Blackmer
A DOVER COMPANY

SPEC SHEET 1301-007

Section: **1301**
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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)

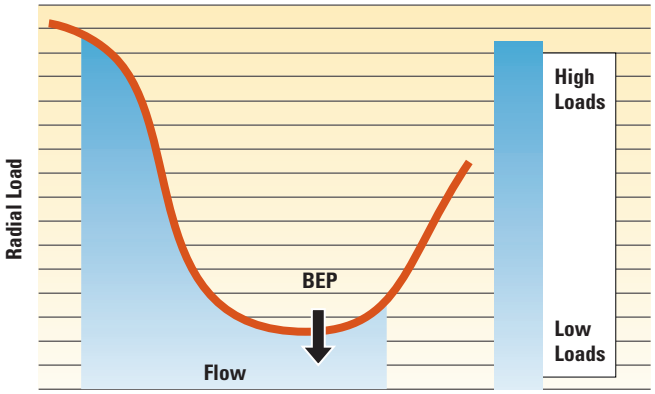
Exclusive Features

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

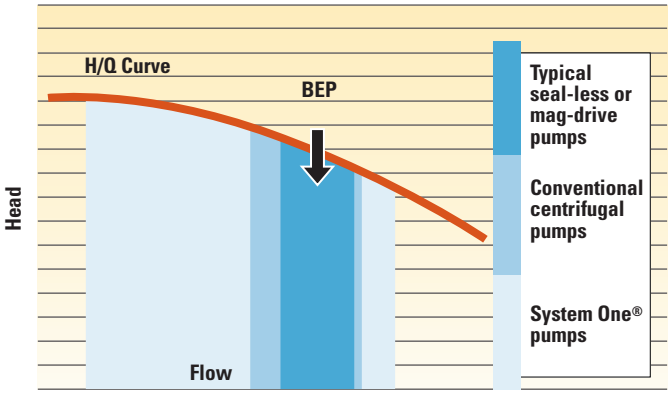
Heavy-Duty Construction

- 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.

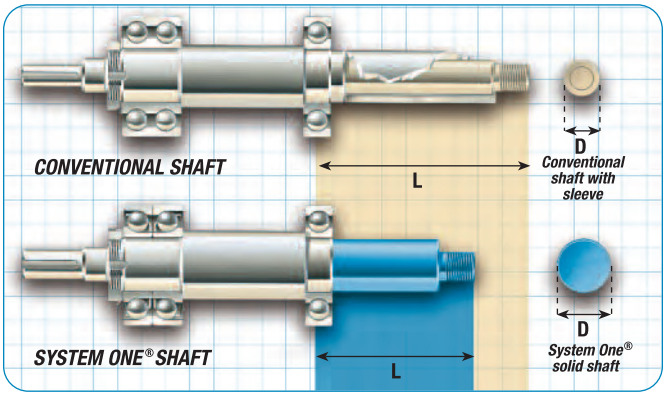
Process Pump Challenges:

- 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.

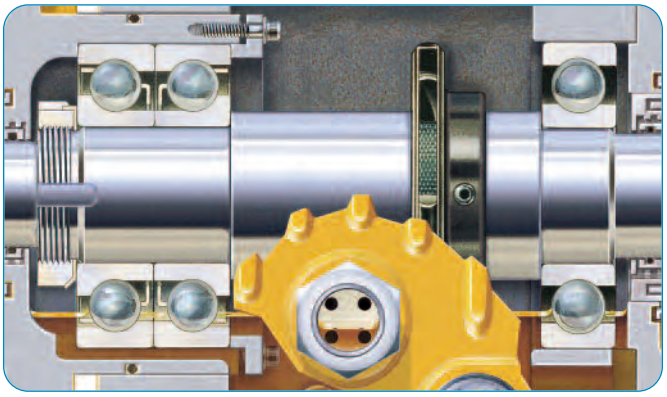
Shaft



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



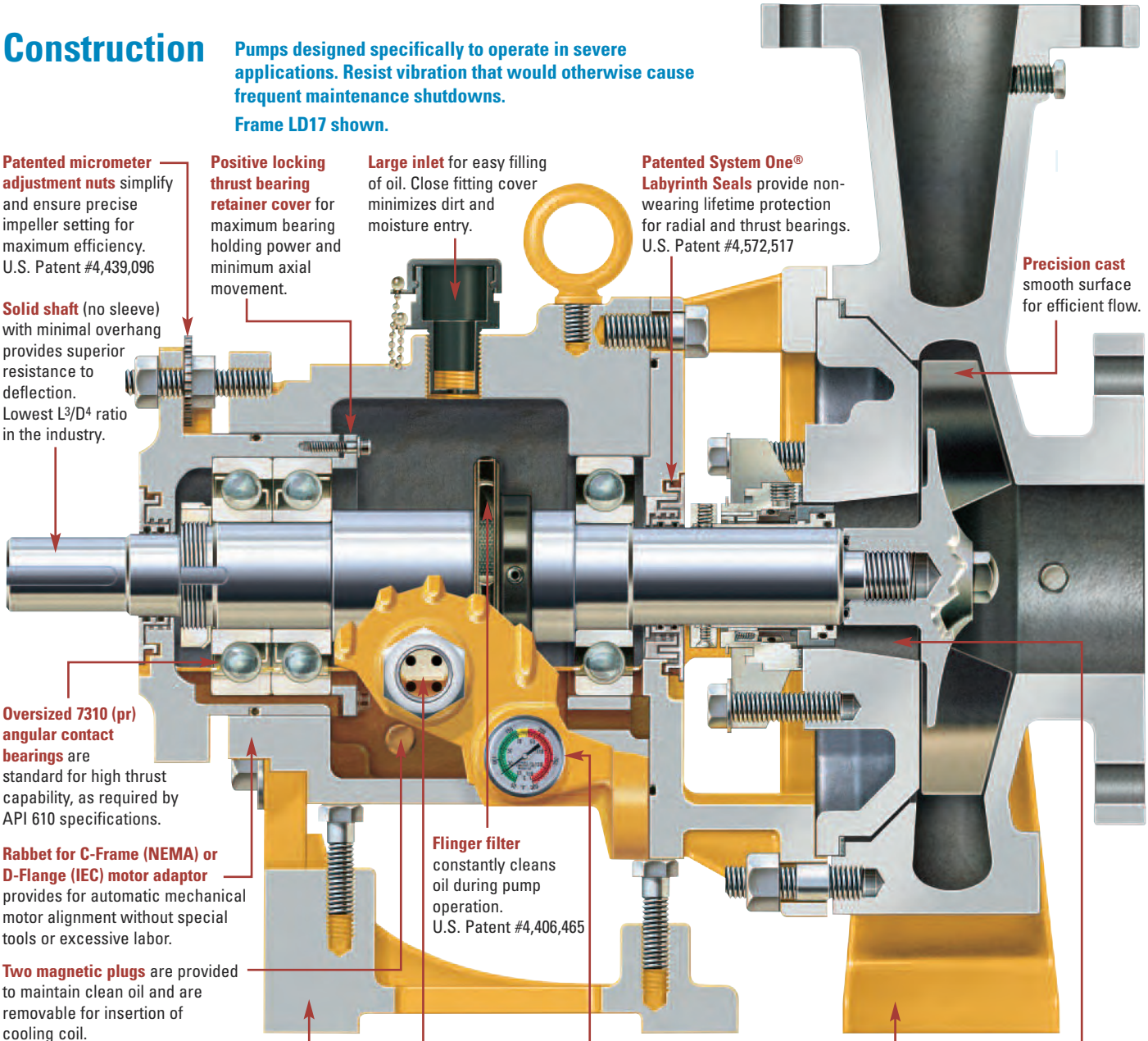
Heavy duty bearings with longer bearing life

- 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.

Construction

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

Frame LD17 shown.



Patented micrometer adjustment nuts simplify and ensure precise impeller setting for maximum efficiency. U.S. Patent #4,439,096

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.

Patented System One® Labyrinth Seals provide non-wearing lifetime protection for radial and thrust bearings. U.S. Patent #4,572,517

Precision cast smooth surface for efficient flow.

Solid shaft (no sleeve) with minimal overhang provides superior resistance to deflection. Lowest L^3/D^4 ratio in the industry.

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

Rabbet 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.

Flinger filter constantly cleans oil during pump operation. U.S. Patent #4,406,465

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.

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.

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^3/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^3/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^3/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
  - Pulp and paper
  - 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
- Universal configurations to fit most other pumps

BLACKMER MEMBER OF PSG™ PUMP SOLUTIONS GROUP A DOVER COMPANY

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