



INTRODUCTION

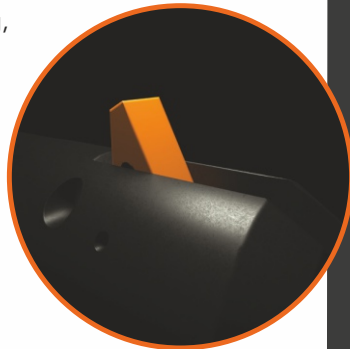
The RAZORBLADE is a non-explosive, reliable and cost-efficient punching tool which can punch single or multiple holes in a single run and operates as a Plug & Play add on to the RAZORBOSS Plug & Play platform of tools. The RAZORBLADE tool delivers circulation holes in a range of tubing and casing sizes from 2-7/8" to 9-5/8" and does not damage the outer or annular pipe string.

RAZORBLADE also has the ability to create centralisation or standoff between tubing and casing or casing to casing enhance cement placement.

RAZORBLADE utilises the RAZOR Control Module (RCM), a disposable alkaline battery pack for power requirements and which delivers a single punching operation per pack. The alkaline pack is easy to handle, easy to transport, recyclable and is wellsite safe.

RAZORBLADE can be run in real time or memory mode and is suitable for use with all conveyance methods including mechanical slickline, real time slickline, electric line, coiled tubing, sucker rod or jointed work string.

The RAZORBOSS platform records voltage, current, status, time and temperature for quality-assurance purposes.



FEATURES & BENEFITS

- Non-Explosive/Non-Lithium which improves safety, handling and logistics
- Rugged, reliable and efficient punching tool
- Punches in a single run into the wellbore
- Can be activated real time, memory timer, acceleration, pressure or ball drop
- Short, light weight design aids in mobilisation via winged aircraft or helicopter
- Ideal for operations with limited rig up height i.e. rig-less operations
- 0° phasing only
- Cost-effective solution when compared to rival punching methods
- Conveyance flexibility
- Tool electronics are changed each run ensuring quality and reliability
- High temperature tool qualified to 437°F for 6 hours



SPECIFICATIONS

RAZORBLADE

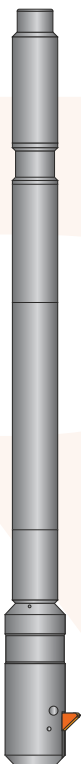
Tubing/Casing Size	2.875"	3.500"	4.500"	5.000"	5.500"	7.000"	9.625"
Tool Length	56.94"	66.61"	66.51"	60.88"	61.11"	94.52"	93.92"
Tool Weight (lbs)	40.39	77.75	147.64	147.64	147.64	222.18	272.12
Maximum Punching Force (lbs)	30,000	40,000	60,000	75,000	75,000	75,000	75,000
Maximum Operating Pressure (psi)	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Max Temp – Standard Tool	260°F for 6 hours						
Max Temp – RAZORHEAT	425°F for 6 hours						
Tubing Grade	J55 – K55 – L80 – N80 – P110 – 13 & 25 Chrome						
Tubing Weight (lb/ft)	6.4 to 8.6	7.7 to 12.7	11.6 - 15.1	18 to 20.3	17.0 - 26.0	23.0 - 32.0	47.0 - 53.0
Punch Head OD	2.160"	2.720"	3.600"	3.800"	4.400"	5.600"	8.350"
Number of Holes Per Run	1 to 6	1 to 6	1 to 6	1 to 6	1 to 6	1 to 6	1 to 3
Hole Size	0.43"	0.65"	0.73"	0.73"	0.95"	0.95"	0.95"
Hole Size Flow Area (in ²)	0.14	0.33	0.42	0.42	0.70	0.70	0.70
Upper Connection	Slickline: 1 1/16" Sucker Rod Pin – Eline: 1 3/16" GO Box – Pipe: As Required						
Lower Connection	1 1/16" Sucker Rod Box						

TUBING FLOW AREA REFERENCE CHART

RAZORBLADE

Tubing Size	2.875"	3.500"	4.500"	5.000"	5.500"	7.000"	9.625"
Tubing Flow Area x 1 hole (in ²)	0.14	0.33	0.42	0.42	0.70	0.70	0.70
Tubing Flow Area x 2 holes (in ²)	0.28	0.66	0.84	0.84	1.40	1.40	1.40
Tubing Flow Area x 3 holes (in ²)	0.42	0.99	1.26	1.26	2.10	2.10	2.10

TOOL STRING EXAMPLE



PUNCH EXAMPLES

