

# P & PV SERIES

## Paper, Pulp & Process Pumps

www.TuffPumps.com

**Standardization:** With 12 horizontal pump sizes built around 3 power frames (designated as pump groups), the **P Series** maximizes bareshaft pump and spare parts interchangeability, and additionally reduces inventory requirements. In addition to the horizontal configuration, the **PV Series** provides a vertical cantilever (tank type mounting) option that covers all of the 12 available pump sizes. Each vertical cantilever pump is tailored to suit customer requirements.

**Greater Wear Life:** By utilizing high-grade cast irons, carbon steel, and stainless steel alloys; with 316 & Duplex St. Steel being commonly applied, together with extra thick material sections, the **P Series** maximizes wear life and reduces life-time costs. Where specifically requested or deemed a process necessity, the **P Series** can be supplied with alternative materials of construction and tailored to suit specific process liquors. All pump fasteners are in 304 or 316SS unless otherwise specified.

**Ease of Maintenance:** Simplified and faster maintenance is facilitated by the incorporation of a back pullout spacer type coupling design within the entire **P Series** pump range ~ with the ability to remove the complete bearing frame/rotating assembly without disturbing the pump casing, suction and discharge pipework, or the electric motor/diesel engine driver.

**Fixed/Variable Speed:** All **P Series** pump impellers can be cut to size to suit specific fixed speed duty conditions or, if so desired, can be left full size diameter when coupled to a variable speed driver.

**Top Centreline Discharge:** The **P Series** pump range is furnished with a top centreline casing discharge nozzle in order to provide self-venting of air-entrained liquors, and, coupled with a rigid foot mounted casing design, simplifies piping layouts, and minimizes induced stresses and potential misalignment problems.

**High Performance:** All **P Series** pumps have been designed with volutes and impellers that optimize erosive and corrosive liquor handling abilities with high efficiencies and lower power costs. Impeller adjustment is facilitated by the incorporation of an extremely accurate, high quality, rigid "shim set" that enables the user to counter normal (suction side) suction wear plate/impeller wear and improve/restore pump efficiency whilst leaving the complete pump in situ.

**Non-clog Open Impeller:** All **P Series** pumps are designed to handle erosive/corrosive, low suction pressure, fibrous, air-entrained and/or suspended solid type pulps and process liquors, thereby requiring cast iron, carbon steel, or stainless steel alloy fully open flow inducing contoured vane impellers that withstand erosion/corrosion, prevent clogging, and solids build-up behind impellers.

**Removable Suction Wear Plate:** In order to effect greater pump efficiency for longer periods of time, the entire **P Series** pump range is fitted with a cast iron, carbon steel, or stainless steel alloy contoured suction wear plate that effectively act as an impeller "suction side shroud". On many process liquor pumps ~ no matter how good the material fitted is ~ it is the suction side shroud of the impeller that wears fastest. The **P Series** pump range overcomes this by incorporating a separate, accurately contoured suction wear plate that can easily and more cost effectively be replaced as erosion/corrosion takes effect. By incorporating a standard shim set arrangement within the outboard bearing assembly, the entire rotating assembly can be moved forward to take up the wear between the impeller and suction wear plate, thereby restoring pump efficiency and facilitating prolonged wear life.

**High Shaft & Bearing Strength:** Over and above wear part strengths and planned longevity of life, the **P Series** range of pumps has taken this design philosophy farther, by incorporating oversized high tensile or stainless steel alloy shafts and similarly oversized bearings; with the outboard, drive end bearing designed to take a combination of relatively high radial and thrust loads, whilst the inboard, impeller end (floating) bearing is designed to take radial loads only.

**Maximum Bearing Protection:** All **P Series** pump bearings are double protected against the ingress of liquids and/or solid particles by an effective combination of outer deflectors or labyrinth seals and inner double lip oil or grease seals with other, more complex options available should the duty and/or application necessitate same. Bearing condition and general pump health can be remotely analyzed by the incorporation of optional electronic bearing sensors.

**Lubrication:** The **P Series** pump range can be supplied with oil bath, oil mist, or grease lubricated bearings; with the standard default system being oil mist. Extra large oil sight glasses or constant oil levelers are fitted as standard, with electronic oil detectors available as an optional extra. Bearing housing oil cooling systems are also available upon request and/or should the application operating temperature dictate necessary.

**Rotodynamic Sealing:** The **P Series** pump range is fitted ~ as standard ~ with 316SS glands and high grade GFO packing, however, should the application and/or customer require otherwise, the **P Series** pump range can be fitted with the following options:-

- Single or Double Mechanical Seals
- Single or Double Dynamic Seals (otherwise known as Expellers)
- Auxiliary/External Sealing Systems
- Oversized Parallel and Oversized Tapered Stuffing Boxes for Mechanical Seals ~ providing superior cooling/lubrication and/or self-venting.

### P & PV Series Pump Range ~ Maximum Performance Guide

**Pump Size**    **Flow Rate = m<sup>3</sup>/hour & Head = metres & Speed = rpm**

#### Group 1 Pumps:

<b>P6/3-14</b>	<b>Maximum</b>	<b>200 / 60</b>	<b>Maximum</b>	<b>1800</b>
<b>P6/4-14</b>	<b>Flow / Head =</b>	<b>340 / 60</b>	<b>Speed =</b>	<b>1800</b>

#### Group 2 Pumps:

<b>P8/4-17</b>		<b>520 / 90</b>		<b>1800</b>
<b>P8/5-17</b>	<b>Maximum</b>	<b>680 / 90</b>	<b>Maximum</b>	<b>1800</b>
<b>P8/6-17</b>	<b>Flow / Head =</b>	<b>1000 / 90</b>	<b>Speed =</b>	<b>1800</b>
<b>P10/8-17</b>		<b>1200 / 80</b>		<b>1800</b>
<b>P12/10-17</b>		<b>1500 / 75</b>		<b>1800</b>

#### Group 3 Pumps:

<b>P8/6-21</b>		<b>850 / 60</b>		<b>1200</b>
<b>P10/8-21</b>	<b>Maximum</b>	<b>1200 / 60</b>	<b>Maximum</b>	<b>1200</b>
<b>P12/10-21</b>	<b>Flow / Head =</b>	<b>1700 / 55</b>	<b>Speed =</b>	<b>1200</b>
<b>P14/12-21</b>		<b>2500 / 50</b>		<b>1200</b>
<b>P16/14-21</b>		<b>3400 / 50</b>		<b>1200</b>

**Key Note:** P8/6-17 = Process Pump IP1 with 8" N/ B Dia. Suction Nozzle, 6" N/B Dia. Discharge Nozzle, and 17" (full) Dia. Impeller.



**Head Office,**  
**Containerbase Building,**  
**Gartsherrie Road, Coatbridge,**  
**ML5 2DS, Scotland, United Kingdom.**  
**Tel: +44 (0)1236 437000**  
**Fax: +44 (0)1236 437037**  
**E-mail: info@tuffpumps.com**