



Technical Bulletin

PVK PUMPS

Application Guide Lines

ENGINEERING

1

The following information should be considered when applying Oilgear PVK Pumps. These guidelines are to be used to help design systems for continuous duty. Please consult the Oilgear Technical Sales Department when application and/or system requirement vary (even) slightly from the following.

SPECIFICATIONS (Also See "Additional Notes")	PVK-140	PVK-270	PVK-370
DRIVE			
Maximum rpm			
Flooded Inlet (suction)	1800	1500	1500
Supercharged Inlet	2400	1800	1800
Minimum rpm			
Flooded Inlet (suction)	600	600	600
Supercharged Inlet	600	600	600
Torque to turn shaft (ft. lbs.)	15	60	60
Inlet			
Pressure (psia)			
1800 rpm	13.7	35.0	35.0
1500 rpm	10.0	13.0	14.0
1200 rpm	8.0	10.5	11.0
Volume (See "Additional Notes")			
Output			
Pressure (psi)			
Maximum			
Intermittent	5800	5800	4100
Continuous	5000	5000	3500
Minimum	100	100	100
Volume gpm @ rated pressure, rpm indicated and unit set for full displacement (to exceed)			
1800 rpm	62.9	114.3 *	163.2 *
1200 rpm	41.9	77.0	106.1

* Can only be run at this speed when supercharged.
Pumps should not be run at neutral for more than 30 consecutive minutes. For longer times, a 10% minimum stroke should be maintained.

Case Case pressure/inlet differentials take priority and must be followed per curves in "CHARTS".

Maximum Pressure psi			
w/Std. Shaft seal	25	25	25
Minimum Drain Size (inch tube)	1	1-1/4	1-1/4
Average case slip (cipm) at			
5000 psi	700	1600	-
3500 psi	-	-	1900

Orientation See Oilgear Service Instructions Bulletin 947025 for horizontal mounting. See Oilgear Service Instruction Bulletin 90014 for vertical mounting.

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ENGINEERING

2

SPECIFICATIONS (Also See "Additional Notes")	PVK-140	PVK-270	PVK-370
Control			
Minimum Pilot Pressure (psi) for Volume Controls	500	500	500
Control piston stroke (inches)	1.21	1.62	1.62
Control piston areas (inches ²)			
Pressure Controls			
On Stroke	0.405	0.601	0.601
Off Stroke	2.436	3.693	3.693
Volume Controls			
On & Off are equal	2.436	3.693	3.693
Volume (in ³) displaced (Neutral to Full)			
Pressure Controls			
On Stroke	0.49	0.97	0.97
Off Stroke	2.95	5.98	5.98
Volume Controls			
On & Off are equal	2.95	5.98	5.98
Swashblock angle (degrees) max.	17	15	15
Stroking Rate (msec.) at rated pressure*			
Pressure Controls (minimum)			
On stroke	100	110	110
Off stroke	70	70	70
Volume Controls with indicated control psi	500	500	500
On and Off Stroke	250	370	370

* Fastest possible times, stroking times may be slower.... depending on conditions.
Consult Oilgear Technical Sales Department.

Fluid Also see "Additional Notes" for filtration and contamination levels. Pump should be run only with anti-wear fluids.

Viscosity SSU			
Minimum	80	80	80
Maximum	2000	2000	2000
Operating Temperature (F°)*			
Inlet			
Maximum	200	150	150
Minimum	-20	-20	-20
Case range	150-250	150-200	150-200

*Minimum and maximum viscosities should be observed.



Technical Bulletin
PVK PUMPS
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ENGINEERING

3

ADDITIONAL NOTES

Drive

1. PVK 270/370 units are shimmed for a specific rpm.
These units should be operated only at the rpm stamped on the nameplate.

Inlet

1. Free sucking circuits must be arranged to insure pump will "prime" when started.
2. When supercharging, (a) Maximum allowable supercharge pressure is 200 psi (b) 30 % of maximum is recommended for partial supercharge when using a suction check valve (c) 105 % volume required to fully supercharge units.

Case

1. **Drain** (a) Fill case with fluid before starting (b) Arrange case drain line to keep case full of fluid (c) Use a minimum of bends returning case drain line to reservoir below minimum fluid level.
2. **Orientation** (a) Pump orientation is not restricted. But, case drain must be arranged to **keep case full** of fluid at all times. *See Oilgear Service Instruction Bulletin 947025 for horizontal mounting. For vertically mounted units, see Bulletin 90014 "Service Instructions, Installation of Vertically Mounted Axial Piston Units.*

Control

1. Case bleed of 1 of 2 gpm is recommended for volume controlled pumps and/or pumps hydraulically remote controlled, especially if operated at neutral for long periods of time.
2. PVK 270 and 370 pumps running at greater than 1500 rpm should maintain a minimum of 500 psi during periods of extended idle time.

Fluid

1. **Filtration** (a) At least 1/3 of pump volume must be filtered with an element having a $B_{10} = 15$. (b) All fluid to a swing-plate servo valve control must be filtered with an element having a $B_{10} = 15$. (c) All fluid to other servo valve controls must be through a $B_{10} 75$ element.
2. **Contamination** level of ISO code 18/15 is maximum and a 0.1 % of water is maximum level.

Start-up

1. **Priming** (a) Valves may be necessary to bleed air from high pressure lines.
2. **Horizontal mounted units** (a) Top of case must be level with (or below) minimum reservoir fluid level or (b) Free sucking horizontal units mounted on top of reservoir must be partially supercharged or dump full pump delivery into reservoir at 10 psi (or less) for 15 seconds to purge (burp) the inlet air.
3. **Vertical mounted units** – See Bulletin 90014, "Service Instructions; Installation of Vertically Mounted Axial Piston Pumps.



Technical Bulletin

PVK PUMPS

Application Guide Lines

ENGINEERING

4

CHARTS

MAXIMUM CASE/INLET DIFFERENTIAL PRESSURE. Case pressure can not exceed inlet pressure by values higher than those shown.

PVK – 140 Differential Limits

PVK – 270 Differential Limits

PVK – 370 Differential Limits

MAXIMUM CASE/INLET DIFFERENTIAL PRESSURE

