

## Powered Mechanical Services

## FEATURES

- Three large rectangular holes for maximum circulation flow rate in 4 1/2-in. pipe
- Large rectangular hole allows increased circular flow compared to the traditional round hole
- Can be set up for single, tandem, or triple perforation
- 3.4-in. OD
- Can be used in 4 1/2-in. pipe from 9.5 to 16.6 ppf
- Works in grades from J55 to Q125, including 13Cr and GRE pipe
- Surface readout to monitor performance on e-line and RDSL

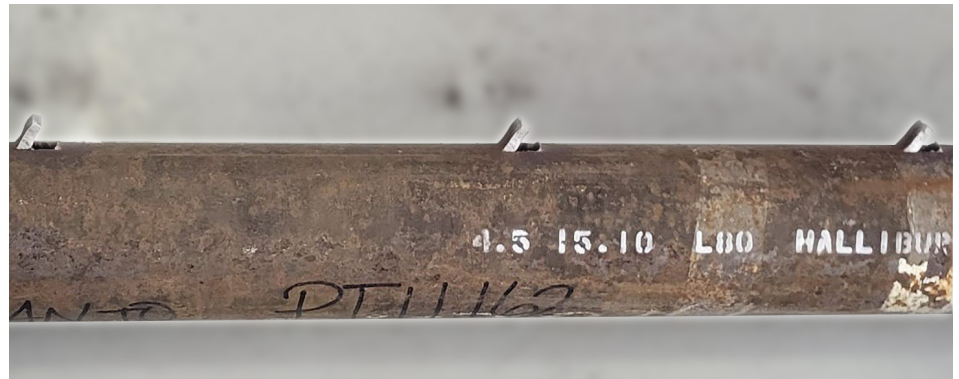
## BENEFITS

- No dangerous goods or explosive escort requirement
- Slow perforating action does not damage control lines or TEC cables
- 3 3/8-in. e-line DPUI deployment for increased actuating force
- 340°F (171°C) and 20,000 psi (138 MPa)
- A single large rectangular hole allows a 4- to 6-bbl/min flow rate; multi-hole setup increases this rate
- Hepta or mono cable deployment

## INTERVENTION SOLUTIONS

DPU<sup>®</sup> actuated multi-hole perforator

Electromechanical multi-hole circulation perforator for 4 1/2-in. pipe



## Overview

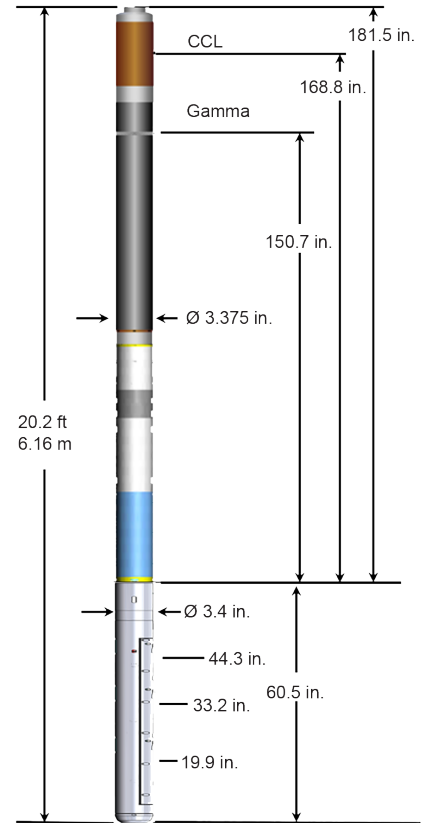
The DPU<sup>®</sup> actuated tubing perforator was developed to provide a nonexplosive circulation solution deployable on slickline (SL) units for ductile J-55 tubing applications. Conventional SL mechanical punch tools struggled to perforate this pipe grade and ballooned the tubular. An explosive tubing puncher was undesirable due to the need for an explosive escort, which could delay wellsite deployment and increase HSE risk. The initial tool was deployed in 4 1/2-in. 11.6- and 12.6-ppf J-55 tubing and run in combination with the 3.6-in. SL DPU. The perforator design uses a cam action with a hardened blade to slice a slot into the pipe. This offers a much larger flow area compared to traditional small round holes. In the field, the single-blade DPU<sup>®</sup> actuated perforator allowed operations to circulate 4 to 6 bbl/min in 4 1/2-in. tubing.

The success of this device led to development of a 3 1/2-, 5 1/2-, and 7-in. tools. To meet operator requests for multiple holes in a single run and improve results in Q125 pipe, the new DPU<sup>®</sup> actuated multi-hole perforator addresses these challenges with a smaller 3.4-in. OD that can create three large rectangular slots in a single deployment. The tool design was upgraded with higher yield metals to better manage the rigors of Q125 pipe. Test requirements indicate that to consistently perforate this pipe grade, the DPU force should exceed 65,000 lbf. Therefore, the new tool is paired with the 3 3/8-in. e-line DPUI, which provides 70,000-lbsf of force and a longer 13-in. stroke.

This tool has no dangerous goods associated with the services and no requirement for an explosive escort. This helps facilitate an efficient intervention with reduced HSE risk.

**DPU® actuated multi-hole perforator specifications**

Tool outside diameter	3.4 in. (82.6 mm)
Maximum temperature	340°F (171°C)
Maximum pressure	20,000 psi (138 MPa)
Pipe size and weight	4 1/2 in., 9.5 to 16.6 ppf
Pipe grade	J-55 to Q125, GRE, and 13Cr
Flow area	3 × 0.5 in <sup>2</sup>
DPUi OD	3.375 in. (85.7 mm)
DPUi actuator force	70,000 lbf (311,376 N)
DPUi stroke length	13.0 in. (412.8 mm)
Tool length (DPUi and perforator)	20.2 ft (6.16 m)
Tool weight (DPUi and perforator)	410 lb (186 kg)
Power and wireline	Hepta and mono cables



Slow blade movement prevents damage to control lines or TEC cables



Hole size: 1.0 × 0.5 in.  
flow area: 0.5 in.<sup>2</sup>



4 1/2-in., 15.1-ppf Q125 test pipe

For more information, contact your local Halliburton representative or visit us on the web at [www.halliburton.com](http://www.halliburton.com)

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