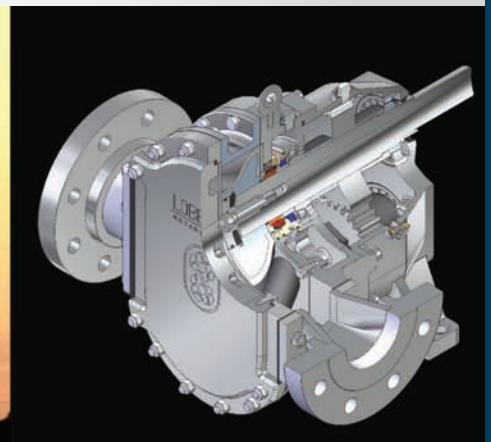




API 676 Compliant Rotary Lobe Pumps



API Pumps

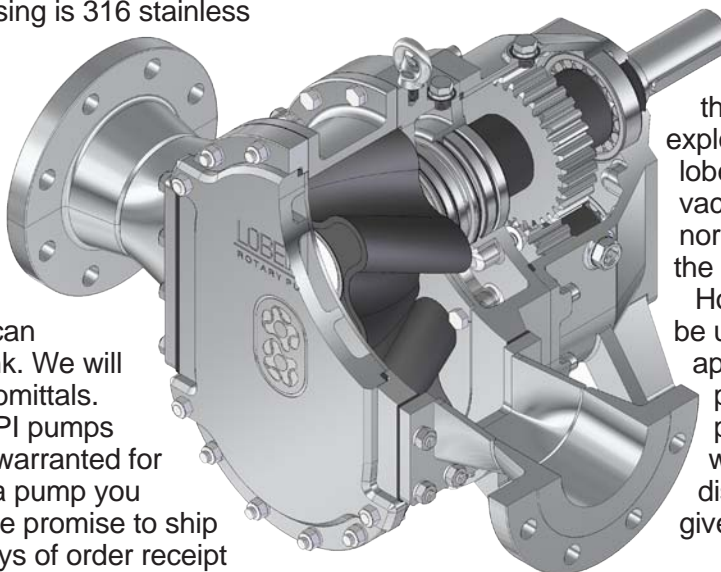
We manufacture rotary lobe positive displacement pumps having an output range from 8 gpm to 2500 gpm with up to 175 PSI pressure capacity. They are compliant with API 676 standards. We have developed our own oil cooled Cartridge "Engineered Seal" design as provided for in API 682 revision 4. We have found these to be long lasting and trouble free. A broad range of coatings and seals materials are available to suit your application.

Our standard pump pressure casing is 316 stainless steel, which may be coated with whatever material is needed for your application. We also stock CD3MN Duplex Stainless Steel as an additional pressure casing option for applications where 316 stainless steel is not advisable.

We have our own staff of code certified welders and a knowledge staff of engineers. Our engineers can perform all API tests in our test tank. We will do a quality job of compiling all submittals. We are generally able to deliver API pumps within 4-6 weeks. The pumps are warranted for workmanship for 2 years. Should a pump you purchase from us require repair, we promise to ship the wear parts within 2 working days of order receipt or the parts are free.

In addition to providing the pump, we can also provide the motor, gear reducer, controls, and skid to your specification. We can also provide custom fabrications to suit individual applications. Since our start in 1978, we have packaged 1,000s of pump systems.

Our API pumps can also be utilized in applications where low Net Positive Suction Head Required (NPSHR) of 3' (1m) or less is needed. In many oil and gas



applications, it is necessary for the pump to be able to move materials in a tank that is not ventilated due to the explosive nature of gases. Rotary lobe pumps can overcome the vacuum pressures and maintain normal pumping ranges through the pump cycle.

However, our pumps can be utilized in many other applications because of the properties of rotary lobe pumps. Our engineers would welcome the opportunity to discuss your application and give you a quote.

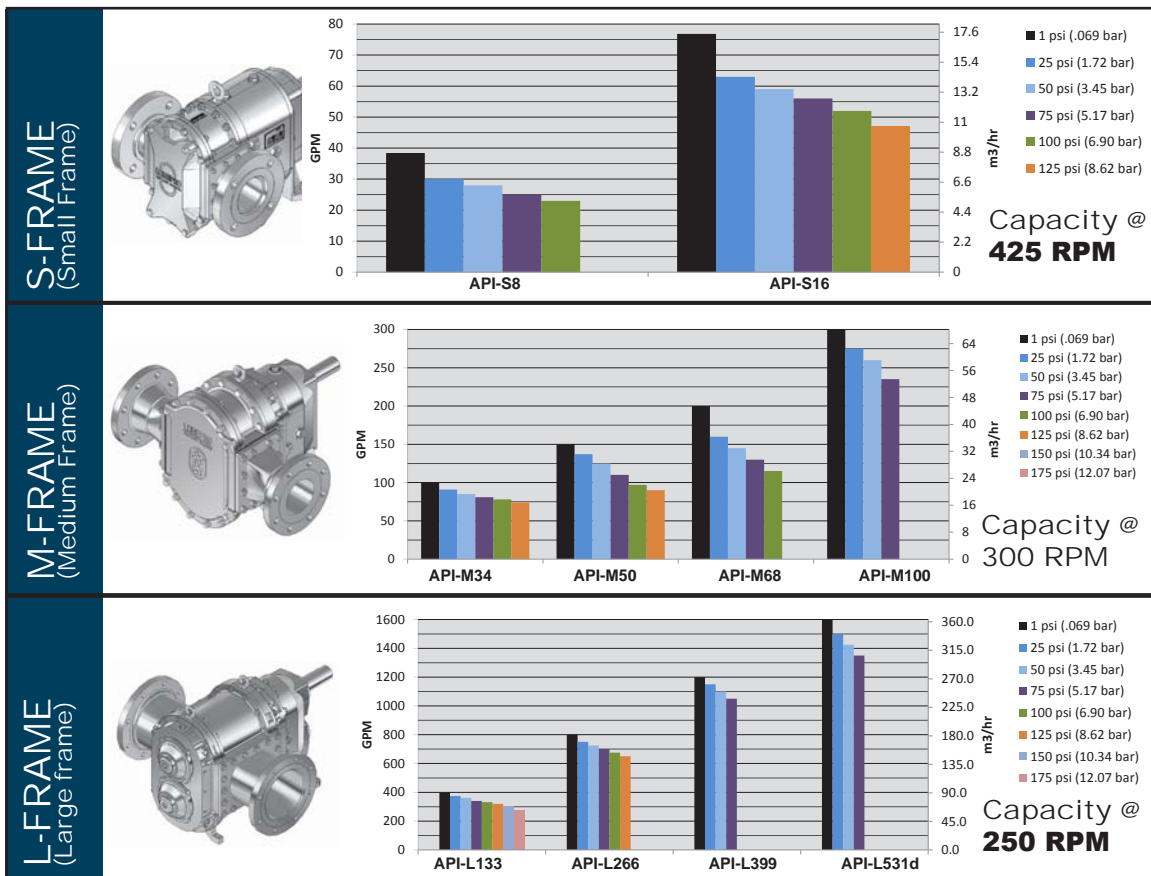


Pump Capacities: Typical Speeds for Moderate Abrasive Sludges/Fluids with 40 cP Viscosity*

*Note: Slip decreases as viscosity of fluid pumped increases

Important Properties of LobePro Rotary Lobe Pumps

- Low shear
- Measured Flow
- Self priming to 25' wet
- Discharge pressure to 175 psi (12 bar)
- Capacities 0- 2, 656 GPM (0-604 m³/hr)
- Low pulsation
- Forward and reverse pumping operation
- Long lifespan
- Pump NPSHR is 3' (1 m) or less
- Easy access to wet end for "in place" wear part replacement
- Space-saving, compact design
- Excellent for abrasives, solids & viscous fluids
- Low maintenance
- Run dry ability



Advantage vs Commonly Used Alternatives

LobePro vs. Progressive Cavity (Screw) Pumps

LobePro pumps do the same jobs as well or better than progressive cavity (screw) pumps up to 150 psi of pressure and have the following advantages:

- Require approximately 1/3 their physical space
- Because they are 1/3 the size:
 - ◆ Parts are typically 1/3 the cost
 - ◆ Maintenance labor time is 1/3 or less
 - ◆ Lifetime ownership cost is 1/3
- Ability to run dry for a period of time
- Maintenance in place. LobePro lobes, seals and wear plates can be replaced without removing attached piping or pump.
- No Ragging. The PC Pump's screwing motion causes the pump to clog or rag. LobePro pumps very seldom clog.

LobePro vs. Centrifugal Pumps

LobePro pumps have the following advantages over centrifugal pumps:

- Able to pump high viscosity fluids
- Constant flow at different pressures or constant pressure at different flows
- Low fluid shear/low emulsion
- Easily pumps air/liquid mixtures
- Self-priming to 25'
- Handles abrasives better because of low RPM's which greatly reduces wear. LobePro's pump away all the fluids including solids and abrasives. Centrifugal pumps tend to pump the lighter fluid away and leave the heavy material. Hence they are not suitable for fluids containing 3% or more solids.

LobePro vs. External Gear Pumps

- Gear Pumps have one shaft and two gears. The driven gear pushes the other gear. Abrasive materials rapidly wear the gears where they contact and as a result gear pumps are only suitable for pumping clean liquids. Rotary lobes pumps have two shafts driven by timing gear. The lobes do not touch each other and, after a short break in period, the housing segment. This enables rotary lobe pumps to handle hard solids up to 1/8" (3mm) and soft solids up to 2.5" (63 mm).
- Gear Pumps cannot be run in reverse without rebuilding. Rotary lobes pumps can run in either direction make them suitable for loading and unloading fluids with the same pump.
- Gear pumps cannot run dry. Rotary Lobe Pumps can for a period of time.

LobePro vs. Sliding Vane Pumps

- Sliding vane pumps rely on vanes that slide in and out as the shaft turns within an elliptical casing. LobePro uses a simple arrangement of timing gears to rotate lobes that do not touch each other.
- Vane pumps require very clean fluid otherwise contaminants may cause the vanes to stop sliding resulting in possible pump failure. LobePro can handle hard solids to 1/8" (3mm) and soft solids up to 2.5" (63 mm).
- Large strainers must be placed at the inlet to prevent contaminants from clogging the sliding vanes. Failure to maintain these strainers results in pump failure.
- LobePro pumps can operate in forward or reverse. This permits the pump to be used for loading and unloading applications. Sliding Vane pumps have very limited capacity to operate in reverse.
- Run dry ability. Vane pumps rely on vanes that slide and requires the pumped fluid to lubricate and remove heat. LobePro uses a non-contact design that greatly increases its run-dry capability.

Special Metals and Elastomers Applications

Chlorides, Hydroxides, H₂S

Our "C" Series Chemical and Corrosives pumps have 316 stainless steel wetends. We stock 316 stainless steel parts which allow us to assemble a C series pumps within a week if required. Our C series pumps satisfactorily handle many Chemical and Corrosive applications. However, sometimes a different type of steel such as Duplex Steel can be a good choice in applications too corrosive for 316 stainless steel.

Duplex Steel is a good choice for applications with fluids containing chlorides, hydroxides, or H₂S. These applications are frequently found in the Oil & Gas Industry for example. For more details see "Corrosion Engineering" on our website, www.lobepro.com.

Additionally duplex is specified instead of 316 SS in applications which are both corrosive and abrasive because duplex has a higher Brinell hardness than 316 Stainless Steel.

LobePro stocks Type 2205 duplex steel and its cast equivalent, CD3mn, parts for fast delivery of our "D" Series duplex steel wet end pumps in a broad range of sizes. DS16, DM50 and DM100 are currently available with other sizes available by request. All LobePro CD3mn parts are solution annealed and passivated.

With an approximate four month lead time, LobePro can provide pumps with wetends made in most types of super duplex, hastelloy, austenitic or martensitic stainless steels. Each of these metals has special properties. Applications requiring these special metals include applications where Hydrogen Embrittlement, Caustic Chemical Corrosion, and chemicals oxidation are worries to name a few.

For more information on Corrosives Engineering and further detail on Duplex Steel vs Stainless Steel properties please visit www.lobepro.com/eng-data-corrosive-engineering.php.



LOBEPRO

ROTARY PUMPS

Cartridge seals for quick replacement No pressure bottle needed below 100 psi.

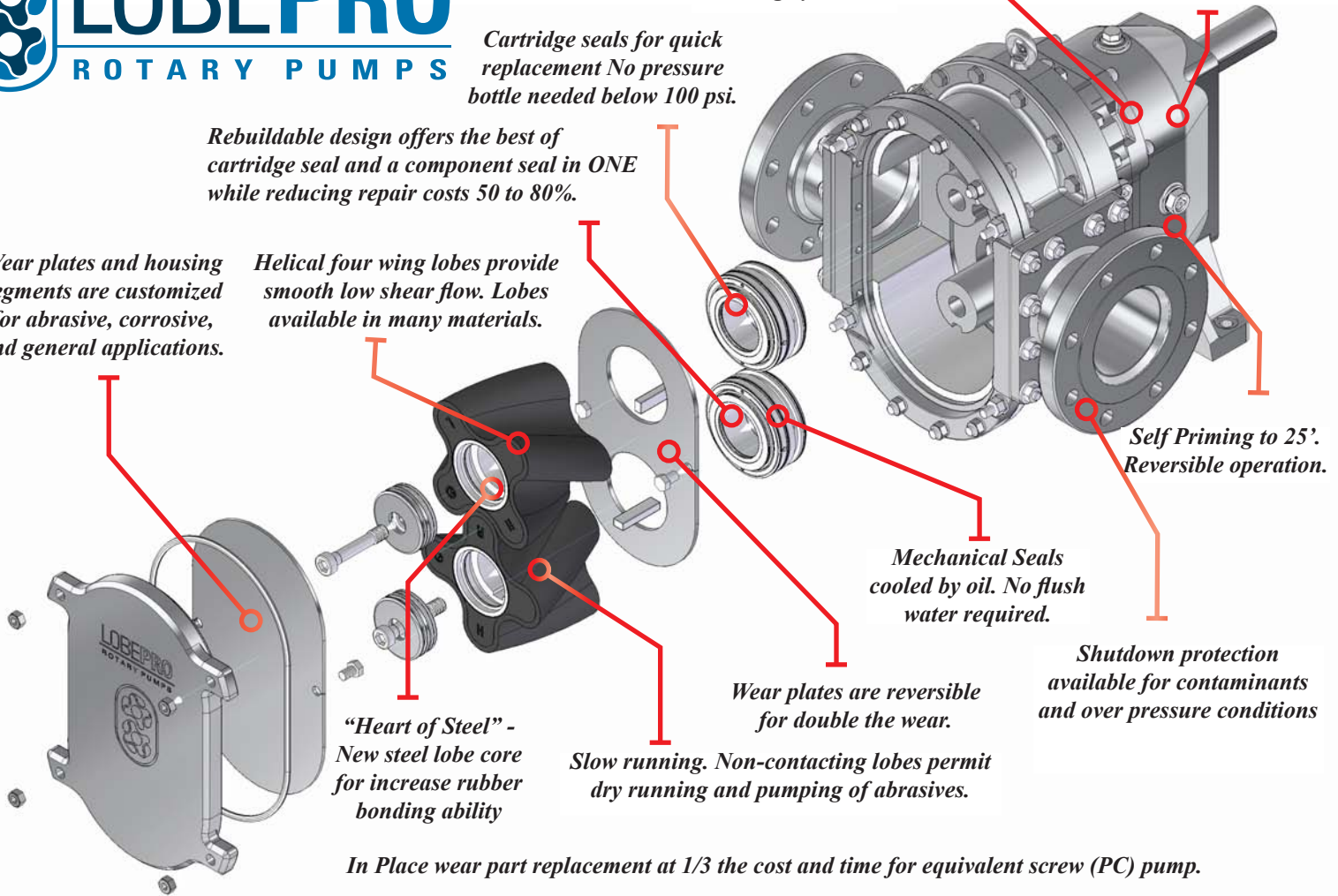
Rebuildable design offers the best of cartridge seal and a component seal in ONE while reducing repair costs 50 to 80%.

Wear plates and housing segments are customized for abrasive, corrosive, and general applications.

Helical four wing lobes provide smooth low shear flow. Lobes available in many materials.

Gears do not require timing by user.

Gear housing is separated from wet end and mechanical seals



In Place wear part replacement at 1/3 the cost and time for equivalent screw (PC) pump.

PRINCIPLE REASONS TO USE LOBEPRO	PUMPING APPLICATIONS									
	Feed Pump for							Induced Gas Floation Froth	Desand Slop	Non-Vented Tanks
	Oil Sumps Containing Abrasives	Fuel Transfer	Vapor-Liquid Separator	Produced Water Filtration	Decantering Centrifuge	Belt Press				
Reversible (can Load, Unload, Backwash)		☒		☒						
Strong Vacuum/Self Priming to 25 ft. (3 ft. NPSHR)	☒		☒				☒		☒	
Handles Air and Fluid Without Damaging Cavitation			☒				☒			
Low Shear	☒				☒	☒				
Ability to Pump Thick, Viscous Fluids					☒	☒		☒		
Steady, Measured, Flow at Constant Pressure			☒	☒	☒	☒				
Can Run Dry	☒				☒	☒	☒			
Handles Abrasives Well	☒				☒	☒		☒		
ATEX Zone 2 Category 3 Rating	☒	☒	☒				☒	☒	☒	

MODEL >	API-SS, API-SM, API-SL	API-CS, API-CM, API-CL	API-DS, API-DM, API-DL
Service	Non-Corrosive Sludge & Slurries	Chemical/Corrosive	Oil, Gas, Chemical and Corrosive
Rotary Lobes			
Elastomer	NBR 70 Durometer. HNBR & EPDM Available*	Viton/FKM. HNBR & EPDM Available*	Viton/FKM. HNBR & EPDM Available*
Lobe Profile	Helix	Helix	Helix
Number of lobe wings	API-SS: 6; API-SM & API-SL: 4	API-CS: 6; API-CM & API-CL: 4	API-DS: 6; API-DM & API-DL: 4
Core	NBR over Grey Iron	Viton/FKM over Grey Iron	Viton/FKM over Grey Iron
Housing Segments			
Medium touched	Stainless Steel 316 Ryton Coated	Stainless Steel 316	CD3MN Duplex Stainless Steel
Wear Plates			
Medium touched	AR500 Steel (Brinell 500)	Stainless Steel 316	CD3MN Duplex Stainless Steel
Shaft Seal:			
Seal	Cartridge "Engineer Seal" per API 682 revision 4.	Cartridge "Engineer Seal" per API 682 revision 4.	Cartridge "Engineer Seal" per API 682 revision 4.
Piping Plan	Internal Oil Cooled. Flushing with pumped fluid (sludge/slurry) not desirable. Plan 99 oil flush system available.	Internal Oil Cooled. Flushing with pumped fluid (sludge/slurry) not desirable. Plan 99 oil flush system available.	Internal Oil Cooled. Flushing with pumped fluid (sludge/slurry) not desirable. Plan 99 oil flush system available.
Seal Faces	Duronit	Duronit, Silicon Carbide, or Engineer Rec.	Duronit, Silicon Carbide, or Engineer Rec.
Seal Holders	Electroless Nickel Coated Steel	Stainless Steel 316	CD3MN Duplex Stainless Steel Option Stainless Steel 316 coated with Electroless Nickel
Seal Inspection and Removal	Maybe accomplished without removing driver.	Maybe accomplished without removing driver.	Maybe accomplished without removing driver.
Sealing:			
O-rings	NBR, Viton/FKM or Engineer Recommendation	Viton/FKM or Engineer Recommendation	Viton/FKM or Engineer Recommendation
Oil seals	NBR, Viton/FKM or Engineer Recommendation	Viton/FKM or Engineer Recommendation	Viton/FKM or Engineer Recommendation
Oil Cooling Chamber for Seals	ASTM 48 Grey Iron	ASTM 48 Grey Iron coated with Electroless Nickel	ASTM 48 Grey Iron coated with Electroless Nickel
Shaft:			
Medium Untouched	AISI 4140 Steel	AISI 4140 Steel	AISI 4140 Steel
Gear Housing			
Casting	ASTMA48 Grey Iron	ASTMA48 Grey Iron	ASTMA48 Grey Iron Option Electroless Nickel coated
Flange:	Steel. Conforms to requirements of API 676 Section 6.6.1.1 for dimensions (ISO 7005-2) & finish (ASME B16.1 or B16.42)	Steel. Conforms to requirements of API 676 Section 6.6.1.1 for dimensions (ISO 7005-2) & finish (ASME B16.1 or B16.42)	Steel. Conforms to requirements of API 676 Section 6.6.1.1 for dimensions (ISO 7005-2) & finish (ASME B16.1 or B16.42)
Welding	Operators qualified under ASME BPVC Section IX	Operators qualified under ASME BPVC Section IX	Operators qualified under ASME BPVC Section IX
Bolts- Strain Bolt			
Medium untouched	Socket Head Steel ASTM A574M 12.9 Electroless Nickel Class MJ Thread	Socket Head Steel ASTM A574M 12.9 Electroless Nickel Class MJ Thread	Socket Head Steel ASTM A574M 12.9 Electroless Nickel Class MJ Thread
Bolts			
Exposed to Media	Hex Head Steel ASTM F 568/ISO 898/1	Hex Head SS Din 931 A2-A4	Hex Head CD3MN Duplex SS Din 931 A2-A4
External (untouched by media)	Hex Head Steel ASTM F 568/ISO 898/1	Hex Head SS Din 931 A2-A4	Hex Head CD3MN Duplex SS Din 931 A2-A4
Timing Gears			
Medium untouched	AGMA Class 9 Coarse-Pitch type designed in accordance with AGMA 6010 with 1.5 min. service factor.	AGMA Class 9 Coarse-Pitch type designed in accordance with AGMA 6010 with 1.5 min. service factor.	AGMA Class 9 Coarse-Pitch type designed in accordance with AGMA 6010 with 1.5 min. service factor.
Bearings	K5 fit; C3 Internal clearance in accordance with ABMA7	K5 fit; C3 Internal clearance in accordance with ABMA7	K5 fit; C3 Internal clearance in accordance with ABMA7
Shaft Keyways	Fillet radii conforming to ASME B17.2 (fillet = 1/4 of key depth)	Fillet radii conforming to ASME B17.2 (fillet = 1/4 of key depth)	Fillet radii conforming to ASME B17.2 (fillet = 1/4 of key depth)
Draining and Venting	Completely drain capable. Gear Housing & Quench chamber vented.	Completely drain capable. Gear Housing & Quench chamber vented.	Completely drain capable. Gear Housing & Quench chamber vented.
Flammable/	ATEX II 3G/D T3	ATEX II 3G/D T3	ATEX II 3G/D T3
Hazardous Service			
NOTE: Above is a summary of the principal features of the LobePro API 676 compliant pump. There are many other provisions of API 676 which apply to the pump. Our API series pumps comply with all of these provisions.			

MODEL >	API-SS, API-SM, API-SL, API-CS, API-CM, API-CL, API-DS, API-DM, API-DL
Standard Tests	Test Description
Hydrostatic Test	Operates without leaking at 150% of MACP when hydro tested
Run Test	Tested to determine if the pump operates without excessive vibration or seal leaks throughout operating range.
Performance Test	Tested a duty point to confirm pump curve.
Sound Test	Shall be under 94 db's at a distance of 3 ft. (1 meter).
Material Certification	Materials Certifications provided standard
Seal Pressure Test	Air Pressure at 25 psi per API 682

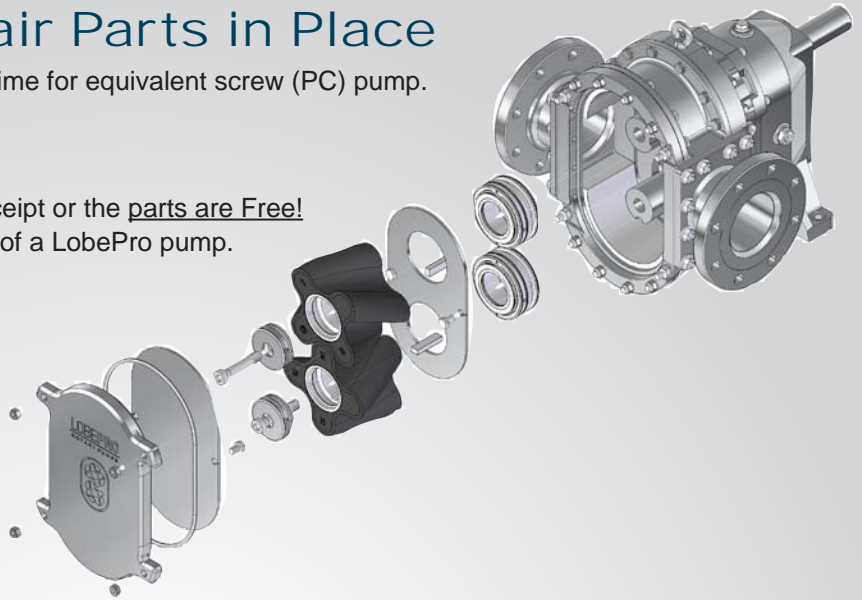
Simple and Easy to Repair Parts in Place

In Place wear part replacement at 1/3 the cost and time for equivalent screw (PC) pump.

Wear parts ship quickly

Wear parts shipped within 2 working days of order receipt or the parts are Free!

This guarantee applies for 5 years after the purchase of a LobePro pump.



"I love this LobePro Pump. It takes three guys three days to build a Moyno. It took three hours to rebuild the LobePro - and I did it myself. I can't wait until we replace the other Moynos with LobePro."

---Paul, Lead Mechanic

Pump Models

The flows shown below is the theoretical capacity prior to slip caused by pressure.

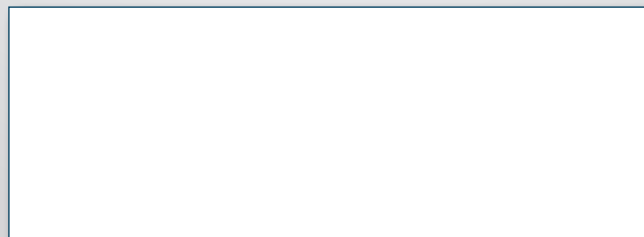
Model	Speed	Max Capacity GPM (m ³ /hr)	Max Flow Per 100 RPM	Max. Working Pressure	Rated RPM
API-S8		72 gpm (16.3 m ³ /hr)	8 gal (1.8 m ³)	175 psi (12 bar)	0-900 RPM
API-S16		144 gpm (32.6 m ³ /hr)	16 gal (3.6 m ³)	150 psi (10.3 bar)	0-900 RPM
API-M34		204 gpm (46 m ³ /hr)	34 gal (8 m ³)	145 psi (10 bar)	0-600 RPM
API-M50		300 gpm (68 m ³ /hr)	50 gal (11 m ³)	125 psi (8.6 bar)	0-600 RPM
API-M68		408 gpm (92 m ³ /hr)	68 gal (15 m ³)	100 psi (6.9 bar)	0-600 RPM
API-M100		600 gpm (136 m ³ /hr)	100 gal (23 m ³)	70 psi (4.8 bar)	0-600 RPM
API-L133		665 gpm (151 m ³ /hr)	133 gal (30 m ³)	125 psi (8.6 bar)	0-500 RPM
API-L133d		665 gpm (151 m ³ /hr)	133 gal (30 m ³)	175 psi (12 bar)	0-500 RPM
API-L266		1,328 gpm (301 m ³ /hr)	266 gal (60 m ³)	70 psi (4.8 bar)	0-500 RPM
API-L266d		1,328 gpm (301 m ³ /hr)	266 gal (60 m ³)	125 psi (8.6 bar)	0-500 RPM
API-L399		1,995 gpm (453 m ³ /hr)	399 gal (91 m ³)	50 psi (3.4 bar)	0-500 RPM
API-L399d		1,995 gpm (453 m ³ /hr)	399 gal (91 m ³)	85 psi (5.8 bar)	0-500 RPM
API-L531d		2,656 gpm (603 m ³ /hr)	531 gal (121 m ³)	70 psi (4.8 bar)	0-500 RPM



LobePro Product Partner



CE and Atex approved



LobePro Inc. dba
Holland Pump Manufacturing
of Georgia Inc.
Certified to ISO 9001-2008
Certificate No. 10005463 QM08

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