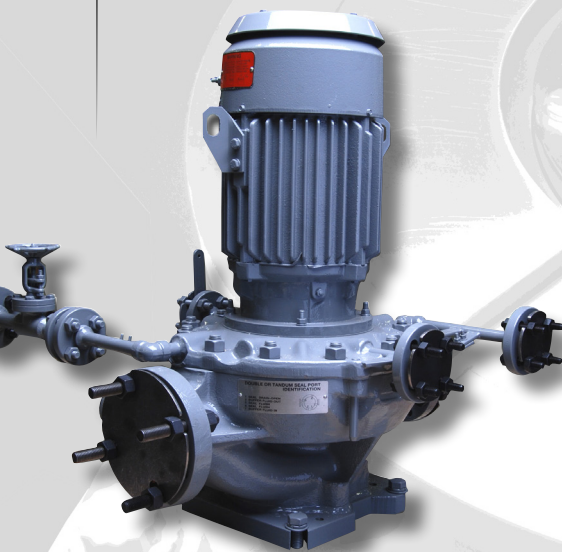


LMV Direct Drive API-610 Centrifugal Pumps

LMV 801:

Delivering multi-stage performance in a space-saving, single-stage design.



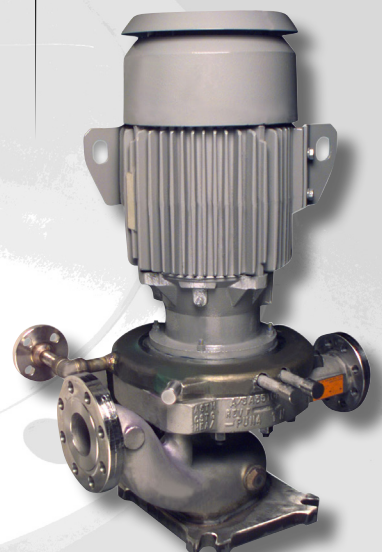
LMV 802:

Custom engineered to meet your unique Best Efficiency Point.



LMV 806:

The industry standard for high-head, low-flow fluid handling technology.



Innovators in Pump Technology

Sundyne LMV Direct Drive

For over 50 years, Sundyne LMV (Line-Mounted-Vertical) Direct Drive centrifugal pumps have set the industry standard for high-head, low-flow fluid handling technology. Featuring a modular design with an independent gearbox and wet-end, our engineers custom build every pump to meet the unique Best Efficiency Point (BEP) of each customer's application. With over one million possible configurations available, Sundyne pumps deliver multi-stage performance in a single-stage design.

Built to meet standard OH5 configurations – or OH3 when used with a bearing box option – Sundyne LMV Direct Drive pumps are available in three flexible models and are capable of delivering a broad range of flows and heads.

These API-610 compliant pumps deliver rugged reliability in a compact footprint; equating to maximized uptime, reduced maintenance costs and optimized productivity over the lifecycle of the unit. Backed by our global network of Authorized Service Centers, Sundyne pumps are the best in class option for a wide range of critical applications in the refining, petrochemical, chemical, gas production and power generation sectors.



A Legacy Of Inspiration

Sundyne is a leading global manufacturer of pumps and compressors, which are highly regarded for their engineering excellence and reliability.

Sundyne traces its origins back to Sundstrand's Aviation Division, when they were contracted by Boeing Aircraft to build a high pressure water injection pump to increase jet engine thrust during take off. It was from this unique high speed, single-stage centrifugal pump that Sundstrand Fluid Handling – now Sundyne – got its start. Later, in 1962, this design was adapted for use in the hydrocarbon processing industry.

Today, Sundyne leadership in the marketplace can be attributed to our continued dedication to research and development. Via the use of CAD systems and computer sizing programs, we are able to provide our customers with state-of-the-art fluid handling technology that is custom engineered to deliver optimized efficiency and unflagging performance. Combined with our strict quality control and testing procedures, each shipped pump features the finest workmanship, highest quality and industry best reliability.

A full range of tests are performed on each pump at the time of shipment, including vibration analysis, metallurgical checks, casing radiography and more. Additionally, we carry out hydrostatic and performance tests to fully assure the integrity and reliability of the pump.

Furthermore, the Sundyne after-sales service network stands ready to perform on-site consultations and service anywhere in the world. We back our products with quality Genuine Sundyne Parts; and because we know our customers operate around the clock and around the globe, we maintain a 24-hour hotline to handle any emergency.

At Sundyne, we are fully committed to not only maintaining our technological leadership as a supplier of pumps and compressors, but also to our customers as a provider of aftermarket support and service.

Sundyne: Reliability Realized.

Applications

Sundyne direct drive API pumps are suitable for use in a broad range of industrial applications, from simple washdown and cleaning services to heavy duty cryogenic and boiler feed processes.

Petrochemical & Petroleum Refining

- Charging Transfer
- Reactor Feed
- Recycle
- Make-Up
- Bottoming
- Pipelines

Power Generation

- Oil Fired Boilers In Primary Feed & Constant Differential Services
- Boiler Feed
- Desuperheating
- Condensate
- Fuel Feed

General Industry

- Washdown & Cleaning Services
- Boiler Feed
- Desuperheating
- Mechanical Atomization
- Seal Water
- Reverse Osmosis
- Cryogenic Services
- High Pressure Showers
- Steel Mill Descaling
- Offshore Platform Services
- Oil Field Well Injection

Inorganic Chemicals

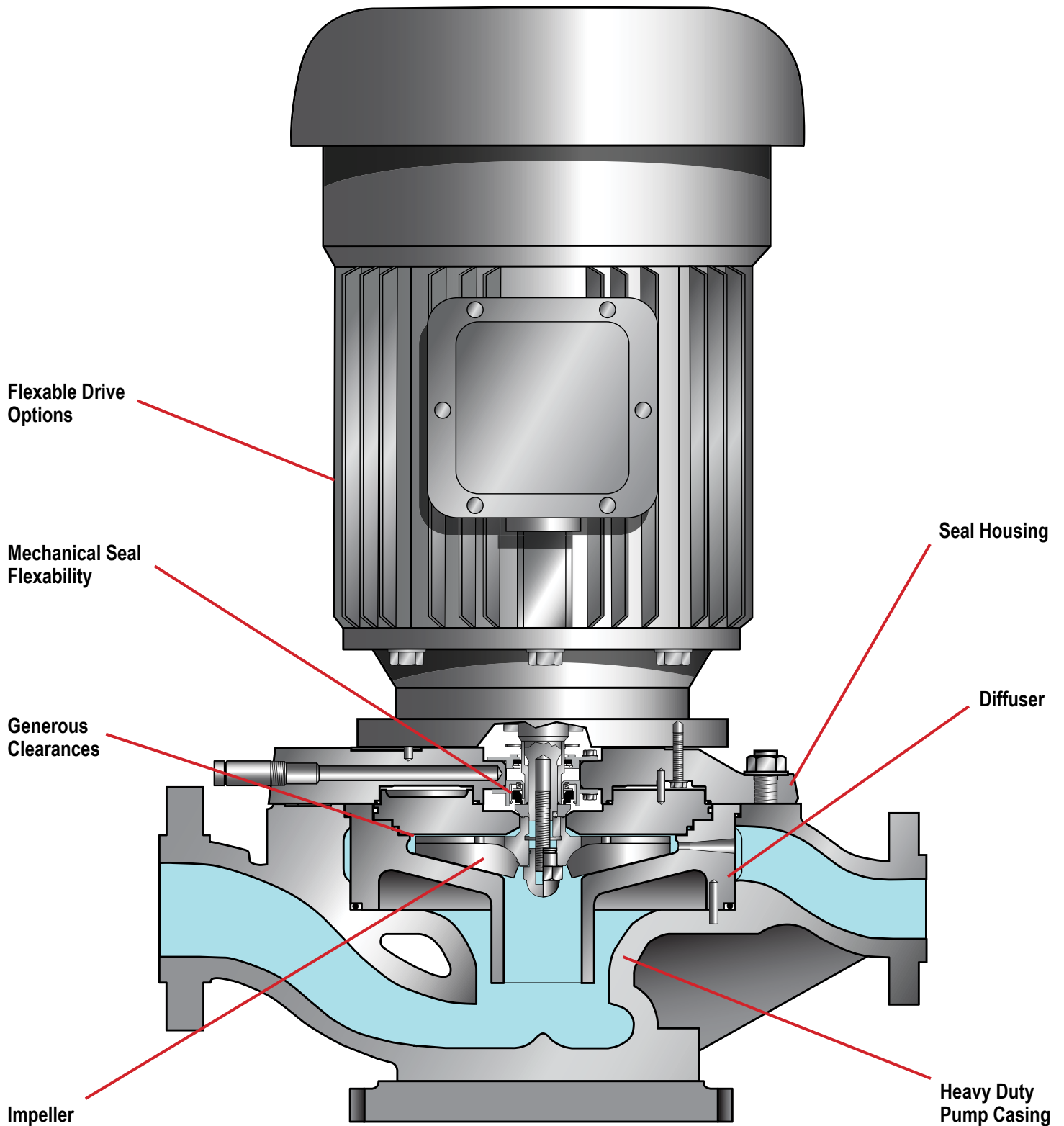
- Inorganic Acids
- High Pressure Wash
- Boiler Feed
- Condensate

Key Product Features

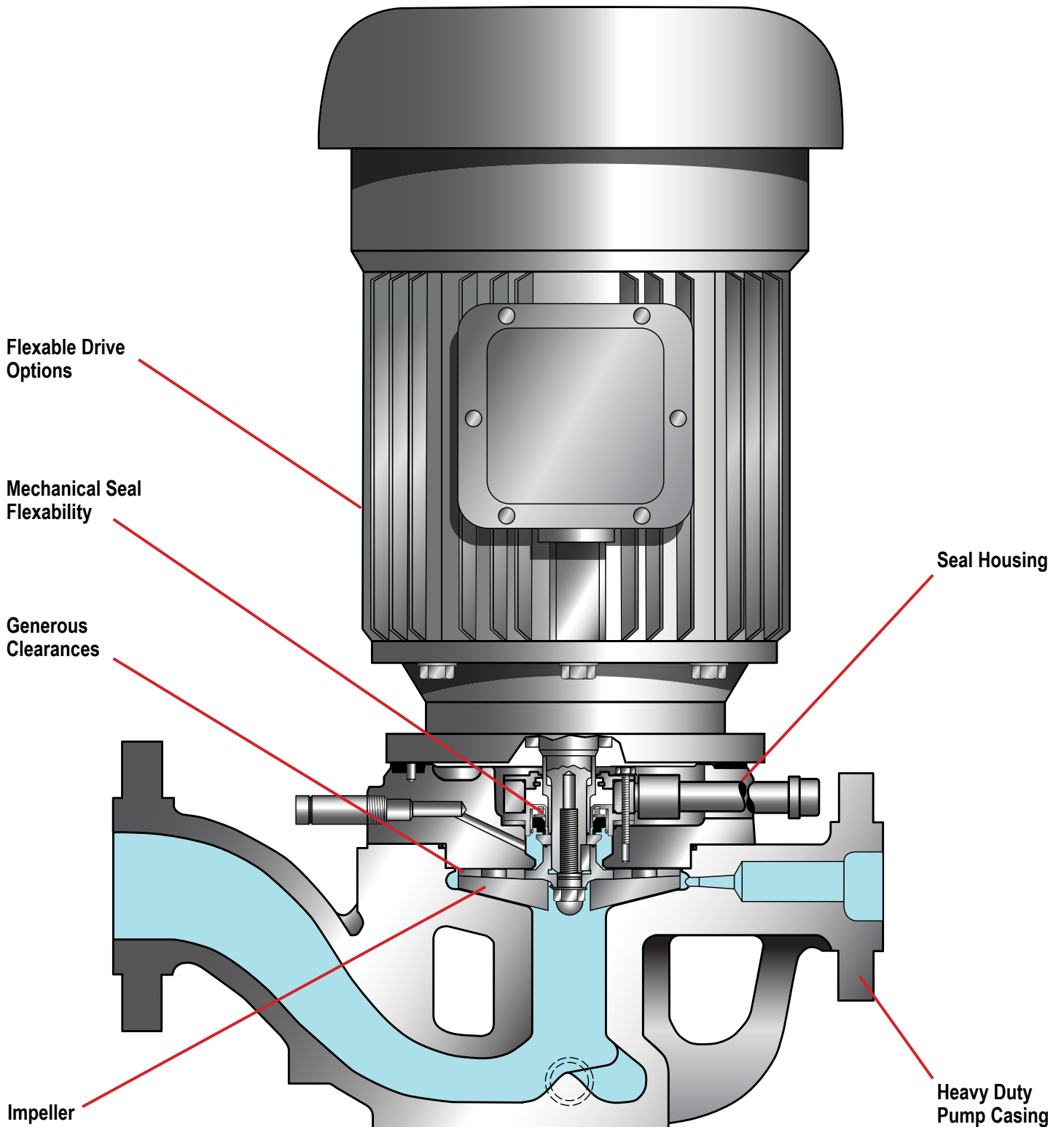
- Multi-stage performance from a single-stage unit
- Compact footprint
- Simple by design
- Standard or custom engineered options
- World-wide Sundyne support network



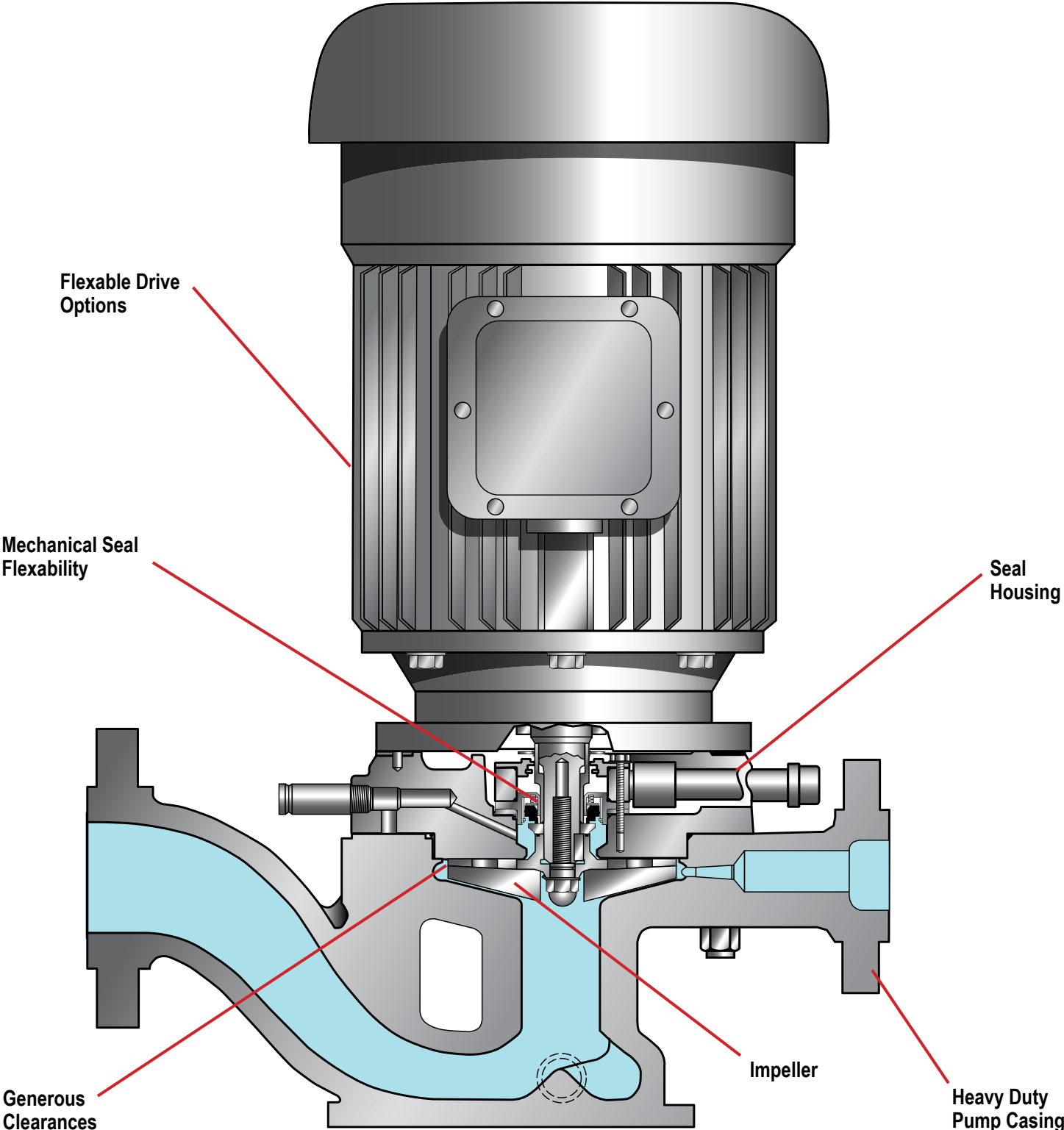
LMV-801



LMV-802



LMV-806



Optional Features

API Plans

Sundyne can provide most API-610 piping plans:

- Plan 11, 12, 21 & 23
- Plan 13
- Plan 31, 32 and 41
- Plan 52, 53, and 54
- Plan 61 and 62
- Plan J

Metallurgies

All machineable alloys are available, including:

- Carbon Steel
- 316SS
- 410 SS (LMV-802 & 806)
- Sunmet B*
- Sunmet C**
- Monel

LMV-806 Only

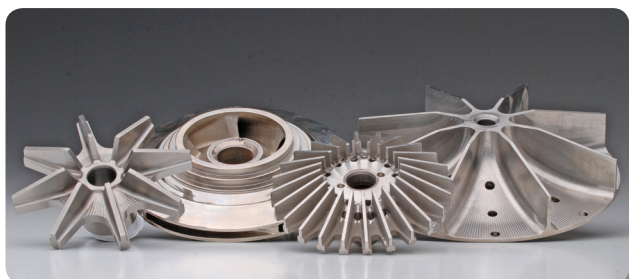
- Titanium
- Alloy 20

*Sunmet B - ASTM A494 Grade N-7M and is equivalent to Hastelloy B

**Sunmet C - ASTM A494 Grade CW2M and is equivalent to Hastelloy C

Hydraulic Hardware

- Z-Series, 24 blade high solidity impeller for rising curves (LMV-801/802)
- Concentric bowl, 8 blade open radial impeller for low specific speed (Ns)



Inducer

Reduces NPSH required, thereby eliminating cavitation

900 lb. RF Or RJ Flanges

For heavy-duty service requirements

Testing (optional)

Sundyne can perform many special tests to meet your needs, including:

- Performance Test
- Pump Case Hydrostatic Test
- NPSH Suppression Test
- Radiography Inspection
- Liquid Penetrant Inspection
- Mill Test Reports or Material Certificates
- Magnetic Particle Inspection
- Hardness Testing

Static Seals

Available in a wide variety of compounds, including:

- Nitrile
- Fluorocarbon
- Ethylene Propylene
- Carbon Graphite
- Kalrez®
- Silicone

Seal Arrangements

Three configurations to meet your needs:

- Single
- Double
- Tandem

*Engineered seals are also available

Specifications



LMV-801



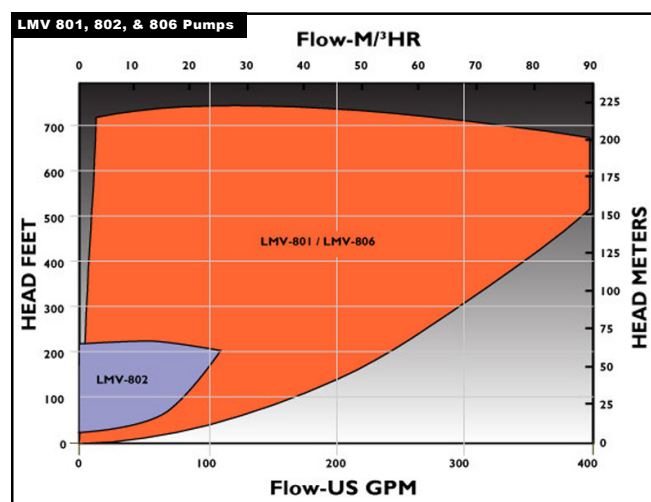
LMV-802



LMV-806

| | | | |
|--------------------------------|---|---|---|
| Heads To | 10 to 720 ft (2 to 153 m) | 20 to 210 ft (4 to 45 m) | 10 to 760 ft (2 to 162 m) |
| Flows To | 10 to 380 gpm (8 to 69 m ³ /hr) | 10 to 150 gmp (8 to 27 m ³ /hr) | 10 to 380 gmp (8 to 69 m ³ /hr) |
| Max Power | 75 to 100 hp (55 Kw) | 50 hp (37 Kw) | 75 hp (55 Kw) |
| Temp Range | -200 to 650°F (-130 to 340°C) | -200 to 650°F (-130 to 340°C) | -40 to 350°F (-40 to 175°C) |
| Number of Stages | 1.0 | 1.0 | 1.0 |
| Max Case Working Pressure | 2,160 psi (152 kg/cm ²) | 1,440 psi (101 kg/cm ²) | 710 psi (50 kg/cm ²) |
| Max Suction Pressure | 1,000 psi (71 kg/cm ²) | 600 psi (42 kg/cm ²) | 557 psi (40 kg/cm ²) |
| Differential Head | 450 ft (137 m) | 210 ft (64 m) | 450 ft (137 m) |
| HP Dependent on Diff. Head | 75 hp (55 Kw) | 50 hp (37 Kw) | 75 hp (55 Kw) |
| Standard Delivery | 8 weeks | 8 weeks | 8 weeks |
| Speed Range | 1,450 to 3,550 rpm - 60Hz | 1,450 to 3,550 rpm - 60Hz | 1,450 to 3,550 rpm - 60Hz |
| Bearing Materials Available | Ball Bearings | Ball Bearings | Ball Bearings |
| Hydrotest Pressure | 3,350 psig (235 kg/cm ² g) | 2,160 psig (151.95 kg/cm ² g) | 1,200 psig (84 kg/cm ² g) |
| Max Viscosity | 750 cp | 750 cp | 750 cp |
| Industry Standard | API-610 | API-610 | API-610 |
| Solids Range | 0.015" (0.381mm), 400 microns | 0.015" (0.381mm), 400 microns | 0.015" (0.381mm), 400 microns |
| Mounting Configurations | Vertical, Horizontal | Vertical | Vertical, Horizontal |
| Number of Available Hydraulics | 1.0 | 1.0 | 1.0 |
| Seal Configurations Available | Single, Double, Tandem | Single, Double, Tandem | Single, Double, Tandem |
| Available Inducer | Yes | Yes | Yes |
| Available Flanges | ANSI 600#, 900# (RF optional) | ANSI 600# RF | ANSI 600# RF |
| Pump Case Corrosion Allowance | 0.125" (3.175 mm) | 0.125" (3.17 mm) | 0.125" (3.17 mm) |
| Suction and Discharge Size | 3" x 2" | 3" x 2" | 3" x 2" |
| API Plans for Sundyne Pumps | 11, 12, 13, 21, 23, 31, 32, 41, 52, 53, 54, 61, 62, J | 11, 12, 13, 21, 23, 31, 32, 41, 52, 53, 54, 61, 62, J | 11, 12, 13, 21, 23, 31, 32, 41, 52, 53, 54, 61, 62, J |

Performance



Optional Inducers For Low Npsh

- Superior NPSHR performance
- Suction tuned design for cavitation free operation
- High suction specific speed capability

Mechanical Seal Flexibility

- One seal housing accepts single, double or tandem seal arrangements
- Easily converted in the field
- Engineered seals available for unique applications

Low Radial Loading

- Shaft deflections below .001" (0.025mm)
- Partial emission design reduces radial loading at low flows unlike volute designs
- Maximizes seal life

Generous Clearances

- No wear rings; Eliminates performance degradation and mechanical adjustments associated with wear ring designs; Maintains as-built efficiency
- Open radial blade impeller design allows for generous .030" (.076mm) nominal clearances
- Dry running capability can handle process upsets with double seals
- No mechanical adjustment required

Removable Diffuser (LMV-801)

- Easily converted in the field
- Allows for rerating of pumps to different process conditions without costly machining
- Condensate

Extra Heavy Duty Casing:

- 300# and 600# flange models
- 900# flanges available on LMV-801

Low Ns Tailored Hydraulics

- Partial emission hydraulics for optimum efficiency in low specific speed (N_s) applications
- Computer optimized hardware to fit the exact design requirements
- Lower end-of-curve horsepower requirements
- Maximized efficiency

Optional Centrifugal Separator

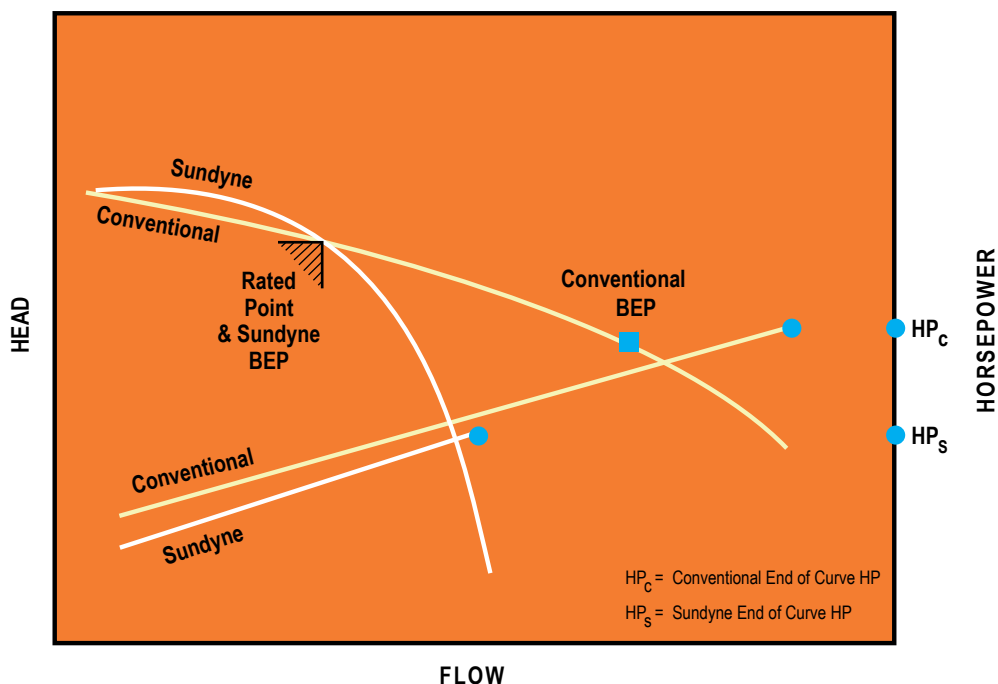
- Integral to pump case for simplicity
 - no external piping
- Provides clean flush for longer seal life

NPSH Advantages

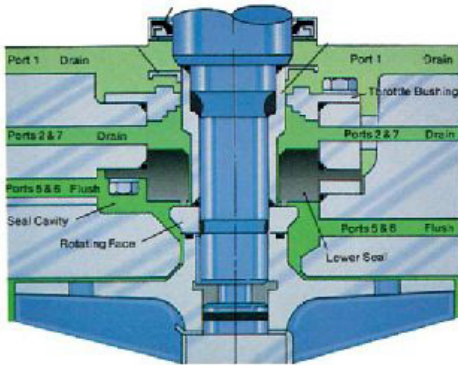
- Sundyne inducer option reduces NPSHR considerably and often eliminates the need for costly design requirements, such as elevated suction vessels and boost pumps.

Computer Optimized Hydraulics

Unlike conventional pumps, Sundyne custom tailored hydraulics sizes the B.E.P. (Best Efficiency Point) at your rated point, where you want it. This results in optimum efficiency, minimum recirculation and minimum vibration. An added benefit of the partial emission design is reduced end-of-curve horsepower, resulting in smaller drivers.

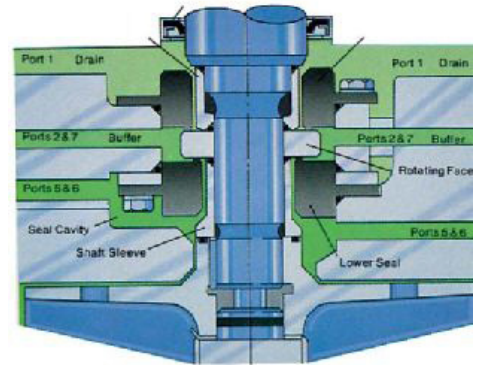


Mechanical Seal Configurations



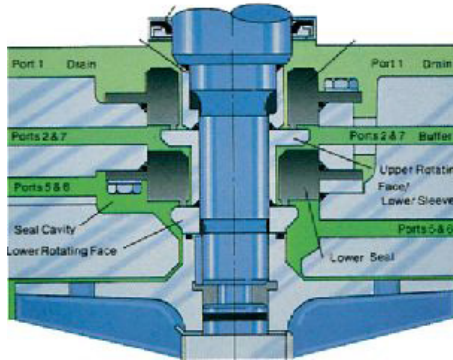
Double Seal ▶

Recommended when the pumped liquid contains abrasive, leakage could be hazardous, or when the pump is likely to run dry.



Single Seal ▲

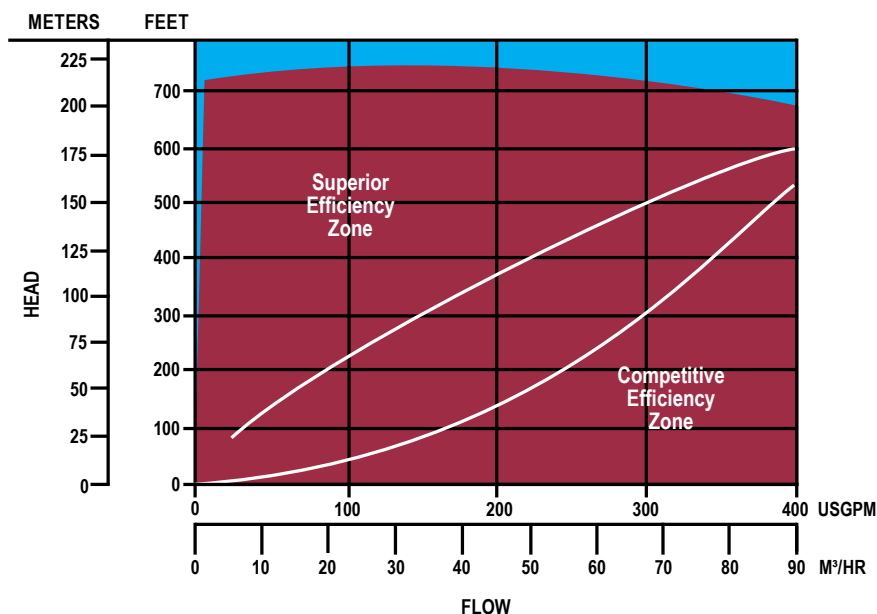
Standard seal used in most applications for non-abrasive or non-hazardous liquid. Bellows seals are also available for higher temperatures and abrasive liquids.



◀ Tandem Seal

Used to accommodate quenching, automatic shutdown systems, and high pressure services. With no requirement for a buffer liquid, a film-riding gas seal may be placed in the upper position, thereby providing a secondary seal backup in the event of main seal failure.

Superior Low Specific Speed Efficiency



Specific speed (NS) is a dimensionless parameter for pumps at the best efficiency point:

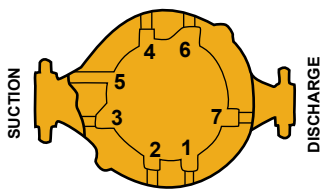
$$NS = \frac{RPM \sqrt{GPM}}{(\text{Feet of Head})^{3/4}}$$

The Sundyne radial blade impeller combined with the partial emission diffuser provides superior single stage efficiency below NS values of 600 (English) / 700 (Metric) when compared to conventional backswept impeller hydraulics.

Seal Housing

LMV-801

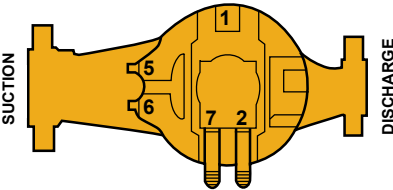
Top View (From Motor)



| Port | Description |
|------|--|
| 1 | Seal drain (open to atmosphere) |
| 2 | Seal drain (single seal) or buffer fluid out (double or tandem seal) |
| 3 | Cooling in (normally plugged) |
| 4 | Cooling out (normally plugged) |
| 5 | Seal flush and/or vent |
| 6 | Seal flush and/or vent |
| 7 | Seal drain (single seal) or buffer fluid in (double or tandem seal) |

LMV-802

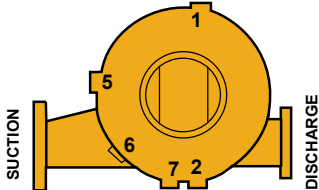
Top View (From Motor)



| Port | Description |
|------|--|
| 1 | Seal drain (open to atmosphere) |
| 2 | Seal drain (single seal) or buffer fluid in (double or tandem seal) |
| 5 | Seal flush and/or vent |
| 6 | Seal flush and/or vent |
| 7 | Seal drain (single seal) or buffer fluid out (double or tandem seal) |

LMV-806

Top View (From Motor)



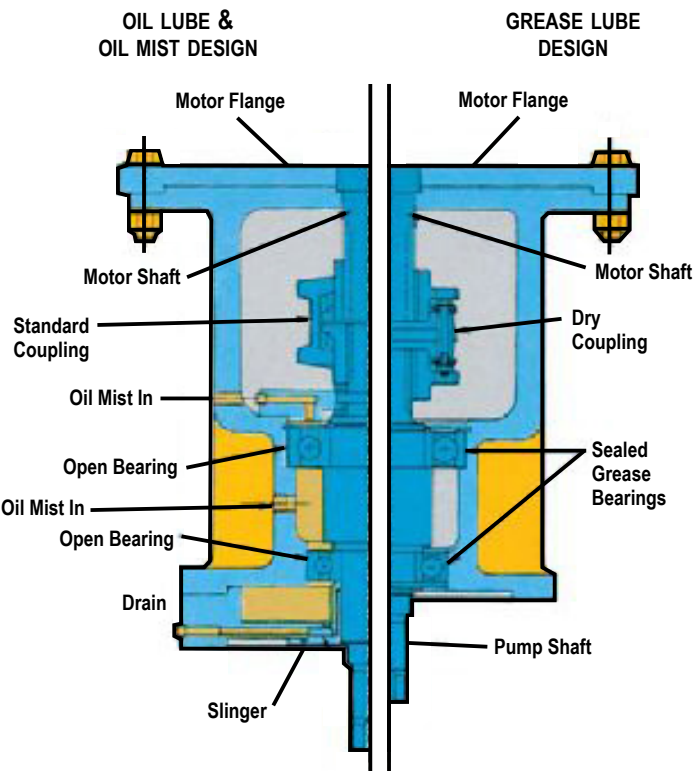
| Port | Description |
|------|--|
| 1 | Seal drain (open to atmosphere) |
| 2 | Seal drain (single seal) or buffer fluid in (double or tandem seal) |
| 5 | Seal flush and/or vent |
| 6 | Seal flush and/or vent |
| 7 | Seal drain (single seal) or buffer fluid out (double or tandem seal) |

*Impeller rotation is CCW on all models when viewed from driver side

Sundyne Bearing Box

The bearing box may be bolted directly on top of the seal housing. This option provides added driver flexibility, such as the use of standard NEMA or IEC shaft electric motors and steam turbines. The unique piloted mounting flange eliminates the need to align the pump and motor, saving valuable installation and maintenance time.

The housing has been designed to accommodate a broad range of couplings to suit your specific needs. The bearing box is available in three designs – grease, oil mist (not available in Europe) and oil lubricated.





COMPRESSORS

PUMPS

GENUINE PARTS

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LMV Direct Drive Brochure
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