



SHOTPlus™

SHOTPlus Standard
Blasthole Charging

March 2017

DEFINING A DEFAULT CHARGING DESIGN FOR NON-ELECTRIC INITIATION



1. **Surface tail length** – minimum length of Exel signal tube or EBS lead wire required at collar
2. **Tube wastage** – factor applied to account for any lead or signal tube slack in a hole or at the surface
3. **Primer stand-off** – distance of primer from top / bottom of deck

A screenshot of the "Edit blast properties" dialog box. The dialog has a title bar with a close button. On the left is a sidebar with a list of categories: "Blast header information", "EBS", "Hole types", "Initiation", "Loading chart options", and "Loading options" (which is highlighted in blue). The main area is titled "Loading options" and contains several settings: "Surface tail length" with a value of 2.0 (m), "Inhole tube wastage" with a value of 5.0 %, "Surface tie-up wastage" with a value of 5.0 %, and "Primer stand off distance" with a value of 1.0 (m). Below these are two checkboxes: "Include packaged products as primers" and "Include primer in charge weights", both of which are unchecked. At the bottom of the main area is a dropdown menu for "Item count rounding" set to "Round to nearest". At the bottom of the dialog are three buttons: "Restore defaults", "OK", and "Cancel".

DEFINING A DEFAULT CHARGING DESIGN FOR EBS INITIATION



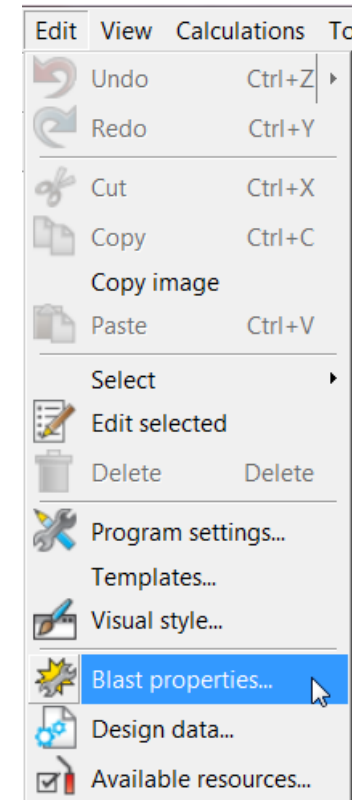
1. **Blaster Type** – SURBS, SURBS Synchro, UT, UT Synchro
2. **Delay Increments** – Set delay increments for EBS timing (can be changed through timing tools)
3. **EBS connection** – define COM port for EBS connections

A screenshot of the "Edit blast properties" dialog box. The dialog has a title bar with a close button (X). On the left is a sidebar with a list of options: "Blast header information", "EBS" (highlighted in blue), "Hole types", "Initiation", "Loading chart options", and "Loading options". The main area is titled "EBS options" and contains several settings: "EBS blaster type" is a dropdown menu showing "Blaster2400S / SURBS (max 12 loggers)"; "Delay increment 1" is a spinner box set to 25 ms; "Delay increment 2" is a spinner box set to 50 ms; "Delay increment 3" is a spinner box set to 150 ms; "Use inhole timing offsets" is an unchecked checkbox; "EBS hardware connection" is a dropdown menu showing "COM3" with an unchecked "Show full list" checkbox; "Apply IDs and delays from uploads" is an unchecked checkbox; "Use i-kon I detonators" is a checked checkbox; "Logger I firmware supports reload (522d+)" is an unchecked checkbox; and "Mark manually timed holes with 'M'" is an unchecked checkbox. At the bottom are three buttons: "Restore defaults", "OK", and "Cancel".

DEFINING A DEFAULT CHARGING DESIGN

Users can define a number of default loading options that will influence the lead length and position of initiators used in the charging design

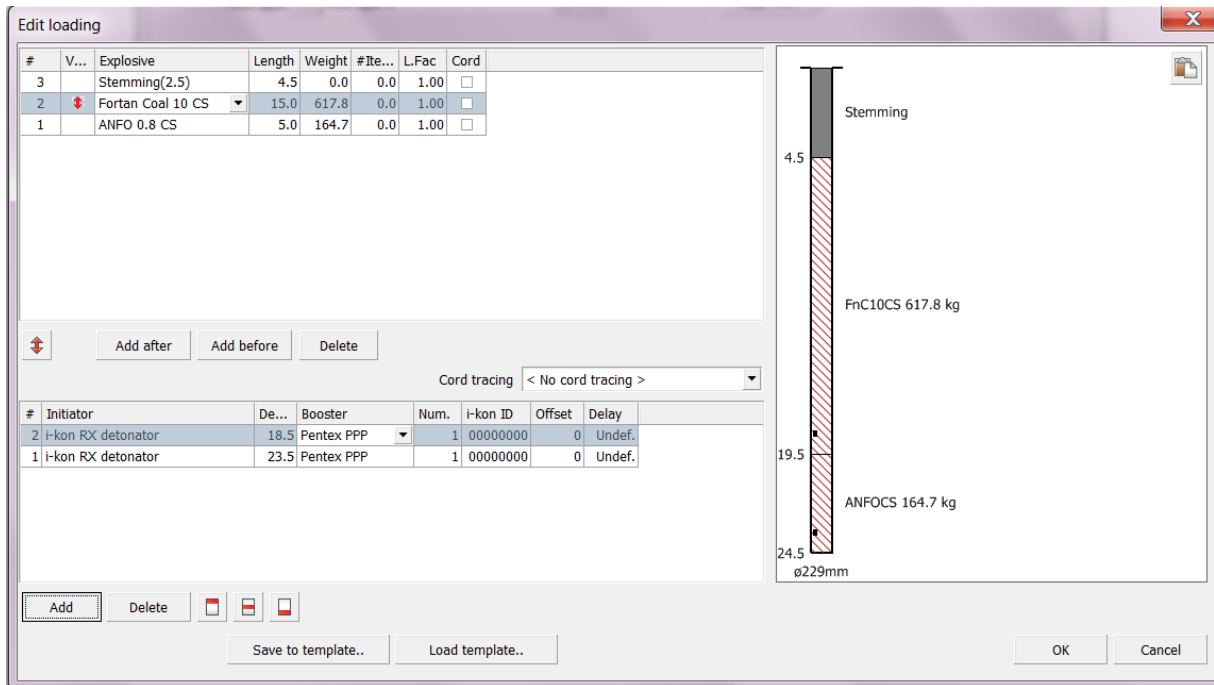
- Loading options can be accessed under the **Edit-Blast properties** menu item



DEFINING A DEFAULT CHARGING DESIGN

In the **Edit Loading** window, the charging design for the Hole Type can be defined, this can consist of;

1. Multiple decks
2. Multiple initiators
3. Displayed graphically



The screenshot shows the 'Edit loading' window with two tables and a graphical representation of the hole design.

Explosive Table:

#	V...	Explosive	Length	Weight	#It...	L.Fac	Cord
3		Stemming(2.5)	4.5	0.0	0.0	1.00	<input type="checkbox"/>
2		Fortan Coal 10 CS	15.0	617.8	0.0	1.00	<input type="checkbox"/>
1		ANFO 0.8 CS	5.0	164.7	0.0	1.00	<input type="checkbox"/>

Initiator Table:

#	Initiator	De...	Booster	Num.	i-kon ID	Offset	Delay
2	i-kon RX detonator	18.5	Pentex PPP	1	00000000	0	Undef.
1	i-kon RX detonator	23.5	Pentex PPP	1	00000000	0	Undef.

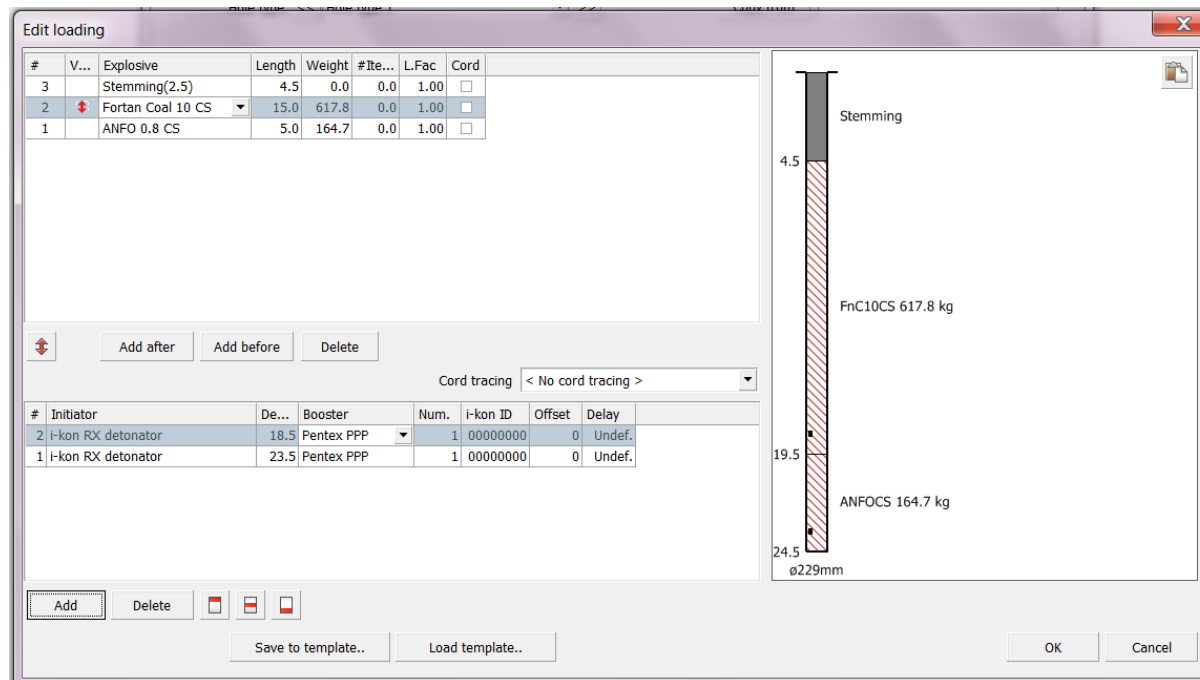
Graphical Representation:

The graphical representation shows a vertical hole with a diameter of $\phi 229\text{mm}$. The hole is divided into three sections: Stemming (4.5m), FnC10CS 617.8 kg (15.0m), and ANFOCS 164.7 kg (5.0m). The total length of the hole is 24.5m. The hole is labeled with 'Cord tracing' and '< No cord tracing >'.

SAVING LOADING TEMPLATES

A defined charging design (decks and initiators) can be saved as a template for future use

1. Select **Save to file** to save a charging template
2. Select **Load file** to import a previously saved charging template



AUTOMATIC LOADING WITH RULES



SHOTPlus allows the creation of rules to control the specific application of your defined charging design

Loading Rules provide a quick and efficient method to;

1. load a large volume of holes in your design
2. load complicated designs with varying charging requirements

Each charge design rule can have **one or more conditions** specified to control the application of that rule

Conditions are essentially **IF** statements

When multiple conditions are used, then the criteria for all conditions must be met (i.e. **IF AND**, not **IF OR**)

If the condition criteria are met, by a blast hole, then that hole will be charged according to the specified rule, for example

- › *If the blast hole is greater than 10metres in length, then charge with...*

AUTOMATIC LOADING WITH RULES



Rules are applied to blast holes sequentially (i.e. in the order that they are defined)

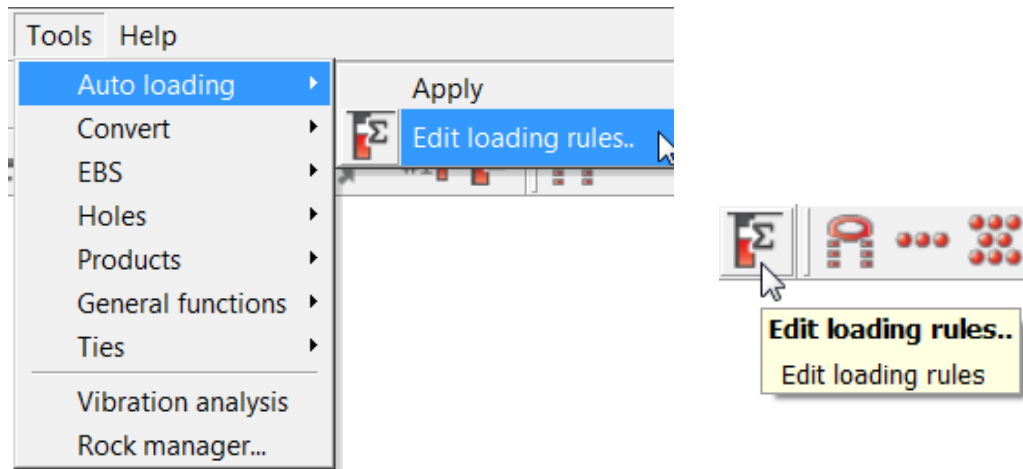
Once a hole is loaded it can not be reloaded by another rule, even if it meets the new rule criteria

Therefore the sequence that you define the rules is critical

DEFINING A LOADING RULE

A charging design can also be defined using the **Edit loading rules** function, accessible via

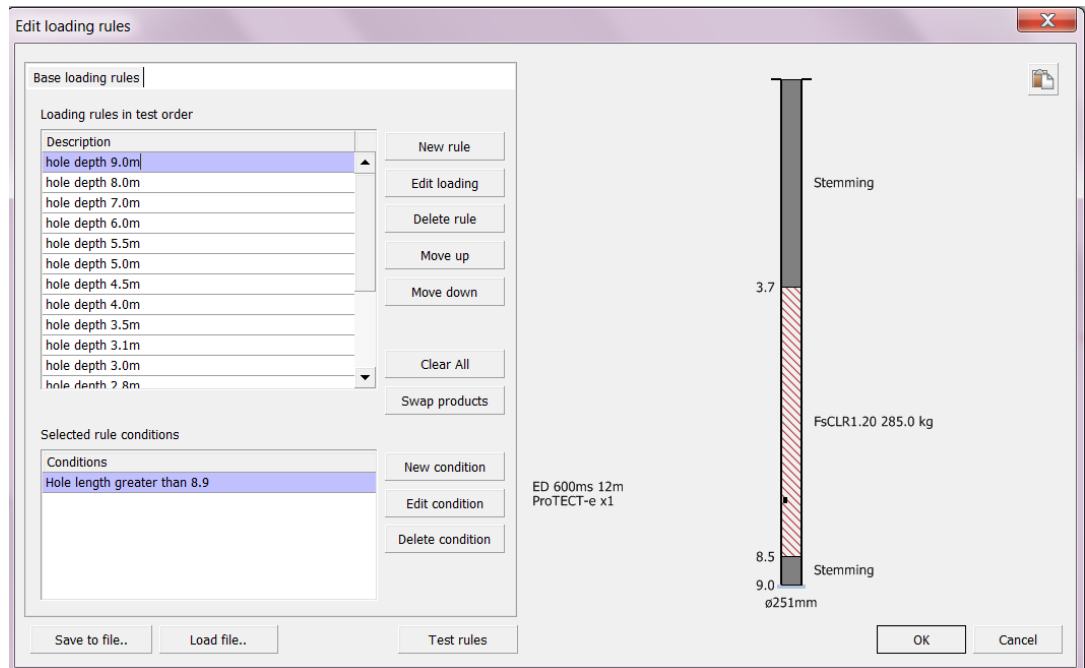
1. The **Tools-Auto loading-Edit loading rules** menu item
2. The **Edit loading rules** button on the **Loading Tools** tool bar (usually docked at top of screen)



DEFINING A LOADING RULE

In the **Edit loading rules** window, condition based rules can be created.

- Multiple rules can be created to suit different conditions.
- Conditions specified control the application of the rules. Rules defined by:
 - Length
 - Diameter
 - Hole Angle
 - Hole Type
- Example loading provided



DEFINING A LOADING RULE

The charging design for a rule is completed as per the previously described process




hole depth 9.0m

#	V...	Explosive	Length	Weight	#It...	L.Fac	Cord
3		Stemming(2.5)	3.7	0.0	0.0	1.00	<input checked="" type="checkbox"/>
2	↓	Fortis Clear 1.2 CS	4.8	285.0	0.0	1.00	<input type="checkbox"/>
1		Stemming(2.5)	0.5	0.0	0.0	1.00	<input type="checkbox"/>

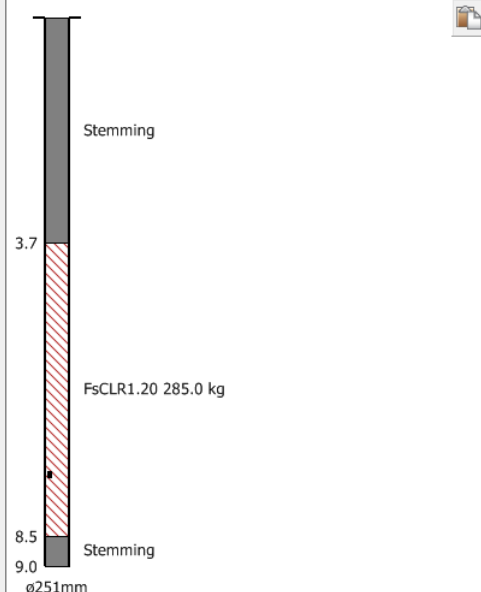
↓ Add after Add before Delete

Cord tracing < No cord tracing >

#	Initiator	De...	Booster	Num.
1	Exel Enduradet (600ms)#15	7.5	ProTECT-e	1

Add Delete   

Save to template.. Load template.. Set diameter.. OK Cancel

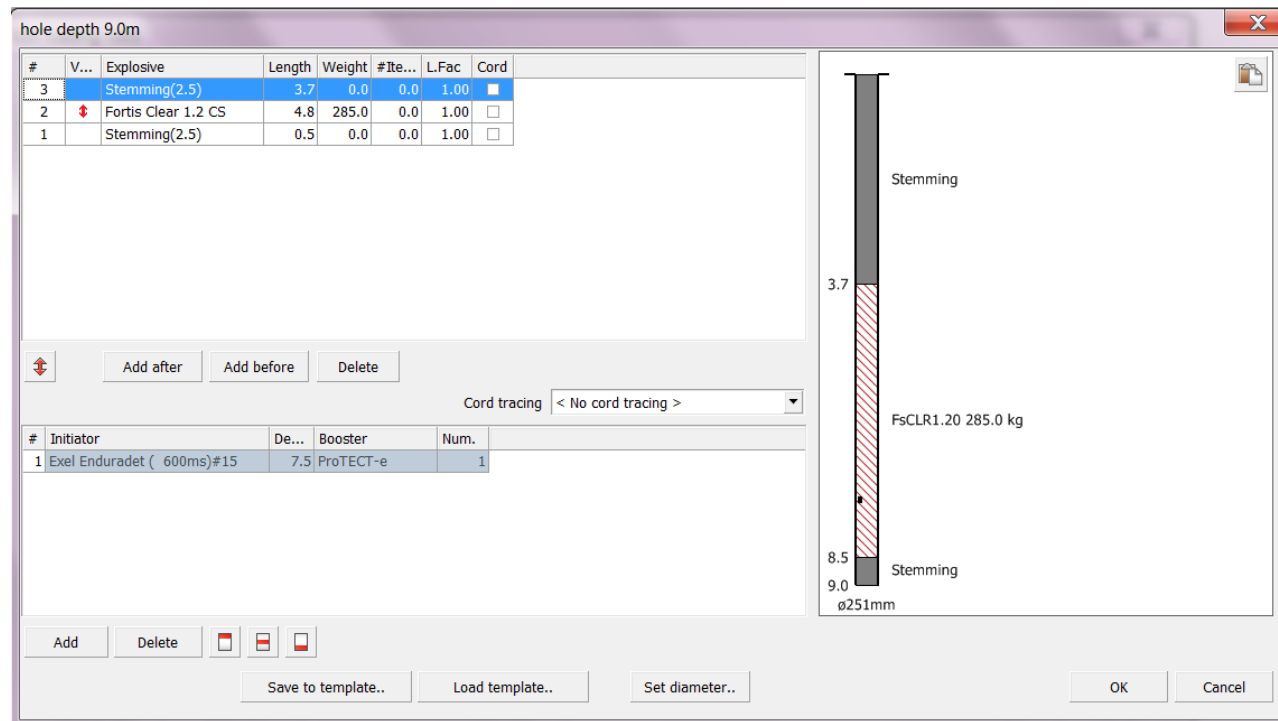


SAVING LOADING RULE TEMPLATES



A defined set of loading rules can be saved as a template for future use

1. Select **Save to file** to save a rules template
2. Select **Load file** to import a previously saved rules template



TESTING LOADING RULE APPLICATION



To verify that you have correctly defined your conditions and the order of the rules

1. Use the **Test Rules** function. By changing hole parameters, you verify that the rules behave as expected

