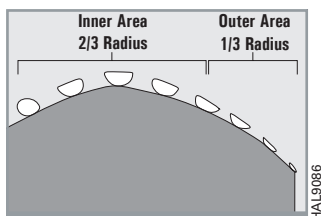
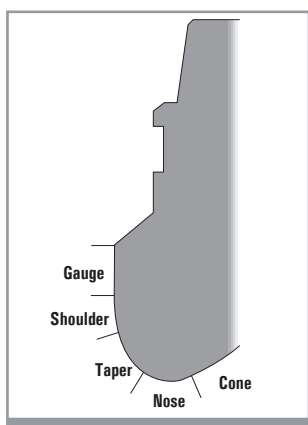


IADC Dull Grading

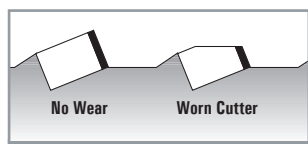
Cutting Structure							
Inner Rows	Outer Rows	Dull Char.	Location	Bearings/Seals	Gauge	Other Dull Char.	Reason Pulled
1	2	3	4	X	6	7	8



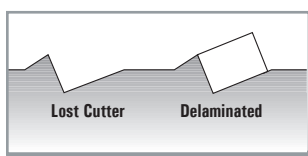
HAL9086



HAL9085



HAL9045



HAL9045

Halliburton's fixed cutter bits are tip ground to exacting tolerances at gauge O.D. per API spec 7. Depending on the specific design and application as much as .080 of an inch of the cutter diameter may be ground flat. This can be mistaken for gauge wear if unfamiliar with our products. Please ensure that dull bits are in gauge with a calibrated PDC No Go ring gauge.

1 Inner Cutting Structure

2 Outer Cutting Structure

A measure of lost, worn and/or broken cutting structure.

Linear Scale: 0-8

0 - No lost, worn and/or broken cutting structure

8 - All of cutting structure lost, worn and/or broken

3 Dull Characteristics

- BF - Bond Failure
- BT - Broken Cutters
- BU - Balled Up
- CR - Cored
- CT - Chipped Cutters
- DL - Delaminated Cutters
- ER - Erosion
- HC - Heat Checking
- JD - Junk Damage
- LM - Lost Matrix
- LN - Lost Nozzle
- LT - Lost Cutters
- NO - No Dull Characteristics
- NR - Not Rerunnable
- PN - Plugged Nozzle/Flow Passage
- RO - Ring Out
- RR - Rerunnable
- WO - Washed Out
- WT - Worn Cutters

4 Location

- A - All Areas
- C - Cone
- G - Gauge
- N - Nose
- S - Shoulder
- T - Taper

5 X

6 Gauge

(Measure in fractions of an inch)

- I - In Gauge
- 1 - 1/16" Out of Gauge
- 2 - 1/8" Out of Gauge
- 4 - 1/4" Out of Gauge

7 Other Dull Characteristics

(Refer to column 3 codes)

8 Reason Pulled or Run Terminated

- BHA - Change Bottomhole Assembly
- CM - Condition Mud
- CP - Core Point
- DMF - Downhole Motor Failure
- DP - Drill Plug
- DSF - Drill String Failure
- DST - Drill Stem Test
- DTF - Downhole Tool Failure
- FM - Formation Change
- HP - Hole Problems
- HR - Hours on Bit
- LIH - Left in Hole
- LOG - Run Logs
- PP - Pump Pressure
- PR - Penetration Rate
- RIG - Rig Repair
- TD - Total Depth/Casing Depth
- TQ - Torque
- TW - Twist Off
- WC - Weather Conditions
- WO - Washout - Drill String

FIXED CUTTER BITS - RING GAUGING

Any fixed cutter bit should be ring gauged prior to running in the hole. Stabilizers should also be calipered or gauged to verify they meet API-approved outside dimension tolerances as shown in the following table. Fixed cutter bits should not be larger than the nominal diameter.

API Fixed Cutter Bit Tolerances	
BIT SIZE (IN.)	FIXED CUTTER BIT O.D. TOLERANCE (IN.)
6-3/4 and Smaller	-0.015 to +0.00
6-25/32 to 9	-0.020 to +0.00
9-1/32 to 13-3/4	-0.030 to +0.00
13-25/32 to 17-1/2	-0.045 to +0.00
17-17/32 and Larger	-0.063 to +0.00

A “no go” gauge is used to ensure a bit is not smaller than allowed and, as the name implies, it should not go or slip down the entire length of the bit. A “go” gauge ensures a bit is not larger than allowed and should slip down the entire bit.