

## GeoTech® Fixed Cutter PDC Bits

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Using DatCI<sup>SM</sup> process and IBitS<sup>TM</sup> design software, Halliburton develops revolutionary fixed cutter PDC bits that increase ROP and drilling intervals, decrease costs

Halliburton's new GeoTech® series of fixed cutter PDC bits blends design theory with practical application-specific knowledge to produce custom-engineered matrix and steel body bits for optimal efficiency and performance—delivering you a truly optimized bit design.

Using the Design at the Customer Interface (DatCI<sup>SM</sup>) process, GeoTech bits help improve rates of penetration and enable longer drilling intervals—all while lowering the cost per foot. Our patented and proprietary IBitS<sup>TM</sup> design software enables us to create 3D bit designs anywhere by using the latest dynamics modeling, including upgrades that better simulate cutting structures.

**Features and Benefits**

Each GeoTech bit incorporates specific application experience with expert design science, including:

- Our rock-interaction analysis tool helps predict load and motion of a drill bit for multiple scenarios including rock chipping, bent motor, whirl, and more.
- Depth of cut control optimally positions cutting-structure elements to smooth torque fluctuations, while a two-step cutter layout position improves performance when primary cutters wear or when drilling parameters change.
- GeoTech PDC-cutter technology significantly helps increase the amount of rock removed with less wear for higher average ROP and up to four times the footage of previous products.
- Improved hydraulics simulation leads to optimum hydraulic design, directing flow with little recirculation and eliminating stagnant zones to optimize bit cleaning and minimize erosion.
- Advanced materials include new matrix/binder materials, which increase durability and erosion resistance, enabling innovative steel-blade geometries and aggressive matrix body design.



*The DatCI<sup>SM</sup> process of developing GeoTech<sup>SM</sup> bits brings together differentiating bit design features needed for a given application, models them for optimum performance with specific operating parameters, monitors that performance, and then incorporates up-to-date performance data into a continuous loop.*

**DatCI service platform: The most effective bit optimization solution**

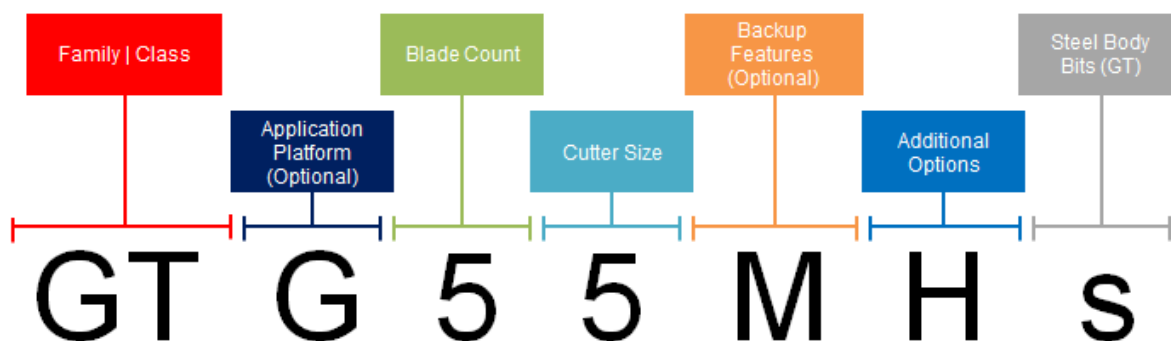
Combining powerful design and simulation tools, and a global network of technical resources, the DatCI service platform uses direct customer input to rapidly optimize each GeoTech bit. Our global network of application design and evaluation (ADE) service specialists works directly with the customer to define specific bit solutions, drawing from a toolbox of the industry's most sophisticated software systems for comprehensive planning, modeling, and engineering—with real-time performance optimization capabilities. That toolbox includes:

- IBitS<sup>TM</sup> patented and proprietary system for creating 3D bit designs anywhere, using the latest bit dynamics modeling, including upgrades that better simulate cutting structures for specific applications
- Enhanced hydraulics modeling that provides a more accurate bottom-hole pattern and enables quantitative analysis on cutter faces and through junk slots to minimize erosion

- SPARTA™ drilling optimization software with an advanced rock mechanics module to analyze formation properties and precisely define the drilling application
- DrillingXpert™ simulation model that enables application and evaluation service specialists to quantify the impact of changes, recommend the best drill bit for the application, and optimize bottom-hole assembly parameters to minimize vibration and enhance performance



At the heart of the Design at the Customer Interface (DatCI) process, the IBitS™ software uses a new rock-interaction model to more accurately predict the effects of design changes on efficiency and longevity.



**Family | Class**

GT = GeoTech®  
MM = MegaForce™  
SF = SteelForce™

**Application Platform (Optional)**

D = Push-the-Bit RSS and Directional Motor  
E = GeoPilot™ Dirigo RSS system  
G = Point-the-Bit RSS systems  
T = Turbine High Rotational Speed  
i = iCruise™ Intelligent Rotary Steerable

**Blade Count**

Blade count indicates the number of blades on the bit.

- 3 = Three Blades
- 4 = Four Blades
- 5 = Five Blades
- 6 = Six Blades
- 7 = Seven Blades
- 8 = Eight Blades
- 9 = Nine Blades
- 0 = Ten Blades
- 1 = Eleven Blades
- 2 = Twelve or more blades

**Cutter Size**

The cutter size digit describes the main cutter size on the bit in 1/8" increments.

- 2 = 1/4" (8mm)
- 3 = 3/8" (10.5mm)
- 4 = 1/2" (13mm)
- 5 = 5/8" (16mm)
- 6 = 3/4" (19mm)

**Backup Features (Optional)**

D = Dual Row Backup PDC Cutters  
W = Stega™ Efficient Backup Cutter Layout  
I = Impregnated Diamond Backup Discs  
R = Shyfter™ Active Shaped Backup Elements  
M = Shyfter™ Passive Shaped Backup Elements  
U = Cruiser™ Depth of Cut Rolling Element

**Additional Options**

K = Geometrix™ Shaped Cutters  
B = Saber™ Engineered Blade Relief  
H = Highly Abrasive Wear  
HE = High Energy  
O = Cerebro® in-bit Sensing Capable  
F = Cerebro Force™ in-bit Sensing Capable

**Steel Body Bits (GT)**

s = Steel Body Bits