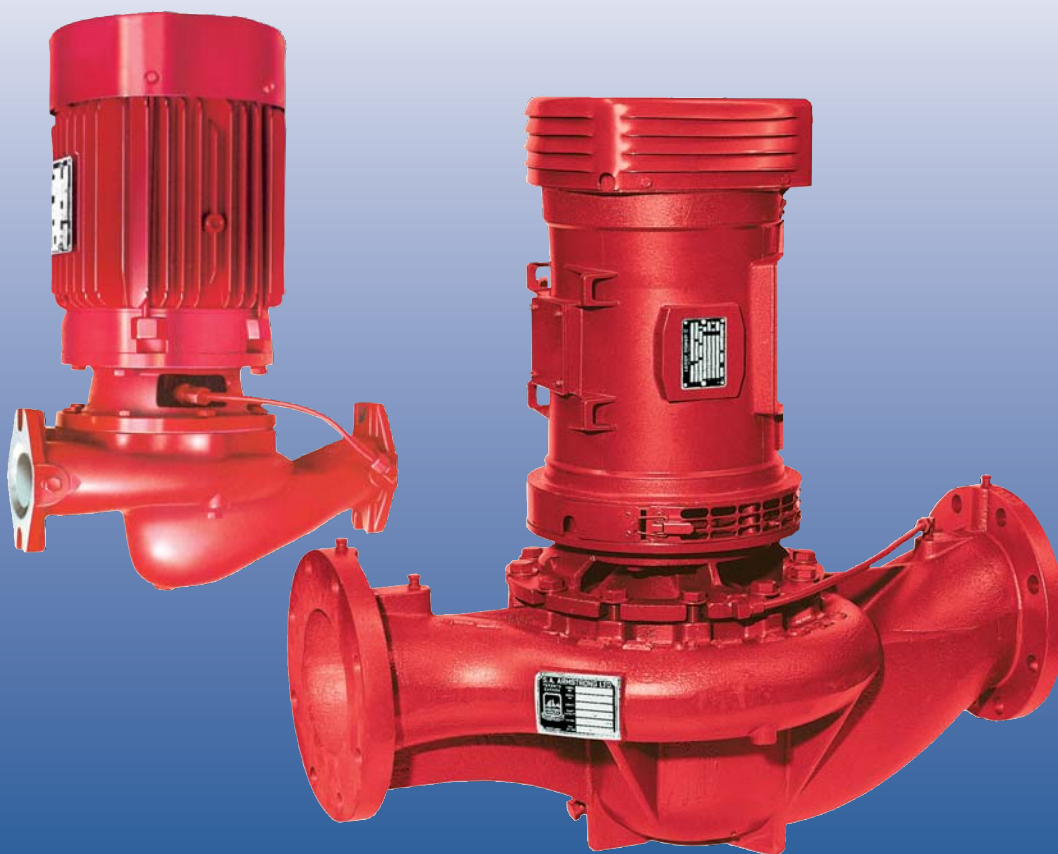


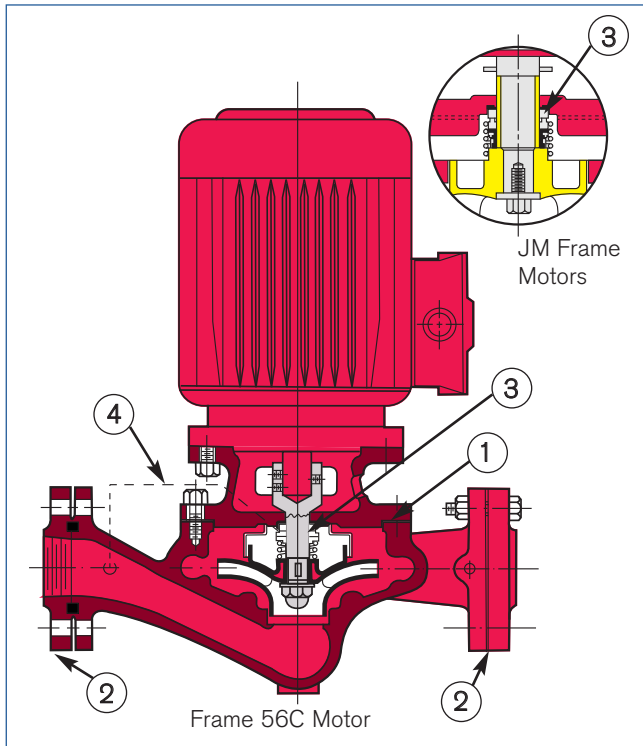
**ARMSTRONG**



## Close Coupled Vertical In-Line Pumps

FILE NO:	43.11
DATE:	Jan. 20, 2010
SUPERSEDES:	43.11
DATE:	Nov. 5, 2008

## ► Series 4360



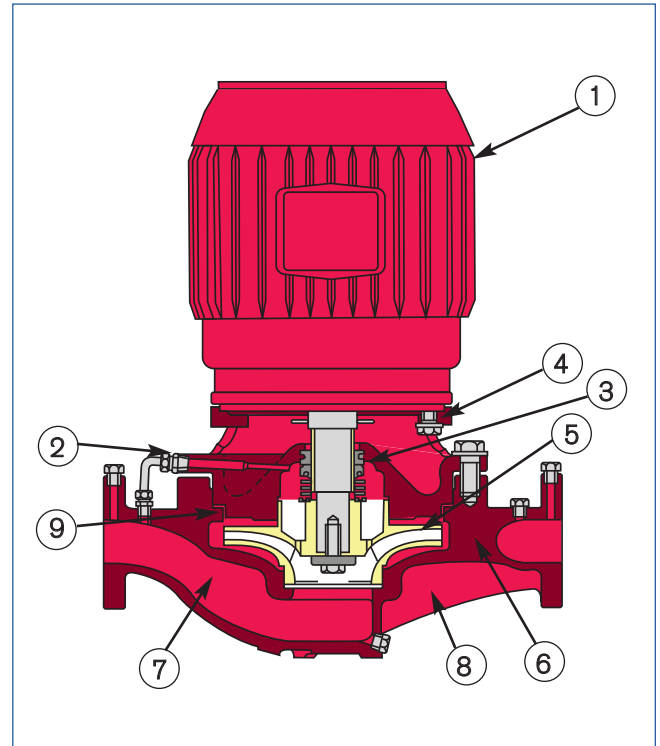
### ► Design Features

- 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.).

## ► Series 4380



### ► Design Features

- ① Industry standard face mounted motor.
- ② Flush and vent connection removes entrained air and ensures liquid at seal face at all times.
- ③ Inside type mechanical seal with Silicon Carbide seat, serviceable without breaking pipe connections.
- ④ Heavy cylindrical bracket with 360° register on both flanges provides a rigid union of pump and motor.
- ⑤ Dynamically balanced impeller assures smooth vibration-free operation.
- ⑥ Radially split casing with equal suction and discharge flange sizes. Separate tapped openings for gauge, flush and drain connections.
- ⑦ Liberal inlet passageways and straightening vanes provide optimum suction performance and quiet operation.
- ⑧ Ribs cast integral with casing. Machined surface to accept floor support when specified.
- ⑨ Confined casing gasket to meet stringent industrial temperature and pressure applications.

# Series 4360 & 4380

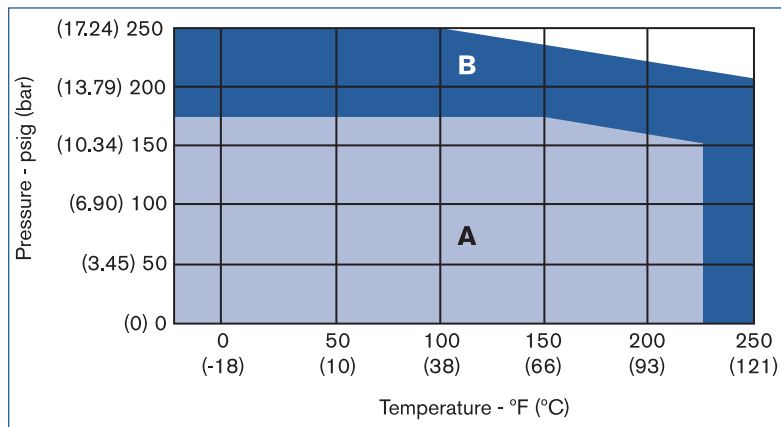
## ► Materials of Construction

Pump Series	ANSI Flange Rating	Motor Frame	Construction	Casing	Impeller	Capscrew (Impeller)	Washer (Impeller)	Acorn Nut (Impeller)	Gasket (Casing)	Adapter Bracket	Motor Shaft	Shaft Sleeve	Stub Shaft	Shaft Spacer	Water Slinger	Seal Washer	Seal Seat	Seal Hardware	Seal Elastomer	Seal Spring	Companion Flanges
4360 B	125		BF	CI	BR-2	-	-	SS-2	F	CI	S	-	SS-6	-	-	C	CE	BR-1	BU	SS-4	CI
	125	56c	AI	CI	ST	-	-	SS-2	F	CI	S	-	SS-6	-	-	C	CE	ST	BU	SS-4	CI
	125		AB	BZ	BR-2	-	-	SS-2	F	BZ	S	-	SS-6	-	-	C	CE	BR-1	BU	SS-4	BZ
4360 D	125		BF	CI	BZ	SS-5	SS-3	-	F	CI	S	-	SS-3	SS-4	N	C	SiC	SS-2	SE	SS-5	CI
	125	56c	AI	CI	CI	SS-5	SS-3	-	F	CI	S	-	SS-3	SS-4	N	C	SiC	SS-2	SE	SS-5	CI
	125		AB	BZ	BZ	SS-5	SS-3	-	F	BZ	S	-	SS-3	SS-4	N	C	SiC	SS-2	SE	SS-5	BZ
	125		BF	CI	BZ	SS-5	SS-3	-	F	CI	S	BR-1	-	SS-4	N	C	SiC	SS-2	SE	SS-5	CI
	125	JM	AI	CI	CI	SS-5	SS-3	-	F	CI	S	SS-4	-	SS-4	N	C	SiC	SS-2	SE	SS-5	CI
	125		AB	BZ	BZ	SS-5	SS-3	-	F	BZ	S	BR-1	-	SS-4	N	C	SiC	SS-2	SE	SS-5	BZ
4380	125		BF	CI	BZ	SS-5	SS-3	-	F	CI	S	-	SS-3	SS-4	N	C	SiC	SS-2	SE	SS-5	-
	125	56c	AI	CI	CI	SS-5	SS-3	-	F	CI	S	-	SS-3	SS-4	N	C	SiC	SS-2	SE	SS-5	-
	125		AB	BZ	BZ	SS-5	SS-3	-	F	BZ	S	-	SS-3	SS-4	N	C	SiC	SS-2	SE	SS-5	-
	125		BF	CI	BZ	SS-5	SS-3	-	F	CI	S	BR-1	-	SS-4	N	C	SiC	SS-2	SE	SS-5	-
	125	JM/JP	AI	CI	CI	SS-5	SS-3	-	F	CI	S	SS-4	-	SS-4	N	C	SiC	SS-2	SE	SS-5	-
	125		AB	BZ	BZ	SS-5	SS-3	-	F	BZ	S	BR-1	-	SS-4	N	C	SiC	SS-2	SE	SS-5	-
	250	JM/JP	DBF	DI	BZ	SS-5	SS-3	-	F	DI	S	BR-1	-	SS-4	N	C	SiC	SS-2	SE	SS-5	-
250		DI	DI	CI	SS-5	SS-3	-	F	DI	S	SS-4	-	SS-4	N	C	SiC	SS-2	SE	SS-5	-	

## Materials of Construction Code

BF	-	Bronze Fitted	BZ	-	Cast Bronze ASTM B584 Grade C84400	C	-	Antimony Loaded Carbon (Resin Bonded Carbon on potable water)	SiC	-	Silicon Carbide
AI	-	All Iron	BR-1	-	Hard Brass Tubing ASTM B111.687	CE	-	Ceramic	ST	-	Plated Steel
AB	-	All Bronze	BR-2	-	Brass Plate	DI	-	Cast Ductile Iron ASTM A536 Grade 65-45-12	SS-2	-	ASTM A564 Type 18-8
DBF	-	Bronze Fitted, Ductile Casing and Adapter Bracket	BU	-	Buna - N Rubber	F	-	Fiber	SS-3	-	ASTM A314 Type 303
DI	-	All Iron, Ductile Casing and Adapter Bracket	CI	-	Cast Iron ASTM A48 Class 30	N	-	Neoprene	SS-4	-	ASTM A276 Type 304
						S	-	Carbon Steel	SS-5	-	AISI 1010-1018 Type 316
						SE	-	Viton O-ring (EPDM L-cup on potable water)	SS-6	-	ASTM A314 Type 416

## ► Pressure/Temperature Chart Series 4360/4380



- (A) Cast Iron – ANSI 125 flanges - Series 4360 & 4380.
- (B) Ductile Iron – ANSI 250 flanges - Series 4380 only.

### 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.

## ► Typical Specifications

### 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 (4360B) single spring inside type with resin bonded carbon and ceramic faces with Buna elastomer (4360D) single spring inside type with Antimony Loaded Carbon and Viton O-ring mounted 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 Antimony Loaded Carbon and Viton O-ring mounted 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.

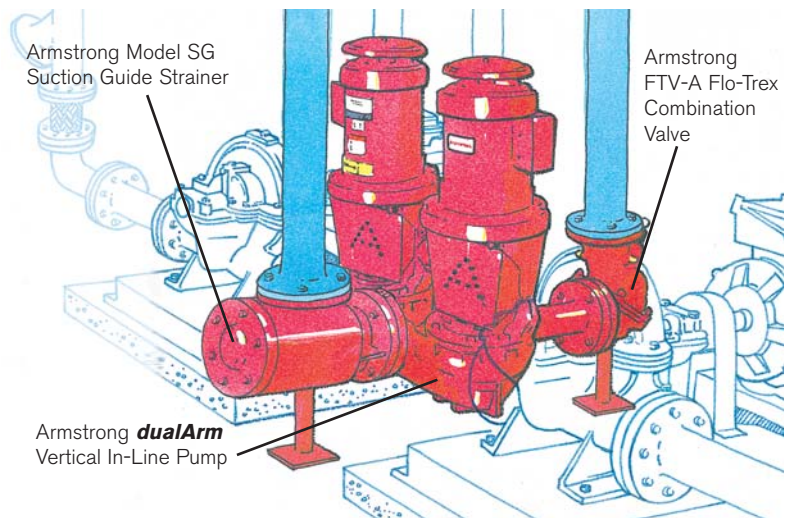
5.0 Motor power requirements shown on the pump schedule are the minimum acceptable and have been sized for continuous operation without exceeding the full load nameplate rating over the entire pump curve, exclusive of service factor.

## 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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