TYPE CODE

K4V	G	180		/	10	R	–	N	Z	D	02	F02	1	S	R	P	–	K
01	02	03	04		05	06		07	08	09	10	11	12	13	14	15		16

AXIAL PISTON UNIT

01	Swash-plate design, variable, nominal pressure p_N 400 [bar], maximum pressure p_{max} 450 [bar]	K4V

OPERATING MODE

02	Pump, close circuit	G

SIZE		28	40	56	71	90	125	180	250
03	Geometric displacement $q_{v,\,max}$ [mL/r]	28	40	56	71	90	125	180	250

CONTROL DEVICE		28	40	56	71	90	125	180	250					
Without control module		○	○	○	○	○	○	●	○	NV				
Proportional hydraulic control	pilot-pressure 6~18 bar with inlet filtration in P[1]	○	○	○	○	○	○	●	○	HD3				
	mechanical servo	○	○	○	○	○	○	●	○	HW				
Proportional electrical control	U=12V DC	○	○	○	○	○	○	●	○	EP3				
	U=24V DC	○	○	○	○	○	○	●	○	EP4				
Two-point electric control	U=12V DC	○	○	○	○	○	○	●	○	EZ1				
	U=24V DC	○	○	○	○	○	○	●	○	EZ2				
Speed related automatic control	U=12V DC	○	○	○	○	○	○	●	○	DA1				
	U=24V DC	○	○	○	○	○	○	●	○	DA2				
Direct operated hydraulic control		○	○	○	○	○	○	●	○	DG				
04 Without pressure cut-off		○	○	–	–	–	○	●	○					
Pressure cut-off		○	○	○	○	○	○	●	○		D			
Without neutral position switch		○	○	○	○	○	○	●	○					
Neutral position switch [2]		○	○	○	○	○	○	●	○			L		
Without mech. stroke limiter		○	○	○	○	○	○	●	○					
External mech. stroke limiter		○	○	○	○	○	○	●	○				M	
Without stroking chamber pressure port X_3/X_4		○	○	○	○	○	○	●	○					
Stroking chamber pressure port		○	○	○	○	○	○	●	○					T
		NV	HD	HW	DG	DA	EP	EZ						
DA control valve	without DA valve	●	●	●	●	–	●	●						1
	fixed setting	–	●	●	●	●	●	–						2
	mechanical adjustable + position lever ⟳	–	●	●	●	●	●	–						3R
	mechanical adjustable + position lever ⟲	–	●	●	●	●	●	–						3L
	non-mineral oil	–	–	–	–	●	–	–						4
	mineral oil	–	–	–	–	●	–	–						8
	pilot-control port	–	●	●	●	●	●	–						7

NOTE: ● available ○ upon request – unavailable preferred

1) For size 28~71: in P and X_1/X_2; 2) Only for HW.

K4V	G	180		/	10	R	–	N	Z	D	02	F02	1	S	R	P	–	K
01	02	03	04		05	06		07	08	09	10	11	12	13	14	15		16

SERIES

		28	40	56	71	90	125	180	250	
05	Standard	○	○	○	○	○	○	●	○	10

DIRECTION OF ROTATION

06	View on drive shaft	⟳ clockwise	R
		⟲ counterclockwise	L

SEALING

07	Fluoroelastomer (FKM) as shaft seals; Nitrile rubber (NBR) for others.	N

DRIVE SHAFT

				28	40	56	71	90	125	180	250	
08	[DIN 5480] splined shaft	single pump		○	○	○	○	○	○	●	○	Z
		tandem pump	1st pump	○	–	–	–	–	–	●	○	Z
				–	○	○	○	○	○	–	–	A
	[ANSI B92.1a] splined shaft	single pump		○	○	○	○	○	○	●	○	S
		tandem pump	1st pump	○	○	–	–	○	–	–	–	S
				–	–	○	○	–	○	●	○	T
			2nd pump	–	○	–	–	○	–	–	–	U

MOUNTING FLANGE

			28	40	56	71	90	125	180	250	
09	[SAE J744] flange	2-hole	○	○	○	–	–	–	–	–	C
		4-hole	–	–	–	–	–	–	●	○	D
		2+4-hole	–	–	–	○	○	○	–	–	F

WORKING PORT

			28	40	56	71	90	125	180	250	
10	Suction port **S** at bottom, [SAE] flange port **A/B**:	on top and at bottom	–	○	○	○	○	○	●	–	02
		both on **left** side	–	–	–	○	○	○	–	–	10
			○	–	–	–	–	–	–	○	10
	Suction port **S** at top, [SAE] flange port **A/B**:	on top and at bottom	–	○	○	○	○	○	○	–	03
			–	–	–	○	○	○	–	–	13
		both on **left** side	○	–	○	–	–	–	–	○	13

THROUGH-DRIVE

			28	40	56	71	90	125	180	250		
11	Without boost pump	without through-drive	○	○	○	○	○	○	●	○	N	
		with through-drive	○	○	○	○	○	○	●	○	K	
	Integrated boost pump	with or without through-drive	○	○	○	○	○	○	●	○	F	
	Single pump	without through-drive	○	○	○	○	○	○	●	○		00
	[ISO 3019-1] 82-2	[SAE A] ⅝"-9T-16/32DP	○	○	○	○	○	○	●	○		01
	[ISO 3019-1] 101-2	[SAE B] ⅞"-13T-16/32DP	○	○	○	○	○	○	●	○		02
		[SAE B–B] 1"-15T-16/32DP	○	○	○	○	○	○	●	○		04
	[ISO 3019-1] 127-2	[SAE B–B] 1"-15T-16/32DP	–	○	–	–	–	–	–	–		09
		[SAE C] 1¼"-14T-12/24DP	–	–	○	○	○	○	●	○		07
	[ISO 3019-1] 152-2/4	W35X2X16X9g	–	–	–	–	○	–	–	–		73
		[SAE D] 1¾"-13T-8/16DP	–	–	–	–	–	○	●	○		69
	[ISO 3019-1] 165-4	[SAE D] 1¾"-13T-8/16DP	–	–	–	–	–	–	●	○		72

NOTE: ● available ○ upon request – unavailable preferred

K4V	G	180		/	10	R	–	N	Z	D	02	F02	1	S	R	P	–	K
01	02	03	04		05	06		07	08	09	10	11	12	13	14	15		16

HIGH-PRESSURE RELIEF VALVE

			28	40	56	71	90	125	180	250	
12	Pilot operated	with bypass	–	–	–	○	○	○	●	○	1
	Direct operated, fixed setting	without bypass	○	○	○	–	–	–	–	–	4
		with bypass	○	○	○	–	–	–	–	–	6
		without bypass	○	○	○	–	–	–	–	–	3
		with bypass	○	○	○	–	–	–	–	–	5

FILTRATION / BOOST PRESSURE SUPPLY

			28	40	56	71	90	125	180	250	
13	Filtration in the boost pump suction line		○	○	○	○	○	○	●	○	S
	Filtration in boost pump pressure line, ports for external boost circuit filtration F_e/F_a,	without attachment filter	○	○	○	○	○	○	●	○	D
		without attachment filter, with cold start valve	–	○	○	○	○	○	●	–	K
		attachment filter + cold start valve	–	○	○	○	○	○	●	–	F
		attachment filter + cold start valve & visual contamination indicator	–	○	○	○	○	○	●	–	P
		attachment filter + cold start valve & electric contamination indicator	–	○	○	○	○	○	●	–	B
	External boost pressure supply (without boost pump)		○	○	○	○	○	○	●	○	E

SWIVEL ANGLE SENSOR

		28	40	56	71	90	125	180	250	
14	Without swivel angle sensor	○	○	○	○	○	○	●	○	
	With electric swivel angle sensor	○	○	○	○	○	○	●	○	R

CONNECTOR FOR SOLENOID

			28	40	56	71	90	125	180	250	
15	DEUTSCH – molded connector, 2-pin,	without suppressor diode	○	○	○	○	○	○	●	○	P
		suppressor diode (only for EZ/DA)	○	○	○	○	○	○	●	○	Q

VERSION

16	Standard version	(without dash or code)	
		with combined pump or parts	K
	Special version		S
		with combined pump or parts	SK

NOTE: ● available ○ upon request – unavailable preferred

HYDRAULIC FLUIDS

K4VG pump is design for operation with [DIN 51524] HLP mineral oil. Selection of environmentally acceptable hydraulic fluids or fire-resistant, water-containing hydraulic fluids HFD (HFA/HFB/HFC excluded) is allowed but must be specified when ordering.

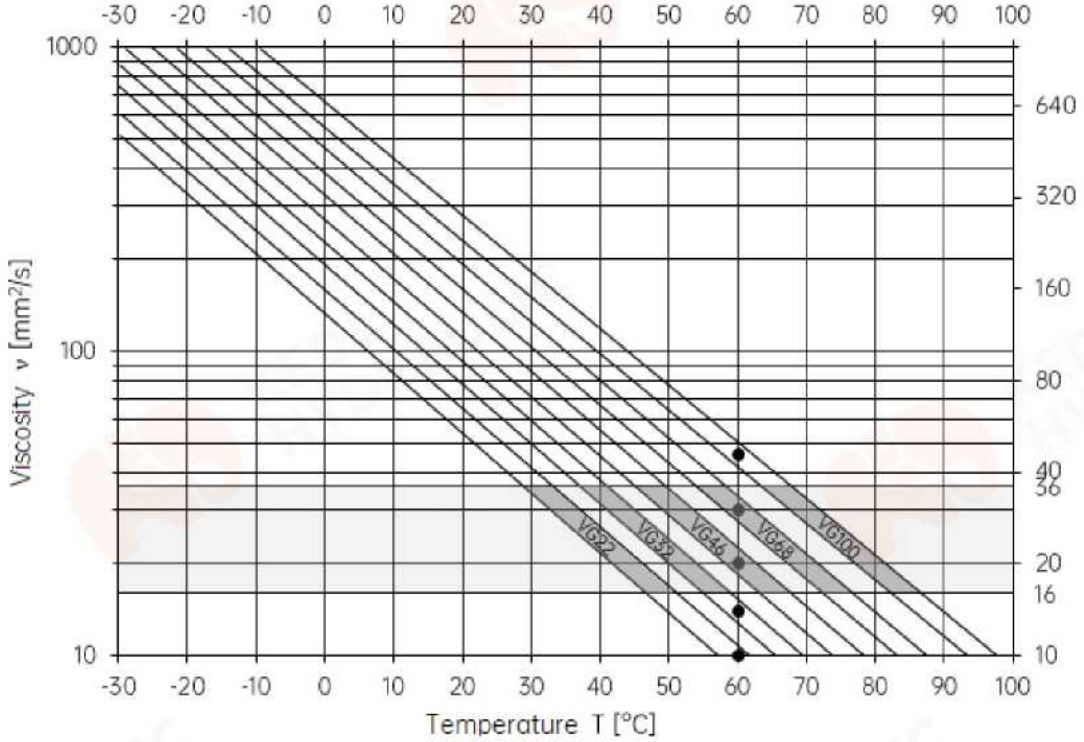
Please contact us if any technical parameter cannot be adhered to.

1. Viscosity and temperature of hydraulic fluids

Operation	Temperature	Viscosity	Remarks
Cold start	t_{min}=-25°C/-40 °C*	ν_{max}=1600 mm²/s	t<3 min, p≤50 bar, n≤1000 rpm
Warm-up		ν=400~1600 mm²/s	t≤15 min, p≤0.7 p_N, n≤0.5 n_{max}
Continuous	t_{max}=+115°C/+85 °C*	ν=10~400 mm²/s	at port T
Short-term	t_{max}=+115°C/+85 °C*	ν_{min}=7~10 mm²/s	t<3 min, p≤0.3 p_N, at port T

NOTE: * NBR as shaft seals, please contact us.

2. Selection diagram



Before selection, figure out the relationship between ambient temperature and oil temperature in lines in a close circuit. Make sure that any temperature in system must NOT exceed 115 °C.

The hydraulic fluid should be selected so that the operating viscosity in the operating temperature range is within the optimum range ν_{opt}=16~36 mm²/s (shaded area in selection diagram) and its viscosity grade should be as high as possible. For example: whereat oil temperature in reservoir is 60 °C, both viscosity grades VG46 and VG68 are within the optimum range (2 spots in shaded area of selection diagram), in this case, VG68 is preferred.

3. Filtration of hydraulic fluids

Finer filtration improves the cleanliness level of the hydraulic fluid, which increases the service life of the axial piston unit. An [ISO 4406] cleanliness level of at least **20/18/15** is to be maintained during continuous operation; In case of high temperature (90~115 °C) during short-term operation, cleanliness level of **19/17/14** is required.

TECHNICAL DATA

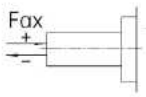
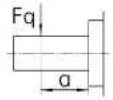
1. Working pressure range (when using hydraulic fluid based on mineral oils)

Pressure	K4VG	Remarks
Suction $p_{S, abs}$	0.8~5 bar	Minimum pressure 0.5 bar absolute at suction port **S** (inlet) in a short-term operation at cold start (t<3 min) is required to prevent damage to the axial piston unit.
Boost pump p_{Sp}	25~40 bar	
Nominal p_N	400 bar	at working port **A/B** (outlet)
Maximum p_{max}	450 bar	at working port **A/B** (outlet)
Minimum p_{min}	≤25 bar high-pressure side p_L+10 bar low-pressure side	Minimum pressure at working port **A/B** (outlet) is required to prevent damage to the axial piston unit. Here p_L=case pressure.
Control $p_{St, min}$ (at n=2000 rpm)	p_L+20 bar (EP/HD/HW) p_L+25 bar (DA/DG/EZ/ET)	Required control pressure depends on rotational speed/working pressure/spring assembly of stroking pistons, which ensures the function of control.

2. Other technical data

			Size	28	40	56	71	90	125	180	250
Geom. displacement		$q_{V, max}$	mL/r	28	40	56	71	90	125	180	250
boost pump [1]		$q_{V, Sp}$	mL/r	6.1	8.6	11.6	19.6	19.6	28.3	39.8	52.5
Rotational speed[2]	$q_{V, max}$	n_N	rpm	4250	4000	3600	3300	3050	2850	2500	2400
	limit [3]	$n_{max, lim}$	rpm	4500	4200	3900	3600	3300	3250	2900	2600
	int. [4]	$n_{max, int}$	rpm	5000	5000	4500	4100	3800	3450	3000	2700
		n_{min}	rpm	500	500	500	500	500	500	500	500
Flow	n_N	Q_V	L/min	119	160	202	234	275	356	450	600
Power	n_N [5]	P	kW	79	107	134	156	183	238	300	400
Torque	Δp_N [5]	T_{max}	Nm	178	255	357	452	573	796	1146	1592
	Δp_E [6]	T	Nm	45	64	89	113	143	199	286	398
Drive shaft	*Z*			W25	W30	W30	W35	W35	W40	W50	W55
	A			–	W35	W35	W40	W45	W45	–	–
	S			1"	1 ¼"	1 ¼"	1 ¼"	1 ¾"	1 ¾"	1 ¾"	1 ¾"
	T			–	–	1 ⅜"	1 ⅜"	–	2"	2 ¼"	2 ¼"
	U			–	1"	–	–	1 ¼"	–	–	–
Input Torque	*Z*	$T_{E, max}$	Nm	352	522	522	912	912	1460	3140	4350
	A	$T_{E, max}$	Nm	–	912	912	1460	2190	2190	–	–
	S	$T_{E, max}$	Nm	314	602	602	602	1640	1640	1640	1640
	T	$T_{E, max}$	Nm	–	–	970	970	–	2670	4070	4070
	U	$T_{E, max}$	Nm	–	314	–	–	602	–	–	–
Through-drive torque		$T_{D, max}$	Nm	231	314	521	660	822	1110	1760	2230
Rotary stiffness of drive shaft	*Z*	c	kNm/rad	32.8	67.5	78.8	122.8	137	223.7	319.6	624.2
	A	c	kNm/rad	–	79.6	95.8	142.4	176.8	256.5	–	–
	S	c	kNm/rad	31.4	69	80.8	98.8	158.1	218.3	244.5	354.5
	T	c	kNm/rad	–	–	95	120.9	–	252.1	318.4	534.3
	U	c	kNm/rad	–	50.8	–	–	107.6	–	–	–

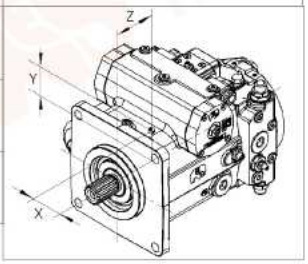
NOTE: – unavailable; **1)** p=20 bar; **2)** v_{opt}=16~36 mm²/s, mineral oil; **3)** Valid at half corner power (e.g. $q_{v, max}$ and p_N/2); 4) intermittent, valid at Δp=70~150 bar, or at Δp<300 bar and t<0.1 s); **5)** At $q_{v, max}$, n_N and Δp_N=400 bar, without boost pump; **6)** At $q_{v, max}$ and Δp_E=100 bar, without boost pump.

Parameter			Size 28	40	56	71	90	125	180	250
Rotary moment of inertia	J	kgm^2	0.0022	0.0038	0.0066	0.0097	0.0149	0.0232	0.0444	0.0983
Angular acceleration	α	rad/s^2	38000	30000	24000	21000	18000	14000	11000	6700
Case volume	V	L	0.9	1.1	1.5	1.3	1.5	2.1	3.1	6.3
Weight	m	kg	29	31	38	50	60	80	101	156
Center of gravity [1]	X	mm	<5	<5	<5	<5	<5	<5	<5	<5
	Y	mm	24	20	20	15	20	30	33	30
	Z	mm	105	112	106	135	145	160	180	203
Axial force										
	Z	$+F_{ax, max}$	N	417	880	1490	2758	2670	3547	4500	4150
		$-F_{ax, max}$	N	1557	2120	2910	4242	4330	6053	7500	4150
	A	$+F_{ax, max}$	N	–	880	1490	2758	2670	3547	–	–
		$-F_{ax, max}$	N	–	2120	2910	4242	4330	6053	–	–
	S	$+F_{ax, max}$	N	417	880	1490	2758	2670	3547	4500	4150
		$-F_{ax, max}$	N	1557	2120	2910	4242	4330	6053	7500	4150
	T	$+F_{ax, max}$	N	–	–	1490	2758	–	3547	4500	4150
		$-F_{ax, max}$	N	–	–	2910	4242	–	6053	7500	4150
	U	$+F_{ax, max}$	N	–	880	–	–	2670	–	–	–
		$-F_{ax, max}$	N	–	2120	–	–	4330	–	–	–
Radial force *(distance a to shaft collar)*	Z	$F_{q, max}$	N	3030	3608	5051	5489	6957	8455	9740	12298
		a	mm	17.5	17.5	17.5	20	20	22.5	27.5	29
	A	$F_{q, max}$	N	–	3092	4329	4803	5411	7516	–	–
		a	mm	–	20	20	22.5	25	25	–	–
	S	$F_{q, max}$	N	2983	3409	4772	6050	5478	7609	10956	15217
		a	mm	19	24	24	24	33.5	33.5	33.5	33.5
	T	$F_{q, max}$	N	–	–	4338	5500	–	6658	8522	11836
		a	mm	–	–	24	24	–	40	40	40
	U	$F_{q, max}$	N	–	4261	–	–	7670	–	–	–
		a	mm	–	19	–	–	24	–	–	–

3. Determination of characteristics

Operation above the maximum values or below the minimum values may result in loss of function, reduced service life or destruction of the axial piston unit. Check out all the permissible values by means of following calculation, etc.

Parameter	Formula	Unit
Geometric displacement per revolution	q_V	[mL/r]
Differential pressure	$\Delta p = p - p_{S, abs}$	[bar]
Rotational speed	n	[rpm]
Volumetric efficiency	$\eta_V = \frac{Q_V}{Q_{V, theor}}$	[%]
Hydraulic-mechanical efficiency	η_{mh}	[%]
Total efficiency	$\eta_t = \frac{Q_V \times p}{600 \times P_{Qv, max}} = \eta_V \times \eta_{mh}$	[%]
Flow	$Q_V = \frac{q_V \times n \times \eta_V}{1000}$	[L/min]
Torque	$T = \frac{q_V \times \Delta p}{20 \pi \times \eta_{mh}}$	[Nm]
Power	$P = \frac{2\pi \times T \times n}{60000} = \frac{Q_V \times \Delta p}{600 \times \eta_t}$	[kW]

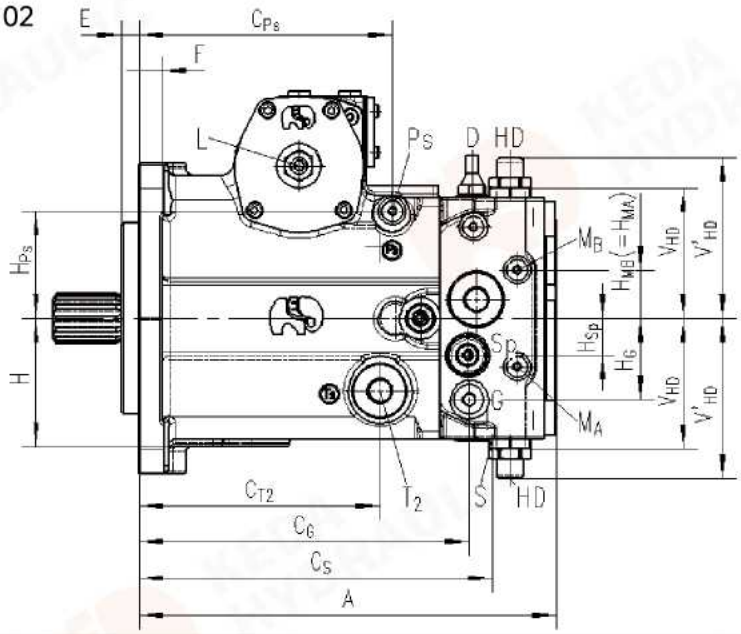


NOTE: – unavailable; 1) Dimensions X/Y/Z for location of center of gravity see:

03 SIZE & DIMENSIONS

Following figures are about K4VG pumps' dimensions of all sizes, classified by port distributions:
(1) Code 02: Suction port S and working port A at bottom, working port B on top.
Code 03 is not shown, the port plate rotates 180°, i.e. the suction port S and working port A on top, working port B at bottom.
(2) Code 10 (left): Suction port S at bottom, working port A/B both on left side.
Code 13 (right) is not shown, the port plate rotates 180°.
(3) Code 10 (right): Suction port S at bottom, working port A/B both on right side.
Code 13 (left) is not shown, the port plate rotates 180°. Size 28/56 and size 250 have some different structures, refer to notes in figure, e.g. "28/56HD" means "here exists HD valve in size 28/56".

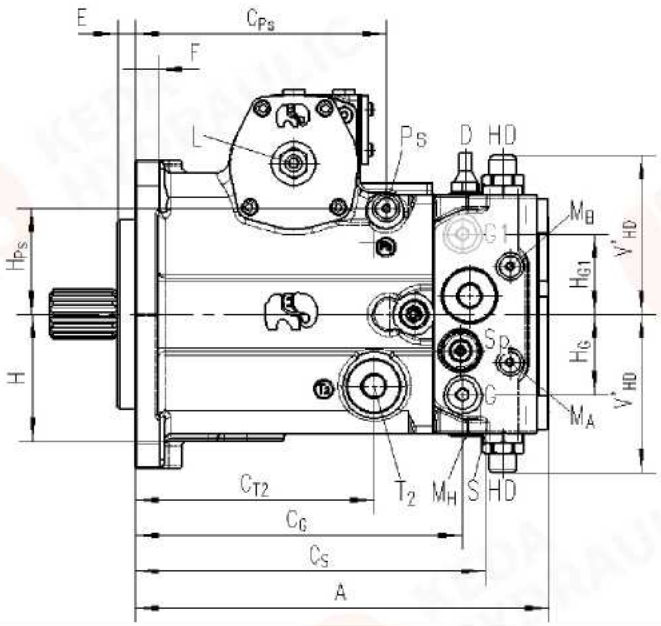
Fig. 1 (1). RHSV, code 02



Size / Dimensions	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
A* F00	–	235.7	256.4	293.6	301	326.4	370.9	–
A* N00	–	220.2	239.4	279.1	287	320.9	370.9	–
E	–	12.7	12.7	12.7	12.7	12.7	15.9	–
F	–	15	23	15	17	20	22	–
H	–	76	83	92	100	107	△	–
C_{Ps}	–	125	129.5	157.3	158.5	184.5	219	–
C_{T2}	–	100	109.5	152.5	160.7	184.5	209	–
C_G	–	201.7	218.4	214	217.5	239.4	286.4	–
C_S	–	182.7	200.4	237	248.5	274.4	305.9	–
H_G	–	1	4.5	65	59	52	△	–
H_{Ps}	–	67	76	77	79	91	93	–
H_{Sp}	–	△	△	△	△	△	32	–
H_{MB}	–	△	△	△	△	△	△	–
V_{HD}	–	103.5	108.5	△	△	△	△	–
V'_{HD}	–	133.5	138.5	135.3	147.9	148.5	138.5	–

NOTE: – unavailable; △ pending; * Single pump in type F00 or N00.

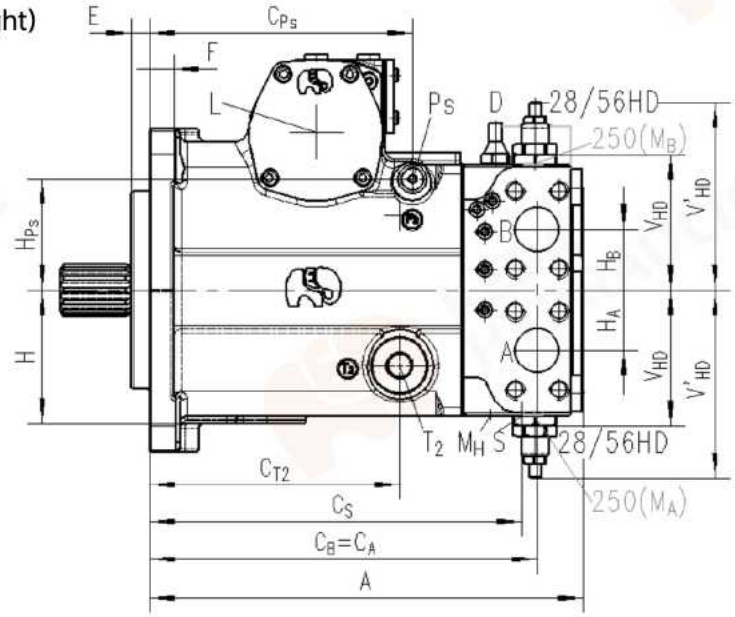
Fig. 1 (2). RHSV, 10 (left)



Dimensions \ Size		K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
A*	F00	–	–	–	293.6	301	326.4	–	–
	N00	–	–	–	279.1	287	320.9	–	–
E		–	–	–	12.7	△	12.7	–	–
F		–	–	–	15	△	20	–	–
H		–	–	–	92	△	107	–	–
C_{Ps}		–	–	–	157.3	△	184.5	–	–
C_{T2}		–	–	–	152.5	△	184.5	–	–
C_G		–	–	–	214	△	239.4	–	–
C_S		–	–	–	231	△	262.9	–	–
H_G		–	–	–	65	△	52	–	–
H_{G1}		–	–	–	60.5	△	–	–	–
H_{Ps}		–	–	–	77	△	91	–	–
V'_{HD}		–	–	–	128.5	△	148.6	–	–

NOTE: – unavailable; △ pending; * Single pump in type F00 or N00.

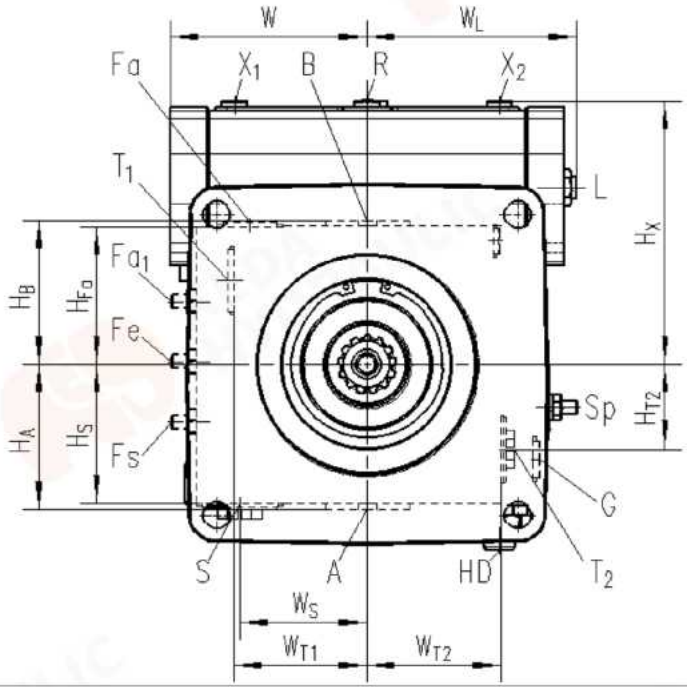
Fig. 1 (3). RHSV, 10 (right)



Size / Dimensions	K4VG28	K4VG40	K4VG56**	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
A* F00	223.4	–	256.4	–	–	–	–	410
A* N00	213.9	–	239.4	–	–	–	–	398.2
E	9.5	–	12.7	–	–	–	–	15.9
F	15	–	23	–	–	–	–	22
H	76	–	83	–	–	–	–	137
C_{Ps}	111.5	–	129.5	–	–	–	–	265
C_{T2}	102	–	109.5	–	–	–	–	214
C_B	183.4	–	205.4	–	–	–	–	349.4
C_S	175.4	–	197.4	–	–	–	–	348.4
H_A	37.5	–	37.5	–	–	–	–	58
H_B	37.5	–	37.5	–	–	–	–	58
H_{Ps}	67	–	76	–	–	–	–	126
V_{HD}	103.5	–	113.5	–	–	–	–	–
V'_{HD}	133.5	–	143.5	–	–	–	–	–

NOTE: – unavailable; △ pending; * Single pump in type F00 or N00; ** Only for code 13 (left), port plate rotates 180°.

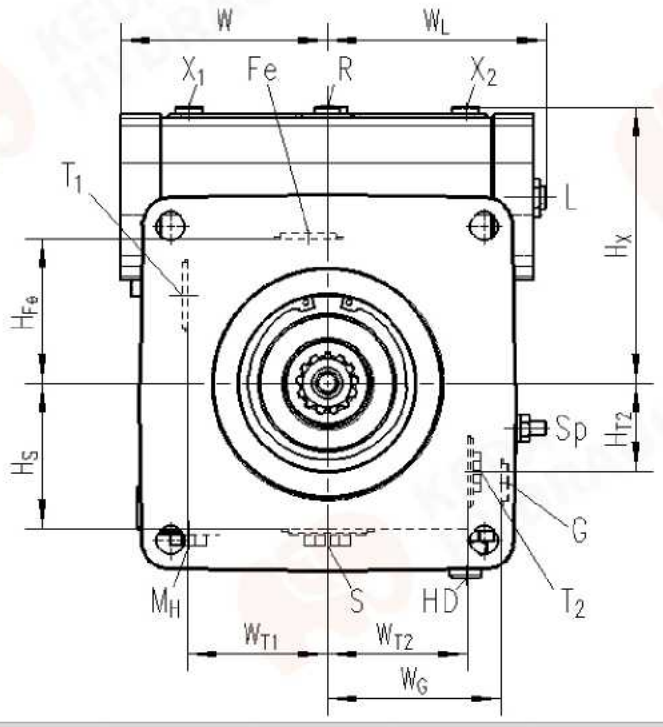
Fig. 2 (1). FV, code 02



Size / Dimensions	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
W	–	93	106	115.5	113	137	145.6	–
W_L	–	105	△	118.5	118.5	△	156	–
W_S	–	66	69	84	86	82.5	96.5	–
W_{T1}	–	68	75	83	80	94	100	–
W_{T2}	–	68	75	83	80	94	100	–
H_A	–	77	86	84	102	115	107	–
H_B	–	77	86	84	102	115	107	–
H_S	–	71.5	82.5	80.5	91	103	103	–
H_{Fa}	–	71.5	82.5	80.5	91	103	103.5	–
H_X	–	129.5	142	152.5	178.5	191	197	–
H_{T2}	–	48	54.5	53	70.5	75	63	–

NOTE: – unavailable; △ pending.

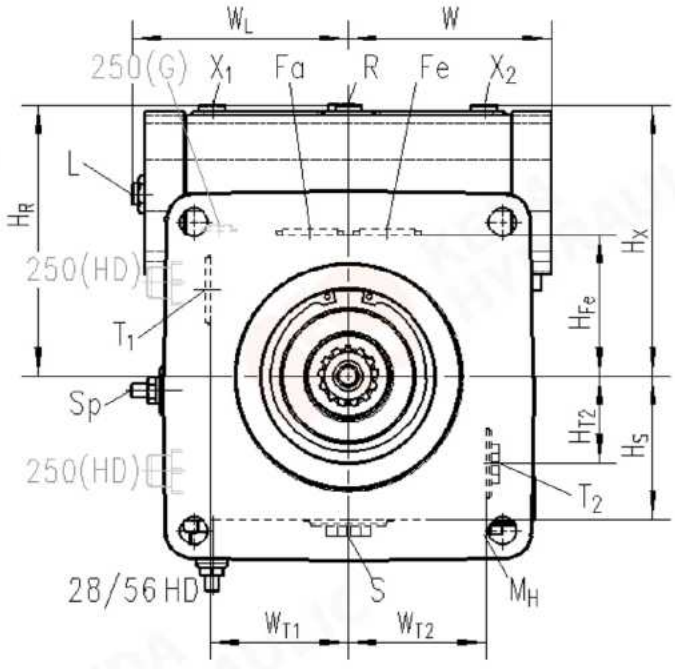
Fig. 2 (2). FV, 10 (left)



Size / Dimensions	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
W	–	–	–	115.5	△	137	–	–
W_L	–	–	–	118.5	△	△	–	–
W_G	–	–	–	105.5	△	△	–	–
W_{T1}	–	–	–	83	△	94	–	–
W_{T2}	–	–	–	83	△	94	–	–
H_S	–	–	–	80.5	△	103	–	–
H_{Fe}	–	–	–	80.5	△	98	–	–
H_X	–	–	–	152.5	△	191	–	–
H_{T2}	–	–	–	53	△	75	–	–

NOTE: – unavailable; △ pending.

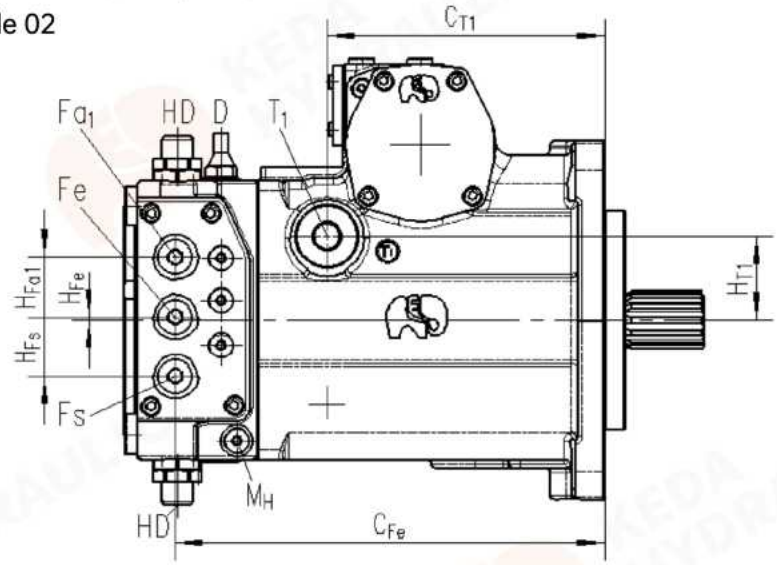
Fig. 2 (3). FV, 10 (right)



Size / Dimensions	K4VG28	K4VG40	K4VG56*	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
W	93	–	106	–	–	–	–	166
W_L	105	–	△	–	–	–	–	173.7
W_{T1}	68	–	75	–	–	–	–	133
W_{T2}	68	–	75	–	–	–	–	133
H_S	71.5	–	82	–	–	–	–	123
H_{Fe}	71.5	–	82	–	–	–	–	158
H_R	△	–	△	–	–	–	–	229.2
H_X	129.5	–	142	–	–	–	–	△
H_{T2}	48	–	54.5	–	–	–	–	66

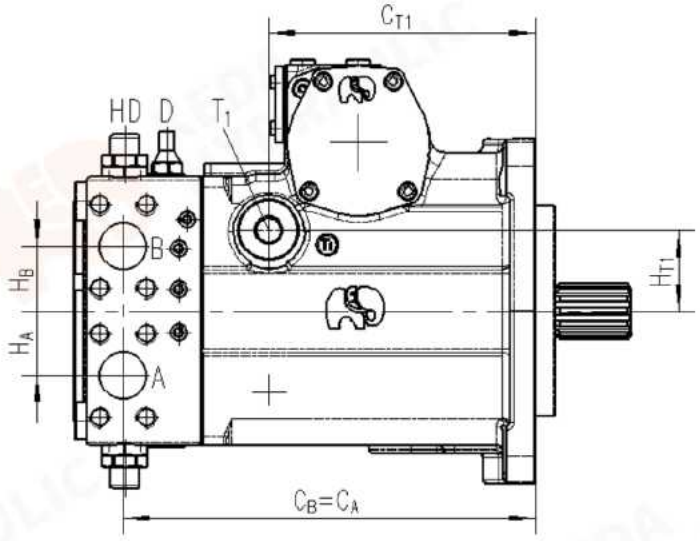
NOTE: – unavailable; △ pending; * Only for code 13 (left), port plate rotates 180°.

Fig. 3 (1). LHSV, code 02



Size / Dimensions	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
C_{T1}	–	100	109.5	152.5	160.7	184.5	209	–
C_{Fe}	–	198.7	215.4	239	248.5	267.9	311.9	–
H_{T1}	–	55	64.5	53	70.5	75	63	–
H_{Fe}	–	0	0	8	24	20	3	–
H_{Fa1}	–	26	26	31	31	43	43	–
H_{Fs}	–	26	26	31	31	43	43	–

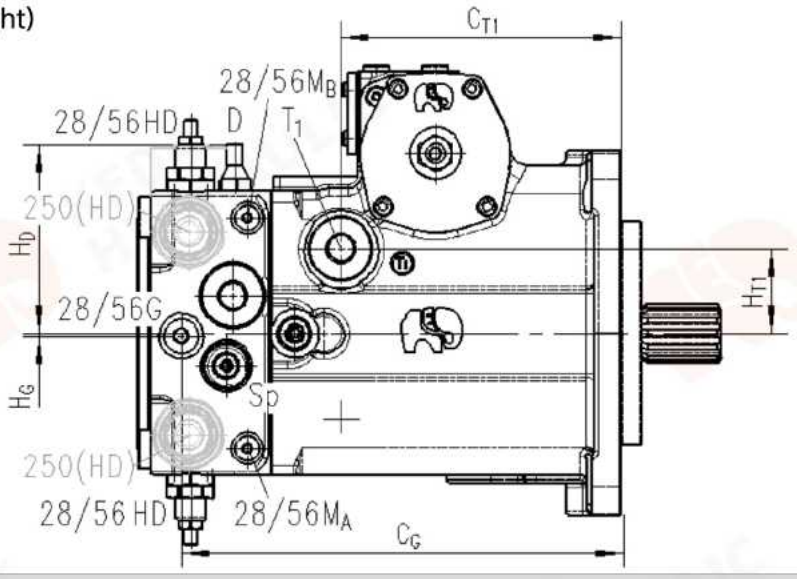
Fig. 3 (2). LHSV, 10 (left)



Size / Dimensions	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
C_A	–	–	–	241	△	273.4	–	–
C_{T1}	–	–	–	152.5	△	184.5	–	–
H_{T1}	–	–	–	53	△	75	–	–
H_A	–	–	–	45	△	58	–	–
H_B	–	–	–	45	△	58	–	–

NOTE: – unavailable; △ pending.

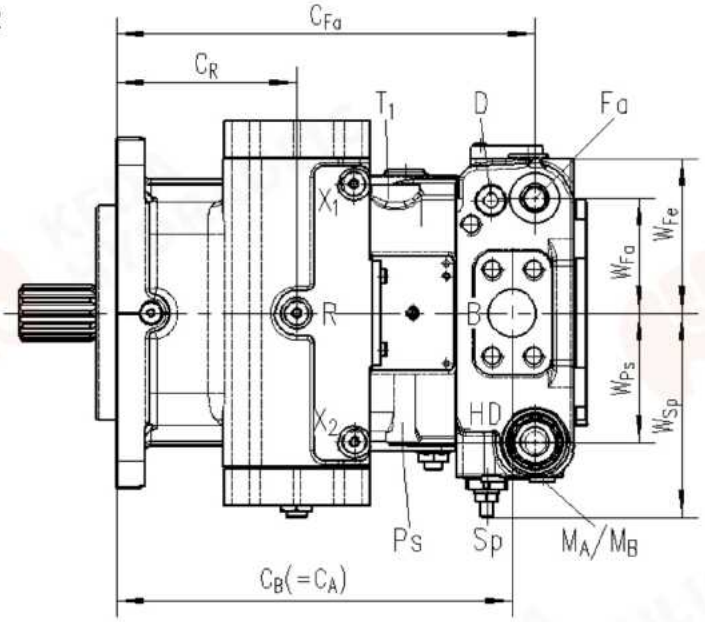
Fig. 3 (3). LHSV, 10 (right)



Size / Dimensions	K4VG28	K4VG40	K4VG56*	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
C_G	195.4	–	218.9	–	–	–	–	369.4**
C_{T1}	102	–	109.5	–	–	–	–	214
H_{T1}	55	–	64.5	–	–	–	–	62
H_D	△	–	max. 136	–	–	–	–	△
H_G	1	–	4	–	–	–	–	–158**

NOTE: – unavailable; △ pending; * Only for code 13 (left), port plate rotates 180°; ** Port G on top for size 250.

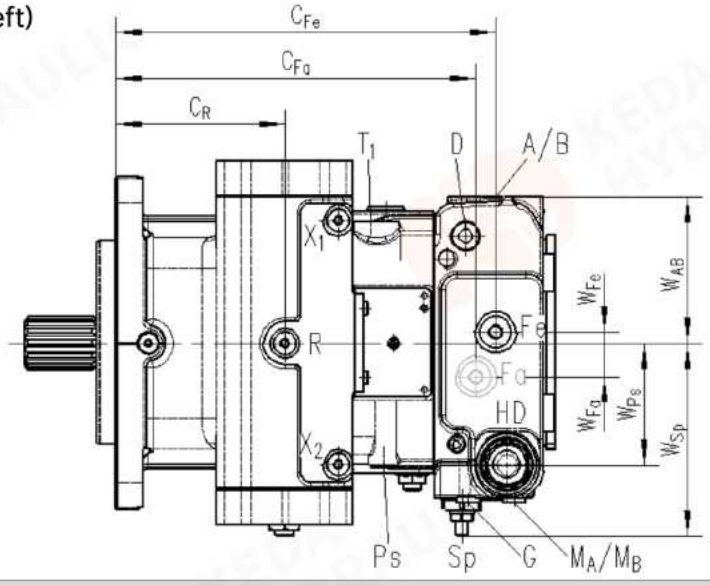
Fig. 4 (1). PLAN, code 02



Size / Dimensions	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
C_{Fa}	–	191.7	206.9	240	247.5	279.4	315.9	–
C_R	–	24.1	30	71.3	90.2	95.5	138.7	–
C_B	–	180.7	194.4	233	247.5	273.4	304.9	–
W_{Fa}	–	65	62	76	66	86	88	–
W_{Fe}	–	85.1	88.1	100.1	94.1	117	117.1	–
W_{Ps}	–	68	72	80	77	90	93	–
W_{Sp}	–	△	△	△	△	max. 157.3	△	–

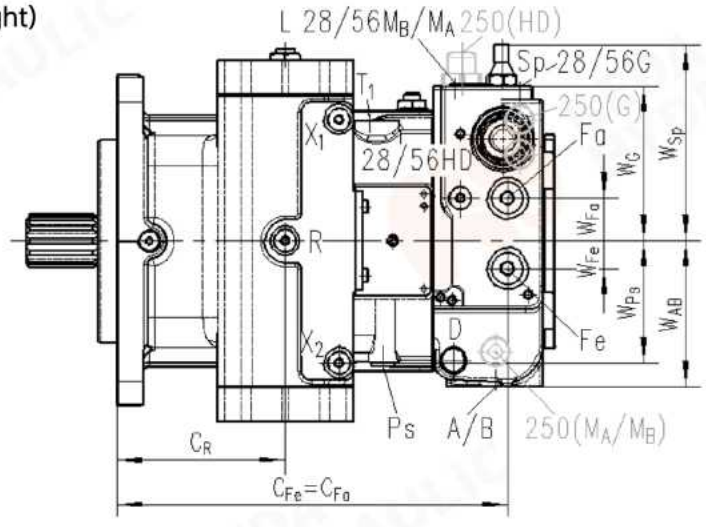
NOTE: – unavailable; △ pending.

Fig. 4 (2). PLAN, 10 (left)



Size / Dimensions	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
C_{Fe}	–	–	–	241	△	273.4	–	–
C_{Fa}	–	–	–	226	△	–	–	–
C_R	–	–	–	△	△	95.5	–	–
W_{Fe}	–	–	–	13	△	12	–	–
W_{Fa}	–	–	–	24	△	–	–	–
W_{Ps}	–	–	–	80	△	90	–	–
W_{Sp}	–	–	–	max. 154	△	max. 158.5	–	–
W_{AB}	–	–	–	102	△	104	–	–

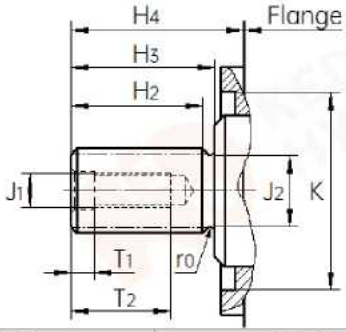
Fig. 4 (3). PLAN, 10 (right)



Size / Dimensions	K4VG28	K4VG40	K4VG56*	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
C_R	△	–	30	–	–	–	–	△
C_{Fe}	178.4	–	△	–	–	–	–	353.4
W_{Fa}	19.5	–	19.5	–	–	–	–	48
W_{Fe}	19.5	–	19.5	–	–	–	–	32
W_G	83.5	–	94.5	–	–	–	–	118
W_{Ps}	68	–	72	–	–	–	–	107
W_{Sp}	△	–	108.5	–	–	–	–	183.5
W_{AB}	△	–	93	–	–	–	–	145.5

NOTE: – unavailable; △ pending; * Only for code 13 (left), port plate rotates 180°; ** Port G on top for size 250.

08 DRIVE SHAFT

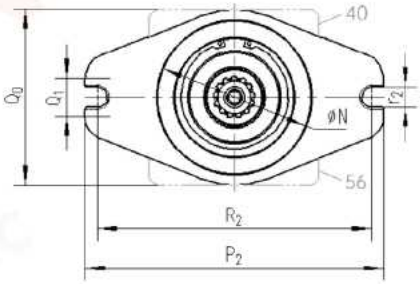


Size / Dimensions		K4VG28		K4VG40				K4VG56				K4VG71			
		Z shaft	S shaft	Z shaft	A shaft	S shaft	U shaft	Z shaft	A shaft	S shaft	T shaft	Z shaft	A shaft	S shaft	T shaft
H_2		29	30	27	32	40	30	27	32	40	40	32	37	40	40
H_3		35	38	35	40	48	38	35	40	48	48	40	45	48	48
H_4		45	46	45	50	56	46	45	50	56	56	50	55	56	56
T_1		7.5	7.5	7.5	9.5	9.5	7.5	7.5	9.5	9.5	9.5	9.5	12	9.5	9.5
T_2		22	22	22	28	28	22	22	28	28	28	28	36	28	28
r_0		R1.6	R1.6	R1.6	R1.6	R1.6	R1.6	R1.6	R1.6	R1.6	R1.6	R1.6	R2.5	R1.6	R1.6
J_1		M10	3/8"	M10	M12	7/16"	3/8"	M10	M12	7/16"	7/16"	M12	M16	7/16"	7/16"
J_2		Φ21.6	Φ20.8	Φ24.6	Φ29.6	Φ25.8	Φ20.8	Φ24.6	Φ29.6	Φ25.8	Φ30.2	Φ29.6	Φ34.6	Φ25.8	Φ30.2
K		Φ72	Φ72	Φ80	Φ80	Φ80	Φ80	Φ68	Φ68	Φ68	Φ68	Φ81	Φ81	Φ81	Φ81
Splined shaft	Z	W25X1.25X18		W30X2X14X9g				W30X2X14X9g				W35X2X16X9g			
	A	–		W35X2X16X9g				W35X2X16X9g				W40X2X18X9g			
	S	1"-15T-16/32DP		1¼"-14T-12/24DP				1¼"-14T-12/24DP				1¼"-14T-12/24DP			
	T	–		–				1⅜"-21T-16/32DP				1⅜"-21T-16/32DP			
	U	–		1"-15T-16/32DP				–				–			

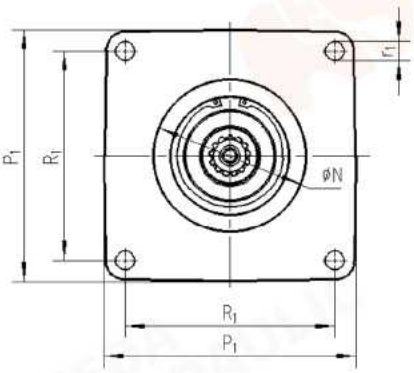
Size / Dimensions		K4VG90				K4VG125				K4VG180			K4VG250		
		Z shaft	A shaft	S shaft	U shaft	Z shaft	A shaft	S shaft	T shaft	Z shaft	S shaft	T shaft	Z shaft	S shaft	T shaft
H_2		32	42	55	40	37	42	55	66	44	55	58	47	55	58
H_3		40	50	67	48	45	50	67	80	55	67	80	58	67	80
H_4		50	60	75	56	55	60	75	88	65	75	88	68	75	88
T_1		9.5	12	12	9.5	12	12	12	12	12	12	15	15	12	15
T_2		28	36	36	28	36	36	36	36	36	36	42	42	36	42
r_0		R1.6	R2.5	R2.5	R1.6	R2.5	R2.5	R2.5	R4	R4	R2.5	R4	R4	R4	R4
J_1		M12	M16	5/8"	7/16"	M16	M16	5/8"	5/8"	M16	5/8"	3/4"	M20	5/8"	3/4"
J_2		Φ29.6	Φ39.6	Φ36	Φ25.8	Φ34.6	Φ39.6	Φ36	Φ42.3	Φ44.6	Φ36	Φ48.6	Φ49.6	Φ36	Φ48.6
K		Φ81	Φ81	Φ81	Φ81	Φ91	Φ91	Φ91	Φ91	Φ107	Φ107	Φ107	Φ121	Φ121	Φ121
Splined shaft	Z	W35X2X16X9g				W40X2X18X9g				W50X2X24X9g			W55X2X26X9g		
	A	W45X2X21X9g				W45X2X21X9g				–			–		
	S	1¾"-13T-8/16DP				1¾"-13T-8/16DP				1¾"-13T-8/16DP			1¾"-13T-8/16DP		
	T	–				2"-15T-8/16DP				2¼"-17T-8/16DP			2¼"-17T-8/16DP		
	U	1¼"-14T-12/24DP				–				–			–		

09 MOUNTING FLANGE

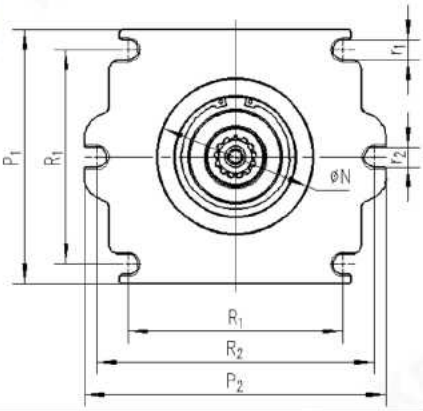
C flange*



D flange



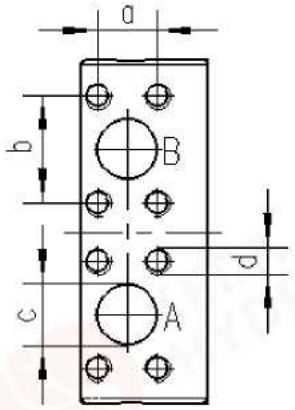
F flange*

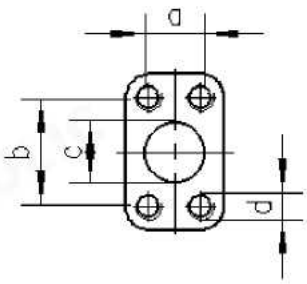


Size / Dimensions	K4VG28 C flange	K4VG40 C flange	K4VG56 C flange	K4VG71 F flange	K4VG90 F flange	K4VG125 F flange	K4VG180 D flange	K4VG250 D flange
N	Φ101.6	Φ127	Φ127	Φ127	Φ152.4	Φ152.4	Φ165.1	Φ165.1
P_1	–	–	–	142.5	200	200	270	270
P_2	174	213	213	213	266.6	266.6	–	–
Q_0	120	148	148	–	–	–	–	–
Q_1	25	31	31	△	△	△	–	–
R_1	–	–	–	114.5	161.6	161.6	224.5	224.5
R_2	146	181	181	181	228.6	228.6	–	–
r_1	–	–	–	14.4	21	21	Φ21	Φ21
r_2	15	18	18	18	21	21	–	–
SAE flange	101-2 (B)	107-2 (C)	107-2 (C)	107-2/4 (C)	154-2/4 (D)	154-2/4 (D)	165-4 (E)	165-4 (E)

NOTE: – unavailable; △ pending; * Contours of C and F flanges may differ from figure.

10 WORKING PORT





Size / Dimensions	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
a	23.8	23.8	23.8	27.8	27.8	31.8	31.8	36.5
b	50.8	50.8	50.8	57.2	57.2	66.7	66.7	79.4
c	Φ19	Φ19	Φ19	Φ25	Φ25	Φ32	Φ32	Φ38
d	M10X1.5X17	M10X1.5X17	M10X1.5X17	M12X1.75X17	M12X1.75X17	M14X2X19	M14X2X19	M16X2X21
Working A/B	¾"	¾"	¾"	1"	1"	1¼"	1¼"	1½"
Suction S	M33X2X18	M33X2X18	M33X2X18	M42X2X20	M42X2X20	M48X2X22	M48X2X22	M48X2X22

OTHER PORT PARAMETERS

Missing dimensions of ports of all sizes can be found in following table. All ports based on DIN 3852.

Port \ Size	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
Boost-in G	M12X1.5X12	M12X1.5X12	M14X1.5X12	M18X1.5X12	M18X1.5X12	M22X1.5X14	M22X1.5X14	M14X1.5X12
Boost-in F_a	M18X1.5X12	M18X1.5X12	M18X1.5X12	M26X1.5X16	M26X1.5X16	M33X2X18	M33X2X18	M33X2X18
Boost-in F_{a1}	–	M18X1.5X12	M18X1.5X12	M22X1.5X14	M22X1.5X14	M33X2X18	M33X2X18	–
Boost-out F_e	M18X1.5X12	M18X1.5X12	M18X1.5X12	M22X1.5X14	M22X1.5X14	M33X2X18	M33X2X18	M33X2X18
Cold start F_S	–	M18X1.5X12	M18X1.5X12	M22X1.5X14	M22X1.5X14	M33X2X18	M33X2X18	–
Measure $M_{A/B}$	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M14X1.5X12
Measure M_H	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M14X1.5X12
Drain T_1/T_2	M22X1.5X14	M22X1.5X14	M22X1.5X14	M26X1.5X16	M26X1.5X16	M33X2X18	M42X2X20	M42X2X20
Air bleed R	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M16X1.5X12	M16X1.5X12	M16X1.5X12	M16X1.5X12
Control X_1/X_2	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M16X1.5X12	M16X1.5X12	M16X1.5X12	M16X1.5X12
Chamber $X_{3/4}$	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M12X1.5X12	M16X1.5X12
Pilot P_S	M14X1.5X12	M14X1.5X12	M14X1.5X12	M14X1.5X12	M18X1.5X12	M18X1.5X12	M18X1.5X12	M18X1.5X12
Pilot-out Y	M14X1.5X12	M14X1.5X12	M14X1.5X12	M14X1.5X12	M18X1.5X12	M18X1.5X12	M18X1.5X12	M18X1.5X12
Pilot Y_1/Y_2	M14X1.5X12	M14X1.5X12	M14X1.5X12	M14X1.5X12	M14X1.5X12	M14X1.5X12	M14X1.5X12	M14X1.5X12
Pilot (inch) Z	M10X1X8	M10X1X8	M10X1X8	M10X1X12	M10X1X8	M10X1X8	M10X1X8	M10X1X8

04 CONTROL DEVICE

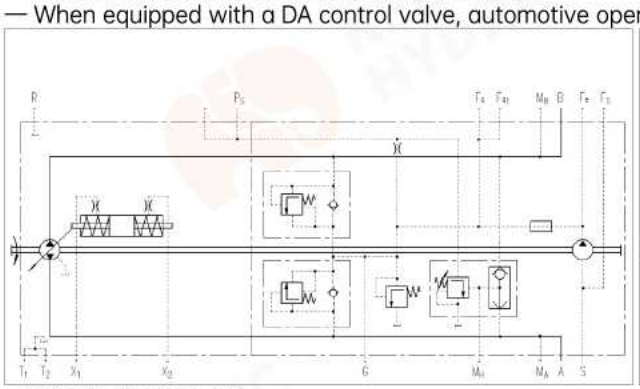
K4VG pumps can be equipped with various control devices, for instance, direct operated hydraulic control DG, without control module NV, hydraulic proportional control HD/HW, electrical control with proportional solenoids EP, two-point electric control EZ, speed related automatic control DA. Possible for DG/HD/HW/EP control devices to be equipped with a DA control valve.

1. DG – Direct operated hydraulic control

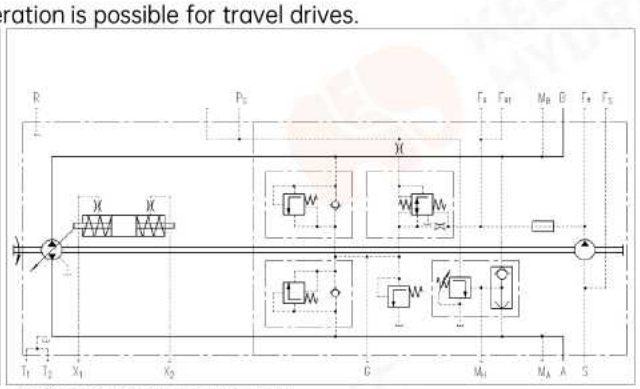
The output flow of pump is controlled by a hydraulic control pressure, applied directly to the stroking piston through either port X_1 or X_2. Flow direction is determined by which control pressure port is pressurized. Pump displacement is infnitely variable and proportional to the applied control pressure, but is also infuenced by system pressure and pump drive speed. In order to use the optional built-in pressure cut-off, port P_S must be used for the selected control module as source of the control pressure X_1 or X_2 generated on the customer side.

— Maximum permissible control pressure: 40 bar;

— When equipped with a DA control valve, automotive operation is possible for travel drives.



▲Circuit diagram DG



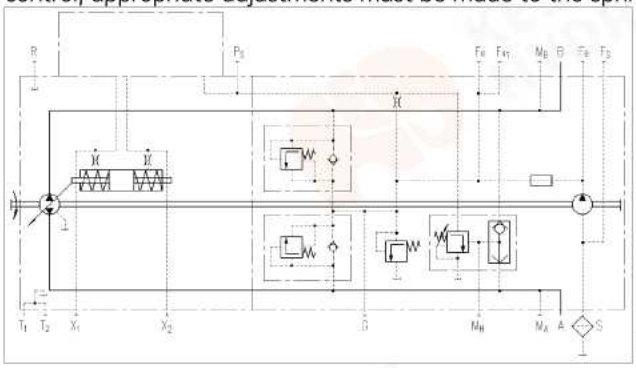
▲Circuit diagram DG+DA

▼Correlation of direction of rotation, control and flow direction for DG control

Size	K4VG28/40/56				K4VG71/90/125/180/250			
Rotation	clockwise R		counterclockwise L		clockwise R		counterclockwise L	
Control pressure	X_1	X_2	X_1	X_2	X_1	X_2	X_1	X_2
Flow direction	A→B	B→A	B→A	A→B	B→A	A→B	A→B	B→A
Working pressure	M_B	M_A	M_A	M_B	M_A	M_B	M_B	M_A

2. NV – Without control module

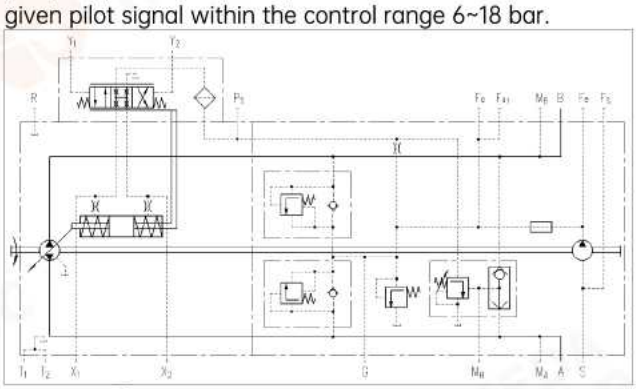
The mounting surface for the control module is machined and sealed with the standard seal for control modules and a cover plate. This version is ready for retroftting to control modules HD/HW/EP/EZ. When (in combinations) with DA control, appropriate adjustments must be made to the spring assembly of the adjustment cylinder and control plate.



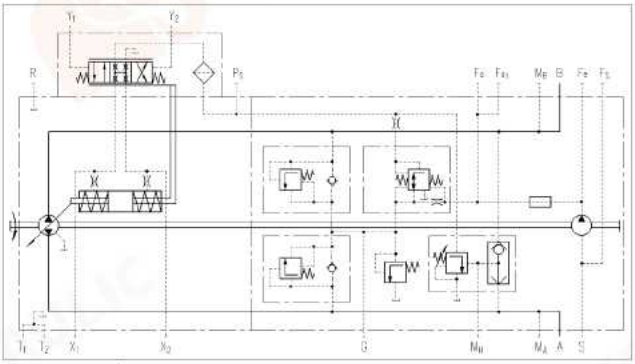
◀ Circuit diagram NV

3. HD – Pilot-pressure related hydraulic proportional control

The output flow of the pump is infnitely variable between 0~100%, proportional to the difference in pilot-pressure p_{st} applied to the two pilot-signal ports Y_1 and Y_2. The pilot-signal coming from an external source is a pressure signal and acts only on the control spool of control valve, which directs control oil into and out of the stroking cylinder to adjust pump displacement as required. A feedback lever connected to the stroking piston maintains the pump fow for any given pilot signal within the control range 6~18 bar.



▲Circuit diagram HD



▲Circuit diagram HD+DA

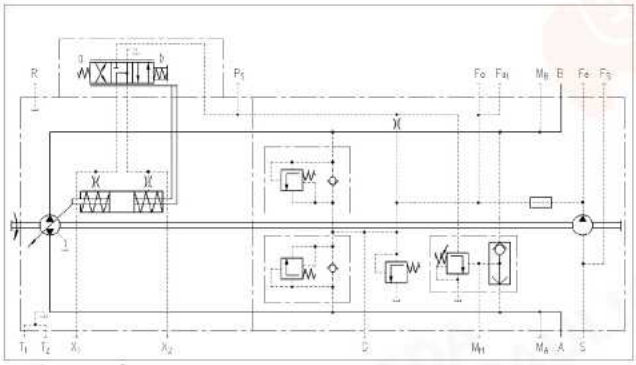
▼Correlation of direction of rotation, control and flow direction for HD control

Size	K4VG28/40/56				K4VG71/90/125/180/250			
Rotation	clockwise R		counterclockwise L		clockwise R		counterclockwise L	
Pilot-signal	Y_1	Y_2	Y_1	Y_2	Y_1	Y_2	Y_1	Y_2
Control pressure	X_1	X_2	X_1	X_2	X_1	X_2	X_1	X_2
Flow direction	A→B	B→A	B→A	A→B	B→A	A→B	A→B	B→A
Working pressure	M_B	M_A	M_A	M_B	M_A	M_B	M_B	M_A

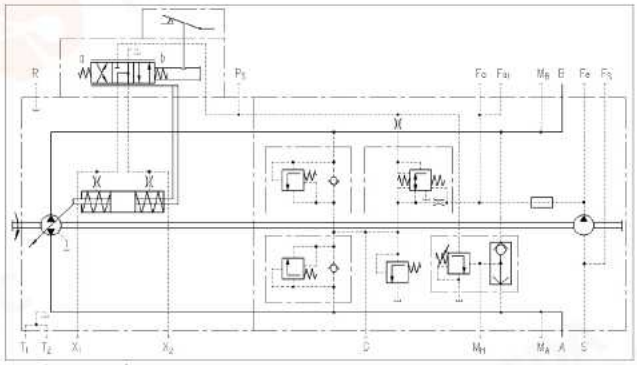
4. HW – Hydraulic proportional control with mechanical servo

The output flow of pump is infnitely variable between 0~100%, proportional to swivel angle β ±(3~29)° of control lever. Rotational limits of β for K4VG28~71 is ±40°, for K4VG90~250 is ±35°. To prevent damage to the HW control module, a positive mechanical stop of 36.5°±1 must be provided for the HW control lever on the customer side.

The neutral position switch is closed when the control lever locates in its neutral position. The switch opens when the control lever is moved out of the central position in either direction.



▲Circuit diagram HW



▲Circuit diagram HW+DA

▼Correlation of direction of rotation, control and flow direction for HW control

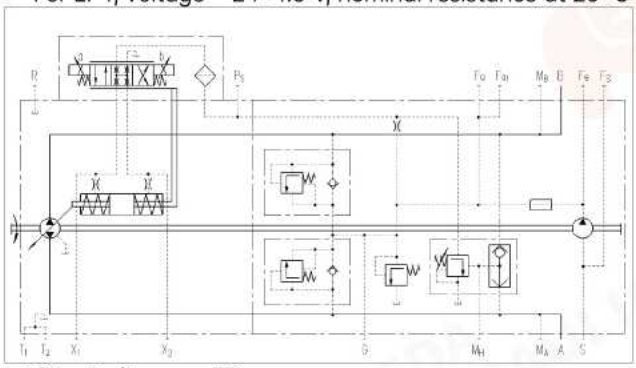
Size	K4VG28/40/56				K4VG71/90/125/180/250			
Rotation	⟳ clockwise R		⟲ counterclockwise L		⟳ clockwise R		⟲ counterclockwise L	
Lever direction	↶ left	↷ right	↶ left	↷ right	↶ left	↷ right	↶ left	↷ right
Control pressure	X_2	X_1	X_2	X_1	X_2	X_1	X_2	X_1
Flow direction	B→ A	A→ B	A→ B	B→ A	A→ B	B→ A	B→ A	A→ B
Working pressure	M_A	M_B	M_B	M_A	M_B	M_A	M_A	M_B

5. EP – Proportional electrical control

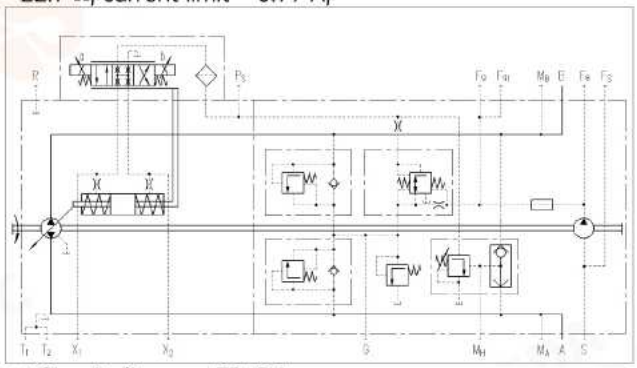
The output flow of the pump is infnitely variable between 0~100 %, proportional to the electrical current supplied to solenoid. The electrical energy is converted into a force acting on the control spool, which directs control oil into and out of the stroking cylinder to adjust pump displacement as required. A feedback lever connected to the stroking piston maintains the pump fow for any given current within the control range 400~1200mA (EP3) or 200~600mA (EP4).

— For EP3, voltage = 12±2.4 V, nominal resistance at 20 ℃ = 5.5 Ω, current limit = 1.54 A;

— For EP4, voltage = 24±4.8 V, nominal resistance at 20 ℃ = 22.7 Ω, current limit = 0.77 A;



▲Circuit diagram EP



▲Circuit diagram EP+DA

▼Correlation of direction of rotation, control and flow direction for EP control

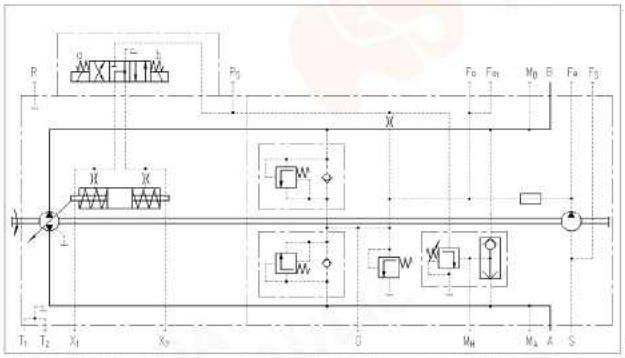
Size	K4VG28/40/56				K4VG71/90/125/180/250			
Rotation	⟳ clockwise R		⟲ counterclockwise L		⟳ clockwise R		⟲ counterclockwise L	
Actuation of prop. solenoid	↶ left	↷ right	↶ left	↷ right	↶ left	↷ right	↶ left	↷ right
Control pressure	X_1	X_2	X_1	X_2	X_1	X_2	X_1	X_2
Flow direction	A→ B	B→ A	B→ A	A→ B	B→ A	A→ B	A→ B	B→ A
Working pressure	M_B	M_A	M_A	M_B	M_A	M_B	M_B	M_A

6. EZ – Two-point electrical control

The EZ control enables pump flow to be switched between $V_{g,min}$ and $V_{g,max}$. By actuating either switching solenoid, the internal control pressure is applied directly to the stroking piston and the pump swivels to maximum displacement. Flow direction is determined by which solenoid is energized.

— For EZ1, voltage = 12±2.4 V, nominal resistance at 20 ℃ = 5.5 Ω, minimum required active current = 1.32 A;

— For EZ2, voltage = 24±4.8 V, nominal resistance at 20 ℃ = 21.7 Ω, minimum required active current = 0.67 A.



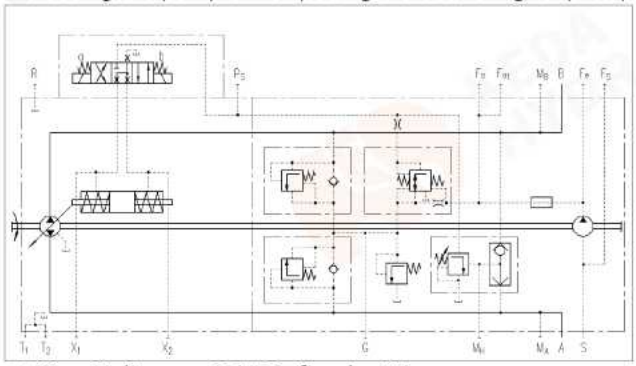
◀ Circuit diagram EZ

▼Correlation of direction of rotation, control and flow direction for EP control

Size	K4VG28/40/56				K4VG71/90/125/180/250			
Rotation	clockwise R		counterclockwise L		clockwise R		counterclockwise L	
Actuation of prop. solenoid	left	right	left	right	left	right	left	right
Control pressure	X_2	X_1	X_2	X_1	X_2	X_1	X_2	X_1
Flow direction	B→A	A→B	A→B	B→A	A→B	B→A	B→A	A→B
Working pressure	M_A	M_B	M_B	M_A	M_B	M_A	M_A	M_B

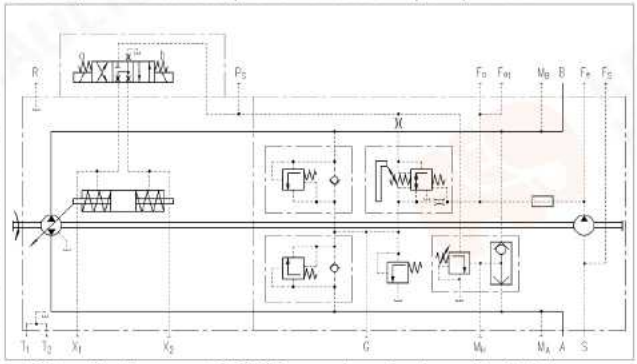
7. DA – Speed related automatic control

An engine speed-dependent system for travel drives. Flow direction is determined by either solenoid being activated. Increasing the pump drive speed generates a higher pilot-pressure, with a subsequent increase in pump flow.



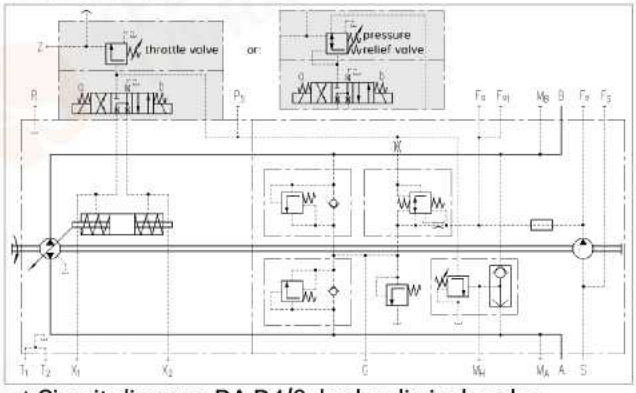
▲Circuit diagram DA_D2, fixed setting

The built-in DA control valve generates a pilot-pressure which is proportional to pump drive speed of motor and is directed to the stroking cylinder of pump by a 4/3-way directional valve.



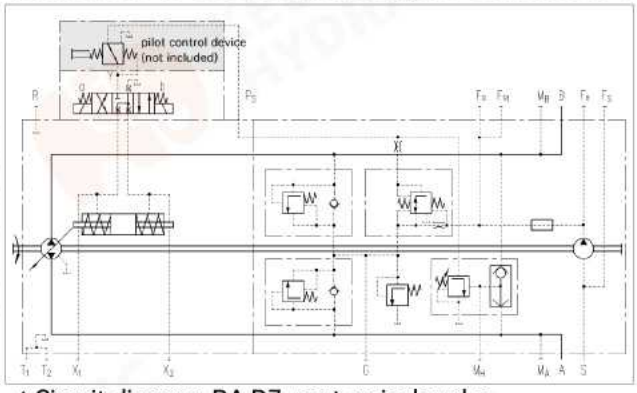
▲Circuit diagram DA_D3, mechanically adjustable

Possible to reduce pilot-pressure independently of drive speed through mechanical actuation of the position lever (inch function). Maximum permissible actuation torque at position lever is 4 N·m. Maximum angle of rotation is 70°.



▲Circuit diagram DA_D4/8, hydraulic inch valve

Pilot-pressure can be reduced by hydraulic inch valve at port Z, where maximum permissible pilot-pressure 80 bar. Throttle valve for size 28~71; pressure reducing valve for size 90~250.



▲Circuit diagram DA_D7, port as inch valve

Reduction of pilot-pressure can be done by mechanical actuation of pilot control device that installed separately from pump and connected to the pump by two hydraulic control lines via ports P_S and Y.

▼Correlation of direction of rotation, control and flow direction for DA control

Size	K4VG28/40/56				K4VG71/90/125/180/250			
Rotation	clockwise R		counterclockwise L		clockwise R		counterclockwise L	
Actuation of prop. solenoid	left	right	left	right	left	right	left	right
Control pressure	X_2	X_1	X_2	X_1	X_2	X_1	X_2	X_1
Flow direction	B→A	A→B	A→B	B→A	A→B	B→A	B→A	A→B
Working pressure	M_A	M_B	M_B	M_A	M_B	M_A	M_A	M_B

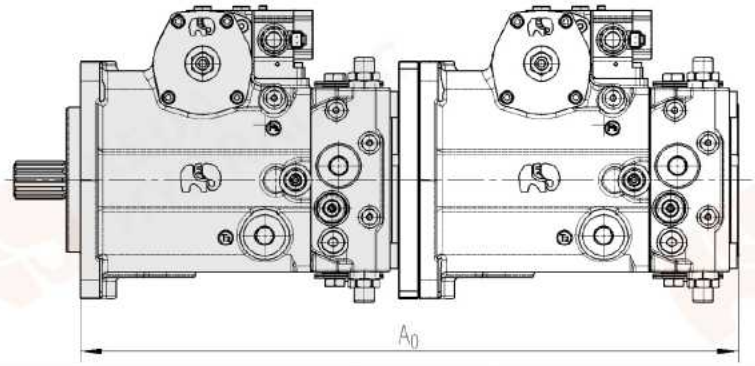
COMBINATION PUMP

K4VG pump can be combined with K4VG/K10VO/K4FO/K11VO/gear pumps, etc. A tandem pump with two pumps of equal size is permissible. Please specify the designations for the 1st and the 2nd pumps and join by a "+" when ordering. Order example:

K4V G 180 EP3D1 / 10 R – N S D 02 K72 + K4V G 180 EP3D1 / 10 R – N S D 02 F00

The first row of following table refers to the 1st pump (P). For informations about the through-drives (TD), see part 11.

▼Total length A_0 of an example pump combination K4VG+K4VG...F00



1st P / +2nd P	TD	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
		A_0	A_0	A_0	A_0	A_0	A_0	A_0	A_0
K4VG28(S)	F04 K04	453.8	464.1	485.8	524.0	528.4	554.3	604.8	652.3
K4VG40(U)	F09 K09	–	480.4	–	–	–	–	–	–
K4VG40(S)	F07 K07	–	–	502.1	539.3	544.7	571.6	620.1	661.6
K4VG56(S)	F07 K07	–	–	522.8	560.0	565.4	592.3	640.8	682.3
K4VG71(S)	F07 K07	–	–	–	597.2	602.6	629.5	678.0	719.5
K4VG90(Z)	F73 K73	–	–	–	–	610.0	–	–	–
K4VG90(S)	F69 K69	–	–	–	–	–	644.9	692.9	745.9
K4VG125(S)	F69 K69	–	–	–	–	–	670.3	718.3	771.3
K4VG180(S)	F72 K72	–	–	–	–	–	–	762.8	815.8
K4VG250(S)	F72 K72	–	–	–	–	–	–	–	854.8

NOTE: – unavailable ( ) = drive shaft of 2nd pump

11 THROUGH-DRIVE

K4VG pump can be combined with K4VG/K10VO/K4FO/K11VO/gear pumps, etc. Hub for splined shaft, mounting bolts, O-rings and mounting plates (when available) are in the scope of delivery.

The first rows of following tables refer to the 1st pumps, while the second rows after "+" refer to the 2nd pumps and their drive shafts.

1. Available through-drives for K4VG+K4VG

1st P	28	K4VG40		K4VG56			K4VG71				K4VG90					K4VG125		
TD +	28S	28S	40U	28S	40S	56S	28S	40S	56S	71S	28S	40S	56S	71S	90Z	28S	40S	56S
K04/F04	○	○	–	○	–	–	○	–	–	–	○	–	–	–	–	○	–	–
K09/F09	–	–	○	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K07/F07	–	–	–	–	○	○	–	○	○	○	–	○	○	○	–	–	○	○
K73/F73	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○	–	–	–

1st P	K4VG125			K4VG180							K4VG250							
TD +	71S	90S	125S	28S	40S	56S	71S	90S	125S	180S	28S	40S	56S	71S	90S	125S	180S	250S
K04/F04	–	–	–	○	–	–	–	–	–	–	○	–	–	–	–	–	–	–
K07/F07	○	–	–	–	○	○	○	–	–	–	–	○	○	○	–	–	–	–
K69/F69	–	○	○	–	–	–	–	○	○	–	–	–	–	–	○	○	–	–
K72/F72	–	–	–	–	–	–	–	–	–	●	–	–	–	–	–	–	○	○

NOTE: ● available ○ upon request – unavailable

2. Available through-drives for K4VG+K10VO

1st P	K4VG28/40				K4VG56								K4VG71					
TD +	10U	18U	28S	28R	10U	18U	28S	28R	45S	45R	45U	45W	10U	18U	28S	28R	45S	45R
K01/F01	○	○	–	–	○	○	–	–	–	–	–	–	○	○	–	–	–	–
K02/F02	–	–	○	○	–	–	○	○	–	–	○	○	–	–	○	○	–	–
K04/F04	–	–	–	–	–	–	–	–	○	○	–	–	–	–	–	–	○	○

1st P	K4VG71						K4VG90											
TD +	45U	45W	63U	63W	71S	71R	10U	18U	28S	28R	45S	45R	45U	45W	63U	63W	71S	71R
K01/F01	–	–	–	–	–	–	○	○	–	–	–	–	–	–	–	–	–	–
K02/F02	○	○	–	–	–	–	–	–	○	○	–	–	○	○	–	–	–	–
K04/F04	–	–	○	○	–	–	–	–	–	–	○	○	–	–	○	○	–	–
K07/F07	–	–	–	–	○	○	–	–	–	–	–	–	–	–	–	–	○	○

1st P	K4VG90		K4VG125/180/250															
TD +	85U	85W	10/18U	28S	28R	45S	45R	45U	45W	63U	63W	71S	71R	85U	85W	100U	100W	140S
K01/F01	–	–	●	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K02/F02	–	–	–	●	●	–	–	●	●	–	–	–	–	–	–	–	–	–
K04/F04	–	–	–	–	–	●	●	–	–	○	○	–	–	–	–	–	–	–
K07/F07	○	○	–	–	–	–	–	–	–	–	–	●	●	●	●	●	●	–
K69/F69	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●

NOTE: ● available ○ upon request – unavailable

3. Available through-drives for K4VG+K4FO

1st P / TD +	K4VG28/40/56/71/90/125			K4VG180			K4VG250		
	K11FO16...S	K11FO22...S	K11FO28...S	K11FO16...S	K11FO22...S	K11FO28...S	K11FO16...S	K11FO22...S	K11FO28...S
K02/F02	○	○	○	●	●	●	○	○	○

NOTE: ● available ○ upon request

4. Available through-drives for K4VG+K11VO

1st P / TD +	40	56/71/90		K4VG125				K4VG180						K4VG250						
	40S	40S	60S	40S	60S	95S	130S	40S	60S	95S	130S	145S	190S	40S	60S	95S	130S	145S	190S	260S
K04/F04	○	○	–	○	–	–	–	○	–	–	–	–	–	○	–	–	–	–	–	–
K07/F07	–	–	○	–	○	–	–	–	○	–	–	–	–	–	○	–	–	–	–	–
K69/F69	–	–	–	–	–	○	○	–	–	○	○	○	–	–	–	○	○	○	–	–
K72/F72	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	–	–	–	○	○

NOTE: ● available ○ upon request – unavailable

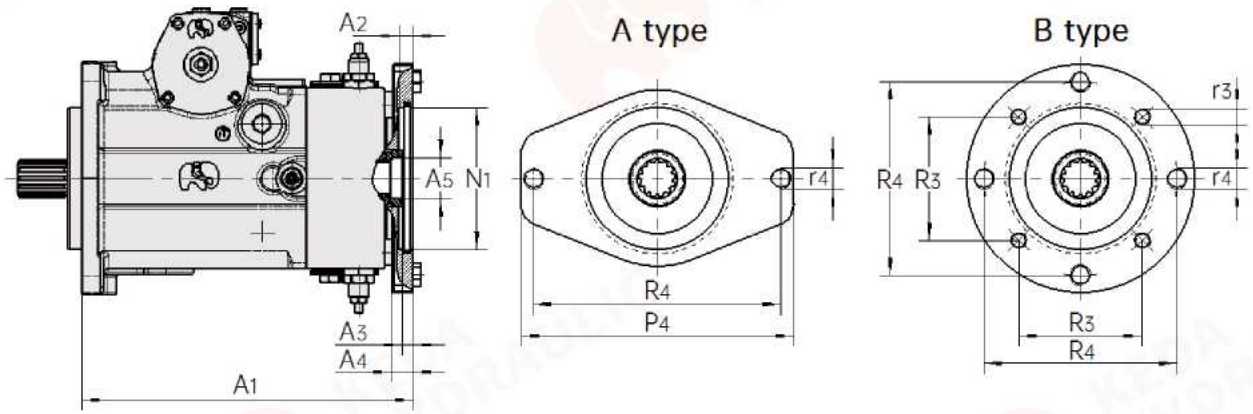
5. Available through-drives for K4VG+gear pump

1st P / TD +	K4VG28/40/56/71/90/125			K4VG180			K4VG250		
	(F) 4~22	(N) 20~36	(G) 32~50	(F) 4~22	(N) 20~36	(G) 32~50	(F) 4~22	(N) 20~36	(G) 32~50
K01/F01	○	–	–	●	–	–	○	–	–
K02/F02	–	○	○	–	●	●	–	○	○

NOTE: ● available ○ upon request – unavailable (F)(N)(G) = series of gear pump

▼Dimensions of mounting plate/2nd pump's flange/hub for splined shaft/... of all sizes

6. 2-hole mounting plate



Code K01/F01 (2nd pump K10VO10U/18U or gear pump F series 4~22; 2nd pump's flange ISO 3019-1 – 82-2)

1st P / Dimension		K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
		B type	B type	B type	B type	B type	B type	B type	B type
A_1	F01	227.9	239.7	261.4	297.6	304	330.9	378.4	426.9
	K01	227.9	234.2	254.9	297.6	304	330.9	378.4	426.2
A_2		7.5	9	10	10	8	9	7.5	11
A_3		7.5	9	10	9	9	10.5	7.5	11
A_4		14.5	18	18	17	–	–	15.5	18
A_5		Φ17.5	Φ17.5	Φ17.5	Φ17.5	Φ17.5	Φ17.5	Φ17.5	Φ17.5
N_1		Φ82.55	Φ82.55	Φ82.55	Φ82.55	Φ82.55	Φ82.55	Φ82.55	Φ82.55
R_4		106.4	106.4	106.4	106.4	106.4	106.4	106.4	106.4
r_4		M10X1.5X15	M10X1.5X15	M10X1.5X15	M10X1.5X15	M10X1.5X15	M10X1.5X15	M10X1.5X16.5	M10X1.5X16.5

NOTE: – unavailable. Missing dimensions means related structure does NOT exist.

Code K02/F02 (2nd pump K10VO28S/28R/45U/45W, K4FO16S/22S/28S or gear pump N series 20~36 & G series 32~50; 2nd pump's flange ISO 3019-1 – 101-2)
Code K04/F04 (2nd pump K10VO45S/45R/63U/63W, K11VO40S; 2nd pump's flange ISO 3019-1 – 101-2)

1st P / Dimension	K4VG28 A type	K4VG40 A type	K4VG56 A type	K4VG71 B type	K4VG90 B type	K4VG125 B type	K4VG180 B type	K4VG250 B type
A_1	230.4	240.7	262.4	300.6	305	330.9	381.4	428.9
A_2	9.7	11/9.7*	11	9.8	11	11	11	11
A_3	9.7	11	12	13	9	10	11	11
A_4	16.2/13.7*	17/16*	19.5/18.5*	17/15.5*	17/15*	17/16.5*	19/18*	16/15.5*
A_5	Φ24/Φ27*	Φ24/Φ27*	Φ24/Φ27*	Φ24/Φ27*	Φ24/Φ27*	Φ24/Φ27*	Φ24/Φ27*	Φ24/Φ27*
N_1	Φ101.6	Φ101.6	Φ101.6	Φ101.6	Φ101.6	Φ101.6	Φ101.6	Φ101.6
R_4	146	146	146	146	146	146	146	146
P_4	174	174	174	174	174	174	174	174
r_4	M12X1.75X19	M12X1.75X19	M12X1.75X19	M12X1.75X21	M12X1.75X21	M12X1.75X18	M12X1.75X21	M12X1.75X21

NOTE: – unavailable; * for code K04 and F04. Missing dimensions means related structure does NOT exist.

Code K09/F09 (2nd pump K4VG40U; 2nd pump's flange ISO 3019-1 – 127-2)

1st P / Dimension	K4VG28 A type	K4VG40 A type	K4VG56 A type	K4VG71 A type	K4VG90 A type	K4VG125 A type	K4VG180 A type	K4VG250 A type
A_1	–	244.7	–	–	–	–	–	–
A_2	–	14	–	–	–	–	–	–
A_3	–	14	–	–	–	–	–	–
A_4	–	19.5	–	–	–	–	–	–
A_5	–	Φ27	–	–	–	–	–	–
N_1	–	Φ127	–	–	–	–	–	–
R_4	–	181	–	–	–	–	–	–
P_4	–	213	–	–	–	–	–	–
r_4	–	M16X2X20	–	–	–	–	–	–

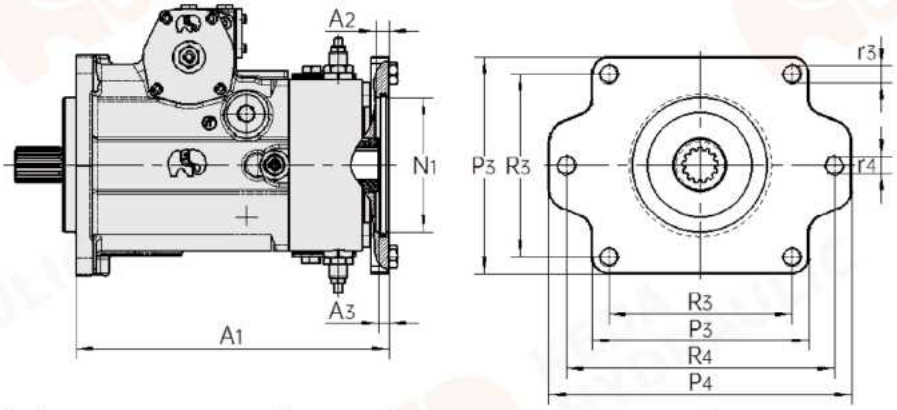
NOTE: – unavailable. Missing dimensions means related structure does NOT exist.

Code K07/F07 (2nd pump K4VG40S/56S/71S, K10VO71S/71R/85U/85W/100U/100W; 2nd pump's flange ISO 3019-1 – 127-2 or 127-2+4)

1st P / Dimension	K4VG28 A type	K4VG40 A type	K4VG56 A type	K4VG71 A type	K4VG90 B type	K4VG125 B type	K4VG180* B type	K4VG250 A type
A_1	–	–	266.4	303.6	309	335.9	384.4	425.9
A_2	–	–	14	13.5	14	15.5	19	14
A_3	–	–	15	15	13	15	14	16
A_4	–	–	17.5	20	20.5	22.5	17	16
A_5	–	–	Φ32.7	Φ33.5	Φ33.5	Φ33.5	Φ33.5	Φ33.5
N_1	–	–	Φ127	Φ127	Φ127	Φ127	Φ127	Φ127
R_3	–	–	114.5	114.5	114.5	114.5	114.5	114.5
R_4	–	–	181	181	181	181	181	181
P_4	–	–	213	213	213	213	213	213
r_3	–	–	–	–	M12X1.75X18	M12X1.75X18	M12X1.75X18	–
r_4	–	–	M16X2X20	M16X2X24	M16X2X23	M16X2X23	M16X2X23	M16X2X24

NOTE: – unavailable; * only with 2-hole flange based on SAE. Please specify the type of 2nd pump, i.e. whether the 4-hole, the 2-hole horizontal or the 2-hole vertical version is used, when ordering.

7. 2-4-hole mounting plate

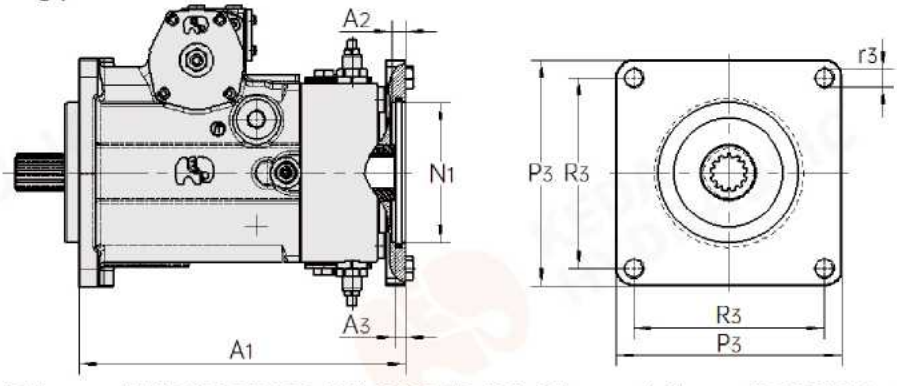


Code K73/F73 (2nd pump K4VG90Z; 2nd pump's flange ISO 3019-1 – 152-2+4)
Code K69/F69 (2nd pump K4VG90S/125S, K10VO140S, K11VO95S/130S/145S; flange ISO 3019-1 – 152-2+4)

1st P / Dimension	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90 K73/F73	K4VG125 K69/F69	K4VG180 K69/F69	K4VG250 K69/F69
A_1	–	–	–	–	309	343.9	391.9	444.9
A_2	–	–	–	–	14	14	18	17
A_3	–	–	–	–	12	18	20.9	9
N_1	–	–	–	–	Φ152.4	Φ152.4	Φ152.4	Φ152.4
R_3	–	–	–	–	161.6	161.6	161.6	161.6
R_4	–	–	–	–	228.6	228.6	228.6	228.6
P_3	–	–	–	–	200	200	200	200
P_4	–	–	–	–	266.6	266.6	266.6	266.6
r_3	–	–	–	–	M20X2.5X20	M20X2.5X20	M20X2.5X20	M20X2.5X20
r_4	–	–	–	–	M20X2.5X20	M20X2.5X20	M20X2.5X20	M20X2.5X20

NOTE: – unavailable. Please specify the type of 2nd pump, i.e. whether the 2-hole, the 4-hole or the 2+4-hole version is used, when ordering.

8. 4-hole mounting plate

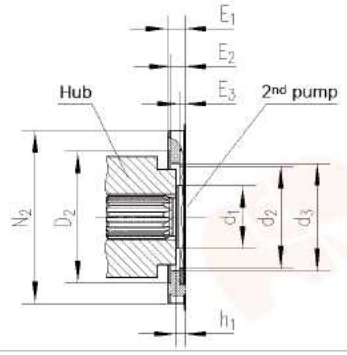


Code K72/F72 (2nd pump K4VG180S/250S, K11VO190S/260S, 2nd pump's flange ISO 3019-1 – 165-4)

1st P / Dimension	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180 K72/F72	K4VG250 K72/F72
A_1	–	–	–	–	–	–	391.9	444.9
A_2	–	–	–	–	–	–	18	17
A_3	–	–	–	–	–	–	20.9	9
N_1	–	–	–	–	–	–	Φ165.1	Φ165.1
R_3	–	–	–	–	–	–	224.5	224.5
P_3	–	–	–	–	–	–	270	270
r_3	–	–	–	–	–	–	M20X2.5X20	M20X2.5X20

COUPLING ASSEMBLY

To ensure that rotating components (coupling hub) and fixed components (housing, retaining ring) do not come into contact with each other, the following installation conditions must be observed. This depends on the pump size and the splined shaft.



2nd P / Dimension	K4VG28	K4VG40	K4VG56	K4VG71	K4VG90	K4VG125	K4VG180	K4VG250
N_2	Φ101.6	Φ127	Φ127	Φ127	Φ152.4	Φ152.4	Φ165.1	Φ165.1
D_2	Φ72	Φ80	–	–	–	–	–	–
d_1	Φ35	Φ40	Φ40	Φ45	Φ50	Φ55	Φ60	Φ75
$d_{2\,min}$	Φ43.4	Φ51.4	Φ54.4	Φ66.5	Φ66.5	Φ76.3	Φ88	Φ104.6
d_3	Φ55±0.1	Φ63±0.1	Φ68±0.1	Φ81±0.1	Φ81±0.1	Φ91±0.1	Φ107±0.1	Φ121
E_1	$9.5_{-0.5}$	$12.7_{-0.5}$	$12.7_{-0.5}$	$12.7_{-0.5}$	$12.7_{-0.5}$	$12.7_{-0.5}$	$15.9_{-0.5}$	$15.9_{-0.5}$
E_2	7	7	–	–	–	–	–	–
E_3	$3.3^{+0.2}$	$4.3^{+0.2}$	$7.0^{+0.2}$	$7.0^{+0.2}$	$6.8^{+0.2}$	$7.0^{+0.2}$	$7.4^{+0.2}$	$6.3^{+0.2}$
h_1* SAE	8	8	8	8	8	8	8	8
h_1* DIN	10	10	10	10	10	10	10	10

NOTE: – unavailable; * tolerance of h_1 is +0.9/–0.6.

1. Install the specified coupling half onto the drive shaft of the axial piston unit following instructions.
2. Clamp the coupling hub onto the drive shaft or ensure a permanent lubrication of the drive shaft. This prevents the formation of frictional corrosion and the associated wear.
3. Transport the axial piston unit to the installation location and remove dirt and contaminants there.
4. Install the coupling on the drive shaft of the machine/system in accordance with the specifications. Fix the axial piston unit (may not be bolted down until the coupling has been correctly installed).
5. Do not install the coupling hub onto the drive shaft of the axial piston unit by striking it.

TRANSPORTATION

▲via lifting strap

▲via hooks

▲via forklift