

Tubing Cutter - Radial Cutting Torch

Expro is a market leader in the provision of trigger initiator services and their application through well established procedures. The Radial Cutting Torch (RCT) is recommended for tubing cutting using the Expro Combined Trigger Unit (CTU) on slickline, without the need for radio silence or explosives.

The cutting tool package consists of:

Electronic Trigger

The electronics package controls the output from a battery pack. This initiates the thermal generator to ignite the RCT. The firing sequence only initiates when all pre-programmed downhole parameters are met and all safety barriers are overcome.

Surface Safety Switches

Individual mechanical pressure and temperature switches form short circuits across the firing head to ensure surface safety. Well pressure and temperature 'open' the switches at a pre-determined depth and 'close' them on retrieval. These switches ensure that the device cannot fire on or near surface.

Radial Cutting Torch

The Radial Cutting Torch (RCT) is a patented cutting device used to sever tubing, casing, drill pipe and coil tubing. The RCT utilizes a proprietary mixture of powdered metals contained inside the torch body which burn at very high temperature on ignition by the gas generator. The resultant molten plasma is then ejected through the nozzle section and onto the target tubing.



Applications:

- Severing of tubing, casing, drill pipe or coiled tubing
- Punching of large diameter tubing slots for circulation

Benefits:

- Cost effective service run on slickline
- No explosives or dangerous chemicals required for use
- Classified as a flammable solid, organic, UN1325 Section 4.1
- No special storage, handling, or disposal problems
- Causes no flaring or swelling in tubing
- Cuts all stainless steels, Monel, Inconel and plastic coated pipe
- Can be run through small restrictions to cut larger diameter pipe
- Can be used in close contact pipe conditions
- Can cut in dry pipe conditions
- New patented pressure balance anchor system eliminates movement, slipping, or sticking problems associated with other anchors
- The complete system is safe to use in radio sensitive areas

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Operation

The RCT assembly is lowered into the well on slickline to the desired depth. Once all parameters are met, the CTU triggers the thermal generator with a resistant coil. The generator creates heat to ignite the main load. Highly energized molten plasma is produced in the torch causing an increase in internal pressure.

Once the pressure in the torch exceeds that of the wellbore, the sleeve covering the nozzle slides down exposing the nozzle to the wellbore. The highly energized plasma escapes the torch body through the nozzles and is diverted 90 degrees toward the inside diameter of the tubing. At this point, the molten plasma has the consistency and cutting action of a 6000°F (3316°C) sand blaster.

The highly energized by-products act as sand blast beads that impart heat and erosion to the cut area, which enables the RCT to cut effectively, even under high stand-off conditions. The cutting process is completed in approximately 25 milliseconds.

Technical Specifications:

Part Number	Description	Recommended Use	Pressure PSI
RCT-1500-200	1 1/2" OD	2 1/16", 2 3/8" Tubing	0-4,000
RCT-1500-300	1 1/2" OD	2 1/16", 2 3/8" Tubing	4,000-10,000
RCT-1688-200	1-1 1/16" OD	2 7/8" Tubing 6.4# - 8.7#	0-4,000
RCT-1688-300	1-1 1/16" OD	2 7/8" Tubing 6.4# - 8.7#	4,000-10,000
		2 7/8" Tubing 8.9# - 11.7#	0-4,000
RCT-1688-400	1-1 1/16" OD	2 7/8" Tubing 8.9# - 11.7#	4,000-10,000
RCT-2500-200	2 1/2" OD	3 1/2" Tubing all weights	0-4,000
RCT-2500-300	2 1/2" OD	3 1/2" Tubing all weights	4,000-10,000
RCT-2937-100	2 5/16" OD	4" Tubing, Casing & DP	0-4,000
RCT-2937-200	2 5/16" OD	4" Tubing, Casing & DP	4,000-10,000
		4 1/2" & 5" DP	0-4,000
RCT-2937-300	2 5/16" OD	4 1/2" & 5" DP	4,000-10,000
RCT-4000-200	4" OD	5 1/2" Tubing, Casing	0-4,000
RCT-4000-300	4" OD	5 1/2" Tubing, Casing	4,000-10,000
RCT-5000-100	5" OD	6 5/8" Tubing, Casing	0-4,000
RCT-5000-200	5" OD	7" - 7 5/8" Tubing, Casing	0-4,000
		6 5/8" Tubing, Casing	4,000-10,000
RCT-5000-300	5" OD	7" - 7 5/8" Tubing, Casing	4,000-10,000