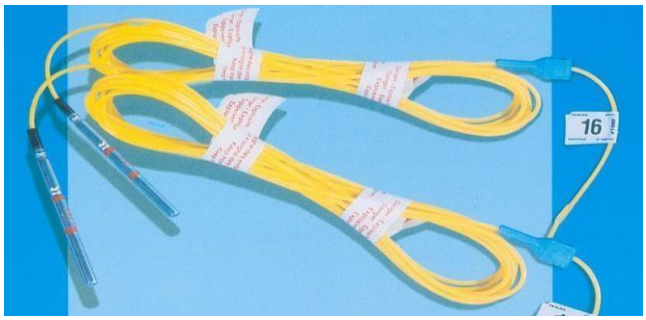
Technical Data Sheet

FORCE LP (Long Period Detonator)

The Power of Partnership



Description

Force LP detonators are a series of high strength non-electric detonators with Long Period (LP) delay intervals between successive firing times.

Force LP detonators consist of a non-electric detonator, a length of signal tube. The detonator incorporates delay elements and a high strength base charge inside an aluminium shell. The yellow signal tube is a high strength, high abrasion resistant tubing which transmits the initiation signal to the detonator. One end of the signal tube is crimped into the detonator shell, and the other end is closed off by a waterproof seal.

Application

Force LP detonators provide a series of delay times suitable for underground development blasting in tunnelling, raising and shaft sinking operations.

Force LP detonators will directly initiate cap sensitive boosters and packaged explosives. Refer to the relevant Technical Data Sheets for details.

Technical Properties

Signal Tube	Yellow
Outer Diameter	3 mm
Nominal tensile strength	25 kg (+20 °C / 2 min)
Lengths	4.8 – 7.8 m
Detonator Base Charge	#8 Strength
Water resistance	0.3 MPa
Shock tube velocity	2000 m/s

Available Delay Range

Delay #	**LP 0**	**LP 100**	**LP 200**	**LP 300**
Nominal Time (ms)	25	100	200	300
Delay #	**LP 400**	**LP 500**	**LP 600**	**LP 700**
Nominal Time (ms)	400	500	600	700
Delay #	**LP 800**	**LP 900**	**LP 1000**	**LP 1100**
Nominal Time (ms)	800	900	1000	1100
Delay #	**LP 1200**	**LP 1400**	**LP 1600**	**LP 1800**
Nominal Time (ms)	1200	1400	1600	1800
Delay #	**LP 2000**	**LP 2400**	**LP 2800**	**LP 3200**
Nominal Time (ms)	2000	2400	2800	3200
Delay #	**LP 3600**	**LP 4000**	**LP 4400**	**LP 4800**
Nominal Time (ms)	3600	4000	4400	4800
Delay #	**LP 5200**	**LP 5600**	**LP 6000**	
Nominal Time (ms)	5200	5600	6000	

All nominal times, with 6.0 m tube

Recommendations for Use

Signal tube is extremely robust, however if it is cut or split, moisture may enter the hollow core and cause a misfire.
Force LP detonators should always be secured inside a suitable booster, which fully encloses the detonator. Exposed detonators should not be placed inside blastholes or charging hoses.
Force LP detonators used inside blastholes should normally be "reverse-primed", with the detonator base pointing towards the blasthole collar.
Force LP detonators maybe used in temperatures -30°C to +80°C.

NOBEL

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Excessive force should not be applied to signal tubes connected to in-hole detonators and primers. If a primer becomes stuck when attempting to retrieve or reposition it, a replacement unit should be used.

Cord harness connection

Force LP detonators can be reliably initiated by detonating cord, which has a PETN core charge between 3.6 and 5.0 g/m, using standard J - Hook connections.

Bunch hook up connection

Force LP detonators can be attached to *Force HTD Connector* with at least 5 and a maximum of 20 signal tubes collected into a bunch or to detonating cord in the same manor. Ensure that no signal tubes cross over or lie within 200 mm of the detonating cord.

Packaging

Force LP detonators are packed into sealed "barrier bags" which are contained within an outer cardboard case. All units within a case have the same lead length and delay.

Tube length (m)	Qty per bag (1.1B)	Qty per box (1.1B)
4.8	10	100
6.0	10	100
6.6	10	100
7.8	10	100

Storage and Handling

Product Classification

Authorised Name:	*Force LP*
Proper Shipping Name:	Detonator assemblies, non-electric
UN No:	0360, 0361, 0500
Classification:	1.1B, 1.4B, 1.4S
EC Type Certificate:	ENB/D/009/08

Force LP detonators should be stored in a cool, dry detonator magazine. The temperature range should be 0° C to +50 °C and the relative humidity max. 45 %.

Stacks of cases should be no more than 2 metres high.

Force LP detonators should be used within 3 months of opening the sealed "barrier bag". Batches of detonators more than 2 years old should not be used.

Force LP detonators will remain in good working order for a minimum of 2 years from the date of manufacture if stored properly under the above conditions.

Safety

Force LP detonators provide a high level of safety against initiation by static electricity, stray electrical currents and radio frequency transmissions. *Force LP* detonators incorporate sensitive components inside the detonator. Care should be taken not to cause initiation via intense impact, friction or heat. *Force LP* detonators are supplied in Class 1.1B / 1.4B and 1.4S packaging and have UN Number 0360 / 0361 and 0500.

Nobel Explosives

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