# Technical Bulletin

## PVV PUMPS

### Application Guide Lines

The following information should be considered when applying Oilgear PVV 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") | **PVV 200** | **PVV 250** | **PVV 540** |
|---|---|---|---|
| **DRIVE** | | | |
| Maximum rpm | | | |
| Flooded Inlet (suction) | 1800 | 1800 | 1500** |
| Supercharged Inlet | 2200 | 2200 | 1500** |
| Minimum rpm | | | |
| Flooded Inlet (suction) | 300** | 300** | 600 |
| Supercharged Inlet | 300** | 300** | 600 |
| Torque to turn shaft (ft. lbs.) | 14.0 | 14.0 | 31.0 |
| ** Consult Factory | | | |
| **Inlet** | | | |
| Pressure (psia) | | | |
| 1800 rpm | 14.3 | 14.7 | - |
| 1500 rpm | 10.8 | 11.5 | ** |
| 1200 rpm | 8.0 | 10.0 | 11.1 |
| Volume (See "Additional Notes") | | | |
| ** Consult factory | | | |
| **Output** | | | |
| Pressure (psi) | | | |
| Maximum | | | |
| Intermittent | 6500 | 5800 | 5800 |
| Continuous | 6000 | 5000 | 5000 |
| Minimum | 50 * | 50 * | 50 * |
| * Must be maintained at either the inlet or delivery port | | | |
| Volume gpm @ rated pressure, | | | |
| rpm indicated and unit | 1800 | 1800 | 1200 |
| set for full displacement (to exceed) | 87 | 107 | 155 |
| Pumps should not be run at neutral for more than 30 consecutive minutes. For longer times, a 10% minimum stroke should be maintained. | | | |
| **Case** | | | |
| Maximum Pressure psi | | | |
| w/Std. Shaft seal | 50 | 50 | 50 |
| Minimum Drain Size (inch tube) | 1 | 1 | 1.5 |
| Average case slip (cipm) at | | | |
| 5000 psi | 2250 | 3100 | 3500 |
| Orientation | See Oilgear Service Instructions Bulletin 947028 for horizontal mounting. See Oilgear Service Instruction Bulletin 90014 for vertical mounting. | | |

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| **SPECIFICATIONS** (Also See "Additional Notes") | **PVV 200** | **PVV 250** | **PVV 540** |
|---|---|---|---|
| **Control** | | | |
| Minimum Pilot Pressure (psi) | | | |
| for Volume Controls (VS & RY) | 700 | 700 | 500 |
| Control piston stroke (inches) | 0.96 | 0.96 | 1.29 |
| Control piston areas (inches$^2$) | | | |
| Pressure Controls | | | |
| On Stroke | 0.57 | 0.57 | 1.35 |
| Off Stroke | 1.76 | 1.76 | 3.14 |
| Volume Controls (VS & RU) | | | |
| On & Off are equal | 1.76 | 1.76 | 7.07 |
| Volume (in.$^3$) | | | |
| Pressure Controls | | | |
| On Stroke | 0.55 | 0.55 | 1.74 |
| Off Stroke | 1.69 | 1.69 | 4.05 |
| Volume Controls (VS & RU) | | | |
| On & Off stroke are equal | 1.69 | 1.69 | 9.12 |
| Swashblock angle (deg.) max. | 15 | 15 | 15 |
| Stroking Rate (msec.) at rated pressure | | | |
| Pressure Controls (minimum)* | | | |
| On Stroke | 140 | 140 | 140 |
| Off Stroke | 100 | 100 | 100 |
| Volume Controls (VS & RU) | | | |
| with minimum control psi | | | |
| On and Off stroke | 375 | 375 | 375 |

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

**Fluids** 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 | 160 | 160 | 160 |
| Minimum | -20 | -20 | -20 |
| Case maximum | 210 | 210 | 200 |

* Minimum and maximum viscosities should be observed.



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**ADDITIONAL NOTES**

**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) 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 Bulletin 947028 or 947029 for horizontally mounted units. ***For vertically mounted units, see Bulletin 90014 "Service Instructions, Installation of Vertically Mounted Axial Piston Units".***

**Control**

1. Case bleed of 2 gpm is recommended for volume controlled pumps and/or pumps hydraulically remote controlled. Note:- a bleed orifice is incorporated internally on all servo valve (VS) controlled pumps.

**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.