

## High Pressure Checkball Piston Pumps

Fixed displacement, bi-directional PF6000 Series pumps provide reliable high-pressure operation: Maximum, 15 000 psi (1040 bar).

### High Volumetric Efficiency

The positive-seating action of the check valve provides less wear and improved volumetric efficiency at higher pressures.

During operation the checkball rotates, providing a uniform, moving area of wear against the seat. The result is high efficiency even as the checkball wears.

### Contamination Tolerant

Checkball pumps use piston check valves to direct flow from the pump inlet to the outlet.

The outlet check valves provide a relatively large flushing path for system contamination. This makes the pumps ideal for environments in which contamination is always present, such as Steel Mill, Mining, and Aggregate operations.

### PUMP SELECTION

The table shows specifications for standard pressure and high pressure "H" option models.

These pumps require a complete model code specifying shaft, seal and outlet port options. Refer to *Typical Model Code* on page 6.

### Multiple Outlet Models

Split-Flow® models provide multiple outputs for synchronized actuator movement or multiple function circuits. Contact the Dynex Sales department for options and availability.

**PF6000 SERIES**  
14.1 to 29.8 gpm (53,4 to 112,8 L/min) at 1800 rpm  
6000 to 15 000 psi (420 to 1040 bar)



### Specifications

Pump Models	Output Flow at 1500 rpm <sup>①</sup>		Output Flow at 1800 rpm <sup>①</sup>		Rated Pressure		Maximum Pressure	
	U.S. gpm	L/min	U.S. gpm	L/min	psi	bar	psi	bar
PF6020-10	11.8	44,5	14.1	53,4	6000	420	8000	560
PF6024-10	13.8	52,3	16.6	62,8	6000	420	8000	560
PF6030-10	18.0	68,2	21.6	81,8	6000	420	8000	560
PF6033-10	19.1	72,3	22.9	86,7	6000	420	8000	560
PF6042-10	24.8	94,0	29.8	112,8	6000	420	8000	560
PF6020H-10	11.2	42,3	13.4	50,7	10 000	700	15 000	1040
PF6024H-10	13.3	50,2	15.9	60,2	10 000	700	15 000	1040
PF6030H-10	17.3	65,3	20.7	78,3	10 000	700	15 000	1040
PF6033H-10	18.8	71,0	22.5	85,2	8000	560	10 000	700
PF6042H-10	24.3	92,1	29.2	110,5	8000	560	10 000	700

<sup>①</sup> Output flow based on typical performance at rated pressure (ISO 32 oil at 120° F).

## INSTALLATION AND OPERATION

### Fluid

High-grade premium petroleum-based oil, with a combination of anti-wear, demulsibility, oxidation and foam resistance properties, and rust protection.

Some Dynex pumps are suitable for use with water-glycol, Skydrol and other phosphate ester fluids, and various military fluids. Contact the Dynex Sales department for more information.

If fluid conditions fall outside of the range shown in the *Hydraulic Fluid Viscosity Guidelines* table, or if other operating recommendations are needed, please contact the Dynex Sales department.

### Seals

Options include Fluorocarbon (Viton® or Fluorel®), Polyurethane (Disogrin®), or EPR (Ethylene-Propylene Rubber).

### Inlet Pressure

Pumps may require pressurized inlet at elevated speeds or fluid viscosities outside the optimum range. Failure to meet inlet requirements will result in flow reduction. Refer to the *Minimum Inlet Conditions* table.

Inlet pressures higher than 10 psi (0,7 bar) require a high pressure shaft seal (XE, XV or XD option).

See *Typical Model Code* on page 6 for selecting seal options.

### Outlet Port Options

Full flow and Split-Flow® models are available with the following options:

Standard pressure models have SAE ports. High pressure "H" option models require the use of outlet port option "A" (Autoclave Medium Pressure, Butech M/P or equivalent) or outlet port option "B" (British Standard Pipe Parallel).

As shown on page 3, the outlet port is machined in a block integrally mounted to the pump cover. Refer to *Typical Model Code* on page 6 to specify the port.

### Minimum Inlet Conditions<sup>①</sup>

Pump Models	Operating Speed					
	1200 rpm		1500 rpm		1800 rpm	
	psi	bar	psi	bar	psi	bar
PF6020, PF6024	0	0	5	0,4	5	0,4
PF6030, PF6033	0	0	5	0,4	10	0,7
PF6042	5	0,4	10	0,7	15 <sup>②</sup>	1 <sup>②</sup>

① Values shown are based on fluid viscosity of 100 SUS (20 cSt). Includes Standard and "H" option models.

② Inlet pressures higher than 10 psi (0,7 bar) require a high-pressure shaft seal (XE, XV or XD option). Refer to "Typical Model Code" on page 6 for seal options.

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

Operating							
Minimum		Maximum		Start-up <sup>②</sup>		Optimum Range	
SUS	cSt	SUS	cSt	SUS	cSt	SUS	cSt
34	2,3	1911	413	1911	413	98 to 324	20 to 70

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

② Under load or no-load.

### Minimum Filtration Levels

Pump inlet, 150 μ nominal.  
Pressure or return line, 25 μ nominal.  
Finer filtration levels than these are desirable and will result in longer component life.

*Note: Restricting flow to the pump inlet should be avoided to achieve expected output flow.*

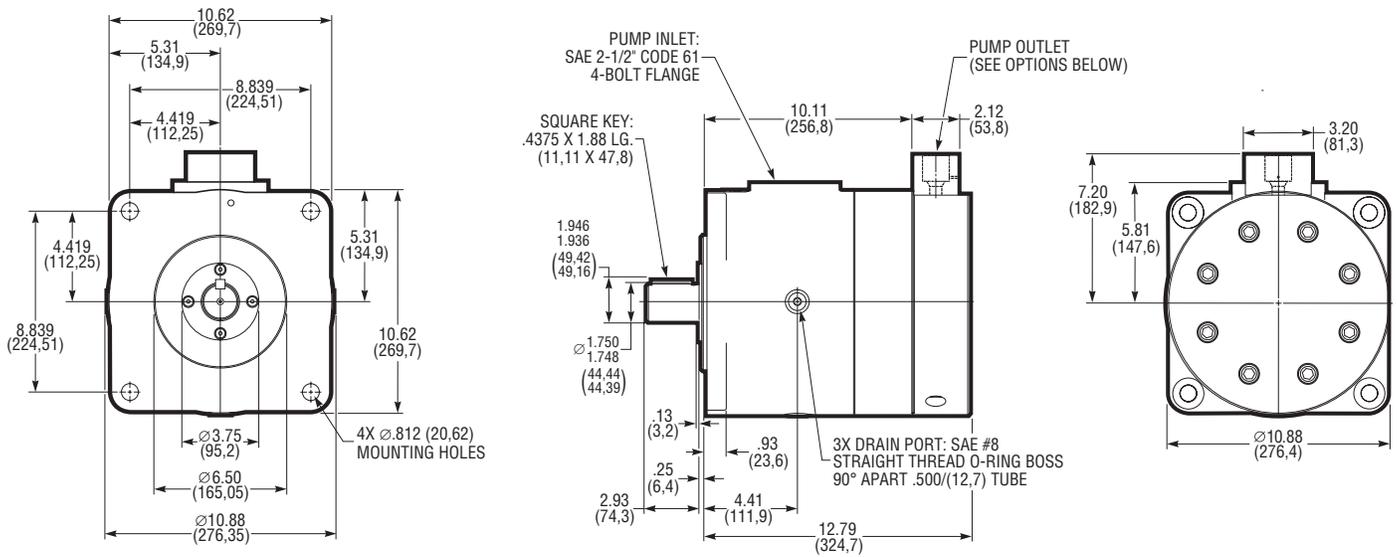
### Orientation

Generally, shaft horizontal with inlet vertically up. Contact the Dynex Sales department for applications requiring vertical shaft-up mounting or inlet orientation other than vertically up.

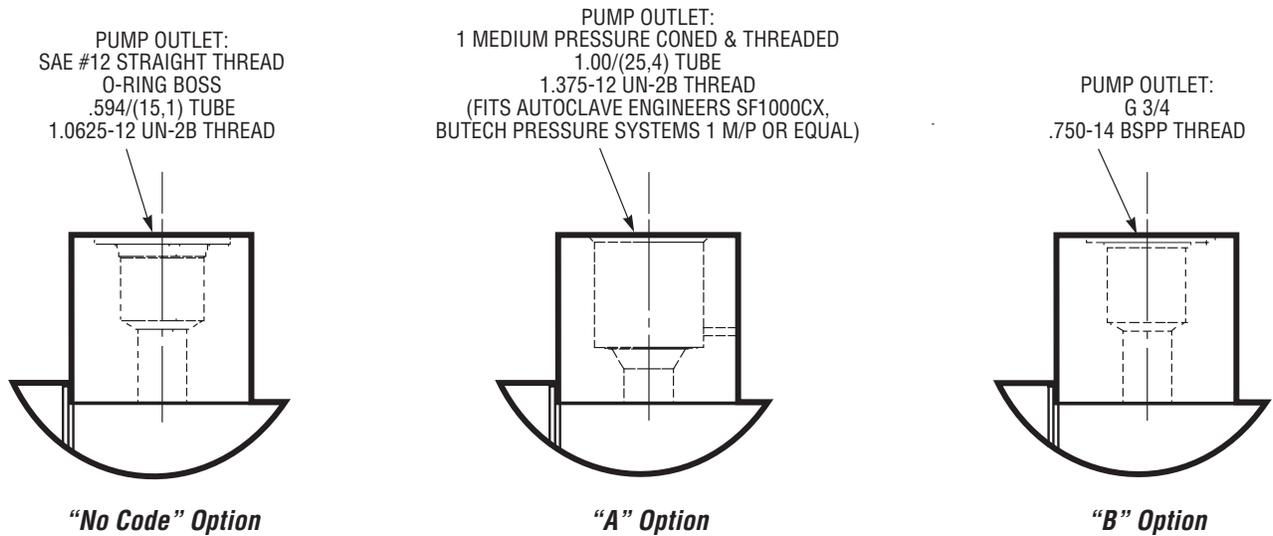
### Bi-Directional Shaft Rotation

With these fixed displacement pumps, the direction of output flow is constant, regardless of drive shaft rotation.

# INSTALLATION DRAWING



## OUTLET OPTIONS



## INSTALLATION

All dimensions are shown in inches (millimeters in parentheses) and are nominal. See *Typical Model Code* on page 6 for selecting port options.

Contact Dynex Sales for Installation Drawings of Split-Flow® Models.

### Pilot/Mounting

SAE E 4-bolt pattern with 0.25 inch (6.4 mm) pilot engagement.

### Shaft

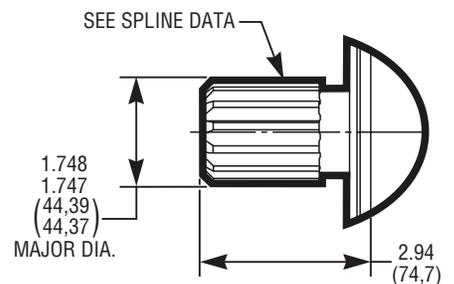
1.75 inch (44,44 mm) diameter keyed shaft.

### Optional Spline Shaft

SAE Spline, 1.748/1.747 inch (44,39/44,37mm) diameter standard SAE 13 tooth, 8/16 DP 30° involute spline.

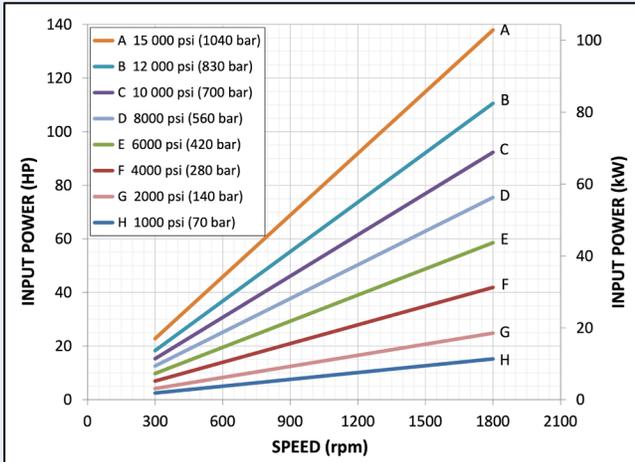
### Weight (Mass):

290 lb (131,54 kg).

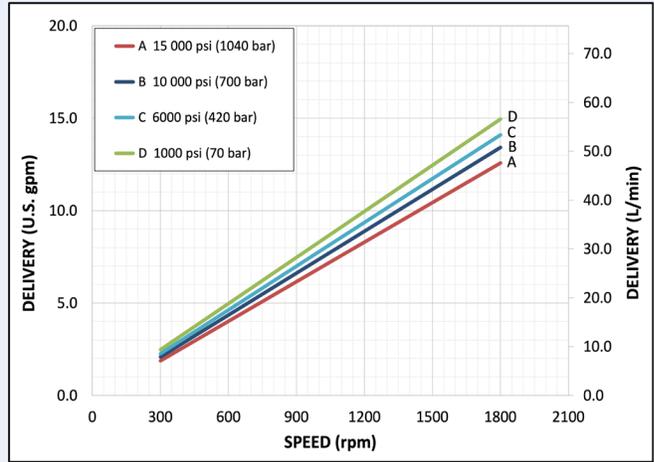


# Typical Performance Curves<sup>①</sup>

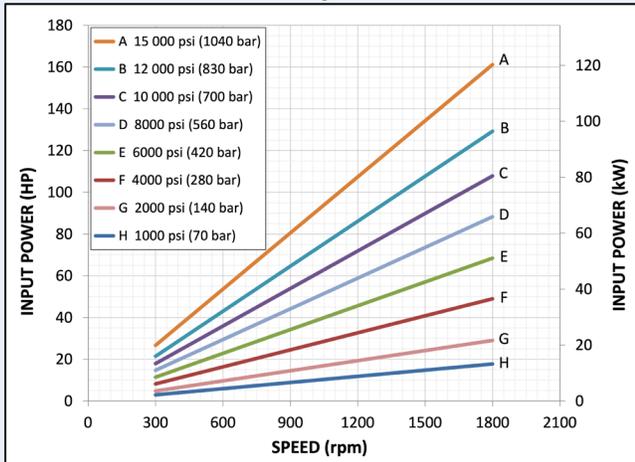
### PF6020 Input Power



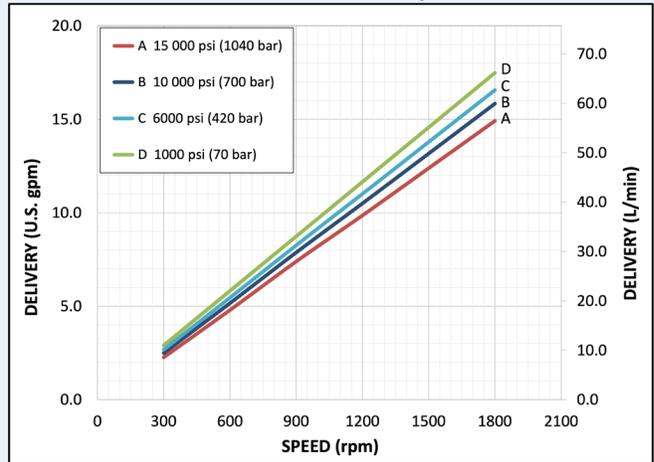
### PF6020 Delivery



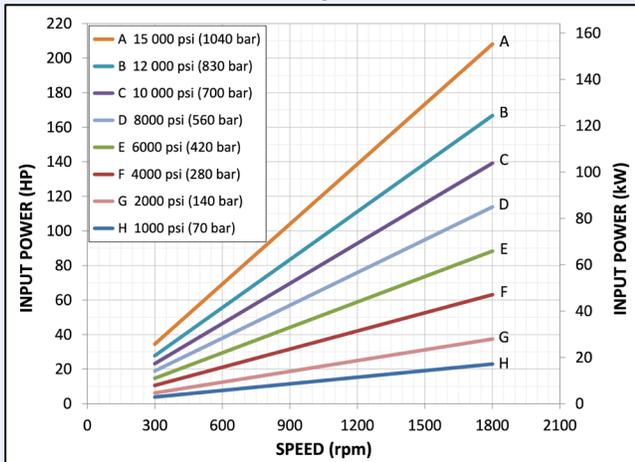
### PF6024 Input Power



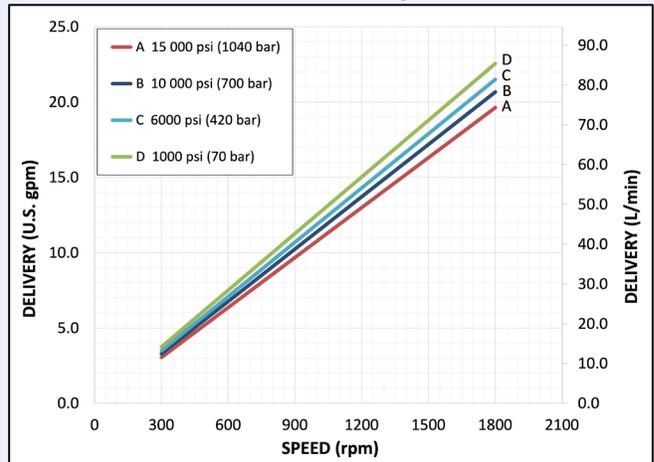
### PF6024 Delivery



### PF6030 Input Power



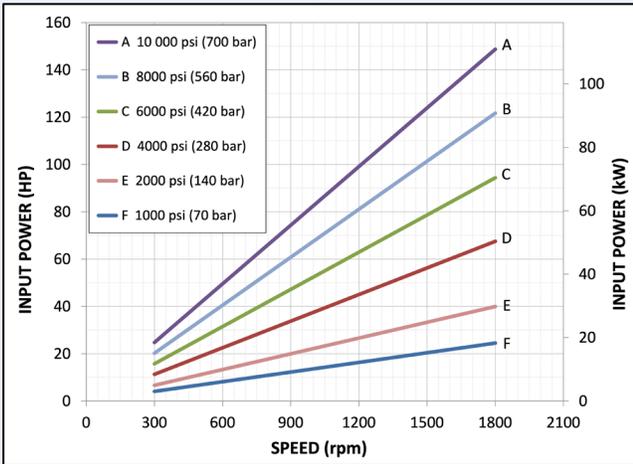
### PF6030 Delivery



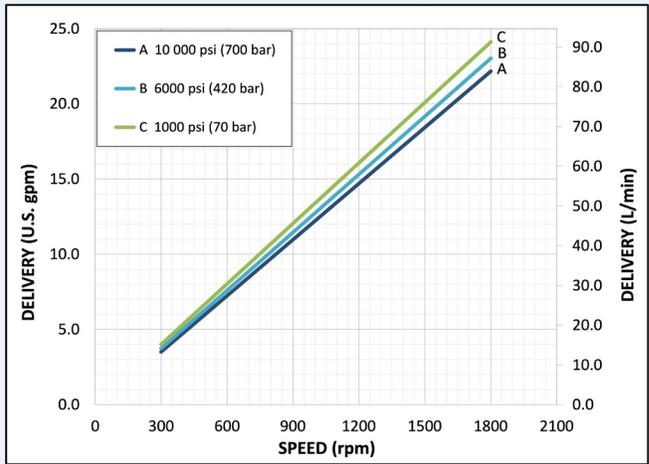
<sup>①</sup> Curves valid only when minimum inlet condition is met, and for most fluids at 100 SUS (20 cSt). Refer to "Minimum Inlet Conditions" table on page 2.

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

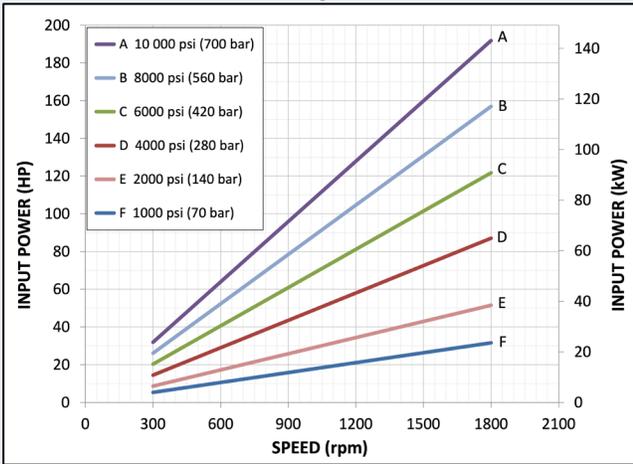
### PF6033 Input Power



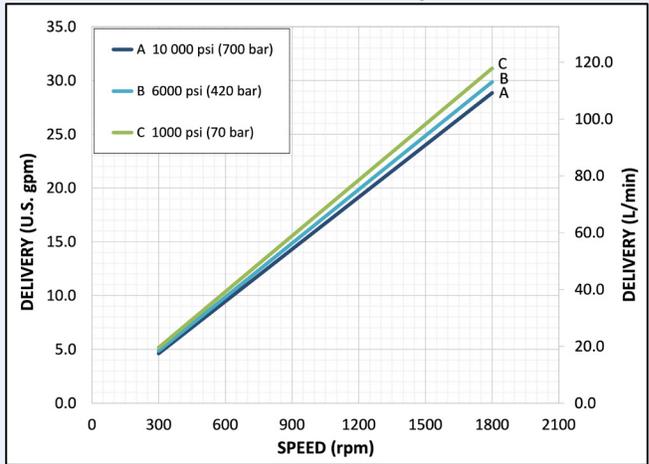
### PF6033 Delivery



### PF6042 Input Power



### PF6042 Delivery



① Curves valid only when minimum inlet condition is met, and for most fluids at 100 SUS (20 cSt). Refer to "Minimum Inlet Conditions" table on page 2.

# TYPICAL MODEL CODE

PF60

20

H – S XV A

–

44

–

10

Pump Type	
PF60	Fixed Displacement Checkball Pump

Design Number
10

Output Flow (At 1800 rpm, at Rated Pressure)	
20	Standard: 14.1 gpm (53,4 L/min) “H” option: 13.4 gpm (50,7 L/min)
24	Standard: 16.6 gpm (62,8 L/min) “H” option: 15.9 gpm (60,2 L/min)
30	Standard: 21.6 gpm (81,8 L/min) “H” option: 20.7 gpm (78,3 L/min)
33	Standard: 22.9 gpm (86,7 L/min) “H” option: 22.5 gpm (85,2 L/min)
42	Standard: 29.8 gpm (112,8 L/min) “H” option: 29.2 gpm (110,5 L/min)

<sup>①</sup> Refer to performance curves for flows at other pressures and speeds.

Operating Pressure	
No Code	Standard Pressure
H	High Pressure <sup>①</sup>

<sup>①</sup> Requires “A” or “B” port option.

Drive Shaft	
No Code	Keyed, 1.75 inch (44,44 mm) diameter
S	SAE Spline, 1.748/1.747 inch (44,39/44,37mm) diameter standard SAE 13-Tooth, 8/16 DP 30° involute Spline.

Seals <sup>①</sup>	
XV	All Fluorocarbon (Viton® or Fluorel®) with High Pressure Shaft Seal
XD	Fluorocarbon (Viton® or Fluorel®) with Polyurethane (Disogrin®) o-rings in the cover and High Pressure Shaft Seal
XE	All EPR (Ethylene Propylene Rubber) with High Pressure Shaft Seal

<sup>①</sup> Note: PF6042 requires 15 psi at 1800 rpm. Seal packages XV, XD, or XE recommended.

Split-Flow® Options PF6020, 24, 30	
44	Four-piston output + four-piston output
8X	Eight ports, each with one-piston output
4	Four-piston output + four inactive pistons

Split-Flow® Options PF6033, 42	
55	Five-piston output + five-piston output
10X	Ten ports, each with one-piston output
5	Five-piston output + five inactive pistons

Ports	
No Code	Inlet SAE 2-1/2" Code 61 4-Bolt Flange; Outlet No. 12 SAE <sup>①</sup>
A	Inlet SAE 2-1/2" Code 61 4-Bolt Flange; Outlet 1 Medium Pressure Coned and Threaded <sup>②</sup>
B	Inlet SAE 2-1/2" Code 61 4-Bolt Flange; Outlet G 3/4 (BSPP) <sup>③</sup>

<sup>①</sup> Not recommended for operation above 8000 psi (560 bar). Contact the fitting manufacturer for the pressure rating of the fitting.  
<sup>②</sup> High pressure port uses medium pressure coned and threaded (Autoclave, Butech, or equivalent).  
<sup>③</sup> Outlet port uses British Standard Pipe Parallel fitting. Not recommended for operation above 10 000 psi (700 bar).