

CAMLift

Hydraulic pumping unit

APPLICATIONS

- Heavy, medium, and light oil well production
- Deep horizontal well production
- Gas well dewatering
- Coalbed methane and coal seam gas well production
- Production from thermally stimulated wells such as cyclic steam stimulation and SAGD

BENEFITS

- Improves production uptime through faster installation, operator adjustments, and service
- Maximizes pumping efficiency by reducing the effect of rod stretch and gas compression
- Maintains ability to continue production while neighboring wells are being worked over
- Minimizes operating costs by reducing rod tubing wear
- Minimizes installation costs associated with transportation, ground preparation, jack alignment, and installation service
- Reduces HSE risk posed by large rotating equipment and guidewires

FEATURES

- Easy adjustment of stroke length and speed
- Direct mount to wellhead
- Ability to run two interdependent wells with one power unit
- Availability with electric or gas power options
- Small footprint ideal for small well and multiwell pads
- Surface and downhole dynamometer cards
- Manual and automatic speed control functions

The CAMLift* hydraulic pumping unit brings advanced sucker rod pump technology and automation intelligence together into an integrated and easy-to-use package. Its compact and lightweight design enables simple and efficient installation and maintenance on single or multiwell pads.

Variable control of the motion dynamics—including up and down speed ratios and top and bottom position delays—give the operator more control over a well's performance compared with conventional rod lift technology. The standard control package features manual and automatic speed control, and the unit can be controlled remotely from human machine interface SCADA applications. The CAMLift unit provides conventional pumping functionality, including pump fill control, adjustable up and down speed profiles, stroke length adjustments, and operational alarms and shutdowns.

System automation and intelligence

The CAMLift unit features both hydraulic and sucker rod pump automation for added intelligence. The unit analyzes and optimizes power, pressure, and temperature for the hydraulic system. This adds reliability, longevity, and efficiency to the hydraulic power unit components. The automation intelligence features for the sucker rod pump system optimize rod actuation and downhole pumping, providing greater reliability and failure prevention. This translates into increased pumping system performance and insights into well issues.

Intelligent dual-jack operation

Intelligent dual-jack operation enables one skid to operate two enclosed cylinder jacks without affecting well performance in applications where the skid is capable of delivering production rates for both wells. This option reduces equipment cost, decreases the overall footprint, and enables close well pad installations. Advanced automation software specifically built for dual-jack operation analyzes data to optimize available power for each well. This enables maximum production without the need to continuously manually adjust the operating parameters.

Installation and maintenance

Installing and commissioning the CAMLift unit only takes a few hours. There is no mandatory site preparation required because the jack is mounted directly onto the wellhead. This direct mount also eliminates the need for guidewires, significantly reducing challenges with alignment and stack-up height. There is no special ground preparation necessary for the skid, which is set outside of the classified zone up to 25 ft [7.6 m] from the well.

Critical components of the CAMLift unit are equipped with intelligent sensors, counters, and controllers that provide wellsite and remote condition monitoring. This enables real-time decision making when maintenance issues arise and allows the unit to be maintained in the field. Its compact and lightweight design enable most of the components to be serviced without a crane.



The CAMLift unit jack is installed directly on the wellhead, reducing preparation, installation, and servicing requirements.

Hollow or enclosed cylinder jacks

Schlumberger leveraged its extensive engineering and sealing technology to design both hollow and enclosed cylinder hydraulic jacks for the CAMLift unit. The stroke length and lift capability of the hollow cylinder jack makes it the economical and efficient choice for applications requiring moderate stroke length. The polished rod at the top of the cylinder is easily accessed to unseat and flush an insert rod pump or for simple space-out adjustments. The hollow cylinder jack also features a rod rotator, which increases system reliability in deviated wellbores.

The enclosed cylinder jack features a long stroke length, which minimizes rod stretch impact, reduces cyclic stresses, reduces rod and tubing wear, and improves gas compression ratios. The peak polished rod lift capacity enables pumping in deep highly deviated wells. Both jacks are available with environmental boots to provide an additional layer of protection from stuffing box leaks and worn hydraulic cylinders.

Counterbalanced system

The counterbalanced CAMLift unit employs nitrogen counterbalance to reduce the energy requirement to lift the rod string when used with the H40-192 jack. The stored energy from the counterbalanced system enables high power efficiency in deep vertical wells with high minimum polished rod loads.

CAMLift Hydraulic Pumping Unit Specifications

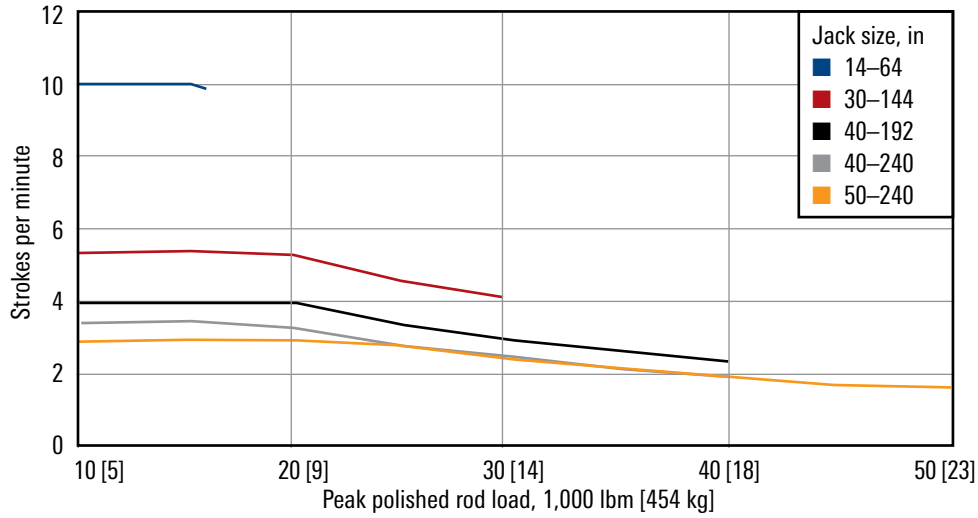
Pumpjacks

	Jack Cylinder Type	Peak Polished Rod Load, lbm [kg]	Stroke Length, in [cm]	Dimensions (L x W x H), in [cm]	Weight, lbm [kg]
H14-64		14,000 [6,400]	64 [162]	30 x 22 x 160 [76 x 56 x 406] (including ladder)	600 [272]
H30-144	Hollow	30,000 [14,000]	144 [365]	50 x 32 x 215 [127 x 81 x 546] (including ladder)	1,600 [726]
H40-192		40,000 [18,000]	192 [488]	52 x 32 x 255 [132 x 81 x 648] (including ladder)	2,200 [998]
E40-240		40,000 [18,000]	240 [610]	13 x 12 x 295 [33 x 30 x 749]	790 [358]
E40-336		50,000 [23,000]	336 [853]	13 x 12 x 385 [33 x 30 x 1,000]	1,005 [456]
E50-240	Enclosed		240 [610]	13 x 12 x 295 [33 x 30 x 749]	915 [415]
E50-336			336 [853]	13 x 12 x 385 [33 x 30 x 978]	1,180 [535]

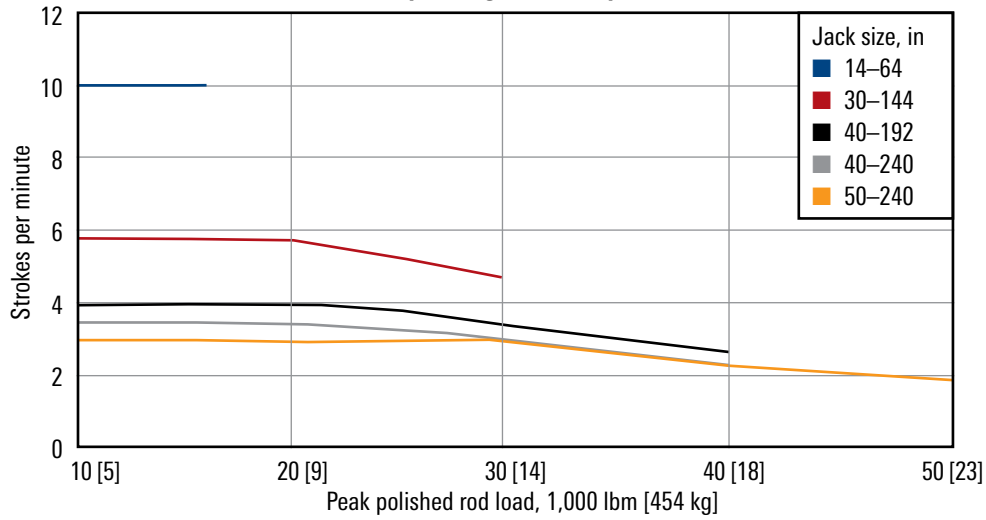
Power Skids

Skid	Hydraulic Circuit	Prime Mover	Dimensions (L x W x H), in [cm]	Weight, lbm [kg]
		Gas, 5.7 L [350 in ³]	151 x 54 x 125 [384 x 137 x 318]	3,700 [1,680]
		Gas, 6.2 L [376 in ³]	151 x 54 x 125 [384 x 137 x 318]	3,700 [1,680]
Low flow	Open loop	Gas, 10.3 L [632 in ³]	151 x 54 x 125 [384 x 137 x 318]	4,600 [2,090]
		Electric, 50 hp [37 kW]	151 x 44 x 80 [384 x 112 x 203]	3,000 [1,360]
		Electric, 100 hp [76 kW]	151 x 44 x 80 [384 x 112 x 203]	3,500 [1,590]
		Gas, 10.3 L [629 in ³]	107 x 88 x 80 [272 x 224 x 203]	6,500 [2,950]
High flow	Open loop	Electric, 100 hp [76 kW]	107 x 88 x 80 [272 x 224 x 203]	6,600 [2,990]
		Electric, 150 hp [112 kW]	107 x 88 x 80 [272 x 224 x 203]	7,000 [3,180]
		Gas, 5.7 L [350 in ³]	160 x 96 x 88 [406 x 244 x 224]	12,000 [5,440]
Counter balanced	Closed loop	Electric, 75 hp [60 kW]	160 x 96 x 88 [406 x 244 x 224]	12,500 [5,670]
		Electric, 100 hp [76 kW]	160 x 96 x 88 [406 x 244 x 224]	13,000 [5,900]

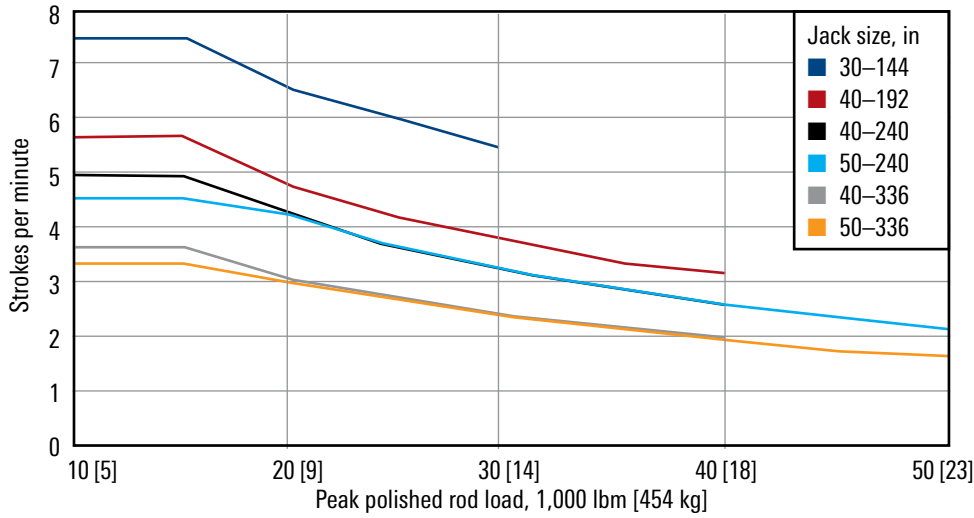
**Low-Flow Skid Capabilities for 6.2-L [376-in³] Gas Engine
Operating at 1,800 rpm**



**Low-Flow Skid Capabilities for 100-hp [75-kW] Electric Motor
Operating at 1,770 rpm**



**High-Flow Skid Capabilities for 10.3-L [632-in³] Gas Engine
Operating at 1,800 rpm**



**High-Flow Skid Capabilities for 150-hp [112-kW] Electric Motor
Operating at 1,770 rpm**

