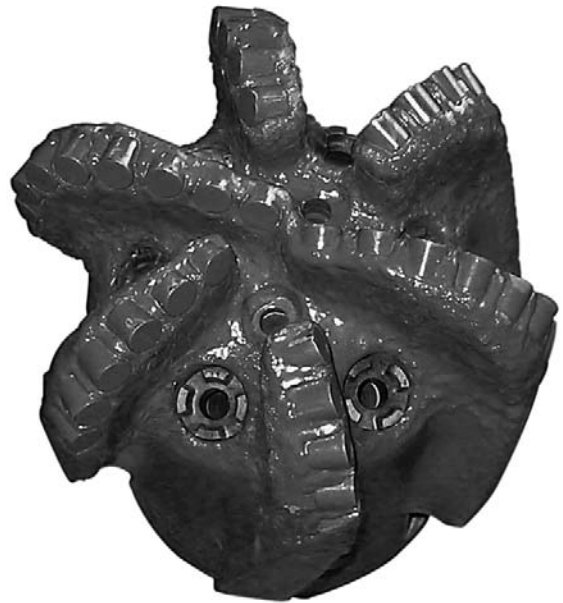




*Directional*  
*7-7/8" Hart6138*

*technical specifications*



*features*

- Short, one piece
- Nonsymmetrical blade layout
- balanced
- PDC gage
- three primary blades
- three tracking back-up blades

*design specifications*

Total Cutters	39
Number 13 mm cutters	39
Number face cutters	29
Number gage cutters	10
Number nozzles	8 (6 interchangeable- 2 fixed)
Junk slot area	13.8 in. <sup>2</sup>
Gage Length	3"
Gage protection	fused carbide & diamond
Make up length	9.40"
Overall length	13.60"
API pin connection	4½" API Regular

*operating parameters*

Rotary speed	Rotary or PDM
Weight on bit	5,000 to 20,000
Flow rate	200 to 500 GPM
make up torque	12-15000 ft.#