ETERNAL GROUP

ETL-HYD

Show China Eternal Quality To The World

Piston Pump

TAIZHOU ETERNAL HYDRAULIC

台州永畅液压机械有限公司

Taizhou Eternal Hydraulic Machine Co., Ltd.

COMPANY PROFILE

Eternal Hydraulic belongs to Eternal Group, which is a International Well-known Professional Hydraulic Enterprise with 6 Own Manufacturing Bases in 2023, and we will complete our 12+ Manufacturing Bases in future 5 years to become the No.1 Hydraulic Alliance Group Enterprise.
Eternal Hydraulic are integrating Design&Develop&Manufacturing&Marketing for Hydraulic Components, and with more than 16+ years experience in Hydraulic Field.

Eternal Hydraulic commit ourselves to the No.1 Global One-Stop Mall in Hydraulic Field, Our products are widely used in Agricultural Machinery, Forestry Machinery, Dump Trucks & Special Vehicles, Municipal Sanitation Machinery, Construction Machinery, Logistics&Forklift Machinery, Industrial Equipment, Mining machinery, Marine Machinery and Military Machinery etc, with 98% Good Quality&Price Feedback from market.
Eternal Hydraulic can be used in all Equipments which need Hydraulic Power.

Eternal Hydraulic keep good cooperative relationship with most of International Well-known Hydraulic Companies to provide best Service to our all regular customers.
Eternal Hydraulic firmly believes that "Only the Best can Satisfied the Best", become the First and Best Purchase Choice of Hydraulic Components in all over the World.

Inviting all ability Partners to join in us to complete 86+ Strategic Partners in all over the World.

ETERNAL HYDRAULIC PISTON PUMP MANUFACTURING BASE

● *No. of Workers: 160+* ● *Factory area: 40,000m²*

MAIN PRODUCTS

Rexroth, Parker, Kawasaki, Eaton Vickers,Hydrosila, Sauer Danfoss Series...

CERTIFICATES

EXHIBITION

EXHIBITION

SAMPLE ROOM

SAMPLE ROOM

?NNJGA?RGMLQ

Agricultural Machinery

Forklift

Sanitation Machinery

Forestry Machinery

Construction Machinery

Dump Truck

Industry

Mining Machine

Ship Machinery

TAIZHOU
ETERNAL HYDRAULIC

目 录 CATALOGUE

■型号说明 Model Code

A2F	55	R	2	P	3

型号 Type

定量泵/马达 Fixed displacement Pump/motor — A2F

规格 Size / 排量 Displacement (Vgmin~Vgmax)

规格 Size	排量 Displacement (Vgmin~Vgmax)
10	(9.4ml/r)
12	(11.6ml/r)
23	(22.7ml/r)
28	(28.1ml/r)
45	(44.3ml/r)
55	(54.8ml/r)
63	(63.0ml/r)
80	(80.0ml/r)
107	(107ml/r)
125	(125ml/r)
160	(160ml/r)
200	(200ml/r)
225	(225ml/r)
250	(250ml/r)
355	(355ml/r)
500	(500ml/r)

旋转方向 Direction of Rotation

(从轴端看)	(Viewed on drive shaft)	
顺时针	Clock wise	R
逆时针	Anti-clock wise	L
双向	Alternating	W

（不适用于开式回路中的泵）
(not for pumps in open circuit)

系列 Series

系列 Series	规格 Size 10~160	1
系列 Series		2
系列 Series		3
系列 Series		4
系列 Series	规格 Size 200~500	5

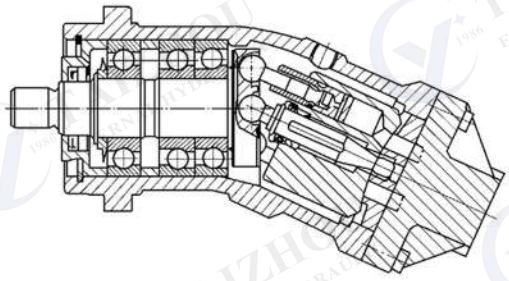
轴伸 shaft End

平键 keyed shaft GB1096-79	P
花键 splines shaft DIN 5480	Z
花键 splines shaft GB 3478.1-83	S

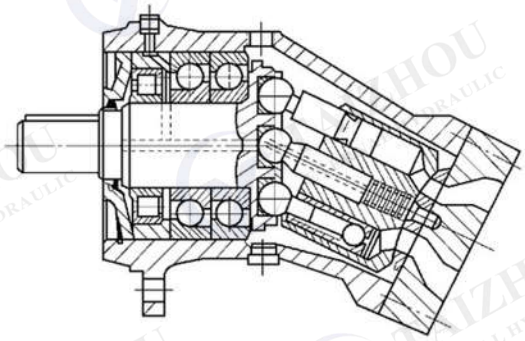
后盖形式 Rear cover

后盖 Port Plate	1
后盖 Port Plate	2
后盖 Port Plate	3
后盖 Port Plate	4
后盖 Port Plate	5
后盖 Port Plate	6
后盖 Port Plate	7

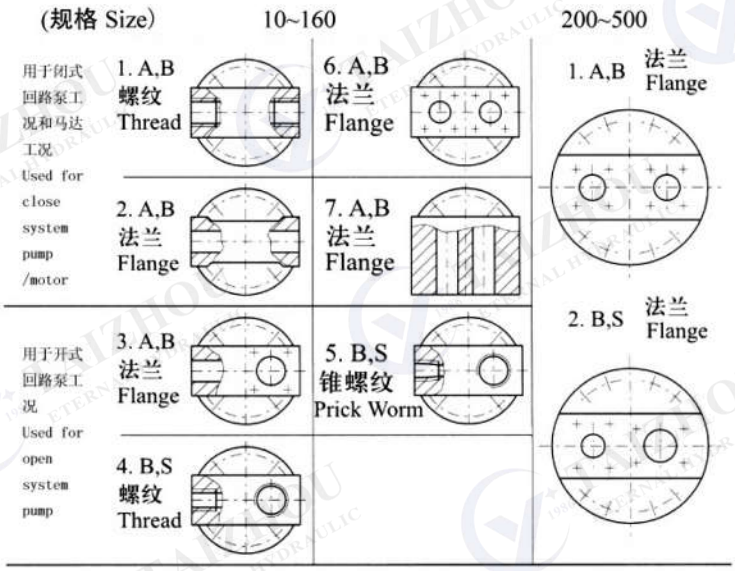
Series 1-4, Size 10-160



Series 5, Size 200-500



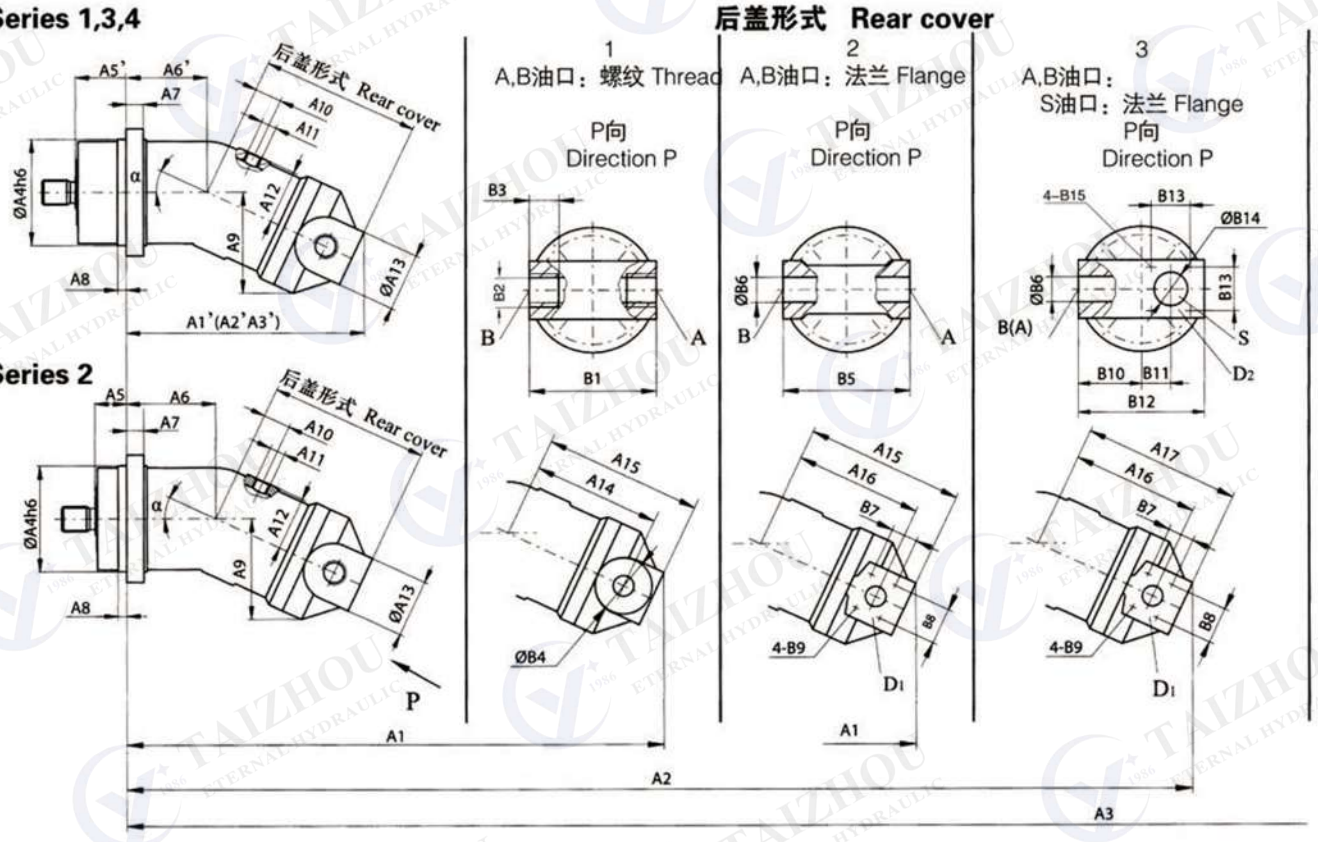
后盖形式 Rear cover:



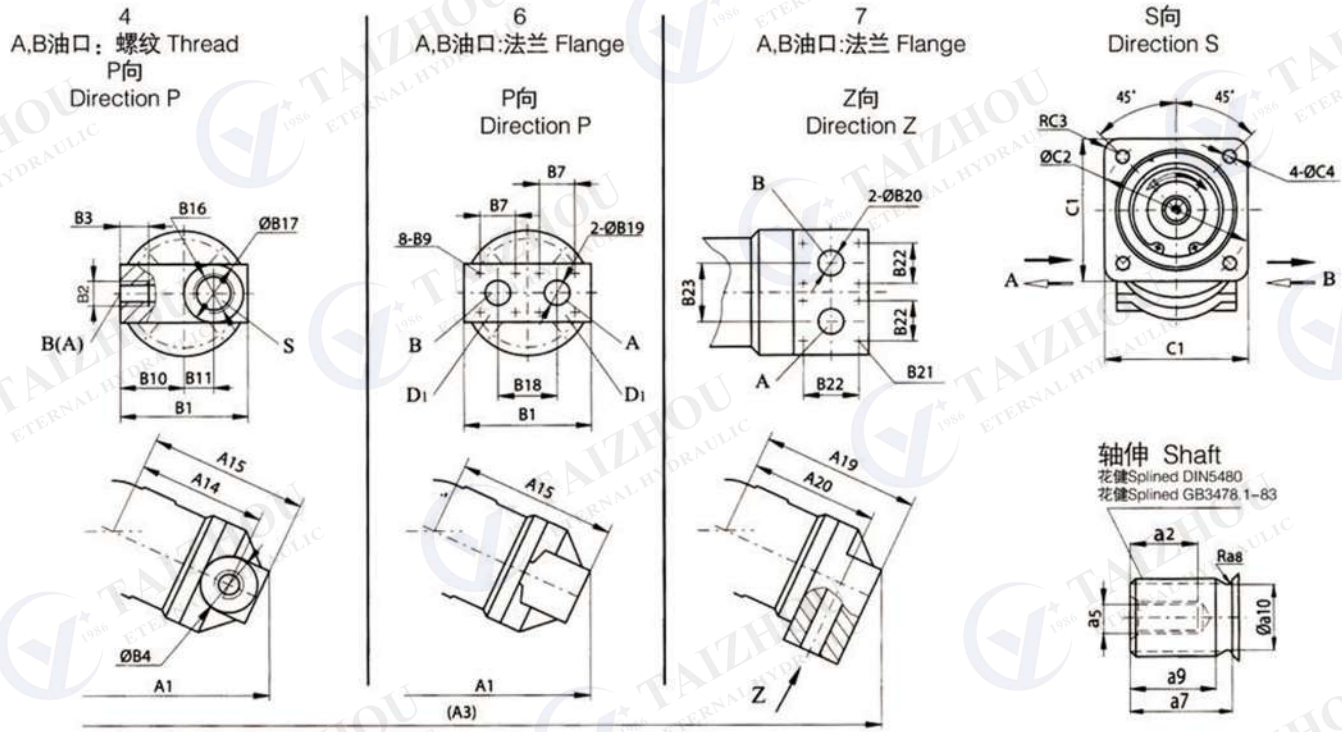
■元件外形尺寸 系列1~4 规格10~160 Unit Dimensions Series 1~4 Size 10~160

系列 Series 1,3,4

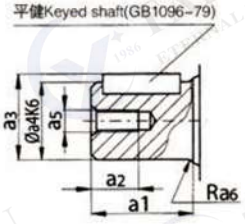
后盖形式 Rear cover



系列 Series 2



注：
1.A1、A2和A3的尺寸只适用于系列2，对系列1,3,4的对应值由下式求出：
A1'=A1-（A6-A6'）; A2'=A2-（A6-A6'）; A3'=A3-（A6-A6'）。
除上述结构形式外，还可以根据用户特殊需要对现有产品进行改制。
Note:
1.The dimensions of A1、A2、A3 are only valid for series 2.The parallel dimensions of the three above mentioned positions for series 1,3 and 4 can be calculated according to the follows formula:A1'=A1-(A6-A6'); A2'=A2-（A6-A6'）; A3'=A3-（A6-A6'）。
2.Besides above mentioned constructures,we can adjust the design of the present product according to the customers' special needs.



■ A2F定量柱塞泵/马达(1~5系列) A2F Fixed Displacement pump/motor(1~5 Series)

元件外形尺寸 系列1~4 规格10~160 Unit Dimension Series 1~4 Size 10~160

规格 Size		系列	后盖形式	A1		A2		A3		A4	A5	A6	A5'	A6'	A7	A8	A9	
α20°	α25°	Series	Rear cover	α20°	α25°	α20°	α25°	α20°	α25°								α20°	α25°
10	12	2,4	1,4	174	172	–	–	–	–	80	20	62	40	42	12.5	8	69	75
23	28	2,3	1,2,4	223	218	–	–	–	–	100	25	75	50	50	16	8	88	95
45	55	1,2	1,2,3,6	292	289	286	284	–	–	125	32	108	63	77	20	10	110	118
63	80	1,2	1,2,3	350	348	345	342	–	–	140	32	137	83	86	23	10	126	140
87	107	1,2	1,2,3,7	360	356	353	348	358	353	160	40	130	80	90	25	12	138	149
125	160	2	1,2,3,7	422	417	417	410	408	420	180	40	156	–	–	28	10	159	173.5

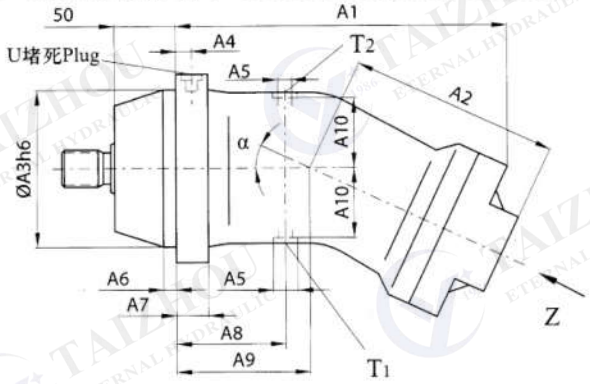
规格 Size		A10	A11	A12	A13	A14	A15	A16	A17	A 18		A19	A20	B1	B2	B3	B4
α20°	α25°									α20°	α25°						
10	12	14	M12×1.5	40	–	90	112	–	–	–	–	–	–	89	M22×1.5	14	40
23	28	25	M16×1.5	50	–	118	145	118	–	–	–	–	–	106	M27×2	16	47
45	55	31.5	M18×1.5	63	–	151	183	151	178	–	–	–	–	132	M33×2	18	53
63	80	36	M18×1.5	77	–	174	213	174	208	–	–	–	–	156	M42×2	20	63
87	107	40	M18×1.5	80	–	190	230	190	225	185	200	230	195	165	M42×2	20	66
125	160	45	M22×1.5	93	–	212	262	212	257	204	220	252	212	195	M48×2	22	70

规格 Size		B5	B6	B7	B8	B9	深 Deep	B10	B11	B12	B13	B14	B15	深 Deep	B16	深 Deep	B17	B18	B19	B20
α20°	α25°																			
10	12	–	–	–	–	–	–	44.5	18	–	–	–	–	–	M33×2	18	42	–	–	–
23	28	120	13	18.2	40.5	M8	15	53	25	–	–	–	–	–	M42×2	20	48	–	–	–
45	55	126	19	23.8	50.8	M10	15	63	29	129	48	50	M10	13	–	–	–	67	20	–
63	80	150	25	27.8	57.1	M12	15	75	35.5	153	60	56	M12	15	–	–	–	–	–	–
87	107	160	25	27.8	57.1	M12	17	80	35.5	162.5	60	56	M12	18	–	–	–	–	–	25
125	160	190	32	31.8	66.7	M14	19	95	42.2	192.5	75	70	M16	20	–	–	–	–	–	39

规格 Size		B21	深 Deep	B22	B23	C1	C2	C3	C4	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10
α20°	α25°																		
10	12	–	–	–	–	95	100	10	9	40	16	22.5	20	M6	0.8	34	2	22	16.7
23	28	–	–	–	–	118	125	12	11	50	19	27.9	25	M8	0.8	43	1.2	28	21.5
45	55	–	–	–	–	150	160	16	13.5	60	28	33	30	M12	1.5	35	1.5	28	25
63	80	–	–	–	–	165	180	16	13.5	70	28	38	35	M12	1.6	40	1.5	33	30
87	107	M12	25	50	78	190	200	20	17.5	80	28	43	40	M12	1.6	45	2	37.5	35
125	160	M12	25	50	78	210	224	20	17.5	90	36	48.5	45	M16	2.5	50	2.5	43	40

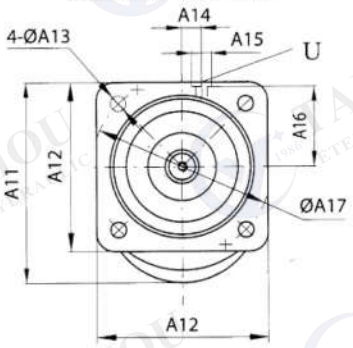
规格 Size		SEA法兰 SEAFlang		平键盘Paralled	花键Splined Shaft	花键Splined Shaft	重量 (kg)
α20°	α25°	D1	D2	BG1096-79	DIN5480	GB3478-83	Weight
10	12	–	–	键Key6×32	W20×1.25×14×9g	EXT14Z×1.25×30R×5f	5
23	28	1/2"	1/2"	键Key8×40	W25×1.25×18×9g	EXT18Z×1.25×30R×5f	12
45	55	3/4"	1 3/4"	键Key8×50	W30×2×14×9g	EXT14Z×2m×30R×5f	23
63	80	1"	2"	键Key10×56	W35×2×16×9g	EXT16Z×2m×30R×5f	33
87	107	1"	2"	键Key12×63	W40×2×18×9g	EXT18Z×2m×30R×5f	44
125	160	1 1/4"	2 3/4"	键Key14×70	W45×2×21×9g	EXT21Z×2m×30R×5f	63

■元件外形尺寸 Unit Dimension Series 5

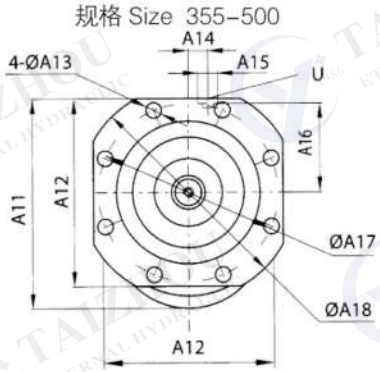


轴伸shaft end

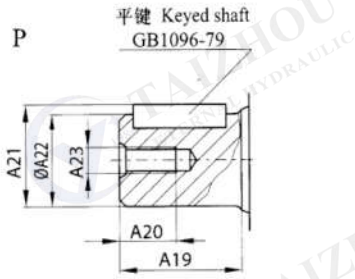
规格 Size 200–250

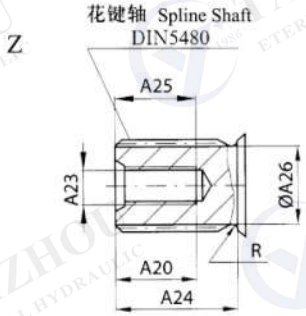


规格 Size 355–500

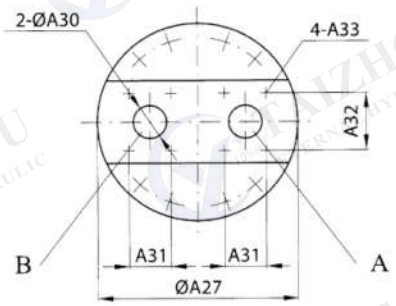


后盖（Z向）End Plate(Direction Z)





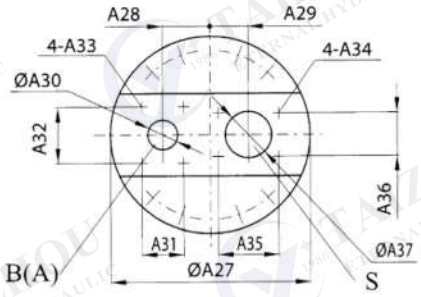
1
用于马达工况和泵工况(闭式回路)
Used for Pump and Motor(Closed Circuit)



A,B油口：法兰42MPa(见尺寸表A38)
A,B Port:Flange 42MPa(See From A38)

A,B	工作管	Operation
S	吸油管	Suction
T1	漏油口	Drain Port
T2	泄油口	Drain Port
U	冲油口	(轴承) Clear port(Bearing)

2
用于泵工况(开式回路)
Used For Pump(Open Circuit)



A,B油口：法兰42MPa(见尺寸表A38)
逆时针旋转时，后盖2旋转180°
S油口：法兰42MPa(见尺寸表A39)
规格200–355：17.5MPa,规格500：14MPa.
A,B Port:Flange 42MPa(See From A38)
S Port:Flange 42MPa(See From A39)
When rotation with anti-clockwise,
The end plate will be rotary 180° .
Size 200–355:17.5MPa.Size 500:14MPa.

■系列5 规格200-500元件外形尺寸表 Series 5 Size 200-500 Table of Unit Dimension

规格 Size	α	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15
200	21°	368	232	224	13	M22×1.5	9	25	120	134	107	300	252	22	70	M14×1.5
250	26.5°	370	232	224	13	M22×1.5	9	25	120	134	107	314	252	22	70	M14×1.5
355	26.5°	422	260	280	14	M33×2	15	28	142	160	128	380	335	18	35	M14×1.5
500	26.5°	462	283	315	15	M33×2	15	30	155	175	142	420	375	22	35	M18×1.5

规格 Size	A16	A17	A18	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28	A29	A30	A31	A32	A33
200	122	280	/	82	36	53.5	50k6	M16	58	47	45	216	55	45	32	31.8	66.7	M14
250	122	280	/	82	36	53.5	50k6	M16	58	47	45	216	55	45	32	31.8	66.7	M14
355	166	320	360	105	42	64	60m6	M20	82	69	55	245	60	50	40	36.6	79.4	M16
500	180	360	400	105	42	74.5	70m6	M20	82	67	62.5	270	65	55	40	36.6	79.4	M16

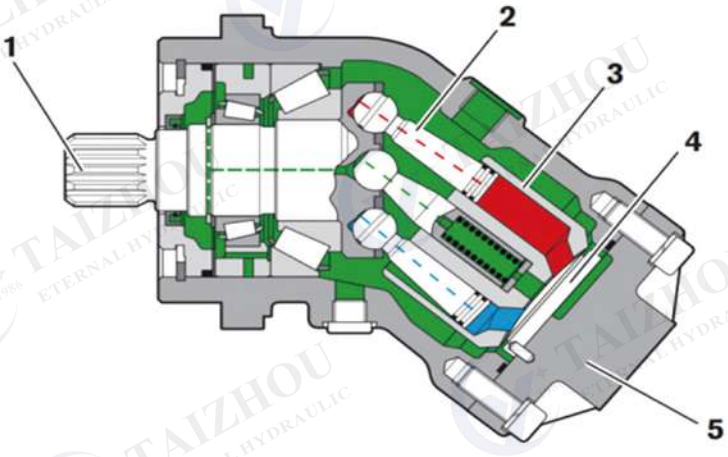
规格 Size	Deep	A34	Deep	R	A35	A36	A37	A38	A39	平键Paralled BG1096–79	花键Spline DIN5480	重量 Weight (kg)
200	22	M12	18	1.2	88.9	50.8	63	1 1/4"	2 1/2"	键Key14×80	W50×2×24×9g	88
250	22	M12	18	1.2	88.9	50.8	63	1 1/4"	2 1/2"	键Key14×80	W50×2×24×9g	88
355	24	M12	18	1.6	88.9	50.8	63	1 1/2"	2 1/2"	键Key18×100	W60×2×28×9g	138
500	24	M16	24	1.6	106.4	62	75	1 1/2"	3"	键Key20×100	W70×3×22×9g	185

■型号说明 Model Code

A2F	O	28	/	6	1	R	—	V	P	B	05	
01	02	03		04	05	06		07	08	09	10	11

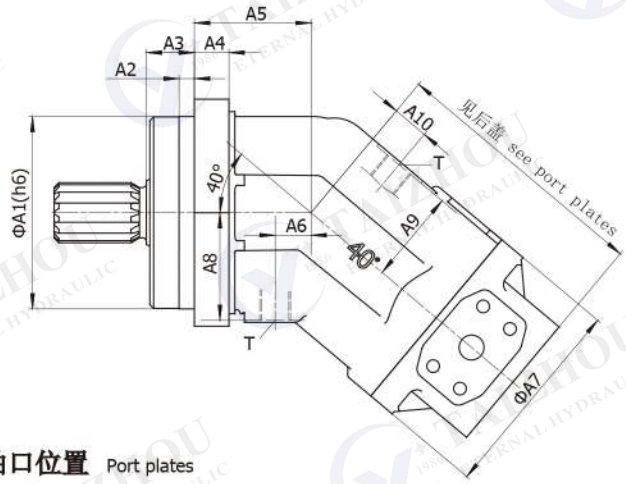
01	斜轴式结构，定量柱塞单元 Bent-axis design, fixed																JA2F
02	马达 Motor																M
	泵 Pump																O
03	排量 Displacement mL/r	10	12	16	23	28	32	45	56	63	80	90	107	125	160	180	
		√	√	√	√	√	√	√	√	√	√	√					
04	系列 Series																6
05	标号 Index																1
06	旋转方向 Directions of rotation	双向 bidirectional															W
		正转 clockwise															R
		反转 counter-clockwise															L
07	密封 Seals	氟橡胶 FKM															V
		丁腈橡胶 NBR															P
08	轴伸 Drive shafts	10	12	16	23	28	32	45	56	63	80	90	107	125	160	180	
	花键轴 Splined shaft DIN 5480	√	√	√	√	√	√	√	√	√	√	√					A
		√	√		√	√		√	√		√						Z
	平键轴 Parallel keyed shaft DIN 6885	√	√	√	√	√	√		√	√	√	√					B
		√	√		√	√		√	√		√						P
09	安装法兰 4 孔 Mounting flanges （ISO 4-hole）	10	12	16	23	28	32	45	56	63	80	90	107	125	160	180	
		√	√	√	√	√	√	√	√	√	√	√					B
10	后盖油口 Port plates	10	12	16	23	28	32	45	56	63	80	90	107	125	160	180	
	SAE 法兰油口；A 和 B 在后侧 Ports A and B SAE,at rear end				√	√	√	√	√	√	√	√					01
	SAE 法兰油口 ;A 和 B 在两侧，相对 Ports A and B SAE,opposite side				√	√	√	√	√	√	√	√					02
	螺纹油口 ;A 和 B 在两侧，相对 Ports A and B threads,opposite side	√	√	√	√	√	√										03
	螺纹油口 ;A 和 B 在两侧和后侧 Ports A and B threads, at side and rear end	√	√	√	√	√	√	√	√	√							04
	SAE 法兰油口 ;A/B 侧面 ;S 后面 SAE flange port, A/B at side and S at rear				√	√	√	√	√	√	√	√					05
	侧面螺纹油口 A/B 和后侧螺纹油口 S Threaded port, A/B at side and S at rear	√	√	√													06
11	阀 valves	无 Void (A2FO)															
		不带阀 without valves(A2FM)															0

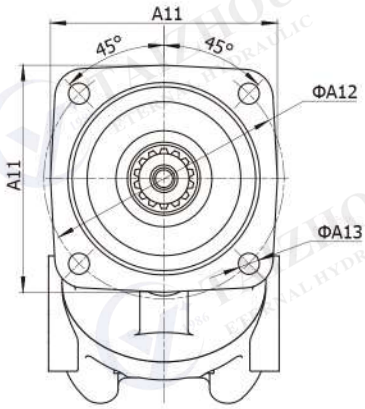
结构剖视 Construction



1. 传动轴 Drive shaft
2. 柱塞 Piston
3. 缸体 Cylinder
4. 配油盘 Control plate
5. 后盖 Port plate

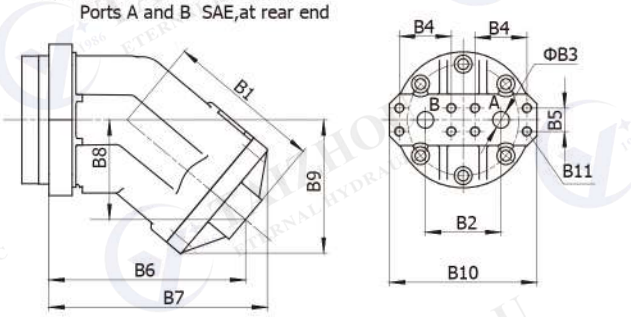
■外形尺寸 Dimension



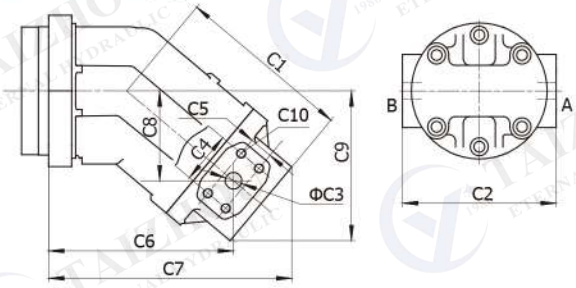


后盖油口位置 Port plates

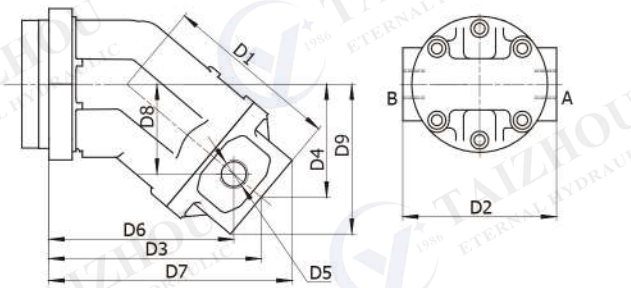
01 SAE法兰油口;A和B在后侧
Ports A and B SAE,at rear end



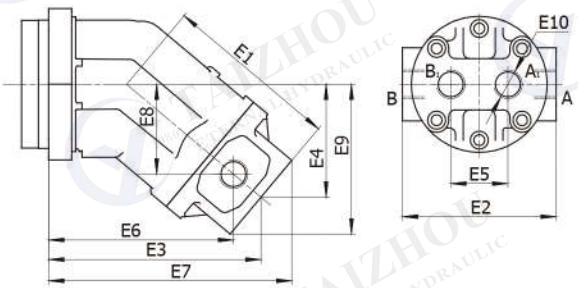
02 SAE法兰油口;A和B在两侧,相对 (Standard for Motor)
Ports A and B SAE,opposite side



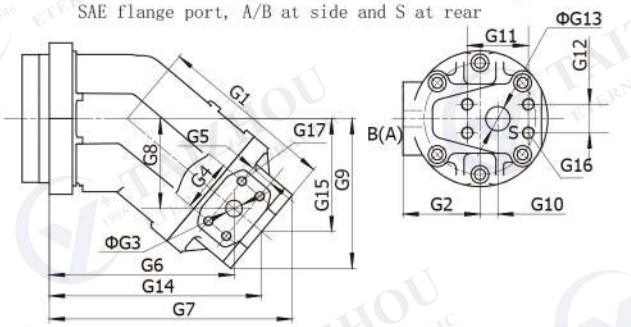
03 螺纹油口;A和B在两侧,相对
Ports A and B threads, at side, opposite side



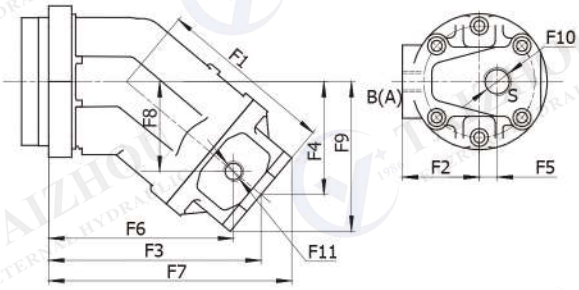
04 螺纹油口;A和B在两侧和后侧
Ports A and B threads, at side and rear end



05 SAE法兰油口;A/B侧面;S后面 (Standard for Pump)
SAE flange port, A/B at side and S at rear

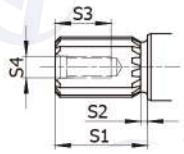


06 侧面螺纹油口 A/B 和后侧螺纹油口 S
Threaded port, A/B at side and S at rear

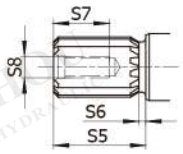


轴伸 Drive shafts

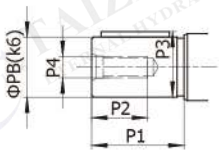
A 花键轴 DIN 5480
Splined shaft



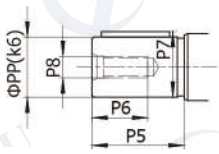
Z 花键轴 DIN 5480
Splined shaft



B 平键轴 DIN 6885
Parallel keyed shaft



P 平键轴 DIN 6885
Parallel keyed shaft



■外形尺寸 Dimension

规格 Size	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	T	B1	B2	B3	B4	B5
10,12,16	Φ80	6	20	12	64.5	5	Φ85	53.5	41.5	5	95	Φ100	Φ9	M12x1.5	/	/	/	/	/
23,28,32	Φ100	8	25	18	60.7	19	Φ106	55.5	48.5	19	118	Φ125	Φ11	M16x1.5	121	59	Φ13	40.5	18.2
45	Φ125	12	32	20	60.3	18	Φ118	63	52	18	150	Φ160	Φ13.5	M18x1.5	138	75	Φ19	50.8	23.8
56,63	Φ125	10	32	20	67.5	18	Φ128	70	56	18	150	Φ160	Φ13.5	M18x1.5	149.5	75	Φ19	50.8	23.8
80,90	Φ140	10	32	20	78.5	15	Φ138	83	61	15	165	Φ180	Φ13.5	M18x1.5	162.5	84	Φ25	57.2	27.8
107,125	Φ160	10	40	23	82.8	18	Φ150	85	67	18	190	Φ200	Φ17.5	M18x1.5	186.5	99	Φ32	66.7	31.8
160,180	Φ180	10	40	25	93	19.5	Φ180	95.5	77.5	19.5	210	Φ224	Φ17.5	M22x1.5	208	99	Φ32	66.7	31.8

规格 Size	B6	B7	B8	B9	B10	B11	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	D1	D2
10,12,16	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	108	85
23,28,32	153	173	78	106	115	M8;15 deep	137	120	Φ13	40.5	18.2	144	190	70	117	M8;15 deep	137	120
45	166	194	89	122	147	M10;17 deep	155	128	Φ19	50.8	23.8	155	207	80	133	M10;17 deep	/	/
56,63	182	206	96	130	147	M10;17 deep	166.5	136	Φ19	50.8	23.8	171	225	87	142	M10;17 deep	/	/
80,90	203	233	104.5	145	166	M12;17 deep	189.5	160	Φ25	57.2	27.8	196	257	99	162	M12;17 deep	/	/
107	225.5	252	120	159	194	M14;19 deep	222	178	Φ25	57.2	27.8	213	285	110	181	M12;17 deep	/	/
125	225.5	252	120	159	194	M14;19 deep	222	178	Φ32	66.7	31.8	213	285	110	181	M14;19 deep	/	/
160,180	252	294	134	188	194	M14;19 deep	233	202	Φ32	66.7	31.8	237	294	121	188	M14;19 deep	/	/

规格 Size	D3	D4	D5	D6	D7	D8	D9	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	G1
10,12,16	147	69.5	M22x1.5	130.5	166	55.5	91	108	85	147	69.5	34	130.5	166	55.5	91	M22x1.5	/
23,28,32	166	88	M27x2	144	190	70	117	137	120	166	88	58	144	190	70	117	M27x2	141
45	/	/	/	/	/	/	/	155	128	179	100	58	155	207	80	133	M33x2	158
56,63	/	/	/	/	/	/	/	166.5	136	195	107	58	171	225	87	142	M33x2	169.5
80,90	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	189.5
107,125	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	212
160,180	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	233

规格 Size	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	G17	F1	F2
10,12,16	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	108	42.5
23,28,32	60	Φ13	40.5	18.2	144	193	70	120	14	47.6	22.2	Φ19	169	91	M10;17 deep	M8;17 deep	/	/
45	63.5	Φ19	50.8	23.8	155	206	80	132	20	52.4	26.2	Φ25	181	102	M10;17 deep	M10;17 deep	/	/
56,63	68	Φ19	50.8	23.8	171	225	87	142	23	52.4	26.2	Φ25	197	109	M10;17 deep	M10;17 deep	/	/
80,90	73	Φ25	57.2	27.8	196	255	99	160	25	58.7	30.2	Φ32	223.5	122	M10;17 deep	M12;17 deep	/	/
107	89	Φ25	57.2	27.8	213	275	110	173	20	69.9	35.7	Φ38	245	136	M12;20 deep	M12;17 deep	/	/
125	89	Φ32	66.7	31.8	213	275	110	173	20	69.9	35.7	Φ38	245	136	M12;20 deep	M14;19 deep	/	/
160,180	101	Φ32	66.7	31.8	237	294	121	188	15	69.9	35.7	Φ42	271	150	M12;20 deep	M14;19 deep	/	/

规格 Size	F3	F4	F5	F6	F7	F8	F9	F10	F11	A shaft	S1	S2	S3	S4	B shaft
10,12,16	147	69	16	130.5	167.5	55.5	93.5	M33x2	M22x1.5	W25x1.25x18x9g	28	6	22	M10	key 8x7x32
23,28,32	/	/	/	/	/	/	/	/	/	W30x2x14x9g	35	8	22	M10	key 8x7x40
45	/	/	/	/	/	/	/	/	/	W32x2x14x9g	35	8	28	M12	/
56,63	/	/	/	/	/	/	/	/	/	W35x2x16x9g	40	8	28	M12	key 10x8x50
80,90	/	/	/	/	/	/	/	/	/	W40x2x18x9g	45	8	36	M16	key 12x8x56
107,125	/	/	/	/	/	/	/	/	/	W45x2x21x9g	50	8	36	M16	key 14x9x63
160,180	/	/	/	/	/	/	/	/	/	W50x2x24x9g	55	11	36	M16	key 14x9x70

规格 Size	PB	P1	P2	P3	P4	Z shaft	S5	S6	S7	S8	P shaft	PP	P5	P6	P7	P8
10,12,16	Φ25	40	22	28	M10	W20x1.25x14x9g	34	12	16	M6	key 6x6x32	Φ20	40	16	22.5	M6
23,28,32	Φ30	50	22	33	M10	W25x1.25x18x9g	43	15	19	M8	key 8x7x40	Φ25	50	19	28	M8
45	/	/	/	/	/	W30x2x14x9g	35	8	28	M12	key 8x7x50	Φ30	60	28	33	M12
56,63	Φ35	60	28	38	M12	W30x2x14x9g	35	8	28	M12	key 8x7x50	Φ30	60	28	33	M12
80,90	Φ40	70	36	43	M16	W35x2x16x9g	40	8	28	M12	key 10x8x56	Φ35	70	28	38	M12
107,125	Φ45	80	36	48.5	M16	W40x2x18x9g	45	8	28	M12	key 12x8x63	Φ40	80	28	43	M12
160,180	Φ50	90	36	53.5	M16	W45x2x21x9g	50	8	36	M16	key 14x9x70	Φ45	90	36	48.5	M16

Features

- Space-saving construction due to recessed mounting flange
- Easy to install, simply slide into the mechanical gear-box
- High power density
- Very high total efficiency
- High starting efficiency
- Optional with integrated pressure relief valve
- Optional with mounted addifitonal valve: counterba-lance valve (BVD/BVE), flushing and boost-pressure valve
- Bent-axis design
- High pressure motor for integration in mechanical gearboxes
- Size 28 ... 250
- Nominal pressure up to 400 bar
- Maximum pressure up 450 bar
- Open and closed circuits
- High pressure motor for integration in mechanical gearboxes
- Open and closed circuits

Type code

● = Available ○ = On request – = Not available

01	02	03	04	05		06	07	08		09	10	11	12	13	14	15
	A2F		**E**		**/**	**6**		**W**	**–**	**V**						

Hydraulic fluid

01	Mineral oil and HFD. HFD for sizes 250 to 355 only in combination with long-life bearing “L“ (without code)		
	HFB-, HFC-hydraulic fluid	Sizes 28 to 180 (without code)	
		NG250 bis 355(nur in Verbindung mit Long-Life Lagerung “L“)	**E-**

Axial piston unit

02	Bent-axis design, fixed	**A2F**

01	02	03	04	05		06	07	08		09	10	11	12	13	14	15
	A2F		E		/	6		W	–	V						

Drive shaft bearing

		28-180	250	
03	Standard bearing (without code)	●	●	
	Long-life bearing	–	●	L

Operating mode

04	Motor, plug-in version	E

Sizes (NG)[1)]

05	Geometric displacement in cm^3/U								
		28	32	107	125	160	180	250	

Series

06		6

Index

07		size 28 to 180	1
		size 250 to 355	0

Direction of rotation

08	Viewed on drive shaft, bidirectional	W

Seal material

09	FKM (fluoroelastomer)	V

Drive shaft

		28	32	107	125	160	180	250	
10	Splined shaft DIN 5480	●	●	●	●	●	●	–	A
		●	–	●	–	●	–	●	Z

Mounting flange

			28-180	250	
11	ISO 3019-2	2-whole	●	–	L
		4-whole	–	●	M

Working ports

						28	32	107	125	160	180	250	
12	SAE working ports **A** and **B** at side, opposite		02	0		–	–	–	–	–	–	●	020
				7		–	–	●	●	●	●	●	027
	SAE working port **A** and **B** bottom (same side)		10	0		●	●	●	●	●	●	–	100
				7		–	–	–	–	–	–	–	107
	Port plate with pressure relief valves for mounting a counterbalance valve	BVD	17	1		–	–	●	●	–	–	–	171 178
			18	8		●	●	●	●	●	●	–	181
		BVE	18			–	–	●	●	●	●	–	188
	Port plate with pressure-relief valves		19	1		●	●	●	●	●	●	–	191
				2		●	●	●	●	●	●	–	192

Valves

Without valve	0
Pressure-relief valve (without pressure boost facility	1
Pressure-relief valve (with pressure boost facility)	2
Flushing and boost pressure valve, mounted	7
Counterbalance valve BVD/BVE mounted[2)]	8

01	02	03	04	05		06	07	08		09	10	11	12	13	14	15
	A2F		E		/	6		W	–	V						

Speed sensor

		28-32	107-180	250	
13	Without speed sensor	●	●	●	
	Prepared for DSA speed sensor	●	●	○	U
	DSA speed sensor mounted[3]	●	●	○	V

Special version (only sizes 28 to 180)

14	Standard version (without code)	
	Special version for slew drives (standard port plate 19)	J

Standard / special version

15	Standard version (without code)	
	Standard version with installation variants, e.g. **T** ports against standard open or closed	–Y
	Special version	–S

Technical data

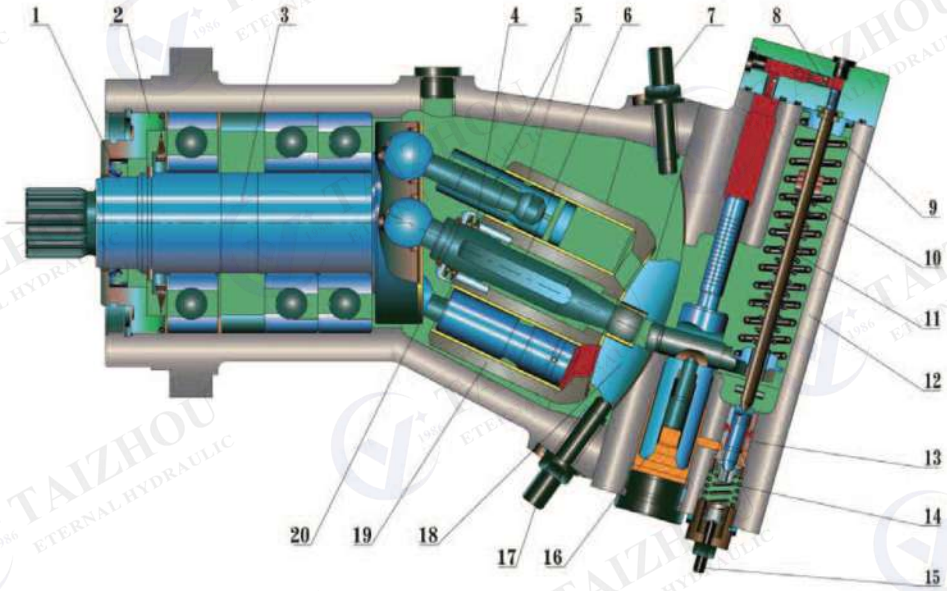
Size				28	32	107	125	160	180	250
Displacement geometric, per revolution		V_g	cm^3	28.1	32	106.7	125	160.4	180	250
Nominal pressure		p_{nom}	bar	400	400	400	400	400	400	350
Maximum pressure		p_{max}	bar	450	450	450	450	450	450	400
Maximum speed [1]		n_{nom}	rpm	6300	6300	4000	4000	3600	3600	2700
		n_{max} [2]	rpm	6900	6900	4400	4400	4000	4000	
Inlet flow [3]	at n_{nom}	q_V	l/min	177	202	427	500	577	648	675
Torque [4]	at p_{nom}	M	Nm	179	204	679	796	1021	1146	1393
Rotary stiffness		c	kNm/rad	2.93	3.12	11.2	11.9	17.4	18.2	73.1
Moment of inertia for rotary group		J_{TW}	$kg \cdot m^2$	0.0012	0.0012	0.0116	0.0116	0.022	0.022	0.061
Maximum angular acceleration		α	rad/s^2	6500	6500	4500	4500	3500	3500	10000
Case volume		V	l	0.2	0.2	0.8	0.8	1.1	1.1	2.5
Weight (approx.)		m	kg	10.5	10.5	34	36	47	48	82

■型号说明 Model Code

A7V | 160 | LV | 1 | L | P | F | 0 | 0

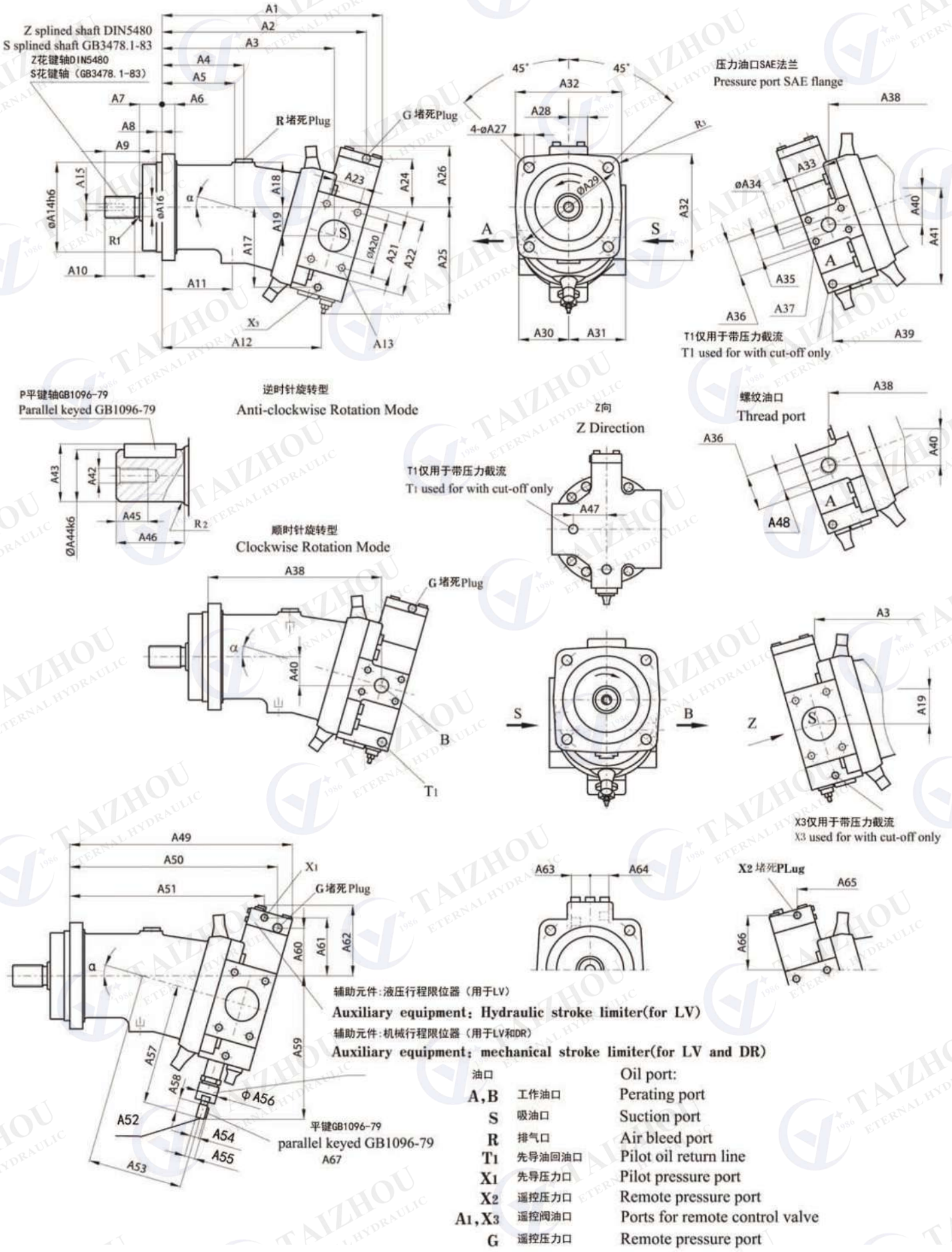
- 辅助元件Auxiliary equipment: 0--无none
- 行程限位Stroke limiter :
  0--无none
  M--机械行程限位mechanically adjustable(for LV and DR)
  H--液压行程限位stroke limiter,hydraulic (for LV)
- 油口连接 Pipe connections:
  F: 压力油口Pressure port-- SAE法兰，在侧面SAE flange，on side
  吸油口 Suction port -- SAE法兰，在侧面SAE flange，on side
  G: 压力油口Pressure port--螺纹连接，在侧面threaded,on side
  吸油口 Suction port -- SAE法兰，在侧面SAE flange，on side
- 轴伸 Shaft End: P--平键 keyed shaft GB1096-79
  Z--花键 splined shaft DIN5480
  S--花键 splined shaft GB3478.1-83
- 转向(从轴端看)Direction of rotation: R--顺时针clockwise; L--逆时针anti-clockwise
- 结构型式 Series: 规格Size 20-160 结构Series 1 规格Size 250-500 结构Series 5.1
- 变量方式 Control device:
  LV--恒功率变量 Constant HP control MA--手动变量 Manual control
  DR--恒压变量 Constant pressure control HD--液控变量 Hydraulic control
- 规格 Size: 20、28、40、55、58、80、78、107、117、160、250、355、500 ml/r
- 泵型号 Pump type：斜轴式变量泵 Axial piston variable displacement pump

■结构剖视 Construction



1. 骨架油封 Oil seal kit
2. 端盖 Front cover
3. 主轴 Shaft
4. 蝶形弹簧 Dishing Spring
5. 柱塞组件 Pistion
6. 中心轴 Center pin
7. 小流量限位螺钉 Limiter screw
8. 先导活塞 Pilot piston
9. 大功率弹簧 Bigger power spring
10. 小功率弹簧 Smaller power spring
11. 顶杆 Control rod
12. 变量壳体 Regulator housing
13. 伺服活塞组件 Assembly parts
14. 起始变量调节弹簧 Adjusting spring
15. 起始变量调节螺钉 Adjusting screw
16. 变量活塞 Flow piston
17. 大流量限位螺钉 Limiter screw
18. 配油盘 Port plate
19. 缸体 Cylinder block
20. 回程盘 Retainer

■外形尺寸 Dimension



油口		Oil port:
A，B	工作油口	Perating port
S	吸油口	Suction port
R	排气口	Air bleed port
T1	先导油回油口	Pilot oil return line
X1	先导压力口	Pilot pressure port
X2	遥控压力口	Remote pressure port
A1，X3	遥控阀油口	Ports for remote control valve
G	遥控压力口	Remote pressure port

■ 元件外形尺寸 系列1 规格20~160 Unit Dimension Series 1 Size 20~160

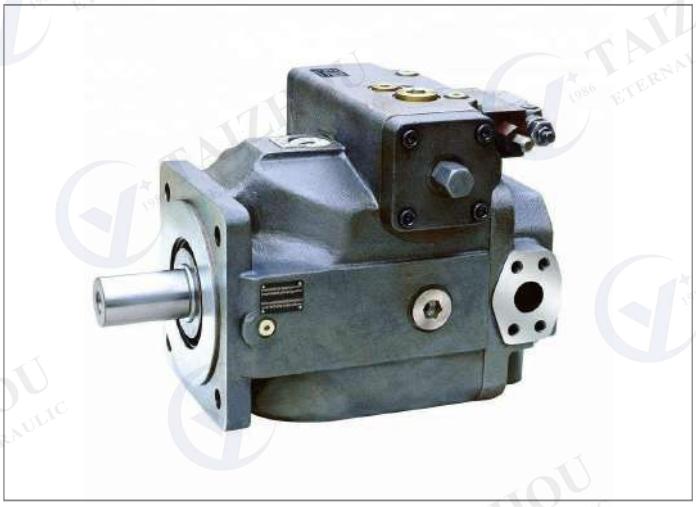
规格 size	α°	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	深 deep	A14	A15	A16	A17	A18	A19	A20
20	9	251	224	199	107	75	16	25	8	43	28	80	160	M12	20	100	M8	21.5	85	52	20	38
28	16	260	232	195	107	75	16	25	8	43	28	80	149	M12	20	100	M8	21.5	95	50	34	38
40	9	317	287	255	123	108	20	32	10	35	28	123	244	M12	20	125	M12	25	95	63	23	50
55	16	327	296	251	123	108	20	32	10	35	28	123		M12	20	125	M12	25		63	41	50
58	9	374	337	304	152	137	23	32	10	40	33	152	295	M12	18	140	M12	30	106	77	26.5	63
80	16	385	351	300	152	137	23	32	10	40	33	152		M12	18	140	M12	30		77	48	63
78	9	381	347	310	145	130	25	40	10	45	37.5	145	298	M12	17	160	M12	35	113	80	29	63
107	16	393	358	305	145	130	25	40	10	45	37.5	145		M12	17	160	M12	35		80	50	63
117	9	443	402	364	214	156	28	40	12	50	43	174.5	350	M16	24	180	M16	40	130	93	33	75
160	16	454	414	359	213	156	28	40	12	50	43	174.5		M16	24	180	M16	40		88	58	75

规格 size	A21	A22	A23	A24	A25	A26	A27	A28	A29	A30	A31	A32	A33	A34	A35	A36	A37	深 deep	A38	A39	A40	A41
20	69.9	94	35.7	78	132	95	11	23.5	125	58	58	118	50.8	19	23.8	46	M10	17	193		19	
28	69.9	94	35.7	59	145	80	11	23.5	125	58	58	118	50.8	19	23.8	46	M10	17	189		33	
40	77.8	102	42.9	87	166	109	13.5	29	160	71	81	150	50.8	19	23.8	53	M10	17	253	261	23	98
55	77.8	102	42.9	64	182	91	13.5	29	160	71	81	150	50.8	19	23.8	53	M10	17	249		40	
58	88.9	115	50.8	93	168	113	13.5	33	180	86	92	165	57.2	25	27.8	64	M12	18	301	313	26	109
80	88.9	115	50.8	68	194		13.5	33	180	86	92	165	57.2	25	27.8	64	M12	17	300		48	
78	88.9	115	50.8	101	180	120	17.5	34	200	89	93	190	57.2	25	27.8	64	M12	17	306	318	28	119
107	88.9	115	50.8	73	200	98	17.5	34	200	89	93	190	57.2	25	27.8	64	M12	17	301		49	
117	106.4	135	61.9	114	195	137	17.5	36	224	104	113	210	66.7	32	31.8	70	M14	19	359	369	32	136
160	106.4	135	61.9	83	212	112	17.5	36	224	104	113	210	66.7	32	31.8	70	M14	19	354		57	

规格 size	A42	A43	A44	A45	A46	A47	A48	A49	A50	A51	A52	深 deep	A53	A54	A55	A56	A57	A58	A59	A60	A61
20	M8	27.9	25	19	50	38	M27x2	257	226	230	M3	9	108	8	8.8	42	161	14	176	77	104
28	M8	27.9	25	19	50	38	M27x2	269	234	242	M3	9	108	8	8.8	42	161	14	186	58	84
40	M12	33	30	28	60	40	M33x2	323	290	279	M4	10	134	10	11.2		184	16	204	85	117
55	M12	33	30	28	60	40	M33x2	337	299	292	M4	10	134	10	11.2		184	16	215	62	98
58	M12	38	35	28	70	62	M42x2	378	344	330	M5	12	155.5	16	18	52	228	24	251	91	116
80	M12	38	35	28	70	62	M42x2	391	354	343	M5	12	155.5	16	18	52	228	24	265	65	91
78	M12	43	40	28	80	55	M42x2	385	352	338	M5	12	169	16	18	52	236	24	261	99	124
107	M12	43	40	28	80	55	M42x2	400	363	351	M5	12	169	16	18	52	236	24	276	71	98
117	M16	48.5	45	36	90	65	M48x2	445	408	384	M5	12.5	192	16	18	65	266	24	294	111	137
160	M16	48.5	45	36	90	65	M48x2	461	420	399	M5	12.5	192	16	18	65	266	24	310	79	108

规格 size	A62	A63	A64	A65	A66	平键 key A67 GB1096-79	平键 key GB1096-79	花键 spline DIN5480	花键 spline GB3478.1-83	R1	R2	R3
20	129	35	30	228	92	键 2x10	键 8x40	W25x1.25x18x9g	EXT18Zx1.25mx30Rx5f	1.2	0.8	12
28	114	35	30	238	73	键 2x10	键 8x40	W25x1.25x18x9g	EXT18Zx1.25mx30Rx5f	1.2	0.8	12
40	147	30	30	276	104	键 3x10	键 8x50	W30x2x14x9g	EXT14Zx2mx30Rx5f	1.6	1.5	16
55	128	30	30	288	83	键 3x10	键 8x50	W30x2x14x9g	EXT14Zx2mx30Rx5f	1.6	1.5	16
58	142	33	33	328	104	键 5x16	键 10x56	W35x2x16x9g	EXT16Zx2mx30Rx5f	1.6	1.6	16
80	120	33	33	339	80	键 5x16	键 10x56	W35x2x16x9g	EXT16Zx2mx30Rx5f	1.6	1.6	16
78	150	33	33	336	112	键 5x16	键 12x63	W40x2x18x9g	EXT18Zx2mx30Rx5f	2.5	1.6	20
107	126	33	33	348	86	键 5x16	键 12x63	W40x2x18x9g	EXT18Zx2mx30Rx5f	2.5	1.6	20
117	164	34	34	382	125	键 5x16	键 14x70	W45x2x21x9g	EXT21Zx2mx30Rx5f	2.5	2.5	20
160	137	34	34	396	96	键 5x16	键 14x70	W45x2x21x9g	EXT21Zx2mx30Rx5f	2.5	2.5	20

规格 size	X1、X2	A1、X3	T	T1	R	G	A、B	S	重量 weight Kg
20	M14x1.5	M12x1.5	M12x1.5	M12x1.5	M16x1.5	M14x1.5	SAE3/4" or M27x2	SAE1 1/2"	19
28	M14x1.5	M12x1.5	M12x1.5	M12x1.5	M16x1.5	M14x1.5	SAE3/4" or M27x2	SAE1 1/2"	19
40	M14x1.5	M18x1.5	M12x1.5	M18x1.5	M18x1.5	M14x1.5	SAE3/4" or M33x2	SAE2"	28
55	M14x1.5	M18x1.5	M12x1.5	M18x1.5	M18x1.5	M14x1.5	SAE3/4" or M33x2	SAE2"	28
58	M14x1.5	M18x1.5	M12x1.5	M18x1.5	M18x1.5	M14x1.5	SAE1" or M42x2	SAE2 1/2"	44
80	M14x1.5	M18x1.5	M12x1.5	M18x1.5	M18x1.5	M14x1.5	SAE1" or M42x2	SAE2 1/2"	44
78	M14x1.5	M18x1.5	M12x1.5	M18x1.5	M18x1.5	M14x1.5	SAE1" or M42x2	SAE2 1/2"	53
107	M14x1.5	M18x1.5	M12x1.5	M18x1.5	M18x1.5	M14x1.5	SAE1" or M42x2	SAE2 1/2"	53
117	M14x1.5	M20x1.5	M12x1.5	M18x1.5	M22x1.5	M14x1.5	SAE1 1/4" or M48x2	SAE3"	76
160	M14x1.5	M20x1.5	M12x1.5	M18x1.5	M22x1.5	M14x1.5	SAE1 1/4" or M48x2	SAE3"	76



Features

Variable displacement pump with axial piston rotary group of swashplate design for hydrostatic drives in open circuit
Flow is proportional to drive speed and displacement.
Flow can be infinitely varied by controlling the swashplate angle.

- Excellent suction characteristics
- Low noise level
- Long service life
- Modular design
- Short control response times
- Variable through drive options
- Optical swivel angle indicator
- Sizes 40 to 500
- Nominal pressure 350 bar
- Maximum pressure 400 bar
- Open circuit

Type code

● = Available ○ = On request – = Not available

01	02	03	04	05		06	07		08	09	10	11	12
	A4VS	O			/			–				25	

Hydraulic fluid/type

		40	71	125	180	250	355	500	
01	Mineral oil (without code)	●	●	●	●	●	●	●	
	High-speed version	–	–	–	–	●	●	●	H

Axial piston unit

02	Swashplate design, variable, nominal pressure 350 bar, maximum pressure 400 bar	A4VS

Operating mode

03	Pump, open circuit	O

Sizes (NG)

		40	71	125	180	250	355	500
04	Geometric displacement, see table of values on page 6							

01	02	03	04	05	06	07	08	09	10	11	12
	A4VS	O			/			–			25

Control devices — Information on controller selection

05	Without control		●	●	●	●	●	●	●	OV
	Pressure controller	See page 10 and data sheet 92060	●	●	●	●	●	●	●	DR
	Pressure controller for parallel operation		●	●	●	●	●	●	●	DP
	Flow controller		●	●	●	●	●	●	●	FR..
	Pressure and flow controller		●	●	●	●	●	●	●	DFR.
	Power controller with hyperbolic characteristic curve	See page 12, 13 and data sheet 92064	●	●	●	●	●	●	●	LR2..
	Power controller with remotely controllable power characteristics		●	●	●	●	●	●	●	LR3..
	Manual control	See page 14 Data sheet 92072	○	○	○	○	○	○	○	MA
	Rod system control (maximum working pressure 150 bar)		–	●	●	●	–	–	–	GE
	Hydraulic control, pressure-dependent HD.U and HD.T not available in ATEX	See page 13 and data sheet 92080	●	●	●	●	●	●	●	HD...

Series

		40	71	125	180	250	355	500	
06	Series 1, index 0	●	●	–	–	–	–	–	10
	Series 1, index 1 only for HD control	●	●	–	–	–	–	–	11
	Series 3, index 0	–	–	●	●	●	●	●	30

Directions of rotation

			40 ... 500	
07	Viewed on drive shaft	clockwise	●	R
		counter-clockwise	●	L

Seals and ATEX version

		40 ... 500	
08	FKM (fluoroelastomer) and ATEX version II 2G Ex h IIC T4-T1 Gb X	●	R
	FKM (fluoroelastomer) and ATEX version II 3G Ex h IIC T4-T1 Gc X	●	A

Drive shafts

		40 ... 500	
09	Parallel keyed shaft DIN 6885	●	P
	Splined shaft DIN 5480	●	Z

Mounting flange

			40	71	125	180	250	355	500	
10	In accordance with ISO 3019-2 (metric)	4-hole	●	●	●	●	●	●	–	B
		8-hole	–	–	–	–	–	–	●	H

Working port

				40 ... 500	
11	SAE flange ports, Fastening thread metric	B and S offset 90° to the side	2. Pressure port B1 opposite B, plugged with flange plate on delivery	●	25

01	02	03	04	05		06	07		08	09	10	11	12
	A4VS	O			/			-				25	

Through drives[1] (for mounting options, see page 41)

12	Flange ISO 3019-2 (metric) Diameter	Hub for splined shaft Diameter		For mounting of ATEX axial piston pump	40	71	125	180	250	355	500	
	without through drive and auxiliary pump				●	●	●	●	●	●	●	N00
	with through drive for mounting of an axial piston pump				●	●	–	–	–	–	●	K...
	Universal through drive[2]				–	–	●	●	●	●	–	U...
	125-4	32x2x14x9g[3]		A4VS NG40	●	●	●	●	●	●	●	31
	140-4	40x2x18x9g[3]		A4VS NG71	–	●	●	●	●	●	●	33
	160-4	50x2x24x9g[3]		A4VS NG125 and NG180	–	–	●	●	●	●	●	34
	224-4	60x2x28x9g[3]		A4VS NG250	–	–	–	–	●	●	●	35
		70x3x22x9g[3]		A4VS NG 355 and 500	–	–	–	–	–	●	●	77
	315-8	80x3x25x9g[3]		A4VS NG 500	–	–	–	–	–	–	●	43
	80-2	3/4 in	11T 16/32DP[4]	A10VSO 18/31	○	●	●	●	●	●	○	B2
	100-2	7/8 in	13T 16/32DP[4]	A10VSO 28/31	●	●	●	●	●	●	○	B3
	100-2	1 in	15T 16/32DP[4]	A10VSO 45/31	●	●	●	●	●	●	●	B4
	125-2	1 1/4 in	14T 12/24DP[4]	A10VSO 71/31	–	●	●	●	●	●	●	B5
	125-2	1 1/2 in	17T 12/24DP[4]	A10VSO 100/31	–	–	●	●	●	●	○	B6
	Prepared for through drive, with pressure-resistant plugged cover				●	●	●	●	●	●	●	99

Technical data

Size		NG		40	71	125	180	250	250 [1]	355	355 [1]	500	500 H[1]
Displacement geometric, per revolution		$V_{g\,max}$	cm³	40	71	125	180	250	250	355	355	500	500
Rotational speed maximum[2]	at $V_{g\,max}$	n_{nom}	rpm	2600	2200	1800	1800	1500	1800	1500	1700	1320	1500
Flow	at n_{nom} and $V_{g\,max}$	$q_{v\,max}$	l/min	104	156	225	324	375	450	533	604	660	750
	at n_E = 1500 rpm	$q_{vE\,max}$	l/min	60	107	186	270	375	375	533	533	–	750
Power	with n_{nom}, $V_{g\,max}$ and Δp = 350 bar	P	kW	61	91	131	189	219	262	311	352	385	437
	at n_E = 1500 rpm, $V_{g\,max}$ and Δp = 350 bar	$P_{E\,max}$	kW	35	62	109	158	219	219	311	311	–	437
Torque	at $V_{g\,max}$ and Δp = 350 bar	T_{max}	Nm	223	395	696	1002	1391	1391	1976	1976	2783	2783
	at $V_{g\,max}$ and Δp = 100 bar	T	Nm	64	113	199	286	398	398	564	564	795	795
Rotary stiffness Drive shaft	P	c	kNm/rad	80	146	260	328	527	527	800	800	1145	1145
	Z	c	kNm/rad	77	146	263	332	543	543	770	770	1136	1136
Moment of inertia of the rotary group		J_{TW}	kgm²	0.0049	0.0121	0.03	0.055	0.0959	0.0959	0.19	0.19	0.3325	0.3325
Maximum angular acceleration[3]		α	rad/s²	17000	11000	8000	6800	4800	4800	3600	3600	2800	2800
Case volume		V	L	2	2.5	5	4	10	10	8	8	14	14
Weight without through drive (approx.)		m	kg	39	53	88	102	184	184	207	207	320	320

Features

- Integrated auxiliary pump for boost and pilot oil supply
- Flow direction changes when the swashplate is moved through the neutral position
- High-pressure relief valves with integrated boost function
- With adjustable pressure cut-off as standard
- Boost-pressure relief valve
- Through drive for mounting of further pumps up to same size
- Large variety of controls
- Swashplate design
- High-pressure pump for applications in closed circuits
- Size 28 to 180
- Nominal pressure 400 bar
- Maximum pressure 450 bar
- Closed circuit

Type code

● = Available ○ = On request – = Not available = Preferred program

01	02	03	04	05	06	07	08	09		10	11		12	13	14	15	16	17	18	19	20	21	22
A4V	**G**			**D**					**/**	**32**		–	**N**										

Axial piston unit

01	Swashplate design, variable, nominal pressure 400 bar, maximum pressure 450 bar	**A4V**

Operating mode

02	Pump, closed circuit	**G**

Size (NG)

03	Geometric displacement, see "Technical data" on page 10	**28**	**40**	**56**	**71**	**90**	**125**	**180**

Type code

01	02	03	04	05	06	07	08	09		10	11		12	13	14	15	16	17	18	19	20	21	22
A4V	**G**			**D**					**/**	**32**		–	**N**										

Control device				**28**	**40**	**56**	**71**	**90**	**125**	**180**	
04	Without control module			●	●	●	●	●	●	●	**NV**
	Proportional control hydraulic	pilot-pressure related, with inlet filtration in **P**[1]		●	●	●	●	●	●	●	**HD3**
		mechanical servo		●	●	●	●	●	●	●	**HW**
	Automatic control, speed related		U = 12 V	●	●	●	●	●	●	●	**DA1**
			U = 24 V	●	●	●	●	●	●	●	**DA2**
	Hydraulic control, direct operated			●	●	●	●	●	●	●	**DG**
	Proportional control electric	with proportional solenoid with inlet filtration in **P**[1]	U = 12 V	●	●	●	●	●	●	●	**EP3**
			U = 24 V	●	●	●	●	●	●	●	**EP4**
	Two-point control, electric	with switching solenoid	U = 12 V	●	●	●	●	●	●	●	**EZ1**
			U = 24 V	●	●	●	●	●	●	●	**EZ2**
	Electric control, direct operated two pressure reducing valves (FTDRE)		U = 12 V	●	●	–	–	–	–	–	**ET3**
			U = 24 V	●	●	–	–	–	–	–	**ET4**
	Electric control, direct operated two pressure reducing valves (DRE5)		U = 12 V	–	–	–	–	–	●	–	**ET7**
			U = 24 V	–	–	–	–	–	●	–	**ET8**
	BODAS electronic control[2]		U = 12 V	●	●	–	–	–	●	–	**BT1**
			U = 24 V	●	●	–	–	–	●	–	**BT2**

Pressure cut-off		**28**	**40**	**56**	**71**	**90**	**125**	**180**	
05	Without pressure cut-off[3]	●	●	–	–	–	●	–	
	Pressure cut-off	●	●	●	●	●	●	●	**D**

Neutral position switch		**28**	**40**	**56**	**71**	**90**	**125**	**180**	
06	Without neutral position switch (without code)	●	●	●	●	●	●	●	
	Neutral position switch (only for HW control)	●	●	●	●	●	●	●	**L**

Mechanical stroke limiter		**28**	**40**	**56**	**71**	**90**	**125**	**180**	
07	Without mechanical stroke limiter (without code)	●	●	●	●	●	●	●	
	Mechanical stroke limiter, externally adjustable	●	●	●	●	●	●	●	**M**

Stroking chamber pressure port		**28**	**40**	**56**	**71**	**90**	**125**	**180**	
08	Without stroking chamber pressure port X_3, X_4 (without code)	●	●	●	●	●	●	●	
	Stroking chamber pressure port X_3, X_4	●	●	●	●	●	●	●	**T**

DA control valve			**NV**	**HD**	**HW**	**DG**	**DA**	**EP**	**EZ**	**ET**	**BT**	
09	Without DA control valve		●	●	●	●	–	●	●	●	●	**1**
	DA control valve, fixed setting		–	●	●	●	●	●	–	–	–	**2**
	DA control valve, mechanically adjustable, with position lever	direction of actuation, clockwise	–	●	●	●	●	●	–	–	–	**3R**
		direction of actuation, counter-clockwise	–	●	●	●	●	●	–	–	–	**3L**
	DA control valve, fixed setting, ports for pilot control device		–	●	●	–	●	●	–	–	–	**7**
	DA control valve, fixed setting and hydraulic inch valve mounted, control with hydraulic fluid, mineral oil-based		–	–	–	–	●	–	–	–	–	**8**

1) Sizes 28 to 71 are designed with inlet filtration in **P** and X_1/X_2

2) The BT control is only permissible in combination with port plate 22 or 30, see position 15 "Port thread: Metric with O-ring seal following ISO 6149".

3) Version not available for all port plate variants, please contact us.

01	02	03	04	05	06	07	08	09		10	11		12	13	14	15	16	17	18	19	20	21	22
A4V	**G**			**D**					**/**	**32**		–	**N**										

Series

10	Series 3, index 2	**32**

Direction of rotation

			28	40	56	71	90	125	180	
11	Viewed on drive shaft	clockwise	●	●	●	●	●	●	●	**R**
		counter-clockwise	●	●	●	●	●	●	●	**L**

Sealing material

		28	40	56	71	90	125	180	
12	NBR (nitrile rubber), shaft seal made of FKM (fluorocarbon rubber)	●	●	●	●	●	●	●	**N**

Drive shaft

			28	40	56	71	90	125	180	
13	Splined shaft DIN 5480	for single pump	●	●	●	●	●	●	●	**Z**
		for combination pump – 1st pump	–[4]	●	●	●	●	●	–[4]	**A**
	Splined shaft ANSI B92.1a	for single pump	●	●	●	●	●	●	●	**S**
		for combination pump – 1st pump	–[5]	–[5]	●	●	–[5]	●	●	**T**
		only for combination pump – 2nd pump	–	●	–	–	●	–	–	**U**

Mounting flange

			28	40	56	71	90	125	180	
14	SAE J744	2-hole	●	●	●	–	–	–	–	**C**
		4-hole	–	–	–	–	–	–	●	**D**
		2+4-hole	–	–	–	●	●	●	–	**F**

Working port (port plate)

15	**Port thread: Metric with profile sealing ring seal based on DIN 3852** **Fastening thread at the SAE working port and through drive: Metric according to DIN 13**		28	40	56	71	90	125	180	
	SAE working port **A** and **B**, top and bottom	suction port **S** bottom	–	●	●	●	●	●	●	**02**
	SAE working port **A** and **B**, top and bottom	suction port **S** at top	–	●	●	○	○	○	○	**03**
	SAE working port **A** and **B**, same side right[6]	suction port **S** bottom	●	–	–	–	–	–	–	**10**
	SAE working port **A** and **B**, same side left[6]	suction port **S** bottom	–	–	–	●	○	●	–	
	SAE working port **A** and **B**, same side right[6]	suction port **S** at top	–	–	–	○	○	○	–	**13**
	SAE working port **A** and **B**, same side left[6]	suction port **S** at top	●	–	●	–	–	–	–	
	Port thread: Metric with O-ring seal based on ISO 6149 **Fastening thread at the SAE working port and through drive: Metric according to DIN 13**		28	40	56	71	90	125	180	
	SAE working port **A** and **B**, top and bottom	suction port **S** bottom	–	●	–	–	–	●	–	**22**
	SAE working port **A** and **B**, same side right[6]	suction port **S** bottom	●	–	–	–	–	–	–	**30**

Boost pump

			28	40	56	71	90	125	180	
16	Without integrated boost pump	without through drive	●	●	●	●	●	●	●	**N**
		with through drive	●	●	●	●	●	●	●	**K**
	Integrated boost pump	with and without through drive	●	●	●	●	●	●	●	**F**

4) Standard for combination pump – 1st pump: Shaft Z
5) Standard for combination pump – 1st pump: Shaft S
6) Only possible without attachment filter

01	02	03	04	05	06	07	08	09		10	11		12	13	14	15	16	17	18	19	20	21	22
A4V	**G**			**D**					**/**	**32**		–	**N**										

Through drive[7]

				28	40	56	71	90	125	180	
17	Without through drive, only for version N and F (position 16)			●	●	●	●	●	●	●	00
	Flange SAE J744	Hub for splined shaft									
	82-2 (A)	5/8 in	9T 16/32DP[8]	●	●	●	●	●	●	●	01
		3/4 in	11T 16/32DP[8]	–	●	●	●	–	–	●	52
	101-2 (B)	7/8 in	13T 16/32DP[8]	●	●	●	●	●	●	●	02
		1 in	15T 16/32DP[8]	●	●	●	●	●	●	●	04
	127-2 (C)	1 in	15T 16/32DP[8]	–	●	–	–	–	–	–	09
	127-2 (C)	1 1/4 in	14T 12/24DP[8]	–	–	●	●	–	–	●	07
	127-2/4 (C)			–	–	–	–	●	●	–	
	152-2/4 (D)	W35	2×30×16×9g[9]	–	–	–	–	●	–	–	73
		1 3/4 in	13T 8/16DP[8]	–	–	–	–	–	●	●	69
	165-4 (E)	1 3/4 in	13T 8/16DP[8]	–	–	–	–	–	–	●	72

High-pressure relief valve

		Setting range Δp_{HD}		28	40	56	71	90	125	180	
18	High-pressure relief valve, pilot operated	100 ... 420 bar	with bypass	–	–	–	●	●	●	●	1
	High-pressure relief valve direct operated, fixed setting	250 ... 420 bar	without bypass	●	●	●	–	–	–	–	3
			with bypass	●	●	●	–	–	–	–	5
		100 ... 250 bar	without bypass	●	●	●	–	–	–	–	4
			with bypass	●	●	●	–	–	–	–	6

Filtration boost circuit/external boost pressure supply

		28	40	56	71	90	125	180	
19	Filtration in the boost pump suction line	●	●	●	●	●	●	●	S
	Filtration in the boost pump pressure line Ports for external boost circuit filtration (F_e and F_a)	●	●	●	●	●	●	●	D
	Attachment filter with cold start valve	–	●	●	●	●	●	●	F
	Attachment filter with cold start valve and visual contamination indicator	–	●	●	●	●	●	●	P
	Attachment filter with cold start valve and electric contamination indicator	–	●	●	●	●	●	●	B
	External boost pressure supply (version without integrated boost pump – N00, K...)	●	●	●	●	●	●	●	E

Swivel angle sensor

		28	40	56	71	90	125	180	
20	Without swivel angle sensor (without code)	●	●	●	●	●	●	●	
	Electric swivel angle sensor mounted[10]	○	○	○	○	○	○	○	R

Connector for solenoids[11]

			28	40	56	71	90	125	180	
21	Without connector (without code), only with purely hydraulic controls		●	●	●	●	●	●	●	
	DEUTSCH connector molded, 2-pin	without suppressor diode	●	●	●	●	●	●	●	P
		with suppressor diode (only for EZ and DA)	●	●	●	●	●	●	●	Q

Standard/special version

22	Standard version	without code	
	Special version		-S

7) Specifications for version with integrated boost pump, please contact us for version without boost pump

8) Hub for splined shaft according to ANSI B92.1a (Splined shaft in accordance with SAE J744)

9) Hub for splined shaft according to DIN 5480

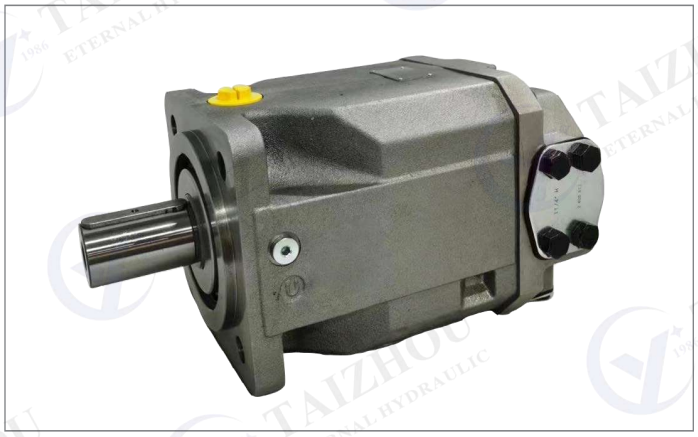
10) The swivel angle sensor is used to detect the swivel angle and thus the displacement. For available options regarding the swivel angle detection, please contact us.

Notice

- In addition to the type code, please specify the relevant technical data when placing your order.
- Please note that not all type code combinations are available although the individual functions are marked as being available.

Technical data

Size			NG		28	40	56	71	90	125	180
Geometric displacement, per revolution											
	variable pump		$V_{g\,max}$	cm^3	28	40	56	71	90	125	180
	boost pump (at p = 20 bar)		$V_{g\,Sp}$	cm^3	6.1	8.6	11.6	19.6	19.6	28.3	39.8
Rotational speed[1]	maximum at $V_{g\,max}$		n_{nom}	rpm	4250	4000	3600	3300	3050	2850	2500
	limited maximum[2]		n_{max1}	rpm	4500	4200	3900	3600	3300	3250	2900
	intermittent maximum[3]		n_{max2}	rpm	5000	5000	4500	4100	3800	3450	3000
	minimum		n_{min}	rpm	500	500	500	500	500	500	500
Flow	at n_{nom} and $V_{g\,max}$		q_v	l/min	119	160	202	234	275	356	450
Power[4]	at n_{nom}, $V_{g\,max}$ and Δp = 400 bar		P	kW	79	107	134	156	183	238	300
Torque[4]	with $V_{g\,max}$ and	Δp = 400 bar	M	Nm	178	255	357	452	573	796	1146
		Δp = 100 bar	M	Nm	45	64	89	113	143	199	286
Rotary stiffness of drive shaft		S	c	kNm/rad	31.4	69	80.8	98.8	158.1	218.3	244.5
		T	c	kNm/rad	–	–	95	120.9	–	252.1	318.4
		A	c	kNm/rad	–	79.6	95.8	142.4	176.8	256.5	–
		Z	c	kNm/rad	32.8	67.5	78.8	122.8	137	223.7	319.6
		U	c	kNm/rad	–	50.8	–	–	107.6	–	–
Moment of inertia of the rotary group			J_{TW}	kgm^2	0.0022	0.0038	0.0066	0.0097	0.0149	0.0232	0.0444
Maximum angular acceleration[5]			α	rad/s^2	38000	30000	24000	21000	18000	14000	11000
Case volume			V	l	0.9	1.1	1.5	1.3	1.5	2.1	3.1
Weight (without through drive) approx.[6]			m	kg	29	31	38	50	60	80	101



Features

- Fixed pump in axial piston swashplate design for hydrostatic drives in an open circuit
- For use in mobile and stationary applications
- Flow is proportional to the drive speed and displacement.
- High power density
- High total efficiency
- Optimized dimensions for special installation situations
- Excellent suction characteristics
- Low noise level
- Long service life
- Economical design
- Through drive for combining additional pumps
- Sizes 22 and 28
  - Nominal pressure 400 bar
  - Maximum pressure 450 bar
- Sizes 71 to 500
  - Nominal pressure 350 bar
  - Maximum pressure 400 bar

Type code

● = Available o = On request – = Not available

01	02	03	04		05	06		07	08	09	10	11
	A4F	O		/			–					

Hydraulic fluid		022	028	071	125	180	250	500	
01	Mineral oil, HFD hydraulic fluid (no code)	●	●	●	●	●	●	●	
	HFA, HFB, HFC hydraulic fluid	–	–	●	●	●	●	●	E–
	High-speed version	–	–	–	–	–	●	●	H–

Axial piston unit		
02	Swashplate design, fixed displacement	A4F

Operating mode		
03	Pump, open circuit	O

Size (NG)								
04	Geometric displacement, see „Technical data“ on page 8	022	028	071	125	180	250	500

Series		022, 028	071	125 to 500	
05	Series 1, index 0	–	●	–	10
	Series 3, index 0	–	–	●	30
	Series 3, index 2	●	–	–	32

01	02	03	04		05	06		07	08	09	10	11
	A4F	O		/			-					

Direction of rotation

06	Viewed on drive shaft	clockwise	R
		counter-clockwise	L

Sealing material

		022, 028	071 to 500	
07	NBR (nitrile rubber), shaft seal in FKM (fluoroelastomer)	●	–	N
		–	●	P
	FKM (fluoroelastomer)	–	●	V

Drive shaft (permissible input torque, see page 10)

		022	028	071	125	180	250	500	
08	Splined shaft ANSI B92.1a	●	●	–	–	–	–	–	S
	Splined shaft DIN 5480	–	–	●	●	●	●	●	Z
	Parallel keyed shaft DIN 6885	–	–	●	●	●	●	●	P

Mounting flange

		022	028	071	125	180	250	500	
09	SAE J744, 2-hole	●	●	–	–	–	–	–	C
	ISO 3019, 4-hole	–	–	●	●	●	●	–	B
	ISO 3019, 8-hole	–	–	–	–	–	–	●	H

Working port[1)]

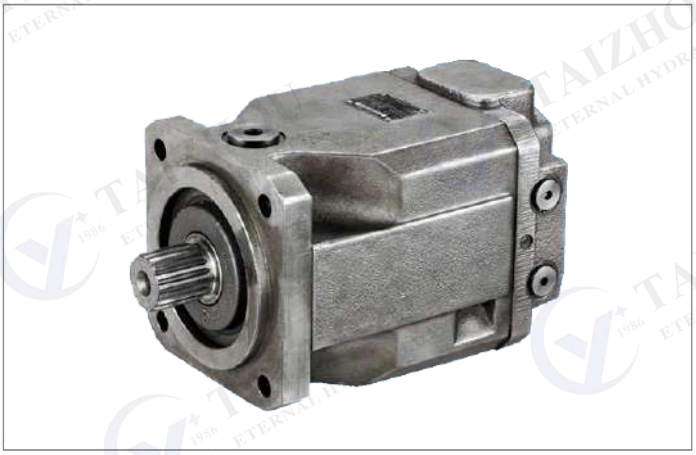
		022, 028	071 to 500	
10	SAE pressure and suction port, at side, opposite	●	–	12
	SAE pressure and suction port, at side, offset by 90° 2nd pressure port B1 opposite B (plugged with flange plate on delivery)	–	●	25

Through drive (for attachment options, see page 25)

			022	028	071	125	180	250	500	
11	Without through drive		●	●	●	●	●	●	●	N00
	With through drive for mounting an axial piston unit or gear pump		●	●	●	–	–	–	●	K...
	Universal through drive (can be modified)		–	–	–	●	●	●	–	U...
	Flange SAE J744	Hub for splined shaft SAE J744								
	82-2 (A)	5/8 in (16-4)	●	●	●	●	●	●	●	...01
	101-2 (B)	7/8 in (22-4)	●	●	–	–	–	–	–	...02
	101-2 (B)	7/8 in (22-4)	–	–	●	●	●	●	○	...68
	Flange ISO 3019-2 (metric)	Hub for splined shaft SAE J744								
	80, 2-hole	3/4 in (19-4)	–	–	●	●	●	●	○	...B2
	100, 2-hole	7/8 in (22-4)	–	–	●	●	●	●	○	...B3
	100, 2-hole	1 in (25-4)	–	–	●	●	●	●	○	...B4
	125, 2-hole	1 1/4 in (32-4)	–	–	●	●	●	●	○	...B5
	125, 2-hole	1 1/2 in (38-4)	–	–	–	●	●	●	○	...B6
	180, 4-hole	1 3/4 in (44-4)	–	–	–	–	●	●	●	...B7
	Flange ISO 3019-2 (metric)	Hub for splined shaft DIN 5480								
	125, 4-hole	W32×2×14×9g	–	–	●	●	●	●	○	...31
	140, 4-hole	W40×2×18×9g	–	–	●	●	●	●	○	...33
	160, 4-hole	W50×2×24×9g	–	–	–	●	●	●	●	...34
	224, 4-hole	W60×2×28×9g	–	–	–	–	–	●	●	...35
	315, 8-hole	W80×3×25×9g	–	–	–	–	–	–	●	...43
	With through-drive shaft, without hub, without intermediate flange, closed with cover		–	–	●	●	●	●	●	...99

Technical data

Size		NG		22	28	71	125	180	250/H[1)]	500/H[1)]
Displacement, geometric, per revolution		V_g	cm^3	22	28	71	125	180	250	500
Maximum rotational speed[2)]		n_{nom}	rpm	3600	3000	2200	1800	1800	1500 / 1900	1320 /1500
Maximum rotational speed[3)]		n_{max}	rpm	4500	3750	2700	2200	2100	1800 / 2100	1600 / 1800
Flow	at V_g and n_{nom}	q_V	l/min	79	84	156	225	324	375 / 475	660 / 750
Power	at V_g, n_{nom} and Δp = 400 bar	P	kW	53	56	91[4)]	131[4)]	189[4)]	219 / 277[4)]	385 / 438[4)]
Torque	at V_g and Δp = 400 bar	T	Nm	140	178	396[4)]	696[4)]	1003[4)]	1393[4)]	2785[4)]
Rotary stiffness drive shaft	Shaft end **S**	c	kNm/rad	29,9	29,9	–	–	–	–	–
	Shaft end **P**	c	kNm/rad	–	–	146	260	328	527	1145
	Shaft end **Z**	c	kNm/rad	–	–	146	263	332	543	1136
Moment of inertia for rotary group		J_{GR}	kgm^2	0,0017	0,0017	0,0121	0,0300	0,055	0,0959	0,3325
Maximum angular acceleration		a	rad/s^2	38000	38000	20000	13000	10000	8000	4800
Case volume		V	l	0,3	0,3	2,0	3,0	4,0	7,0	11,0
Weight (approx.)		m	kg	13,5	13,5	34	61	76	120	220



Features

- Particularly well suited for applications, where a compact installation size is required
- High tolerance to torsional vibrations
- Long service life at high pressures
- Very high total efficiency
- Low noise
- Swashplate design
- High pressure motor for confined installation spaces
- Sizes 71 to 500
- Nominal pressure 350 bar
- Maximum pressure 400 bar
- Open and closed circuit

Type code

● = Available o = On request – = Not available

01	02	03	04	05	06		07	08	09	10
	A4F	**M**		**/**		**W**	**–**				

Hydraulic fluid

		71	125	250	500		
01	Mineral oil, HFD hydraulic fluid (no code)	●	●	●	●		
	HFA, HFB, HFC hydraulic fluid	●	●	●	●		**E**

Axial piston unit

02	Swashplate design, fixed displacement	**A4F**

Operating mode

03	Motor, open and closed circuit	**M**

Size (NG)[1)]

		71	125	250	500
04	Geometric displacement, see technical data on page 6	**71**	**125**	**250**	**500**

Series

		71	125	250	500		
05	Series 1, index 0	●	–	–	–		**10**
	Series 3, index 0	–	●	●	●		**30**

Direction of rotation

06	Viewed on drive shaft	variable	**W**

Sealing material

		71	125	250	500		
07	NBR (nitrile rubber), shaft seal made of FKM (fluoroelastomer)	●	●	●	●		**P**
	FKM (fluoroelastomer)	●	●	●	●		**V**

01	02	03	04		05	06		07	08	09	10
	A4F	**M**		**/**		**W**	**–**				

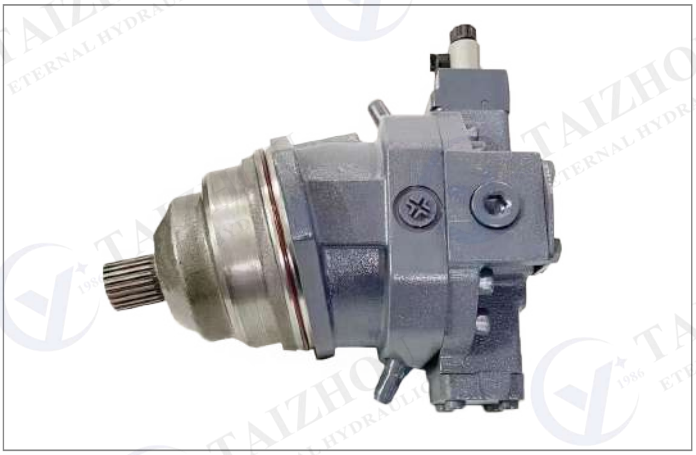
Drive shaft		71	125	250	500		
08	Splined shaft DIN 5480	●	●	●	●		**Z**
	Parallel keyed shaft DIN 6885	●	●	●	●		**P**

Mounting flange		71	125	250	500		
09	ISO 3019-2; 4-hole	●	●	●	–		**B**
	ISO 3019-2; 8-hole	–	–	–	●		**H**

Working port		71	125	250	500		
10	SAE working port **A** and **B** at rear, Metric fastening thread according to DIN 13	●	●	●	–		**01**
	SAE working port **A** and **B**, laterally opposite on top and bottom, Metric fastening thread according to DIN 13	●	●	●	–		**02**
	SAE working port **A** and **B** laterally, same side, Metric fastening thread according to DIN 13	–	–	–	●		**10**

Technical data

Size		**NG**		**71**	**125**	**250**	**500**
Geometric displacement, per revolution		V_g	cm^3	71	125	250	500
Maximum rotational speed[1)]		n_{nom}	rpm	3200	2600	2200	1800
Inlet flow	at V_g and n_{nom}	q_v	l/min	227	325	550	900
Power	at V_g, n_{nom} and Δp = 350 bar	P	kW	91	131	277	525
Torque	at V_g and Δp = 350 bar	M	Nm	396	696	1393	2783
Torque constant		M_K	Nm/bar	1.13	1.99	3.97	7.95
Rotary stiffness Drive shaft	Shaft end **P**	c	kNm/rad	146	260	527	1145
	Shaft end **Z**	c	kNm/rad	146	263	543	1136
Moment of inertia of the rotary group		J_{TW}	kgm^2	0.0121	0.0300	0.0959	0.3325
Actual starting torque at n= 0 rpm and Δp = 350 bar (approx.)			Nm	320	564	1127	2254
Maximum angular acceleration		a	rad/s^2	20000	13000	8000	2800
Case volume		V	l	2.0	3.0	7.0	11.0
Weight (approx.)		m	kg	34	61	120	220



Technical data sheet

Series 6

Size	Nominal pressure / Peak pressure
28 to 160	400 / 450 bar
250	350 / 400 bar

Open and closed circuits

Features

- Variable plug-in motor with axial tapered piston rotary group of bent axis design for hydrostatic drives in open and closed circuits
- Easy assembly, simply «plugs-in» into mechanical gearboxes (no installation tolerances to consider)
- The design of the motor with the mounting flange in the center of the housing allows it to be almost fully integrated into a mechanical gearbox to give an extremely compact unit
- For use in mobile applications
- Installation ready and tested unit
- he displacement is infinitely variable from $V_{g\,max}$ to $V_{g\,min} = 0$
- The output speed is dependent on the flow of the pump and the displacement of the motor
- The torque increases with the pressure differential between the high and low pressure side and with increasing displacement

- Further information:

  Variable motor A6VM_____RE 91604

Type code

• = Available ○ = On request – = Not available ▭ = Preferred program

A6V	E					/	63	W		-	V								
01	02	03	04	05	06		07	08	09		10	11	12	13	14	15	16	17	18

Axial piston unit

01	Bent-axis design, variable	**A6V**

Operation mode

02	Motor, plug-in version	**E**

Size

03	≈ Displacement $V_{g\,max}$ in cm^3	28	55	80	107	160	250

A6V	E					/	63	W		-	V								
01	02	03	04	05	06		07	08	09		10	11	12	13	14	15	16	17	18

Control device

				28	55	80	107	160	250	
04	Hydraulic control, pilot-pressure related		Δp = 10 bar	●	●	●	●	●	●	HD1
			Δp = 25 bar	●	●	●	●	●	●	HD2
	Hydraulic two-point control			–	–	–	–	–	●	HZ
				●	–	–	–	●	–	HZ1
				–	●	●	●	●[1)]	–	HZ3
	Electric control, proportional		12 V	●	●	●	●	●	●	EP1
			24 V	●	●	●	●	●	●	EP2
	Electric two-point control, with switching solenoid		12 V	●	–	–	–	●	●	EZ1
			24 V	●	–	–	–	●	●	EZ2
			12 V	–	●	●	●	–	–	EZ3
			24 V	–	●	●	●	–	–	EZ4
	Automatic control, high-pressure related	Without pressure increase		●	●	●	●	●	●	HA1
		With pressure increase Δp=100bar		●	●	●	●	●	●	HA2
		Without pressure increase		–	●	●	●	●[1)]	–	HA3[1)]
	Hydraulic control, speed related									
	p_{St}/p_{HD}=3/100, hydraulic travel direction valve			–	–	–	–	–	●	DA
	p_{St}/p_{HD}=5/100, el. travel direction valve + el. $V_{g\,max}$ control		24V	●	●	●	●	●	–	DA3

Pressure control (only for HD, EP)

05	Without pressure control (without code)	
	Pressure control, direct	D

Overriding HA control

06	Without override (without code)	
	Hydraulic override	T

Series

07	Series 6, index 3	63

Direction of rotation

08	Viewed from shaft end, alternating	W

Setting range for displacement [2)]

			28	55	80	107	160	250	
09	$V_{g\,min}$ = 0 to 0.7 $V_{g\,max}$ (without code)		●	●	●	●	●	–	
	$V_{g\,min}$ = 0 to 0.4 $V_{g\,max}$	$V_{g\,max}$ = $V_{g\,max}$ to 0.8 $V_{g\,max}$	–	–	–	–	–	●	1
	$V_{g\,min}$ > 0.4 $V_{g\,max}$ to 0.8 $V_{g\,max}$	$V_{g\,max}$ = $V_{g\,max}$ to 0.8 $V_{g\,max}$	–	–	–	–	–	●	2

Seals

		28	55	80	107	160	250	
10	FKM (fluor-caoutchouc)	●	●	●	●	●	●	V

Shaft end

11	Splined shaft DIN 5480	●	–	●	–	●	–	A
		–	●	–	●	–	●	Z

Mounting flange

		28	55	80	107	160	250	
12	2-hole, similar to ISO 3019-2	●	●	●	●	●	–	L
	4-hole, similar to ISO 3019-2	–	–	–	–	–	●	M
	2-hole (modified adaption flange)	–	–	–	●	–	–	U

A6V	E					/	63	W		-	V								
01	02	03	04	05	06		07	08	09		10	11	12	13	14	15	16	17	18

Service line ports [3])

13	SAE flange ports A/B side, opposite	02	0	●	●	●	●	●	●	020
			7	●	●	●	●	●	●	027
	Port plate with integral counterbalance valve (with brake release valve) and secondary valve; SAE flange ports A/B bottom [6])	22	1	–	●	●	●	●	–	221[4])
			2	–	●	●	●	●	–	222[4])

Valves

14	Without valve		0
	Brake release valve (pilot pressure for brake release)	Internal boring	1
		External piping	2
	With flush and boost pressure valve		7

Speed measurement

		28	55	80	107	160	250	
15	Without speed measurement (without code)	●	●	●	●	●	●	
	Prepared for speed measurement (HDD) [5])	–	●	●	●	●	–	F

Connector for solenoids (only sizes 28 to 160)

		EP1/2	EZ1/2	EZ3/4	DA	
16	DEUTSCH - molded connector, 2-pin – without suppressor diode	●	●	❍	●	P

Start of control

17	Port plate 02	At $V_{g\,min}$ (standard for HA)	●	●	●	●	●	●	A
		At $V_{g\,max}$ (standard for HD, HZ, EP, EZ, DA)	●	●	●	●	●	●	B
	Port plate 22	At $V_{g\,min}$ (standard for HA3)	–	●	●	●	●	–	B
		At $V_{g\,max}$ (standard for HZ3)	–	●	●	●	●	–	B

Standard / special version

18	Standard version	(without code)	
		With attachment part	-K
	Special version		-S
		With attachment part	-SK

Technical data

Size			Size	28	55	80	107	160	250
Displacement [1])		$V_{g\,max}$	cm^3	28.1	54.8	80	107	160	250
		$V_{g\,0}$	cm^3	0	0	0	0	0	0
Speed max. (while adhering to max. permissible flow)		n_{max} at $V_{g\,max}$	rpm	5550	4450	3900	3550	3100	2700
		n_{max1} at $V_g < V_{g1}$	rpm	8750	7000	6150	5600	4900	3600
		$V_{g1} = 0.63 \times V_{g\,max}$	cm^3	18	35	51	68	101	188 [2])
		$n_{max\,0}$ at $V_{g\,0}$	rpm	10450	8350	7350	6300	5500	3600
Max flow		$q_{V\,max}$	L/min	156	244	312	380	496	675
Max torque		T_{max} at $V_{g\,max}$ [3])	Nm	179	349	509	681	1019	1391
Rotary stiffness	$V_{g\,max}$ to $V_{g/2}$	c_{min}	Nm/rad	5670	10400	15500	21000	35300	59500
	$V_{g/2}$ to $0_{(interpolated)}$	c_{max}	Nm/rad	18100	32000	47900	65200	105000	181000
Moment of inertia for rotary group		J_{TW}	kgm^2	0.0014	0.0042	0.008	0.0127	0.0253	0.061
Angular acceleration maximum		α	rad/s^2	47000	31500	24000	19000	11000	10000
Filling capacity		V	L	0.5	0.75	1.2	1.5	2.4	3.0
Mass (approx.)	Port plate 02	m	kg	16	26	34	47	64	90
	Port plate 22	m	kg	–	35	43	53	72	–

Features

- Robust motor with long service life
- Approved for very high rotational speeds
- High control range (can be swiveled to zero)
- High torque
- Variety of controls
- Optionally with flushing and boost-pressure valve mounted
- Optionally with integrated or mounted counterbalance valve
- Bent-axis design
- All-purpose high pressure motor
- Sizes 28 to 200:
  Nominal pressure 400 bar
  Maximum pressure 450 bar
- Sizes 250 to:
  Nominal pressure 350 bar
  Maximum pressure 400 bar
- Open and closed circuits

Type code

● = Available ○ = On request ▲ = Not for new projects – = Not available

01	02	03	04	05	06	07	08		09	10	11		12	13	14	15	16	17	18	19		20
	A6V		**M**					**/**	**63**	**W**		**–**	**V**								**–**	

Hydraulic fluid

01	Mineral oil and HFD. HFD for sizes 250 to 1000 only in conjunction with long-life bearings “L” (without code)		
	HFB, HFC hydraulic fluid	Sizes 28 to 200 (without code)	
		Sizes 250 to 1000 (only in conjunction with long-life bearings “L”)	**E**

Axial piston unit

02	Bent-axis design, variable	**A6V**

Drive shaft bearing

		28...200	250	355	500	1000	
03	Standard bearings (without code)	●	●	●	●	–	
	Long-life bearings	–	●	●	●	●	**L**

Operating mode

04	Motor (plug-in motor A6VE, see data sheet 91606)	**M**

Size (NG)

05	Geometric displacement, see page 8	**28**	**55**	**80**	**107**	**140**	**160**	**200**	**250**

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
	A6V		M					/	63	W		–	V							–	

Size (NG)

		28	55	80	107	140	160	200	250
05	Geometric displacement, see page 8								

Control device[1)]

06	Proportional control, hydraulic	Δp_{St} = 10 bar	●	●	●	●	●	●	●	●	HD1
		Δp_{St} = 25 bar	●	●	●	●	●	●	●	●	HD2
		Δp_{St} = 35 bar	–	–	–	–	–	–	–	●	HD3
	Proportional control, electric	U = 12 V	●	●	●	●	●	●	●	●	EP1
		U = 24 V	●	●	●	●	●	●	●	●	EP2
	Two-point control, hydraulic		–	–	–	–	–	–	–	●	HZ
			●	–	–	–	●	●	●	–	HZ1
			–	●	●	●	–	–	–	–	HZ3
	Two-point control, electric	U = 12 V	●	–	–	–	●	●	●	●	EZ1
		U = 24 V	●	–	–	–	●	●	●	●	EZ2
		U = 12 V	–	●	●	●	–	–	–	–	EZ3
		U = 24 V	–	●	●	●	–	–	–	–	EZ4
	Automatic control, high-pressure related	With minimum pressure increase Δp ≤ approx. 10 bar	●	●	●	●	●	●	●	●	HA1
		With pressure increase Δp = 100 bar	●	●	●	●	●	●	●	●	HA2
	Automatic control, speed related		–	–	–	–	–	–	–	●	DA
	p_{St}/p_{HD} = 3/100	Hydraulic travel direction valve									
	p_{St}/p_{HD} = 5/100	Hydraulic travel direction valve	●	●	●	●	●	●	●	–	DA1
		Electric travel direction valve + electric $V_{g\,max}$ circuit, U = 12 V	●	●	●	●	●	●	●	–	DA2
		Electric travel direction valve + electric $V_{g\,max}$ circuit, U = 24 V	●	●	●	●	●	●	●	–	DA3
	p_{St}/p_{HD} = 8/100	Hydraulic travel direction valve	●	●	●	●	●	●	●	–	DA4
		Electric travel direction valve + electric $V_{g\,max}$ circuit, U = 12 V	●	●	●	●	●	●	●	–	DA5
		Electric travel direction valve + electric $V_{g\,max}$ circuit, U = 24 V	●	●	●	●	●	●	●	–	DA6

Pressure control/override (only for HD, EP)

			28	55	80	107	140	160	200	250	
07	Without pressure control/override		●	●	●	●	●	●	●	●	
	Pressure control	fixed setting	●	●	●	●	●	●	●	●	D
		Hydraulic override, two-point	●	●	●	●	●	●	●	2)	E
		Hydraulic remote control, proportional	–	–	–	–	–	–	–	●	G

Overrides for the HA1 and HA2 controls

			28	55	80	107	140	160	200	250	
08	Without override (without code)		●	●	●	●	●	●	●	●	
	Hydraulic override, remote control, proportional		●	●	●	●	●	●	●	●	T
	Remote control electric override, two-point	U = 12 V	●	●	●	●	●	●	●	–	U1
		U = 24 V	●	●	●	●	●	●	●	–	U2
	Electric override + travel direction valve, electric	U = 12 V	●	●	●	●	●	●	●	–	R1
		U = 24 V	●	●	●	●	●	●	●	–	R2

Series

09	Series 6, index 3	63

Direction of rotation

10	Viewed on drive shaft, bidirectional	W

Setting ranges for displacement[3)]

			28	55	80	107	140	160	200	250	
11	$V_{g\,min}$ = 0 to 0.7 $V_{g\,max}$		●	●	●	●	●	●	●	–	
	$V_{g\,min}$ = 0 to 0.4 $V_{g\,max}$	$V_{g\,max}$ = $V_{g\,max}$ to 0.8 $V_{g\,max}$	–	–	–	–	–	–	–	●	1
	$V_{g\,min}$ > 0.4 $V_{g\,max}$ to 0.8 $V_{g\,max}$	$V_{g\,max}$ = $V_{g\,max}$ to 0.8 $V_{g\,max}$	–	–	–	–	–	–	–	●	2

01	02	03	04	05	06	07	08		09	10	11		12	13	14	15	16	17	18	19		20
	A6V		M					/	63	W		–	V								–	

Sealing material

12	FKM (fluoroelastomer)	V

Drive shaft		28	55	80	107	140	160	200	250	
13	Splined shaft DIN 5480	●	●	●	●	–	●	●	–	A
		●	●	●	●	●	●	–	●	Z
	Parallel keyed shaft DIN 6885	–	–	–	–	–	–	–	●	P

Mounting flange			28	55	80	107	140	160	200	250	
14	ISO 3019-2	4-hole	●	●	●	●	●	●	●	●	B
		8-hole	–	–	–	–	–	–	–	–	H

Port plate for working line[4]				28	55	80	107	140	160	200	250	
15	SAE working ports A and B at rear	**01**	0	●	●	●	●	●	●	●	●	010
			7	●	●	●	●	●	●	●	●	017
	SAE working ports A and B lateral, opposite	**02**	0	●	●	●	●	●	●	●	●	020
			7	●	●	●	●	●	●	●	●	027
	SAE working ports A and B lateral, opposite + rear	**15**	0	–	–	–	–	–	–	–	●	150
	Port plate with 1-stage pressure-relief valves for mounting a counterbalance valve[5] for BVD20	**37**	0	–	–	–	●	–	–	–	–	370
			8	–	–	–	●	–	–	–	–	378
	for BVD20/BVD25	**38**	0	–	●	●	●	●	●	●	●[6]	380
			8	–	●	●	●	●	●	●	●[6]	388
	for BVE	**38**	0	–	–	–	●	●	●	●	–	380
			8	–	–	–	●	●	●	●	–	388

Valve

Without valve	**0**
Flushing and boost-pressure valve, mounted	**7**
Counterbalance valve mounted[7]	**8**

Speed sensor (see page 79)		28	55	80	107	140	160	200	250	
16	Without speed sensor (without code)	●	●	●	●	●	●	●	●	0
	Prepared for HDD speed sensor	▲	▲	▲	▲	▲	▲	▲	●	F
	HDD speed sensor mounted[9]	▲	▲	▲	▲	▲	▲	▲	●	H
	Prepared for DSM/DSA speed sensor	●	●	●	●	●	●	●	–	U
	DSM/DSA speed sensor mounted[9]	●	●	●	●	●	●	●	–	V

Swivel angle sensor (see page 78)		28	55	80	107	140	160	200	250	
17	Without swivel angle sensor	●	●	●	●	●	●	●	●	
	Optical swivel angle sensor	–	–	–	–	–	–	–	●	V
	Electric swivel angle sensor	–	–	–	–	–	–	–	●	E

Connector for solenoids (see page 72)		28 to 200	250	
18	Without connector (without solenoid, with hydraulic control only) (sizes 250 to 1000)	●	–	0
		–	●	
	DEUTSCH molded connector, 2-pin – without suppressor diode	●	–	P
	HIRSCHMANN connector – without suppressor diode	–	●	

01	02	03	04	05	06	07	08		09	10	11		12	13	14	15	16	17	18	19		20
	A6V		M					/	63	W		–	V								–	

Beginning of control

		28	55	80	107	140	160	200	250	
19	At $V_{g\,min}$ (standard for HA)	●	●	●	●	●	●	●	●	A
	At $V_{g\,max}$ (standard for HD, HZ, EP, EZ, DA)	●	●	●	●	●	●	●	●	B

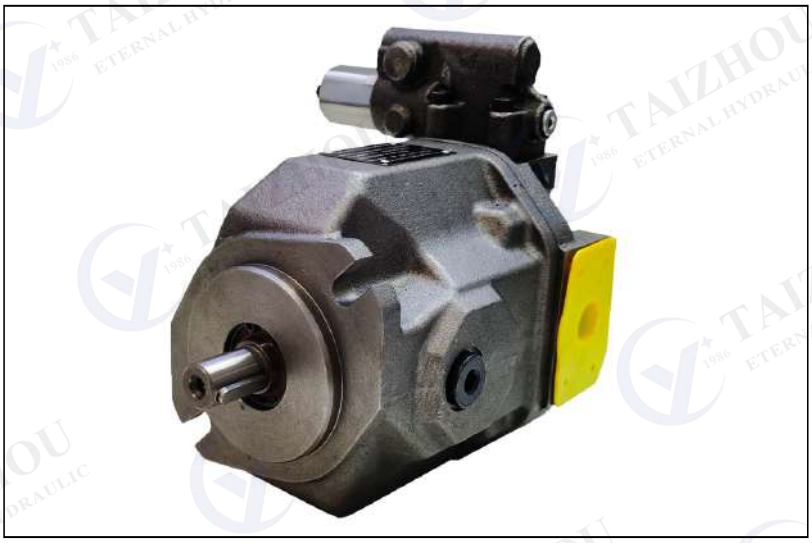
Standard / special version

20	Standard version	
	Standard version with installation variants, e.g. T ports open and closed contrary to standard	-Y
	Special version	-S

Technical data

Size		NG		28	55	80	107	140	160
Geometric displacement, per revolution[1]		$V_{g\,max}$	cm³	28.1	54.8	80	107	140	160
		$V_{g\,min}$	cm³	0	0	0	0	0	0
		$V_{g\,x}$	cm³	18	35	51	68	88	61
Maximum rotational speed[2] (while adhering to the maximum permissible inlet flow)	at $V_{g\,max}$	n_{nom}	rpm	5550	4450	3900	3550	3250	3100
	at $V_g < V_{g\,x}$ (see diagram on page 9)	n_{max}	rpm	8750	7000	6150	5600	5150	4900
	where $V_{g\,0}$	n_{max}	rpm	10450	8350	7350	6300	5750	5500
Inlet flow[3]	at n_{nom} and $V_{g\,max}$	$q_{v\,max}$	l/min	156	244	312	380	455	496
Torque[4]	at $V_{g\,max}$ and Δp = 400 bar	T	Nm	179	349	509	681	891	1019
	at $V_{g\,max}$ and Δp = 350 bar	T	Nm	157	305	446	596	778	891
Rotary stiffness	$V_{g\,max}$ to $V_g/2$	c_{min}	kNm/rad	6	10	16	21	34	35
	$V_g/2$ to 0 (interpolated)	c_{min}	kNm/rad	18	32	48	65	93	105
Moment of inertia for rotary group		J_{TW}	kgm²	0.0014	0.0042	0,008	0.0127	0.0207	0.0253
Maximum angular acceleration		α	rad/s²	47000	31500	24000	19000	11000	11000
Case volume		V	l	0.5	0.75	1.2	1.5	1.8	2.4
Weight approx.		m	kg	16	28	36	46	61	62

Size		NG		200	250
Geometric displacement, per revolution[1]		$V_{g\,max}$	cm³	200	250
		$V_{g\,min}$	cm³	0	0
		$V_{g\,x}$	cm³	76	205
Maximum rotational speed[2] (while adhering to the maximum permissible inlet flow)	at $V_{g\,max}$	n_{nom}	rpm	2900	2700
	at $V_g < V_{g\,x}$ (see diagram on page 9)	n_{max}	rpm	4600	3300
	where $V_{g\,0}$	n_{max}	rpm	5100	3300
Inlet flow[3]	at n_{nom} and $V_{g\,max}$	$q_{v\,max}$	l/min	580	675
Torque[4]	at $V_{g\,max}$ and Δp = 400 bar	T	Nm	1273	–
	at $V_{g\,max}$ and Δp = 350 bar	T	Nm	1114	1391
Rotary stiffness	$V_{g\,max}$ to $V_g/2$	c_{min}	kNm/rad	44	60
	$V_g/2$ to 0 (interpolated)	c_{min}	kNm/rad	130	181
Moment of inertia for rotary group		J_{TW}	kgm²	0.0353	0,061
Maximum angular acceleration		α	rad/s²	11000	10000
Case volume		V	l	2.7	3.00
Weight approx.		m	kg	78	100



Features

- Variable pump with axial piston rotary group in swashplate design for hydrostatic drives in open circuit.
- The flow is proportional to the drive speed and displacement.
- The flow can be infinitely varied by adjusting the swashplate angle.
- 2 drain ports
- Excellent suction performance
- Low noise level
- Long service life
- Favorable power/weight ratio
- Versatile controller range
- Short control time
- The through drive is suitable for adding gear pumps and axial piston pumps up to the same size, i.e., 100% through drive.
- Size 18 (A10VSO)
- Sizes 28 to 140 (A10VO)
- Nominal pressure 280 bar
- Maximum pressure 350 bar
- Open circuit

Type code

● = Available ○ = On request – = Not available

01	02	03	04	05		06	07		08	09	10	11	12	13
	A10V(S)	**O**			**/**	**31**		**–**	**V**					

Version

		18	28	45	71	88	100	140	
01	Standard version (without code)	●	●	●	●	●	●	●	
	High-speed version (external dimensions are the same as the standard version)	–	–	●	●	–	●	●	**H**

Axial piston unit

02	Swashplate design, variable, nominal pressure 280 bar, maximum pressure 350 bar	●	–	–	–	–	–	–	**A10VS**
		–	●	●	●	●	●	●	**A10V**

01	02	03	04	05	06	07	08	09	10	11	12	13
	A10V(S)	O			/	31	–	V				

Operating mode

03	Pump, open circuit	O

Size (NG)

		18	28	45	71	88	100	140
04	Geometric displacement, see table of values on pages 6 and 7							

Control device

					18	28	45	71	88	100	140	
05	Two-point control, direct operated				●	●	●	●	●	●	●	DG
	Pressure controller	hydraulic			●	●	●	●	●	●	●	DR
	with flow controller	hydraulic	X-T open		●	●	●	●	●	●	●	DFR
			X-T plugged with flushing function		●	●	●	●	●	●	●	DFR1
			X-T plugged without flushing function		●	●	●	●	●	●	●	DRSC
	with flow and differential pressure control, electrically variable				●	●	●	●	●	●	●	EF[1)]
	with pressure cut-off	hydraulic	remote controlled		●	●	●	●	●	●	●	DRG
		electrical	negative control	*U* = 12 V	●	●	●	●	●	●	●	ED71
				U = 24 V	●	●	●	●	●	●	●	ED72
		electrical	positive control	*U* = 12 V	●	●	●	●	●	●	●	ER71
				U = 24 V	●	●	●	●	●	●	●	ER72
	Pressure-flow power control				–	●	●	●	●	●	●	DFLR

Series

06	Series 3, index 1	31

Direction of rotation

07	Viewed on drive shaft	clockwise	R
		counter-clockwise	L

Sealing material

08	FKM (fluoroelastomer)	V

Drive shaft

			18	28	45	71	88	100	140	
09	Splined shaft ANSI B92.1a	standard shaft	●	●	●	●	●	●	●	S
		similar to shaft “S” however for higher input torque	●	●	●	●	●	–	–	R
		reduced diameter, limited suitability for through drive (see table of values, page 9)	●	●	●	●	●	●	○	U
		same as “U”, higher torque; limited suitability for through drive (see table of values, page 9)	–	●	●	●	●	●	●	W

Mounting flange

				18	28	45	71	88	100	140	
10	ISO 3019-1 (SAE)	2-hole		●	●	●	●	●	●	●	C
		4-hole		–	–	–	–	–	–	●	D

Working port

				18	28	45	71	88	100	140	
11	SAE flange ports according to J518 Working ports **metric**	Fastening thread **metric**; rear	not for through drive	–	●	●	–	–	●	●	11
				–	–	–	●	●	–	–	41
		Fastening thread **metric**; lateral top bottom	for through drive	●	●	●	–	–	●	●	12
				–	–	–	●	●	–	–	42
	SAE flange ports according to J518 Working ports **UNF**	Fastening thread **UNF**; rear	not for through drive	–	●	●	–	–	●	●	61
				–	–	–	●	●	–	–	91
		Fastening thread **UNF**; lateral top bottom	for through drive	●	●	●	–	–	●	●	62
				–	–	–	●	●	–	–	92

01	02	03	04	05		06	07		08	09	10	11	12	13
	A10V(S)	**O**			**/**	**31**		**–**	**V**					

Through drive (for mounting options, see page 53)

12	Flange ISO 3019-1	Hub for splined shaft[2]		18	28	45	71	88	100	140	
	Diameter	Diameter									
	without through drive			●	●	●	●	●	●	●	**N00**
	82-2 (A)	5/8 in	9T 16/32DP	●	●	●	●	●	●	●	**K01**
		3/4 in	11T 16/32DP	●	●	●	●	●	●	●	**K52**
	101-2 (B)	7/8 in	13T 16/32DP	–	●	●	●	●	●	●	**K68**
		1 in	15T 16/32DP	–	–	●	●	●	●	●	**K04**
	127-2 (C)	1 1/4 in	14T 12/24DP	–	–	–	●	●	●	●	**K07**
		1 1/2 in	17T 12/24DP	–	–	–	–	–	●	●	**K24**
	152-4 (D)	1 3/4 in	13T 8/16DP	–	–	–	–	–	–	●	**K17**[4]

Connectors for solenoids[3]

13	Without connector (without solenoid, with hydraulic control only, without code)	●	●	●	●	●	●	●	
	DEUTSCH - molded connector, 2-pin, without suppressor diode	●	●	●	●	●	●	●	**P**

Technical data, standard unit

Size		**NG**		**18**	**28**	**45**	**71**	**88**	**100**	**140**
Displacement, geometric, per revolution		$V_{g\,max}$	cm³	18	28	45	71	88	100	140
Rotational speed maximum[1]	at $V_{g\,max}$	n_{nom}	rpm	3300	3000	2600	2200	2100	2000	1800
	at $V_g < V_{g\,max}$[2]	$n_{max\,perm}$	rpm	3900	3600	3100	2600	2500	2400	2100
Flow	at n_{nom} and $V_{g\,max}$	$q_{v\,max}$	l/min	59	84	117	156	185	200	252
	at n_E= 1500 rpm and $V_{g\,max}$	$q_{vE\,max}$	l/min	27	42	68	107	132	150	210
Power	at n_{nom}, $V_{g\,max}$	P_{max}	kW	28	39	55	73	86	93	118
at Δp = 280 bar	at n_E= 1500 rpm and $V_{g\,max}$	$P_{E\,max}$	kW	12.6	20	32	50	62	70	98
Torque	Δp = 280 bar	T_{max}	Nm	80	125	200	316	392	445	623
at $V_{g\,max}$ and	Δp = 100 bar	T	Nm	30	45	72	113	140	159	223
Rotary stiffness of drive shaft	S	c	Nm/rad	11087	22317	37500	71884	71884	121142	169437
	R	c	Nm/rad	14850	26360	41025	76545	76545	–	–
	U	c	Nm/rad	8090	16695	30077	52779	52779	91093	–
	W	c	Nm/rad	–	19898	34463	57460	57460	101847	165594
Moment of inertia for rotary group		J_{TW}	kgm²	0.00093	0.0017	0.0033	0.0083	0.0083	0.0167	0.0242
Maximum angular acceleration[3]		α	rad/s²	6800	5500	4000	2900	2600	2400	2000
Case volume		V	l	0.4	0.7	1.0	1.6	1.6	2.2	3.0
Weight **without** through drive (approx.)		m	kg	12.9	18	23.5	35.2	35.2	49.5	65.4
Weight **with** through drive (approx.)				13.8	19.3	25.1	38	38	55.4	74.4

Features

- Variable displacement pump with axial piston rotary group of swashplate design for hydrostatic drives in open circuit
- Flow is proportional to the drive speed and displacement.
- Flow can be infinitely varied by controlling the swashplate angle.
- Hydrostatically unloaded cradle bearing
- Port for measurement sensor on high pressure port for all sizes with port plate 22 and 32
- Low noise level
- Increased functional reliability
- High efficiency
- Good power to weight ratio
- Universal through drive for all sizes with port plate 22 and 32
- Optional pulsation damping
- Optimized medium pressure pump for high power machines
- Sizes 45 to 180
- Nominal pressure 280 bar
- Maximum pressure 350 bar
- Open circuit

TAIZHOU ETERNAL HYDRAULIC

Type code

● = Available ○ = On request – = Not available

01	02	03	04		05	06		07	08	09	10	11	12
A10V	**O**			**/**	**32**		**–**	**V**					

Axial piston unit

01	Swashplate design, variable, nominal pressure 280 bar, maximum pressure 350 bar	**A10V**

Operating mode

02	Pump, open circuit	**O**

Sizes (NG)

03	Geometric displacement, see technical data on page 7	**45**	**71**	**100**	**140**	**180**

Control devices

04	Pressure controller	hydraulic				●	●	●	●	●	**DR**
	with flow controller	hydraulic	X-T open			●	●	●	●	●	**DRF**
			X-T plugged	with flushing function		●	●	●	●	●	**DRS**
			X-T plugged	without flushing function		●	●	●	●	●	**DRSC**
	Pressure cut-off	hydraulic	remotely controlled			●	●	●	●	●	**DRG**
		electric	negative control		*U* = 12 V	●	●	●	●	●	**ED71**
					U = 24 V	●	●	●	●	●	**ED72**
		electric	positive control		*U* = 12 V	●	●	●	●	●	**ER71[1)]**
					U = 24 V	●	●	●	●	●	**ER72[1)]**
	Differential pressure control	electric	negative control	see data sheet 92709		●	●	●	●	○	**EF.**
	Power controller with										
	Pressure cut-off	hydraulic	Beginning of control	to	50 bar	●	●	●	●	●	**LA5D**
				from	51 to 90 bar	●	●	●	●	●	**LA6D**
					91 to 160 bar	●	●	●	●	●	**LA7D**
					161 to 240 bar	●	●	●	●	●	**LA8D**
				above	240 bar	●	●	●	●	●	**LA9D**
	Pressure cut-off and flow control	hydraulic	Beginning of control	see LA.D		●	●	●	●	●	**LA.DS**
	pressure cut-off Remotely controlled	hydraulic	Beginning of control	see LA.D		●	●	●	●	●	**LA.DG**
	separate flow control	hydraulic	Beginning of control	see LA.D		●	●	●	●	●	**LA.S**

Series

05	Series 3, index 2	**32**

Directions of rotation

06	Viewed on drive shaft	clockwise	**R**
		counter-clockwise	**L**

Seal

07	FKM (fluoroelastomer)	**V**

Drive shaft

08	Splined shaft	Standard shaft	●	●	●	●	●	**S**
	ANSI B92.1a	same as shaft "S", but for higher torque	●	●	–	–	–	**R**
		reduced diameter, limited suitability for through drive (see the table of values, page 8)	●	●	●	●	–	**U**
		same as shaft "U", but for higher torque, limited suitability for through drive (see table of values, page 8)	○	●	●	●	●	**W**

01	02	03	04		05	06		07	08	09	10	11	12
A10V	**O**			**/**	**32**		**–**	**V**					

Mounting flange

			45	71	100	140	180	
09	ISO 3019-1 (SAE)	SAE B; 2-hole	●	–	–	–	–	**C**
		SAE C; 2-hole	–	●	●	●	–	
		SAE C; 4-hole	●	●	–	–	–	**D**
		SAE D; 4-hole	–	–	●	●	●	
			–	●	–	–	–	**U**

Working port

10	SAE flange ports (Port plates and through drive assignment, see position 11)	rear, metric fastening thread (only without through drive "N00")	●	●	●	●	●	**11**
		at top, at bottom, on opposite side, metric fastening thread	●	●	●	●	●	**12**
		at top, at bottom, on opposite side, metric fastening thread, with universal through drive U..; **without** pulsation damping	●	●	●	●	●	**22**[1]
		at top, at bottom, on opposite side, metric fastening thread, with universal through drive U..; **with** pulsation damping	○	●	○	○	●	**32**[1]

Through drive (for mounting options, see page 61)

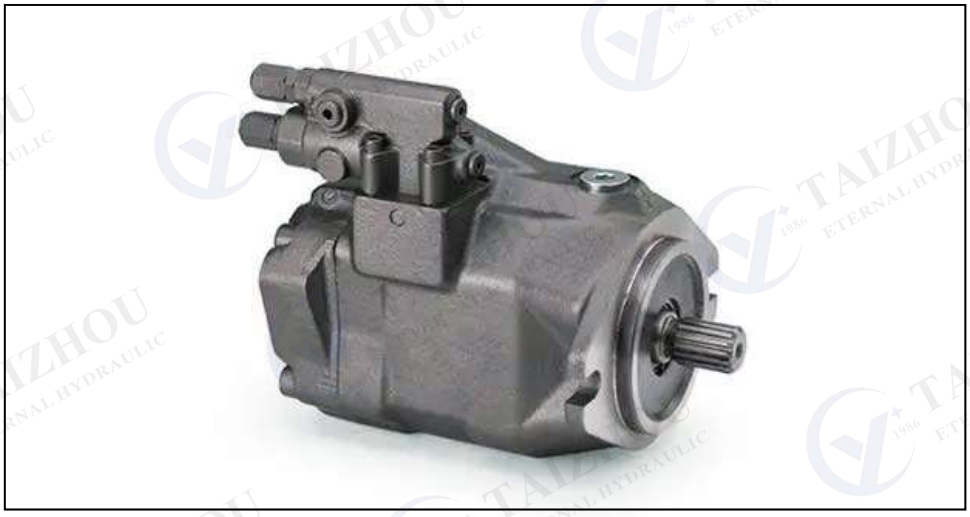
11	Flange ISO 3019-1 Diameter	Attachment[4]	Hub for splined shaft[2] Diameter		45	71	100	140	180	
	without through drive	(**Only for port plate 12**)			●	●	●	●	●	**N00**
	82-2 (A)		5/8 in	9T 16/32DP	●	●	●	●	–	**K01**
			3/4 in	11T 16/32DP	●	●	●	●	–	**K52**
	101-2 (B)		7/8 in	13T 16/32DP	●	●	●	●	–	**K68**
			1 in	15T 16/32DP	●	●	●	●	–	**K04**
	127-2 (C)		1 1/4 in	14T 12/24DP	–	●	●	●	–	**K07**
			1 1/2 in	17T12/24DP	–	–	●	●	–	**K24**
	127-4 (C)		1 1/4 in	14T 12/24DP	–	○	●	●	–	**K15**
	152-4 (D)		1 3/4 in	13T 8/16DP	–	–	–	●	–	**K17**
	without through drive[3]	(**Only for port plates 22 and 32**)			●	●	●	●	●	**U00**
	82-2 (A)		5/8 in	9T 16/32DP	○	●	●	●	●	**U01**
			3/4 in	11T 16/32DP	●	●	●	●	●	**U52**
	101-2 (B)		7/8 in	13T 16/32DP	●	●	●	●	●	**U68**
			1 in	15T 16/32DP	○	●	●	●	●	**U04**
	127-2 (C)		1 1/4 in	14T 12/24DP	–	●	●	●	●	**U07**
			1 1/2 in	17T 12/24DP	–	–	●	●	●	**U24**
	127-4 (C)		1 in	15T 16/32DP	○	○	●	●	○	**UE2**
			1 1/4 in	14T 12/24DP	–	–	●	●	●	**U15**
	152-4 (D)		1 3/4 in	13T 8/16DP	–	–	–	●	●	**U17**

Connectors for solenoids[5]

12	Without connector (without solenoid, only for hydraulic controls, without signs)	
	DEUTSCH molded connector, 2-pin – without suppressor diode	**P**

Technical data

Size		NG		45	71	100	140	180
Geometric displacement, per revolution		$V_{g\,max}$	cm^3	45	71.1	100	140	180
Maximum rotational speed[1)2)]	at $V_{g\,max}$	n_{nom}	rpm	3000	2550	2300	2200	1800
Flow	at n_{nom} and $V_{g\,max}$	q_v	l/min	135	181	230	308	324
Power	at n_{nom}, $V_{g\,max}$ and Δp = 280 bar	P	kW	63	85	107	144	151
Torque	at $V_{g\,max}$ and Δp = 280 bar	M	Nm	200	317	446	624	802
	at $V_{g\,max}$ and Δp = 100 bar	M	Nm	72	113	159	223	286
Rotary stiffness Drive shaft	S	c	Nm/rad	37500	71884	121142	169537	171107
	R	c	Nm/rad	41025	76545	–	–	–
	U	c	Nm/rad	30077	52779	91093	on request	–
	W	c	Nm/rad	34463	57460	101847	165594	–
Moment of inertia of the rotary group		J_{TW}	kgm^2	0.0035	0.0087	0.0167	0.0242	0.033
Maximum angular acceleration[3)]		α	rad/s^2	4000	2900	2400	2000	2000
Case volume		V	L	1.0	1.6	2.2	3.0	2.7
Weight (11N00 and 12N00 without through drive) approx.		m	kg	25.8	40.4	56.4	70.5	75.2
Weight (12Kxx) approx.		m	kg	27.4	43.3	62.6	79.5	–
Weight (22Uxx/32Uxx) approx.		m	kg	32.6	51.8	76	90.2	89.4



Features

- Variable pump with axial piston rotary group in swashplate design for hydrostatic drives in open circuit.
- Flow is proportional to drive speed and displacement.
- The flow can be infinitely varied by adjusting the swashplate angle.
- Stable bearing for long service life
- High permissible drive speed
- Favorable power-to-weight ratio – compact dimensions
- Low noise
- Excellent suction characteristics
- Electro-hydraulic pressure control
- Power control
- Electro-proportional swivel angle control
- Short control response times
- For machines with medium pressure requirements
- Sizes 10 to 100
- Nominal pressure 250 bar
- Maximum pressure 315 bar
- Open circuit

Type code series 52

● = Available ○ = On request – = Not available

01	02	03	04		05	06		07	08	09	10	11	12
A10V(S)	O			/	52		–	V					

Axial piston unit

		10	28	45	60	85	
01	Swashplate design, variable, nominal pressure 250 bar, maximum pressure 315 bar	●	–	–	–	–	A10VS
		–	●	●	●	●	A10V

Operating mode

02	Pump, open circuit	O

Size (NG)

		10	28	45	60	85
03	Geometric displacement, see table of values on page 10	10	28	45	60	85

Control device

					10	28	45	60	85	
04	Pressure controller	hydraulic			●	●	●	●	●	DR
	with flow controller	hydraulic	X-T open		●	●	●	●	●	DFR
			X-T plugged	with flushing function	●	●	●	●	●	DFR1
				without flushing function	–	●	●	●	●	DRSC
	with pressure cut-off	hydraulic	remote controlled		●	●	●	●	●	DRG
		electric	negative control	U = 12 V	–	●	●	●	●	ED71
				U = 24 V	–	●	●	●	●	ED72
		electric	positive control	U = 12 V	–	●	●	●	●	ER71
				U = 24 V	–	●	●	●	●	ER72
	Differential pressure control		electric control (negative control)		–	○	○	○	●	EF..[1]

Series

		10	28	45	60	85	
05	Series 5, index 2	●	●	●	●	●	52

Direction of rotation

06	Viewed on drive shaft	clockwise	R
		counter-clockwise	L

Sealing material

07	FKM (fluoroelastomer)	V

Drive shaft

			10	28	45	60	85	
08	Splined shaft ISO 3019-1	Standard shaft	●	●	●	●	●	S
		similar to shaft "S" however for higher torque	–	●	●	●	●	R
		reduced diameter, limited suitability for through drive	●	●	●	●	●	U
		similar to shaft "U", however for higher torque only conditionally suitable for mounting with through drive. For mounting options, see page 66	–	●	●	●	●	W
	Parallel keyed shaft DIN 6885 limited suitability for through drive		●	–	–	–	–	P

Mounting flange

			10	28	45	60	85	
09	ISO 3019-2 (ISO)	2-hole	●	–	–	–	–	A
	ISO 3019-1 (SAE)	2-hole	●	●	●	●	●	C
		4-hole	–	–	–	●	–	D

01	02	03	04		05	06		07	08	09	10	11	12
A10V(S)	**O**			**/**	**52**		**–**	**V**					

Working port

				10	28	45	60	85	
10	SAE flange ports Fastening thread metric	rear	not for through drive	–	●	●	●	●	**11**
		laterally opposite	for through drive	–	●	●	●	●	**12**
		at side, offset 90°	not for through drive; available for counter-clockwise rotation only	–	–	●	–	–	**13**
	Threaded port metric	rear	not for through drive	●	–	–	–	–	**14**

Through drive (for mounting options, see page 66)

11	Flange ISO 3019-1	Hub for splined shaft[1)]							
	Diameter	Diameter							
	without through drive			●	●	●	●	●	**N00**
	82-2 (A)	5/8 in	9T 16/32DP	–	●	●	●	●	**K01**
		3/4 in	11T 16/32DP	–	●	●	●	●	**K52**
	101-2 (B)	7/8 in	13T 16/32DP	–	●	●	●	●	**K68**
		1 in	15T 16/32DP	–	–	●	●	●	**K04**
	127-4 (C)	1 1/4 in	14T 12/24DP	–	–	–	●	●	**K15**
		1 1/2 in	17T 12/24DP	–	–	–	–	●	**K16**
	127-2 (C)	1 1/4 in	14T12/24DP	–	–	–	–	●	**K07**
		1 1/2 in	17T 12/24DP	–	–	–	–	●	**K24**

Connector for solenoids

12	Without connector (without solenoid, only for hydraulic controls, without signs)	●	●	●	●	●	
	DEUTSCH - molded connector, 2-pin, without suppressor diode (for electric control)	–	●	●	●	●	**P**

Type code series 53

● = Available ○ = On request – = Not available

01	02	03	04		05	06		07	08	09	10	11	12
A10V	**O**			**/**	**53**		**–**	**V**					

Axial piston unit

		18	28	45	63	72	85	100	
01	Swashplate design, variable, nominal pressure 250 bar, maximum pressure 315 bar	●	●	●	●	●	●	●	**A10V**

Operating mode

02	Pump, open circuit	**O**

Size (NG)

03	Geometric displacement, see table of values on page 10	**18**	**28**	**45**	**63**	**72**	**85**	**100**

01	02	03	04	05	06	07	08	09	10	11	12
A10V	**O**			**/**	**53**		**–**	**V**					

Control device

04	Pressure controller	hydraulic						●	●	●	●	●	●	●	**DR**
	with flow controller	hydraulic	X-T open					●	●	●	●	●	●	●	**DRF**
			X-T plugged	with flushing function				●	●	●	●	●	●	●	**DRS**
				without flushing function				●	●	●	●	●	●	●	**DRSC**
	with pressure cut-off	hydraulic	remote controlled					●	●	●	●	●	●	●	**DRG**
		electric	negative control				*U* = 12 V	●	●	●	●	●	●	●	**ED71**
							U = 24 V	●	●	●	●	●	●	●	**ED72**
		electric	positive control				*U* = 12 V	●	●	●	●	●	●	●	**ER71**
							U = 24 V	●	●	●	●	●	●	●	**ER72**
	Differential pressure control		electric control (negative control)					○	○	○	○	○	●	●	**EF..**[1]
	Power control with pressure cut-off	hydraulic	Beginning of control	from			10 to 35 bar	●	●	●	●	●	●	●	**LA5D**
							36 to 70 bar	●	●	●	●	●	●	●	**LA6D**
							71 to 105 bar	●	●	●	●	●	●	●	**LA7D**
							106 to 140 bar	●	●	●	●	●	●	●	**LA8D**
							141 to 230 bar	●	●	●	●	●	●	●	**LA9D**
	remote controlled	hydraulic	Beginning of control	see LA.D				●	●	●	●	●	●	●	**LA.DG**
	Flow control X-T plugged	hydraulic with flushing function	Beginning of control	see LA.D				●	●	●	●	●	●	●	**LA.DS**
		hydraulic without flushing function	Beginning of control	see LA.D				●	●	●	●	●	●	●	**LA.DC**
		Differential pressure control[1]	Beginning of control	see LA.D				○	○	○	○	○	●	●	**LA.EF**
	Electro-proportional control		positive control												
	with pressure control						*U* = 12 V	●	●	●	●	●	●	●	**EP1D**
							U = 24 V	●	●	●	●	●	●	●	**EP2D**
	with pressure and flow control (load-sensing)		X-T open				*U* = 12 V	●	●	●	●	●	●	●	**EP1DF**
							U = 24 V	●	●	●	●	●	●	●	**EP2DF**
	with pressure and flow control (load-sensing)		X-T plugged				*U* = 12 V	●	●	●	●	●	●	●	**EP1DS**
							U = 24 V	●	●	●	●	●	●	●	**EP2DS**
	with electrohydraulic Pressure control						*U* = 12 V	●	●	●	●	●	●	●	**EP1ED**
							U = 24 V	●	●	●	●	●	●	●	**EP2ED**

								18	**28**	**45**	**63**	**72**	**85**	**100**	
04	Electro-proportional control		positive control												
	with pressure control						*U* = 12 V	●	●	●	●	●	●	●	**EK1D**
							U = 24 V	●	●	●	●	●	●	●	**EK2D**
	Pressure and flow control with controller cut-off (load sensing)		X-T open				*U* = 12 V	●	●	●	●	●	●	●	**EK1DF**
							U = 24 V	●	●	●	●	●	●	●	**EK2DF**
	Pressure and flow control with controller cut-off (load sensing)		X-T plugged				*U* = 12 V	●	●	●	●	●	●	●	**EK1DS**
							U = 24 V	●	●	●	●	●	●	●	**EK2DS**
	electrohydraulic pressure control with controller cut-off						*U* = 12 V	●	●	●	●	●	●	●	**EK1ED**
							U = 24 V	●	●	●	●	●	●	●	**EK2ED**

01	02	03	04		05	06		07	08	09	10	11	12
A10V	**O**			**/**	**53**		**–**	**V**					

Series

05	Series 5, index 3			●	●	●	●	●	●	●	**53**

Direction of rotation

06	Viewed on drive shaft	clockwise	**R**
		counter-clockwise	**L**

Sealing material

07	FKM (fluoroelastomer)	**V**

Drive shaft

08	Splined shaft ISO3019-1	Standard shaft	●	●	●	●	●	●	●	**S**
		similar to shaft "S" however for higher torque	●	●	●	●	●	●	●	**R**
		reduced diameter, limited suitability for through drive	●	●	●	●	●	●	●	**U**
		similar to shaft "U", however for higher torque only conditionally suitable for mounting with through drive. For mounting options, see page 66	–	●	●	●	●	●	●	**W**

Mounting flange

09	ISO 3019-1 (SAE)	2-hole	●	●	●	●	●	●	●	**C**
		4-hole	–	–	–	●	●	●	●	**D**

Working port

10	SAE flange ports Fastening thread metric	rear	not for through drive	●	●	●	●	●	●	●	**11**
		laterally opposite	for through drive	●	●	●	●	●	●	●	**12**
		at side, offset 90°	not for through drive; for counter-clockwise rotation only available	–	–	●	–	–	–	–	**13**

Through drive (for mounting options, see page 66)

11	Flange ISO 3019-1	Hub for splined shaft[2)]		**18**	**28**	**45**	**63**	**72**	**85**	**100**	
	Diameter	Diameter									
	without through drive			●	●	●	●	●	●	●	**N00**
	82-2 (A)	5/8 in	9T 16/32DP	●	●	●	●	●	●	●	**K01**
		3/4 in	11T 16/32DP	●	●	●	●	●	●	●	**K52**
	101-2 (B)	7/8 in	13T 16/32DP	–	●	●	●	●	●	●	**K68**
		1 in	15T 16/32DP	–	–	●	●	●	●	●	**K04**
	127-4 (C)	1 1/4 in	14T 12/24DP	–	–	–	●	●	●	●	**K15**
		1 1/2 in	17T 12/24DP	–	–	–	–	–	●	●	**K16**
	127-2 (C)	1 1/4 in	14T12/24DP	–	–	–	–	–	●	●	**K07**
		1 1/2 in	17T 12/24DP	–	–	–	–	–	●	●	**K24**

Connector for solenoids

12	Without connector (without solenoid, only for hydraulic controls, without signs)	●	●	●	●	●	●	●	
	DEUTSCH - molded connector, 2-pin, without suppressor diode (for electric control)	●	●	●	●	●	●	●	**P**

Technical data -- Series 52/53

Size		NG		10	18	28	45	60	63	72	85	100
Displacement geometric, per revolution		$V_{g\,max}$	cm^3	10.5	18	28	45	60	63	72	85	100
Rotational speed maximum[1)]	at $V_{g\,max}$	n_{nom}	rpm	3600	3300	3000	2600[4)]	2700	2600	2600	2500	2300
	at $V_g < V_{g\,max}$[2)]	$n_{max\,adm.}$	rpm	4320	3960	3600	3120	3140	3140	3140	3000	2500
Flow	at n_{nom} and $V_{g\,max}$	q_v	l/min	37	59	84	117	162	163	187	212	230
	at n_E = 1500 rpm	q_{vE}	l/min	15	27	42	68	90	95	108	128	150
Power	with n_{nom}, $V_{g\,max}$ and Δp = 250 bar	P	kW	16	25	35	49	65	68	77	89	96
	at n_E = 1500 rpm	P_E	kW	7	11	18	28	37	39	45	53	62
Torque	at $V_{g\,max}$ and Δp = 250 bar	M	Nm	42	71	111	179	238	250	286	338	398
	at $V_{g\,max}$ and Δp = 100 bar	M	Nm	17	29	45	72	95	100	114	135	159
Rotary stiffness Drive shaft	S	c	Nm/rad	9200	11000	22300	37500	65500	65500	65500	143000	143000
	R	c	Nm/rad	–	14800	26300	41000	69400	69400	69400	152900	152900
	U	c	Nm/rad	6800	8000	16700	30000	49200	49200	49200	102900	102900
	W	c	Nm/rad	–	–	19900	34400	54000	54000	54000	117900	117900
	P	c	Nm/rad	10700	–	–	–	–	–	–	–	–
Moment of inertia of the rotary group		J_{TW}	kgm^2	0.0006	0.0009	0.0017	0,003	0.0056	0.0056	0.0056	0,012	0,012
Maximum angular acceleration[3)]		α	rad/s^2	8000	6800	5500	4000	3300	3300	3300	2700	2700
Case volume		V	l	0.2	0.25	0.3	0.5	0.8	0.8	0.8	1	1
Weight **without** through drive (approx.)		m	kg	8	11.5	15	18	22	22	22	36	36
Weight **with** through drive (approx.)				–	13	18	24	28	28	28	45	45

Features

- Through-drive for mounting of further pumps up to same size
- Optional with charge pump for sizes 130 to 260
- Higher speeds are possible for the version with charge pump (A11VLO)
- Large variety of controls
- Swashplate design
- Compact design
- High efficiency
- High power density
- All-purpose high pressure pump
- Size 40 to 260
- Nominal pressure 350 bar
- Maximum pressure 400 bar
- Open circuit

Type code

● = Available ○ = On request – = Not available

01	02	03	04		05	06	07	08	09	10	11	12	13	14	15
A11V				**/**				**N**			**12**			**–**	

Axial piston unit

01	Swashplate design, variable, nominal pressure 350 bar, maximum pressure 400 bar	**A11V**

Operating mode

			40	60	75	95	130	145	190	260	
02	Pump, open circuit	without charge pump	●	●	●	●	●	●	●	●	**O**
		with charge pump	–	–	–	–	●	●	●	●	**LO**

Size (NG)

		40	60	75	95	130	145	190	260
03	Geometric displacement, see technical data on page 8								

Control device[1)]

					40	60	75	95	130	145	190	260	
04	Power controller	fixed setting			●	●	●	●	●	●	●	●	**LR**
	with override	cross sensing	negative control		●	●	●	●	●	●	●	●	**LR.C**
		high pressure dependent	negative control		●	●	●	●	●	●	●	●	**LR3**
		pilot-pressure related	negative control		●	●	●	●	●	●	●	●	**LG1**
			positive control		●	●	●	●	●	●	●	●	**LG2**
		electric	negative control	U = 24 V	●	●	●	●	●	●	●	●	**LE2**
	with pressure cut-off				●	●	●	●	●	●	●	●	**L.D..**
		hydraulic remote controlled			●	●	●	●	●	●	●	●	**L..G.**
	with load sensing				●	●	●	●	●	●	●	●	**L...S**
		electric proportional override		U = 24 V	●	●	●	●	●	●	●	●	**L...S2**
		hydraulic proportional override			–	–	–	●	●	●	●	●	**L...S5**
	with hydraulic stroke limiter	negative control		Δp = 25 bar	●	●	●	●	●	●	●	●	**L...H1**
		positive control		Δp = 25 bar	●	●	●	●	●	●	●	●	**L...H2**
	with electric stroke limiter	positive control U = 24 V			●	●	●	●	●	●	●	●	**L...U2**
			with manual override and spring return		○	○	○	○	○	○	○	○	**L...U6**
	Pressure controller				●	●	●	●	●	●	●	●	**DR**
		with load sensing			●	●	●	●	●	●	●	●	**DRS**
		hydraulic remote controlled			●	●	●	●	●	●	●	●	**DRG**
		for parallel operation			●	●	●	●	●	●	●	●	**DRL**
	Hydraulic control, pilot-pressure related	positive control		Δp = 25 bar	●	●	●	●	●	●	●	●	**HD2**
			with pressure cut-off	Δp = 25 bar	●	●	●	●	●	●	●	●	**HD2D**
	Electrical control with proportional solenoid	positive control U = 24 V			●	●	●	●	●	●	●	●	**EP2**
			with manual override and spring return		○	○	○	○	○	○	○	○	**EP6**
			with pressure cut-off		●	●	●	●	●	●	●	●	**EP2D**
			with pressure cut-off, hydraulic remote controlled		●	●	●	●	●	●	●	●	**EP2G**
			with pressure cut-off, electric remote controlled	negative control	–	–	–	●	●	●	●	●	**EP2G2**
				positive control	–	–	–	●	●	●	●	●	**EP2G4**

Series

05		**1**

Index

06	Size 40 ... 130	**0**
	Size 145 ... 260	**1**

01	02	03	04		05	06	07	08	09	10	11	12	13	14		15
A11V				**/**				**N**			**12**				**–**	

Direction of rotation

07	Viewed on drive shaft	clockwise	**R**
		counter-clockwise	**L**

Sealing material

08	NBR (nitrile rubber), shaft seal ring made of FKM (fluorocarbon rubber)	**N**
	FKM (fluorocarbon rubber)	**V**

Drive shaft

			40	60	75	95	130	145	190	260	
09	Splined shaft DIN 5480 for single and combination pump		●	●	●	●	●	●	●	●	**Z**
	Parallel keyed shaft DIN 6885		●	●	●	●	●	●	●	●	**P**
	Splined shaft ANSI B92.1a–1976	for single pump	●	●	●	●	●	●	●	●	**S**
		for combination pump	●	●	●	–[2]	–[2]	–[2]	●	●	**T**

Mounting flange

		40	60	75	95	130	145	190	260	
10	SAE J744 – 2-hole	●	●	–	–	–	–	–	–	**C**
	SAE J744 – 4-hole	–	–	●	●	●	●	●	●	**D**
	SAE J617[3] (SAE 3)	–	–	–	●	●	●	●	–	**G**

Working port

		40	60	75	95	130	145	190	260	
11	SAE pressure and suction port at side, opposite, metric fastening thread according to DIN 13. Port thread, metric with profile sealing ring based on DIN 3852	●	●	●	●	●	●	●	●	**12**
	SAE pressure and suction port at side, opposite, metric fastening thread according to DIN 13. Port thread, UNF with profile sealing ring based on ISO 11926	○	●	●	●	●	●	●	●	**07**

Through-drive

					40	60	75	95	130	145	190	260	
12	Flange SAE J744 [4]	Hub for splined shaft[4]											
	Diameter	Diameter		Designation									
	–	–			●	●	●	●	●	●	●	●	**N00**
	82-2 (A)	5/8 in	9T 16/32DP	A	●	●	●	●	●	●	●	●	**K01**
		3/4 in	11T 16/32DP	A-B	●	●	●	●	●	●	●	●	**K52**
	101-2 (B)	7/8 in	13T 16/32DP	B	●	●	●	●	●	●	●	●	**K02**
		1 in	15T 16/32DP	B-B	●	●	●	●	●	●	●	●	**K04**
		W 35 × 2 × 16 × 9g			●	●	●	●	○	○	●	●	**K79**
	127-2/-2+4 (C)[5]	1 1/4 in	14T 12/24DP	C	–	●	●	●	●	●	●	●	**K07**
		1 1/2 in	17T 12/24DP	C-C	–	–	–	●	●	●	●	●	**K24**
		W 30 × 2 × 14 × 9g			–	●	●	●	●[6]	●[6]	●	●	**K80**
		W 35 × 2 × 16 × 9g			–	●	●	●	●	●	●	●	**K61**
	152-4 (D)	1 1/4in	14T 12/24DP	C	–	–	●	●	●	●	●	●	**K86**
		1 3/4 in	13T 8/16DP	D	–	–	–	–	●	●	●	●	**K17**
		W 40 × 2 × 18 × 9g			–	–	●	●	●	●	●	●	**K81**
		W 45 × 2 × 21 × 9g			–	–	–	●	●	●	●	●	**K82**
		W 50 × 2 × 24 × 9g			–	–	–	–	●	●	●	●	**K83**
	165-4 (E)	1 3/4 in	13T 8/16DP	D	–	–	–	–	–	–	●	●	**K72**
		W 50 × 2 × 24 × 9g			–	–	–	–	–	–	●	●	**K84**
		W 60 × 2 × 28 × 9g			–	–	–	–	–	–	–	●	**K67**

01	02	03	04		05	06	07	08	09	10	11	12	13	14		15
A11V				**/**				**N**			**12**			**P**	**–**	

Swivel angle indicator

		40	60	75	95	130	145	190	260	
13	without swivel angle indicator (without code)	●	●	●	●	●	●	●	●	
	with optical swivel angle indicator	●	–	●	●	●	●	●	●	**V**
	with electric swivel angle sensor	●	–	●	●	●	●	●	●	**R**

Connector for solenoids

			40	60	75	95	130	145	190	260	
14	DEUTSCH connector molded	2-pin, without suppressor diode	●	●	●	●	●	●	●	●	**P**

Standard/special version

15	Standard version (without code)	
	Special version	**S**
	Installation variant	**Y**

Technical data

Size		**NG**		**40**	**60**	**75**	**95**	**130**	**145**	**190**	**260**
Geometric displacement, per revolution		$V_{g\,max}$	cm^3	42.0	58.5	74.0	93.5	130.0	145.0	193.0	260.0
		$V_{g\,min}$	cm^3	0	0	0	0	0	0	0	0
Maximum rotational speed	at $V_{g\,max}$ [1]	n_{nom}	rpm	3000	2700	2550	2350	2100	2200	2100	2000
	at $V_g \le V_{g\,max}$ [3]	n_{max}	rpm	3500	3250	3000	2780	2500	2500	2100 [5]	2300
Flow	at n_{nom} and $V_{g\,max}$	q_v	l/min	126	158	189	220	273	319	405	468
Power	at n_{nom}, $V_{g\,max}$ and Δp = 350 bar	P	kW	74	92	110	128	159	186	236	273
Torque	at $V_{g\,max}$ and Δp = 350 bar [2]	M	Nm	234	326	412	521	724	808	1075	1448
Rotary stiffness drive shaft	Z	c	kNm/rad	88.9	102.4	145.8	199.6	302.5	302.5	346.2	686.5
	P	c	kNm/rad	87.5	107.9	143.1	196.4	312.4	312.4	383.2	653.8
	S	c	kNm/rad	58.3	86.3	101.9	173.7	236.9	236.9	259.8	352.0
	T	c	kNm/rad	74.5	102.4	125.6	148.3	–	–	301.9	567.1
Moment of inertia of the rotary group		J_{TW}	kgm^2	0.0048	0.0082	0.0115	0.0173	0.0318	0.0341	0.055	0.0878
Maximum angular acceleration [4]		α	rad/s^2	22000	17500	15000	13000	10500	9000	6800	4800
Case volume		V	L	1.1	1.35	1.85	2.1	2.9	2.9	3.8	4.6
Weight (without through-drive) approx.		m	kg	32	40	45	53	66	67	95	125

Features

- Variable pump with two axial piston rotary groups in swash-plate design for use in open circuit hydrostatic drives
- For use in mobile and stationary applications
- The pump consists of proven components from the A11VO (RE 92500), A10VO/53 (RE 92703) or A4VSO (RE 92050) variable pumps
- The pump operates under self-priming condition, with tank pressurisation or with charge pump (sizes 190...260)
- A wide variety of controls are available
- Setting of the constant power control is possible via external adjustments, even when the unit is operating (only with power contol).
- The pump is available with a through drive to mount a gear pump or a second axial piston pump
- Output flow is proportional to drive speed and pump displacement and is steplessly variable between maximum and zero displacement

Series 1
Sizes
60
95...520
for open circuits

Nominal pressure/ Peak pressure
250/315 bar
350/400 bar

Type code

● = Available ○ = On request – = Not available

A20V		O			/	10		–					
01	02	03	04	05		06	07		08	09	10	11	12

Axial piston unit

01	Swashplate design, variable (Back to back - design)							A20V

	Charge pump (impeller)	**60**	**95**	**190**	**260**	**520**	
02	without charge pump (no code)	●	●	–	–	●	
	with charge pump	–	–	●	●	–	L

Operation

03	Double pump, open circuit							O

Size

04	≈ Displacement $V_{g\,max}$ in cm^3 (per rotary group)	**60**	**95**	**190**	**260**	**520**	

	Control devices	**60**	**95**	**190**	**260**	**520**	
05	see RE 92703 (A10VO/53)	●	–	–	–	–	
	see RE 92500 (A11VO)	–	●	●	●	–	
	see RE 92050 (A4VSO) and RE 92060, RE 92064, RE 92076	–	–	–	–	●	

Series

06	Series 1, Index 0							10

Direction of rotation

07	viewed on shaft end	clockwise						R
		counter-clockwise						L

Seals

08	NBR (nitril-caoutchouc), shaft seal ring in FKM (fluor-caoutchouc)	●	●	●	●	–	N
	FKM (fluor-caoutchouc)	–	–	–	–	●	V

	Shaft end	**60**	**95**	**190**	**260**	**520**	
10	Splined shaft DIN 5480	–	●	●	●	●	Z
	Splined shaft, ANSI B92.1a-1976	●	●	–	–	–	S
		–	–	●	●	–	T
	Parallel keyed shaft, DIN 6885	–	–	–	–	●	P

	Mounting flange	**60**	**95**	**190**	**260**	**520**	
09	SAE J744 – 4-hole	●	●	●	●	–	D
	To fit flywheel housing (conformin to SAE J617) of internal combustion engine (details on request)	–	●	●	–	–	G
	ISO 3019-2 – 8-hole	–	–	–	–	●	H

	Service line ports	**60**	**95**	**190**	**260**	**520**	
11	Two service line ports and one scution port at site, opposite (fastening thread metric)	●	●	●	●	–	24
	At the site two service line ports each, opposite and one suction port displaced by 90° (fastening thread metric)	–	–	–	–	●	26

	Boost pump and through drive[1])			**60**	**95**	**190**	**260**	**520**	
12	without boost pump, without through drive			●	●	●	●	–	N00
	without boost pump, with through drive								
	Flange SAE J744	Splined shaft hub							
	82-2 (A)	5/8 in	9T 16/32DP (A)	❍	❍	❍	❍	–	K01
	127-2 (C)	1 1/4in	14T 12/24DP (C)	–	–	–	–	●	K07
	with through drive shaft, without hub, without intermediate flange, closed by a cover			–	–	–	–	●	K99

Technical data

Size	*without* charge pump *with* charge pump		60	95	190	260	520
Displacement	$V_{g\,max}$	cm^3	60	93,8	192,7	260	520
(per rotary group)	$V_{g\,min}$	cm^3	0	0	0	0	0
Speed							
maximal [1] at $V_{g\,max}$	n_{max}	min^{-1}	2700	2350	2500 [2]	2300 [2]	1450
Speed max. [3]							
at $V_g \leq V_{g\,max}$	n_{max}	min^{-1}	3200	2780	2500	2300	1720
Flow							
at n_{max} and $V_{g\,max}$	$q_{v\,max}$	L/min	2x162	2x220	2x482	2x598	2x754
Power at $q_{V\,max}$ and $\Delta p = 350$ bar	P_{max}	kW	135[4]	257	562	698	880
Torque at $V_{g\,max}$							
at long-term ($\Delta p = 350$ bar)	T_{max}	Nm	477 [4]	1045	2147	2897	5793
max. perm., short term ($\Delta p = 400$ bar)	T_{max}	Nm	602 [4]	1194	2454	3310	6621
Moment of inertia (of the rotating parts)	J	kgm^2	0,0113	0,0346	0,0604	0,0912	0,696
Mass approx.	m	kg	44				640

[1] The values are quoted for an absolute pressure (p_{abs}) of 1 bar at suction port S and mineral operating fluid.
[2] The values are quoted for an absolute pressure (p_{abs}) of at least 0.8 bar at suction port S and mineral operating fluid.
[3] The values are quoted for $V_g < V_{g\,max}$ or increase of the input pressure p_{abs} at suction port S.
[4] $\Delta p = 250$ bar (long-term operation) or rather 315 bar (short term).

Related Products

Vane Pump

Dump Pump

Gear Pump

Hydraulic Orbit Motor

Hydraulic Valve

Directioanal Control Valve

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