



Liner Hanger Systems

Engineered to last

Liner Hanger Systems



A solid track record

Liner hanger systems must suspend, support, isolate, seal, and anchor—in all types of applications and environments. Their quality, integrity, performance, and reliability will make a critical difference in the success of your completion, well, and project.

Schlumberger Completions offers a full line of liner hanger systems and accessories for conventional, medium, and complex well applications, as well as deepwater and high-pressure, high-temperature (HPHT) environments. Backed by a track record of more than 6 decades, these liner hanger systems are also supported by Schlumberger's strong customer service, quality processes, and global presence.

Around the world, we will work with you to choose the most reliable liner hanger system for each application, to execute projects efficiently and effectively, and to continuously evaluate quality and performance. Our experienced field personnel will ensure that your needs are quickly addressed and that wellsite operations are seamlessly performed.



ONE TRUSTED SOURCE FOR YOUR COMPLETIONS

Schlumberger expanded its Completions product portfolio in 2010 to include the full line of Smith International liner hangers and accessories. These systems complement existing Schlumberger technologies and allow you to complete your wells using equipment and services from one trusted source.

From Concept to Completion

Schlumberger liner hanger systems have been developed through years of research, testing, and reliable field performance.

Design. During the new product design phase, engineers study the effects of pressure and temperature on liner hanger system components, including rapid analysis of the forces, stresses, and movement in the wellbore and numerical screening techniques such as finite element analysis. These programs are applicable to both simple and complex well conditions and help optimize product design and reduce product

development cycle time. The results and feedback required to design a successful well completion provide precise design specifications for manufacturing.

Manufacturing. Schlumberger uses the latest computer numerical control machine tool technologies to precisely manufacture liner hanger components according to design specifications.

Qualifications Testing. Temperature, pressure, and load prerelease tests are conducted on system components at engineering test facilities in Houston, Texas, to meet both industry- and

client-specific requirements. Testing parameters are visually monitored, fully documented, and compliant with the latest ISO 14310 V3 and V0 industry standards.

Liner hanger components are tested individually for hanging and load capacity, pressure and temperature limits, tensile and torsional capabilities, and for torque, burst, and collapse ratings. The entire liner hanger assembly is function tested to ensure that each component will work with the others when deployed in the well.



Matching system to well



The integrity of your well and success of your project are greatly affected by the liner hanger system you use. The right system lessens weight on the wellhead, decreases casing length, minimizes risks and formation damage, improves cement jobs, reduces well completion time, increases flow rates and well production, and lowers operational costs.

Schlumberger offers a complete line of liner hanger systems for conventional, medium, and complex well applications, including deepwater and deep land wells, high-pressure, high-temperature environments, and horizontal, extended-reach, tight, and deviated boreholes.

Liner Hanger System Selection Chart

| Component/feature | COLOSSUS Premium | HPS Heavy-Duty Premium | HPS Heavy-Duty | Conventional Mechanical | Pocket-Slip | Uncemented |
|---------------------------------|--|--|--|--|---|--|
| Set and release mechanism | Hydraulic-set Hydraulic-release | Hydraulic-set Hydraulic-release | Hydraulic-set Mechanical-release | Mechanical-set Mechanical-release | Hydraulic- or mechanical-set and release | Integral liner hanger packer |
| Hanger | HCHR | HPS | HPS | SBRD | PSHR or PSH | Long-Reach LRP |
| Packer | PV-0 or PV-3 | PV-0 or PV-3 | WMP or VMP | PV-3 or WMP | FSP Frontier | |
| Running/setting tools | RRT or CRT | RRT or CRT | STL or STS | RRT or STL | STPR or STP | LRST |
| Preferred wellbore applications | <ul style="list-style-type: none"> • Deepwater and deep land wells • HPHT well environments • Horizontal, tight, extended-reach, and deviated wellbores | <ul style="list-style-type: none"> • Intermediate to deep wells • High-angle and highly deviated wellbores | <ul style="list-style-type: none"> • Medium-depth land wells • Mid- to low-deviation wellbores | <ul style="list-style-type: none"> • Conventional completions • Vertical, onshore, and shallow land wells • Low-deviation wellbores | <ul style="list-style-type: none"> • Offshore and land wells • High-pressure environments • High-flow-rate gas wells | <ul style="list-style-type: none"> • Heavy oil and other unconventional resources • High-angle and extended-reach wells • High-temperature environments |



COLOSSUS Premium Liner Hanger System

Designed for deepwater and deep land wells, high-pressure, high-temperature (HPHT) environments, and horizontal, extended-reach, tight, and deviated wellbores requiring a high hanging capacity and drilldown capabilities.

Features the HCHR high-capacity rotating liner hanger, the PV-0 or PV-3 weight-set liner top packers, and the RRT right-hand-mechanical-release running tool and the CRT hydraulic-release collet running tool.

HPS Heavy-Duty Premium Liner Hanger System

Designed for intermediate to deep wells with high angles and deviated wellbores requiring high hanging capacity and drilldown capabilities.

Features the HPS hydraulic pocket-slip rotating hanger, the PV-0 or PV-3 weight-set liner top packers, and the RRT right-hand-mechanical-release running tool and the CRT hydraulic-release collet running tool.

HPS Heavy-Duty Liner Hanger System

Designed for medium-depth land wells and mid-to low-deviation wellbores in environments requiring a robust system with basic functionalities.

Features the HPS hydraulic pocket-slip rotating hanger, the WMP or VMP weight-set liner top packers, the STL or STS mechanical-release setting tools, and the mechanical-release setting adapter.

Conventional Mechanical Liner Hanger System

The conventional mechanical liner hanger system is designed for vertical, onshore, and low-deviation wellbores. Its features are designed to meet basic well requirements and maximize reliability while minimizing well costs.

Features the SBRD solid-body mechanical liner hanger, the WMP weight-set liner top packer, the STL mechanical-release setting tool, and the SATM mechanical-release setting adapter.

Pocket-Slip Liner Hanger System

The pocket-slip liner hanger system is designed for high-pressure, high-gas-rate wells that require optimized pressure integrity at the liner top.

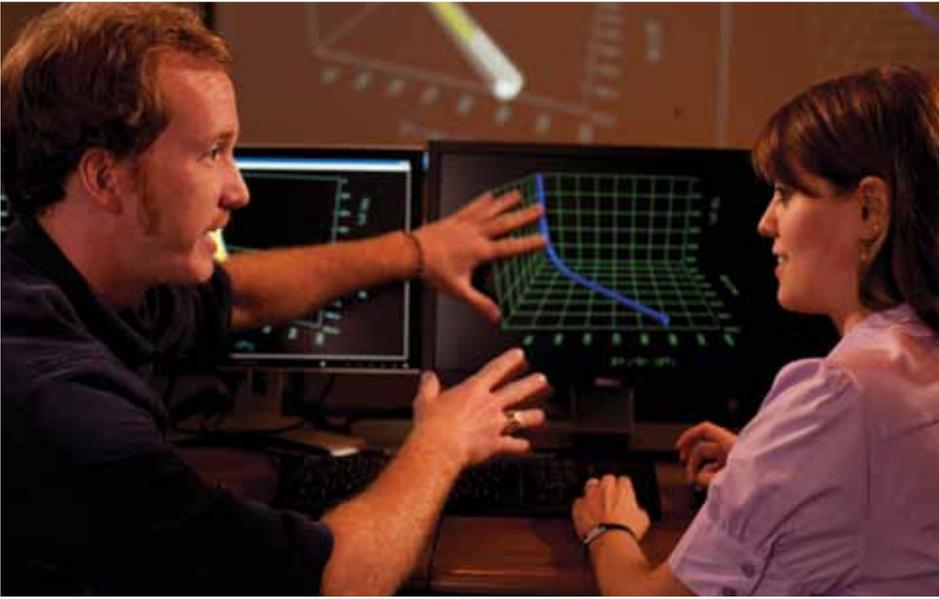
The hanger is positioned above the liner top packer to eliminate differential pressure at the hanger, thereby improving pressure integrity and reducing equivalent circulating density and running interference.

Features the PSHR rotational or PSH non-rotational pocket-slip liner hanger, the FSP Frontier liner top packer, the STPR rotational or STP nonrotational pocket-slip setting tool, and the TP pocket-slip tieback receptacle.

Uncemented Liner Hanger System

The uncemented liner hanger system is designed for high-angle and extended-reach wells where manipulating the workstring is difficult.

Features the integral Long Reach* liner hanger packer and setting tool.



Operations Support

Matching the best-performing liner hanger system with a particular well's parameters requires a deep understanding of the wellbore environment and its potential challenges.

A dedicated team of Schlumberger engineers will work with you to understand these challenges and recommend the appropriate liner hanger system for the operation. Their engineering knowledge and expertise, our innovative tool designs, and simulation software help streamline liner hanger deployment, optimize the operation, minimize risks, and reduce costs.

This selection–feedback cycle is based on a three-phase process of design, execution, and evaluation.

Design. Schlumberger engineers help you select the optimum liner hanger equipment based on your specific well requirements and parameters, including depth, liner length, wellbore deviation, and pressures and temperatures. They use simulation software to create torque and drag models and surge and swab models to ensure that buckling and failure of tools are avoided and that operations can be completed correctly the first time—as planned and on budget.

Execution. Sophisticated software is put in place at the rig site to record key well parameters. Engineers monitor the liner hanger operation, record key parameters, and provide expertise onsite for optimum running speeds.

Evaluation. Engineers view the actual well parameter data and run additional simulations to review the details of the operation. The results enable them to provide a postjob analysis and evaluate the performance of the liner hanger system. All the information is stored in a secure database for future reference.

3-Phase Operations Support Process

Design

- Collect and validate well parameters
- Select optimum liner hanger equipment
- Simulate torque and drag, surge and swab

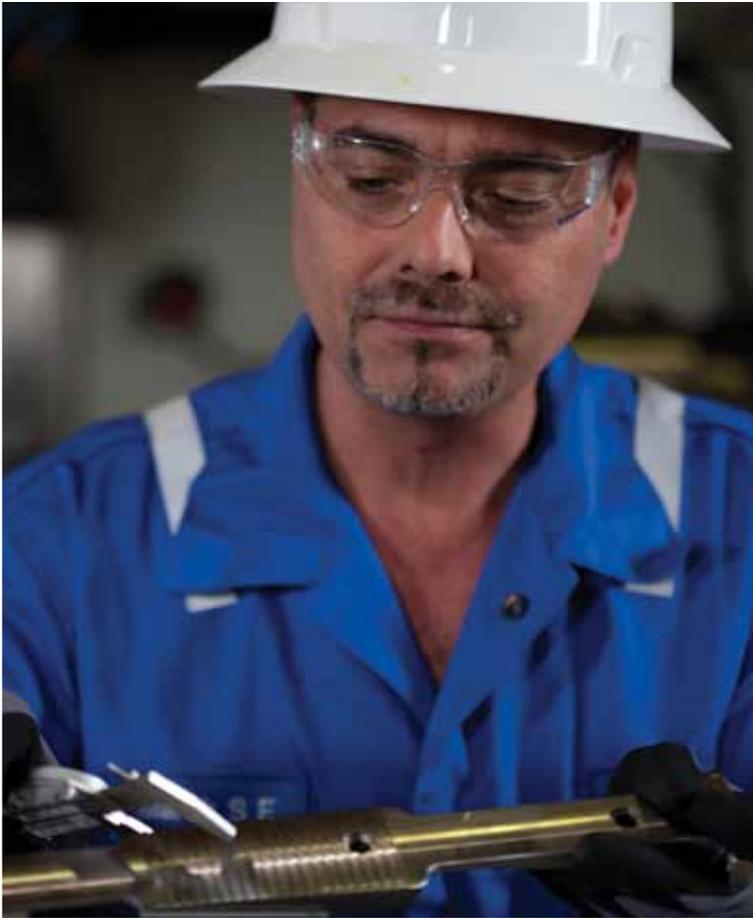
Execute

- Register hook load versus string depth
- Simulate axial force buckling effect
- Monitor torque limits
- Record changes in circulating pressures, string weight, pressure and temperature, reverse circulation volume, and flow rate

Evaluate

- Review operations and provide postjob analysis
- Evaluate performance of the equipment
- Recommend liner hanger system for optimizing operations
- Store feedback in a secure database

Liner Hanger Systems



Backed by more than 6 decades of experience and supported by our strong customer service, quality processes, and global presence, Schlumberger liner hanger systems help protect the integrity of your completion and support the overall success of your project.

Confidence in Completions

www.slb.com/linerhangers

Schlumberger