



# Technical Bulletin

## PVWH PUMPS

### Application Guide Lines

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The following information should be considered when applying Oilgear PVWH 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")	PVWH			PVWH			PVWH			
	04	06	10	11	15	20	25	34	45	60
<b>Drive</b>										
Maximum rpm										
Flooded Inlet (suction)	3000	3000	2800	2700	2800	2400	2400	2300	2300	1800
Supercharged Inlet	3600	3600	3600	3000	3000	2700	2700	2700	2700	2100
Minimum rpm										
Flooded Inlet (suction)		600			600				600	
Supercharged Inlet		600			600				600	
Torque to turn shaft (ft. lbs.)		1.7 – 2.1			2.9 – 3.3				7.9 – 8.3	
<b>Inlet</b>										
Pressure (psia)										
1800 rpm	6.1	6.4	7.0	8.2	8.4	9.0	9.5	9.6	9.8	14.5
1500 rpm	5.7	5.9	6.0	7.3	7.6	7.9	8.5	8.6	8.6	10.0
1200 rpm	5.4	5.5	5.5	7.0	7.0	7.2	7.6	8.0	7.6	8.0
Volume (See "Additional Notes")										
<b>Output</b>										
Pressure (psi)										
Maximum										
Intermittent	5800	4500	3500	5800	4000	3000	5800	4000	3000	2000
Continuous	5000	4000	3000	5000	3500	2500	5000	3500	2500	1500
Minimum	100	100	100	100	100	100	100	100	100	100
Volume @ 1800 rpm, rated pressure, and unit set for full displ. (to exceed) minimum gpm	3.50	5.01	8.98	9.43	13.44	18.45	22.38	31.40	41.45	55.18

(Continued)

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SPECIFICATIONS (Also see "Additional Notes")	PVWH			PVWH			PVWH			
	04	06	10	11	15	20	25	34	45	60
<b>CASE</b> Case pressure/inlet differentials take priority and must be followed.										
Maximum Pressure psi										
w/Std. Shaft Seal		25			25			25		
w/High Pressure Seal		100			100			100		
Minimum Drain Size (inch tube)	0.5	0.5	0.5	0.625	0.625	0.625	0.75	0.75	0.75	0.75
Average case slip (cipm) at										
1500 psi										530
2500 psi						300			460	
3000 psi			200							
3500 psi					300			460		
4000 psi		200								
5000 psi	200			300			460			
Orientation See Oilgear Service Instruction Bulletin 947015 for horizontal mounting. See Oilgear Service Instruction Bulletin 90014 for vertical mounting.										
<b>Control</b>										
Minimum Pilot Pressure (psi)										
Pressure Controls		200			400			600		
Volume Controls		350			350			350		
Control Piston Stroke (inches <sup>1</sup> )		0.461			0.603			0.752		
Control Piston Area (inches <sup>2</sup> )										
Pressure Controls										
On Stroke					Spring Operated					
Off Stroke		0.785			1.767			2.405		
Volume & Electronic Controls										
On & off sizes are equal		0.785			1.767			2.405		
Volume (inches <sup>3</sup> )										
Pressure Controls										
on Stroke		N/A			N/A			N/A		



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SPECIFICATIONS (Also see "Additional Notes")	PVWH			PVWH			PVWH			
	04	06	10	11	15	20	25	34	45	60
Volume (inches <sup>2</sup> ) Continued										
Volume & Electronic Controls on & off are equal		0.362			1.066			1.809		
Swashblock Angle (degrees) max.		21.0			20.5			21.5		
Rate (msec.) at 1800 rpm & Rated Pressure Pressure Controls										
* Minimum to Full Stroke	100	100	100	100	100	100	200	200	200	200
** Full to Minimum Stroke	80	80	80	80	80	80	200	200	200	200
Volume & Electronic Control Min. to full stroke Full to Minimum Stroke										

Based on customers' control system pump

*\* The smaller the differential between delivery pressure and compensator setting, the slower the rate will be.  
\*\* Rate will be slower, if pressure is less than 500 psi above compensator setting.*

**Fluid** Also see "Additional notes" for filtration and contamination levels

Viscosity SSU										
Minimum		65			65			65		
Maximum		2000			2000			2000		
Operating Temperature (F°)*										
Inlet										
Maximum		190			190			190		
Minimum		14			14			14		
Minimum Starting		-40			-40			-40		

*\*Minimum and maximum viscosities should be observed.*



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**ADDITIONAL NOTES**

- Inlet**
1. Free sucking circuits must be arranged to ensure pump will “prime” when started.
  2. When supercharging, (a) Maximum allowable supercharge pressure is 200 psi (b) 5% 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 947015 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 to 2 gpm is recommended for volume controlled pumps and/or pumps hydraulically remote controlled, especially if operated at neutral for long periods of 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 servo valve controls must be through a  $B_{10} = 75$  element.
  2. **Contamination** level of ISO code 19/16 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. **Vertically mounted units** – *See Bulletin 90014; “Service Instructions, Installation of Vertically Mounted Axial Piston Pumps”.*