**Design Features**

1. Easy to service. A radially split casing permits removal of the motor and pump rotating assembly, without removing the pump casing from the line.
2. Easy removal of complete pump from the line when necessary, due to companion flanges, supplied with the pump.
3. Inside type mechanical seal with Silicon carbide seat, serviceable without breaking pipe connections.
4. Flush and vent connection removes entrained air and ensures liquid at seal face at all times.
5. Equal suction and discharge connections result in simplified piping design and installation.
6. Fewer maintenance and servicing problems due to bearing-free pump design.

**Typical Applications**

- Cooling and heating systems.
- Pressure boosting systems.
- Industrial applications requiring a compact pump.
- OEM (Cooling tower, spray washer, fountain, etc.).
**Materials of Construction**

<table>
<thead>
<tr>
<th>PUMP SERIES</th>
<th>ANSI FLANGE RATING</th>
<th>MOTOR FRAME</th>
<th>CONSTRUCTION</th>
<th>CASING</th>
<th>IMPELLER</th>
<th>CAPSCREW (IMPELLER)</th>
<th>WASHER (IMPELLER)</th>
<th>SASKET (CASING)</th>
<th>ADAPTER BRACKET</th>
<th>MOTOR SHAFT</th>
<th>SHAFT SLEEVE</th>
<th>STUB SHAFT</th>
<th>SHAFT SPACER</th>
<th>WATER SLINGER</th>
<th>SEAL WASHER</th>
<th>SEAL SEAT</th>
<th>SEAL HARDWARE</th>
<th>SEAL ELASTOMER</th>
<th>SEAL SPRING</th>
<th>COMPANION FLANGES</th>
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**MATERIALS OF CONSTRUCTION CODE**

- BF - Bronze fitted
- Al - All iron
- AB - All bronze
- DBF - Bronze fitted, ductile casing and adapter bracket
- DI - All iron, ductile casing and adapter bracket
- BZ - Cast bronze ASTM B594 grade c82400
- BR-1 - Hard brass tubing ASTM B111.687
- BR-2 - Brass plate
- BU - Buna-N rubber
- CI - Cast iron ASTM A48 class 30
- F - Fiber
- N - Neoprene
- C - Resin bonded carbon (above 200°F/93°C: antimony loaded carbon)
- SiC - Silicon carbide
- S - Carbon steel
- ST - Plated steel
- SS-2 - ASTM A564 type 18-8
- SS-3 - ASTM A314 type 303
- SS-4 - ASTM A276 type 304
- SS-5 - AISI 1000-1018 type 316
- SS-6 - ASTM A314 type 416
- CE - Ceramic
- Di - Cast ductile iron ASTM A536 grade 65-45-12
- Se - Viton O-ring (FPM L - cup on potable water)

**Pressure/Temperature Chart Series 4360/4380**

![Pressure/Temperature Chart Series 4360/4380](chart_url)

**NOTES:**
- Hydrostatic test pressure at ambient temperature is 150% maximum working pressure.
- All values are based on clear, clean water. Values may change with other liquids.

Cast iron - NPT connections standard seal (Series 4360B)

**A** Cast iron - Standard seal NPT connections (Series 4360D) or ANSI 125 flanges (Series 4380)

**B** Ductile iron - Standard seal ANSI 250 flanges (Series 4380 only)
1.0 Pumps - Close Coupled Vertical In-Line.

2.0 Provide Armstrong single stage, single suction Vertical In-Line type pumps, with rising head to shut off pump characteristics. Refer to the schedule for pump flows and heads and motor speed, efficiency, enclosure and power requirements.

3.0 The pumps shall be Armstrong Series 4360 or Series 4380 motor mounted Vertical In-Line.

4.0 Pump Construction:

SERIES 4360:

4.1 Pump casing shall be cast iron, suitable for 175 psig (12 bar) working pressure at 140°F (60°C). The casing shall be hydrostatically tested to 150% maximum working pressure. The casing shall be radially split to allow removal of the rotating element without disturbing the pipe connections. The casing shall be provided with NPT threaded companion flanges, for the appropriate pump size, with gaskets and hardware.

4.2 Pump impeller shall be fully enclosed type. The impeller shall be keyed and secured to the pump shaft by stainless steel fittings.

4.3 The pump shaft shall be a stainless steel stub shaft for frame 56 motors. The steel motor shaft shall be enclosed by a bronze shaft sleeve, on other motor frame sizes.

4.4 Mechanical seal shall be single spring inside type with Resin Bonded Carbon* and Silicon Carbide faces, with stainless steel spring and hardware. (For 4360D potable water supply Resin Bonded Carbon and EPDM L-cup mounted Silicon Carbide faces)

Provide factory installed seal vent line, piped from the seal area to the pump suction connection.

SERIES 4380:

4.1 Pump casing shall be cast iron, suitable for 175 psig (12 bar) working pressure at 140°F (60°C). Ductile iron pump casings are suitable for pressures to 250 psig (17 bar). The casing shall be hydrostatically tested to 150% maximum working pressure. The casing shall be radially split to allow removal of the rotating element without disturbing the pipe connections. The casing suction and discharge connections shall be the same size and shall be provided with drilled and tapped seal vent and pressure gauge connections.

4.2 Pump impeller shall be bronze, fully enclosed type. Impeller shall be dynamically balanced.

4.3 A bronze shaft sleeve, extending the full length of the mechanical seal area, shall be provided.

4.4 Mechanical seal shall be single spring inside type with Resin Bonded Carbon* and Silicon Carbide faces, with stainless steel spring and hardware. (For potable water supply Resin Bonded Carbon and EPDM L-cup mounted Silicon Carbide faces)

Provide factory installed seal vent line, piped from the seal area to the pump suction connection.

5.0 Motor power requirements shown on the pump schedule are the minimum acceptable and have been sized for continuous operation without exceeding the full load nameplate rating over the entire pump curve, exclusive of service factor.

* For liquids above 200°F / 93°C use: antimony loaded carbon. For glycols above 30% by weight: use silicon carbide.

OTHER ARMSTRONG PRODUCTS

For even greater space savings, ease of installation and flexibility of use:

Specify Armstrong dualArm Vertical In-Line pump.

- Two (2) Armstrong time proven Vertical In-Line pumps in one (1) casing.
- Eliminates a complete set of piping and fittings.
- Stand-by or two pump parallel operation with no loss of single pump efficiency.
- Remove one pump for repair while the second pump continues to operate.

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