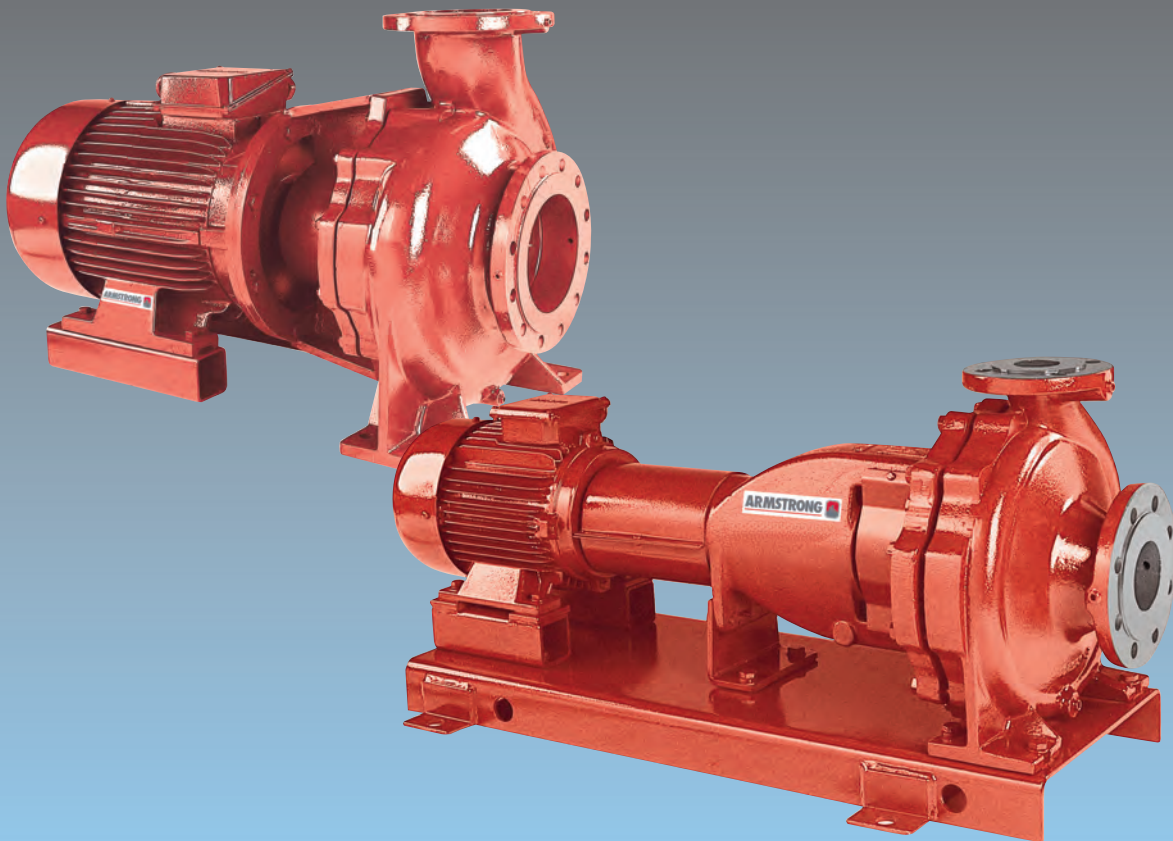


ARMSTRONG



End Suction Pumps

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4030 Starnorm & 4280 Starbloc End Suction Pumps



The Armstrong 4030 Starnorm and 4280 Starbloc Series offer technical excellence with a compact configuration. Both designs feature DIN 24960 mechanical seals with carbon vs. silicon carbide faces for long life and a pull out design for easy maintenance.

► Applications

- Flows up to 180 l/s, heads to 950 kPa
- Powers to 500kW
- 2 and 4 pole proprietary drives
- On transfer duties for a range of process and industrial liquids
- Static pressures up to 10 bar
- Temperatures up to 145°C
- Extensively specified for LTHW, MTHW, HTHW, Circulation, Chilled and Condenser Water

► Superior Components, Features and Benefits

- DIN 24960 mechanical seal with carbon versus silicon carbide faces for long life
- Impellers are trimmed to suit specified duties, to ensure efficient performance, low absorbed power and optimised motor selection
- IEC 72 standard motor for ease of supply and replacement
- Pressure gauge tapings on inlet/outlet flanges for ease of performance checks
- Grade 260 cast iron casings for robustness

► Long Life and Reliability

- Impeller back vanes provide hydraulic balance and reduce bearing loads, extending life times
- One piece gunmetal bronze impeller, when specified, resists corrosion, thus prevents seizure
- Solid stainless steel shaft resists corrosion and reduces possible leakage paths
- Substantial shaft diameters reduce deflection, increasing seal life
- Impellers are statically balanced.

► Installation

Pumps can be bolted directly to a concrete plinth or mounted on an inertia base, depending on the level of inertia efficiency required. Inertia bases should be sized to weigh 1.5 to 2.0 times the weight of the pump.

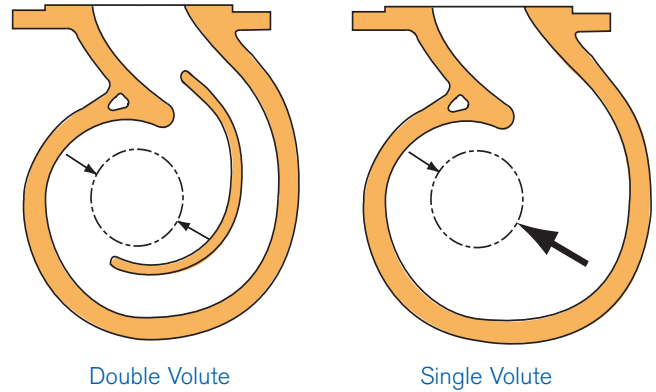
- Close coupled arrangement allows easy installation
- Suitable for horizontal pipelines
- Suitable for vertical pipelines up to 1.5kW motor size
- Starnorm provides lowest installed cost
- The Starbloc range offers the most compact duty / standby arrangement
- Chilled water pumps require suitable lagging on site against condensation
- Back pull-out gives easy access to internals
- 4280 Starbloc and 4030 Starnorm Series with motors of 11.0kW and larger require motor lifting facilities in the plant room

Life cycle value at every turn

► Double - Volute Feature

Eight Star range pump sizes have double-volute castings. The double-volute feature, generally only specified in heavy-duty process pumps, reduces radial shaft loads by balancing the opposing loads on the impeller, thus increasing life beyond that of conventional end suction pumps. The smaller load also reduces shaft deflection, increasing mechanical seal life.

Double-volute castings are featured on 80-165, 80-200, 100-200, 80-250, 100-250, 125-250, 150-250 and 250-315 sizes. Higher head sizes have intrinsic radial load balance radial thus are not fitted with double-volute castings.



► Pressure and Temperature Limits

Pressure: 10 bar - 4280 Starbloc
16 bar - 4030 Starnorm
25 bar - 4030 Starnorm S.G. Iron
Capacity: Up to 600 l/s

Temperature: 145°C maximum at suitable pressure and water quality.
Up to 175°C with gland cooling and soft gland packing.

Note: 32-120 pumps - 120°C and 6 bar limits.

► Silent Operation

Precautions should be taken to minimise the transmission of vibration to pipework and building structures in cases where plant is positioned close to domestic premises, schools and hospitals etc.

We recommend the use of a fabricated steel concrete filled inertia base placed on anti-vibration mountings.

► Ancillary Equipment Available

- Inertia bases with open springs for all sizes and types
- Neoprene in shear anti-vibration mounts with spreader plate
- Nylon reinforced flexible pipe connectors
- Suction guide/strainers and triple duty discharge valves

► Certified Performance Testing

Pumps are tested to the customer's specified duty conditions in line with ISO 9960:2000 grade 2 for performance

4280 Starbloc Series Close Coupled End Suction Pumps

Motor Mounted Centrifugal Pumps

► 4280 Series design features

- Easy maintenance due to back pull-out design
- Manufactured and inspected to rigid standards
- Self venting centre-line discharge
- Drilled and tapped gauge connections are standard on suction and discharge ports
- Mount with motor feet only, or motor and pump feet for convenience
- Extensive interchangeability of parts
- Quiet operation
- Confined casing gasket

► Impeller

Balanced impeller designed with balancing chamber and pressure relief holes in the impeller reduce axial thrusts to a minimum, ensuring smooth performance and long life.

► Casing

Radially-split casing with centre-line discharge can be left in the line while servicing the pump, eliminating needless disconnecting of pipes. Tapped openings are provided for draining and gauge connections. Double volute design where radial loads demand. Centre-line discharge allows self venting preventing possible pump failures due to vapor lock.

► Motor

The motor is equipped with heavy duty, grease-lubricated ball bearings adequately rated to accommodate impeller radial loads and residual hydraulic thrusts.

► Mechanical Seal

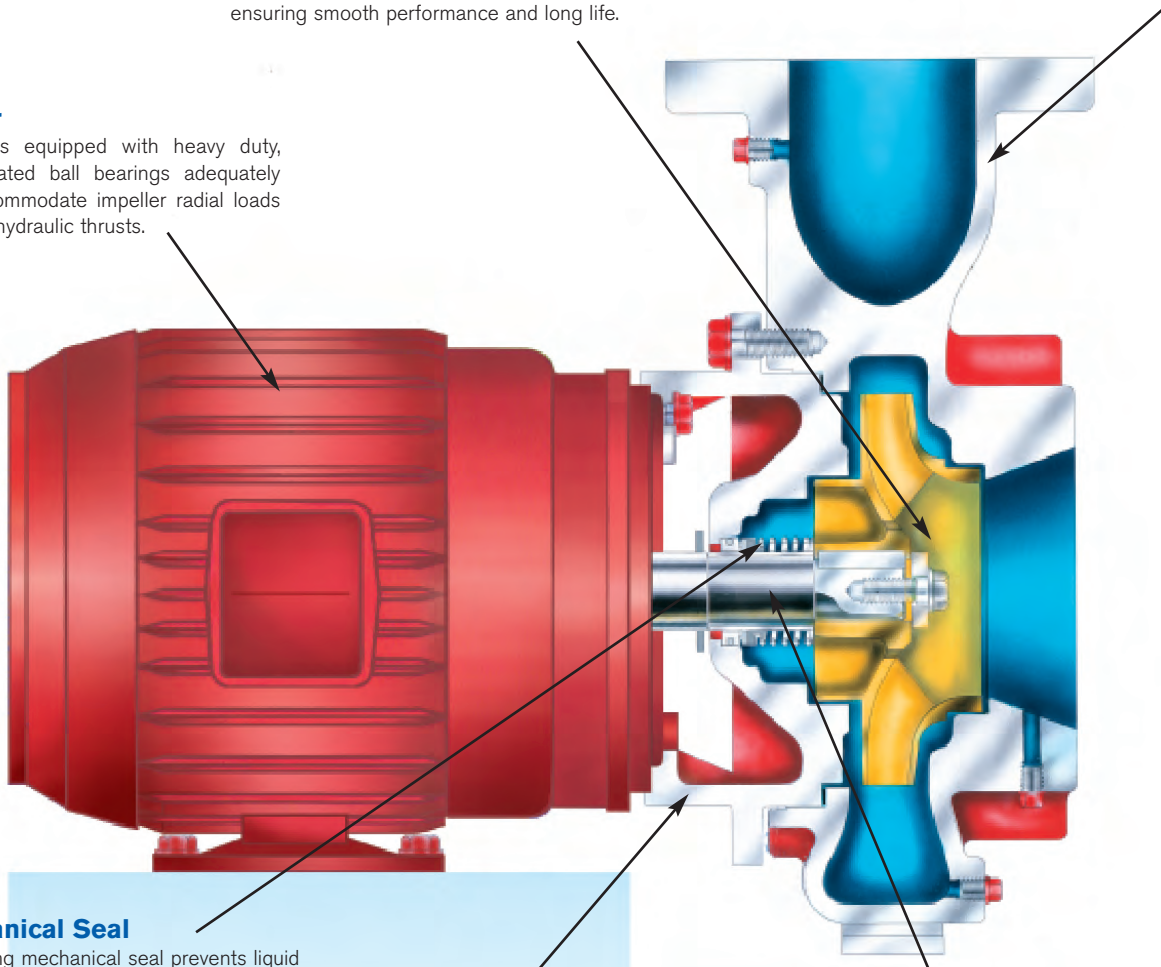
Self-lubricating mechanical seal prevents liquid seepage. A carbon face rotating against a stationary "O" ring seat provides positive sealing up to full design pressure. Higher temperature construction also available.

► Bracket

A heavy cylindrical bracket with 360 degree register on both flanges provides a rigid union of pump and motor and establishes perfect alignment.

► Shaft

The impeller is mounted on an extension of the motor shaft with minimum overhang. A shaft sleeve affords protection in the wetted area.



► Material of Construction

PUMP	Flange Rating (psig)	Motor Frame	Construction	Casing	Impeller	Capscrew (Impeller)	Washer (Impeller)	Gasket (Casing)	Adapter Bracket	Shaft Sleeve	Motor Shaft	Water Slinger	Seal Washer	Seal Seat	Seal Hardware	Seal Elastomer	Seal Spring
4280	125	JM/JP	BF	CI	BZ	SS-5	SS-2	F	CI	BR	S	N	C	CE	SS-2	EP	SS-5
4280	125	JM/JP	AI	CI	CI	SS-5	SS-2	F	CI	SS-5	S	N	C	CE	SS-2	EP	SS-5
4280	125	JM/JP	AB	BZ	BZ	SS-5	SS-2	F	BZ	BR	S	N	C	CE	SS-2	EP	SS-5
4280	250	JM/JP	DBF	DI	BZ	SS-5	SS-2	F	DI	BR	S	N	C	TC	SS-2	EP	SS-5

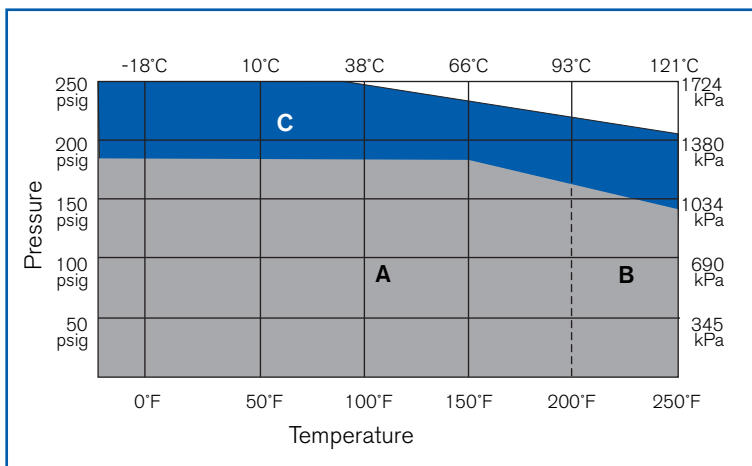
Materials of Construction Code:

BF - Bronze Fitted
 AI - All Iron
 AB - All Bronze
 DBF - Bronze Fitted, Ductile Casing and Adapter Bracket

Material Specification

BR	Hard Brass Tubing ASTM B111.687	C	Carbon	S	Carbon Steel
BZ	Cast Bronze ASTM B584	CE	Ceramic	SS-2	ASTM A564 Type 18-8
CI	Cast Iron ASTM A48 Class 30	DI	Cast Ductile Iron ASTM A536 Grade 65-45-12	SS-5	AISI 1010-1018 Type 316
		EP	EPDM elastomer	TC	Tungsten Carbide
		F	Fiber		

► Pressure / Temperature chart 4280 Starbloc Series



A- Cast Iron - PN16 flanges Standard Seal

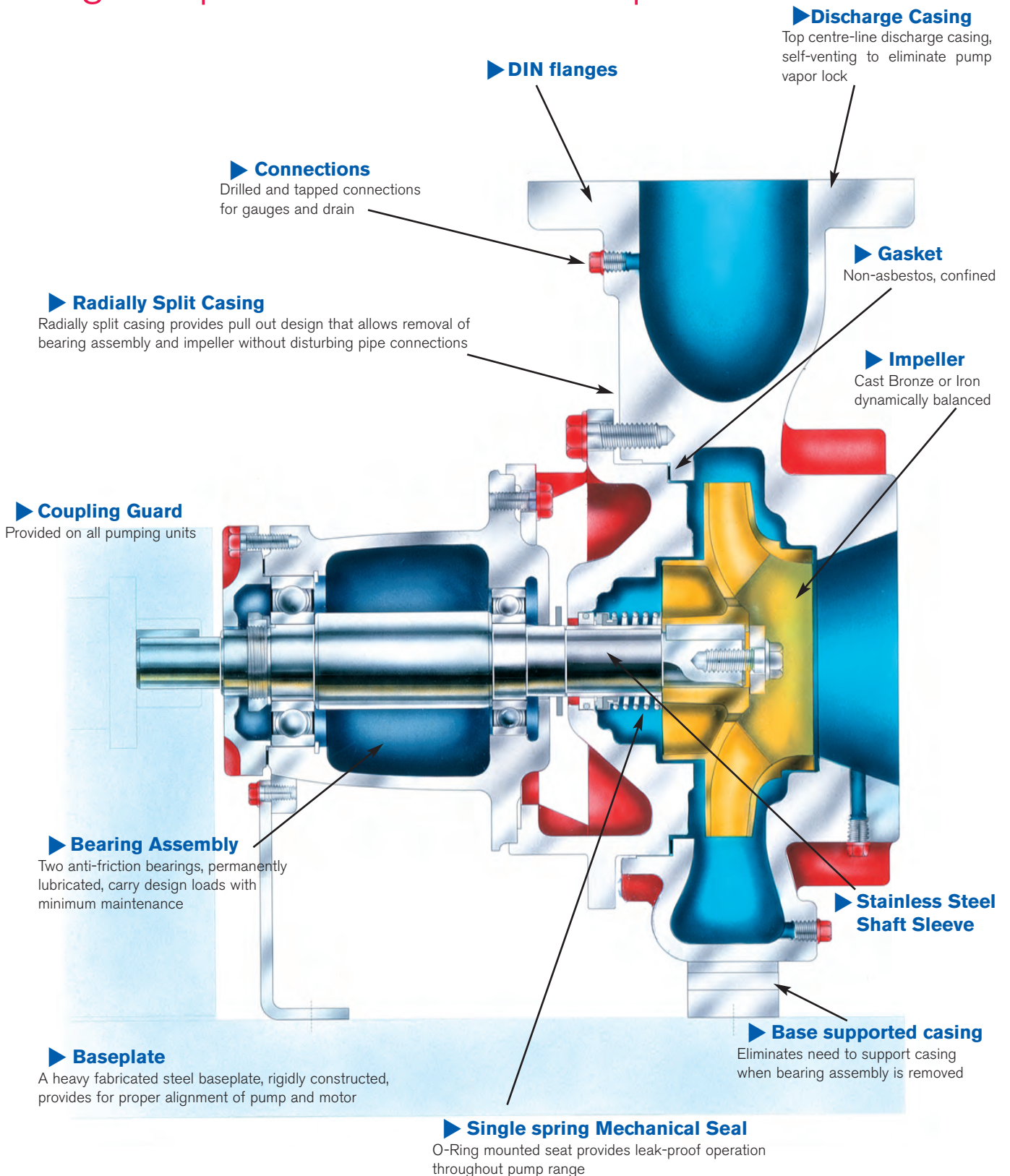
B- Tungsten Carbide seal seat recommended

B- Ductile Iron - PN16 flanges Tungsten Carbide seal seats supplied

Notes:

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

4030 Starnorm Series Long Coupled End Suction Pumps



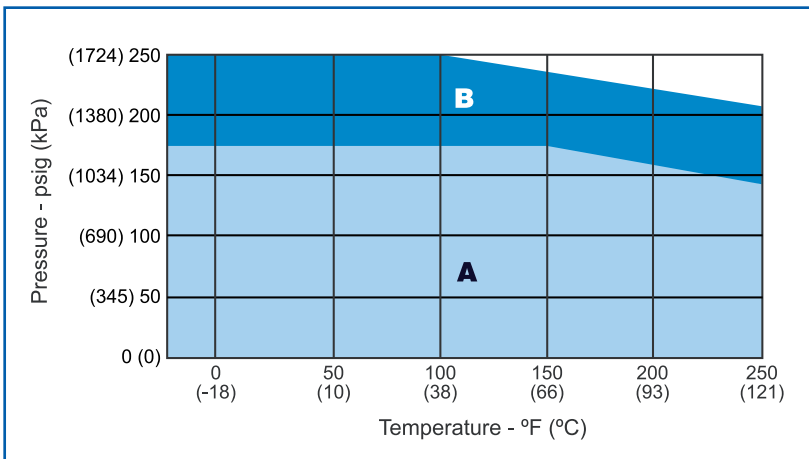
► Traditional Features:

- Back Pull Out Design
- Base Supported Radially-Split Casing
- Drain and Gauge Connections
- All Iron and Ductile Iron Construction available
- One Piece Baseplate
- Flexible Coupling, with Guard
- Cast Iron Housing, Bronze-Fitted Construction
- Designed, Manufactured and Inspected to Exacting Standards

► Material of Construction

Pump Body:	Cast Iron BS1454 GR 260. North Discharge, flanges BS 4504 - 16 bar rating. SG Iron - 25 bar rating - optional.
Impeller:	Gunmetal Bronze BS1400 LG2C or Cast Iron BS1452 Grade 260.
Shaft:	Stainless Steel BS970 431.S29
Seal Box:	Cast Iron.
Bearings:	Sealed for life, larger units grease lubricated.
Seal:	DIN 24960 Mechanical Seal, silicon carbide seat versus a carbon rotating face, for longer life, or Double Mechanical Seal or Water Cooled Packed Gland.
Motor:	IEC 72 standard IP55, EFF2 motor. Thermistors are standard on D200 frame and larger. Suitable for Armstrong approved frequency inverter drives. Class F insulation with Class B temperature rise.
Motor Optional	
Extras:	Power factor correction capacitors, supplied loose. Thermistors on D180 and smaller frames. Premium efficiency EFF1. ATEX explosion proof and increased safety, EEx d and EEx N, IP55 enclosure, others on application. Anti-condensation heaters.
Bearing Pedestal:	Cast Iron.
Base:	Robust Fabricated Steel.
Coupling:	Flexible non spacer type. Spacer type available as optional extra.

► Pressure / Temperature Chart 4030 Series



- A. Cast Iron - PN16 flanges Standard seal
- B. Ductile Iron - PN16 flanges up to 1600 kPa, Tungsten Carbide Seal

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

Typical Specifications

► 4280 Starbloc Series - Close Coupled End Suction Pumps

- Provide Armstrong single stage, single end suction, motor mounted centrifugal pumps, with rising head characteristics to pump shut off.
Refer to the schedule for pump flows and heads and motor speed, efficiency, enclosure and power requirements.
- The pumps shall be Armstrong 4280 Series motor mounted horizontal end suction pump.
- Pump Construction:
- Pump casing shall be cast iron, suitable for 12.05 bar working pressure at 65°C. (Ductile Iron for pressures to 17.24 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 shall be equipped with a drilled and tapped drain connection. Suction and discharge connections shall be provided with drilled and tapped pressure gauge connections.
- Pump impeller shall be fully enclosed type. Dynamically balanced.
- Provide a shaft sleeve, extending the full length of the mechanical seal area.
- Mechanical Seal shall be single spring inside type with carbon face rotating against an O-ring mounted seat. EPDM elastomer with stainless steel spring and hardware shall be provided.
- 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.

► 4030 Starnorm Series - Long Coupled End Suction Pumps

- Furnish and install, as indicated on the plans and specifications, Armstrong 4030 Series base mounted centrifugal pumps.
- The pump shall be single, end suction type with radially split, top centre-line discharge, self-venting casing. The casing-to-cover gasket shall be confined on the atmospheric side to prevent blow-out possibility.
- Pump construction shall be cast iron, bronze fitted (all iron, all bronze, ductile iron) and shall be fitted with a long-life, product lubricated, drip-tight mechanical seal, with O-ring seat retainer, designed for the specified maximum temperature and pressure.
- The shaft shall be fitted with a Stainless Steel shaft sleeve and be supported by two heavy duty ball bearings. The design shall allow Back Pull Out servicing, enabling the complete rotating assembly to be removed without disturbing the casing piping connections.
- The pump shall be mounted on a rigid, single piece baseplate, with grouting hole, and connected by flexible coupling, with OSHA guard, to a ____ kW, ____ Hz, ____ phase, ____ Volts, ____ rpm, ____ enclosure squirrel cage, induction type motor of Federal approved (premium, ____%) efficiency level and suitable for across-the-line (wye-delta, part wind) starting.
- The housing shall be hydrostatically tested to 150% maximum working pressure.
- The unit shall be suitable for the conditions shown on the pump schedule.

Our policy is one of continuous improvement and we reserve the right to alter our dimensions and specifications without notice

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