



User Recommendations for 008 Top Fire Detonators

DET-3050-008

DET-3050-008C

MAN-DET-008 (R04)

OWEN OIL TOOLS

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Warning: use of owen equipment contrary to manufacturer's specifications or operating instructions may result in property damage, serious injury or fatality. If you are not trained in the handling and use of explosive devices, do not attempt to use or assemble any owen perforating systems or owen firing devices.

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Warning: *Explosives are destructive by nature! Do not attempt to disassemble or alter the detonator in any manner! Do not crush, hammer, pinch, impact, pull wires or abuse the detonator or any explosive!*



Warning: *Be sure to follow safe operating practices in accordance with API RP-67, and with governmental regulations, company policies and manufacturer's recommendations!*

Owen Oil Tools' Resistorized Bridge Detonators are designed to detonate when an electrical current greater than 0.2 amps is applied. The 008 Top Fire Detonator is a resistorized electrical detonator manufactured to API RP-67 recommendations and employs a 51 Ohm resistor in the firing circuit. It is designed to be used in hollow steel carrier or scalloped gun systems in a top-fire application where the detonator has a directional output designed to initiate a bi-directional booster. The 008 detonator is intended to be used in operating conditions less than 475°F for 1 hour. Special hardware is required to house the 008 detonator and adapt it to conventional wireline tools between the CCL and the perforating gun.

The user should satisfy themselves, as to the suitability of this product for the user's application.

1.0 Procedures for Panel Setup and Firing Resistorized Bridge Detonators

1.1 Before attaching a gun or detonator to the wireline cable:

- Short circuit the toolstring below the CCL.
- Apply DC voltage and adjust the rheostat to achieve 1.0 amp.
- Mark the rheostat location, then return the rheostat to zero.

1.2 When ready to fire a gun or detonator downhole, increase the power to the firing circuit from 0 to the 1.0 amp rheostat position over 4-6 seconds until the detonator fires.



Note: *If an alternative firing technique is used, do not surge the firing circuit with power as it may cause the detonator to fail and a mis-run to occur.*

2.0 Safety Shields

- 2.1 Safety shields are available for the 008 Series Detonators for purposes of arming the detonators according to API RP-67. All detonators should be armed electrically before ballistically.
- 2.2 Please see the following table to select the appropriate safety shield according to the system being used.

System	Safety Shield Part #	Required Additional Hardware	Hardware Part #
1.688" Shooting Adapter	TAG-1687-078SHL	NONE	N/A
2.75" Quick Change	DET-0100-157	Modified Detonator Block	ADP-2750-224

3.0 Safe Arming 1.688"



Warning: *Detonators should be removed from their packaging only in the loading/arming area at the time of arming! The loading area should be free of any sources of electrical current or possible RF sources that could energize the detonator.*



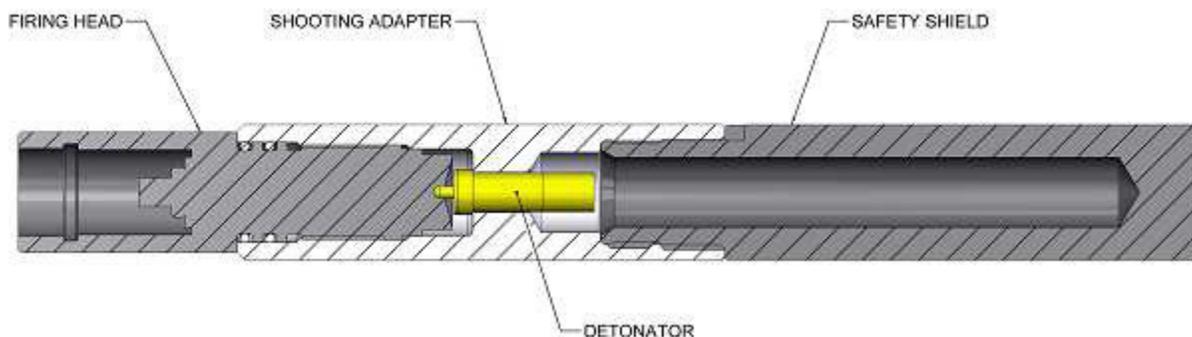
Warning: *If a detonation event does occur with the safety shield then it should be thrown away. It is only good for a single detonation event.*

- 3.1 Smaller size gun system hardware utilizes a shooting adapter with a box connection at each end. Be sure to select the proper size safety shield for the gun size/firing head being utilized.
- 3.2 Inspect the shooting adapter prior to inserting the detonator; the ID should be 0.50" (1.27cm) and free of debris.
- 3.3 Fully thread the appropriate sized safety shield into the bottom thread of the shooting adapter.



Warning: *A groove has been cut through the threads of the safety shield to allow gas pressure to exhaust if a detonation was to occur. Keep this exhaust port pointed away from yourself or anyone else while handling. If a detonation occurs all fragments are contained, but the rapid release of gas pressure can still cause injury.*

- 3.4 Remove the detonator from its packaging and insert it into the top of the shooting adapter.
- 3.5 The person handling the detonator should have possession of the shooting panel key and the shooting panel must also be shunted so that no power can be supplied to the wireline. Use a blaster's meter to verify that no power is being supplied to the wireline.
- 3.6 Thread the shooting adapter onto the firing head. This will electrically connect the detonator to the wireline cable or cable connections in accordance with API RP-67 (Electric before ballistic).



Note: An electrical check of the detonator's firing circuit may be conducted while the detonator is confined within the safety shield, shooting adapter, and firing head assembly. The firing head must be disconnected from the wireline. Using an approved blaster's meter for testing explosive circuits, the detonator will read a resistance of 50 to 60 Ohms (due to the resistance in the hardware). To check detonator resistance, place one probe of the blaster's meter on the center conductor of the firing head and the other on the outside of the shooting adapter. If a poor connection has been made then the resistance will be high. Make sure all the components are clean to allow the detonator to properly ground through the shooting adapter.

- 3.7 The safety shield can now be removed from the shooting adapter in order to make the ballistic connection to the top sub of the gun system.



Note: Owen recommends the use of a bi-directional booster in the gun top sub. Make sure it is flush with the top sub or is recessed no more than 0.125" (0.32 cm) into the top sub. This prevents it from being pinched during assembly.

- 3.8 Complete the mechanical assembly by attaching the shooting adapter to the gun top sub taking care not to force, pinch, crush, or impact the explosive components.

4.0 Safe Arming 2.75", 3.25"



Warning: *Detonators should be removed from their packaging only in the loading/arming area at the time of arming! The loading area should be free of any sources of electrical current or possible RF sources that could energize the detonator.*



Warning: *If a detonation event does occur with the safety shield then it should be thrown away. It is only good for a single detonation event.*

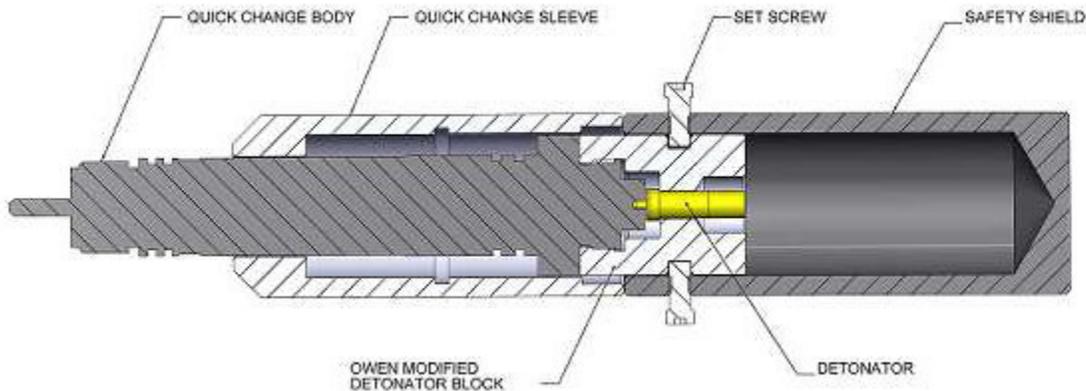
- 4.1 The larger size gun system hardware utilizes a quick change with an Owen modified detonator block. Select the proper size safety shield for the quick change and detonator block being utilized.
- 4.2 Inspect the Owen modified detonator block prior to inserting the detonator; the ID should be 0.50" (1.27cm) and free of debris.
- 4.3 Slide the appropriate sized safety shield onto the bottom of the Owen modified detonator block to line up the set screws with the groove. Once lined up, thread the set screws all the way in until they bottom out in the groove.



Warning: *The safety shield allows pressure to exhaust around the detonator block upwards. If a detonation occurs all fragments are contained, but the rapid release of gas pressure can still cause injury.*

- 4.4 Remove the detonator from its packaging and insert it into the top of the detonator block.
- 4.5 The person handling the detonator should have possession of the shooting panel key and the shooting panel must also be shunted so that no power can be supplied to the wireline. Use a blaster's meter to verify that no power is being supplied to the wireline.

- 4.6 Thread the detonator block onto the quick change. The quick change sleeve will have to be slid up out of the way in order to thread on the detonator block. This will electrically connect the detonator to the wireline cable or cable connections in accordance with API RP-67 (Electric before ballistic).



Note: An electrical check of the detonator's firing circuit may be conducted while the detonator is confined within the safety shield, shooting adapter, and firing head assembly. Using an approved blasters meter for testing explosive circuits, the detonator will read a resistance of 50 to 60 Ohms (due to the resistance in the hardware). To check the resistance, place one probe of the blasters meter on the center conductor of the quick change and the other on the outside of the detonator block. If a poor connection has been made then the resistance will be high. Make sure all of the components are clean to allow the detonator to properly ground through the detonator block.

- 4.7 The safety shield can now be removed from the detonator block in order to make the ballistic connection to the top sub of the gun system.



Note: Owen recommends the use of a bi-directional booster in the gun top sub. Make sure it is flush with the top sub or is recessed no more than 0.125" (0.32 cm) into the top sub. This prevents it from being pinched during assembly.

- 4.8 Complete the mechanical assembly by attaching the quick change to the gun top sub taking care not to force, pinch, crush, or impact the explosive components.