

9000-6 & X^{series} HYDRAULIC PUMP JACK EQUIPMENT DESCRIPTION AND SPECIFICATIONS

Equipment: The 9000 series hydraulic pump jack includes a power unit and wellhead mounted slave cylinders. The only additional equipment required to operate the pump jack is a propane tank or fuel gas for multi cylinder prime mover or a VFD or pump-jack starter and 3 phase 460 volt power source for the electric prime mover.

Maximum Polish Rod Load (PRL) Capability: 35,000 pounds.

Stroke Length: Variable and fully adjustable by fraction of an inch up to 156" maximum.

SPM: Variable, fully adjustable and independent up and down stroke speeds up to 7 SPM (dependent on polish rod differential load and desired stroke length).

Jog Function: Allows the field operator to manually raise and lower the polish rod.

Timer Functions: Bottom turn around delay and full stroke on-off delay timers.

Polish Rod Load Limiters: Maximum and minimum polish rod loads can be set to stop the unit from stroking if the set PRL values exceed the set maximum weight or are below the set minimum weight.

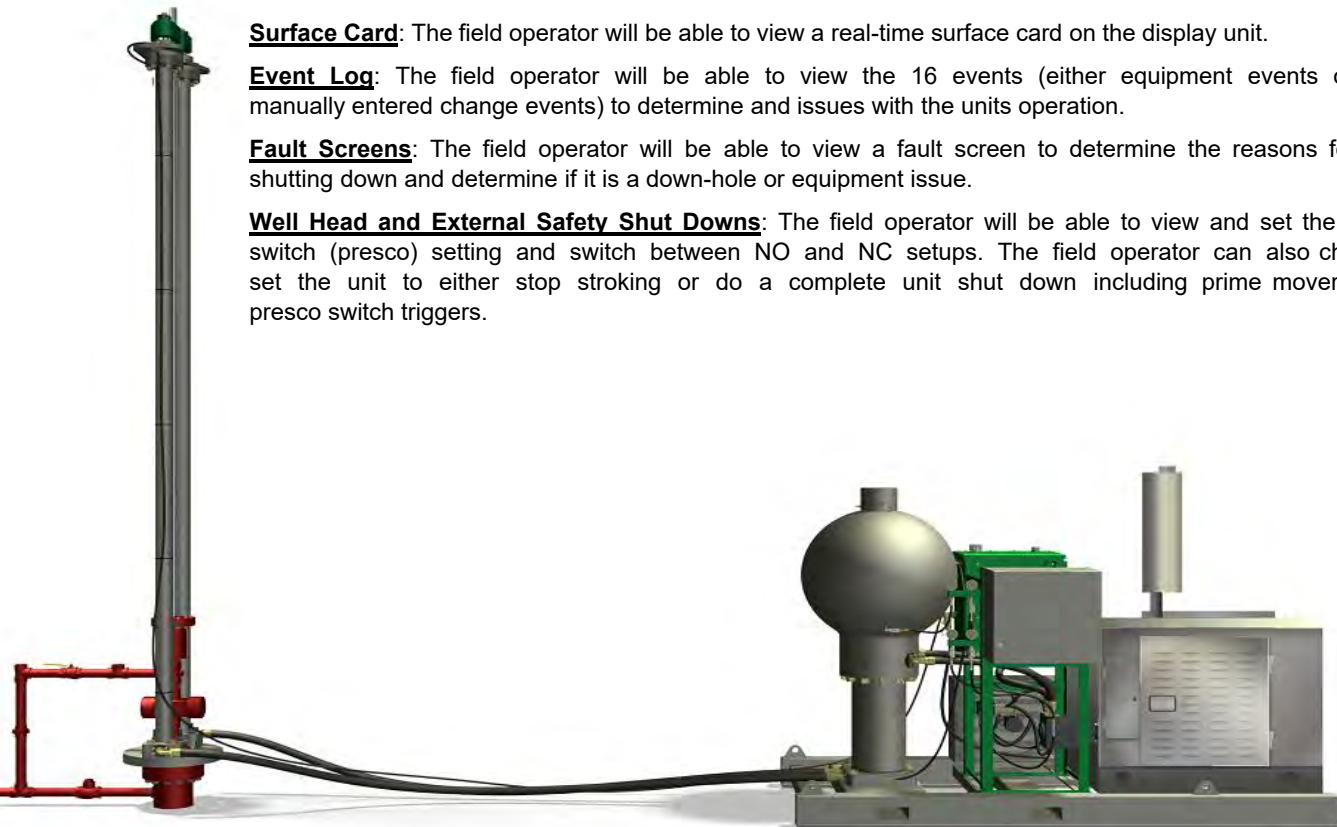
Control Function: The field operator has full control of stroke length, SPM, timer functions and max / min PRL settings via the electronic display screen without the need of stopping the unit, picker trucks or climbing the slave cylinders to set external proximity switches or sensor bars. Once the new desired stroke length, independent up and down speeds, timer functions and/or PRL limiters are entered and confirmed, the unit will modify these values on the next few strokes and turn around setting is calibrated to the speed and length of stroke.

Surface Card: The field operator will be able to view a real-time surface card on the display unit.

Event Log: The field operator will be able to view the 16 events (either equipment events or operator manually entered change events) to determine and issues with the units operation.

Fault Screens: The field operator will be able to view a fault screen to determine the reasons for the unit shutting down and determine if it is a down-hole or equipment issue.

Well Head and External Safety Shut Downs: The field operator will be able to view and set the well head switch (presco) setting and switch between NO and NC setups. The field operator can also choose and set the unit to either stop stroking or do a complete unit shut down including prime mover when the presco switch triggers.



N2 Balancing: Patented nitrogen balancing system, Eliminates shock loading of equipment that improves equipment life and smooths out peak HP and torque requirements when the PRL is balanced with the N2 this typically improves fuel efficiencies.

Prime Mover Options: GMC V8 5.7L gas engine (propane or fuel gas) and 50 HP electric motor.

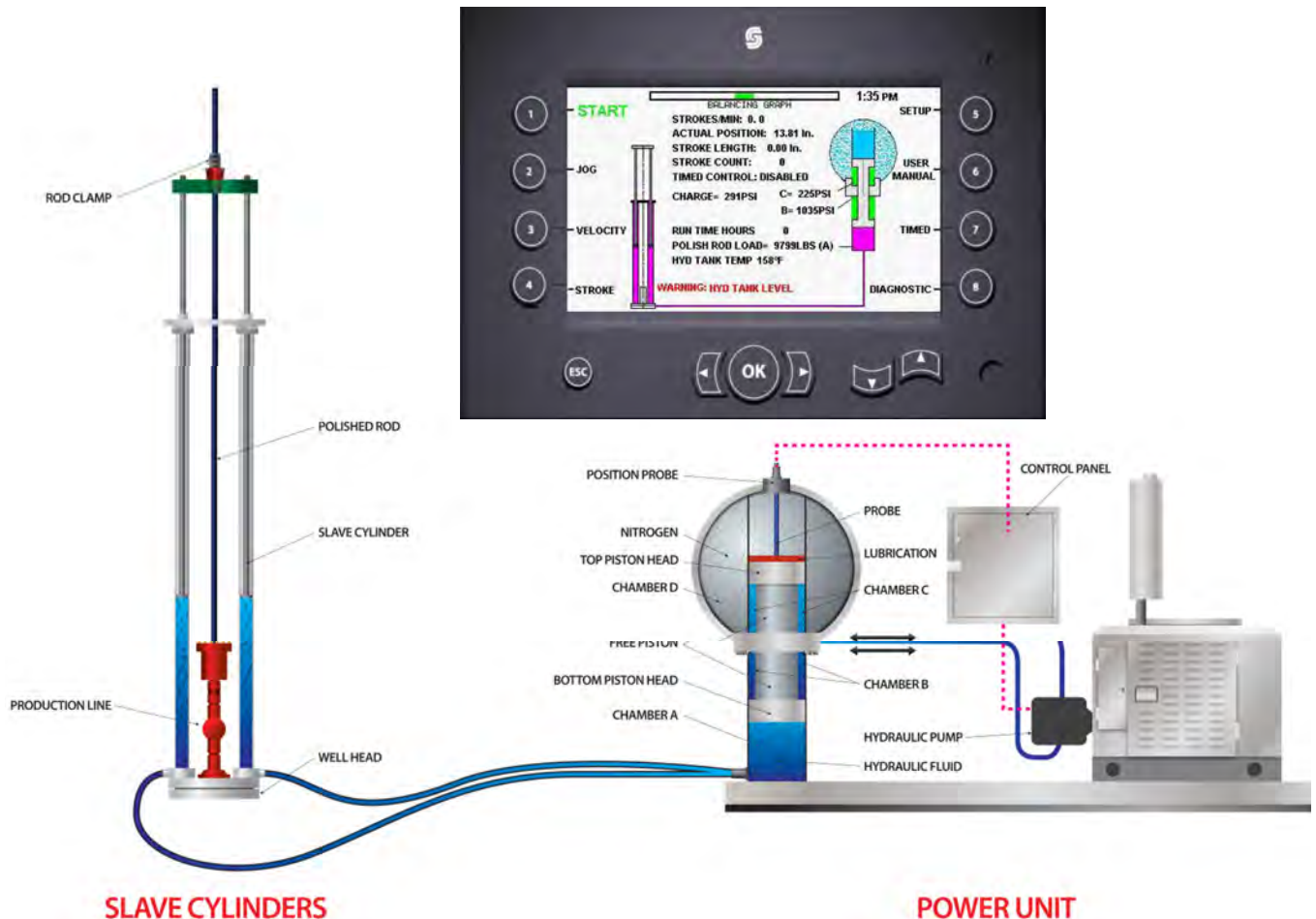
Power Skid: 10' X 4.5' skid – approximately 6,500 pounds with 20' hoses to the slave cylinders mounted on the wellhead.

Slave Cylinders: 19' dual slave cylinders – approximately 2,300 pounds - mount directly to the tubing hanger flange on the wellhead for a dead center pull on the polish rod eliminating side loading on the stuffing box.

Site Preparation: Minimal site preparation, unit skid can be set on two timbers.

Set Up: Set up time is approximately 2-3 hours with a picker truck and 2 field technicians.

Screen Information Available for the Field Operator: Unit status, actual stroke length, actual SPM (as well as up and down independent speed settings), polish rod loads, pump surface card, stroke counter, stroke top and bottom turn around, presco/ESD shut down status, fault status, prior 16 event screen, bottom turn around and stroke timer status, slave cylinder position, load limit status, pumping unit sensor readings.



Operating Principle: The Ecoquip pump jack is based on fluid displacement principles and it operates much like the braking system on an automobile where a master cylinder displaces fluid to the wheel cylinders. A gas (N2) ballast stores the energy during the pump down stroke to assist on the next upstroke and the balanced unit is at mid point of stroke; Maximum energy is available when the unit is in the bottom of the stroke. Balancing is done by adjusting the ballast pressure while the unit is operation and unit output pressure is equal on the up and down stroke. This creates a smooth and efficient stroke that provides longevity to seal, hydraulic pump and prime mover life when regular maintenance is performed.