



## System One® Pumps Featuring L/D Design



### Industry Standard for Reliability

- High-strength, low maintenance line of innovative process pumps
- Designed specifically for the toughest, most extreme environments
- Sets the industry standard for high-quality and durability

### Durability

- Lowest shaft stiffness ratio ( $L^3/D^4$ ) in the process industry:
  - Frame S – 46 (1.9)
  - Frame LD17 – 17 (.65)
  - Frame M – 19 (.87)

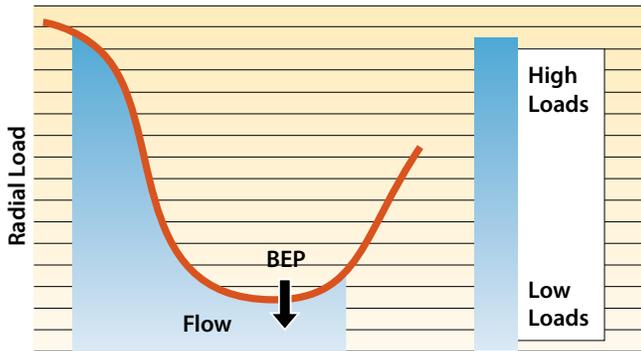
### Exclusive Features

- Designed around the seal and bearings where 90% of failures occur
- Designed to maximize system reliability – stronger, more vibration-resistant pump
- Heavy-duty, solid, low deflection shaft prevents common vibration damage and greater stability at the seal area to improve seal life
- Heavy-duty bearings offer greater load capacity and extend bearing life
- System One® Labyrinth Seals provide non-wearing lifetime protection for radial and thrust bearings

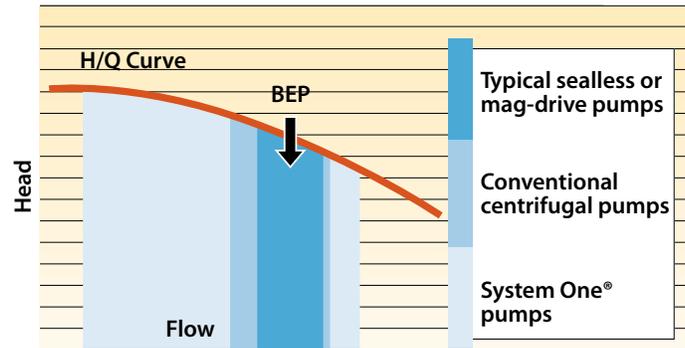
### Heavy-Duty Construction

- Heavy-duty shaft, bearings, seals and housing design means this pump is built for reliability in the most extreme environments
- Offers the widest window of operation off the BEP of any conventional centrifugal pump

## Wider Window of Operation Off the BEP (Best Efficiency Point)



Many processes demand operation off the BEP where higher loads can create damaging vibration.



System One® pumps resist vibration for a larger operational window off the BEP and greater reliability.

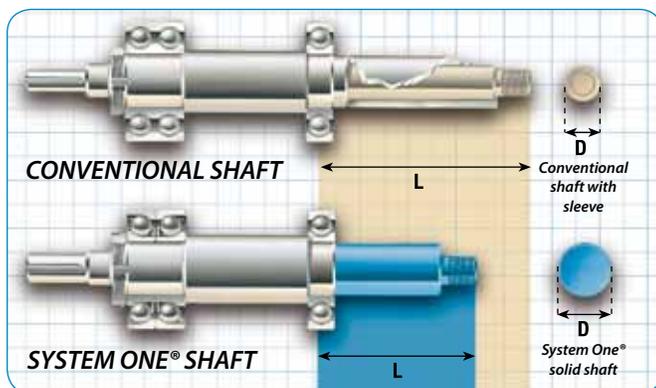
### Process Pump Challenges:

- Due to process changes and variations, the majority of process pumps operate off the BEP where radial loads create high stresses.
- Conventional pumps are prone to damaging shaft vibration under off-BEP conditions.
- Seal and bearing failures result from vibration damage.

### System One® Is The Solution:

- Heavy-duty design for the toughest applications in the process industry.
- System One® pumps are designed to prevent vibration under high radial loads.
- System One® pumps offer the widest operational window off the BEP of any standard process pump.
- Seals and bearings last longer for greater system reliability.
- When your process demands that pumps vary from the BEP, System One® will save you money and prevent lost production.

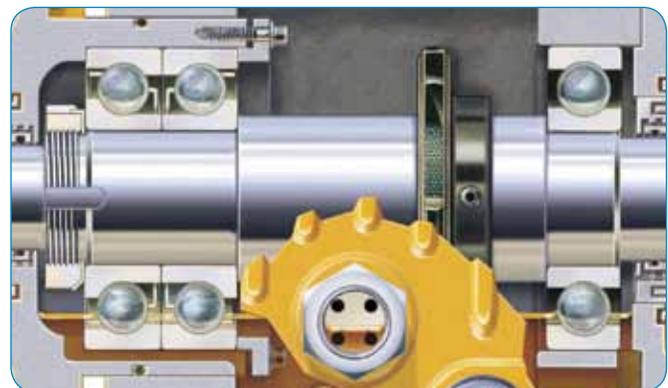
## Shaft



Solid design, low deflection shaft prevents common vibration damage

- Prevents common vibration damage.
- Heavier duty construction and lower stiffness ratios than competing pumps.
  - Frame S – 46 (1.9)
  - Frame LD17 – 17 (.65)
  - Frame M – 19 (.87)
- Greater stability at seal area improves seal life.
- Short shaft overhang reduces bearing load to extend bearing life.

## Bearings



Heavy duty bearings with longer bearing life

- Larger bearings than competing pumps for greater load capacity and bearing life.
- Bolted retainer cover locks thrust bearing into cartridge for enhanced reliability.
- Angular contact thrust bearings as required by API 610 specification. Optional on Frame S.

## Construction

Pumps designed specifically to operate in severe applications. Resist vibration that would otherwise cause frequent maintenance shutdowns. Frame LD17 shown.

**Micrometer adjustment nuts** simplify and ensure precise impeller setting for maximum efficiency.

**Positive locking thrust bearing retainer cover** for maximum bearing holding power and minimum axial movement.

**Large inlet** for easy filling of oil. Close fitting cover minimizes dirt and moisture entry.

**System One® Labyrinth Seals** provide non-wearing lifetime protection for radial and thrust bearings.

**Precision cast smooth surface** for efficient flow.

**Solid shaft** (no sleeve) with minimal overhang provides superior resistance to deflection. Lowest L3/D4 ratio in the industry.

**Oversized 7310 (pr) angular contact bearings** are standard for high thrust capability, as required by API 610 specifications.

**Rabbit for C-Frame (NEMA) or D-Flange (IEC) motor adaptor** provides for automatic mechanical motor alignment without special tools or excessive labor.

**Two magnetic plugs** are provided to maintain clean oil and are removable for insertion of cooling coil.

**Full support rear leg** assures bearing frame remains upright during pump disassembly. Full adjustability aids in alignment.

**Oil sight glass** for constant monitoring of oil level and condition.

**Flinger filter** constantly cleans oil during pump operation.

**Optional bearing oil temperature monitor** indicates potential failure of bearings and/or lubrication by an increase in oil temperature.

**Centerline casing support legs** are adjustable for pipe variations and minimize heat effects, as required by API 610 specifications.

**Large bore seal chamber** (available with optional throat bushing).

## Blackmer System One® Performance Assurance

**Five Year Power End Performance Assurance** – Should any System One® power end component fail within 5 years of the original installation, including bearings or shafts that have fractured, a free replacement component will be provided. This offer is limited to a claim for one of each component per power end.\*

**One Year Mechanical Seal Performance Assurance** – Should any factory supplied and installed mechanical seal fail within one year

after the sale of the pump and seal, a spare parts kit (with materials the same as the original seal) will be provided at no charge. Program includes power end conversions that were purchased with Blackmer System One® back cover conversions. Limit of one seal claim per application.\*

*\*See current Blackmer System One® Warranty, Form 001-002, for full product warranty details including exclusions and limitations of liability.*



**blackOPS: Blackmer Optimum Pump Solutions** – blackOPS is a selection software program created specifically for Blackmer's System One® centrifugal and positive displacement pump lines. The program allows you to print (or save) your pump selection data and pump curves in a PDF format. For additional information on blackOPS, log onto [www.blackmer.com](http://www.blackmer.com).



# System One® Pumps

Products for the Process Industry

## Frames S & SD

- Mid-size frame strength and reliability in small frame space – heavy-duty alternative to standard small frame pumps
- Lowest  $L^3/D^4$  stiffness ratio of any competitive size pump – 46 (1.9) Frame S
- Meets ASME/ANSI dimensional specifications
- Frame SD is the DIN/ISO (metric) version
- Capacities to 450 gpm (102 m<sup>3</sup>/hr)



## Frame A/LD17

- Low maintenance, long life, maximum value process pump
- Most stable shaft in the industry
- Lowest  $L^3/D^4$  stiffness ratio of any competitive size pump – 17 (.65) Frame LD17
- Dramatically reduces bearing, sealing device and shaft failures
- Frame A meets ASME/ANSI dimensional specifications
- LD17 configuration available for severe-duty applications
- Available in IPP Metric construction
- Capacities to 1,400 gpm (320 m<sup>3</sup>/hr)

## Frame M

- Engineered reliability for the most demanding environments
- Lowest  $L^3/D^4$  ratio of any process pump in this size range – 19 (.87) Frame M
- The only ASME/ANSI B73.1 pump of its size that offers centerline mount for high temperature applications
- Optional left/right side discharge

## Vortex

Vortex pump puts System One® strength and reliability in the service of handling entrained solids without clogging. Available in the LD17 and IPP Metric configurations. Capacities to 1,500 gpm (340 m<sup>3</sup>/hr).

- Frame A and LD17 pump with vortex casing and impeller, designed specifically for difficult pumping situations:
  - Sludges and slurries with large solids
  - Pumped material with entrained air
  - Pumped fluids with stringy or fibrous materials
  - Minimum product shearing



- ASME/ANSI & IPP Metric flanges available
- Especially suited for:
  - Waste treatment
  - Food and chemical processing
  - Agriculture

## Power End Conversions

- Upgrade existing pumps to System One® heavy duty design
- Low stiffness ratio power end for maximum reliability
- Direct replacements available for popular models



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