{min} = -25^\circ\text{C}$$

$$t_{max} = 90^\circ\text{C}$$

➤ Selection Diagram



➤ Instructions on Selection of Hydraulic Fluid

To select the correct hydraulic fluid, we must know the relationship between the fluid working temperature in the reservoir (open circuit) and the ambient temperature.

The hydraulic fluid should be so selected that the working viscosity in the working range is within the optimum range (V_{opt} , the shaded area on the selection diagram). The higher viscosity is recommended under the same conditions.

For example:

At an ambient temperature of X °C, the working temperature of the circuit is 60 °C. The viscosity within the optimum range (V_{opt} , shaded area) is VG46 or VG68 and the latter should be selected.

Note:

The leakage (case drain) temperature depends on the pressure and speed of the pump, and it is always higher than the reservoir temperature. However, the maximum temperature at any point within the system should not exceed 90 °C.

➤ Filtration

Finer filtration improves the cleanliness level of the hydraulic fluid, thus increasing the service life of the axial piston unit. To ensure normal operation of the axial piston unit, a cleanliness level of at:

NAS 1638,9

ISO/DIS 4406 18/15

Please contact us if the above cleanliness level cannot be reached.

➤ Mechanical Displacement Limiter

The mechanical displacement limiter is available for without through drive piston pumps and it realizes free adjustment of maximum displacement between 100% ↔ 50%.

➤ Case Drain Pressure

Maximum permissible pressure at drain port (L, L1)

Maximum 0.5 bar higher than inlet pressure at port S

No higher than 2 bar absolute pressure

➤ Flow Direction

From port S to B

➤ Controller

L1: Pressure and flow control

Load sensitive

standard setting: 15 bar

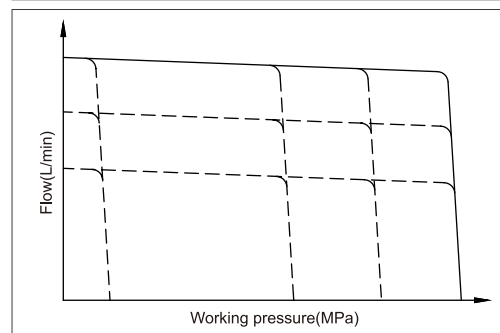
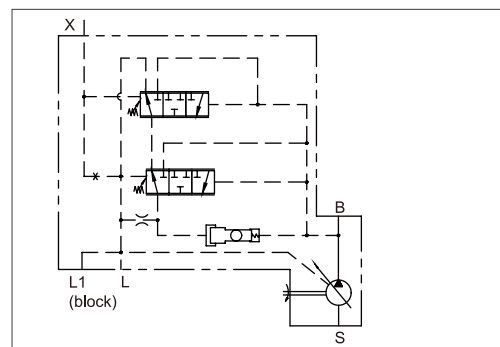
adjustable range: 10 bar-21 bar

Pressure cut-off

standard setting: 320 bar

adjustable range: 21 bar-320 bar

Circuit diagram



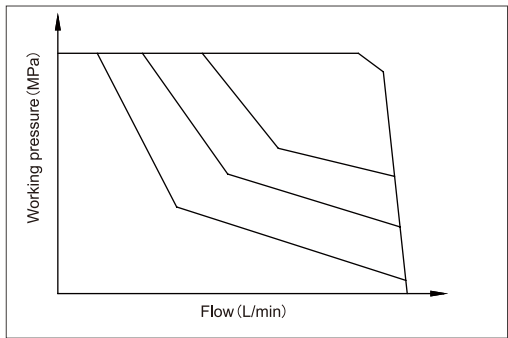
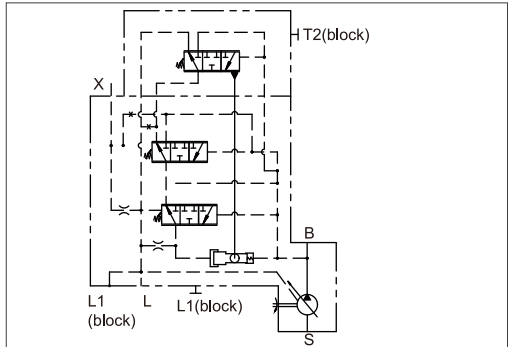
Controller

L1/1:Pressure/flow and power control

Load sensitive
standard setting:15bar
adjustable range:10bar-21bar

Pressure cut-off
standard setting:320bar
adjustable range:21bar-320bar

Circuit diagram



L1/1-E1(L1/1-E2):Pressure/flow and Electric proportional control

Load sensitive
standard setting:15bar
adjustable range:10bar-21bar

Pressure cut-off
standard setting:320bar
adjustable range:21bar-320bar
X1 port pressure:20bar-21bar

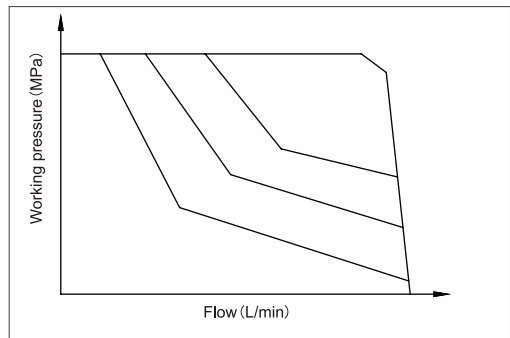
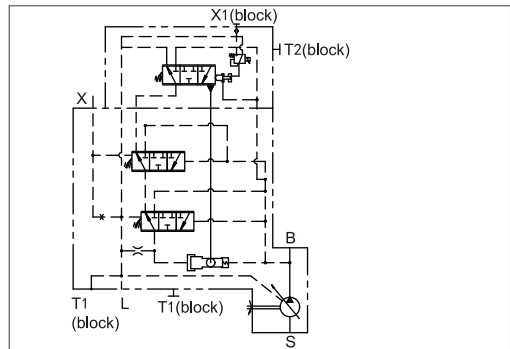
Solenoid

Voltage V	Current A	Resistance Ω	Isolation
12	0.89	7.3 \pm 10%(20°C)	H(180°C)
24	0.75	21.2 \pm 10%	IP6K6/IPX9K

Connector(Deutsch/AMP/DIN)

DEUTSCH:DT04-2P-E005
AMP:174354-2、173706-1
DIN: EN175301-803

Circuit diagram



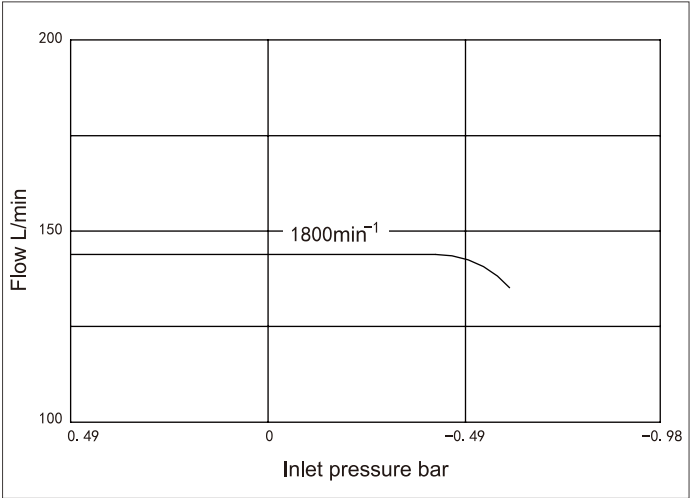
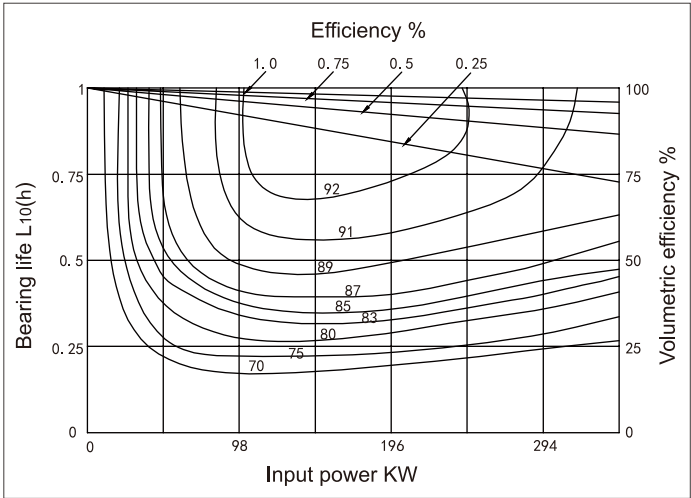
Technical Data

Size			80	
Displacement		V_g	mL/r	80
Maximum Speed		$n_o \max$	rpm	2400
Max. speed (continuous)at increase in inlet pressure P_{abs} and $V_g<V_{Gmax}$		$n_o \max$	rpm	3000
Maximum Flow	At $n_o \max$	$q_{v o \max}$	L/min	192
	At $n_{\epsilon}=1500\text{min}^{-1}$		L/min	120
Rated pressure		P	MPa	32
Maximum pressure		P_{\max}	MPa	35
Max. torque at $V_{Gmax}(\triangle p=32\text{MPa})$		$T_o \max$	Nm	400
Weight		m	KG	38. 5
Case volume			L	0. 8

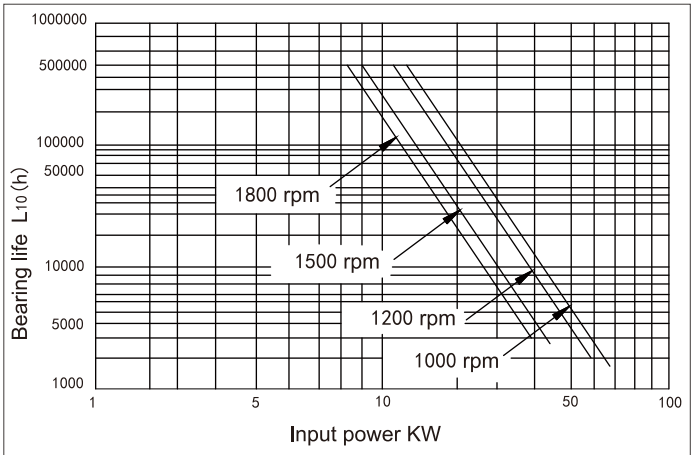
Specification Calculation

Flow	$q_v = \frac{V_g \cdot n \cdot \eta_v}{1000}$	[L/min]	V_g = Displacement, mL/r Δp = Differential pressure, MPa
Torque	$T = \frac{V_g \cdot \Delta p}{2 \cdot \pi \cdot \eta_{mh}}$	[Nm]	n = Speed, rpm η_v = Volumetric efficiency
Power	$P = \frac{2 \pi \cdot T \cdot n}{60000} = \frac{q_v \cdot \Delta p}{60 \cdot \eta_t}$	[KW]	η_{mh} = Mechanical-hydraulic efficiency η_t = Total efficiency

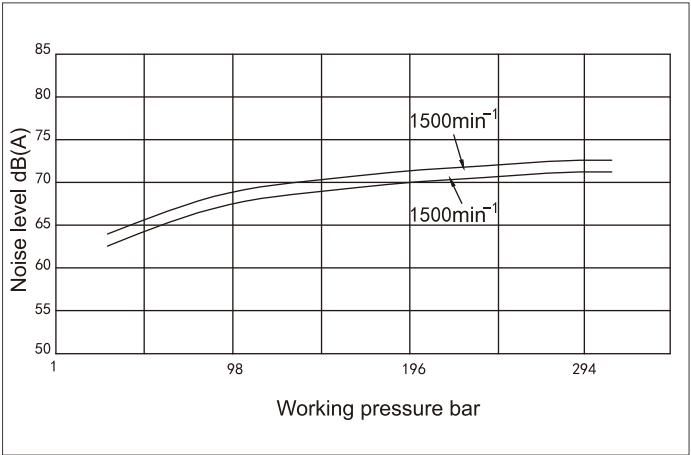
Characteristic Curve



Self-priming

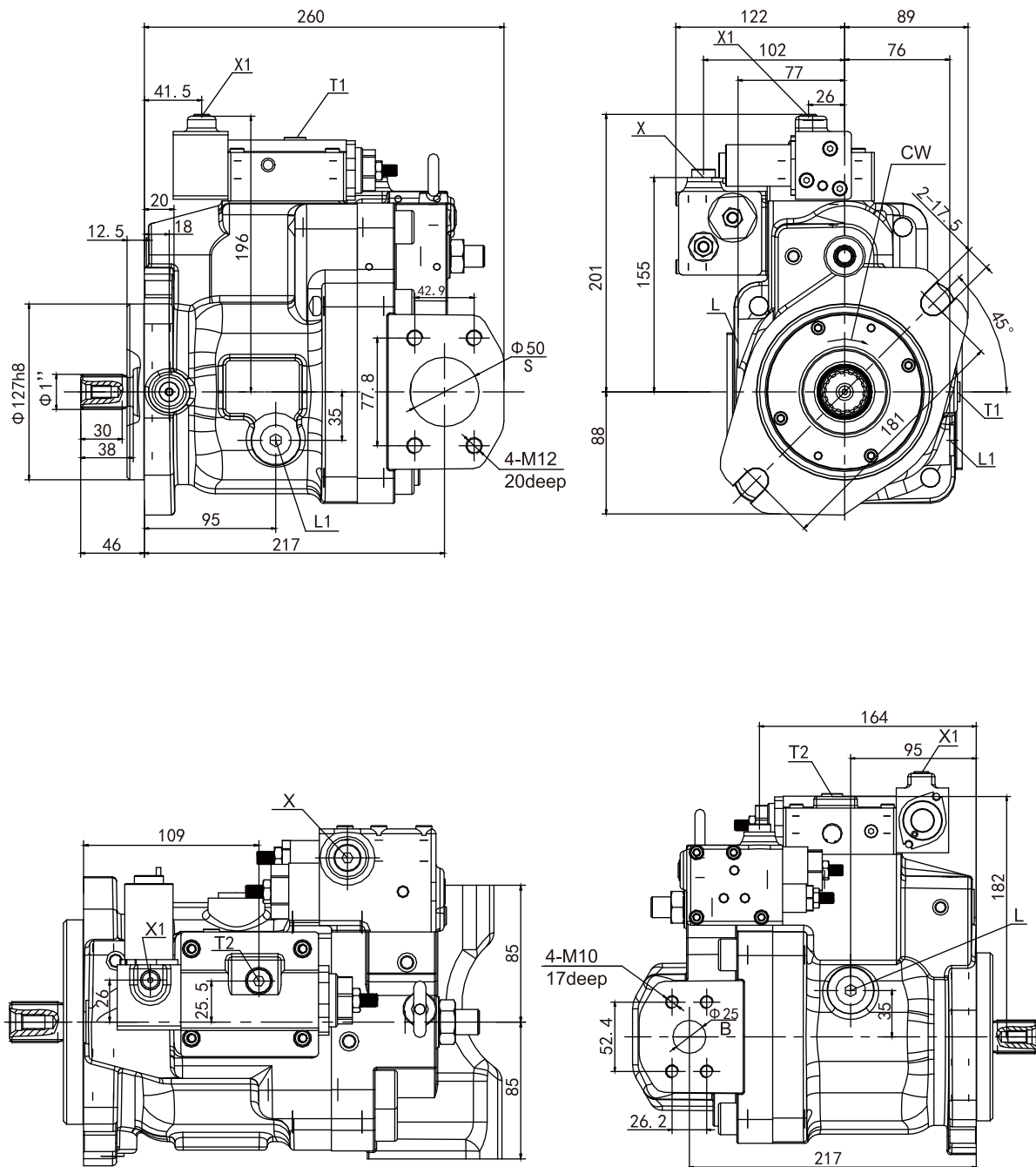


Bearing life

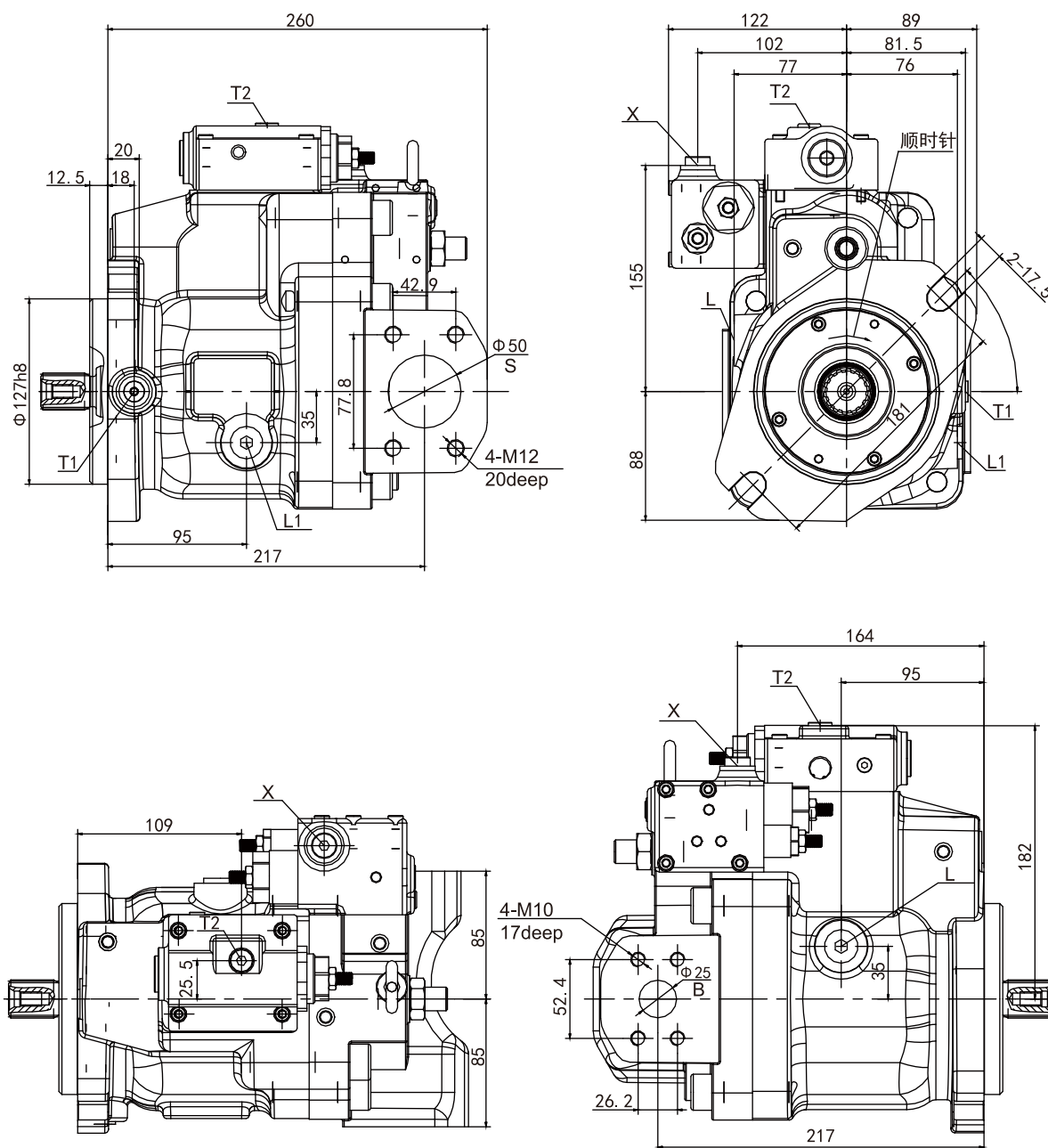


Noise level

L1/1-E1 (L1/1-E2)

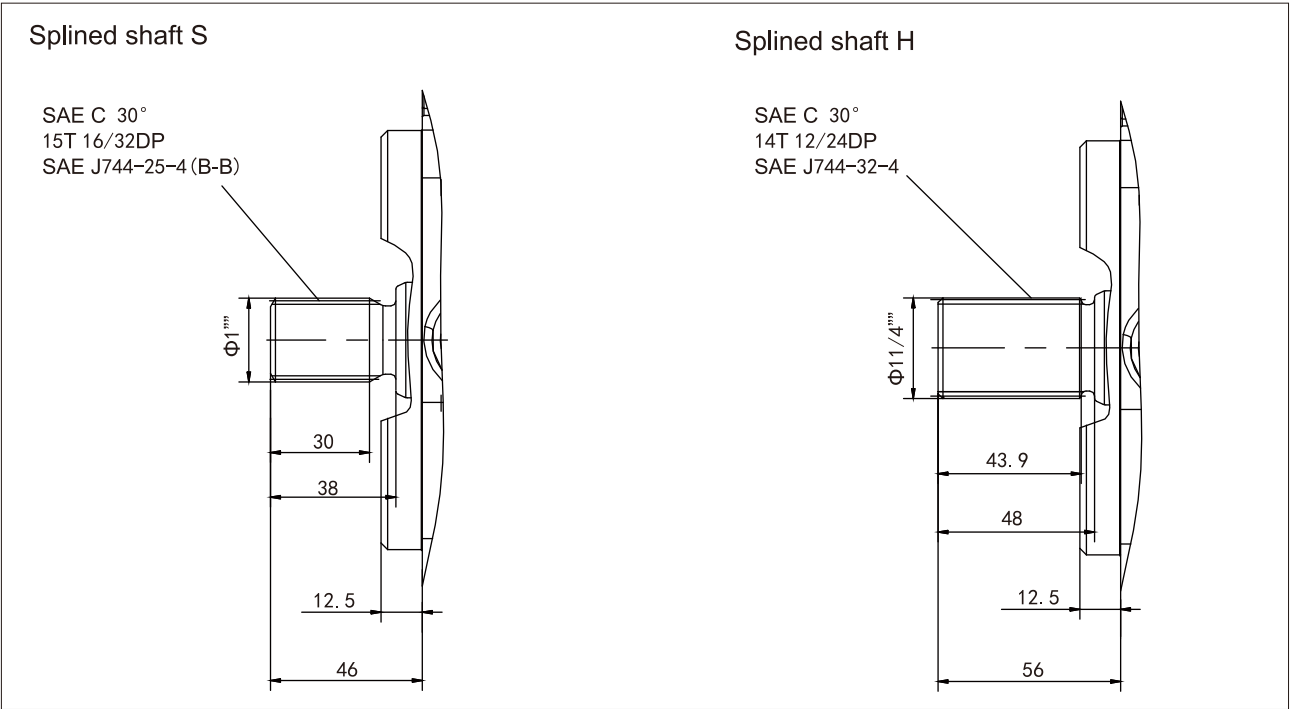


L1/1

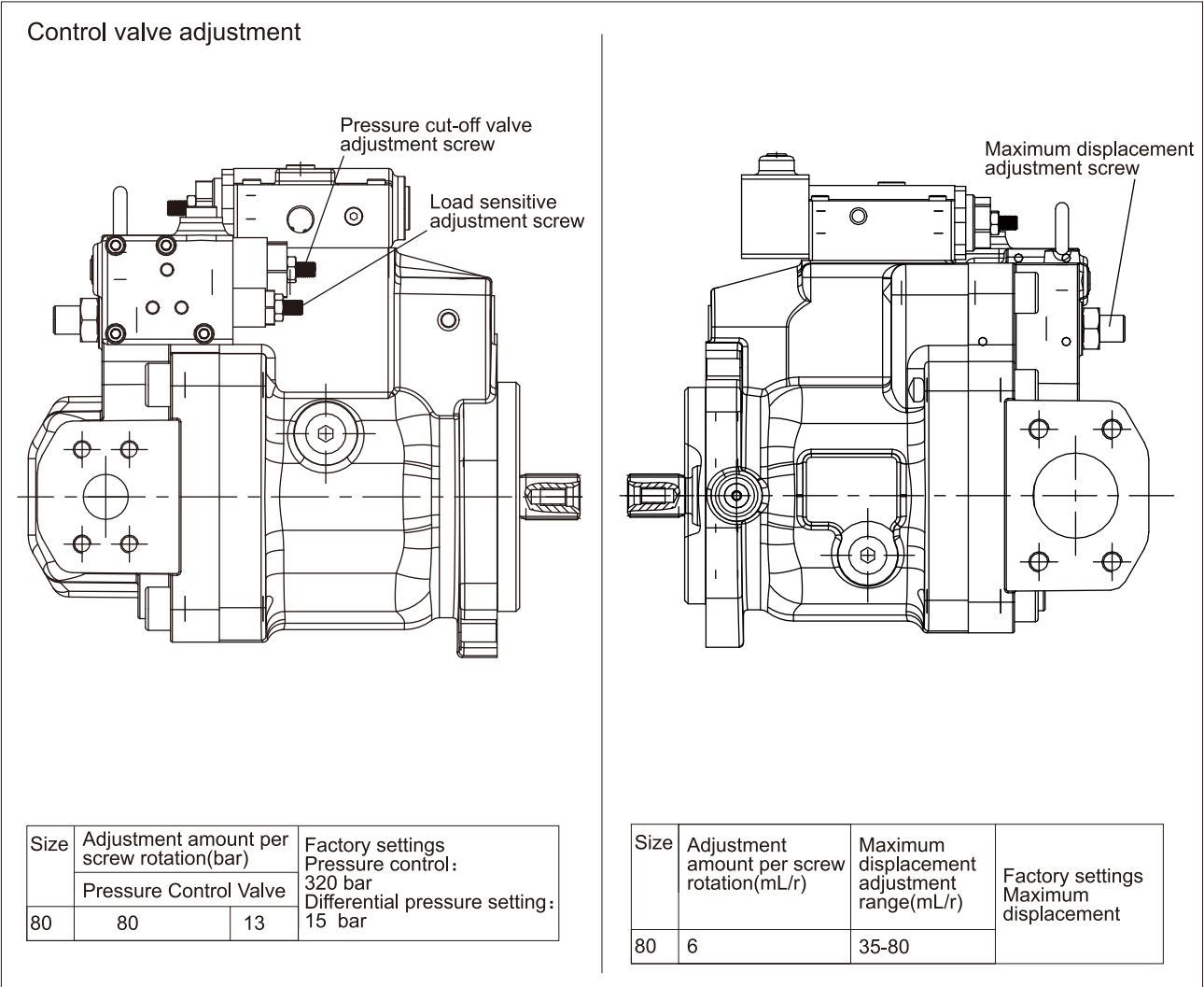


	Port	Port size and type			Torque Nm
B	Outlet port	1"SAE J518C Code 61(5000psi)	M(Metric)	M10×1.5(17deep)	57
			S(UNC)	3/8-16UNC-2B(17deep)	
S	Inlet port	2"SAE J518C Code 61(3000psi)	M(Metric)	M12×1.5(20deep)	98
			S(UNC)	1/2-13UNC-2B(20deep)	
L/L1	drain port	ISO11926 3/4-16UNF-2B, 16deep, O-ring seal			98
X	LS Control port	ISO11926 7/16-20UNF-2B, 11.5deep, O-ring seal			12
T1	Air bleed port	ISO11926 7/16-20UNF-2B, 17deep, O-ring seal			12
T2	Air bleed port	ISO6149-1 M10×1, 8.5deep, O-ring seal			12
X1	Pilot port	ISO11926 7/16-20UNF-2B, 11.5deep, O-ring seal			98

Installation Dimensions



Control valve and Maximum displacement adjustment



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If there are any other modifications,no further notice will be given.