



## Eccentric Reamers

Short Bit & Tool Co.  
225 Gold St  
Garland, Texas 75042  
972-205-1011

Patent US 8,851,205, Invented by Lot Short, Richard Beggs, and Brad Beggs

Sold to Hard Rock Solutions in 2013

### Basis of invention:

The "205" tool is made up of two reamers that are exactly alike and are spaced about 4 feet apart linearly and rotated 180 degrees apart axially. Each has four conventional reamer blades that run in a direction parallel with the drill string and are each set with PDC Shear cutters that act to side ream the spiraled drift diameter of a directional bore hole.

Each reamer has PDC cutters spaced about 3/4" to 1" apart and in side reaming formation the coverage of these cutters are incomplete and require multiple revolutions to cut the subject drift diameter which requires both #1 and #2 reamers. The 205 tool does not work with just one reamer.

Most reaming while drilling applications have the drill bit cutting a full size (example 6 1/8") bore hole on a (example 4 3/4") drill motor so the "drift" diameter is those two sizes added together divided by two (5 7/16").

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### New SBT Invention:

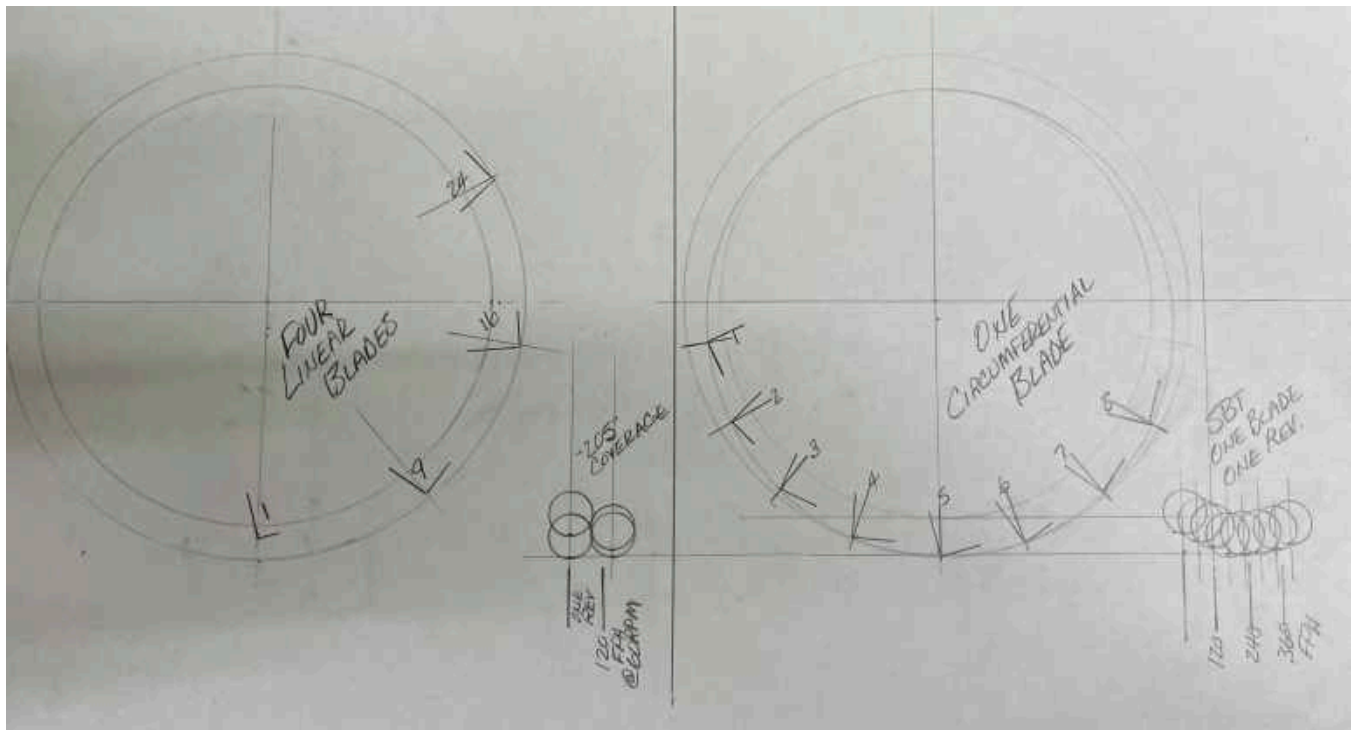
Single Eccentric Reamer and an Eccentric Stabilizer.

In order to perform functions the 205 reamer cannot, the SBT reamer has the following features not seen in previous reamers.

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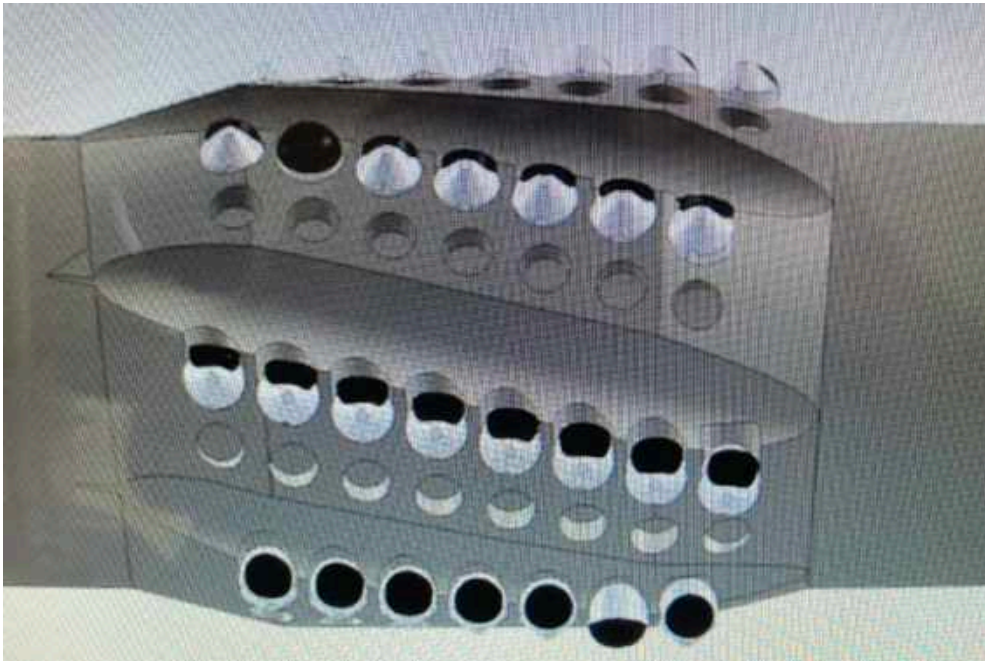
1. The SBT uses a circumferential blade with sufficient PDC cutters to take a full side cut in one revolution at advancement per revolution the reamer is subjected to rotating 60 RPM at 120, 240, and 360 ft/hr drilling rates (.4", .8", 1.2"). Any ONE SBT blade takes this full one rev cut, making the other 3 blades redundant. This shear cutting is done by the 8 PDC cutters in each blade so there is no further reaming that is required above the reamer.
2. Eccentric cutting by the SBT reamer could cause unwanted whirling of the drill string so a stabilizer is run above the SBT reamer in the hole that has been enlarged past the 5 7/16" drift. That stabilizer is eccentric so it will drift easily while sliding and is set with 5/8" dome shaped carbide dampeners that act to stabilize the unwanted string whirl. Since the non-cutting dampeners only do the work of a bearing surface they can be carbide instead of PDC (Diamond).



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One of the two "205" reamers



The only one reamer of the SBT tool.



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Eccentric Stabilizer after 14,000 ft reaming while drilling with no wear on the carbide dampeners because they do no work (no cutting...no reaming) since the drift diameter of the hole is already enlarged by the Reamer below it.

