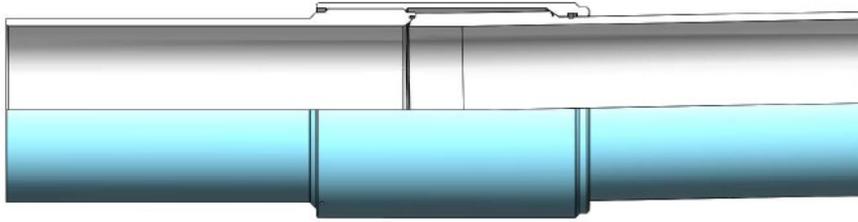


Rotate and Bend Connection



In recent years, it is more common to see directionally or horizontally drilled wells than the conventional vertical wells. Directionally drilled wells will contain controlled build angles required to obtain a target. During these controlled build angles, formation changes can result in undesirable drilled angles of build, and often severe changes in build angles are required to get back on target. These large build angles (referred to as doglegs) are the cause of human error, mechanical error, and formation changes. If the dogleg degree is larger than allowed, it can cause difficulty in liner installation or liner damage through these doglegs. A dogleg measurement is the change in angle (degree) over a set distance of (30 meters or 100 feet). For example, a 15° dogleg is a directional change of 15° over a 30m/100' distance.

The Rotate and Bend Connection (RBC) is a special connection that can bend a specified angle (or dogleg) within the RBC connection (12"). By placing the RBC connections within the liner at predetermined depths, where undesirable doglegs exist, the RBC will allow easier installation and less chance for liner damage or failure. The RBC connection is designed to meet or exceed the specifications of the liner it will be run with. The RBC connection will be preset at surface with the required loads to allow the connection to bend. When the set bending loads are exceeded, the connection will bend to the custom designed angle or dogleg. If this load is exceeded while rotating, the connection will continue to bend while rotating and still obtain a seal in the connection. The RBC is custom designed and built for a specific need. The RBC can accommodate greater bend angles than those achieved while drilling.

Canadian Patent No. 2,759,606

US Patent No. 9,637,983 B2

Mexican Patent No. 349423

GCC Patent No. 0007246

Argentina Patent No. AR088958B1

APPLICATION

- Vertical, directional and horizontal wells containing severe doglegs.
- Thermal wells with casing movements due to thermal expansion, contraction, and formation shifting and movements.
- Wells containing voids due to product removal, washing, and formation slumps.

FEATURES

- Can be run with any casing types and connections. The RBC will be assembled within the casing string, using the same makeup values and equipment used as the liner run.
- Allows bending of the liner (to a custom designed bend) without damage to the liner.
- Allows rotation and bending of the RBC connection simultaneously, while holding a connection seal. It has similar strengths to the liner run.
- The load required to bend the RBC connection off its axis, is preset at surface.

BENEFITS

- Can decrease the chance of liner failures due to, long periods of casing rotations, severe doglegs, formation shifting, thermal movements, and formation voids, both during and after installation.
- Control the loads required to allow bending of the RBC connections down hole.
- Allow rotation of liner down hole where otherwise would cause connection failures (fatigue cracking and failure in the casing connections).



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