

# LIGHTNING ELIMINATORS

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## RGAR<sup>®</sup>750

### Retractable Grounding Assembly

Optimized Lightning Protection for Floating Roof Tanks

**Pre-Tensioned:** The RGA 750 is pre-tensioned at the factory, so no on-site tensioning is required.

**Corrosion Resistance:** New aluminum cable\* originally developed for marine use greatly improves corrosion resistance and is highly resistant to hydrogen sulfide (H<sub>2</sub>S).

**Easy-to-Install:** Installation takes only two hours on both new and existing tanks.

**Effective:** Permanent, reliable, low-impedance bond prevents fires triggered by lightning currents.

**Durable and Low Maintenance:** Engineered for years of durability and reliable performance in corrosive environments and requires virtually no upkeep as compared to shunts.

**Standards Conformant:** The RGA conforms to both API 545 and NFPA 780 recommendations and meets the API 545 requirements for a bypass conductor.

The ATEX approved and patented RGA substantially reduces the risk of tank fires by subduing sustained arcs during lightning events and other electrical phenomena. The RGA does this better than other traditional methods for bonding floating roofs because the retractable cable is always at the shortest possible length. The resultant low resistance and impedance results in too low of a voltage to sustain the arc, i.e., no fire.



\*Tinned copper option available upon request

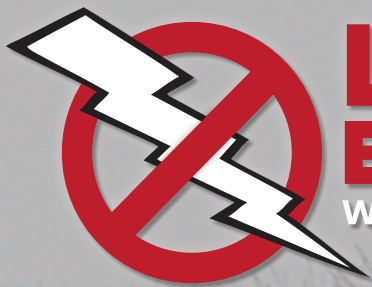
### The Limitations of Shunts

To combat the risk of rim fires, the industry has been using metal strips called "shunts" that electrically bond the shell and roof of the tank. Unfortunately, the bond that these shunts establish is unreliable and creates a greater risk of sustained arcs:

1. Rust, waxy deposits, and paint can line the inner wall of the shell, thus increasing resistance.
2. The floating roof can drift slightly off-center and disconnect some of the shunts from the shell.
3. API Testing proved that shunts will arc under all conditions, even if the tank wall and shunts are new and clean.

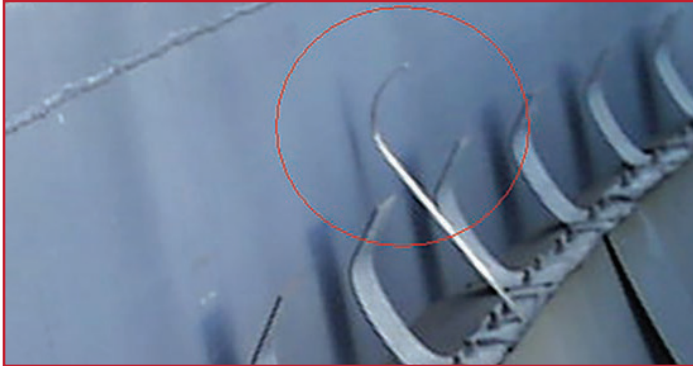
### Floating Roof Tank Fires are Common

There are 15 to 20 known floating roof tank (FRT) fires per year. FRT's are especially vulnerable to the direct and indirect effects of lightning. A direct or a nearby lightning strike will cause electrical currents to flow across the tank shell and roof. When these



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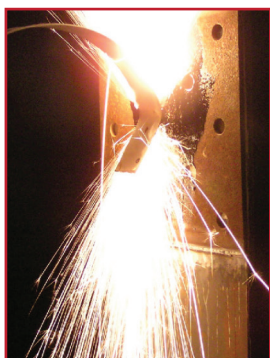
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lightning currents arc across the roof/shell interface, they can ignite any flammable vapors that may be present. It is therefore necessary to bond the roof and shell to prevent arcing at the roof/shell interface.

Substantially reducing the risk of sustained arcs requires a reliable, full-time, low-impedance and low-resistance connection between the tank shell and roof. Additionally, the connection must operate regardless of the tank shell's condition.

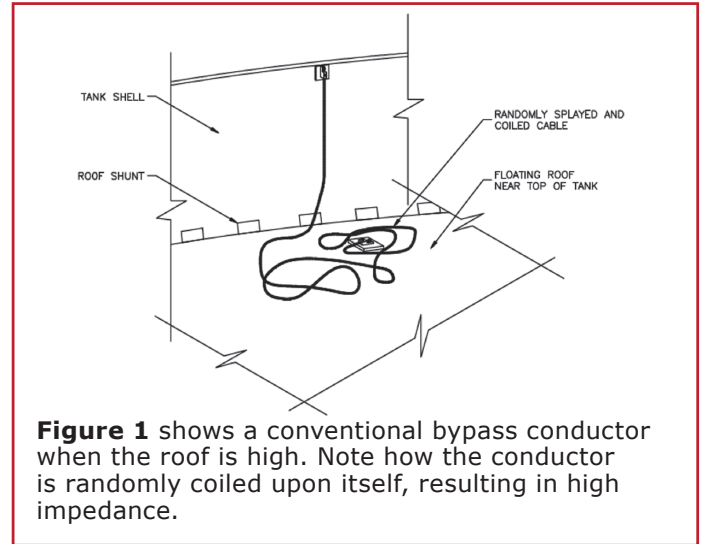
The RGA is not affected by the condition of the tank because the RGA and cable are bolted and sealed to optimal locations on the tank shell and floating roof. When properly applied, multiple RGAs on each tank provide low-impedance pathways to safely discharge lightning currents.



The RGA is designed to retrofit easily onto any existing tank, even those in service and is also easy to inspect and is constructed to be low maintenance.

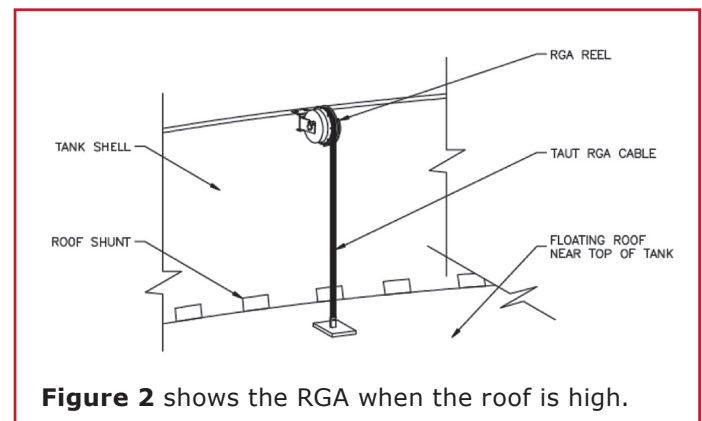
The new RGA 750 uses stronger springs to retract

the cable, resulting in an average increase in retraction force over the entire cable payout range of 340% over the RGA 75 and 600% over the RGA 55.



**Figure 1** shows a conventional bypass conductor when the roof is high. Note how the conductor is randomly coiled upon itself, resulting in high impedance.

Note below how the conductor is as short as possible, thus providing the lowest possible impedance between the roof and shell. When a typical floating roof tank is 80% full, the impedance of the RGA is only 15% of that of a conventional bypass conductor.



**Figure 2** shows the RGA when the roof is high.



US Patent # 7,078,621

**IMPORTANT NOTE:** PLEASE CONSULT WITH REPRESENTATIVE AT LIGHTNING ELIMINATORS FOR GROUND STRAP ATTACHMENT METHODS DEPENDING ON FOAM DAM STYLE.