TUBULAR RUNNING SERVICES

Free-floating backup system

Delivering reliable connection integrity by eliminating bending and shearing forces

Weatherford®

Connection integrity starts with a good backup

Our free-floating backup eliminates the bending and shearing forces typically caused by integral backup systems

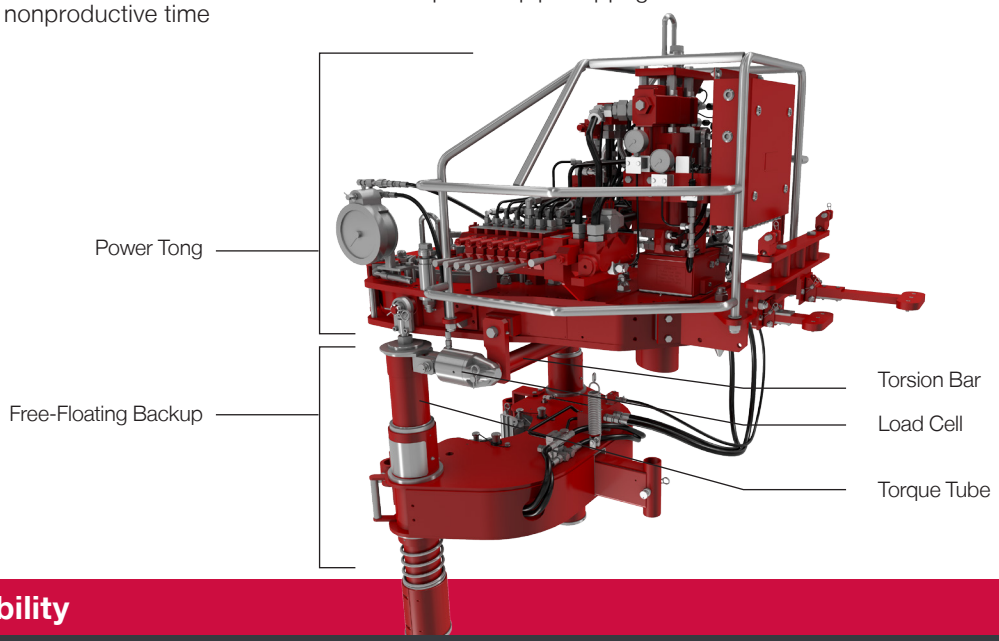
As the global leader in tubular running technologies and services, Weatherford provides a full suite of equipment that correctly makes up connections to OEM specifications to build a secure mechanical formation barrier.

Our hydraulic free-floating backup (FFBU) system not only secures a proper connection, but also eliminates the potential for damage during makeup and breakout. Compatible with all Weatherford power tongs, the FFBU opposes the output torque of the tong without conventional backup lines. The FFBU grips the lower pipe, allowing the tong to move in unison with the upper pipe when rotation is applied. The system virtually eliminates shearing and bending moments during makeup and breakout, which reduces tubular deformation while increasing long-term well integrity.

The FFBU is designed for use with complementary connection integrity technologies, including our Micro-grip* system, JamPro™ torque monitoring system, and TorkPro* 3 torque and turn analyzing software. Together, these tools create a life-of-well tubular system that reduces nonproductive time and costs long term.

Features and benefits

- Part of the torque reaction system which ensures that the torque generated by the hydraulic motor and drive train spins the pipe instead of the tong.
- The FFBU system allows some free movement for the tong to properly make up or break out a connection (MU/BU), which eliminates side loads and bending forces from the connection.
- A load cell that is fitted between the tong and FFBU measures the torque during makeup and breakout — both in tension and in compression.
- Two jaws provide the means for gripping, and a flow divider provides centric clamping action.
- The torque tube counteracts the torque reaction produced by the tong motor to MU and BO the connection.
- A pressure booster increases the pressure set by the control valve from 1,450 to 5,802 psi (100 to 400 bar) before pressure reaches the clamping cylinder generating enough gripping force to prevent pipe slippage.



Mechanized Tong Compatibility

5.5-15 Hydraulic Tubing Tong
- Make up and break out 1.66- to 5.5-in. tubular strings
- 15,000 ft/lb maximum torque

7.6-30 Hydraulic Tubing Tong
- Make up and break out 2.375- to 7.625-in. tubular strings
- 30,000 ft/lb maximum torque

7.6-50 Hydraulic Tubing Tong
- Make up and break out 2.375- to 7.625-in. tubular strings
- 50,000 ft/lb maximum torque

14-50 Hydraulic Casing Tong
- Make up and break out 6.625- to 14-in. casing
- 50,000 ft/lb maximum torque

14-100 Hydraulic Casing Tong
- Make up and break out 7- to 14-in. casing
- 100,000 ft/lb maximum torque

21-300 Riser Tong
- Make up and break out risers with ODs ≤21-in.
- 300,000 ft/lb maximum torque

24-50 Hydraulic Casing Tong
- Make up and break out 10.75- to 24-in. casing
- 50,000 ft/lb maximum torque

30-100 Hydraulic Casing Tong
- Make up and break out 16- to 30-in. casing
- 100,000 ft/lb maximum torque

22-150 Hydraulic Casing Tong
- Make up and break out 9 5/8- to 22-in. casing
- 150,000 ft/lbmaximum torque

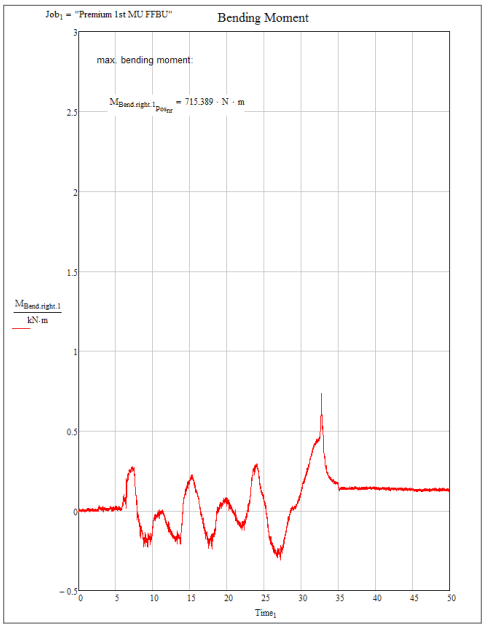
The free-floating backup advantage

Traditional integral backup systems introduce side forces and bending moments during makeup. These side forces can lead to false torque readings, which affects the integrity of the connection.

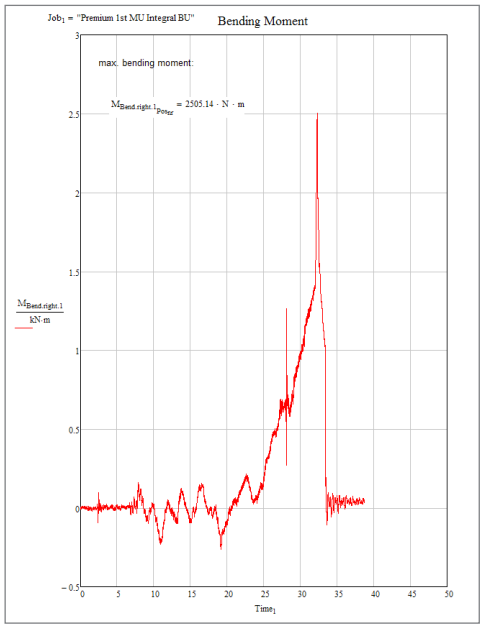
The Weatherford FFBU eliminates the side forces that are caused by integral backup systems. The FFBU also enhances connection integrity by enabling the application of proper parameters at each connection.

Graphic comparisons illustrate how the FFBU provides optimal monitoring of connections compared to integral backup designs.

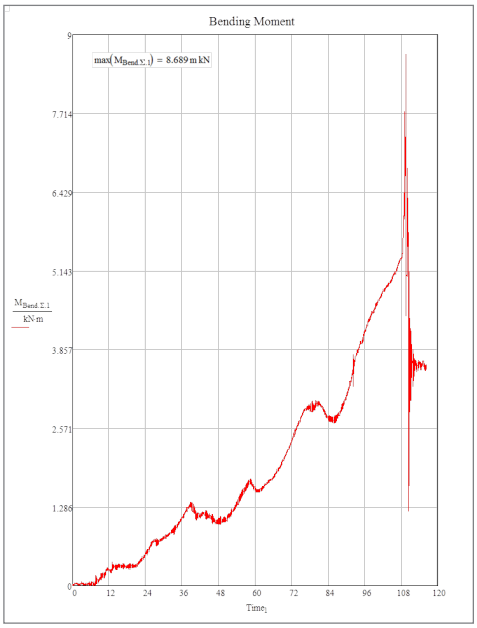
Weatherford FFBU Bending Moment



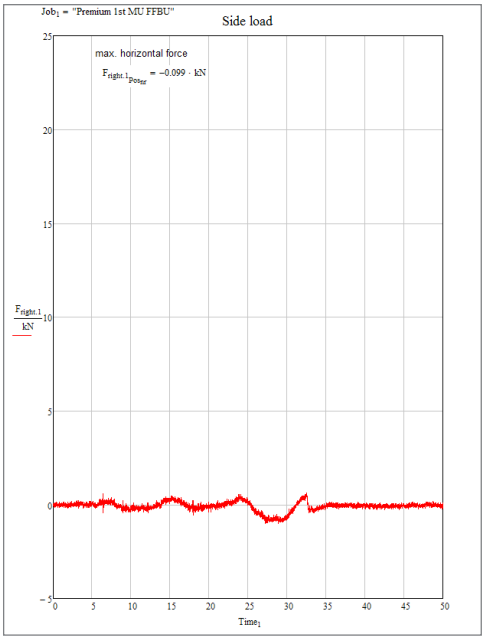
Integral Backup Bending Moment



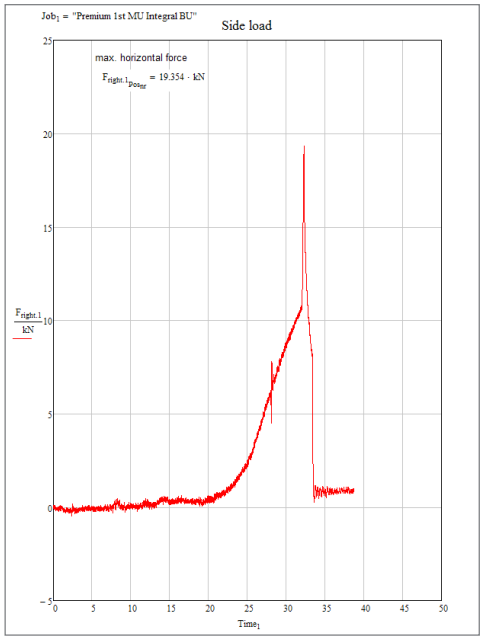
Snub Line Bending Moment



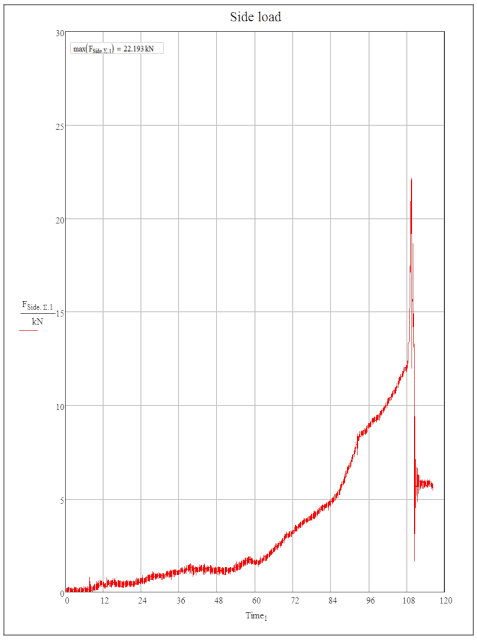
Weatherford FFBU Side Load



Integral Backup Side Load



Snub Line Side Load



Weatherford tubular running services (TRS) provide life-of-well connection integrity with a suite of technologies that provide optimal torque and turn. To learn how our services and technologies can work for you, contact your authorized Weatherford representative, or visit us at **www.weatherford.com/trs**

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