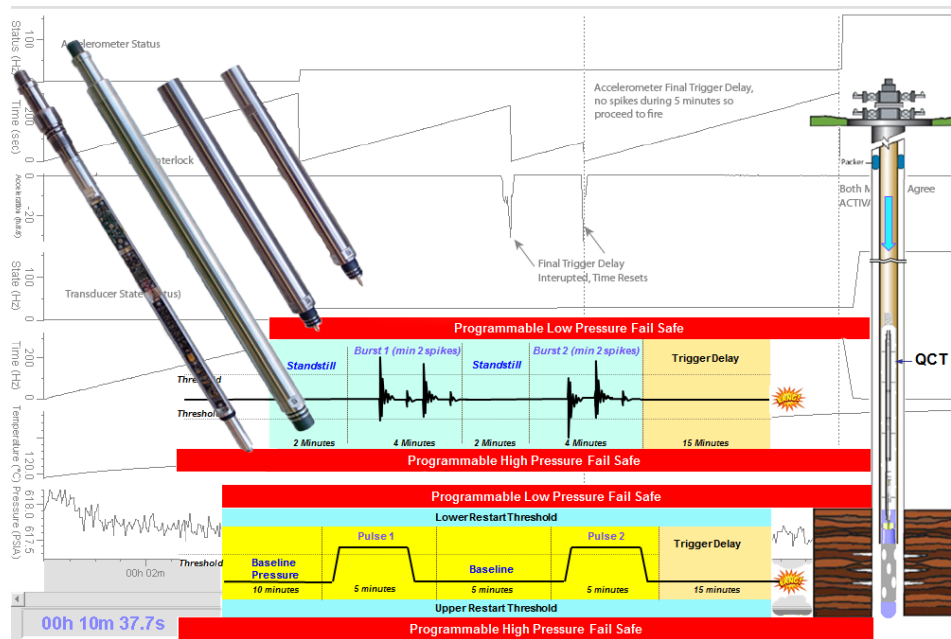


## ELECTRONIC FIRING HEAD - QUICK CHANGE TRIGGER (QCT)



### Product Overview

The Quick Change Trigger (QCT) is the next generation electronic firing head, designed to fulfill the need for a cost-effective triggering device, without compromising on safety or quality. The QCT is a memory based electronic trigger system specifically designed for initiating ballistic firing heads. The flexible design allows for multiple deployment options including Slickline, TCP and Coil Tubing.

The design concept is based on a field replaceable control cartridge. If required, the cartridge can be replaced quickly and easily at the well site. No special tools are required and training requirements are minimal.

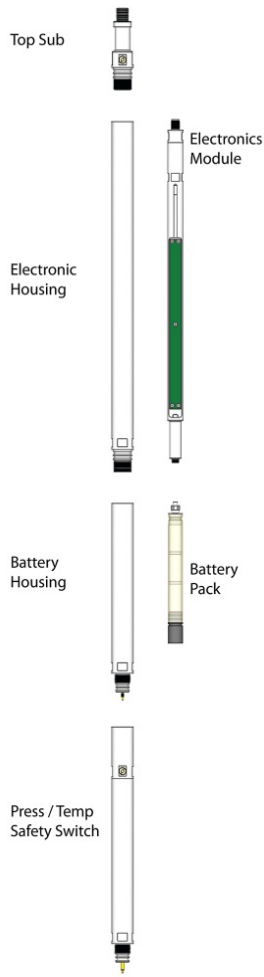
The QCT firing sequence is programmable at surface for the relevant ballistic operations:

- 🔧 Casing Perforating
- 🔧 Tubing Punching
- 🔧 Tubing Cutting
- 🔧 Plug / Packer setting
- 🔧 Various other downhole operations

### Features and Applications

- 🔧 Field replaceable control cartridge
- 🔧 Quick and easy re-dress between runs
- 🔧 Can be activated with positive or negative pressure pulse code e.g. TCP or Coil Tubing operations
- 🔧 Program sequence can be aborted and restarted downhole
- 🔧 Can be activated with pre-programmed accelerometer burst e.g. Slickline operations
- 🔧 Accelerometer can be disabled for TCP operations
- 🔧 Option available for long duration TCP battery pack
- 🔧 Deploy and initiate industry standard ballistic devices
- 🔧 API-RP67 Certified
- 🔧 Vibration & shock tested to 40G

**The QCT has Redundant Failsafe Capabilities!**



Bonnetts QC Trigger Tool Specifications	
<b>Operating Range</b>	
Pressure	15,000 psi (103.4 mPa)
Temperature	347°F (175°C)
Material	NACE
<b>Dimensions</b>	
Outer Diameter	1.688 in (42.9 mm)
Total Makeup Length	4.69 ft (1.4307 m)
<b>Connections</b>	
Top	1 5/16 in 10 UN Sucker Rod
Bottom	1 3/16 in 12 UN-2A Male Go
<b>Pressure Measurement</b>	
Sensor Type	Strain
Range	0 to 15,000 psi (103.4 mPa)
Accuracy	± 0.1 % of Full Scale
Resolution	0.00066% of Full Scale
<b>Temperature Measurement</b>	
Range	0 to 347° F (175° C)
Accuracy	± 0.9° F ( ± 0.5° C)
Resolution	0.0036° F (0.002°C)
<b>Data Acquisition</b>	
Memory	16 Mbyte (<1.5 million data sets - Trigger Mode)
Communication	5-way "LEMO" connector for Battery and PC Communication
Sample Rate	0.1 second fastest, 2 second minimum for Trigger Mode
<b>Electronic Cartridge</b>	
Available Modules	JRC RIG ENVIRONMENTAL DETONATOR (RED) DYNAenergetics ELECTRONIC RF-SAFE IGNITER OM-1 and EBW FIRESETS BP-3 IGNITERS IN BAKER SETTING TOOLS OWEN RF-SAFE GREEN DETONATORS
<b>Power Requirements</b>	
Battery Pack - Standard	3 x "C" Cells, 11.7 v. 6.2 Ah (-20°C to 165°C)
Battery Pack - Long Duration	3 x "CC" Cells, 11.7 v. 13.0 Ah (-20°C to 165°C)



Bonnetts Energy's QC Trigger can deploy any wireline retrievable bridge plugs in tubing (chart below) and casing from 4" to 13 5/8" (full spec guide available)

Brico Wireline Retrievable Tubing Plug Specifications											
O.D.	Tubing Weight		Range of Tubing I.D.s				Product #	Gauge Ring O.D.		Retrieving Tool	Baker Setting Tool
								in	mm		
2 3/8 in	4.60	6.84	1.931	50.7	2.046	51.9	10-049-0200	1.900	48.26	10-081-0200	#5
2 7/8 in	6.40	9.52	2.373	62.0	2.494	63.3	10-049-0250	2.320	58.93	10-081-0250	
	3 1/2 in	12.70	18.90	2.625	66.7	2.750	69.0	10-049-0340	2.600	66.04	
9.30		13.80	2.992	76.0	3.112	79.0	10-049-0350	2.850	72.39		
12.75		19.00	2.750	69.9	2.750	69.9	10-049-0360	2.500	63.50		