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Qidong Deke Hydraulic Machinery Factory
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Deye Power Transmission Technology (Qidong) Co., Ltd.
Qidong Deke Hydraulic Machinery Factory



Company Profile

Qidong Deke Hydraulic Machinery Factory is a modern enterprise integrating production, R&D, and sales. We adhere to a business philosophy guided by the market, driven by technology, focused on quality, rooted in talent, based on management, and guaranteed by service. Our goal is not to be the largest or most comprehensive, but rather to be professional and lean, offering cost-effective products and high customer satisfaction.

Our main products include the A2F series, A7V series, A2FM/61 series, A2FO/61 series, A2FE/61 series, A6VM series, A6VE series, A4VSO series, and A10VSO series hydraulic piston pumps and hydraulic motors. We also provide customer selection and design services.



It is a professional, large-scale, and diversified manufacturer of hydraulic components in China. Our products are widely used in hydraulic transmissions for engineering machinery, construction machinery, mobile machinery, forging and pressing machinery, agricultural machinery, as well as in mining, metallurgy, shipbuilding, and water conservancy, with a focus on supporting main engines.

The company boasts numerous machining centers, high-precision CNC lathes, high-precision grinders, digital hydraulic test benches, and other production and testing equipment. With a professional and highly qualified technical team, a rigorous production management system, and comprehensive testing methods, we guarantee the quality of our hydraulic products.
Furthermore, strict quality control and testing throughout the production process ensure the company's long-term stable product quality, earning it market recognition.

Deke Hydraulics sincerely welcomes new and existing friends at home and abroad to cooperate with us.

Related Patents



证书号第21101100号

专利公告信息

实用新型专利证书

实用新型名称：一种关于变换机斜轴式柱塞液压泵壳体

专 利 权 人：德液动力传动科技（启东）有限公司

地　　址：226265 江苏省南通市启东市惠萍镇兴惠街132号

发 明 人：集称花;吴大宁;集华烨

专 利 号：ZL 2023 2 3180522.8　　授权公告号：CN 221120197 U

专利申请日：2023年11月24日　　授权公告日：2024年06月11日

申请团体名人：德液动力传动科技（启东）有限公司

申请团发明人：集称花;吴大宁;集华烨

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局长
申长雨

2024年05月11日

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证书号第21506931号

专利公告信息

实用新型专利证书

实用新型名称：一种关活可调机斜轴式液压泵

专 利 权 人：德液动力传动科技（启东）有限公司

地　　址：226265 江苏省南通市启东市惠萍镇兴惠街132号

发 明 人：集称花;吴大宁

专 利 号：ZL 2023 2 3357935.9　　授权公告号：CN 221526033 U

专利申请日：2023年12月11日　　授权公告日：2024年08月13日

申请团体名人：德液动力传动科技（启东）有限公司

申请团发明人：集称花;吴大宁

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申长雨

2024年08月13日

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证书号第21504744号

专利公告信息

实用新型专利证书

实用新型名称：一种结构简单优割轴式液压马达

专 利 权 人：德液动力传动科技（启东）有限公司

地　　址：226265 江苏省南通市启东市惠萍镇兴惠街132号

发 明 人：式天宁;集华烨

专 利 号：ZL 2023 2 3438843.3　　授权公告号：CN 221534998 U

专利申请日：2023年12月18日　　授权公告日：2024年08月13日

申请团体名人：德液动力传动科技（启东）有限公司

申请团发明人：式天宁;集华烨

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申长雨

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证书号第21807885号

专利公告信息

实用新型专利证书

实用新型名称：一种范阳龙性斜轴式液压马达

专 利 权 人：德液动力传动科技（启东）有限公司

地　　址：226265 江苏省南通市启东市惠萍镇兴惠街132号

发 明 人：陈兴平;陈炳锦

专 利 号：ZL 2024 2 0003807.8　　授权公告号：CN 221823950 U

专利申请日：2024年01月02日　　授权公告日：2024年10月11日

申请团体名人：德液动力传动科技（启东）有限公司

申请团发明人：陈兴平;陈炳锦

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局长
申长雨

2024年10月11日

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证书号第21932442号

专利公告信息

实用新型专利证书

实用新型名称：一种液压动力生产

专 利 权 人：德液动力传动科技（启东）有限公司

地　　址：226265 江苏省南通市启东市惠萍镇兴惠街132号

发 明 人：集称花;吴大宁;集华烨

专 利 号：ZL 2024 2 0256836.7　　授权公告号：CN 221973954 U

专利申请日：2024年02月02日　　授权公告日：2024年11月08日

申请团体名人：德液动力传动科技（启东）有限公司

申请团发明人：集称花;吴大宁;集华烨

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局长
申长雨

2024年11月08日

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证书号第9260040号

专利公告信息

外观设计专利证书

外观设计名称：盖轴型柱塞泵

专 利 权 人：德液动力传动科技（启东）有限公司

地　　址：226900 江苏省南通市启东市惠萍镇兴业街132号

设 计 人：陈炳锦

专 利 号：ZL 2024 3 0667719.5　　授权公告号：CN 309239968 S

专利申请日：2024年10月23日　　授权公告日：2025年04月15日

申请团体名人：德液动力传动科技（启东）有限公司

申请团设计人：陈炳锦

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局长
申长雨

2025年04月15日

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证书号第18009479号

实用新型专利证书

实用新型名称：一种内置溢流阀的液压马达后盖

发 明 人：陈炳锦

专 利 号：ZL 2022 2 2386716.2

专利申请日：2022年09月05日

专 利 权 人：启东市驰宏液压机械厂

地　　址：226000 江苏省南通市启东市汇萍镇海洪河村九组33号

授权公告日：2022年12月13日　　授权公告号：CN 218030911 U

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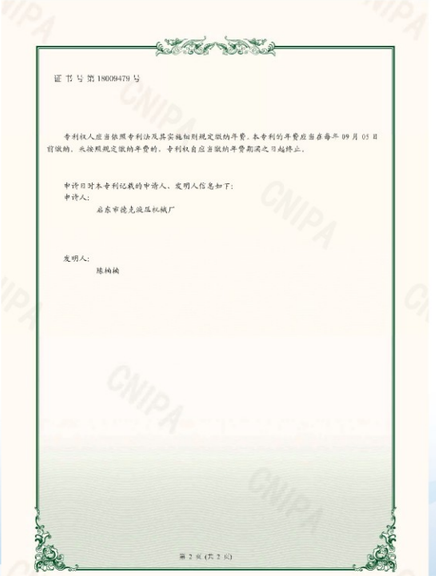
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申长雨

2022年12月13日

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其他事项参见续页



证书号第18009479号

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申请日对本专利记载的申请人、发明人信息如下：

申请人：
启东市驰宏液压机械厂

发明人：
陈炳锦

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▶ A2FM series 61 Axial piston fixed motor ····· 04
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▶A2F1-5 Series Bent Axis Piston Pump/Motor



Description:

Axial piston elements with a bent axis design and fixed displacement are used as pumps or motors in hydrostatic transmissions in open or closed circuits. When operating as a pump, flow rate is directly proportional to the drive speed and displacement. When operating as a motor, output speed is directly proportional to flow rate and inversely proportional to displacement. Output torque increases with the pressure differential between the high-pressure and low-pressure sides.

Features:

The high-performance rotating assembly with the proven spherical port plate offers the advantages of self-centering, low peripheral speeds, and high efficiency. Durable ball and roller bearings contribute to long operating life. The drive shaft can withstand radial loads. ISO mounting flanges are common to fixed-displacement pumps/motors and variabledisplacement motors starting from size 55. Fire-resistant hydraulic fluids can be used. Low noise levels.

Table of values (theor etica l va lues, wit h out eff icien cy and tolerances; values rounded)

Size				6	10	12	23	28	45	55	63	80	107	125	160	200	250	500
Displacement			ml/r	5.96	9.4	11.6	22.7	28.1	44.3	54.8	63	80	107	125	160	200	250	500
Maximum Speed	Closed Circuit		r/min	6000	7500	6000	5600	4750	3750	3750	3350	3350	3000	3150	2650	2500	2500	2000
		0.09 MPa[1]	r/min	3750	4700	3750	3750	2800	2360	2360	2550	2120	1900	2120	1650	1700	1400	1120
	Open Circuit	0.1MPa[1]	r/min	4000	5000	4000	4000	3000	2500	2500	2700	2240	2000	2240	1750	1800	1500	1200
		0.15 MPa[1]	r/min	4900	6000	4900	4900	3600	3000	3000	3300	2750	2450	2750	2100	2180	1850	1500
Maximum Flow	Closed Circuit		L/min	31	71	70	127	133	166	206	252	268	321	394	424	500	625	1000
		$n_{0,09}$[2]	L/min	19	43	42	83	76	122	125	156	164	197	257	256	330	340	543
	Open Circuit	$n_{0,1}$[2]	L/min	20	46	45	88	82	129	133	165	174	208	272	272	349	364	582
		$n_{0,15}$[2]	L/min	25	55	55	108	98	157	160	202	213	254	334	326	432	449	728
Maximum Power	Closed Circuit		kW	18	41	41	74	78	97	120	147	156	187	230	247	292	365	583
		$Q_{0,09}$	kW	13	25	25	50	46	71	75	93	99	119	154	154	198	204	326
p=35MPa	Open Circuit	$Q_{0,1}$	kW	14	27	26	53	49	75	80	99	105	125	163	163	210	218	350
		$Q_{0,15}$	kW	17	32	32	65	59	92	96	121	128	153	200	196	254	270	437
Motor Speed	Flow	Closed Circuit	L/min	8.6	13.6	16.8	32.9	40.7	64.2	79.5	91.3	116	155	181.2	232			
			L/min	8.3	13.2	16.3	31.9	39.5	62.3	77.1	88.6	112.5	150.5	175.8	225			
	Power	Open Circuit 2)	kW	5	8	10	19	24	38	46	53	68	91	106	135			
n=1450rpm	(Δp35MPa)																	
Torque	Δp=10MPa		Nm	9.5	15	18	36	44.6	70.4	87	100	127.5	169.7	198	254	318.5	397.9	795.7
	Δp=35MPa		Nm	33	52	65	126	156	247	305	350	446	594	693	889	111.4	1393	2785
Approximate Weight			kg	5	5	5	12	12	23	23	33	33	44	63	63	88	88	185

Note: 1) These values apply when the suction pipe S has absolute pressure and operates with mineral oil. 2) In open loop, Vg is reduced by 3%.

A6V Series Variable Displacement Piston Motor



Description:

This variable speed motor is designed for hydrostatic drives with secondary control. It comes with a complete control assembly with a maximum adjustment range of Vman/Vmin = 3.47.

Features:

When using hydrostatic transmissions, it offers a wide adjustment range, secondary control, and adjustment with various control devices. It also increases maximum output speed at smaller inclination angles, reduces costs by allowing for smaller pumps, eliminates the need for multi-ratio gear drives, offers high power density, tolerates high external shaft loads, allows for optional mounting positions, offers high efficiency, excellent starting characteristics, and reduces inertia.

Table of values (theor etica l va lues, wit h out eff icien cy and tolerances; values rounded)

Size			28	55	80	107	160	225	250	500
Variation Mode										
HD Hydraulic Control			●	●	●	●	●	●	●	●
HDID				●	●	●	●			
HS Hydraulic Control (Dual Speed)			●	●	●	●	●	●	●	●
HA High-Pressure Automatic				●	●	●	●	●	●	
DA Speed Hydraulic Control				●	●	●	●	●	●	
ES Electronic Control (Dual Speed)				●	●	●	●			
EP Electronic Control (Proportional)				●	●	●	●			
MO Torque Control					●	●	●			
MA Manual				●	●	●	●	●	●	●
Displacement		ml/r		28.1	54.8	80	107	160	225	250	500
		ml/r		8.1	15.8	23	30.8	46	64.8	0	137
Maximum Allowable Flow		L/min		133	206	238	321	424	530	590	950
Maximum Speed	n_{max} V_{gmax}	r/min		4750	3750	3350	3000	2650	2360	2360	1900
At Qmax	n_{max} V_g<V_{gmax}	r/min		6250	5000	4500	4000	3500	3100	3100	2500
Torque Constant	M_s V_{gmax}	Nm/MPa		4.463	8.701	12.75	16.97	25.41	35.71	39.79	79.577
	M_s V_{gmin}	Nm/MPa		1.285	2.511	3.73	4.9	7.35	10.30	11.46	21.804
Maximum Torque ΔP - 35 MPa	M_{max} V_{gmax}	Nm		156	304	446	594	889	1250	1391	2782
	M_{max} V_{min}	Nm		45	88	130	171	257	360	401	763
Maximum Output Power (at 35 MPa and Qmax)		kW		78	120	156	187	247	309	335	507
Moment of Inertia		kgm^2		0.0017	0.0052	0.0109	0.0167	0.0322	0.0532	0.0532	
Weight		kg		18	27	39	52	74	103	105	223

Hydraulic pump/motor

A2F1-5 Series Bent Axis Piston Pump/Motor



Description:

Bent-axis axial piston pump for open-loop hydrostatic transmissions. Flow rate is proportional to drive speed and displacement and can be infinitely varied at a constant drive speed. A comprehensive range of controls are available for every control and regulation function. Operates with mineral oil and flame-resistant fluids.

Features:

High-performance rotating assembly and spherical oil distribution plate enable selfcentering, low peripheral speeds, and high efficiency. Drive shaft can withstand radial loads. Long life. Low noise level.

Table of values (theor etica l va lues, wit h out eff icien cy and tolerances; values rounded)

Size			20	28	40	55	58	80	78	107	117	160	250	355	500
Control device															
LV Constant HP control			●	●	●	●	●	●	●	●	●	●	●		●
LVS Constant Power Load Sensing Variable											●	●			
DR Constant Pressure control			●		●	●	●	●	●	●	●	●	●		●
DRS Constant Pressure Load Sensing											●	●			
HD Hydraulic Control			●		●	●	●	●	●	●	●	●	●	●	
EP				●	●	●	●	●	●	●	●	●	●		●
MA Manual control				●		●	●	●	●	●	●	●	●		
SC Brake ontrol				●	●	●	●	●	●	●	●	●	●		
Displacement	V_{gmax}	ml/r		20.5	28.1	40.1	54.8	58.8	80	78	107	117	160	250	355	500
	V_{gmax}	ml/r		0	8.1	0	15.8	0	23.1	0	30.8	0	46.2	0	0	0
	0.09.MPa[1)]	r/min		3800	2800	3200	2360	2850	2120	2540	1900	2240	1650	1400	1250	1120
Maximum Speed	0.1.MPa[1)]	r/min		4100	3000	3400	2500	3000	2240	2700	2000	2360	1750	1500	1320	1200
	0.15.MPa[1]	r/min		4750	3600	3750	3000	3350	2750	3000	2450	2650	2100	1850	165	1500
	n_{max}0.09	L/min		76	76	124	125	161	164	192	197	254	256	340	430	543
Maximum Flow	n_{max}0.1	L/min		82	82	132	133	170	174	204	208	267	271	364	455	282
	n_{max}0.15	L/min		94	98	146	160	190	213	227	254	300	326	449	568	728
Maximum Power	Q_{max}0.09	kW		45	46	75	75	97	99	116	119	153	154	204	259	326
△P=35MPa	Q_{max}0.1	kW		49	49	80	80	102	105	123	125	161	163	218	273	350
	Q_{max}0.15	kW		57	59	88	96	114	128	136	153	181	196	270	342	437
Flow	n_E=1450r/min	L/min		28.8	39.5	56.4	77.1	82.3	112.5	109.7	150.5	164.6	225	–	-	–
Power (△P=35MPa)	η_E=1450r/min	kW		17	24	34	46	50	68	66	91	99	135	–	-	–
Torque (△P=10MPa)	V_{gma}	Nm/10MPa		32.6	44.6	637.	87	93.2	127.5	124	169.7	186	254	397.5	564.5	795
	V_{gmin}	Nm/10MPa		–	12.9	–	25.1	-	36.8	-	49	–	73.5	–	-	–
Maximum Torque (△P=35MPa)	V_{gmax}	Nm		117	156	223	305	326	446	431	594	651	889	1391	1975	2782
	V_{gmin}	Nm		–	45	–	88	-	129	-	171	–	257	–	-	–
Moment of Inertia		kgm^2		0.0017	0.0017	0.0052	0.0052	0.0109	0.0109	0.0167	0.0167	0.0322	0.0322	0.088	0.1600	0.270
Weight		kg		19	19	28	28	44	44	53	53	76	76	105	165	245

Note: 1) The values shown are absolute suction pressure (S) and are for operation with mineral oil at Vgmax. 2) Calculated based on a volumetric efficiency of 97%. 3) Even at higher loads, the maximum speed must not exceed the value at 0.15 MPa. However, for sizes with Vgmin > 0 (28-20, 55-40, 80-58, 107-78, and 160-117), the maximum speed can be increased from the value for sizes with Vgmax = 0 by reducing displacement (Vg < Vgmax) while maintaining maximum flow.

A2FO/61 Series bent axis plunger pumps



Product Description:

- 6 series structure; specifications5 ~ 500
- Rated pressure 40 MPa; Peak pressure 45 MPa

Structural features:

- Bent-axis axial piston metering pump, suitable for hydraulic transmission in open circuit.
- Suitable for mobile machinery or industrial fields .
- The output flow is proportional to the driving speed and displacement.
- The driving bearing design is suitable for long-term work and prolongs the working life.
- Various specifications are widely compatible with any drive equipment.
- Compact structure, excellent power/weight ratio and optimal volumetric efficiency.
- Integrated axial tapered plunger design with plunger ring.

A2FM/61 Series bent axis piston motor



Product Description:

- 6 series structure; specifications5 ~ 500
- Rated pressure 40 MPa; Peak pressure 45 MPa

Structural features:

- Bent-axis axial piston metering pump, suitable for hydraulic transmission in open and closed circuits move .
- The output speed is directly proportional to the input flow rate and inversely proportional to the displacement.
- The driving torque increases as the pressure difference between the high-pressure side and the low-pressure side of the motor increases.
- Carefully select the displacement provided, the specifications of which can be matched with the actual application.
- Compact structure, excellent power/weight ratio and optimal volumetric efficiency.
- Integrated axial tapered plunger design with plunger ring.

Hydraulic pump/motor

Technical Data:

Table of values (theoretical values, without efficiency and tolerances; values rounded)

Size		NG		5	10	12	16	23	28	32	45	56	63	80
Displacement geometric, per revolution		V_g	cm^3	4.93	10.3	12	16	22.9	28.1	32	45.6	56.1	63	80.4
Speed maximum[1]		n_{nom}	rpm	5600	3150	3150	3150	2500	2500	2500	2240	2000	2000	1800
		n_{max}[2]	rpm	8000	6000	6000	6000	4750	4750	4750	4250	3750	3750	3350
Flow at n_{nom}		q_V	L/min	27.6	32	38	50	57	70	80	102	112	126	145
Power at	$\Delta p = 350$ bar	P	kW	14.5[4]	19	22	29	33	41	47	60	65	74	84
	$\Delta p = 400$ bar	P	kW	–	22	25	34	38	47	53	68	75	84	96
Torque[3] at V_g and	$\Delta p = 350$ bar	T	Nm	24.7[4]	57	67	89	128	157	178	254	313	351	448
	$\Delta p = 400$ bar	T	Nm	–	66	76	102	146	179	204	290	357	401	512
Rotary stiffness		c	kNm/rad	0.63	0.92	1.25	1.59	2.56	2.93	3.12	4.18	5.94	6.25	8.73
Moment of inertia for rotary group		J_{GR}	kgm^2	0.00006	0.0004	0.0004	0.0004	0.0012	0.0012	0.0012	0.0024	0.0042	0.0042	0.0072
Maximum angular acceleration		α	rad/s^2	5000	5000	5000	5000	6500	6500	6500	14600	7500	7500	6000
Case volume		V	L		0.17	0.17	0.17	0.20	0.20	0.20	0.33	0.45	0.45	0.55
Mass (approx.)		m	kg	2.5	6	6	6	9.5	9.5	9.5	13.5	18	18	23

Size		NG		90	107	125	160	180	200	250	355	500	710	1000
Displacement geometric, per revolution		V_g	cm^3	90	106.7	125	160.4	180	200	250	355	500	710	1000
Speed maximum[1]		n_{nom}	rpm	1800	1600	1600	1450	1450	1550	1500	1320	1200	1200	950
		n_{max}[2]	rpm	3350	3000	3000	2650	2650	2750	1800	1600	1500	1500	1200
Flow at n_{nom}		q_V	L/min	162	171	200	233	261	310	375	469	600	852	950
Power at	$\Delta p = 350$ bar	P	kW	95	100	117	136	152	181	219	273	350	497	554
	$\Delta p = 400$ bar	P	kW	108	114	133	155	174	207	–	–	–	–	–
Torque[3] at V_g and	$\Delta p = 350$ bar	T	Nm	501	594	696	893	1003	1114	1393	1978	2785	3955	5570
	$\Delta p = 400$ bar	T	Nm	573	679	796	1021	1146	1273	–	–	–	–	–
Rotary stiffness		c	kNm/rad	9.14	11.2	11.9	17.4	18.2	57.3	73.1	96.1	144	270	324
Moment of inertia for rotary group		J_{GR}	kgm^2	0.0072	0.0116	0.0116	0.0220	0.0220	0.0353	0.061	0.102	0,178	0.55	0.55
Maximum angular acceleration		α	rad/s^2	6000	4500	4500	3500	3500	11000	10000	8300	5500	4300	4500
Case volume		V	L	0.55	0.8	0.8	1.1	1.1	2.7	2.5	3.5	4.2	8	8
Mass (approx.)		m	kg	23	32	32	45	45	66	73	110	155	325	336

Size		NG		10	12	16	23	28	32	45	56
Displacement geometric, per revolution		V_g	cm^3	10.3	12	16	22.9	28.1	32	45.6	56.1
Maximum rotational speed[1]	Temperature class T3	n_{max}	rpm	8000	8000	8000	6300	6300	6300	5600	5000
	Temperature class T4	n_{max}	rpm	4000	4000	4000	3150	3150	3150	2800	2500
Inlet flow[2]	at n_{nom}	$q_{v\,max}$	l/min	82	96	128	144	177	202	255	281
Torque[3]	at Δp = 350 bar	M	Nm	57	67	89	128	157	178	254	313
	at Δp = 400 bar	M	Nm	66	76	102	146	179	204	290	357
Rotary stiffness		c_{min}	kNm/rad	0.92	1.25	1.59	2.56	2.93	3.12	4.18	5.94
Moment of inertia of the rotary group		J_{TW}	kgm^2	0.0004	0.0004	0.0004	0.0012	0.0012	0.0012	0.0024	0.0042
Case volume		V	l	0.17	0.17	0.17	0.20	0.20	0.20	0.33	0.45
Weight approx.		m	kg	5.4	5.4	5.4	9.5	9.5	9.5	13.5	18

Size		NG		63	80	90	107	125	160	180
Displacement geometric, per revolution		V_g	cm^3	63	80.4	90	106.7	125	160.4	180
Maximum rotational speed[1]	Temperature class T3	n_{max}	rpm	5000	4500	4500	4000	4000	3600	3600
	Temperature class T4	n_{max}	rpm	2500	2250	2250	2000	2000	1800	1800
Inlet flow[2]	at n_{nom}	$q_{v\,max}$	l/min	315	362	405	427	500	577	648
Torque[3]	at Δp = 350 bar	M	Nm	351	448	501	594	696	893	1003
	at Δp = 400 bar	M	Nm	401	512	573	679	796	1021	1146
Rotary stiffness		c_{min}	kNm/rad	6.25	8.73	9.14	11.2	11.9	17.4	18.2
Moment of inertia of the rotary group		J_{TW}	kgm^2	0.0042	0.0072	0.0072	0.0116	0.0116	0.0220	0.0220
Case volume		V	l	0.45	0.55	0.55	0.8	0.8	1.1	1.1
Weight approx.		m	kg	18	23	23	32	32	45	45

A2FE/61 Series Cartridge Piston Motors



Product Description:

- 6 Series Structure; Sizes 28-355
- Rated Pressure 40MPa; Peak Pressure 45MPa

Structural features:

- Fixed motor with axial tapered piston rotary group of bent-axis design, for hydrostatic drives in open and closed circuits.
- For use in mobile and stationary applications
- The output speed depends on the flow of the pump and the displacement of the motor
- The output torque increases with the pressure differential between the high-pressure side and the low-pressure side.
- Finely graduated sizes permit far-reaching adaptation to the drive concerned
- High power density
- Small dimensions
- High total efficiency
- Good starting efficiency
- One-piece tapered piston with piston rings for sealing

Table of values (theoretical values, without efficiency and tolerances; values rounded)

Size		NG		23	28	32	45	56
Displacement geometric, per revolution		V_g	cm³	22.9	28.1	32	45.6	56.1
Maximum rotational speed[1)]	Temperature class T3	n_{max}	rpm	6300	6300	6300	5600	5000
	Temperature class T4	n_{max}	rpm	3150	3150	3150	2800	2500
Inlet flow[2)]	at n_{nom}	$q_{v\,max}$	l/min	144	177	202	255	281
Torque[3)]	at Δp = 350 bar	M	Nm	128	157	178	254	313
	at Δp = 400 bar	M	Nm	146	179	204	290	357
Rotary stiffness		c_{min}	kNm/rad	2.56	2.93	3.12	4.18	5.94
Moment of inertia of the rotary group		J_{TW}	kgm²	0.0012	0.0012	0.0012	0.0024	0.0042
Case volume		V	l	0.20	0.20	0.20	0.33	0.45
Weight approx.		m	kg	9.5	9.5	9.5	13.5	18

Size		NG		63	80	90	107	125	160	180
Displacement geometric, per revolution		V_g	cm³	63	80.4	90	106.7	125	160.4	180
Maximum rotational speed[1)]	Temperature class T3	n_{max}	rpm	5000	4500	4500	4000	4000	3600	3600
	Temperature class T4	n_{max}	rpm	2500	2250	2250	2000	2000	1800	1800
Inlet flow[2)]	at n_{nom}	$q_{v\,max}$	l/min	315	362	405	427	500	577	648
Torque[3)]	at Δp = 350 bar	M	Nm	351	448	501	594	696	893	1003
	at Δp = 400 bar	M	Nm	401	512	573	679	796	1021	1146
Rotary stiffness		c_{min}	kNm/rad	6.25	8.73	9.14	11.2	11.9	17.4	18.2
Moment of inertia of the rotary group		J_{TW}	kgm²	0.0042	0.0072	0.0072	0.0116	0.0116	0.0220	0.0220
Case volume		V	l	0.45	0.55	0.55	0.8	0.8	1.1	1.1
Weight approx.		m	kg	18	23	23	32	32	45	45

Note: 1) Intermittent maximum speed: when unloading and overtaking, overspeed T<5 seconds and △P<15MPa 2) △P<35MP

A6VM/63 Series Variable Displacement Piston Motors



Product Description:

- 63 Series Structure; Sizes 28-500
- Rated Pressure 40 MPa; Peak Pressure 45 MPa

Structural features:

- Integrated axial tapered plunger design with plunger ring, suitable for open and closed loop hydraulic transmissions.
- Suitable for both mobile and stationary equipment industries.
- With a wide adjustment range, the variable displacement motor can meet high speed and high torque requirements.
- Displacement is infinitely adjustable from maximum flow rate Vg max to minimum flow rate Vg min =0.
- Output speed is directly proportional to input flow rate and inversely proportional to displacement.
- Output torque increases with increasing pressure on the high and low pressure sides of the motor and with larger motor displacement.
- Hydrostatic drive with a wide adjustment range, a variety of control and variable devices, and excellent starting characteristics.
- Cost reduction achieved by eliminating gear transmissions and using a smaller hydraulic oil pump.
- Compact and durable structure, excellent power-to-weight ratio, and optimal volumetric efficiency.

Control Type:

- HD–Proportional control, hydraulic
- EP–Proportional control, electric
- HZ–Two-point control, hydraulic
- EZ–Two-point control, electric
- HA–Automatic high-pressure related control

Table of values (theoretical values, without efficiency and tolerances; values rounded)

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	355	500	1000
Geometric displacement, per revolution[1)]		$V_{g\,max}$	cm³	200	250	355	500	1000
		$V_{g\,min}$	cm³	0	0	0	0	0
		$V_{g\,x}$	cm³	76	205	300	417	1000
Maximum rotational speed[2)] (while adhering to the maximum permissible inlet flow)	at $V_{g\,max}$	n_{nom}	rpm	2900	2700	2240	2000	1600
	at $V_g < V_{g\,x}$ (see diagram on page 9)	n_{max}	rpm	4600	3300	2650	2400	1600
	where $V_{g\,0}$	n_{max}	rpm	5100	3300	2650	2400	1600
Inlet flow[3)]	at n_{nom} and $V_{g\,max}$	$q_{v\,max}$	l/min	580	675	795	1000	1600
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	1978	2785	5571
Rotary stiffness	$V_{g\,max}$ to $V_g/2$	c_{min}	kNm/rad	44	60	75	115	281
	$V_g/2$ to 0 (interpolated)	c_{min}	kNm/rad	130	181	262	391	820
Moment of inertia for rotary group		J_{TW}	kgm²	0.0353	0,061	0,102	0,178	0.55
Maximum angular acceleration		α	rad/s²	11000	10000	8300	5500	4000
Case volume		V	l	2.7	3.00	5.0	7.0	16.0
Weight approx.		m	kg	78	100	170	210	430

A6VE/63 Series Plug-in Variable Displacement Piston Motors



Product Description:

- 63 Series Structure; Sizes 28-250
- Rated Pressure 35 MPa; Peak Pressure 40 MPa
- Mainly Designed for Installation in Mechanical Gearboxes, Such as Track Drive Gearboxes.

Structural features:

- Integrated axial tapered plunger design with plunger ring, suitable for both open and closed loop hydraulic transmissions.
- The motor mounting flange is located in the center of the motor housing, allowing for integrated, flush mounting of the motor and reducer, resulting in a very compact design.
- Easy Installation: Simply insert into the hydraulic reducer, eliminating the need to consider installation tolerances.
- The assembled and tested drive components offer advantages in construction machinery applications.
- The displacement is steplessly adjustable from maximum flow (Vgma) to minimum flow (Vgm:n=0).
- The wide control range enables variable speed motors to meet high speed and torque requirements.
- The output speed is dependent on the hydraulic pump flow rate and the hydraulic motor displacement.
- The output torque increases with the increase of the pressure difference between the high and low pressure sides of the motor and the increase of the motor displacement.

Control Type:

- Hydraulic Control (HD); Hydraulic Two-Point Control (HZ)
- Electronic Control (EP); Electronic Two-Point Control (EZ)
- Automatic Control... Related to High Pressure (HA)
- Automatic Control... Related to Speed (HA)

Table of values (theoretical values, without efficiency and tolerances; values rounded)

Size			55	80	107	160
Variation Mode						
HD Hydraulic Contro			●	●	●	●
HS Hydraulic Control (Two-Speed)			●	●	●	●
HA High-Pressure Automatic			●	●	●	●
DA Speed Hydraulic Control			●	●	●	●
ES Electronic Control (Two-Speed)			●	●	●	●
EP Electronic Control (Proportional)			●	●	●	●
MO Torque Control			●	●	●	●
MA Manual Control			●	●	●	●
Displacement		ml/r	54.8	80	107	160
		ml/r	15.8	23	30.8	46
Maximum Allowable Flow		L/min	206	268	321	424
Maximum Speed	n_{max} V_{gmax}	r/min	3450	3350	3000	2650
Under Q	n_{max} $V_g < V_{gmax}$	r/min	5000	4500	4000	3500
Torque Constant	M_s V_{gmax}	Nm/MPa	8.701	12.75	16.97	25.41
	M_s V_{gmax}	Nm/MPa	2.511	3.73	4.9	7.35
Maximum Torque	M_{max} V_{gmax}	Nm	304	446	594	889
(ΔP=35MPa)	M_{max} V_{gmin}	Nm	88	130	171	257
Maximum Output Power	(35MPa Q_{max})	kW	120	156	187	247
Moment of Inertia		kgm^2	0.0042	0.008	0.0127	0.0253
Weight		kg	26	34	45	64

Hydraulic pump/motor

Axial piston fixed motor AA2FM series 6x



Product Description:

- All-purpose high pressure motor
- Size 10 ... 250
- Nominal pressure up to 5800 psi (400 bar)
- Maximum pressure up to 6500 psi (450 bar)
- Open and closed circuits
- SAE version (for the US market)

Structural features:

- Large variety of available nominal sizes allows exact adjustment to the application
- High power density
- Very high total efficiency
- High starting efficiency
- Working ports SAE flange or thread
- Optional with integrated pressure relief valve
- Optional with mounted additional valve: counterbalance valve (BVD/BVE), flushing and boost-pressure valve
- Bent-axis design

Table of values (theoretical values, without efficiency and tolerances; values rounded)

Size		NG		10	12	16	23	28	32	45	56
Displacement geometric, per revolution		V_g	in^3	0.63	0.73	0.98	1.40	1.71	1.95	2.78	3.42
			cm^3	10.3	12	16	22.9	28.1	32	45.6	56.1
Speed maximum[1]		n_{nom}	rpm	8000	8000	8000	6300	6300	6300	5600	5000
		n_{max}[2]	rpm	8800	8800	8800	6900	6900	6900	6200	5500
Input flow[3]			gpm	21.8	25.3	33.9	38.2	46.8	53.4	67.4	74.2
at n_{nom} and V_g		q_v	L/min	82	96	128	144	177	202	255	281
Torque[4]	Δp = 5100 psi	T	lb-ft	42	49	66	94	116	132	188	231
at V_g and	Δp = 350 bar	T	Nm	57	67	89	128	157	178	254	313
	Δp = 5800 psi	T	lb-ft	49	56	75	108	132	150	213	263
	Δp = 400 bar	T	Nm	66	76	102	146	179	204	290	357
Rotary stiffness		c	kNm/rad	0.92	1.25	1.59	2.56	2.93	3.12	4.18	5.94
Moment of inertia for rotary group		J_{GR}	$lbs\text{-}ft^2$	0.0095	0.0095	0.0095	0.0285	0.0285	0.0285	0.0569	0.0997
			kgm^2	0.0004	0.0004	0.0004	0.0012	0.0012	0.0012	0.0024	0.0042
Maximum angular acceleration		α	rad/s^2	5000	5000	5000	6500	6500	6500	14600	7500
Case volume		V	gal	0.045	0.045	0.045	0.053	0.053	0.053	0.087	0.119
			L	0.17	0.17	0.17	0.20	0.20	0.20	0.33	0.45
Mass (approx.)		m	lbs	12	12	12	21	21	21	30	40
			kg	5.4	5.4	5.4	9.5	9.5	9.5	13.5	18

Size		NG		63	80	90	107	125	160	180	250
Displacement geometric, per revolution		V_g	in^3	3.84	4.91	5.49	6.51	7.63	9.79	10.98	15.25
			cm^3	63	80.4	90	106.7	125	160.4	180	250
Speed maximum[1]		n_{nom}	rpm	5000	4500	4500	4000	4000	3600	3600	2700
		n_{max}[2]	rpm	5500	5000	5000	4400	4400	4000	4000	–
Input flow[3]			gpm	83.1	95.6	106.9	112.7	132.1	152.5	171.1	178
at n_{nom} and V_g		q_v	L/min	315	362	405	427	500	577	648	675
Torque[4]	Δp = 5100 psi	T	lb-ft	259	330	371	438	513	659	740	1030
at V_g and	Δp = 350 bar	T	Nm	351	448	501	594	696	893	1003	1393
	Δp = 5800 psi	T	lb-ft	296	378	423	501	587	753	845	–
	Δp = 400 bar	T	Nm	401	512	573	679	796	1021	1146	–
Rotary stiffness		c	kNm/rad	6.25	8.73	9.14	11.2	11.9	17.4	18.2	73.1
Moment of inertia for rotary group		J_{GR}	$lbs\text{-}ft^2$	0.0997	0.1708	0.1708	0.2753	0.2753	0.5221	0.5221	1.4475
			kgm^2	0.0042	0.0072	0.0072	0.0116	0.0116	0.0220	0.0220	0.061
Maximum angular acceleration		α	rad/s^2	7500	6000	6000	4500	4500	3500	3500	10000
Case volume		V	gal	0.119	0.145	0.145	0.211	0.211	0.291	0.291	0.660
			L	0.45	0.55	0.55	0.8	0.8	1.1	1.1	2.5
Mass (approx.)		m	lbs	40	51	51	71	71	99	99	161
			kg	18	23	23	32	32	45	45	73

1) The values are valid:
- for the optimum viscosity range from v_{opt} = 170 to 74 SUS (36 to 16 mm^2/s)
- with hydraulic fluid based on mineral oils

2) Intermittent maximum speed: overspeed for unload and over-hauling processes, t < 5 s and Δp < 2200 psi (150 bar)

3) Restriction of input flow with counterbalance valve, see page 32

4) Torque without radial force, with radial force see page 9

Note
Operation above the maximum values or below the minimum values may result in a loss of function, a reduced service life or in the destruction of the axial piston unit. Other permissible limit values, with respect to speed variation, reduced angular acceleration as a function of the frequency and the permissible start up angular acceleration (lower than the maximum angular acceleration) can be found in data sheet RE 90261.

Type code

01	02	03	04	05		06	07	08		09	10	11	12	13	14	15
	AA2F		M		/	6		W	–	V						

Hydraulic fluid

01	Mineral oil and HFD. HFD for sizes 250 to 1000 only in combination with long-life bearing “L“ (without code)		
	HFB-, HFC-hydraulic fluid	Sizes 10 to 180 (without code)	
		Size 250 (only in combination with long-life bearing “L”)	**E-**

Axial piston unit

02	Bent-axis design, fixed	**AA2F**

Drive shaft bearing

		10–180	250	
03	Standard bearing (without code)	●	●	
	Long-life bearing	–	●	**L**

Operating mode

04	Motor	**M**

Sizes (NG) [1]

05	Geometric displacement (see table of values)											
		10	**12**	**16**	**23**	**28**	**32**	**107**	**125**	**160**	**180**	**250**

Series

06		**6**

Index

07		size 10 to 180	**1**
		size 250	**0**

Direction of rotation

08	Viewed on drive shaft, bidirectional	**W**

Seal material

09	FKM (fluoroelastomer)	**V**

Drive shaft

			10	12	16	23	28	32	107	125	160	180	250	
10	Splined shaft SAE J744 (ANSI B92.1a)		●	●	●	●	●	●	●	●	●	●	●	**S**
			–	–	–	–	–	–	●	●	–	–	–	**U**
	Parallel keyed shaft DIN 6885		●	●	●	●	●	●	●	●	●	●	–	**B**
			●	●	–	●	●	–	●	–	●	–	–	**P**
	Parallel keyed shaft SAE		–	–	–	–	–	–	–	–	–	–	●	**K**

Mounting flange

			10–16	23–250	
11	SAE J744	2-hole	●	–	**C**
		4-hole	–	●	**D**

● = Available ○ = On request – = Not available

[1] Sizes 45, 56, 63, 80, 90 see data sheet 91071 (A2FM series 70)

01	02	03	04	05		06	07	08		09	10	11	12	13	14	15
	AA2F		M		/	6		W	–	V						

Working ports

				10-16	23	28-32	107-125	160-180	250	
12	SAE working ports **A** and **B** at rear	51	0	–	●	●	●	●	●	**510**
	SAE working ports **A** and **B** at side, opposite	52	0	–	●	●	●	●	●	**520**
			7	–	●	●	●	●	●	**527**
	Threaded ports **A** and **B** at side, opposite	53	0	●	●	●	–	–	–	**530**
	Threaded ports **A** and **B** side and rear[1]	54	0	–	●	●	–	–	–	**540**
	SAE working ports **A** and **B** at bottom	60	0	–	–	–	●	–	–	**600**
	Port plate with pressure relief valves for mounting a counterbalance valve[3] BVD	17	1	–	–	–	●	–	–	**171** **178**
		18	8	–	–	●	●	●	–	**181**
	BVE	18		–	–	–	○	○	–[2]	**188**
	Port plate with pressure relief valves[3]	19	1	–	–	●	●	●	–	**191**
			2	–	–	●	●	●	–	**192**

Valves

Without valve	**0**
Pressure-relief valves (without pressure boost facility)	**1**
Pressure-relief valves (with pressure boost facility)	**2**
Flushing and boost pressure valve mounted	**7**
Counterbalance valve BVD/BVE mounted[4]	**8**

Speed sensors

		10-16	23-32	107-125	160	180	250	
13	Without speed sensor (without code)	●	●	●	●	●	●	
	Prepared for HDD speed sensor	–	–	–	–	–	●	**F**
	HDD speed sensor mounted[5]	–	–	–	–	–	●	**H**
	Prepared for DSA speed sensor	–	●	●	●	●	–	**U**
	Speed sensor DSA mounted[5]	–	●	●	●	●	–	**V**

Special version (only sizes 28 to 180)

14	Standard version (without code)	
	Special version for slew drives (standard with 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 close	**–Y**
	Special version	**–S**

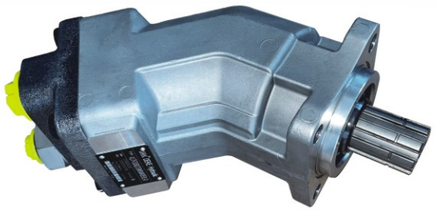
● = Available ○ = On request – = Not available

[1] Threaded ports at the sides plugged with threaded plugs.
[2] Please contact us.
[3] Threaded ports and fastening threads are metric
[4] Specify ordering code of counterbalance valve according to data sheet 95522 (BVD) respectively data sheet 95526 (BVE) separately.
[5] Specify ordering code of sensor according to data sheet 95133 (DSA) respectively data sheet 95135 (HDD) separately.

Notice

- Please note the project planning notes in chapter Project planning notes
- Please note that not all type code combinations are available although the individual functions are marked as being available

Axial piston fixed pump A17FO Series 10



Product Description:

- High-pressure pump for use in commercial vehicles
- Sizes 23 to 107
  Nominal pressure/maximum
- pressure 350/400 bar
- Bent-axis design
- Open circuit

Features:

- Flange and shaft designed for direct mounting on the power take-off of commercial vehicles
- Weight-optimized thanks to diecast aluminum housing.
- No case drain line necessary
- Reduced noise
- Straightforward adjustment of direction of drive
- Excellent suction performance
- High total efficiency
- Long service life

Technical Data

Size		NG		23	32	45	63	80	107
Displacement, geometric, per revolution		V_g	cm^3	22.9	32	45.6	63	80.4	106.7
Speed maximum[1]		n_{nom}[2]	rpm	3050	2750	2650	2200	2150	2000
		n_{max}[3]	rpm	4300	3900	3800	3200	3100	2800
Flow	at n_{nom}	q_v	l/min	70	88	121	139	173	213
Power	at n_{nom} and Δp = 350 bar	P	kW	41	51	71	81	101	124
Torque	at Δp = 350 bar	T	Nm	127	178	254	351	448	594
Rotary stiffness		c	kNm/rad	2.56	3.12	4.18	6.25	8.73	11.2
Moment of inertia for rotary group		J_{TW}	kgm^2	0.0012	0.0012	0.003	0.0042	0.0072	0.0116
Maximum angular acceleration		α	rad/s^2	6500	6500	14600	7500	6000	4500
Case volume		V	l	0.25	0.29	0.4	0.5	0.6	0.75
Mass moment		T_G	Nm	4.7	4.7	8.6	9.9	15.3	20
Mass (approx.)		m	kg	5.9	5.9	8.4	9.3	12.3	15.0

Ordering code

01	02	03		04	05	06	07	08	09	10		11
A17F	O		/	10	N	L	W	K0	E8	1	–	

Axial piston unit

01	Bent-axis design, fixed, nominal pressure 350 bar, maximum pressure 400 bar, for commercial vehicles (truck)	A17F

Operating mode

02	Pump, open circuit	O

Sizes (NG)

03	Geometric displacement, see table of values on page 5	023	032	045	063	080	107

Series

04	Series 1, index 0	10

Configuration of port and fastening threads

05	Metric, port threads with profiled sealing ring according to DIN 3852	N

Direction of rotation[1]

06	Viewed on drive shaft	counter-clockwise	L

Sealing material

07	FKM (fluor-caoutchouc) including the 2 shaft seal rings in FKM	W

Mounting flange

08	Special flange ISO 7653-1985 (for trucks)	K0

Drive shaft

09	Splined shaft similar to DIN ISO 14 (for trucks)	E8

Service line port

10	Threaded ports **A** and **S** at rear	1

Standard / special version

11	Standard version	0
	Special version	S

Hydraulic pump/motor

A4VSO Series Variable Displacement Piston Pumps



Product Description:

- A swash plate axial piston variable displacement pump designed for open-loop hydraulic drives.
- Pump flow is proportional to the pump speed and displacement, and the displacement can be infinitely adjusted by adjusting the swash plate angle.

Structural features:

- Excellent suction characteristics, allowing a nominal operating pressure of 35 MPa.
- The drive shaft can withstand both axial and radial loads.
- Stacked design, excellent power-to-weight ratio.
- Fast control response time and long service life.
- Through-shaft construction, allowing for combined pumps.
- Optional mounting position, with a swash plate angle indicator.
- Optional operation with HF fluids, but operating parameters are reduced.
- Versatile function control devices to meet system control requirements.

Performance Parameters:

- Displacement Series: 40, 71, 125, 180, 250, 300, 355, 500
- Nominal Pressure: 35 MPa; Peak Pressure: 40 MPa

Control Type:

- Constant Pressure Control: DR/DRG
- Pressure and Flow Control: DFR
  Constant Power Control: LR2
  Electronic Control: EO1/EO2
  Manual Control: MA

Applications:

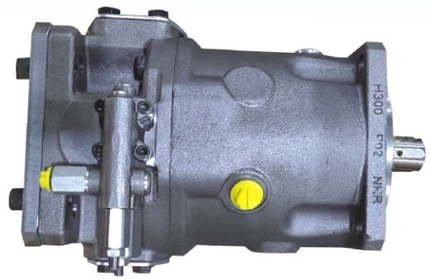
- Steel metallurgy and forging machines
- Ceramic and refractory hydraulic presses
  Shipbuilding and water conservancy and hydropower hoists
  Rubber vulcanizing presses and papermaking equipment
  Petrochemical, construction, and railway machinery

Table of values (theoretical values, without efficiency and tolerances; values rounded)

Size			40	70	80	125	180	250/H*	355/H*	250/H*
Displacement	V_{gmax}	cm^3	40	70	80	125	180	250/250	355/355	500/500
When inlet pressure P at port S is 0.1 MPa Maximum spee	n_{omax}	min^{-1}	2600	2200	2000	1800	1800	1500/1900	1500/1700	1320/1500
When inlet pressure P increases or displacement decreases Maximum speed (speed limit) when Vg < Vgmax	$n_{omax\ zul}$	min^{-1}	3200	2700	2500	2200	2100	1800/2100	1700/1900	1600/1800
Maximum flow At nmax	Q_{vomax}	L/min	104	156	160	225	324	374/475	533/604	660/750
At n = 1500 rpm		L/min	60	107	120	186	270	375	533	581[1]
Maximum power At nmax	P_{omax}	kW	61	91	93	131	189	219/277	311/352	385/437
(AP = 35 MPa) at n = 1500 rpm		kW	35	62	70	109	158	219	311	339[1]
Maximum torque (ΔP = 35 MPa)	T_{max}	Nm	223	395	445	696	1002	1391	976	2783
Torque (ΔP = 10 MPa)	T	Nm	64	113	127	199	286	398	564	795
Moment of inertia on drive shaft	J	kgm^2	0.0049	0.0121	0.0106	0.03	0.055	0.0959	0.19	0.3325
Casing volume		L	2	2.5	3	5	4	10	8	14
Approximate weight	m	kg	39	53	58	88	102	184	207	320
Maximum axial force	$\pm F_{axmax}$	N	600	800	900	1000	1400	1800	2000	2000
Maximum radial force	F_{qmax}	N	1000	1200	1300	1600	2000	2000	2200	2500

1) Vg < Vgmax H* = High-speed type

A10VSO Series Piston Pumps





Product Description: (32 Series)

- A10VSO axial piston variable displacement pump for hydrostatic transmissions in industrial open loops.
- A10VO axial piston variable displacement pump for hydrostatic transmissions in engineering open loops.
- Flow rate is proportional to transmission speed and displacement, and can be infinitely varied by adjusting the swash plate angle.

Structural Features:

- Excellent suction characteristics, support bearing hydraulic unloading, and a pressure sensor port at the pump outlet.
- Low noise, high efficiency, long life, and high-speed compatibility.
- Low pressure pulsation and fast control response time.
- Drive shaft can withstand axial and radial loads.
- High resistance to cavitation during sudden drops in suction pressure and case pressure peaks.
- Through-shaft design allows for combined pumps.

Applications:

- Construction machinery and light industrial equipment
- Steel, metallurgical, and mining machinery
- Marine and civil aviation ground equipment
- Petroleum and petrochemical machinery
- Construction and mobile machinery

Performance Parameters:

- Displacement Series: 45, 71, 100, 140, 180
- Nominal Pressure: 28 MPa; Peak Pressure: 35 MPa

Control Type:

- Constant Pressure Control (DR/DRG)
- Pressure and Flow Control (DFR/DRS)
- Constant Power Control (DFLR)
- Electronic Proportional Control (ED/ER)

Product Description: (31 Series)

- A10VSO axial variable displacement pump for hydrostatic transmissions in industrial open loops.
- A10VO axial piston variable displacement pump for hydrostatic transmissions in engineering open loops.
- Flow rate is proportional to transmission speed and displacement, and flow rate can be continuously varied by adjusting the swash plate angle.

Product Description:

- Excellent oil suction characteristics.
- Permits continuous operating pressure up to 28 MPa.
- Drive shaft can withstand axial and radial loads.
- Fast control response time, low noise, and long life.
- Through-shaft construction allows for combined pumps.
- Ideal power-to-weight ratio and multiple control modes.

Applications:

- Steel, metallurgical, and mining machinery
- Construction machinery and light industrial equipment
- Marine and civil aviation ground equipment
- Petroleum and petrochemical machinery
- Construction and mobile machinery

Performance Parameters:

- Displacement Series: 10, 18, 28, 45, 71, 100, 140
- Nominal Pressure: 28 MPa; Peak Pressure: 32 MPa

Control Type:

- Constant Pressure Control (DR/DRG)
- Pressure and Flow Control (DFR)
- Constant Power Control (DFLR)
- Electronic Proportional Control (EP)

Hydraulic pump/motor

Technical Data (A10VSO Open Loop Swash Plate Axial Piston Variable Displacement Pump Series 32):

◆ **Technical Data** □ **Standard Kit, Type E, Suitable for Mineral Oil Operation**

Table of values (theoretical values)

Sizes				45	71	100	140	180
Displacement	$V_{g\ max}$ cm^3			45	71	100	140	180
Max speed	n_{max} rpm			1800	1800	1800	1800	1800
Max. flow	in n_{max}	q_v	L/min	81	128	180	252	324
	in 1500 r/min			67.5	106.5	150	210	270
(Δp=280bar) Max. power	in n_{max}	P_{max}	kW	38	59.7	84	118	151
	in 1500 r/min			31	50	70	98	125
(Δp=280bar) Max. torque	in $V_{g\ max}$	Tmax	Nm	200	317	446	624	802
Weight		m	Kg	30	47	69	73	78

Technical Data (A10VSO Open Loop Swash Plate Axial Piston Variable Displacement Pump Series 31):

◆ **Values (theoretical values, not taking into account coefficients and tolerances; approximate values):**

Maximum permissible pressure of leakage fiuid at port t.t,:vaximum 0.s bar higher than the imlet pressure at port s, but nohigher than 2 baabsolute.

Sizes				18	28	45	71	100	140
Displacement	$V_{g\ max}$ cm^3			18	28	45	71	100	140
Max speed	n_{max} rpm			3300	3000	2600	2200	2000	1800
Max. flow	in n_{max}	q_v	L/min	59.4	84	117	156	200	252
	in 1500 r/min			27	42	68	107	150	210
(Δp=280bar) Max. power	in n_{max}	P_{max}	kW	27.7	39	55	73	93	118
	in 1500 r/min			12.6	20	32	50	70	98
(Δp=280bar) Max. torque	in $V_{g\ max}$	Tmax	Nm	80.1	125	200	316	445	623
Weight		m	Kg	12	15	21	33	45	60

◆ **Notes:**

1) Values apply:
a. Absolute pressure Pabs at suction port S is 1 bar;
b. Optimal viscosity range: Vopt = 16-36 mm²/s
c. Mineral-based hydraulic fluid is used.

2) Application range: Within the required minimum transmission speed and the maximum permissible transmission speed.
a) Valid for external excitation (e.g., 2 to 8 times the rotational frequency of a diesel engine, 2 times the rotational frequency of a universal joint shaft).
b) Limit values apply only to single-stage pumps.
c) The load capacity of connected components must be considered.

◆ **Notes:**

□ Exceeding the maximum allowable values or falling below the minimum allowable values may result in loss of functionality, shortened service life, or complete damage to the axial piston pump.
□ It is recommended to check the load by testing or calculating/simulating and comparing it to the allowable values.

Axial piston variable pump A11V(L)O series 1x



Product Description:

- All-purpose high pressure pump
- Size 40 to 260
- Nominal pressure 350 bar
- Maximum pressure 400 bar
- Open circui

Structural 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

Without charge pump (A11VO)

Size		NG		40	60	75	95	130	145	190	260
Geometric displacement, per revolution		$V_{g\,max}$	cm³	42.0	58.5	74.0	93.5	130.0	145.0	193.0	260.0
		$V_{g\,min}$	cm³	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}	kgm²	0.0048	0.0082	0.0115	0.0173	0.0318	0.0341	0.055	0.0878
Maximum angular acceleration [4]		α	rad/s²	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

With charge pump (A11VLO)

Size		NG		130	145	190	260
Geometric displacement, per revolution		$V_{g\,max}$	cm³	130.0	145.0	193.0	260.0
		$V_{g\,min}$	cm³	0	0	0	0
Maximum rotational speed	at $V_{g\,max}$ [2]	n_{nom}	rpm	2500	2500	2500	2300
	at $V_g \le V_{g\,max}$	n_{max}	rpm	2500	2500	2500	2300
Flow	at n_{nom} and $V_{g\,max}$	q_v	l/min	325	363	483	598
Power	at n_{nom}, $V_{g\,max}$ and Δp = 350 bar	P	kW	190	211	281	349
Torque	at $V_{g\,max}$ and Δp = 350 bar [2]	M	Nm	724	808	1075	1448
Rotary stiffness drive shaft	Z	c	kNm/rad	302.5	302.5	346.2	686.5
	P	c	kNm/rad	312.4	312.4	383.3	653.8
	S	c	kNm/rad	236.9	236.9	259.8	352.0
	T	c	kNm/rad	–	–	301.9	567.1
Moment of inertia of the rotary group		J_{TW}	kgm²	0.0337	0.036	0.0577	0.0895
Maximum angular acceleration [4]		α	rad/s²	10500	9000	6800	4800
Case volume		V	L	2.9	2.9	3.8	4.6
Weight (without through-drive) approx.		m	kg	72	73	104	138

1) The values apply for an absolute pressure ($p_{absolute}$) of 1 bar at suction port **S** and for operation with mineral operating fluid.
2) The values apply for an absolute pressure ($p_{absolute}$) of at least 0.8 bar at suction port **S** and for operation with mineral operating fluid.
3) The values apply at $V_g \le V_{g\,max}$ or when the inlet pressure ($p_{absolute}$) is increased at the suction port **S** (see diagram "Maximum permissible rotational speed" page 9)
4) The scope of application lies between 0 and the maximum permissible rotational speed. It applies for external stimuli (e.g. diesel engine 2 to 8 times rotary frequency, cardan shaft 2 times rotary frequency). The limit value is only valid for a single pump. The load capacity of the connection parts must be considered.
5) Higher rotational speed possible with special version after consultation.

Type code

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

Axial piston unit

			40	60	75	95	130	145	190	260	
01	Swashplate design, variable, nominal pressure 350 bar, maximum pressure 400 bar										A11V
Operating mode											
02	Pump, open circuit	without charge pump	●	●	●	●	●	●	●	●	O
		with charge pump	–	–	–	–	●	●	●	●	LO
Size (NG)											
03	Geometric displacement, see technical data on page 8		40	60	75	95	130	145	190	260	
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
		pilot-pressure related, 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
		positive control, U = 24 V, 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
		positive control, with pressure cut-off, Δp = 25 bar	●	●	●	●	●	●	●	●	HD2D
	Electrical control with proportional solenoid	positive control, U = 24 V	●	●	●	●	●	●	●	●	EP2
		positive control, with manual override and spring return	○	○	○	○	○	○	○	○	EP6
		positive control, with pressure cut-off	●	●	●	●	●	●	●	●	EP2D
		positive control, with pressure cut-off, hydraulic remote controlled	●	●	●	●	●	●	●	●	EP2G
		with pressure cut-off, electric remote controlled, negative control	–	–	–	●	●	●	●	●	EP2G2
		with pressure cut-off, electric remote controlled, positive control	–	–	–	●	●	●	●	●	EP2G4

● = Available ○ = On request – = Not available

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

Series

05		1

Index

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

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	●	●	●[3]	●[3]	●[3]	●	●	●	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

● = Available ○ = On request – = Not available

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

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

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

● = Available ○ = On request – = Not available