



Weatherford®

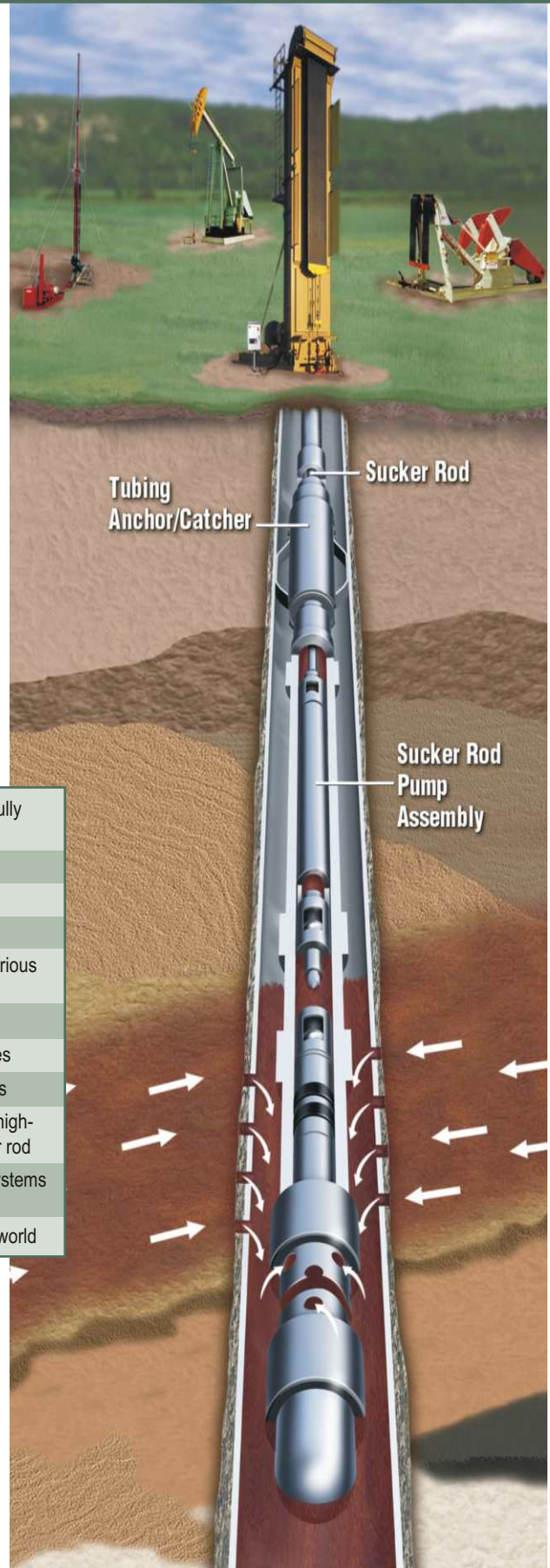
Reciprocating Rod Lift Systems

Weatherford is the only OEM supplier offering completely integrated reciprocating rod lift systems for optimal performance and production enhancement. We have virtually every system component, from subsurface rod pumps and sucker rods to surface pumping units and optimization equipment.

Rod lift pumping systems span the full range of applications, from long-stroke units for high volumes and deep wells to low-profile pumping units for special applications. And our full line of sucker rod products includes the EL® sucker rod, the industry's only casehardened rod for extreme service.

Our complete family of rod-lift products and our unmatched technical and field support capabilities ensure compatible rod lift systems with exceptional economic value and operational efficiency. As the only worldwide source of products and services across all artificial lift platforms, Weatherford can evaluate your reservoir and combine the strengths of different forms of artificial lift to bring maximum value to your operations.

Wherever you are in the world—Weatherford is just around the corner.



Weatherford Advantages

- High system efficiency and better control of lifting costs through Weatherford's fully integrated package of products, expertise, and service
- Production optimization controls and services
- Positive displacement/strong drawdown for optimal rod lifting performance
- Flexibility to adjust production through stroke length and speed
- High salvage value for surface and downhole equipment—flexibility to re-use various components in different well applications
- Low system maintenance and repair costs
- Complete systems offering API rod pumps, specialty rod pumps, and accessories
- Industry-exclusive Strapjack® low-profile and Rotaflex® long-stroke pumping units
- Full breadth of sucker rod technology: API; quenched and tempered; premium; high-strength; ultrahigh-strength coupled rods; exclusive COROD® continuous sucker rod
- Life-of-the-field management from the only worldwide source of products and systems across all artificial lift platforms
- Convenient customer service locations in every major oil-producing area of the world

The Lift ExpertsSM

Surface Pumping Units

Conventional Pumping Units

Continually refined and enhanced, these units are offered in API gear reducer sizes D16 through D1280, with structural capacities from 2,700 to 42,700 lb (1,225 to 19,368 kg) and stroke lengths from 30 to 216 in. (762 to 5,486 mm). Enhanced geometry units are offered in API gear reducer sizes D456 through D912, with structural capacities from 25,600 to 47,000 lb (11,612 to 21,319 kg) and stroke lengths from 120 to 192 in. (3,048 to 4,879 mm).



Long-Stroke Pumping Units

Uniquely designed Rotaflex[®] pumping units feature a stroke length up to 30-1/2 ft, or 366 in. (9.3 m) and an innovative 100 percent mechanical reversing mechanism. These units provide high efficiency and low operating costs in deep, trouble-prone, high-volume wells. Electrical costs are reduced 20 to 50 percent; and rod life and tubing life are extended thanks to a 40 to 60 percent reduction in rod reversal. Our pumping units reduce dynamic loading, lower reducer torque, and help to eliminate gas lock problems. They enable sucker rod pumps to be used where submersible or hydraulic subsurface pumps were once required. Units are safe and simple to install and service, with structural capacities of 25,600 to 50,000 lb (11,612 to 22,680 kg).

Nitrogen-Over-Hydraulic Pumping Units

These reciprocating rod-type pumps handle polished rod loads of up to 40,000 lb (18,144 kg) at depths to 11,000 ft (3,353 m), while using 25 to 75 percent less energy lifting oil to the surface. Designed for heavy-oil fields, for wells with rod fall problems and for enhanced well control, these units are versatile, compact, and lightweight, with low initial capital investment and economical setup (usually under two hours). Stroke lengths are from 60 to 150 in. (1,524 to 3,810 mm), and rates are 0 to 9 SPM (depending on size and model).

Low-Profile Pumping Units

Ideal for height-restricted or visually sensitive areas, these units operate under sprinkler irrigation systems and can be completely enclosed for specific urban applications. They offer high efficiency, high reliability, low lifting costs, and easy portability. Units are available in API sizes 114 through 320, with structural capacities up to 24,600 lb (11,158 kg) and stroke lengths up to 100 in. (2,540 mm).

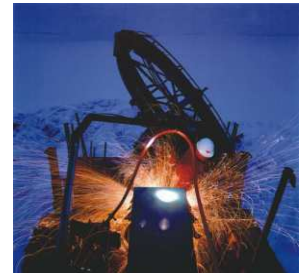
Subsurface Rod Pumps

Easily adapted to pump a variety of well fluids, these pumps offer practical, cost-effective downhole pumping solutions. Our completely integrated family of API pumps, specialty pumps, and accessories can meet all rod pump requirements—even in the most severely corrosive and abrasive pumping environments. Providing the right combination of manufacturing, engineering, and applications expertise, Weatherford can accurately match equipment to your intended production and specific well conditions—and help keep it all on stream.



Sucker Rods

Weatherford has a comprehensive portfolio of sucker rod technologies, including a full range of normalized and API sucker rods in all grades. Our exclusive EL[®] sucker rod is case-hardened and fatigue-resistant for ultra-high strength, and allows for reduced size of surface equipment with no decrease in production rates. Exclusive COROD[®] continuous sucker rods reduce costs by requiring couplings only at the top and bottom of the rod string. Our unique Axelson[®] quenched and tempered sucker rods offer superior fatigue resistance. All rod grades and designs, both continuous and coupled, are suitable for reciprocating and rotary pumping applications.



Optimization Equipment

Weatherford's wellsite optimization products and services reduce downtime, minimize power consumption, and extend equipment life while increasing or maintaining production. Using real-time data, these tools can be used for leak-detection and data-gathering. Our rod lift optimization products allow operators to centralize data collection using remote radio communications.





Application Considerations

Weatherford's reciprocating rod lift systems offer solutions to virtually all applications, whether sandy, gaseous, or high-viscosity. Other applications include:

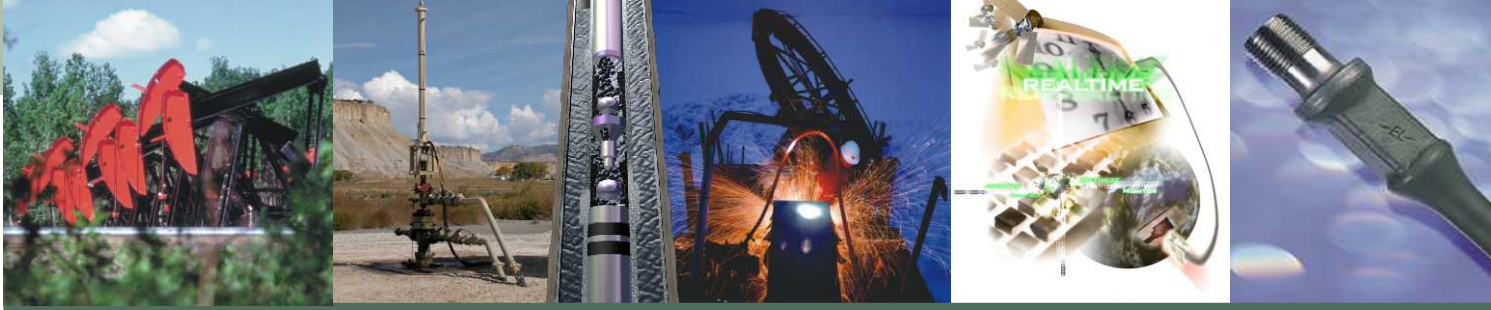
- A wide range of fluid levels from near surface to seating nipple depth
- Low to medium volume lift capabilities
- All types of wells, including horizontal, slant, directional and vertical reservoirs
- Industry standard for on land and remote applications



| | Typical Range | Maximum |
|-----------------------|----------------------------------|----------------------|
| Operating depth TVD | 100 to 11,000 ft (30 to 3,353 m) | 16,000 ft (4,877 m) |
| Operating volume | 5 to 1,500 BPD | 6,000 BPD |
| Operating temperature | 100 to 350°F (38 to 177°C) | 550°F (288°C) |
| Wellbore deviation | 0 to 20° landed pump | 0 to 90° landed pump |
| Corrosion handling | Good to excellent | |
| Gas handling | Good | |
| Solids handling | Good | |
| Fluid gravity | >8° API | |
| Servicing | Workover or pulling rig | |
| Prime mover type | Gas or electric | |
| Offshore application | Limited | |

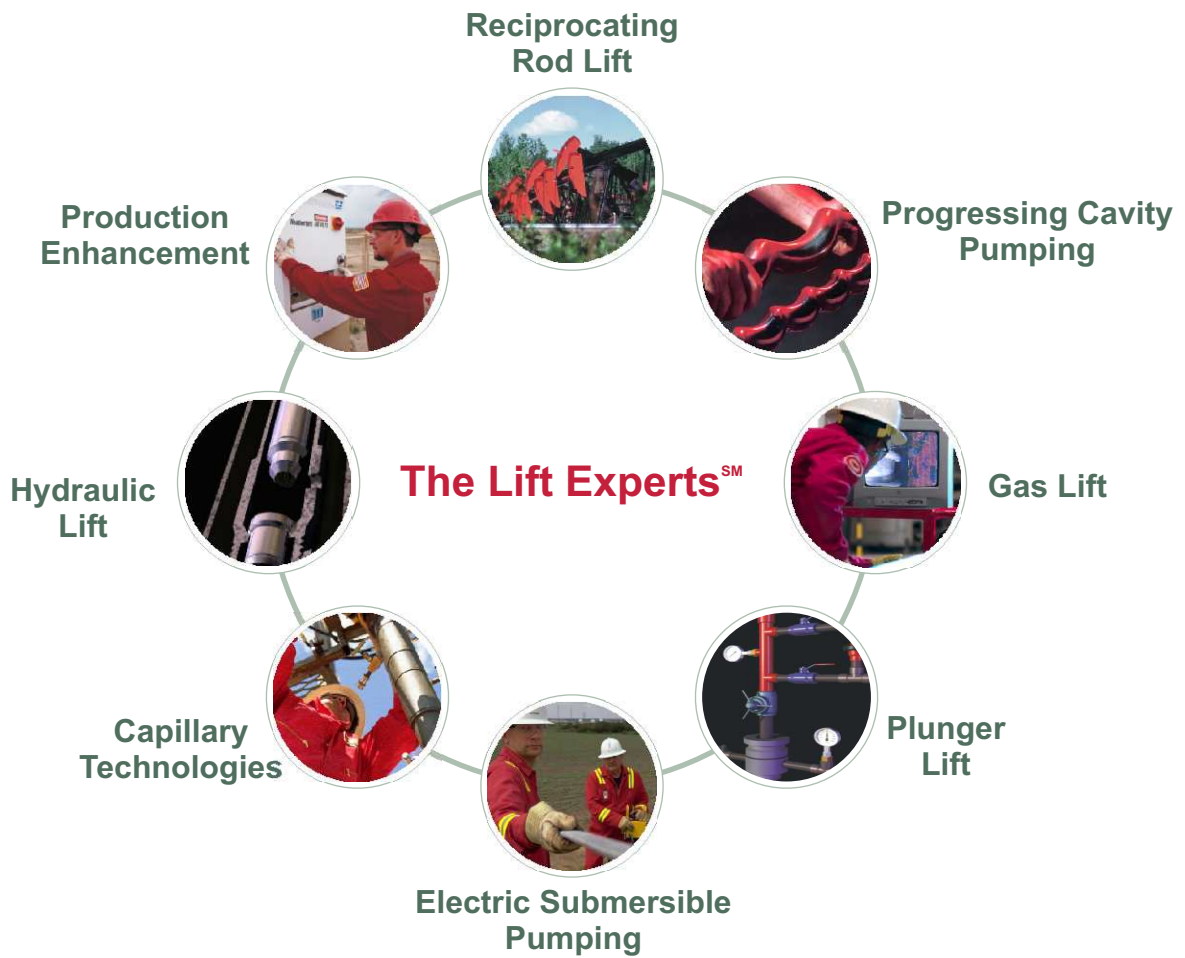
Individual parameters vary with well conditions and system components and should be evaluated on a case-by-case basis. Maximum characteristics typically require special analysis.





Weatherford is the leading single-source provider of artificial lift worldwide and the only company providing products and systems for all forms of lift. These capabilities allow Weatherford to provide total solutions for optimal production enhancement.

Our cost-effective systems provide ultimate reservoir recovery through the integration of focused artificial lift technologies, application engineering and global delivery systems.



Weatherford[®]

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