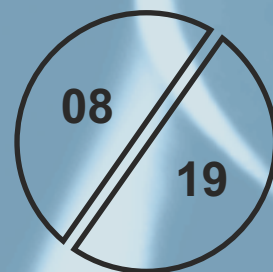


Quality Products for Mechanical
& Fluid Power



ALP Series External Gear Pumps

Groups 1, 2, 3 & 4



GEAR PUMPS



an excellence in engineering

www.jbj.co.uk/pumpsandmotors.html

Reduce noise levels by an average of 15 dBA.

Including group 2, 3 and multiple pumps. The helical profile of the gears reduces pressure oscillations and vibrations produced by the pump and transmitted to the other components, reducing the noise of the hydraulic system. Axial forces induced by the helical teeth are optimally balanced in all operating conditions by the axial compensation system integrated in the pump cover. Specific compensation areas into flange and cover, insulated by special gaskets reinforced with anti-extrusion, allow for fully free axial and radial movement of the bushings, which is proportional to pump operating pressure. In this way, internal leakage is dramatically reduced, ensuring very good volumetric and mechanical pump performances, as well as proper lubrication of pump's moving parts.

Gear pump high pressure, teflon shaft seal can bear over-pressures of over 210 bar. A system of radial sealing at the shaft that can bear enormous internal over-pressures without resulting in damage. This radial sealing is particularly useful in single direction hydraulic motors when, in certain conditions of use, high over-pressures will be generated at the motor output. With bi-directional motors, the area adjacent to the seal ring of the drive-shaft is maintained at atmospheric pressure by the drainage circuit. In single-direction motors, this area is directly connected to the output so any over-pressure impacts directly on the seal ring, causing the lip to turn over or the ring to be expelled from its seat with a consequent leakage of fluid. The Teflon (P450) material adapts evenly to the texture of the machining on the shaft to guarantee a perfect seal.

Allow close coupling of hydraulic pumps directly to the flywheel / flywheel housing of diesel engines, electric and hydraulic motors.

www.jbj.co.uk/hydraulic-adaptors.html

The package consists of a bellhousing and flexible drive coupling that are fully machined to suit the pump and any driving interface; diesel or petrol engine, electric or hydraulic motor.

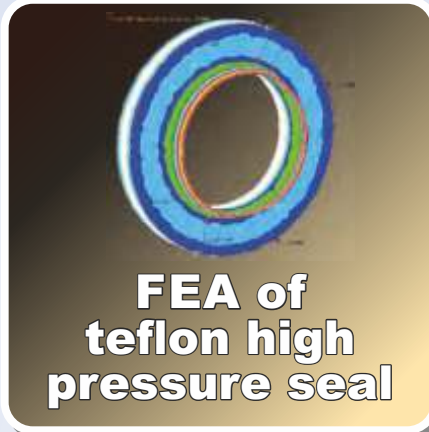
jbj's in-house design team and manufacturing facility provide tailored solutions for your applications at competitive prices with quick delivery.

A range of composite bell housings to accommodate electric motor flanges from 300 mm diameter to 800 mm diameter. See pages 40 to 44 of the Pump Drive Components technical specification catalogue.

A collection of different ways of connecting hydraulic pumps and motors to various driver devices.



Low noise, low pulsation helical gear pumps in group II, III & multiple formats



FEA of teflon high pressure seal



quality products for mechanical & fluid power



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A range of products ATEX certified to directive 94/9/E requirements





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	Displacement	P1 Max. continuous pressure	P2 Max. intermittent pressure	P3 Maximum peak pressure	Maximum speed	Maximum drain line pressure
Group 0.25	from 0.19 to 0.64 cm ³ /rev.	190 bar	210 bar	230 bar	7000 rpm	-
0.25 RO	from 0.19 to 0.64 cm ³ /rev.	230 bar	250 bar	270 bar	7000 rpm	-
Group 0.50	from 0.50 to 1.50 cm ³ /rev.	190 bar	210 bar	230 bar	4000 to 7000 rpm	-
0.50 RO	from 0.50 to 1.25 cm ³ /rev.	230 bar	250 bar	270 bar	5000 to 7000 rpm	-
Group 1P	from 1.1 to 8 cm ³ /rev.	160 to 230 bar	190 to 250 bar	200 to 270 bar	2100 to 6000 rpm	-
Group ALP1	from 1.4 to 13.8 cm ³ /rev.	150 to 250 bar	165 to 270 bar	180 to 290 bar	1800 to 6000 rpm	-
Group ALP2	from 4.5 to 35.2 cm ³ /rev.	140 to 250 bar	155 to 270 bar	170 to 290 bar	2500 to 4000 rpm	-
Group ALP3	from 20 to 87 cm ³ /rev.	140 to 230 bar	155 to 250 bar	170 to 270 bar	2000 to 3500 rpm	-
Group ALP4	from 87 to 200 cm ³ /rev.	130 to 240 bar	140 to 260 bar	150 to 280 bar	2400 to 2800 rpm	-
Group GHP1	from 1.4 to 13.8 cm ³ /rev.	190 to 270 bar	195 to 290 bar	210 to 310 bar	1800 to 6000 rpm	-
Group GHP2	from 4.5 to 35.2 cm ³ /rev.	160 to 280 bar	175 to 295 bar	190 to 310 bar	2500 to 4000 rpm	-
Group GHP3	from 20 to 87 cm ³ /rev.	160 to 280 bar	175 to 295 bar	190 to 310 bar	2000 to 3500 rpm	-
Group ALP/GHP1 Modular	from 1.4 to 13.8 cm ³ /rev.	150 to 270 bar	165 to 290 bar	180 to 310 bar	1800 to 6000 rpm	-
Group ALP/GHP2 Modular	from 4.5 to 35.2 cm ³ /rev.	140 to 280 bar	155 to 295 bar	170 to 310 bar	2500 to 4000 rpm	-
Group ALP/GHP3 Modular	from 20 to 87 cm ³ /rev.	140 to 280 bar	155 to 295 bar	170 to 310 bar	2000 to 3500 rpm	-
Group ALP4 Modular	from 87 to 200 cm ³ /rev.	130 to 240 bar	140 to 260 bar	150 to 280 bar	2400 to 2800 rpm	-
	Displacement	P1 Max. continuous inlet pressure	PC Max. continuous outlet pressure	PP Max. peak inlet pressure	Maximum speed	Maximum drain line pressure
Group ALM1 Uni-directional	from 2.8 to 11 cm ³ /rev.	170 to 250 bar	160 to 240 bar	185 to 270 bar	2200 to 5000 rpm	-
Group ALM1 Bi-directional	from 2.8 to 11 cm ³ /rev.	170 to 250 bar	160 to 240 bar	185 to 270 bar	2200 to 5000 rpm	6 bar
Group ALM2 Uni-directional	from 4.5 to 28.2 cm ³ /rev.	170 to 250 bar	160 to 240 bar	185 to 270 bar	2500 to 4000 rpm	-
Group ALM2 Bi-directional	from 4.5 to 28.2 cm ³ /rev.	170 to 250 bar	160 to 240 bar	185 to 270 bar	2500 to 4000 rpm	6 bar
Group ALM3 Uni-directional	from 22 to 87 cm ³ /rev.	140 to 230 bar	130 to 220 bar	155 to 250 bar	2000 to 3500 rpm	-
Group ALM3 Bi-directional	from 22 to 87 cm ³ /rev.	140 to 230 bar	130 to 220 bar	155 to 250 bar	2000 to 3500 rpm	6 bar
Group GHM1 Uni-directional	from 2.8 to 11 cm ³ /rev.	200 to 270 bar	190 to 260 bar	215 to 290 bar	2200 to 5000 rpm	-
Group GHM1 Bi-directional	from 2.8 to 11 cm ³ /rev.	200 to 270 bar	190 to 260 bar	215 to 290 bar	2200 to 5000 rpm	6 bar
Group GHM2 Uni-directional	from 4.5 to 28.2 cm ³ /rev.	200 to 280 bar	190 to 270 bar	215 to 295 bar	2500 to 4000 rpm	-
Group GHM2 Bi-directional	from 4.5 to 28.2 cm ³ /rev.	200 to 280 bar	190 to 270 bar	215 to 295 bar	2500 to 4000 rpm	6 bar
Group GHM3 Uni-directional	from 22 to 87 cm ³ /rev.	160 to 280 bar	150 to 270 bar	175 to 295 bar	2000 to 3500 rpm	-
Group GHM3 Bi-directional	from 22 to 87 cm ³ /rev.	160 to 280 bar	150 to 270 bar	175 to 295 bar	2000 to 3500 rpm	6 bar
	First stage small displacement. High pressure.	Second stage large displacement. Low pressure.	Unloading valve.	Ports.	RPM range.	Flange and shafts.
Group HL	from 1.1 to 8.3 cm ³ /rev. P1 = up to 250 bar.	from 3.7 to 35.2 cm ³ /rev. (pressure set by unloading valve).	Standard setting from 30 to 50 bar, special settings on request	Common inlet. Common outlet. Side ports code FG, FA, D	1000 rpm to 3500 rpm	According to the HL pump type
	Displacement			Ports.	RPM range.	Flange and shafts.
Group ALPC/GHPC	from 1.4 to 35.2 cm ³ /rev. Max. pressure 270 bar.			Common inlet (option). Side ports code E; EP; FG; FC; FA; D (according to the pump type); Rear ports KA (only group 2)	1000 rpm to 4000 rpm	According to the HL pump type



www.jbj.co.uk/gearpumps.html



0.25 - 0.5 Series Micro Gear Pumps

Extensive range and very high performance of these pumps integrated in to micro power packs make them ideal for many applications from aerospace to marine, medical to automotive.



1P Series Gear Pumps

High production rates, performance consistency and absolute reliability ensure this a benchmark product for the hydraulic power pack market.



ALP Series Gear Pumps

This product range includes pumps of displacements (up to 200cc/rev) in a full aluminium configuration, able to withstand medium to high pressures and using different versions of flanges (European, German and SAE), porting and shafts. Mono-directional as well as reversible.



GHP Series Gear Pumps

The GHP series offer identical configurations to the ALP series and guarantees extreme reliability in very high pressure applications. Ideal for mobile applications from agricultural to construction machines as the cast iron allows more flange, cover and port options.



ALP/GHP Series Multiple Modular Gear Pumps

Modularity and flexibility are the characteristics of these pumps. They allow the assembly of pump modules of the ALP and GHP (from 0.25 to 4) enabling solutions to a wide range of application requirements.



ALM Series Gear Motors

For medium to high pressure rates the ALM series is ideal for mobile and industrial sectors. Mono-directional and bi-directional with internal and external drain available.



GHM Series Gear Motors

The GHM series offer identical configurations to the ALM series but more robust thanks to the cast iron front flange and rear cover.



High/Low 2-Pass Gear Pumps

Ideal pump for applications which require a fast approach and/or return of the actuator at low loads and slow motion of the actuator at high loads. e.g. log splitters, compactors & presses. Volumetric and mechanical efficiencies as well as low noise levels are further benefits of this range.



ALPC/GHPC Series Short Multiple Gear Pumps

For reduced axial layout. Available with both flanges and covers in aluminium or cast iron.



ELIKA®
The low noise,
low pulsation
helical
gear pump.
Groups 2, 3, 4
and multiple
pumps.



Reduces the noise level by up to 20 dBA.

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High Pressure Gear Pumps

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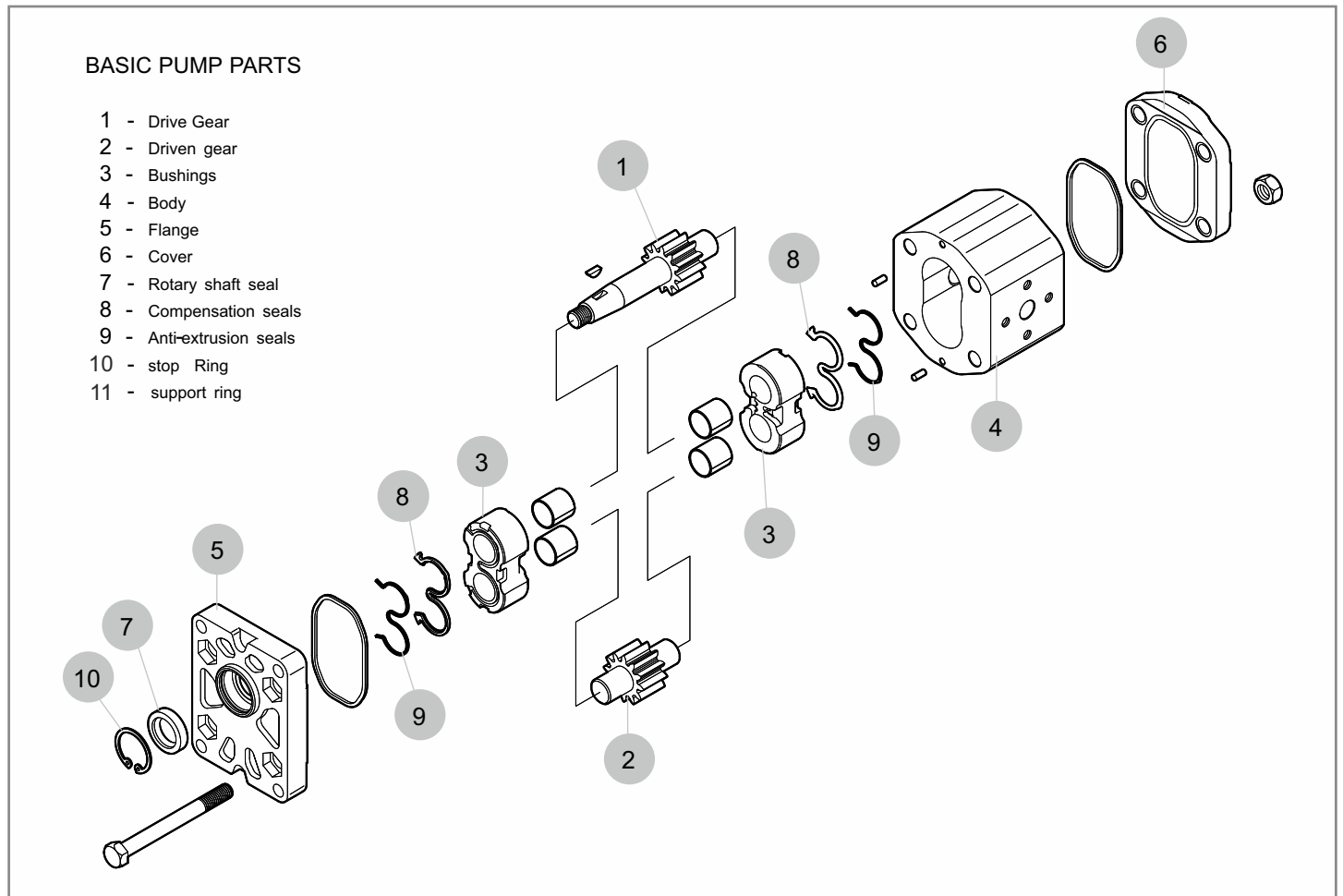


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External gear pumps are the most popular pumps used in modern hydraulic systems. They feature versatility, strength and long useful life. Their simple construction ensures limited purchase costs and servicing.

Thanks to these basic concepts, together with ever improving product design and features, research based on many years of experience, accuracy in material selection, production process followed in great detail and tests on mass-produced parts, our gear pumps have reached top quality standards. For this reason, our products can work under heavy duty operating conditions and transmit high hydraulic power. Furthermore, these hydraulic gear pumps feature good hydraulic, mechanical and volumetric efficiency, low noise level and, last but not least, compact dimensions and low weight/power ratio.

Marzocchi Pompe has further developed its own range of products with a new series of pumps named ALP where groups named ALP1, ALP2, ALP3 and ALP4 are suitable for the widest range of application, both in the industrial and the mobile sector.

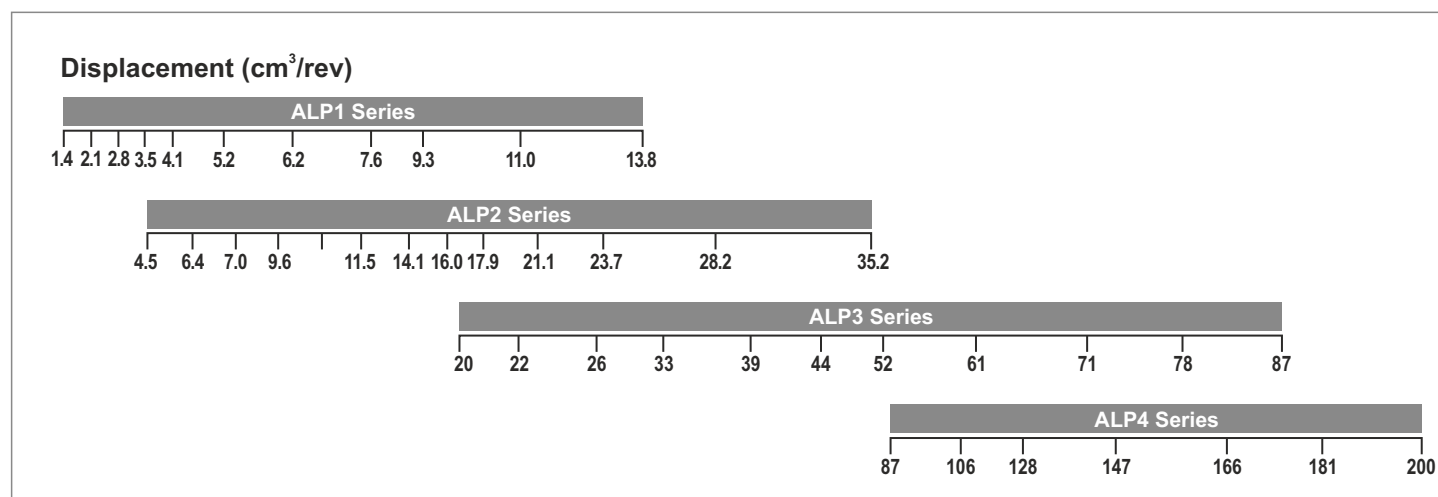
Generally these gear pumps usually consist of a gear pair supported by two aluminum bushes, a body, a securing flange and a cover. Shaft of the driving gear projecting beyond the flange mounts a twin-lip seal ring (the inner lip being a seal and the outer being a dust seal). An elastic securing ring secures the ring in place.

Pump body, flange and cover are made of special hi-resistant aluminum alloys for minimized deformation even when subject to high pressure, be it continuous or intermittent or peak pressure. The body is profiled by means of extrusion, whereas flange and cover are obtained by means of die-casting or gravity casting. Gears are made of special steel. Their manufacturing process includes case-hardening and quench hardening. Then gears are ground and fine finished so to have a high degree of surface finishing. Proper tooth profile design and geometric proportions ensure low pulsation levels and low noise levels during pump operation. Bushings are made of special low-friction and hi-resistant aluminum alloy and manufactured from die-casting. They are equipped with antifriction DU bearings (except for ALP1 pumps). Special compensation zones onto bushings, insulated by special preformed seals with anti-extrusion ring, allow fully free axial and radial movement to the bushings, which is proportional to pump operating pressure. In this way, internal dripping is dramatically reduced, thus ensuring very good pump performance (both in terms of volume and in general) and proper lubrication of pump moving parts.



Bi-directional motors.

Produced in three different groups with very good power/weight ratio and power/size ratio allowing a wide range of displacements within each group (between 1.4 and 87 cc/rev). The wide range of speeds, the excellent functionality, also when used in series, with strong counter-pressures and limited drain, give the GHP series pumps very good characteristics even starting under load. A range of flanges, shafts, inlet and pressure ports are available. Reversible pumps and pumps with independent driving systems are also available.



Special Versions

For special uses are also available:

"V" Version suitable for fluid at high temperatures.

Range between -10°C and +120°C. In the range between -10°C and +80°C maximum pressures as stated in the individual product tables are allowed; beside that figures in the 'P1' column of the tables should not be exceeded.

"VV" Version suitable for fluid at high temperatures.

Range between -10°C and +150°C with maximum pressure 20 bar

"ST" Version suitable for fluid at high or low temperature.

Range between -40°C and +120°C. In the range between -10 °C and +80°C maximum pressures as stated in the individual product table; below and beside that figures in the 'P1' column of the tables should not be exceeded.

"H" Version suitable for fluid at low temperature.

Range between -40°C and +80°C. In the range between -10 °C and +80°C maximum pressures as stated in the product table; below that figures in the 'P1' column of the tables should not be exceeded.

"TR" Version suitable for inlet pressure up to max. 6 bar absolute.

The above descriptions are to be specified in the SEAL field of the ordering code.

Contact jbj Techniques technical office for assistance in selection of correct pump for your application, telephone: +44 (0)1737 767493, email: info@jbj.co.uk



It is essential for correct running, top performance and longer life of the ALP series hydraulic gear pumps to follow the installation and running information provided in this catalogue.

Some general considerations should be made regarding the hydraulic system, in which the pump is to be fitted. Special attention should be given to hydraulic system design and assembly, especially to intake, delivery, return and drain pipes and position of system parts (valves, filters, tanks, heat exchangers and accumulators).

Proper safety devices and reliable instruments to avoid fluid turbulence and prevent air, water or foreign bodies from entering into the system are of major importance. It is also very important to equip the hydraulic system with a proper filtering unit.

Installation Notes

Before starting the system on a continuous basis, we suggest to adopt some simple precautions.

In the case of a mono-directional motor check for the direction of rotation of the pump to be consistent with the drive shaft (in case of single rotation pump).

Check for the proper alignment of pump shaft and motor shaft. It is necessary that the connection does not induce axial or radial loads.

Protect drive shaft seal during pump painting. Check if contact area between seal ring and shaft is clean: dust could cause quicker wear and leakage.

Remove all dirt, particles and all foreign bodies from flanges connecting inlet and delivery ports.

Ensure that intake and return pipes ends are always below fluid level and as far from each other as possible.

Install the pump below head if possible.

Fill the pump with fluid, and turn it by hand.

Disconnect pump drain during startup to bleed air off the circuit.

At first startup, set pressure limiting valves at min. value possible.

Avoid lower rotation speed than min. allowed with pressure higher than P1.

Do not start the system at low temperatures under load conditions or after long stops (always avoid or limit load starting for pump longer life).

Start the system for a few minutes and turn on all components; bleed air off the circuit to check its proper filling.

Check fluid level in the tank after loading all components.

At last, gradually increase pressure, continuously check fluid and moving parts temperature, check rotation speed until you reach set operating values that shall be within the limits indicated in this catalogue.

Cleaning And Filtering The System

It is widely known that most pump early failures are due to contaminated fluids. The extreme reduction of the tolerances required in the design of the pumps, and therefore their operation with minimum clearances, are heavily influenced by a fluid that is not perfectly clean. It is proved that particles circulating in the fluid act as abrasive agents, damaging the surfaces they touch and increasing the quantity of contaminant.

For this reason, ensure that system is perfectly clean during startup and keep it clean for its whole operating life.

Regular checks should be made for contamination of the oil. Preventive actions include: proper cleaning of the system during assembly, deburring, eliminating the welding scum and fluid filtering before filling up.

Starting contamination level of system fluid should not exceed class 18/15 (ref. ISO 4406). Even fresh fluids might exceed this contamination level; therefore



always pre-filter the fluid when filling up or topping up the system. Fit a proper tank; its capacity should be proportional to the volume displaced in one working minute.

Fluid contamination levels should be monitored by use of correct filter types. Two parameters tell which filter is most suitable: absolute filtering power and β filtering ratio. Low absolute filtering power and high β filtering ratio for small particles help ensuring good filtration.

It is then very important to limit not only the size of particulate, but also the number of smaller particles that pass through the filter. It goes without saying that with an operating pressure increase and according to the system sophistication degree, filtering should become more and more efficient.

The filtering system shall always ensure contamination levels not exceeding the values indicated below:

Pressure	<140 bar	140 to 210 bar	>210 bar
NAS 1638 Class	10	9	8
ISO 4406 Class	19/16	18/15	17/14
Ratio $\beta_x = 75$	25-40 μm	12-15 μm	6-12 μm

It is recommended to use a filtering system having absolute filtering capability of 5 μm or lower in the systems using sophisticated valve slaves.

Hydraulic Fluids

Use specific mineral oil based hydraulic fluids of good anti-wear, anti-foaming (rapid deaeration), antioxidant, anti-corrosion and lubricating properties. Fluids should also comply with DIN 51525 and VDMA 24317 standards and compliant with 11th stage of FZG test.

For the standard models, the temperature of the fluid should be between -10°C and +80°C.

Fluid kinematic viscosity ranges are of following:

allowed value (upon verification)	6 to 500 cSt
recommended value	10 to 100 cSt
value allowed at startup	<2000 cSt

If fluids other than the above mentioned type are used, please always indicate type of used fluid and operating conditions so that jbj Techniques technical office can advise of possible problems with compatibility or useful life of system parts.

Inlet Pressure

Under standard working conditions, intake pipe pressure is lower than atmospheric pressure. The operating inlet pressure should range between 0.7 and 3 bars (absolute).

Min. Rotation Speed

The versatility of the ALP series pumps is seen from the wide range of rotation speeds they can be subject to: maximum values are indicated in product tables and change according to the model, while minimum values are as follows:

Group	ALP1										
Size	2	3	4	5	6	7	9	11	13	16	20
Min. Speed (rpm)	800										

Group	ALP2												
Size	6	9	10	12	13	16	20	22	25	30	34	37	40
Min. Speed (rpm)	800			600					500				

Group	ALP3											
Size	30	33	40	50	60	66	80	94	110	120	135	
Min. Speed (rpm)	500						400					

Group	ALP4						
Size	130	160	190	220	250	270	300
Min. Speed (rpm)	400						

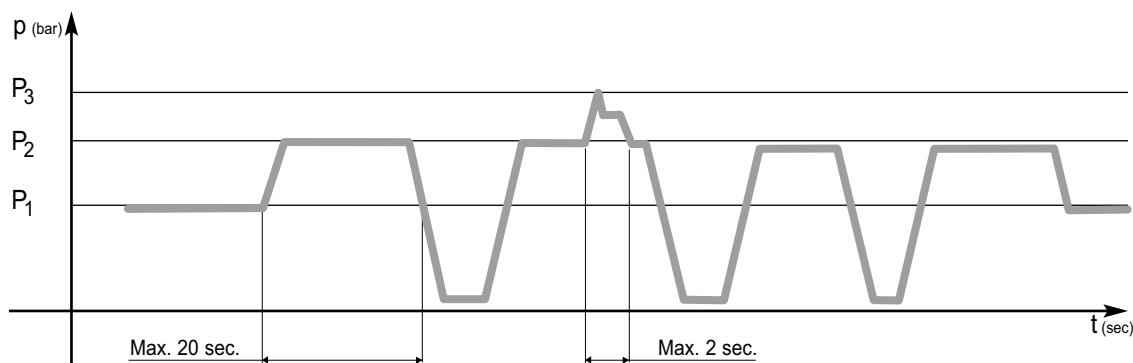
Pressure Definition

Product tables show three max. pressure levels (P1, P2 and P3) to which each pump can be used.

P3 = peak max pressure.

P2 = intermittent max. pressure.

P1 = continuous max. pressure.



Pressure diagram as a function of time. P1, P2 and P3 values can be attained only if system does not go over the following rotation speeds:

Group	ALP1											
Size	2	3	4	5	6	7	9	11	13	16	20	
Speed (rpm)	4000		3500		2500							1500

Group	ALP2													
Size	6	9	10	12	13	16	20	22	25	30	34	37	40	50
Speed (rpm)	3000			2500						2000				

Group	ALP3											
Size	30	33	40	50	60	66	80	94	110	120	135	
Speed (rpm)	2500		2000									

Group	ALP4							
Size	130	160	190	220	250	270	300	
Speed (rpm)	2000		1500					

Please contact jbj Techniques technical department, email: info@jbj.co.uk or telephone: +44 (0)1737 767493 for system operating conditions other than indicated in the product tables.

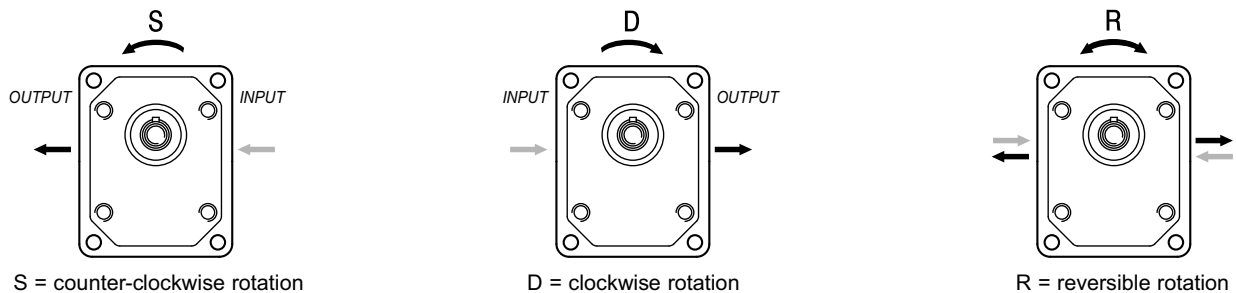
Supply & Delivery Lines

Hydraulic system pipes should show no sudden changes of direction, sharp bends and sudden differences in cross-section. They should not be too long or out of proportion. Pipe cross-section should be sized so that fluid velocity does not exceed recommended values. It is advisable to carefully consider the possible diameter reduction of the inlet or outlet pipes fitted on flange fittings. Reference values are the following:

Intake line	0.5 to 1.66 m/s
Delivery line	2 to 6 m/s
Return line	1.6 to 3 m/s

Direction of Rotation

The ALP series gear pumps are available as single rotation and bi-rotational. The direction of rotation is defined in the following way: looking at the front of the pump with the driver shaft positioned upward and sticking toward the observer, it will be a mono-directional right "D". ALP...D pump therefore with right. "D" rotation, if its rotation will be clockwise and therefore the inlet port will be on the left while the outlet port will be on the right. Vice-versa it will be a mono-directional left ALP...S therefore with left "S" rotation when looking at it from the same angle..



The bi-directional GHP series pumps, "R" have both functional characteristics of the mono-directional motors with clockwise and counterclockwise rotation.

Drive

Connect the pump to the motor using a mechanical power transmission coupling so that no radial and/or axial force is transmitted to the pump shaft during rotation, otherwise pump efficiency will dramatically drop due to early wear of inner moving parts. jbj Techniques have a wide range of suitable couplings to suit a wide range of applications and we can advise on which coupling depending on the circumstances of the application.

In case of driving through gears, pulleys or chains, the T option is recommended. This option allow radial and/or axial loads on the pump shaft.

For further details contact jbj Techniques technical office, email: info@jbj.co.uk or telephone: +44 (0)1737 767493

Frequently Used Formulas

Fluid velocity

Calculate the velocity (v) of a fluid in a pipe as follows:

$$v = Q / 6 \cdot A \text{ [m/s]}$$

Q = flow rate [litre/min]

A = inside area of pipe [cm²]

Absorbed flow rate

Calculate flow rate (Q) as follows:

$$Q = V \cdot n \cdot 10^{-3} / \text{hvol} \text{ [litre/min]}$$

V = displacement [cm³/rotation]

n = rotation speed [rotations per minute]

hvol = pump volumetric efficiency (take 0.95 as an indicative value for rotation speeds ranging between 1000 and 2000 rotations per minute)

Absorbed torque

Calculate necessary torque (M) of a pump subject to pressure differential between inlet and delivery as follows:

$$M = (V \cdot Dp) / (62.8 \cdot \text{hhm}) \text{ [Nm]}$$

V = displacement [cm³/rotation]

Dp = pressure differential [bar]

hhm = hydromechanical efficiency (take 0.80 as indicative value under cold conditions and 0.85 under working conditions).



Absorbed power

Calculate hydraulic power (P), transferred to fluid from a pump subject to a pressure differential between inlet and delivery as follows:

$$P = (Q \cdot D_p) / (600 \cdot h_{tot}) \text{ [kW]}$$

Q = flow rate [litre/min.]

D_p = pressure differential [bar]

h_{tot} = total pump efficiency (h_{hm} • h_{vol})

Values for h_{vol} and h_{hm} (and consequently h_{tot}) depend on pressure differential between supply and delivery, rotation speed, fluid features (temperature and viscosity) and filtering degree.

Contact jbj Techniques technical office, email: info@jbj.co.uk or telephone: +44 (0)1737 767493 for further details on efficiency. The proper values for flow rate, torque and supplied according to pressure differential, rotation speed and set test conditions, can be found on the **Performance Curve** pages.

These pumps are hydraulic machines converting mechanical power into hydraulic power. This section deals with rotary positive-displacement pumps. In this type of pump, a given volume of fluid flows from inlet to outlet at each shaft rotation (theoretical displacement). Pressure depends on delivery line resistance to fluid flow. As gear pumps only transfer fluid, they are subject to pressure generated by the circuit. Therefore, if system flow rate and motor rotation speed are known, it is easy to select the right pump displacement and its model.

The diagram indicating flow rate variations according to speed and pressure, shows that not all the theoretically available fluid is transferred from inlet to outlet because of pump internal leakage. Leakage can be greatly reduced through pressure axial compensating systems (as described at the beginning of this catalogue) but never eliminated. Leakage increases as circuit pressure increases.

A pump requires energy, just like any other hydraulic machine. Part of this power is given to the fluid to increase pressure required by the circuit, the remaining part is used to cure pump internal friction. Therefore, for proper pump operation, supplied torque shall be higher than theoretical torque.

The following diagrams show, for each single displacement, the typical required power as a function of rotation speed and pressure generated by the system and allow you to easily spot the product suitable for your application.

Once the pump flow rate has been selected, different flanges, shafts, inlet and outlet port position and type are available to suit most applications. In the product tables, the flow, shown at 1500 rpm, has been evaluated using a value of volumetric efficiency of 95%. All the drawings represent pumps with clockwise rotation. Reversing the direction of rotation also involves reversing of the suction side with the delivery side ports.



Ordering Code

ALP1	Type	Rotation	Size	Shaft*	Ports*	Seals*	Options*	Drain**
	omit	D Clockwise	2			Seals omit (T range = -10°C + 80°C) V ...		
	A	S Counter Clockwise	3				Options TR ...	
		R Reversible	4					
			5					
			6					
			7					
			9					
			11					
			13					
			16					
			20					

Drain
E0 = internal drain
E1 = external drain G1/4
E2 = external drain 9/16-18 UNF***
...
(*) = to be specified if different from standard "pump type".
(**) = only for R rotation.
(***) = "E2" drain port is machined in compliance with threaded port with O-ring seal in truncated housing SAE J1926/1 (ISO 11926-1).
Thread depth 12.7 mm.

Pump Standard Types

omit = European flange + shaft T0 + ports E + standard seals.

A = flange A + shaft C1 + ports FA + standard seals.

Examples

ALP1-D-2 = clockwise rotation, 1.4 cc/rev, European flange, 1:8 tapered shaft, flanged ports E type, standard seals.

ALP1-D-2-FG-V = clockwise rotation, 1.4 cc/rev, European flange, 1:8 tapered shaft, threaded ports (FG), high temperature seals (V).

ALP1A-D-2-S1 = clockwise rotation, 1.4 cc/rev, SAE A-A2 bolt flange, splined shaft 9T (S1), threaded ports, standard seals.

ALP1-R-2-E1 = reversible pump, 1.4 cc/rev, European flange, 1:8 tapered shaft, flanged ports E type, standard seals, external drain.

The product data sheets show our standard model types. The synoptic tables for flanges, shafts and ports show all the possible configurations. For further details about the availability of each configuration please contact jbj Techniques technical office, email: info@jbj.co.uk or telephone: +44 (0)1737 767493

jbj allow close coupling of hydraulic pumps directly to the flywheel / flywheel housing of diesel engines, electric and hydraulic motors.

www.jbj.co.uk/hydraulic-adaptors.html

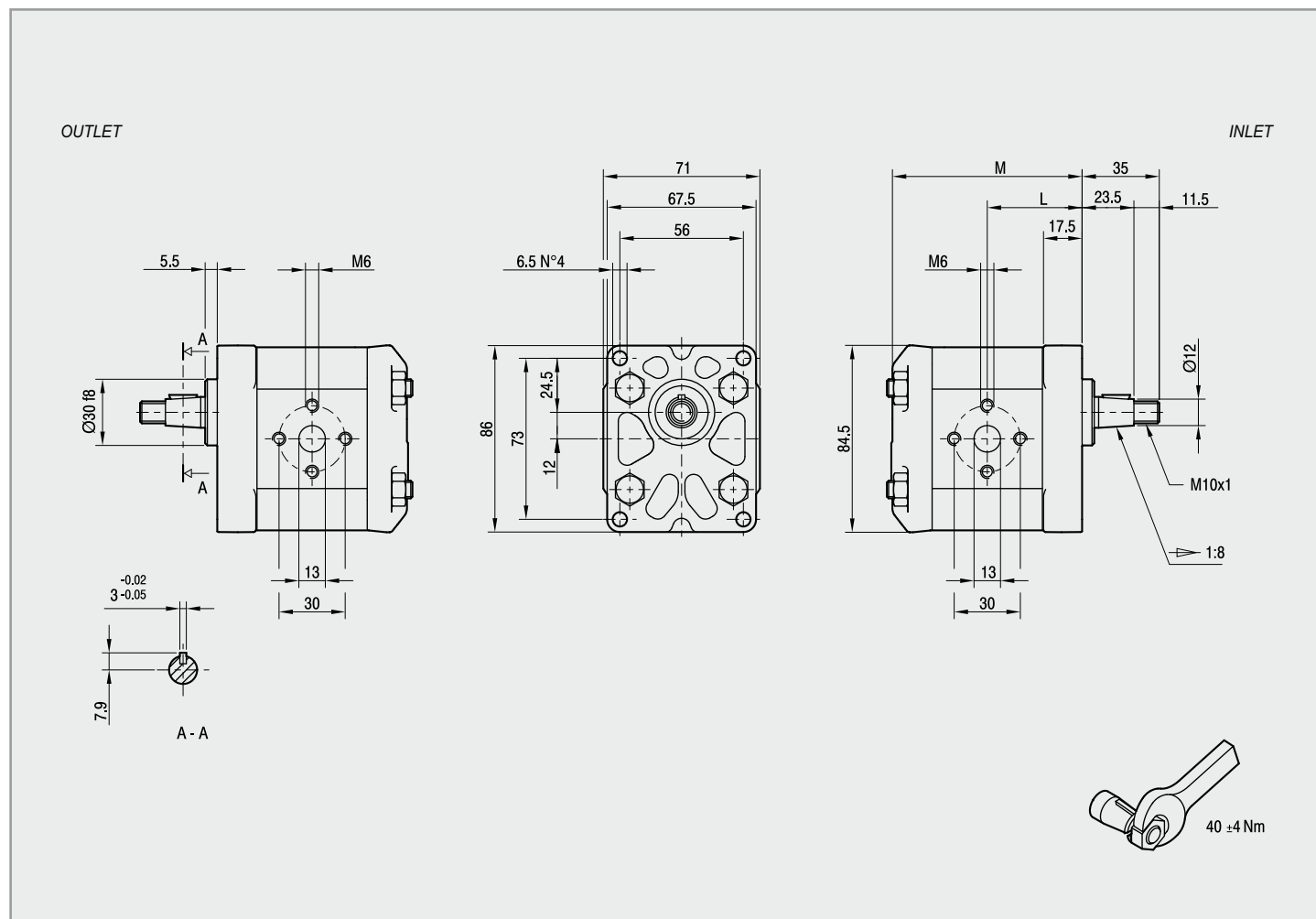
The package consists of a bellhousing and flexible drive coupling that are fully machined to suit the pump and any driving interface; diesel or petrol engine, electric or hydraulic motor.

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A range of composite bell housings to accommodate electric motor flanges from 300 mm diameter to 800 mm diameter. See pages 40 to 44 of the Pump Drive Components technical specification catalogue.

A collection of different ways of connecting hydraulic pumps and motors to various driver devices.

Accessories supplied with the standard pump: woodruff key (code 522054), M10x1 hexagonal nut (code 523015), washer (code 523004).
Standard ports: M6 threads depth 13 mm.

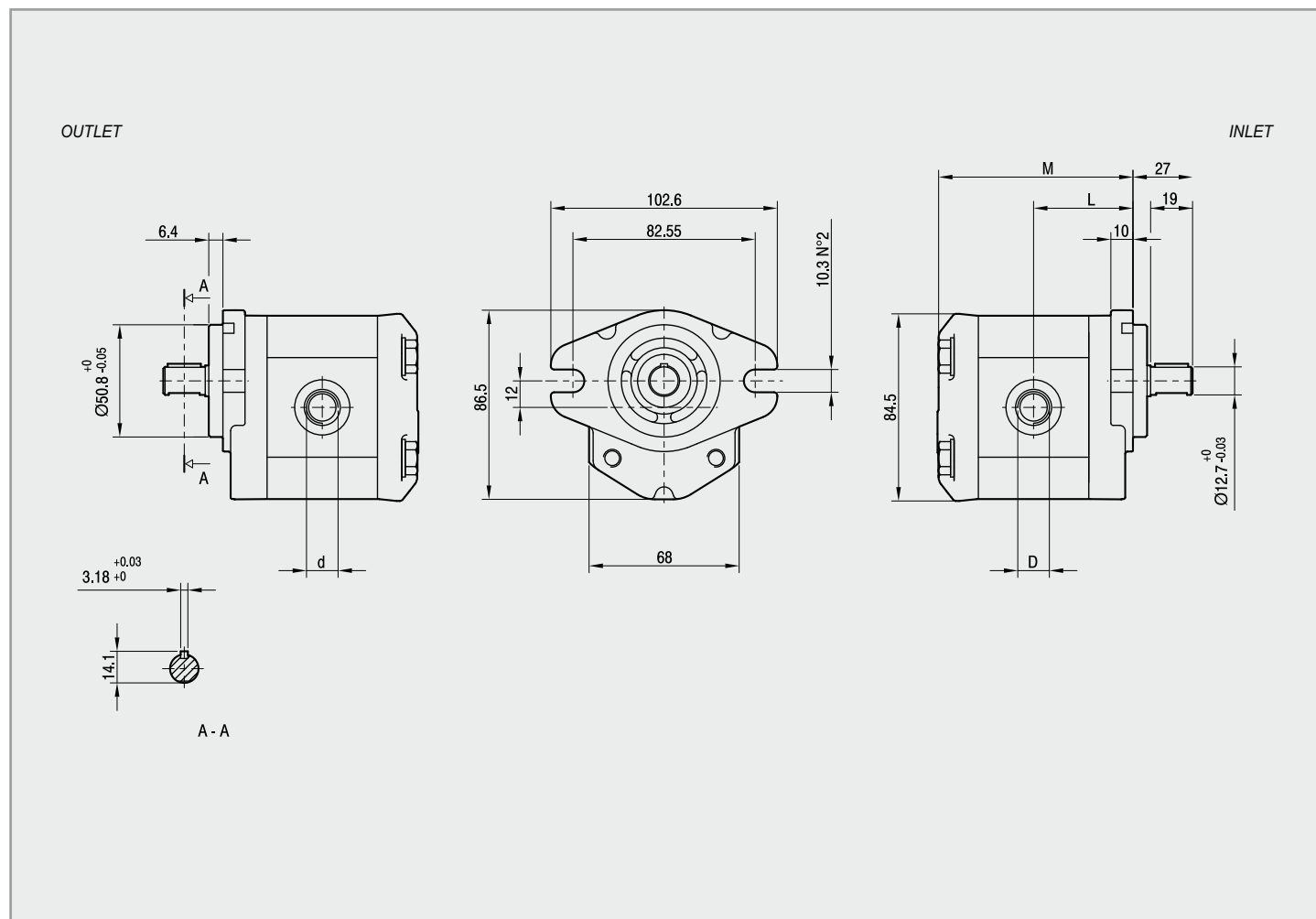


Type	Displacement cm ³ /rev	Flow at 1500 rev/min litres/min	Maximum Pressure			Maximum Speed rpm	Dimensions	
			P ₁ bar	P ₂ bar	P ₃ bar		L mm	M mm
ALP1-D-2	1.4	2.0	250	270	290	6000	40	80.5
ALP1-D-3	2.1	2.9	250	270	290	6000	41	82.5
ALP1-D-4	2.8	3.9	250	270	290	5000	42	84.5
ALP1-D-5	3.5	4.9	250	270	290	5000	43	86.5
ALP1-D-6	4.1	5.9	250	270	290	4000	44	88.5
ALP1-D-7	5.2	7.4	230	245	260	4000	45.5	91.5
ALP1-D-9	6.2	8.8	230	245	260	3800	47	94.5
ALP1-D-11	7.6	10.8	200	215	230	3200	49	98.5
ALP1-D-13	9.3	13.3	180	195	210	2600	51.5	103.5
ALP1-D-16	11.0	15.7	170	185	200	2200	54	108.5
ALP1-D-20	13.8	19.7	150	165	180	1800	58	116.5

Accessories supplied with the standard pump: key (code 522070).

Mounting flange 50-2 (A-A) in compliance with SAE J744c.

"D" and "d" standard ports are machined in compliance with threaded port with O-ring seal in truncated housing SAE J1926/1 (ISO 11926-1).
compliance with threaded port with O-ring seal in truncated housing SAE J1926/1 (ISO 11926-1).

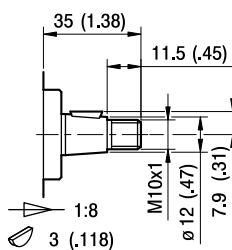
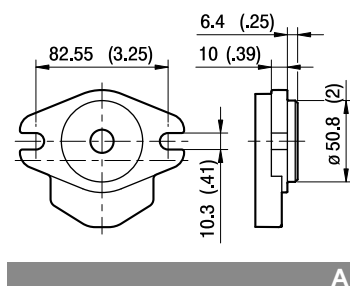
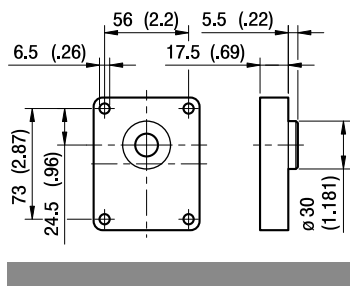


Type	Displacement	Flow at	Maximum Pressure			Maximum	Dimensions			
		1500 rev/min	P ₁	P ₂	P ₃	Speed	L	M	d	D
	cm ³ /rev	litres/mim	bar	bar	bar	rpm	mm	mm		
ALP1A-D-2	1.4	2.0	250	270	290	6000	42	82.5	⅝-18 UNF	¾-16 UNF
ALP1A-D-3	2,1	2,9	250	270	290	6000	43	84,5	⅝-18 UNF	¾-16 UNF
ALP1A-D-4	2,8	3,9	250	270	290	5000	44	86,5	⅝-18 UNF	¾-16 UNF
ALP1A-D-5	3,5	4,9	250	270	290	5000	45	88,5	⅝-18 UNF	¾-16 UNF
ALP1A-D-6	4,1	5,9	250	270	290	4000	46	90,5	⅝-18 UNF	¾-16 UNF
ALP1A-D-7	5,2	7,4	230	245	260	3500	47,5	93,5	⅝-18 UNF	¾-16 UNF
ALP1A-D-9	6,2	8,8	230	245	260	3000	49	96,5	⅝-18 UNF	¾-16 UNF
ALP1A-D-11	7,6	10,8	200	215	230	3500	51	100,5	¾-16 UNF	⅞-14 UNF
ALP1A-D-13	9,3	13,3	180	195	210	3000	53,5	105,5	¾-16 UNF	⅞-14 UNF
ALP1A-D-16	11,0	15,7	170	185	200	2500	56	110,5	¾-16 UNF	⅞-14 UNF
ALP1A-D-20	13,8	19,7	150	165	180	2000	60	118,5	¾-16 UNF	⅞-14 UNF

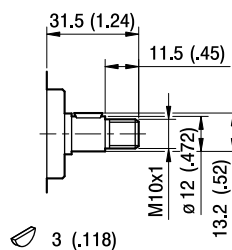


Flanges

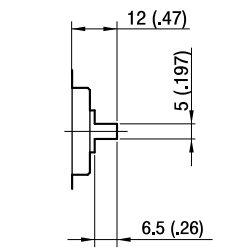
Shafts



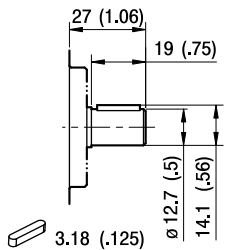
T0
Max Torque 100 Nm



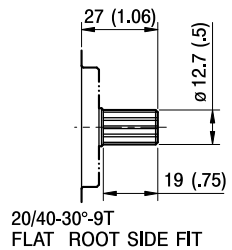
C0
Max Torque 55 Nm



G0
Max Torque 45 Nm



C1
Max Torque 60 Nm



S1
Max Torque 100 Nm

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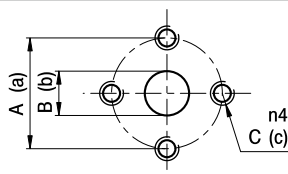
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A collection of different ways of connecting hydraulic pumps and motors to various driver devices.

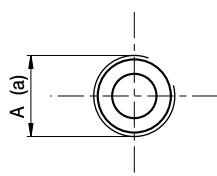
Ports



E

Type	Inlet			Outlet		
	A	B	C	a	b	c
ALP1...2 to ALP1...20	30	13	M6	30	13	M6

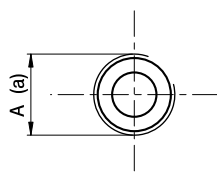
Tightening torques of the fittings screws are specified on page 60 (accessories section).



FG

Type	Inlet	Outlet
	A	a
ALP1...2 to ALP1...5	G $\frac{1}{2}$	G $\frac{3}{8}$
ALP1...6 to ALP1...20	G $\frac{1}{2}$	G $\frac{1}{2}$

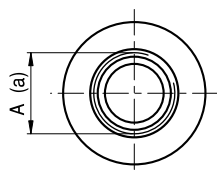
Tightening torques for G $\frac{1}{2}$ fitting: 50 Nm. Tightening torques for G $\frac{3}{8}$ fitting: 35 Nm. Please check with the fittings suppliers.



FC

Type	Inlet	Outlet
	A	a
ALP1...2 to ALP1...20	Rc $\frac{1}{2}$	Rc $\frac{1}{2}$

Tightening torques for Rc $\frac{1}{2}$ fitting: 50 Nm. Please check with the fittings suppliers.



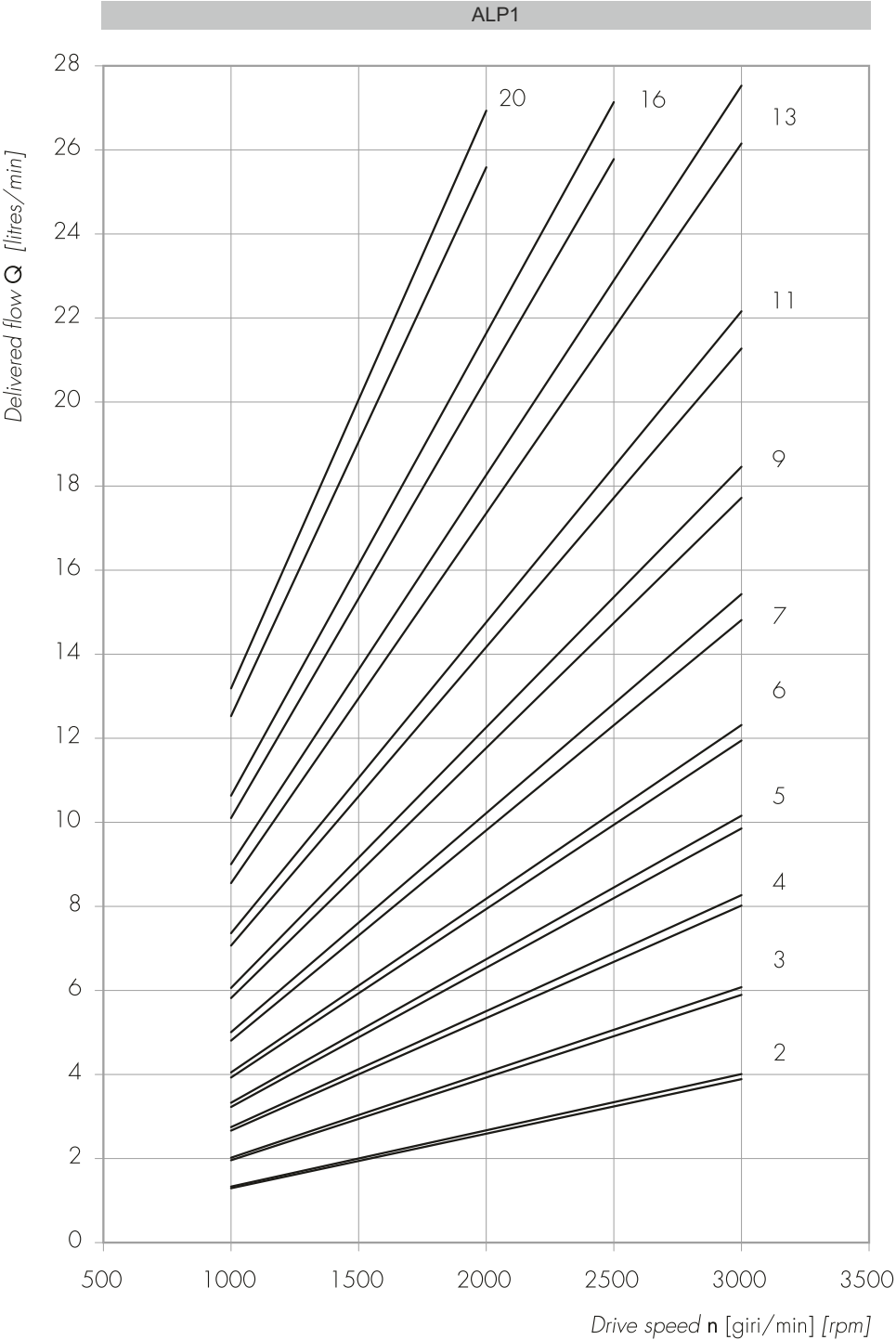
STANDARD SAE J1926/1

FA

Type	Inlet	Outlet
	A	a
ALP1...2 to ALP1...9	$\frac{3}{4}$ -16 UNF	$\frac{1}{8}$ -18 UNF
ALP1...11 to ALP1...20	$\frac{7}{8}$ -14 UNF	$\frac{3}{4}$ -16 UNF

Tightening torques for $\frac{1}{8}$ -18 UNF fitting: 30 Nm. Tightening torques for $\frac{3}{4}$ -16 UNF fitting: 60 Nm.

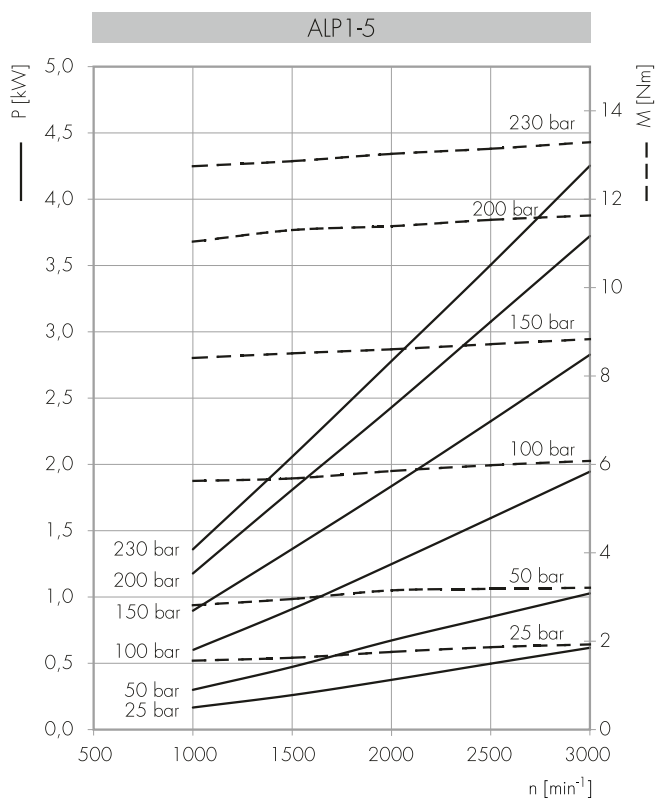
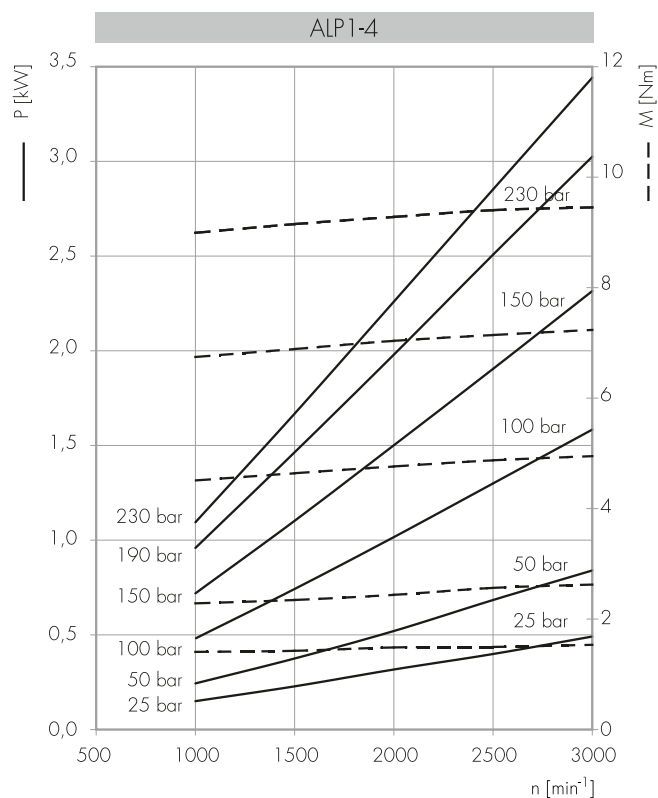
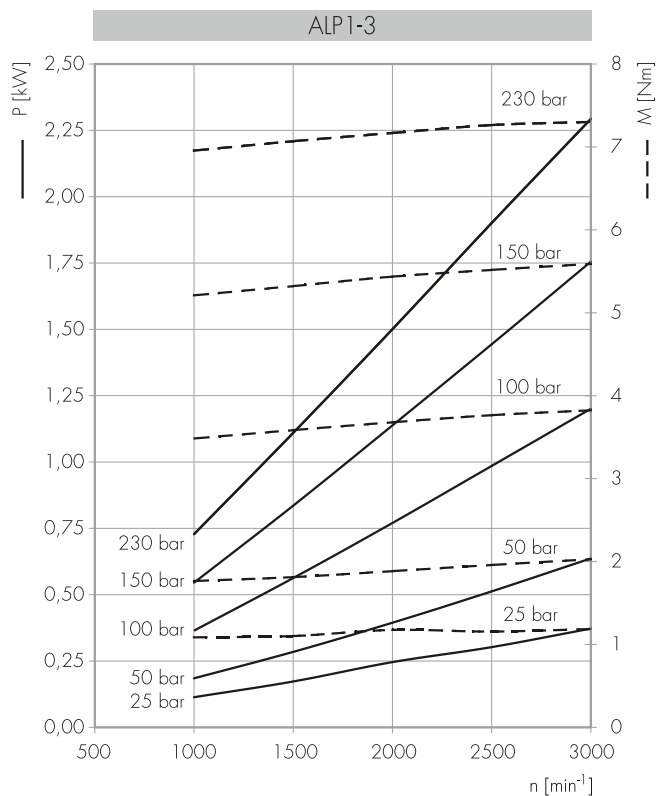
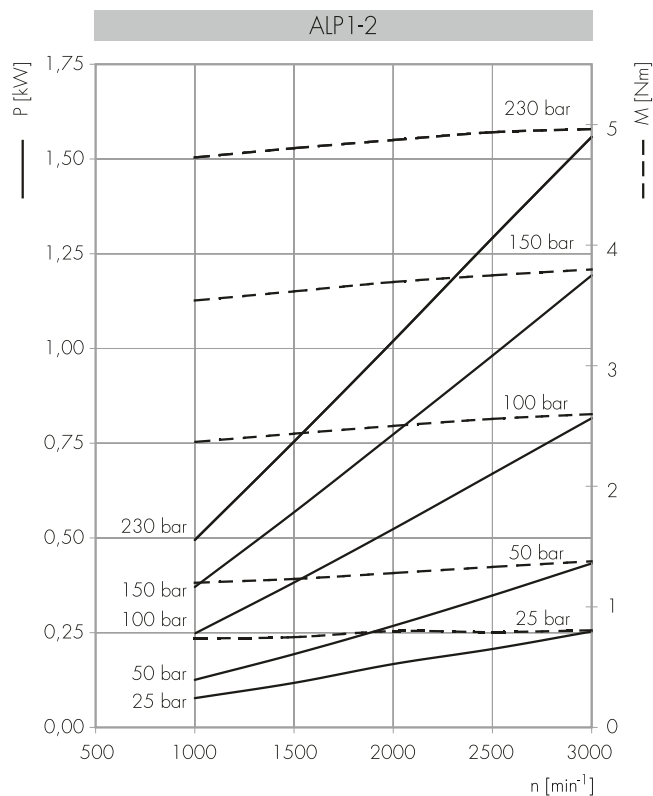
Tightening torques for $\frac{7}{8}$ -14 UNF fitting: 70 Nm. Please check with the fittings suppliers.



Each curve has been obtained at 50°C, using oil with viscosity 30 cSt at these pressure.

2		25-240 bar	6		25-230 bar	9		25-220 bar	11		25-180 bar	13		25-170 bar	16		25-150 bar	20		25-140 bar
3			7																	
4																				
5																				

Absorbed power P [kW]. Absorbed torque M [Nm]. Drive speed n [rpm]



Absorbed power P [kW]. Absorbed torque M [Nm]. Drive speed n [rpm]

