



DuoForce™

Bi-Center Drill Bits



OTS DuoForce™ bi-center drill bits are designed to drill oversized hole under specific casing diameters. OTS manufactures a broad range of DuoForce™ bits, from 5" drift diameter to 12-1/4" drift diameter. DuoForce™ bits can be manufactured in either steel or matrix body materials, and are designed for a wide range of formation types and casing dimensions.

Pilot Stability – the pilot section in DuoForce™ designs is built for maximum stability. This is required for the bit to maintain center during rotation with a mass imbalanced product. DuoForce™ bits typically feature a deeper cone angle and stable bottom hole profile to maximize pilot stability.

Relieved Design – DuoForce™ bits feature a relief area between the pilot and reamer sections of the bit. This allows the in-situ stresses of the rock to relax into the relief area, reducing apparent rock strength ahead of the reamer section. The rock addressed by the reamer section is slightly weaker due to this stress relief, and allows the reamer section to fail rock more efficiently.

Planned Imbalance – conventional bit design has an inherent focus on minimizing uncontrolled forces produced by the cutters. With a mass imbalanced tool, over-balancing the cutting forces reduces the centripetal forces of the bit. This reduces the tendency of the bit to “swing” on the eccentric side, reducing outward force. DuoForce™ bits rely on the imbalance force to maintain the eccentric swing of the bit, maximizing the oversized diameter.



Two-Stage Hydraulic Design – bi-center bits are effectively two joined bits. The hydraulic energy must be split correctly. If mud flow from the reamer portion exceeds the pilot section, a hydraulic dam or eddy results, which decreases pilot bit cleaning. All DuoForce™ bits utilize matched hydraulics, which are sometimes enforced by the use of fixed ports in the reamer or pilot sections of bits.

