

## SPECIFICATION AND CHARACTERISTICS OF A4VSO PUMP

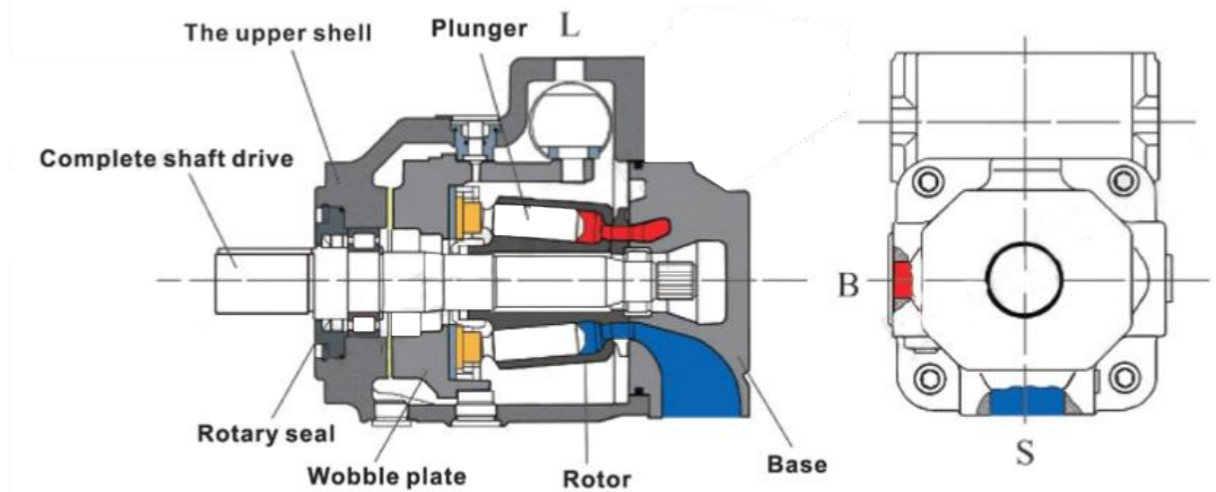


### 1. Sizes

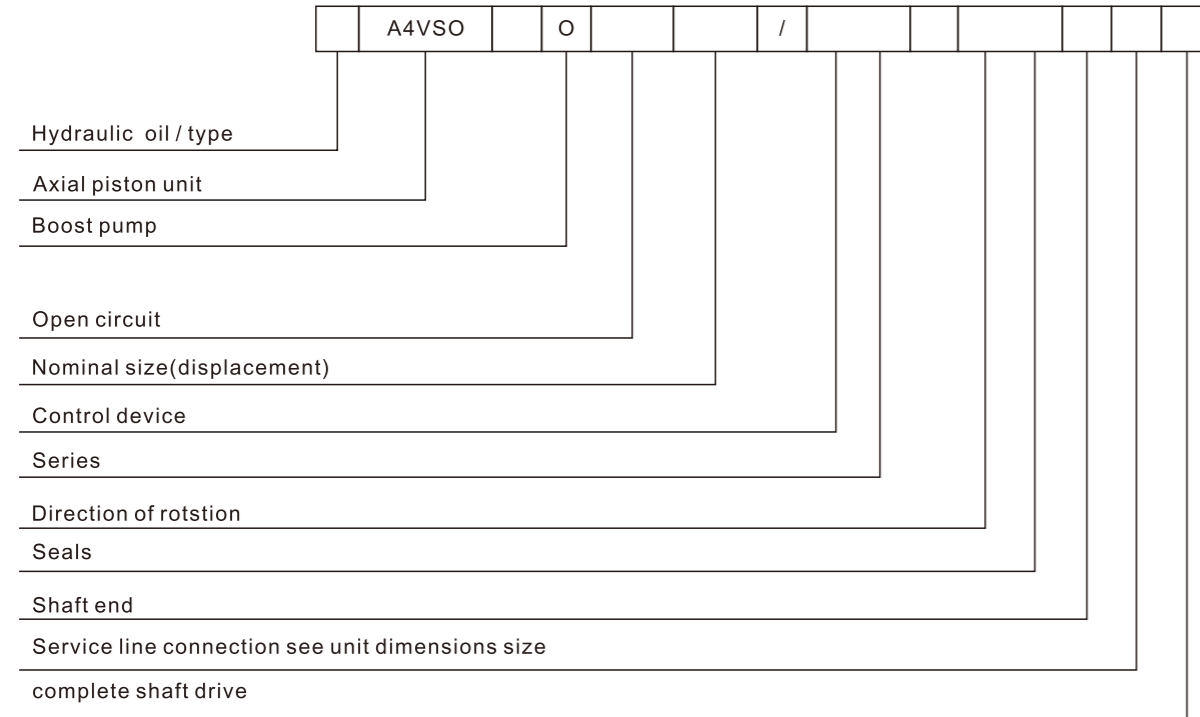
Series 1, 2 and 3, Nominal pressure 35Mpa ,Peak pressure 42Mpa.

### 2. Characteristics

- ◆ The variable displacement axial piston pump type A4VSO in swashplate design is designed for open circuit hydrostatic drives.
- ◆ The flow is proportional to the input drive speed and displacement. By adjusting the swashplate., it is possible to infinitely vary the flow.
- ◆ Infinitely variable displacement., Slot-controlled swashplate design.
- ◆ Good suction characteristics
- ◆ Permissible nominal operating pressure 350 bar
- ◆ Low noise level, Long service life
- ◆ Drive shaft capable of absorbing axial and radial loads
- ◆ Modular design, Good power/weight ratio
- ◆ Short control times
- ◆ Through drive and pump combinations possible
- ◆ Swash plate angle indicator
- ◆ Optional mounting position
- ◆ Operation on HF fluids under reduced operational parameters



### ORDER CODE



#### 1. Hydraulic fluid / version

Size	40	71	125	180	250	300	355	370	500	
Mineral oil (no code)	✓	✓	✓	✓	✓	✓	✓	✓	✓	△
HF hydraulic fluid (with the exception of skydrol)	✓	✓	✓	✓	✓	✓	✓	✓	✓	E
High- Speed-Version		▲	▲	▲	✓	✓	✓	✓	△	H

#### 2. Axial piston unit

Swashplate design, variable, for industrial applications	A4VS
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#### 3. Boost pump (Impeller)

Size	40	71	125	180	250	300	355	370	500	
	△	△	△	✓	✓	✓	✓	△	△	L

#### 4. Type of operation

Pump, open circuit	O
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#### 5. Nominal size

displacement $V_{g \max}$ (cm <sup>3</sup> /r)	40	71	125	180	250	300	355	370	500	
	✓	✓	✓	✓	✓	✓	✓	✓	△	

### 6. Control device

Size		40	71	125	180	250	300	355	370	500
Pressure control	DR	✓	✓	✓	✓	✓	✓	✓	✓	△
Flow control	FR	✓	✓	✓	✓	✓	✓	✓	✓	△
Power control with hyperbolic curve	LR	✓	✓	✓	✓	✓	✓	✓	✓	△
Manual control	MA	✓	✓	✓	✓	✓	✓	✓	✓	△
Electric Motor Control	EM	△	△	△	△	△	△	△	△	△
Hydraulic control, control position dependent	HW	△	△	△	△	△	△	△	△	△
Hydraulic control, control volume dependent	HM	✓	✓	✓	✓	✓	✓	✓	✓	△
Hydraulic control, with servo /proportional valve	HS	✓	✓	✓	✓	✓	✓	✓	✓	△
Electronic control	EO	✓	✓	✓	✓	✓	✓	✓	✓	△
Hydraulic control, and stress related	HD	△	△	△	△	△	△	△	△	△
Speed control, the two control	DS	△	△	△	△	△	△	△	△	△

### 7. Series

Size	40	71	125	180	250	300	355	370	500
10 Series	✓	✓	▲	▲	▲	▲	▲	▲	▲
20 Series	▲	▲	✓	✓	✓	✓	✓	✓	▲
30 Series	▲	▲	✓	✓	✓	✓	✓	✓	△

### 8. Direction of rotation

Viewed on shaft end	clockwise	R
	anti-clockwise	L

### 9. Seals

Nitrile rubber NBR(DIN 1629)	P
Fluorine rubber FRM(DIN ISO 1629)	V

### 10. Shaft end

Keyed parallel shaft DIN 6885	P
Splined shaft DIN 5480	Z

✓ =available    △=in preparation    ▲=not available

### 11. Mounting flange

Size	40	71	125	180	250	300	355	370	500	
ISO4 hole	√	√	√	√	√	√	√	√	▲	B
ISO8 hole	▲	▲	▲	▲	▲	▲	▲	▲	△	H

### 12. Oil port B & S position

	40	71	125	180	250	300	355	370	500	
Oil port B and S are at the side of SAE, the angle of 90°, with fixed thread	√	√	√	√	√	√	√	√	△	13
Secondary pressure oil port B1 is at the opposite of port B. they should be jammed with flanges in supply	√	√	√	√	√	√	√	√	△	25

### Complete shaft drive

No auxiliary pumps, No complete shaft drive			√	√	√	√	√	√	√	△	N00
Complete shaft drive can be connected to the piston, the gear pumps or the radial piston pumps											
Flange	shaft sleeve/shaft	connectable									
ISO 125, 4-hole	Spline shaft 32x2x30x14x9g	A4VSO/H/G 40	√	√	√	√	√	√	√	△	K31
ISO 140, 4-hole	Spline shaft 40x2x30x18x9g	A4VSO/H/G 71	▲	√	√	√	√	√	√	△	K33
ISO 160, 4-hole	Spline shaft 50x2x30x24x9g	A4VSO/H/G 125	▲	▲	√	√	√	√	√	△	K34
ISO 160, 4-hole	Spline shaft 50x2x30x24x9g	A4VSO/G 180	▲	▲	▲	√	√	√	√	△	K34
ISO 224, 4-hole	Spline shaft 60x2x30x28x9g	A4VSO/H/G 250	▲	▲	▲	▲	√	√	√	△	K35
ISO 224, 4-hole	Spline shaft 70x3x30x22x9g	A4VSO/G 355	▲	▲	▲	▲	▲	√	√	△	K77
ISO 315, 8-hole	Spline shaft 80x3x30x25x9g	A4VSO/G 500	▲	▲	▲	▲	▲	▲	▲	△	K43
ISO 80, 2-hole	Spline 3/4" 19-4 (SAE A-B)	A10VSO 18	△	△	√	√	√	△	△	△	KB2
ISO 100, 2-hole	Spline 7/8" 22-4 (SAE B)	A10VSO 28	√	√	√	√	√	√	√	△	KB3
ISO 100, 2-hole	Spline 1" 25-4 (SAE B-B)	A10VSO 45	▲	△	√	√	√	△	△	△	KB4
ISO 125, 2-hole	Spline 1 1/4" 32-4 (SAE C)	A10VSO 71	▲	△	√	√	√	△	△	△	KB5
ISO 125, 2-hole	Spline 1 1/2" 38-4 (SAE C-C)	A10VSO 100	▲	▲	√	√	√	△	△	△	KB6
ISO 180, 4-hole	Spline 1 3/4" 44-4 (SAE D)	A10VSO 140	▲	▲	▲	△	√	√	△	△	KB7
82-2 (SAE A, 2-hole)	Spline 5/8" 16-4 (SAE A)	G2/GC2/GC3-1X	√	√	√	√	√	√	√	△	K01
82-2 (SAE A, 2-hole)	Spline 3/4" 19-4 (SAE A-B)	A10VSO 18	√	√	√	√	√	√	√	△	K52
101-2 (SAE B, 2-hole)	Spline 7/8" (SAE B)	G3	√	√	√	√	√	√	√	△	K02
101-2 (SAE B)	Spline 25-4 (SAE B-B)	GC4-1X, A10V045	▲	▲	√	√	√	√	√	△	K04
127-2 (SAE C)	Spline 32-4 (SAE C)	A10V071	▲	▲	√	√	√	△	△	△	K07
101-2 (SAE B)	Spline 32-4 (SAE C)	GC5-1X	▲	▲	√	√	√	△	△	△	K06
127-2 (SAE C)	Spline 38-4 (SAE C-C)	GC6-1X, A10V0 100	▲	▲	√	√	√	△	△	△	K24
152-4 (SAE D)	Spline 44-4 (SAE D)	A10V0 140	▲	▲	▲	√	√	△	△	△	K17
Ø63, metric 4-hole	Shaft with key Ø25	R4	√	√	√	√	√	△	△	△	K57
101-2 (SAE B)	22-4 (SAE B)	G4, A10V0 28	√	√	√	√	√	√	△	△	K68
Bandpass shaft, no sleeve, without reducing flange.			√	√	√	√	√	√	√	△	K99

√=available    △=in preparation    ▲=not available

### Technical data

#### Standard rotary group version

Size	NG	40	71	125	180	250	355	500	750	750 <sup>5)</sup>	1000
Geometric displacement per revolution	$V_{g \max}$	cm <sup>3</sup>	40	71	125	180	250	355	500	750	1000
Rotational speed maximum <sup>1)</sup>	at $V_{g \max}$ <sup>2)</sup>	$n_{nom}$	rpm	2600	2200	1800	1800	1500	1500	1320	1200
	at $V_g \leq V_{g \max}$ <sup>3)</sup>	$n_{max}$	rpm	3200	2700	2200	2100	1800	1700	1600	1500
Flow	at $n_{nom}$ and $V_{g \max}$	$q_v$	l/min	104	156	225	324	375	533	660	900
	at 1500 rpm	$q_v$	l/min	60	107	186	270	375	533	581 <sup>6)</sup>	770 <sup>6)</sup>
Power	at $n_{nom}$ , $V_{g \max}$ and $\Delta p = 350$ bar	P	kW	61	91	131	189	219	311	385	525
	at 1500 rpm	P	kW	35	62	109	158	219	311	339 <sup>6)</sup>	449 <sup>6)</sup>
Torque	at $V_{g \max}$ and $\Delta p = 350$ bar <sup>2)</sup>	$M_{max}$	Nm	223	395	696	1002	1391	1976	2783	4174
	and $\Delta p = 100$ bar <sup>2)</sup>	M	Nm	64	113	199	286	398	564	795	1193
Rotary stiffness of drive shaft	Shaft end P	c	kNm/rad	80	146	260	328	527	800	1145	1860
	Shaft end Z	c	kNm/rad	77	146	263	332	543	770	1136	1812
Moment of inertia	$J_{TW}$	kgm <sup>2</sup>	0.0049	0.0121	0.03	0.055	0.0959	0.19	0.3325	0.66	
Maximum angular acceleration <sup>4)</sup>	$\alpha$	rad/s <sup>2</sup>	17000	11000	8000	6800	4800	3600	2800	2000	
Case volume	V	l	2	2.5	5	4	10	8	14	19	
Weight (without through drive) approx.	m	kg	39	53	88	102	184	207	320	460	

#### High-speed rotary group version

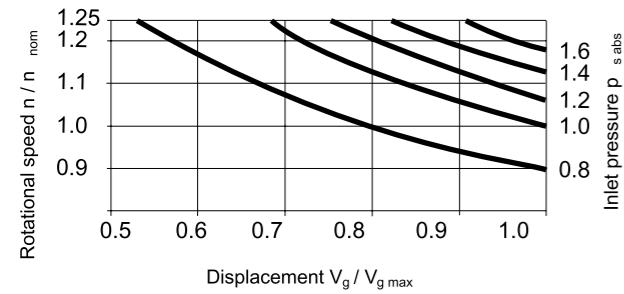
Size	NG	71	250	355	500
Displacement, geometric, per revolution	$V_{g \max}$	cm <sup>3</sup>	71	250	355
Rotational speed maximum <sup>1)</sup>	at $V_{g \max}$	$n_{nom}$	rpm	3000 <sup>2)7)8)</sup>	1900 <sup>2)</sup>
	at $V_g \leq V_{g \max}$	$n_{max}$	rpm	-	1700 <sup>2)</sup>
Flow	at $n_{nom}$ and $V_{g \max}$	$q_v$	l/min	213 <sup>7)8)</sup>	475
Power	at $n_{nom}$ , $V_{g \max}$ and $\Delta p = 350$ bar	P	kW	124	277
Torque	at $V_{g \max}$ and $\Delta p = 350$ bar	$M_{max}$	Nm	395	1391 <sup>2)</sup>
					1976 <sup>2)</sup>
Rotary stiffness of drive shaft	Shaft end P	c	kNm/rad	146	527
	Shaft end Z	c	kNm/rad	146	543
Moment of inertia	$J_{TW}$	kgm <sup>2</sup>	0.0121	0.0959	0.19
Maximum angular acceleration <sup>4)</sup>	$\alpha$	rad/s <sup>2</sup>	11000	4800	3600
Case volume	V	l	2.5	10	8
Weight (without through drive) approx.	m	kg	53	184	207

- The values are applicable:
  - to the optimum viscosity range from  $v_{opt} = 36$  to  $16 \text{ mm}^2/\text{s}$
  - with hydraulic fluid based on mineral oils
- The values apply at absolute pressure  $p_{abs} = 1$  bar at suction ports.
- Maximum rotational speed (speed limit) when increasing the inlet pressure  $p_{abs}$  at suction ports and  $V_g < V_{g \max}$ , see diagram on page 9.

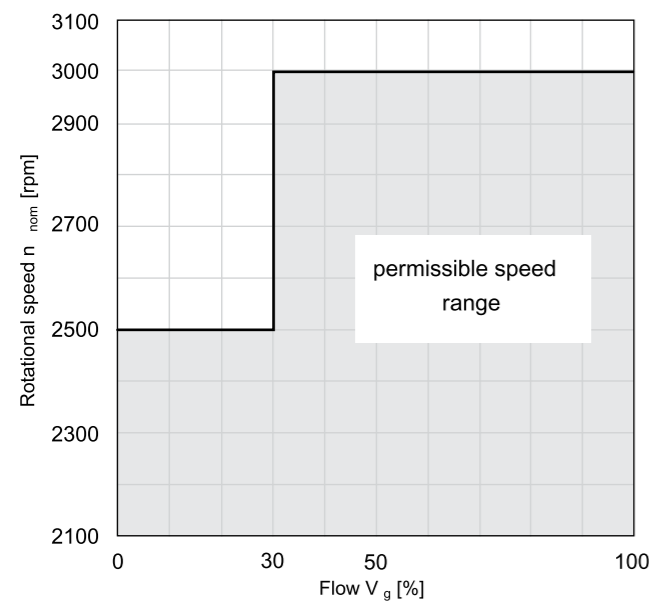
- The data are valid for values between the minimum required and maximum permissible rotational speed. Valid for external excitation (e.g. diesel engine 2 to 8 times rotary frequency; cardan shaft twice the rotary frequency). The limit value is only valid for a single pump. The load capacity of the connecting parts must be considered.
- with charge pump (A4VSO)
- At  $V_g < V_{g \max}$
- If  $V_g > 30\%$  (depending on speed diagram "High Speed NG71")
- For suction pressure  $< 1$  bar see diagram Maximum rotational speed (speed limit) no rotational speed increase possible when the inlet pressure increases.

Maximum permissible speed (speed limit)

( $p_{s\ abs}$  = Inlet pressure [bar])



Maximal permissible speed at High Speed size 71



### Determining the characteristics

$$\text{Flow } q_v = \frac{V_g \times n \times \eta_v}{1000} \quad [\text{l/min}]$$

$$\text{Torque } M = \frac{V_g \times \Delta p}{20 \times \pi \times \eta_{hm}} \quad [\text{Nm}]$$

$$\text{Power } P = \frac{2 \pi \times M \times n}{60000} = \frac{q_v \times \Delta p}{600 \times \eta_t} \quad [\text{kW}]$$

Key	
$V_g$	= Displacement per revolution [cm <sup>3</sup> ]
$\Delta p$	= Differential pressure [bar]
$n$	= Rotational speed [rpm]
$\eta_v$	= Volumetric efficiency
$\eta_{hm}$	= Hydraulic-mechanical efficiency
$\eta_t$	= Total efficiency ( $\eta_t = \eta_v \times \eta_{hm}$ )

### Notices

- ▶ Theoretical values, without efficiency and tolerances; values rounded
- ▶ Operation above the maximum values or below the minimum values may result in a loss of function, a reduced service life or in the destruction of the axial piston unit. We recommend testing the loads by means of experiment or calculation / simulation and comparison with the permissible values.
- ▶ Special requirements apply in the case of belt drives. Please contact us.

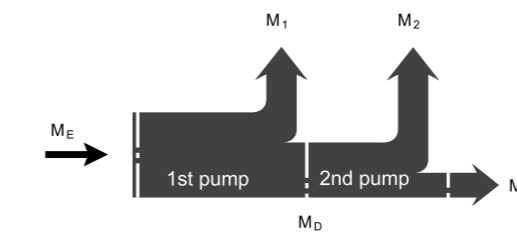
Permissible radial and axial forces of the drive shafts

Size	NG	40	71	125	180	250	355	500	750 <sup>1)</sup>	1000		
Radial force, maximum		$F_{q\ max}$	N	1000	1200	1600	2000	2000	2200	2500	3000	3500
Maximum axial force		$\pm F_{ax\ max}$	N	600	800	1000	1400	1800	2000	2000	2200	2200

Permissible input and through-drive torques

Size	NG	40	71	125	180	250	355	500	750	1000		
Torque at $V_{g\ max}$ and $\Delta p = 350\ bar$ <sup>1)</sup>	$M_{max}$	Nm	223	365	696	1002	1391	1976	2783	4174	5565	
Maximum input torque at drive shaft <sup>2)</sup>												
	Splined shaft Z	$M_{E\ max}$	Nm	446	790	1392	2004	2782	3952	5566	8348	11130
	Shaft key P	$M_{E\ max}$	Nm	380	700	1392	1400	2300	3557	5200	7513	9444
Maximum through-drive torque												
	Splined shaft Z	$M_{D\ max}$	Nm	223	395	696	1002	1391	1976	2783	4174	5565
	Shaft key P	$M_{D\ max}$	Nm	157	305	696	398	909	1581	2417	3339	3879

▼ Distribution of torques



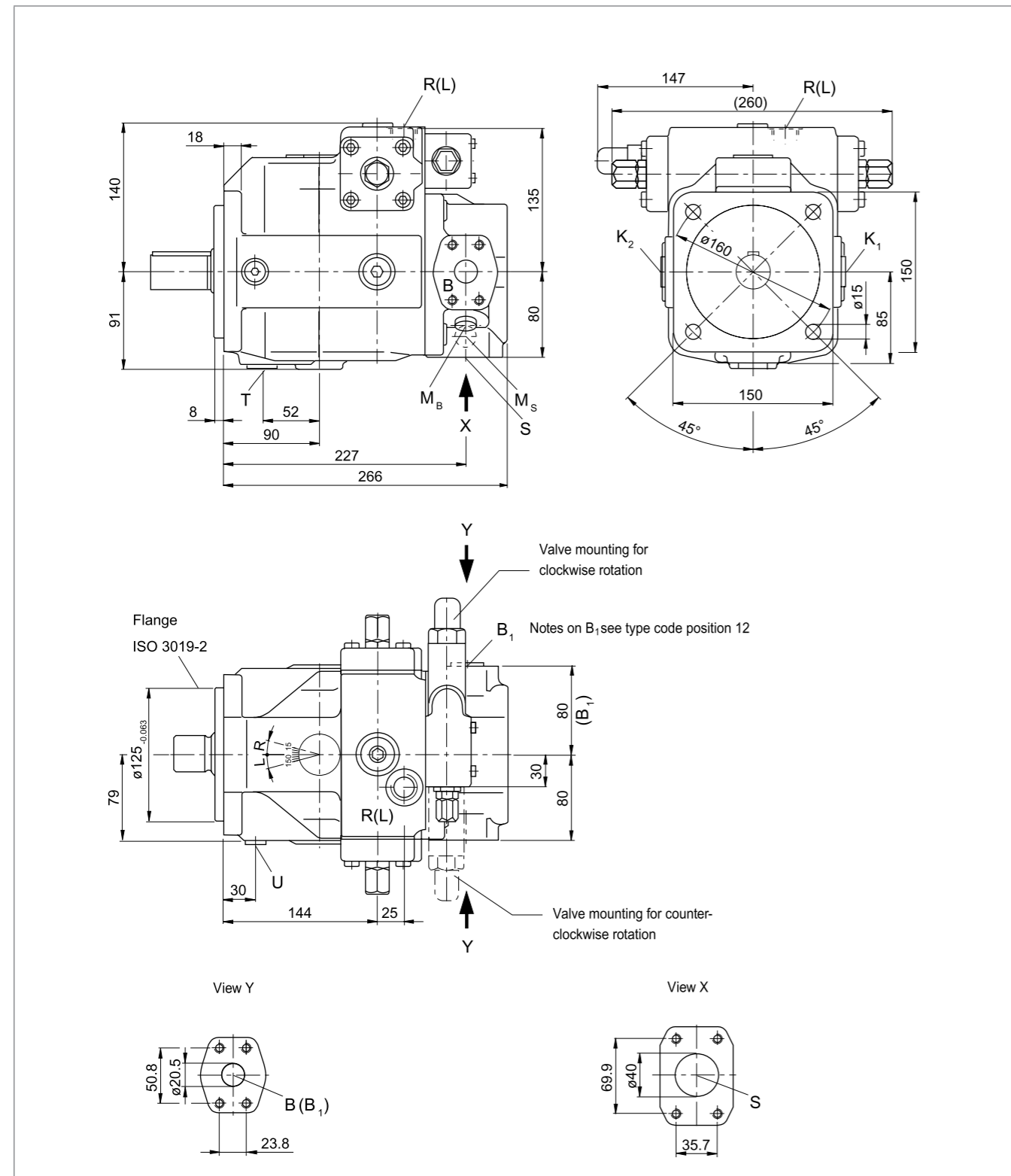
Torque at 1st Pump	$M_1$
Torque at 2nd Pump	$M_2$
Torque at 3rd Pump	$M_3$
Input torque	$M_E = M_1 + M_2 + M_3$
	$M_E < M_{E\ max}$
Through-drive torque	$M_D = M_2 + M_3$
	$M_D < M_{D\ max}$

<sup>1)</sup> Efficiency not considered

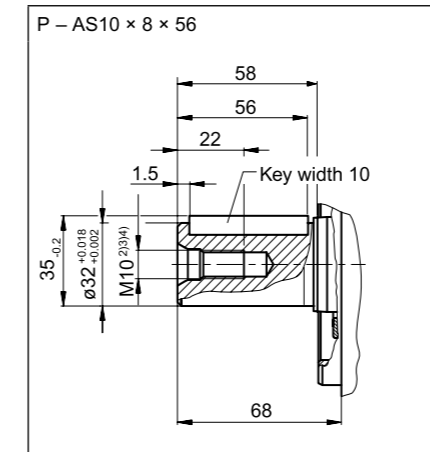
<sup>2)</sup> For drive shafts with no radial force

### Dimensions, size 40

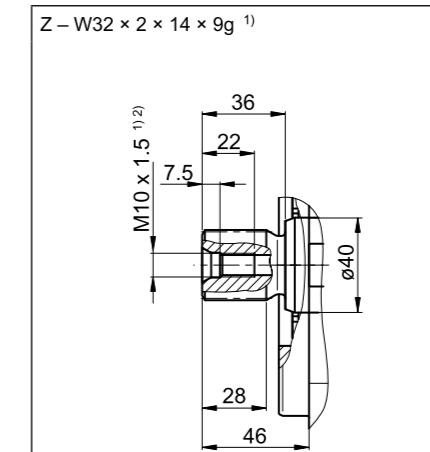
Main dimensions only for the basic unit, further dimensions are given in the relevant data sheets.



▼ Parallel keyed shaft, DIN 6885



▼ Splined shaft (DIN 5480)



Ports	Standard	Size <sup>4)</sup>	$p_{max\ abs}$ [bar] <sup>5)</sup>	State <sup>9)</sup>	
S	Suction port (standard pressure series) Fastening thread	SAE J518 <sup>6)</sup> DIN 13	1 1/2 in M12 x 1.75; 20 deep	30	O
For version port plate 13					
B	Pressure port (high-pressure series) Fastening thread	SAE J518 <sup>6)</sup> DIN 13	3/4 in M10 x 1.5; 17 deep	400	O
B <sub>1</sub>	Additional connection	DIN 3852	M22 x 1.5; 14 deep	400	X
For version port plate 25					
B	Pressure port (high-pressure series) Fastening thread	SAE J518 <sup>6)</sup> DIN 13	3/4 in M10 x 1.5; 17 deep	400	O
B <sub>1</sub>	2nd working port (high-pressure series) Fastening thread	SAE J518 <sup>6)</sup> DIN 13	3/4 in M10 x 1.5; 17 deep	400	X <sup>10)</sup>
K <sub>1</sub> , K <sub>2</sub>	Flushing port	DIN 3852	M22 x 1.5; 14 deep	4	X <sup>8)</sup>
T	Drain port	DIN 3852 <sup>7)</sup>	M22 x 1.5; 14 deep	4	X <sup>8)</sup>
M <sub>B</sub>	Measuring port working pressure	DIN 3852	M14 x 1.5; 12 deep	400	X
M <sub>S</sub>	Measuring port suction pressure	DIN 3852	M14 x 1.5; 12 deep	30	X
R(L)	Drain port	DIN 3852 <sup>7)</sup>	M22 x 1.5; 14 deep	4	O <sup>8)</sup>
U	Flushing port	DIN 3852	M14 x 1.5; 12 deep	5	X

1) Splined shaft according to DIN 5480

2) Center bore according to DIN 332

3) Thread according to DIN 13

4) For notes on tightening torques, see the instruction manual.

5) Depending on the application, momentary pressure peaks can occur. Keep this in mind when selecting measuring devices and fittings.

6) Metric fastening thread is a deviation from standard.

7) The countersink can be deeper than as specified in the standard.

8) Depending on the installation position T, K<sub>1</sub>, K<sub>2</sub> or R(L) must be connected.

9) O = Must be connected (plugged on delivery)

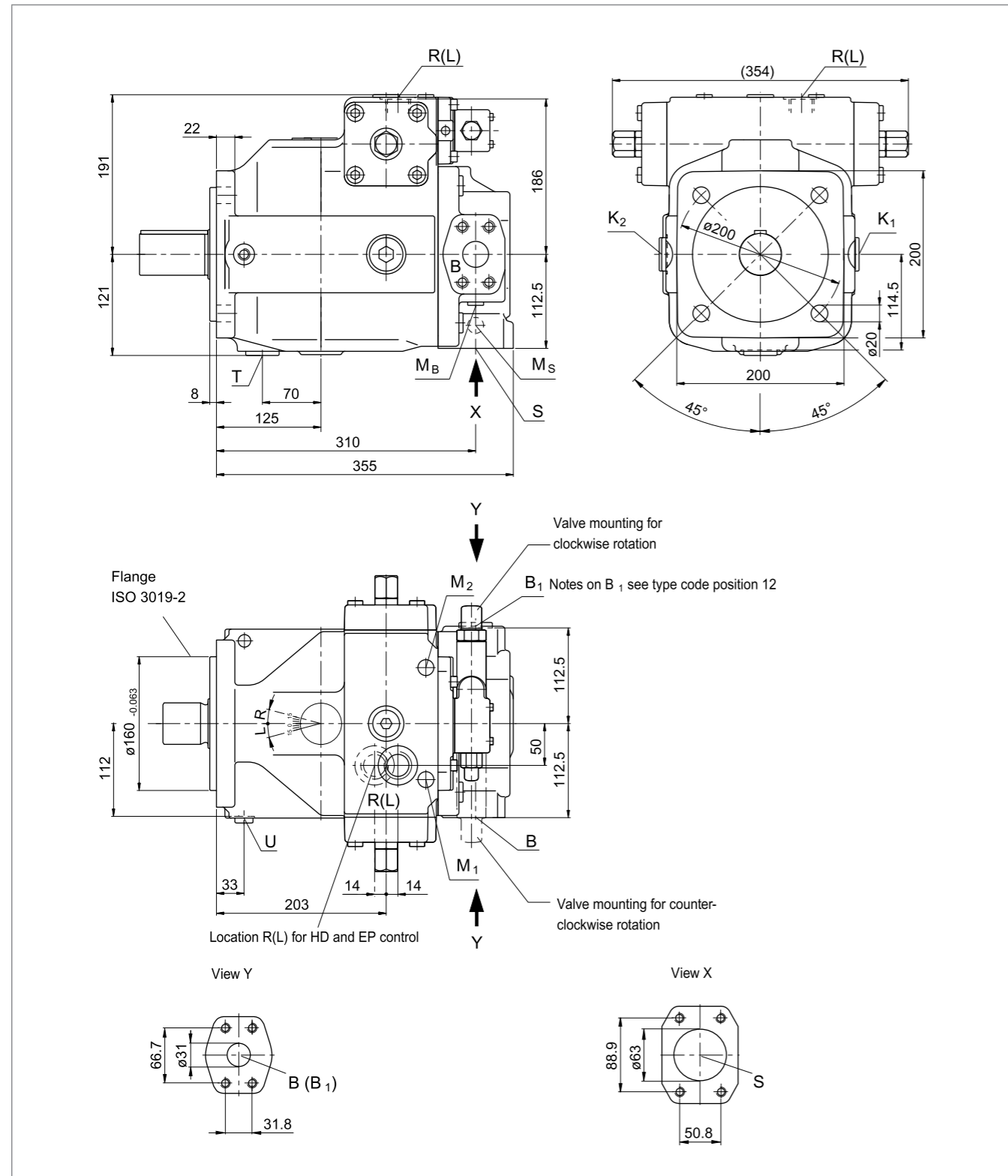
X = Plugged (in normal operation)

10) Plugged with flange plate.

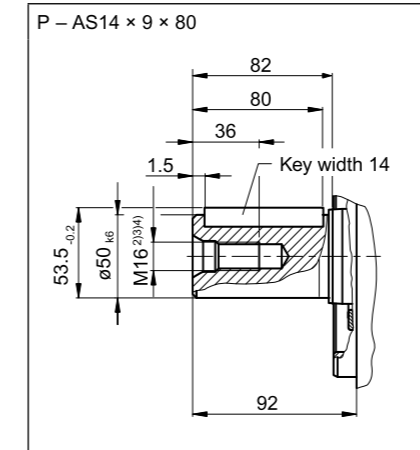


### Dimensions, size 125

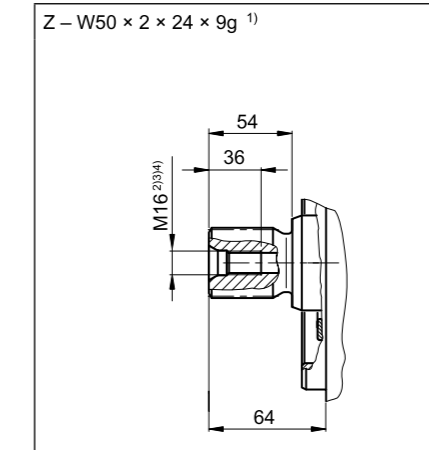
Main dimensions only for the basic unit, further dimensions are given in the relevant data sheets.



▼ Parallel keyed shaft, DIN 6885



▼ Splined shaft (DIN 5480)



Ports	Standard	Size <sup>4)</sup>	$p_{max\ abs}$ [bar] <sup>5)</sup>	State <sup>9)</sup>	
S	Suction port (standard pressure series)	SAE J518 <sup>6)</sup>	2 1/2 in	30	O
	Fastening thread	DIN 13	M12 x 1.75; 17 deep		
For version port plate 13					
B	Pressure port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/4 in	400	O
	Fastening thread	DIN 13	M14 x 2; 19 deep		
B <sub>1</sub>	Additional connection	DIN 3852	M33 x 2; 18 deep	400	X
For version port plate 25					
B	Pressure port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/4 in	400	O
	Fastening thread	DIN 13	M14 x 2; 19 deep		
B <sub>1</sub>	2nd working port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/4 in	400	X <sup>10)</sup>
	Fastening thread	DIN 13	M14 x 2; 19 deep		
K <sub>1</sub> , K <sub>2</sub>	Flushing port	DIN 3852	M33 x 2; 18 deep	4	X <sup>8)</sup>
T	Drain port	DIN 3852 <sup>7)</sup>	M33 x 2; 18 deep	4	X <sup>8)</sup>
M <sub>B</sub>	Measuring port working pressure	DIN 3852	M14 x 1.5; 12 deep	400	X
M <sub>S</sub>	Measuring port suction pressure	DIN 3852	M14 x 1.5; 12 deep	30	X
R(L)	Drain port	DIN 3852 <sup>7)</sup>	M33 x 2; 18 deep	4	O <sup>8)</sup>
U	Flushing port	DIN 3852	M14 x 1.5; 12 deep	5	X

1) Splined shaft according to DIN 5480

2) Center bore according to DIN 332

3) Thread according to DIN 13

4) For notes on tightening torques, see the instruction manual.

5) Depending on the application, momentary pressure peaks can occur. Keep this in mind when selecting measuring devices and fittings.

6) Metric fastening thread is a deviation from standard.

7) The countersink can be deeper than as specified in the standard.

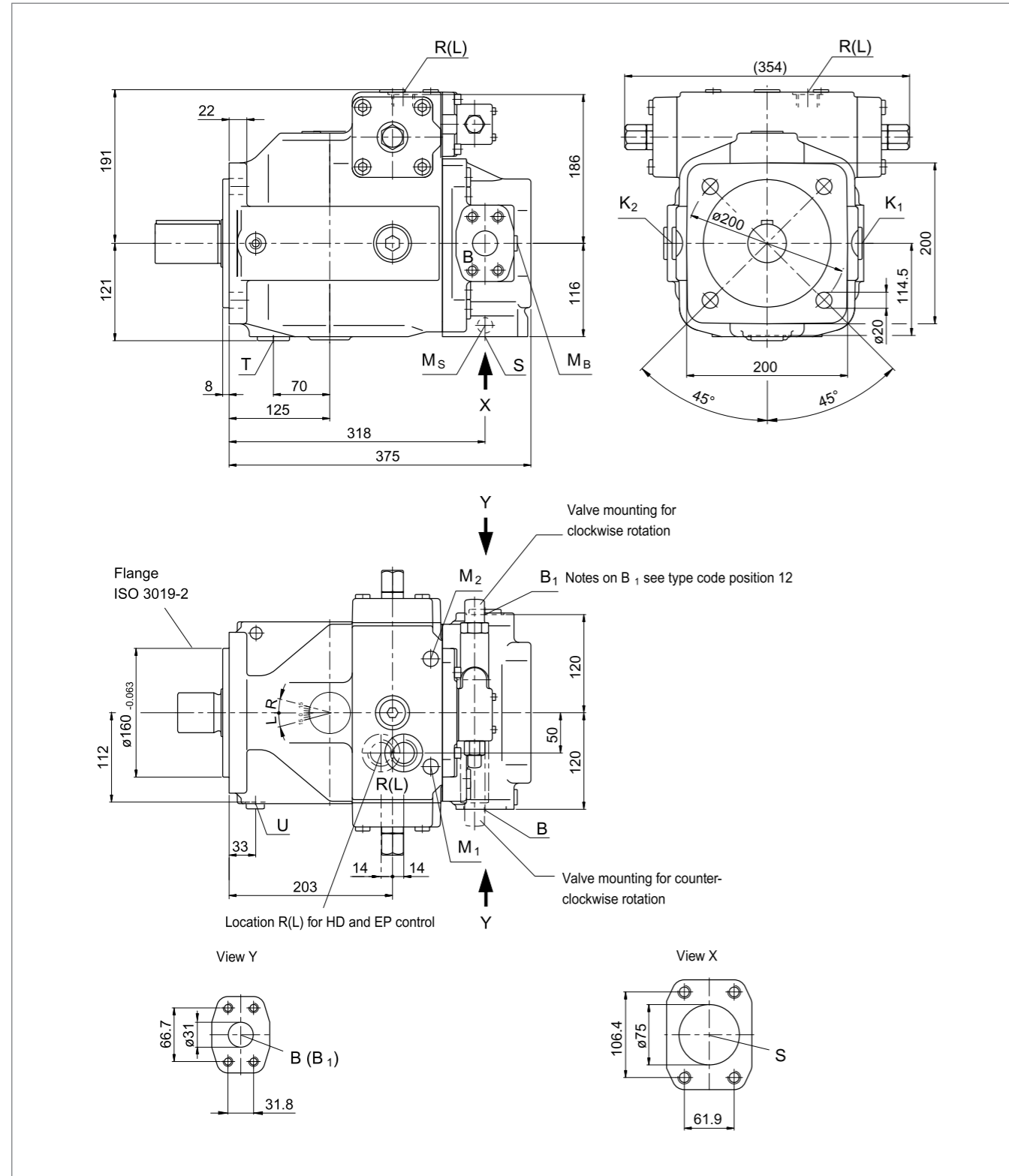
8) Depending on the installation position T, K<sub>1</sub>, K<sub>2</sub> or R(L) must be connected.

9) O = Must be connected (plugged on delivery)

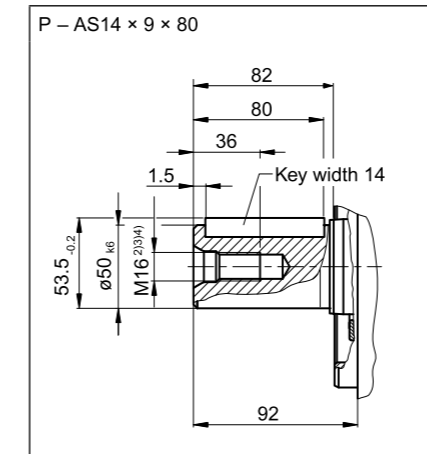
X = Plugged (in normal operation)

10) Plugged with flange plate

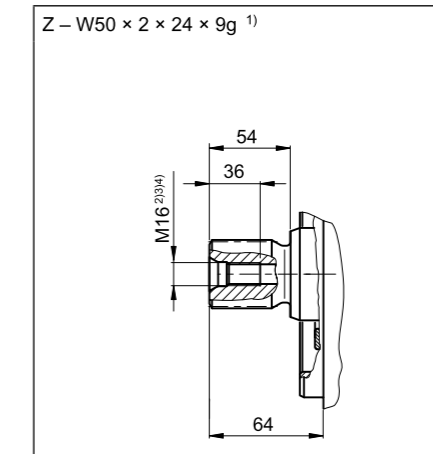
Main dimensions only for the basic unit, further dimensions are given in the relevant data sheets.



▼ Parallel keyed shaft, DIN 6885



▼ Splined shaft (DIN 5480)



Ports		Standard	Size <sup>4)</sup>	$P_{max abs}$ [bar] <sup>5)</sup>	State <sup>9)</sup>
S	Suction port (standard pressure series)	SAE J518 <sup>6)</sup>	3 in	30	O
	Fastening thread	DIN 13	M16 × 2; 24 deep		
For version port plate 13					
B	Pressure port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/4 in	400	O
	Fastening thread	DIN 13	M14 × 2; 19 deep		
B <sub>1</sub>	Additional connection	DIN 3852	M33 × 2; 18 deep	400	X
For version port plate 25					
B	Pressure port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/4 in	400	O
	Fastening thread	DIN 13	M14 × 2; 19 deep		
B <sub>1</sub>	2nd working port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/4 in	400	X <sup>10)</sup>
	Fastening thread	DIN 13	M14 × 2; 19 deep		
K <sub>1</sub> , K <sub>2</sub>	Flushing port	DIN 3852	M33 × 2; 18 deep	4	X <sup>8)</sup>
T	Drain port	DIN 3852 <sup>7)</sup>	M33 × 2; 18 deep	4	X <sup>8)</sup>
M <sub>B</sub>	Measuring port working pressure	DIN 3852	M14 × 1.5; 12 deep	400	X
M <sub>S</sub>	Measuring port suction pressure	DIN 3852	M14 × 1.5; 12 deep	30	X
R(L)	Drain port	DIN 3852 <sup>7)</sup>	M33 × 2; 18 deep	4	O <sup>8)</sup>
U	Flushing port	DIN 3852	M14 × 1.5; 12 deep	5	X
M <sub>1</sub> , M <sub>2</sub>	Measuring port (stroking chamber pressure)	DIN 3852	M14 × 1.5; 12 deep	400	X

1) Splined shaft according to DIN 5480

2) Center bore according to DIN 332

3) Thread according to DIN 13

4) For notes on tightening torques, see the instruction manual.

5) Depending on the application, momentary pressure peaks can occur. Keep this in mind when selecting measuring devices and fittings.

6) Metric fastening thread is a deviation from standard.

7) The countersink can be deeper than as specified in the standard.

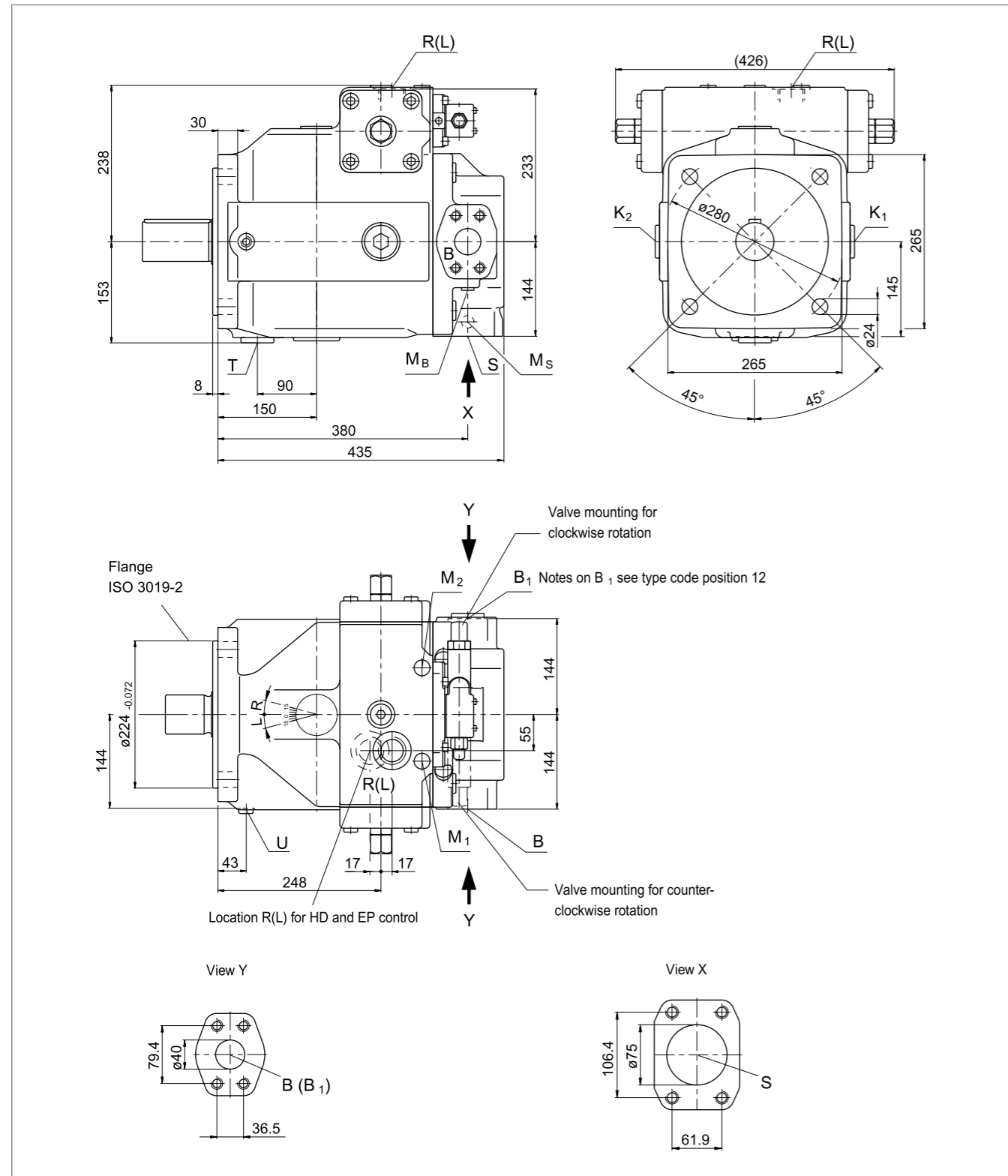
8) Depending on the installation position T, K<sub>1</sub>, K<sub>2</sub> or R(L) must be connected.

9) O = must be connected (plugged when delivered)  
X = plugged (in normal operation)

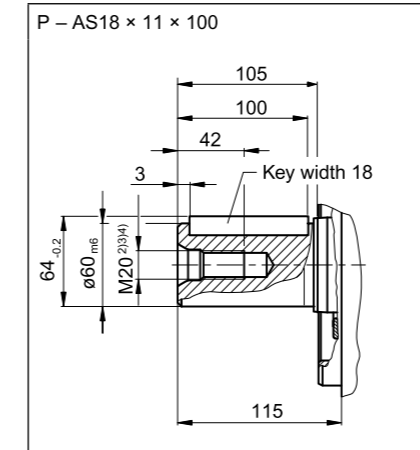
10) Plugged with flange plate.

### Dimensions, size 250

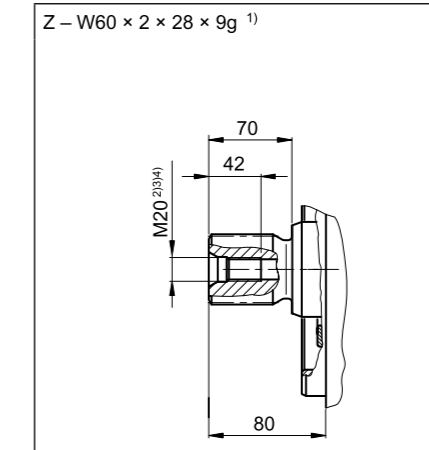
Main dimensions only for the basic unit, further dimensions are given in the relevant data sheets.



▼ Parallel keyed shaft, DIN 6885



▼ Splined shaft (DIN 5480)



Ports	Standard	Size <sup>4)</sup>	$p_{max\ abs}$ [bar] <sup>5)</sup>	State <sup>9)</sup>	
S	Suction port (standard pressure series)	SAE J518 <sup>6)</sup>	3 in	30	O
	Fastening thread	DIN 13	M16 × 2; 24 deep		
For version port plate 13					
B	Pressure port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/2 in	400	O
	Fastening thread	DIN 13	M16 × 2; 25 deep		
B <sub>1</sub>	Additional connection	DIN 3852	M42 × 2; 20 deep	400	X
For version port plate 25					
B	Pressure port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/2 in	400	O
	Fastening thread	DIN 13	M16 × 2; 25 deep		
B <sub>1</sub>	2nd working port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/2 in	400	X <sup>10)</sup>
	Fastening thread	DIN 13	M16 × 2; 25 deep		
K <sub>1</sub> , K <sub>2</sub>	Flushing port	DIN 3852	M42 × 2; 20 deep	4	X <sup>8)</sup>
T	Drain port	DIN 3852 <sup>7)</sup>	M42 × 2; 20 deep	4	X <sup>8)</sup>
M <sub>B</sub>	Measuring port working pressure	DIN 3852	M14 × 1.5; 12 deep	400	X
M <sub>S</sub>	Measuring port suction pressure	DIN 3852	M14 × 1.5; 12 deep	30	X
R(L)	Drain port	DIN 3852 <sup>7)</sup>	M42 × 2; 20 deep	4	O <sup>8)</sup>
U	Flushing port	DIN 3852	M14 × 1.5; 12 deep	5	X
M <sub>1</sub> , M <sub>2</sub>	Measuring port (stroking chamber pressure)	DIN 3852	M18 × 1.5; 12 deep	400	X

1) Splined shaft according to DIN 5480

2) Center bore according to DIN 332

3) Thread according to DIN 13

4) For notes on tightening torques, see the instruction manual.

5) Depending on the application, momentary pressure peaks can occur. Keep this in mind when selecting measuring devices and fittings.

6) Metric fastening thread is a deviation from standard.

7) The countersink can be deeper than as specified in the standard.

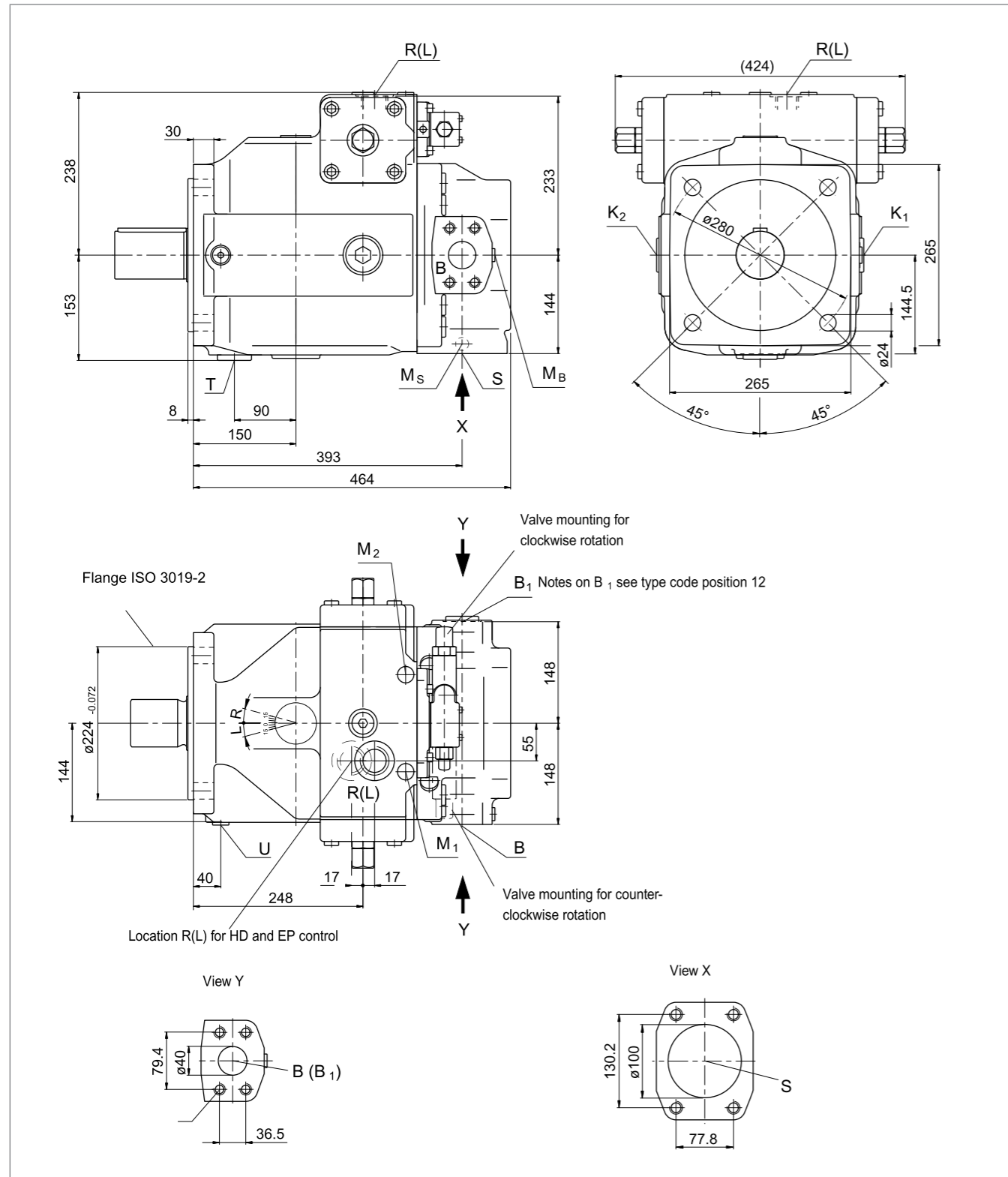
8) Depending on the installation position T, K<sub>1</sub>, K<sub>2</sub> or R(L) must be connected.

9) O = Must be connected (plugged on delivery)

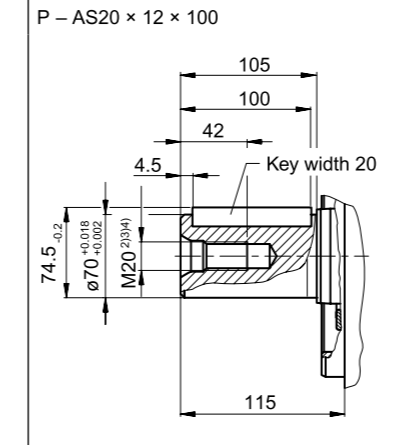
X = Plugged (in normal operation)

10) Plugged with flange plate

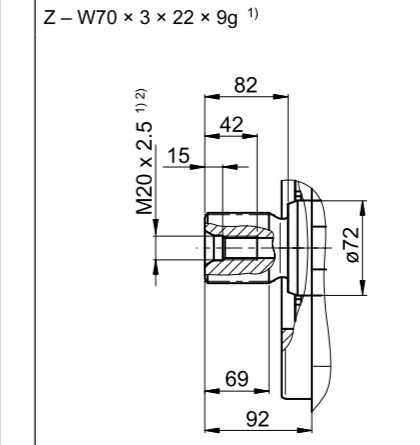
Main dimensions only for the basic unit, further dimensions are given in the relevant data sheets.



Parallel keyed shaft, DIN 6885



Splined shaft (DIN 5480)



Ports	Standard	Size	$p_{max\ abs}$ [bar] <sup>5)</sup>	State <sup>9)</sup>	
S	Suction port (standard pressure series)	SAE J518 <sup>6)</sup>	4 in	30	O
	Fastening thread	DIN 13	M16 x 2; 24 deep		
For version port plate 13					
B	Pressure port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/2 in	400	O
	Fastening thread	DIN 13	M16 x 2; 25 deep		
B <sub>1</sub>	Additional connection	DIN 3852	M42 x 2; 20 deep	400	X
For version port plate 25					
B	Pressure port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/2 in	400	O
	Fastening thread	DIN 13	M16 x 2; 25 deep		
B <sub>1</sub>	2nd working port (high-pressure series)	SAE J518 <sup>6)</sup>	1 1/2 in	400	X <sup>10)</sup>
	Fastening thread	DIN 13	M16 x 2; 25 deep		
K <sub>1</sub> , K <sub>2</sub>	Flushing port	DIN 3852	M42 x 2; 20 deep	4	X <sup>8)</sup>
T	Drain port	DIN 3852 <sup>7)</sup>	M42 x 2; 20 deep	4	X <sup>8)</sup>
M <sub>B</sub>	Measuring port working pressure	DIN 3852	M14 x 1.5; 12 deep	400	X
M <sub>S</sub>	Measuring port suction pressure	DIN 3852	M14 x 1.5; 12 deep	30	X
R(L)	Drain port	DIN 3852 <sup>7)</sup>	M42 x 2; 20 deep	4	O <sup>8)</sup>
U	Flushing port	DIN 3852	M18 x 1.5; 12 deep	5	X
M <sub>1</sub> , M <sub>2</sub>	Measuring port (stroking chamber pressure)	DIN 3852	M18 x 1.5; 12 deep	400	X

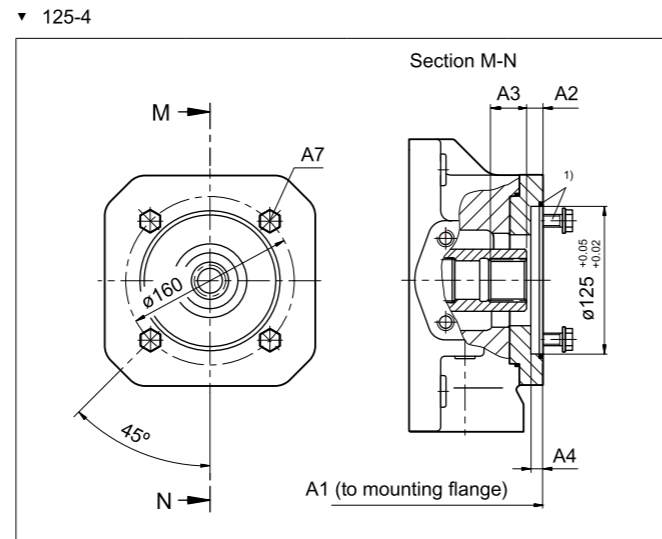
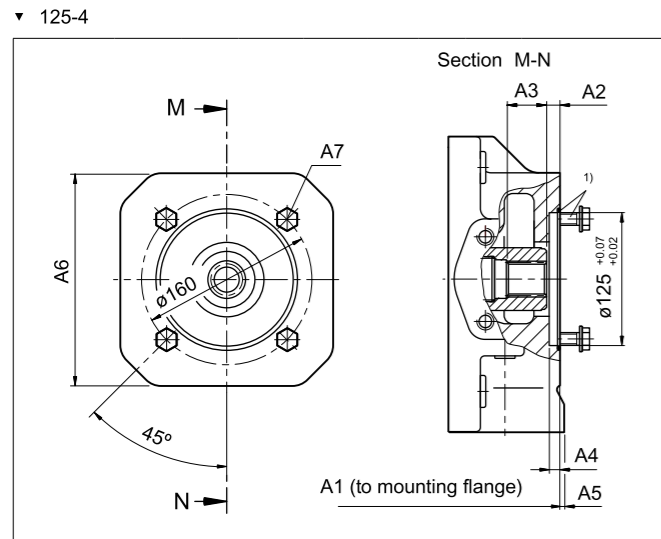
1) Splined shaft according to DIN 5480  
2) Center bore according to DIN 332  
3) Thread according to DIN 13  
4) For notes on tightening torques, see the instruction manual.  
5) Momentary pressure peaks may occur depending on the application. Keep this in mind when selecting measuring devices and fittings.  
6) Metric fastening thread is a deviation from standard.  
7) The countersink can be deeper than as specified in the standard.  
8) Depending on the installation position T, K<sub>1</sub>, K<sub>2</sub> or R(L) must be connected.  
9) O = Must be connected (plugged on delivery)  
X = Plugged (in normal operation)  
10) Plugged with flange plate



## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2 (metric)		Hub for splined shaft <sup>2)</sup>	Availability over sizes								Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
125-4		N32x2x14x8H	•	•	-	-	-	-	•	•	○	K31
		N32x2x14x8H	-	-	•	•	•	•	-	-	-	U31

• = Available    ○ = On request    - = Not available



K31	NG	A1	A2	A3	A4	A5	A6	A7 <sup>3)</sup>
40	288	12.5	40	9	-	-	-	M12; 24 deep
71	316	12.5	33.6	9	-	-	-	M12; 24 deep
500	505	12.5	38.6	9	15	240	-	M12; 18 deep
750	55	12.5	44.5	9	15	240	-	M12; 18 deep

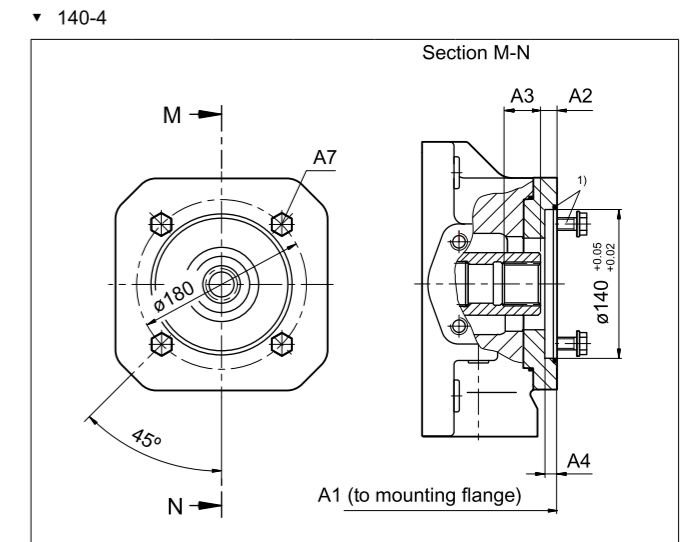
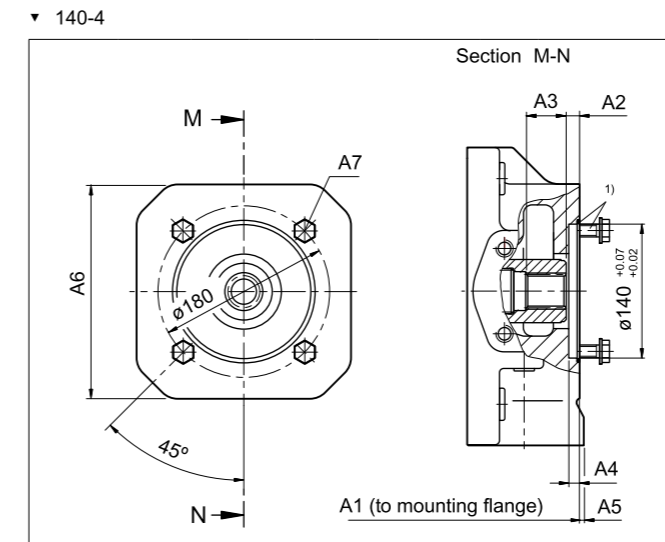
U31	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
125	369	12.5	35.6	9	-	M12; 22 deep
180	393	12.5	35.6	9	-	M12; 22 deep
250	453	12.5	38.0	9	-	M12; 15 deep
355	482	12.5	38.0	9	-	M12; 15 deep

1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Splined hub according to DIN 5480  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2 (metric)		Hub for splined shaft <sup>2)</sup>	Availability over sizes								Code		
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	750 <sup>4)</sup>	1000	
140-4		N40x2x18x8H	-	•	-	-	-	-	•	•	○	•	K33
		N40x2x18x8H	-	-	•	•	•	•	-	-	-	-	U33

○ = On request    - = Not available




K33	NG	A1	A2	A3	A4	A5	A6	A7 <sup>3)</sup>
71	316	11.5	42.8	9	-	-	-	M12; 24 deep
500	505	12.5	57	9	-	-	-	M12; 18 deep
750	555	12.5	44.5	9	15	240	-	M12; 18 deep
1000	628	12.5	60	10	-	280	-	M12; 18 deep

U33	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
125	369	12.5	43.8	9	-	M12; 22 deep
180	393	12.5	43.8	9	-	M12; 22 deep
250	453	12.5	48.9	9	-	M12; 22 deep
355	482	12.5	48.0	9	-	M12; 22 deep

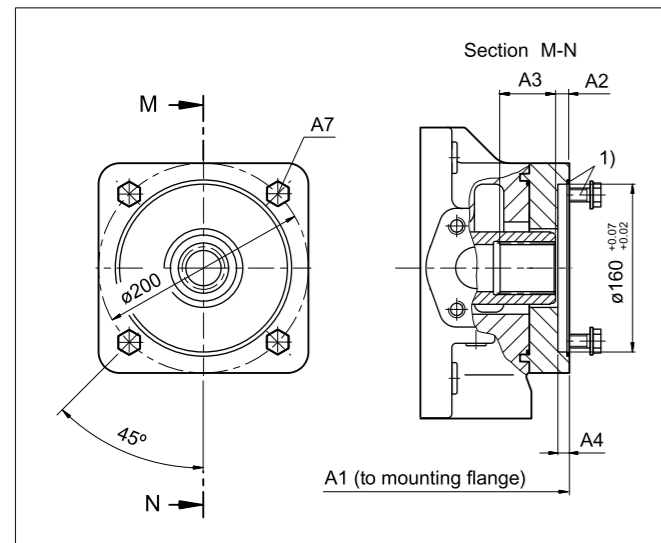
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Splined hub according to DIN 5480  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.  
 4) With charge pump

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2(metric)		Hub for splined shaft <sup>2)</sup>										Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	750 <sup>4)</sup>	1000	
160-4		N50×2×24×8H	-	-	-	-	-	-	•	•	○	○	K34
		N50×2×24×8H	-	-	•	•	•	•	-	-	-	-	U34

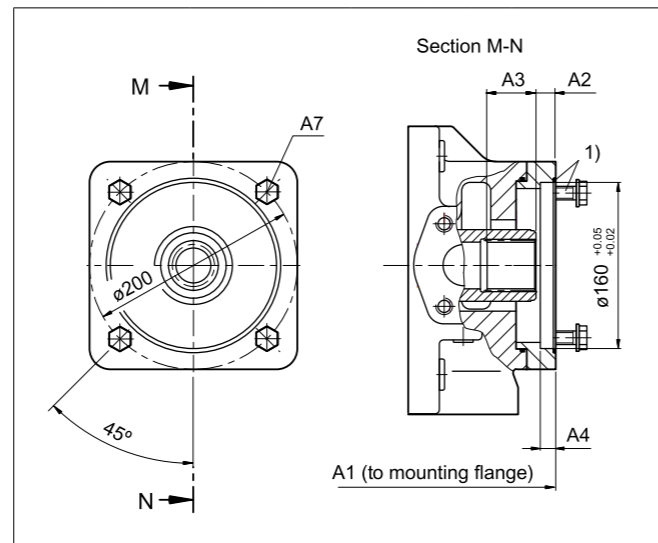
• = Available    ○ = On request    - = Not available

▼ 160-4



K34	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	500	505	13.5	54.5	10	M16; 24 deep
	750	555	13.5	55.5	10	M16; 24 deep
	1000	628	12.5	54.5	10	M16; 24 deep


▼ 160-4



U34	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	12.5	51.6	9	M16; 22 deep
	180	393	12.5	51.6	9	M16; 22 deep
	250	453	12.5	54.0	9	M16; 22 deep
	355	482	12.5	54.0	9	M16; 22 deep

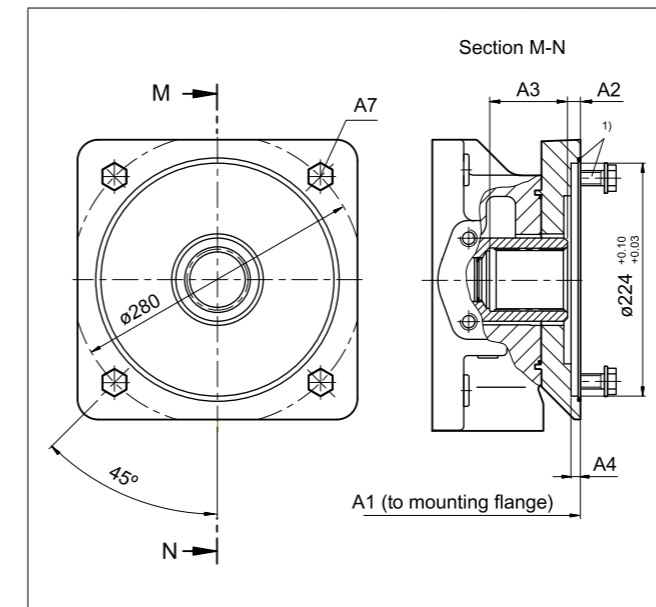
- 1) Mounting bolts and O-ring seal are included in the scope of delivery
- 2) Splined hub according to DIN 5480
- 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.
- 4) With charge pump

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2(metric)		Hub for splined shaft <sup>2)</sup>										Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	750 <sup>4)</sup>	1000	
224-4		N60×2×28×8H	-	-	-	-	-	-	•	•	○	•	K35
		N60×2×28×8H	-	-	-	-	•	•	-	-	-	-	U35

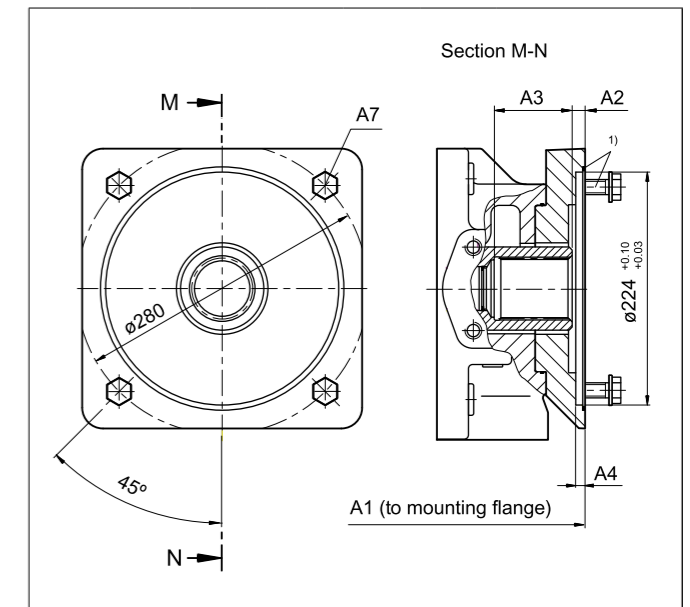
• = Available    ○ = On request

▼ 224-4



K35	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	500	541	12.5	74	9	M20; 36 deep
	750	591	12.5	74	9	M20; 36 deep
	1000	664	12.5	70	9	M20; 36 deep

▼ 224-4



U35	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	250	469	12.5	75	9	M20; 37 deep
	355	498	12.5	75	9	M20; 37 deep

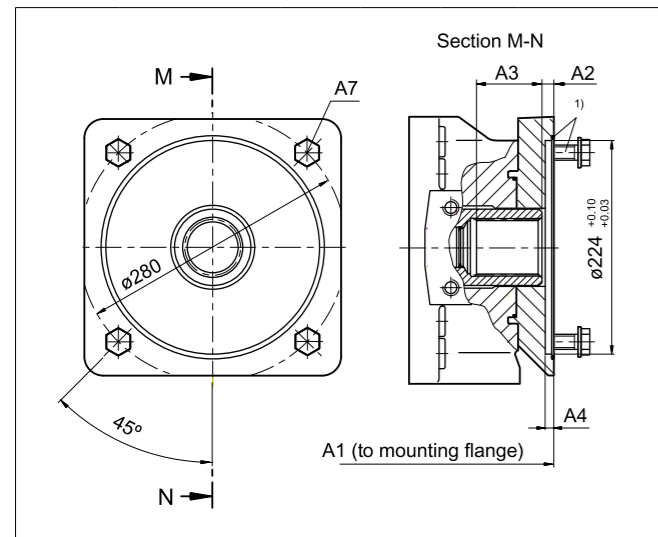
- 1) Mounting bolts and O-ring seal are included in the scope of delivery
- 2) Splined hub according to DIN 5480
- 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.
- 4) With charge pump

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2 (metric)		Hub for splined shaft <sup>2)</sup>									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
224-4		N70×3×22×8H	-	-	-	-	-	-	•	○	•	K77
		N70×3×22×8H	-	-	-	-	-	•	-	-	-	U77

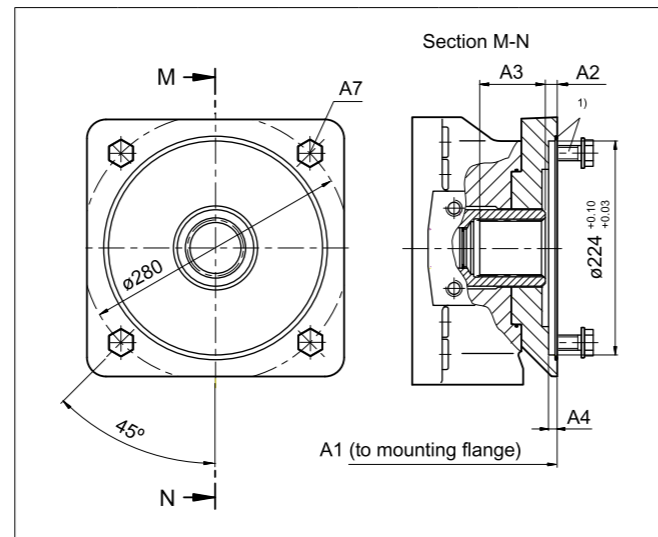
• = Available    ○ = On request    - = Not available

▼ 224-4



K77	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	500	541	12.5	82	9	M20; 36 deep
	1000	664	12.5	82	9	M20; 36 deep

▼ 224-4



U77	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	355	498	12.5	75	9	M20; 37 deep

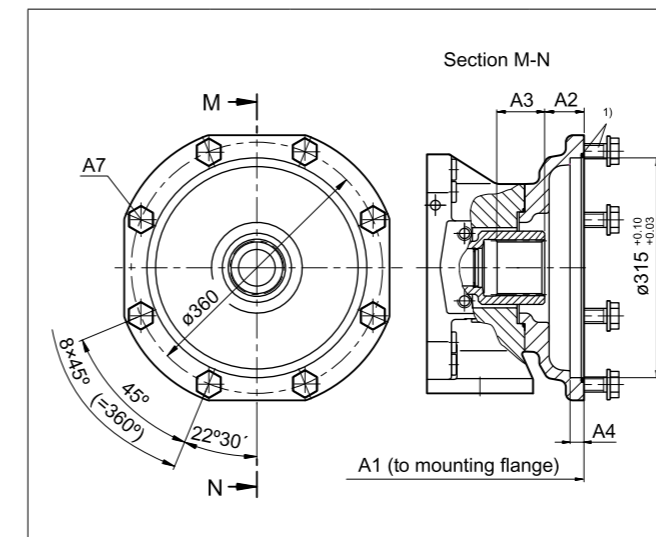
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Splined hub according to DIN 5480  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2 (metric)		Hub for splined shaft <sup>2)</sup>									Code		
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	750 <sup>4)</sup>	1000	
315-8		N80×3×25×8H	-	-	-	-	-	-	•	•	○	•	K43
		N90×3×28×8H	-	-	-	-	-	-	-	-	•	•	K76

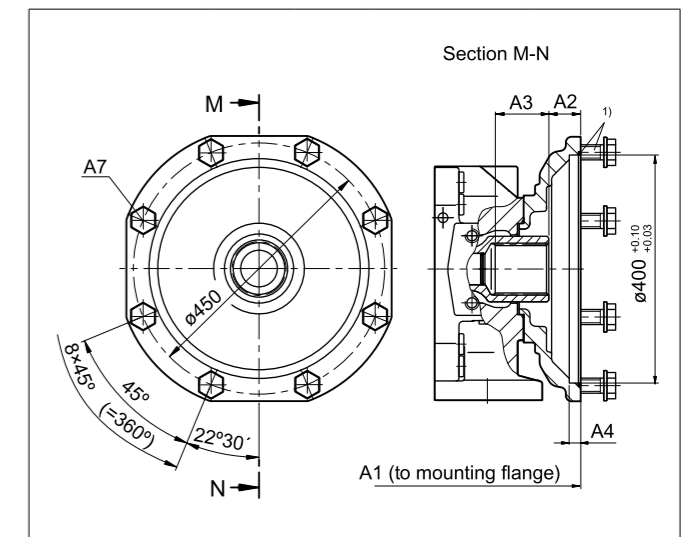
• = Available    ○ = On request    - = Not available

▼ 315-8



K43	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	500	590	53.5	71.9	19	M20; 26 deep
	750	640	53.5	71.9	19	M20; 26 deep
	1000	713	53.5	71	19	M20; 26 deep


▼ 315-8



K76	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	750	655	53	104	19	M20; 26 deep
	750 <sup>4)</sup>	749	53	97	19	M20; 26 deep
	1000	728	53	97	19	M20; 26 deep

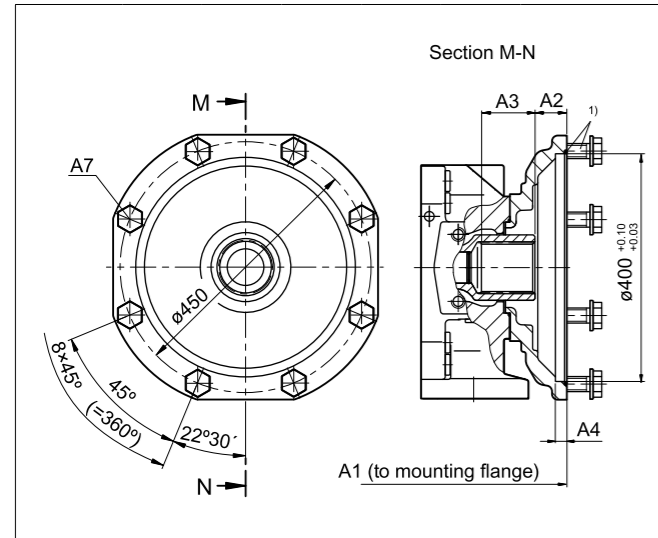
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Splined hub according to DIN 5480  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.  
 4) With charge pump

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2 (metric)		Hub for splined shaft <sup>2)</sup>									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
400-8		N100×3×32×8H	-	-	-	-	-	-	-	-	•	K88

• = Available    ◦ = On request    - = Not available



▼ 400-8



K88	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	1000	728	53	99	19	M20; 26 deep

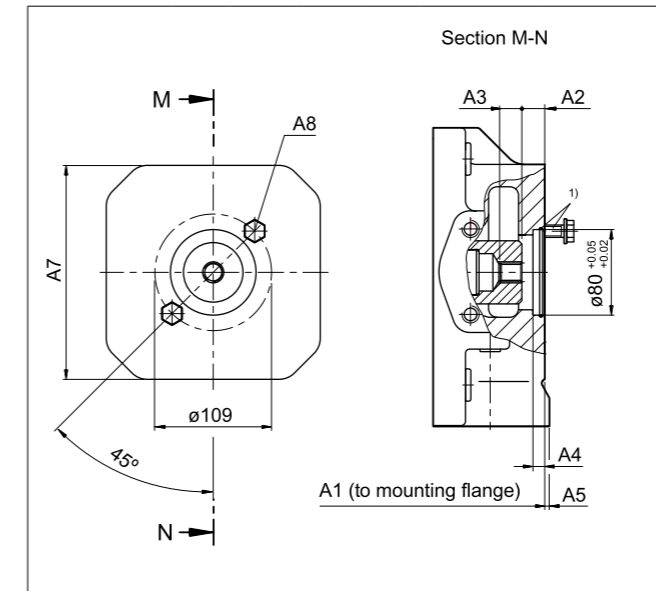
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Splined hub according to DIN 5480  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2 (metric)		Hub for splined shaft <sup>2)</sup>									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
80-2		3/4in 11T 16/32DP	◦	•	-	-	-	-	◦	◦	◦	KB2
		3/4in 11T 16/32DP	-	-	•	•	•	•	-	-	-	UB2

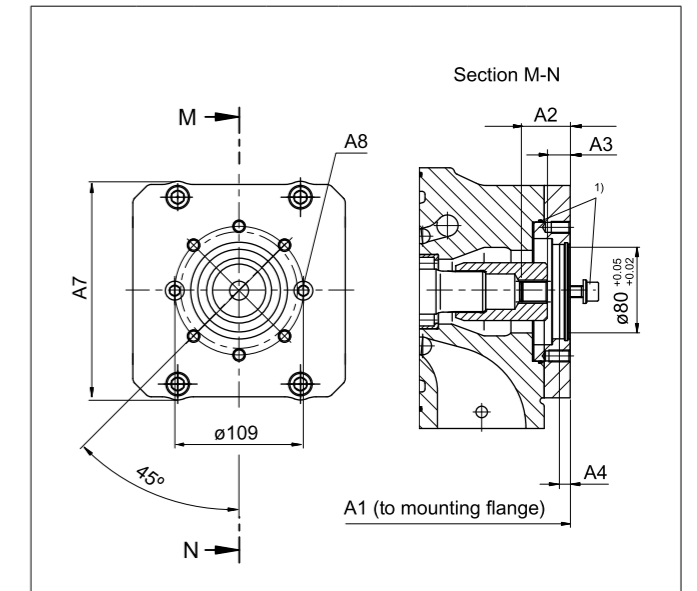
• = Available    ◦ = On request    - = Not available

▼ 80-2



KB2	NG	A1	A2	A3	A4	A5	A7	A8 <sup>3)</sup>
	71	291	21.5	19	10	2	140	M10, 15 deep


▼ 80-2



UB2	NG	A1	A2	A3	A4	A7 <sup>3)</sup>	A8 <sup>3)</sup>
	125	367	40.5	19.4	9	180	M10; 16 deep
	180	393	40.5	19.4	9	180	M10; 16 deep
	250	453	40.5	19	9	200	M10; 16 deep
	355	482	40.4	19	9	200	M10; 16 deep

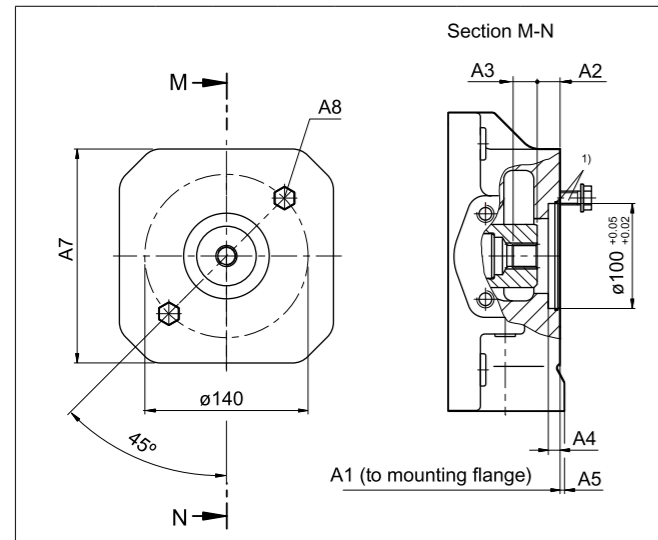
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2(metric)		Hub for splined shaft <sup>2)</sup>									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
100-2		7/8in 13T 16/32DP	•	•	-	-	-	-	○	○	○	KB3
		7/8in 13T 16/32DP	-	-	•	•	•	•	-	-	-	UB3

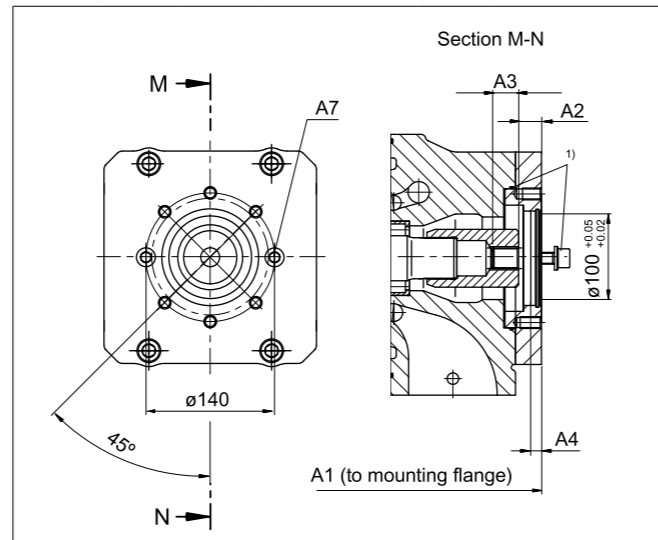
• = Available    ○ = On request    - = Not available

▼ 100-2



KB3	NG	A1	A2	A3	A4	A5	A7 <sup>3)</sup>	A8
	40	290	20.3	23	10	-	-	M12; 18 deep
	71	291	20.4	23	10	2	140	M12; 18 deep


▼ 100-2



UB3	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	20.5	24.9	10	M12; 22 deep
	180	393	20.5	24.9	10	M12; 22 deep
	250	453	19.5	23	10	M12; 18 deep
	355	482	19.5	23	10	M12; 18 deep

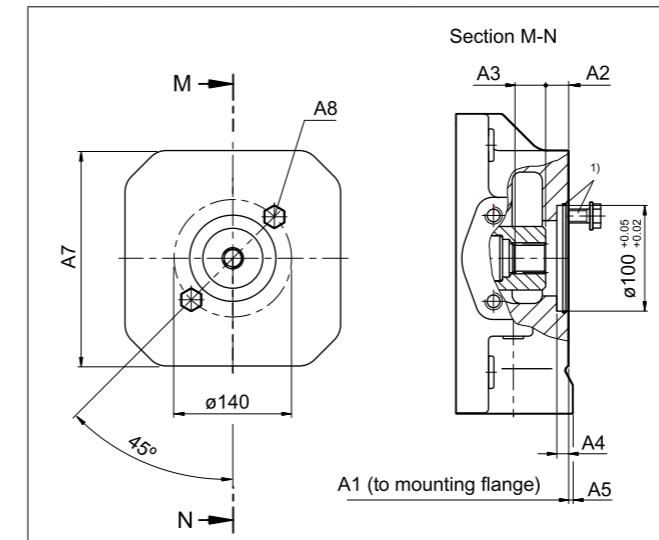
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2(metric)		Hub for splined shaft <sup>2)</sup>									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
100-2		1in 15T 16/32DP	•	•	-	-	-	-	•	○	○	KB4
		1in 15T 16/32DP	-	-	•	•	•	•	-	-	-	UB4

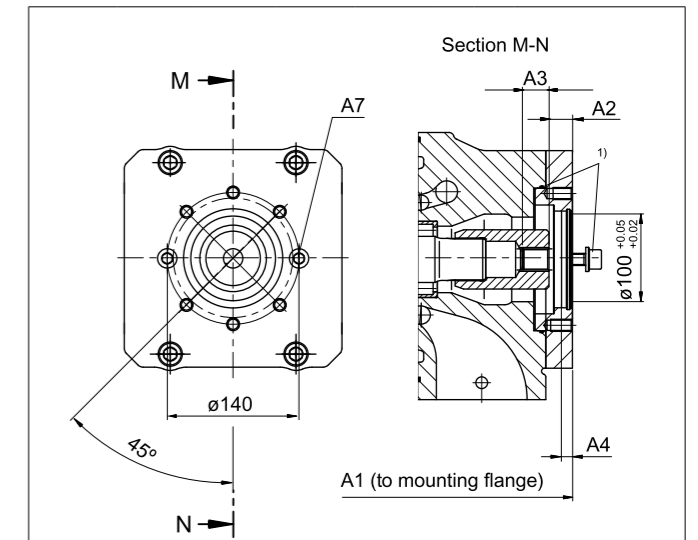
• = Available    ○ = On request    - = Not available

▼ 100-2



KB4	NG	A1	A2	A3	A4	A5	A7 <sup>3)</sup>	A8
	40	290	20.8	27.5	10	-	-	M12; 18 deep
	71	316	20.8	27.5	8	-	-	M12; 24 deep
	500	505	20.4	28.9	10	15	240	M12; 18 deep

▼ 100-2



UB4	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	18.9	29.5	10	M12; 22 deep
	180	393	18.9	29.5	10	M12; 22 deep
	250	453	20.9	29.5	10	M12; 18 deep
	355	482	20.9	29.5	10	M12; 18 deep

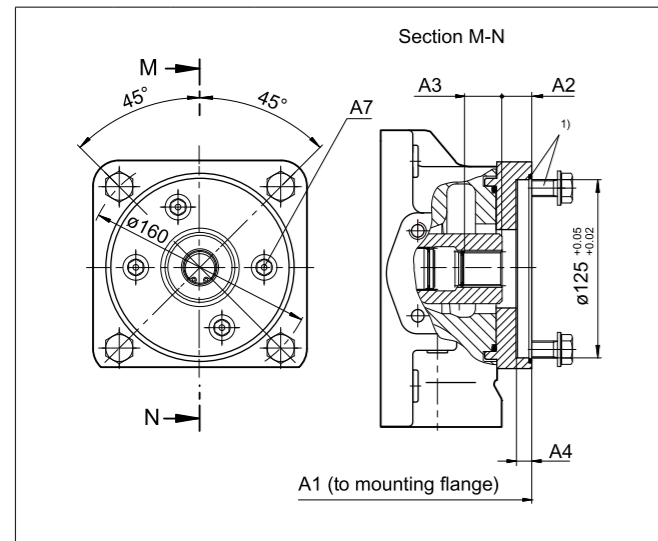
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2(metric)		Hub for splined shaft <sup>2)</sup>									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
125-4		1in 15T 16/32DP	-	•	-	-	-	-	○	○	○	KE1
		1in 15T 16/32DP	-	-	○	○	○	○	-	-	-	UE1

• = Available    ○ = On request    - = Not available

▼ 125-4



KE1	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	71	316	20.8	27.5	10	M12; 24 deep

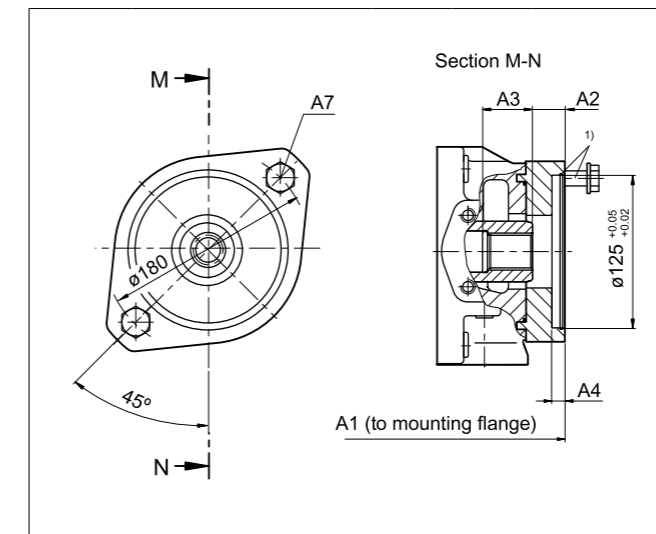
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2(metric)		Hub for splined shaft <sup>2)</sup>										Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	750 <sup>4)</sup>	1000	
125-2		1 1/4 in 14T 12/24DP	-	•	-	-	-	-	•	○	•	○	KB5
		1 1/4 in 14T 12/24DP	-	-	•	•	•	•	-	-	-	-	UB5

• = Available    ○ = On request    - = Not available

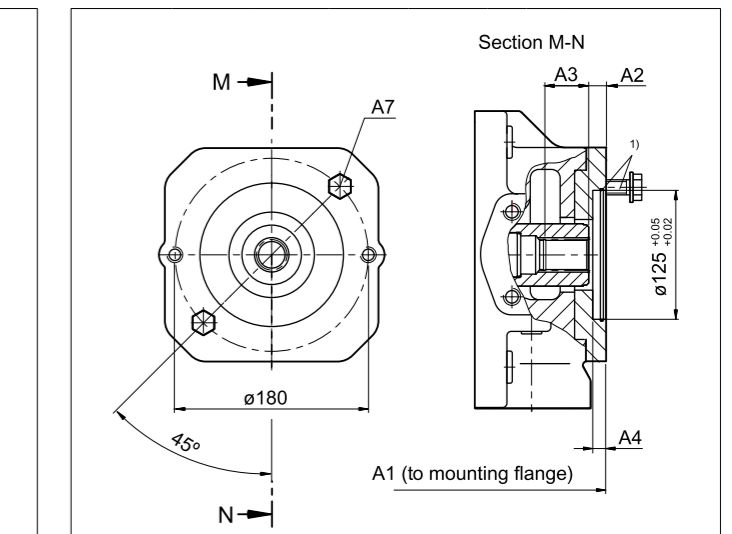
▼ 125-2



KB5	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	71	321	23	38	10	M16; 29 deep
	500	505	19.3	40.4	10	M16; 24 deep
	750 <sup>4)</sup>	649	19.3	40.4	10	M16; 20 deep

1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.  
 4) With charge pump

▼ 125-2



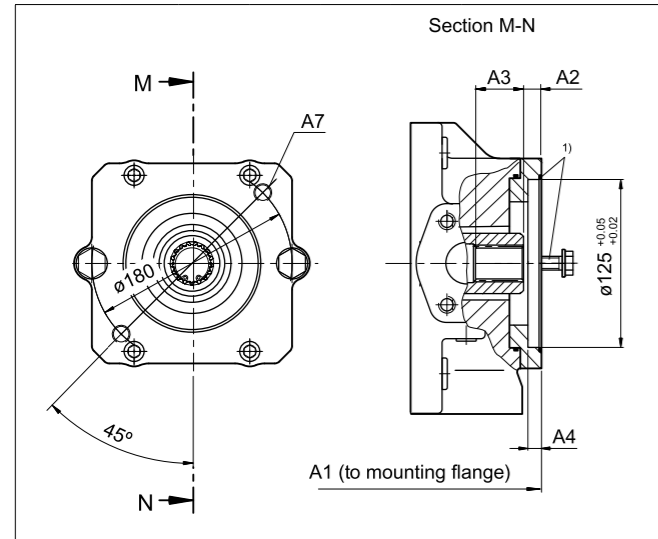
UB5	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	20	38	9	M16; 22 deep
	180	393	20	38	9	M16; 22 deep
	250	453	20.9	37.9	9	M16; 22 deep
	355	482	20.9	37.9	9	M16; 22 deep

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2(metric)		Hub for splined shaft <sup>2)</sup>									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
125-2	☼, ☼☼	1 1/2 in 17T 12/24DP	-	-	-	-	-	-	○	○	○	KB6
		1 1/2 in 17T 12/24DP	-	-	•	•	•	•	-	-	-	UB6
160-4	☼☼	1 1/4 in 14T 12/24DP	-	○	-	-	-	-	○	○	○	KB8
		1 1/4 in 14T 12/24DP	-	-	•	•	•	•	-	-	-	UB8

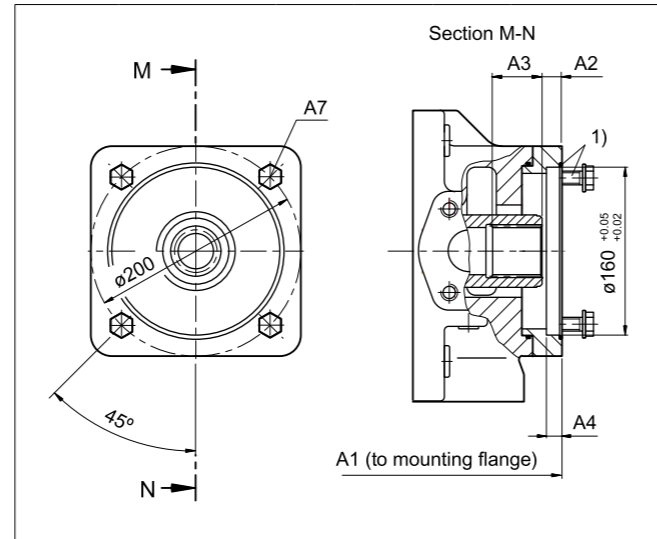
• = Available    ○ = On request    - = Not available

▼ 125-2



UB6	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
125	369	10.4	50	9	M16; 22 deep	
180	393	10.4	50	9	M16; 22 deep	
250	453	12.5	55	9	M16; 22 deep	
355	482	12.5	55	9	M16; 22 deep	

▼ 160-4



UB8	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
125	369	20	38	9	M16; 22 deep	
180	393	20	38	9	M16; 22 deep	
250	453	20.9	38	9	M16; 22 deep	
355	482	20.9	38	9	M16; 22 deep	

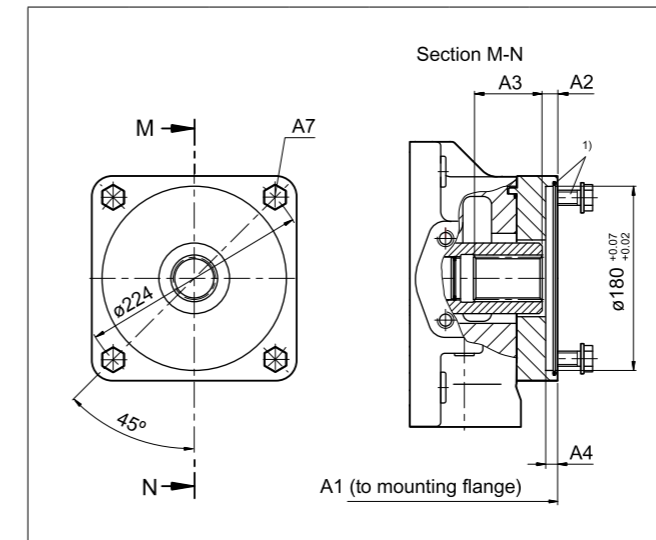
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-2(metric)		Hub for splined shaft <sup>2)</sup>									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
180-4	☼☼	1 3/4in 13T 8/16DP	-	-	-	-	-	-	○	○	○	KB7
		1 3/4in 13T 8/16DP	-	-	-	•	•	•	-	-	-	UB7

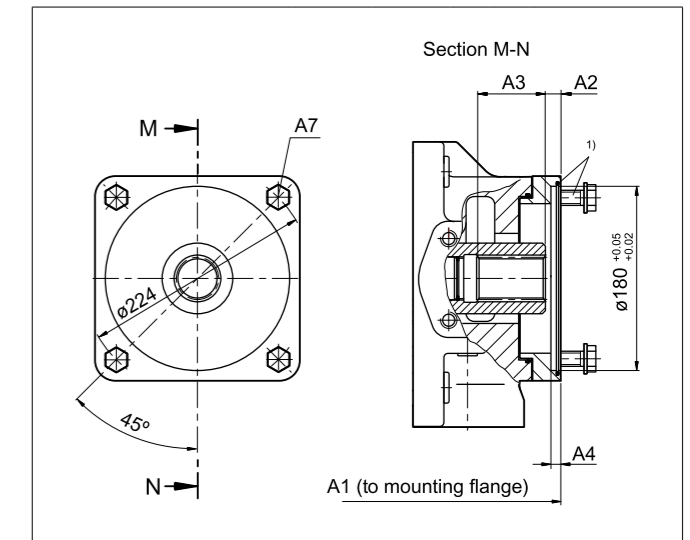
• = Available    ○ = On request    - = Not available

▼ 180-4



KB7	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
500	530	10.4	63.6	10	M16; 25 deep	
750	580	10.4	63.6	10	M16; 25 deep	

▼ 180-4



UB7	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
180	406	10.6	62	9	M16; 34 deep	
250	453	10.6	64	9	M16; 22 deep	
355	482	10.6	64	9	M16; 22 deep	

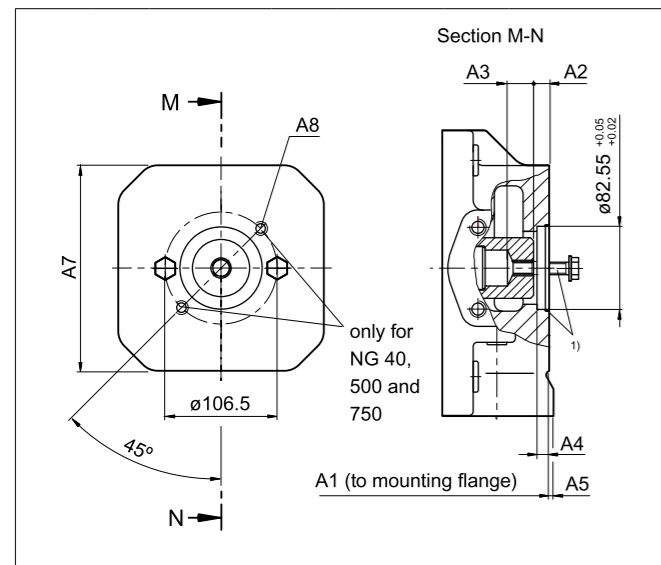
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes										Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	750 <sup>4)</sup>	1000	
82-2 (A)		5/8in 9T 16/32DP	•	•	-	-	-	-	•	•	○	○	K01
		5/8in 9T 16/32DP	-	-	•	•	•	•	-	-	-	-	U01

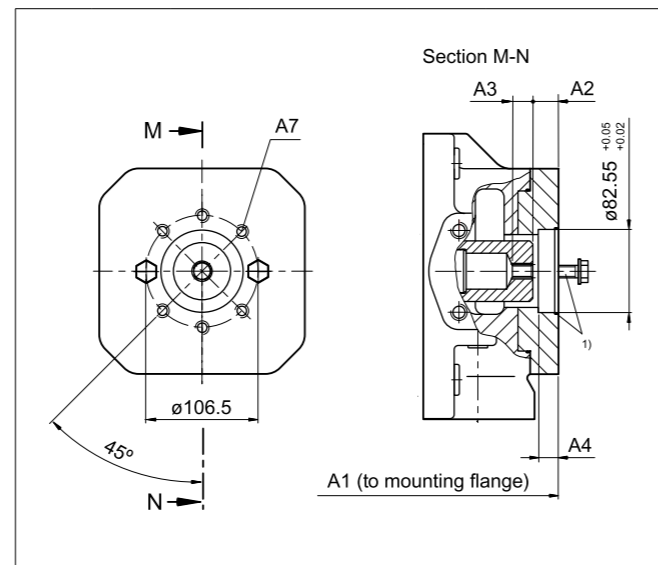
• = Available    ○ = On request    - = Not available

▼ 82-2



K31	NG	A1	A2	A3	A4	A5	A7	A8 <sup>3)</sup>
	40	263	10.3	25.9	10	-	-	M10; 15 deep
	71	291	10.3	24.6	10	2	140	M10; 15 deep
	500	505	10.3	32.7	10	15	240	M10; 15 deep
	750	555	10.3	32.7	10	-	-	M10; 15 deep

▼ 82-2



U01	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	10.3	19.4	13	M10; 16 deep
	180	393	10.3	19.4	13	M10; 16 deep
	250	453	16	19.4	13	M10; 16 deep
	355	482	16	19.4	13	M10; 16 deep

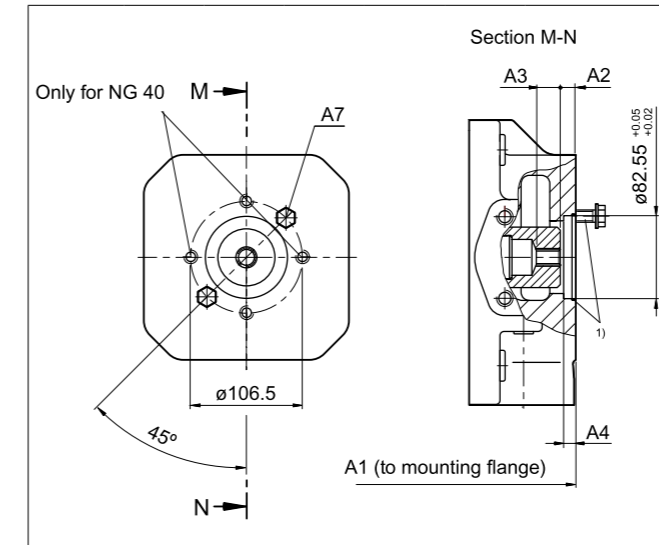
- 1) Mounting bolts and O-ring seal are included in the scope of delivery
- 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5
- 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.
- 4) With charge pump

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes										Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000		
82-2 (A)		3/4in 11T 16/32DP <sup>4)</sup>	•	•	-	-	-	-	○	○	○	K52	
		3/4in 11T 16/32DP	-	-	•	•	•	•	-	-	-	U52	

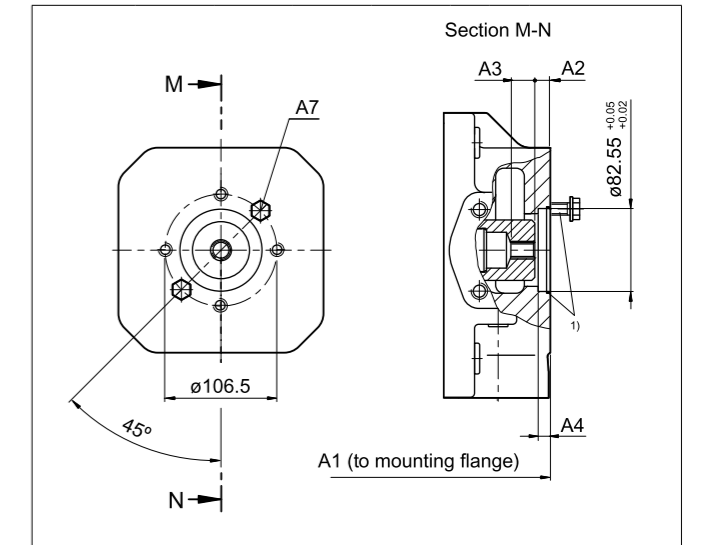
• = Available    ○ = On request    - = Not available

▼ 82-2



K52	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	40	263	10.5	33.8	10	M10; 15 deep
	71	312.5	21.5	19	10	M10; 15 deep

▼ 82-2



U52	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	19.4	21.1	10	M10; 16 deep
	180	393	19.4	21.1	10	M10; 16 deep
	250	453	19.5	23.9	10	M10; 16 deep
	355	482	19.4	23.9	10	M10; 16 deep

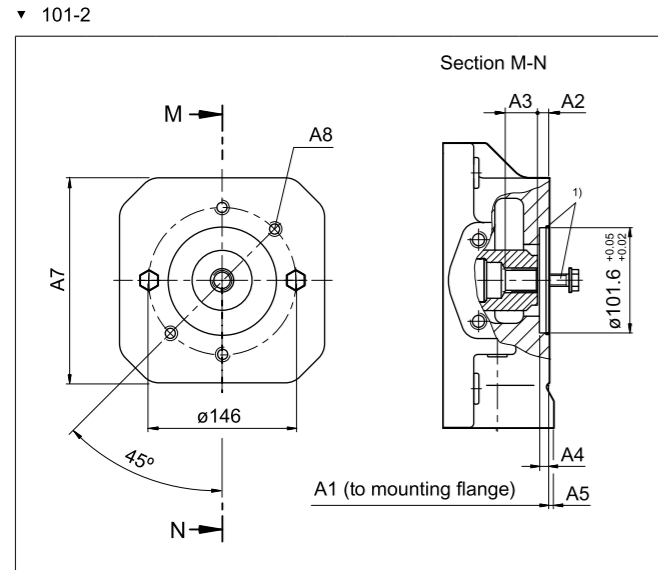
- 1) Mounting bolts and O-ring seal are included in the scope of delivery
- 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5
- 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

- 4) If an attachment pump with "R" shaft is to be fitted, please contact us.

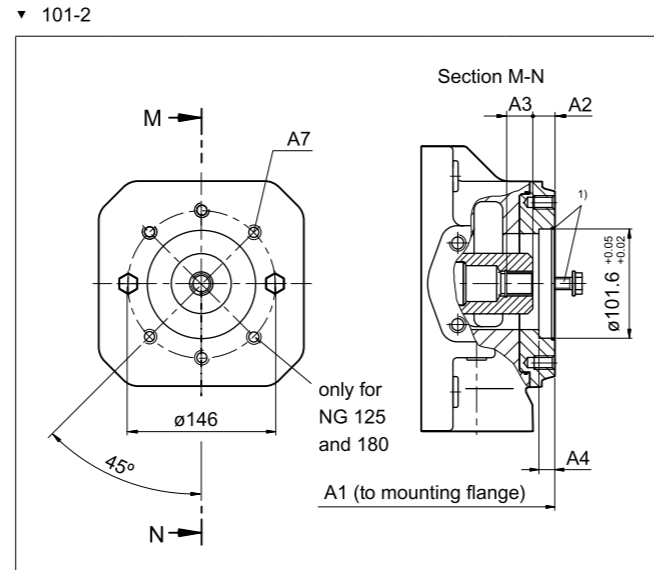
## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes										Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	750 <sup>4)</sup>	1000	
101-2 (B)		7/8in 13T 16/32DP	•	•	-	-	-	-	•	•	•	○	K68
		7/8in 13T 16/32DP	-	-	•	•	•	•	-	-	-	-	U68

• = Available    ○ = On request    - = Not available



K68	NG	A1	A2	A3	A4	A5	A7	A8 <sup>3)</sup>
	40	290	20.4	23.1	10	-	-	M12; 18 deep
	71	322	20.5	23.1	10	-	-	M12; 30 deep
	500	505	19.5	25	10	15	240	M12; 18 deep
	750	555	19.5	25	10	-	-	M12; 18 deep
	750 <sup>4)</sup>	649	19.5	25	10	-	-	M12; 18 deep



U68	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	28	25	13	M12; 22 deep
	180	393	28	25	13	M12; 22 deep
	250	453	19.5	23.1	13	M12; 18 deep
	355	482	19.5	23.1	13	M12; 18 deep

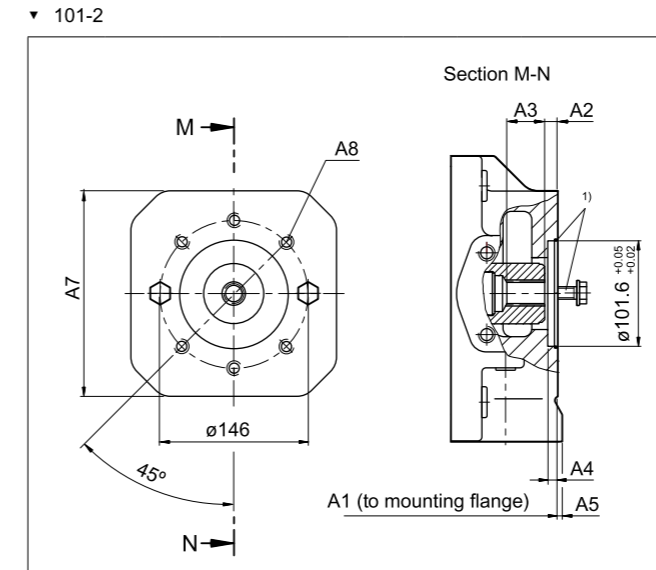
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

4) With charge pump

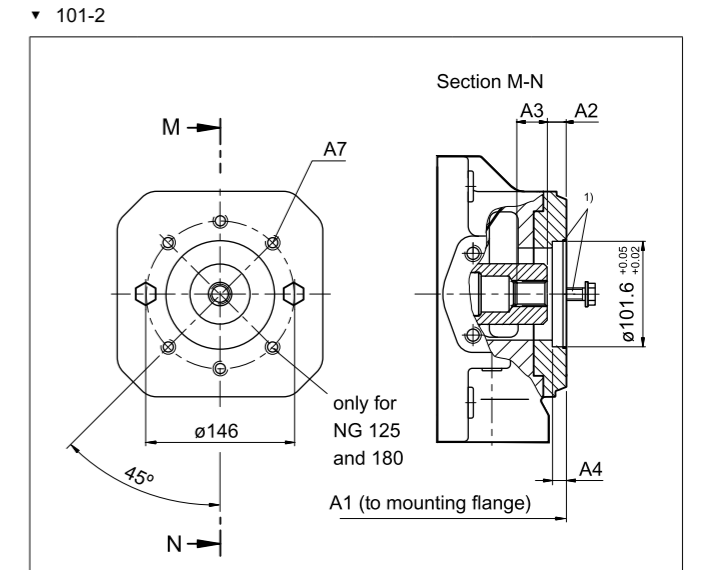
## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes										Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000		
101-2 (B)		1in 15T 16/32DP	•	•	-	-	-	-	•	○	○	K04	
		1in 15T 16/32DP	-	-	•	•	•	•	-	-	-	U04	

• = Available    ○ = On request    - = Not available



K04	NG	A1	A2	A3	A4	A5	A7	A8 <sup>3)</sup>
	40	290	20.8	27.5	10	-	-	M12; 20 deep
	71	322	20	29.4	10	-	-	M12; 30 deep
	500	505	20.4	28.9	10	15	240	M12; 18 deep



U04	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	18.9	29.4	13	M12; 22 deep
	180	393	18.9	29.4	13	M12; 22 deep
	250	453	18.9	29.4	13	M12; 18 deep
	355	482	18.9	29.4	13	M12; 18 deep

1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

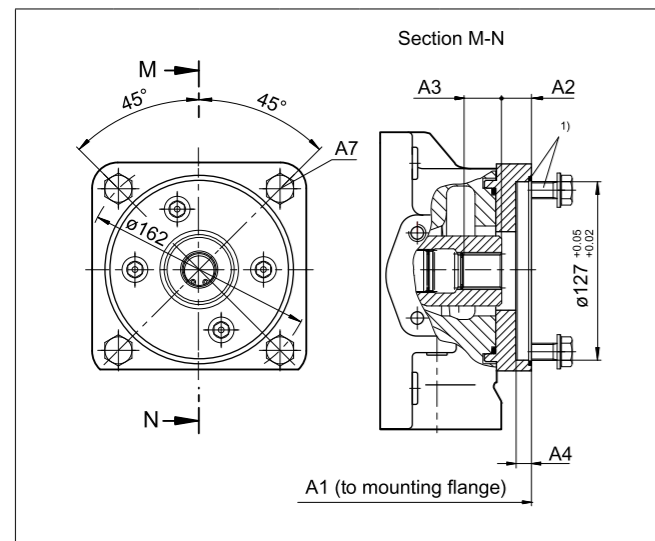


## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes									Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
127-4 (C)		1 1/4in 14T 12/24 DP	-	•	-	-	-	-	•	○	○	K15
		1 1/4in 14T 12/24 DP	-	-	•	•	•	•	-	-	-	U15

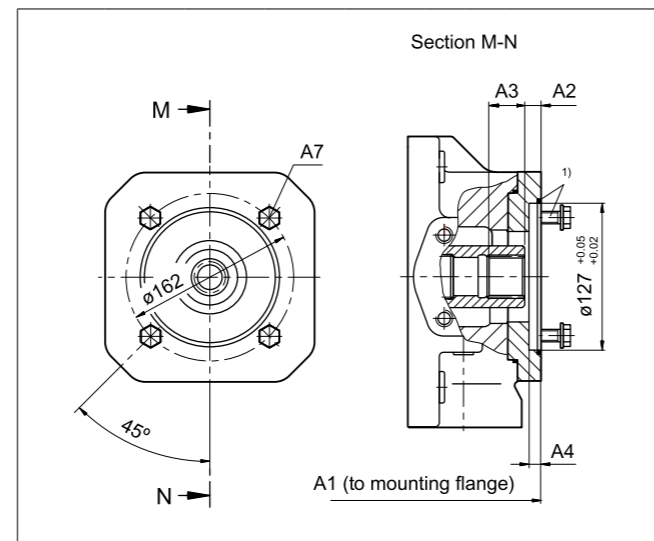
• = Available    ○ = On request    - = Not available

▼ 127-4<sup>4)</sup>



K15	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	71	321	23	38	13	M12; 30 deep
	500	505	19.3	40	13	M12; 18 deep

▼ 127-4



U15	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	20	38	13	M12; 22 deep
	180	393	20	38	13	M12; 22 deep
	250	453	20.9	38	13	M12; 22 deep
	355	482	20.9	38	13	M12; 22 deep

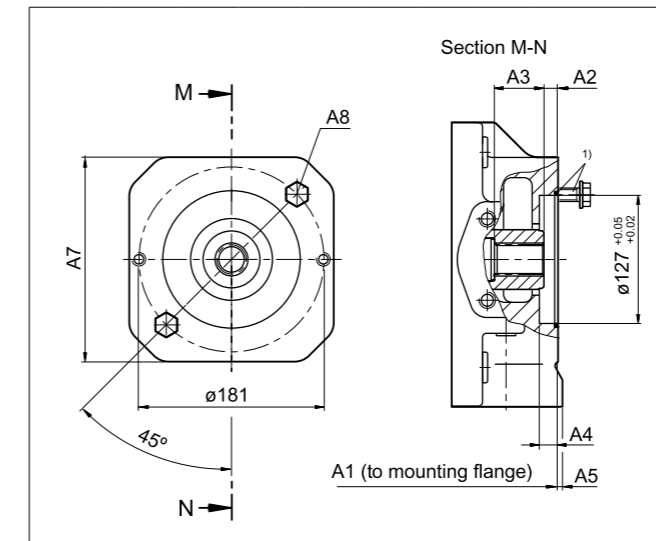
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.  
 4) For fitting an A10VZO71

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes									Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	750 <sup>4)</sup>	1000	
127-2 (C)		1 1/4in 14T 12/24 DP	-	•	-	-	-	-	•	•	•	○	K07
		1 1/4in 14T 12/24 DP	-	-	•	•	•	•	-	-	-	-	U07

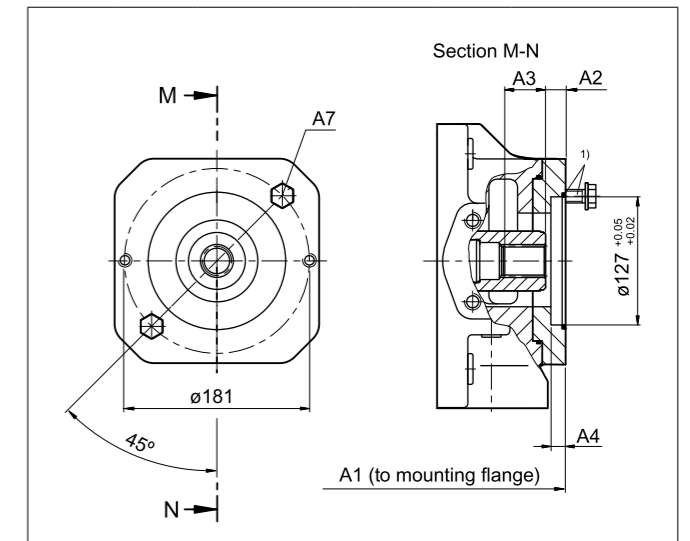
• = Available    ○ = On request    - = Not available

▼ 127-2



K07	NG	A1	A2	A3	A4	A5	A7	A8 <sup>3)</sup>
	71	321	23	38	13	-	-	M16; 30 deep
	500	505	19.3	40.4	13	15	240	M16; 24 deep
	750	555	19.3	40.4	13	-	260	M16; 24 deep
	750 <sup>4)</sup>	649	19.3	40.4	13	-	-	M16; 24 deep

▼ 127-2





U07	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	20.9	37.9	13	M16; 22 deep
	180	393	20.9	37.9	13	M16; 22 deep
	250	453	20.9	37.9	13	M16; 22 deep
	355	482	20.9	37.9	13	M16; 22 deep

1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

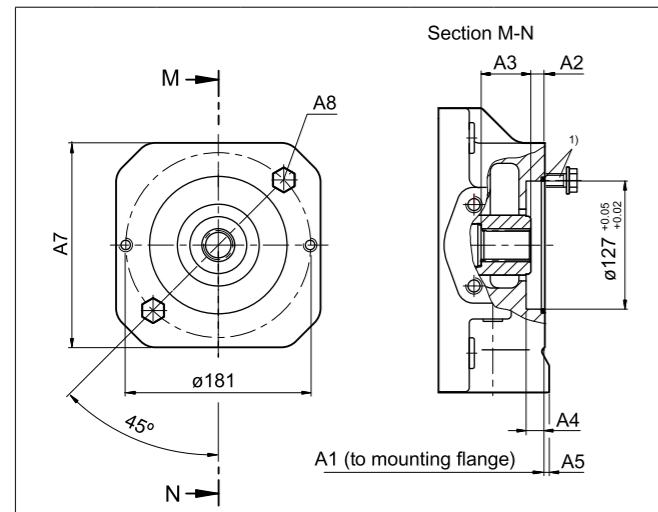
4) With charge pump

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>										Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
127-2 (C)		1 1/2in 17T 12/24 DP	-	-	-	-	-	-	•	•	•	K24
		1 1/2in 17T 12/24 DP	-	-	•	•	•	•	-	-	-	U24

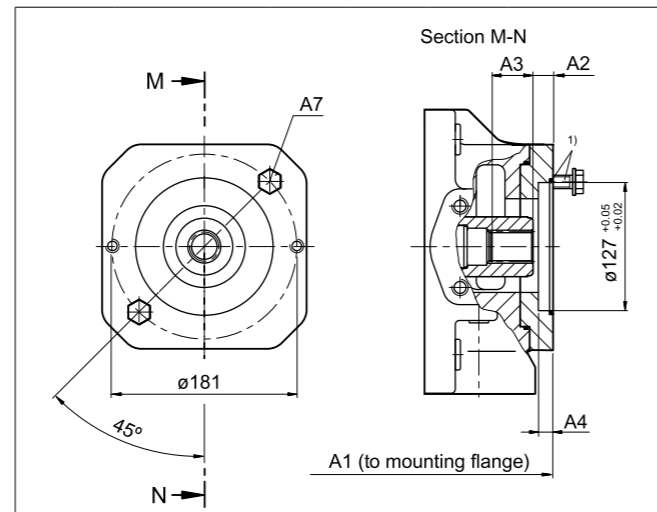
• = Available    ◦ = On request    - = Not available

▼ 127-2



K24	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	500	505	10.3	56.7	13	M16; 24 deep
	750	555	10.3	56.7	13	M16; 24 deep
	1000	628	10.4	56.6	13	M16; 32 deep


▼ 127-2



U24	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	10.4	50	13	M16; 22 deep
	180	393	10.4	50	13	M16; 22 deep
	250	453	12.4	55	13	M16; 22 deep
	355	482	12.4	55	13	M16; 22 deep

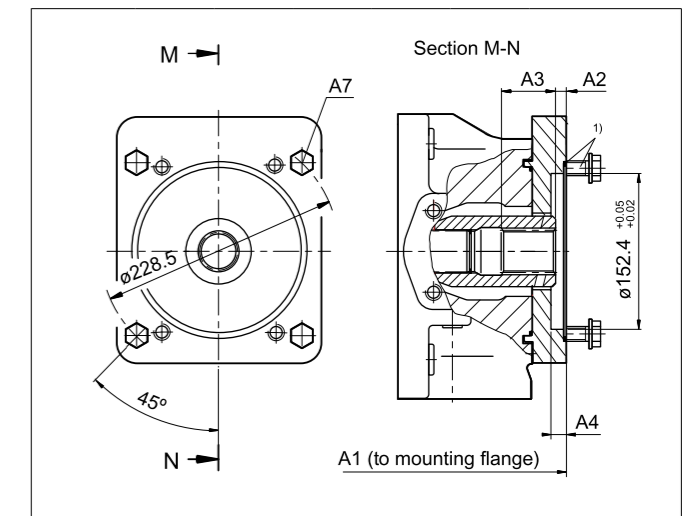
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>										Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
152-4 (D)		1 1/2 in 17T 12/24DP	-	-	-	-	-	-	◦	◦	◦	K96
		1 1/2 in 17T 12/24DP	-	-	•	•	•	•	-	-	-	U96

• = Available    ◦ = On request    - = Not available


▼ 152-4



U96	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
	125	369	10.4	52	13	M16; 22 deep
	180	393	10.4	52	13	M16; 22 deep
	250	453	12.4	55	13	M16; 22 deep
	355	482	12.4	55	13	M16; 22 deep

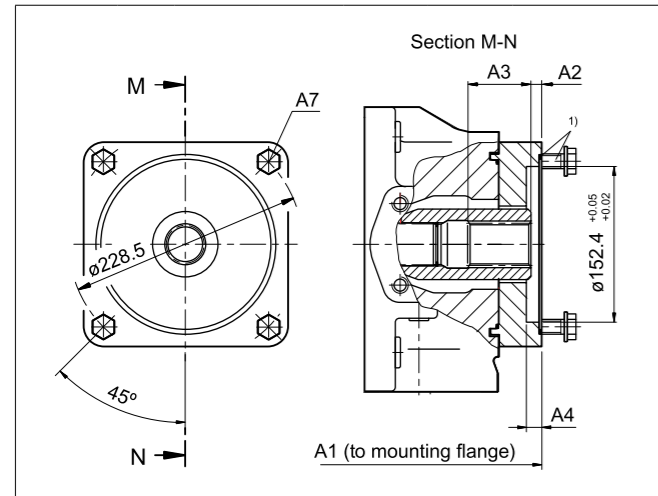
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes									Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
152-4		1 3/4in 13T 8/16DP	-	-	-	-	-	-	•	•	○	K17
		1 3/4in 13T 8/16DP	-	-	•	•	•	•	-	-	-	U17

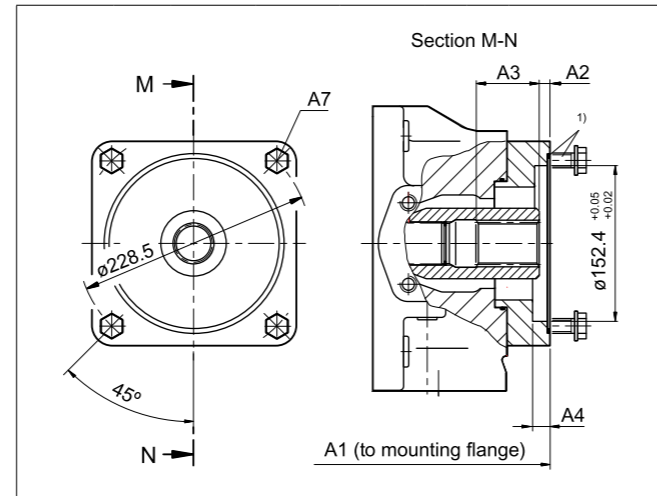
• = Available    ○ = On request    - = Not available

▼ 152-4



K17	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
500	530	10.4	59.6	13	M16; 25 deep	
750	580	10.4	59.6	13	M16; 25 deep	


▼ 152-4



U17	NG	A1	A2	A3	A4	A7 <sup>3)</sup>
125	382	10.4	62	13	M16; 35 deep	
180	406	10.4	62	13	M16; 35 deep	
250	453	10.6	62	13	M16; 22 deep	
355	482	10.6	62	13	M16; 22 deep	

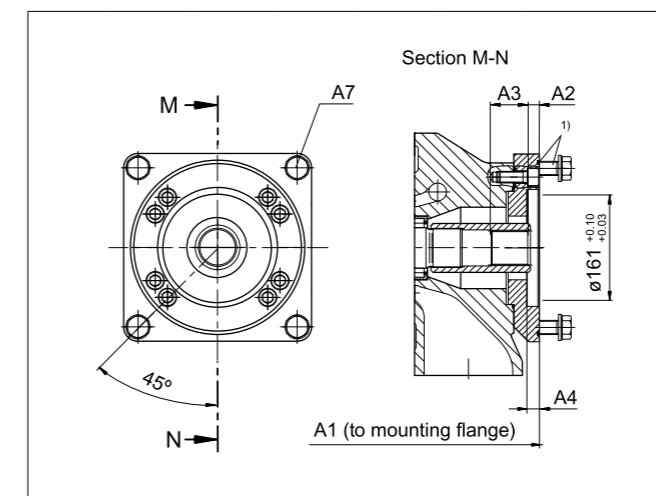
1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes									Code
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
165-4 (D)		N50×2×24×8H	-	-	-	-	-	-	•	○	○	K84
		N50×2×24×8H	-	-	-	-	○	○	-	-	-	U84

• = Available    - = Not available

▼ 165-4



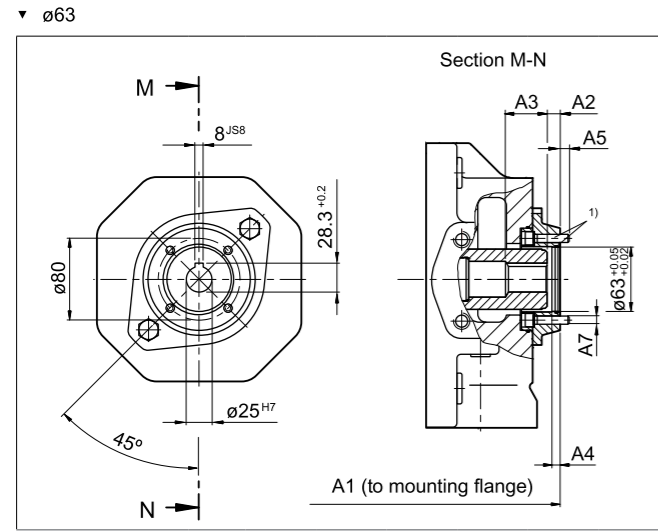
K84	NG	A1	A2	A3	A4 <sup>2)</sup>	A7
500	541	12.5	55.5	18	M20; 36 deep	

1) Mounting bolts and O-ring seal are included in the scope of delivery  
 2) Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit, tolerance class 5  
 3) Thread according to DIN 13, see instruction manual for maximum tightening torques.

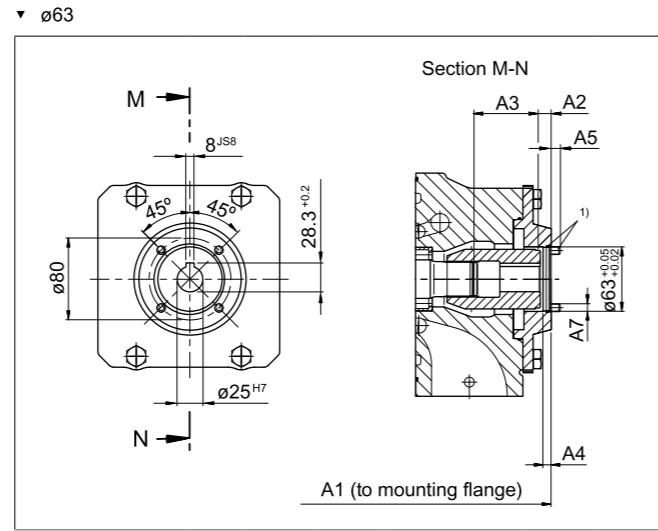
## Axial Piston Variable Pump A4VSO Dimensions, through drive

Flange ISO 3019-1(SAE)		Hub for splined shaft <sup>2)</sup>	Availability over sizes								Code	
Diameter	Symbol	Diameter	40	71	125	180	250	355	500	750	1000	
ø63		Shaft key ø25	•	•	-	-	-	-	○	○	○	K57
		Shaft key ø25	-	-	•	•	•	•	-	-	-	U57

• = Available    ○ = On request    - = Not available



K57	NG	A1	A2	A3	A4	A5	A7 <sup>2)</sup>
	40	288	11	56	9	9	M8
	71	319	10.9	42	8	9	M8



U57	NG	A1	A2	A3	A4	A5	A7 <sup>2)</sup>
	125	375	10.8	40	8	9	M8
	180	399	10.8	40	8	9	M8
	250	459	10.8	42.6	8	9	M8
	355	488	10.8	42.6	8	9	M8

1) Mounting bolts and O-ring seal are included in the scope of delivery  
2) Thread according to DIN 13, see instruction manual for maximum tightening torques.

## Axial Piston Variable Pump A4VSO Dimensions, through drive

### Overview of mounting options

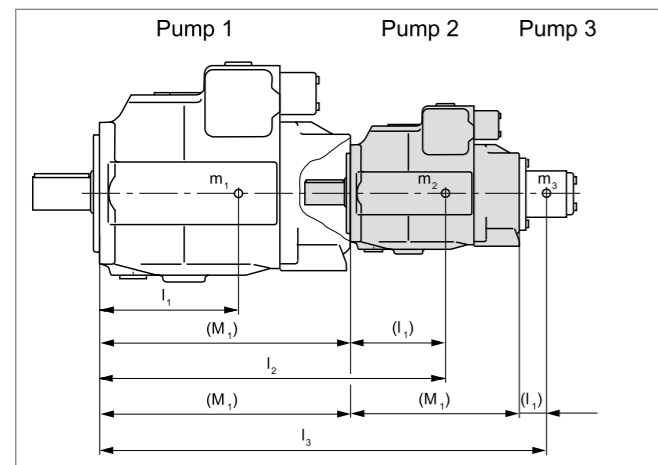
Through drive <sup>1)</sup>		Mounting options – 2nd pump							
Flange	Hub for splined shaft	Code	A4VSO/G NG (shaft)	A4CSG NG (shaft)	A10V(S)O/3x <sup>5)</sup> NG (shaft)	A10V(S)O/5x NG (shaft)	A10FZO/G NG (shaft)	A10VZO/G NG (shaft)	External/ internal gear pump
<b>Flange ISO 3019-2 (metric)</b>									
80-2	3/4 in <sup>3)</sup>	K/U B2	-	-	18 (S)/31	10 (S) /52	-	-	-
100-2	7/8 in <sup>3)</sup>	K/U B3	-	-	28 (S)/31	-	-	-	-
	1 in <sup>3)</sup>	K/U B4	-	-	45 (S)/31	-	-	-	-
125-2	1 1/4 in <sup>3)</sup>	K/U B5	-	-	71/88 (S)/31	-	-	-	-
	1 1/2 in <sup>3)</sup>	K/U B6	-	-	100 (S)/31	-	-	-	-
125-4	1 in <sup>3)</sup>	K/U E1	-	-	45 (S)/32	-	-	-	-
	W32 <sup>2)</sup>	K/U 31	40 (Z)	-	-	-	-	-	-
140-4	W40 <sup>2)</sup>	K/U 33	71 (Z)	-	-	-	-	-	-
160-4	W50 <sup>2)</sup>	K/U 34	125 (Z)	-	-	-	-	-	-
	W50 <sup>2)</sup>	K/U 34	180 (Z)	-	-	-	-	-	-
180-4	1 1/4 in <sup>3)</sup>	K/U B8	-	-	71/88 (S)/31	-	-	-	-
	1 3/4 in <sup>3)</sup>	K/U B7	-	-	140/180 (S)/31/32	-	-	-	-
224-4	1 1/2 in <sup>3)</sup>	K/U B9	-	-	100 (S)/32	-	-	-	-
	W60 <sup>2)</sup>	K/U 35	250 (Z)	250 (Z)	-	-	-	-	-
	W70 <sup>2)</sup>	K/U 77	355 (Z)	355 (Z)	-	-	-	-	-
315-8	W80 <sup>2)</sup>	K43	500 (Z)	500 (Z)	-	-	-	-	-
400-8	W90 <sup>2)</sup>	K76	750 (Z)	750 (Z)	-	-	-	-	-
	W100 <sup>2)</sup>	K88	1000 (Z)	-	-	-	-	-	-
<b>Flange SAE J 744 (ISO 3019-1)</b>									
82-2 (A) <sup>1)</sup>	5/8 in <sup>3)</sup>	K/U 01	-	-	-	-	-	-	F NG 004 to 022 <sup>4)</sup>
	3/4 in <sup>3)</sup>	K/U 52	-	-	18 (S)/31	10/18 (S)	3...10 (S) 11...18 (R)	3...10 (S) 18 (R)	-
101-2 (B) <sup>1)</sup>	7/8 in <sup>3)</sup>	K/U 68	-	-	28 (S)/31	28 (S)	21...28 (R)	28 (R)	N NG 020 to 032 <sup>4)</sup>
	1 in <sup>3)</sup>	K/U 04	-	-	45 (S)/31	45 (S)	37...45 (R)	45 (R)	PGH4
	1 1/4 in <sup>3)</sup>	K/U 06	-	-	-	-	63 (R)/10	-	-
127-2 (C) <sup>1)</sup>	1 1/4 in <sup>3)</sup>	K/U 07	-	-	71/88 (S)/31	-	-	-	-
	1 1/2 in <sup>3)</sup>	K/U 24	-	-	100 (S)/31	85/100 (S)	-	-	PGH5
127-4 (C) <sup>1)</sup>	1 in <sup>3)</sup>	K/U E2	-	-	-	-	-	45 (R)/10	-
	1 1/4 in <sup>3)</sup>	K/U 15	-	-	-	60/63/72 (S)	-	71 (R)/10	-
152-4 (D) <sup>1)</sup>	1 3/4 in <sup>3)</sup>	K/U 17	-	-	140/180 (S)/31/32	-	-	140/180 (S)	-
	1 1/2 in <sup>3)</sup>	K/U 96	-	-	100 (S)/32	-	-	100 (S)	-
ø63-4, metr.	shaft key ø25	K/U 57	-	-	-	-	-	-	R4

1) Additional through drives are available on request  
2) According to DIN 5480  
3) Splined shaft in accordance with SAE J744  
4) If a through drive for an A10V(S)O with R-shaft is desired, please contact us.

### Permissible mass torque

Based on mounting flange on primary pump

Size			40	71	125	180	250	355	500	750	1000
Permissible moment of inertia	$T_{m\text{ perm.}}$	Nm	1800	2000	4200	4200	9300	9300	15600	19500	19500
Permissible moment of inertia for dynamic mass acceleration 10 g (= 98.1 m/s <sup>2</sup> )	$T_{m\text{ perm.}}$	Nm	180	200	420	420	930	930	1560	1950	1950
Weight (A4VSO...DR)	m	kg	39	53	88	102	184	207	320	460	605
Distance from center of gravity	$l_1$	mm	120	140	170	180	210	220	230	260	290



$m_1, m_2, m_3$	Weight of pump	[kg]
$l_1, l_2, l_3$	Distance from center of gravity	[mm]

$$T_m = (m_1 \times l_1 + m_2 \times l_2 + m_3 \times l_3) \times \frac{1}{102} \text{ [Nm]}$$

### Combination pumps A4VSO + A4VSO

Total length A

A4VSO (1. pump)	A4VSO...DR...NOO (2. pump)								
	NG 40	NG 71	NG 125	NG 180	NG 250	NG 355	NG 500	NG 750	NG 1000
NG 40	554	-	-	-	-	-	-	-	-
NG 71	582	611	-	-	-	-	-	-	-
NG 125	635	664	724	-	-	-	-	-	-
NG 180	659	688	748	768	-	-	-	-	-
NG 250	719	748	808	828	904	-	-	-	-
NG 355	748	777	837	857	933	962	-	-	-
NG 500	771	800	860	880	976	1005	1110	-	-
NG 750	821	850	910	930	1026	1055	1160	1214	-
NG 1000	o	923	983	1003	1099	1128	1233	1288	1368

o = On request

By using combination pumps, it is possible to have independent circuits without the need for splitter gearboxes. When ordering combination pumps, the type designations of the 1st and 2nd pumps must be connected with a "+" and are combined in one part number. When ordering, the single pumps should be ordered according to type code.

#### Notice

- ▶ The combination pump type code is shown in shortened form in the order confirmation.  
Example:  
A4VSO 250LR2D/30R+A4VSO 250LR2D/30R
- ▶ Each through drive is plugged with a non-pressure resistant cover. Before commissioning the units, they must therefore be equipped with pressure-resistant covers. Through drives can also be ordered with a pressure-resistant cover. Please specify in plain text.

#### Order example:

A4VSO 250LR2D/30R-PZB25U35

A4VSO 250LR2D/30R-PZB25N00

It is permissible to use a combination of two single pumps of the same size (tandem pump), considering a dynamic mass acceleration of maximum 10 g (= 98.1 m/s<sup>2</sup>) without additional support brackets.

For combination pumps consisting of more than two pumps, the mounting flange must be rated for the permissible moment of inertia.

