

## Checkball Piston Pumps For Water-Based Fluids

Fixed displacement checkball pumps are compatible with a variety of water-based and other low-lubricity fluids. Bi-directional shaft rotation provides constant direction of output flow regardless of drive shaft rotation.

### MAINTENANCE-FREE DESIGN

The single-fluid checkball design uses the pumped fluid for internal bearing lubrication. This eliminates the potential for fluid cross-contamination, possible in other designs with isolated lubrication. It also avoids the cost of a lubrication circuit.

### RELIABLE HIGH PRESSURE

Individual piston check valves provide long service life and greater volumetric efficiency, especially at high pressures and with low-lubricity fluids.

The check valves take the place of a valveplate in other pump designs. With no rotating sealing surface, checkball pumps are resistant to wearing and scoring.

### TYPICAL APPLICATIONS

These pumps are ideal for use in wellhead safety control systems and other subsea applications, providing long life operating at high pressures with water-based fluids.

They are also used on hydroform presses, and other applications requiring environmentally-friendly or fire-resistant fluids.

These pump options are a variant of the PF4312H-XVB-12 or 20. These pump designs incorporate a different piston assembly that allows for operation in applications that can't provide an optimal inlet condition.

Due to the different piston construction, these pumps do not require a super-charge compared to the standard PF4312 Products. (See Minimum Inlet Pressure Guidelines)

**PF4312 SERIES – J1108**  
**PF4312 SERIES – J1232**  
**8.2 gpm (31,0 L/min) at 1800 rpm**  
**8000 psi (560 bar)**



### Specifications

Pump Models	Output Flow at 1200 rpm <sup>①</sup>		Output Flow at 1500 rpm <sup>①②</sup>		Output Flow at 1800 rpm <sup>①②</sup>		Maximum Pressure		Min. Speed rpm <sup>②</sup>	Maximum Speed rpm <sup>②</sup>
	U.S. gpm	L/min	U.S. gpm	L/min	U.S. gpm	L/min	psi	bar		
PF4312	5.5	20,7	6.8	25,9	8.2	31,0	8000	560	900	1800

<sup>①</sup> Output flow based on typical performance using 33 SUS (1,9 cSt) water glycol fluid at maximum pressure with pressurized inlet where required. Refer to the "Minimum Inlet Pressure" table on page 2.

<sup>②</sup> Contact the sales department for operation below 900 rpm.

The limitation of this design is in maximum pressure which is reduced from 10,000 psi (700 bar) to 8,000 psi (560 bar).

### PUMP SELECTION

PF4312-12 – J1108: Standard Model<sup>①</sup>

PF4312-20 – J1232: Stainless Steel Model<sup>①</sup>

<sup>①</sup> These pumps are Atex compliant.

## INSTALLATION AND OPERATING

Refer to separate Bulletin PSI.CB for general installation and operating recommendations.

All dimensions are shown in inches (millimeters in parentheses) and are nominal.

### Mounting

S.A.E. D 4-bolt pattern with 0.25 inch (6,4 mm) pilot engagement.

### Shaft

Standard keyed shaft, 1.250 inch (31,75 mm) diameter;

### Outlet Port

British Standard Pipe fitting.

As shown, the outlet port on these pumps is machined in a block integrally mounted to the pump barrel. See information below for reference.

### Orientation/Drive

Shaft horizontal with inlet vertically up is preferred. Vertical shaft mounting is possible, but requires connecting a line to the bleed port in the pump housing. Contact the sales department for more information.

### Seals

Fluorocarbon (Viton® or Fluorel®).

### Minimum Filtration Levels

Pump inlet: 150 µ nominal;  
Pressure or return line: 25 µ nominal.

While finer filtration levels than these are desirable and will result in longer component life, restricting flow to the pump inlet should be avoided. Minimum recommended inlet conditions must be maintained.

### Weight (Mass)

116 lb (53 kg)

## Minimum Inlet Pressure<sup>①</sup>

**IMPORTANT:** Pumps may require pressurized inlet conditions at higher speeds. Failure to meet minimum inlet requirements will result in flow reduction. Refer to the table.

Pump Models	Operating Speed					
	1200 rpm		1500 rpm		1800 rpm	
	psi	bar	psi	bar	psi	bar
PF4312	0	0	0	0	0	0

① Values shown are based on fluid viscosity of 33 SUS (1,9 cSt).

## Hydraulic Fluid Viscosity Guidelines<sup>①</sup>

Operating				Start-up	
Minimum		Maximum			
SUS	cSt	SUS	cSt	SUS	cSt
32	1,5	927	200	927	200

① If fluid conditions fall outside of the range shown, contact the sales department.

## FLUID RECOMMENDATIONS

### Special Fluid Operation

Because of the wide range of water-based fluid characteristics, contact the sales department for a review of the application requiring non-petroleum based fluid.

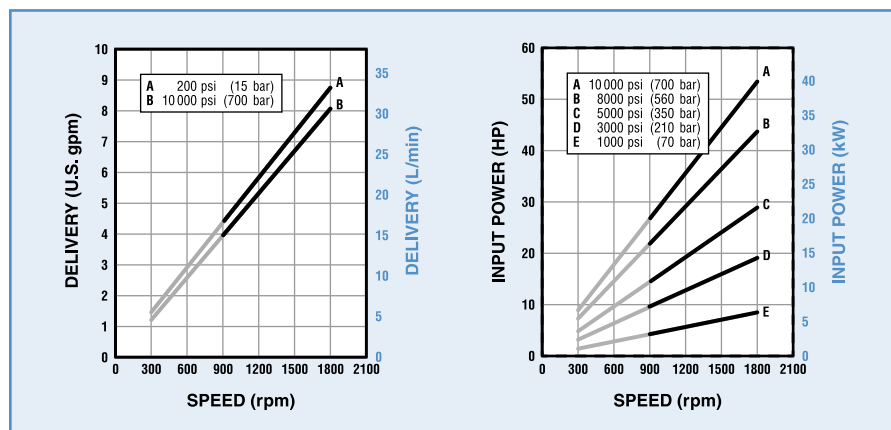
### Viscosity Specifications

Using fluid with the correct viscosity range is critical to achieving long component life.

Fluid conditions outside the ranges shown in the table may result in reduced pump output, requiring pressurized inlet conditions. For more information, contact the sales department.

## Typical Performance Curves<sup>①</sup>

**IMPORTANT:** Typical performance curves are based on 33 SUS (1,9 cSt) water glycol fluid. Pumps may require pressurized inlet conditions at higher speeds. Failure to meet minimum inlet requirements will result in flow reduction. Refer to the table above.



① Contact the sales department for operation below 900 rpm.

