



ARRAY SOLUTIONS

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AS-309H Surge Arrestor Operation and Installation (For one or two wire transmission lines)



AS-309H Single Wire or Two Wire Arrestor

- Rating 5 kW CW and Peak Power at High VSWR – approximately 3000 V GDT
- 20 kA rated per tube
- 1 MHz to 60 MHz
- Stainless steel hardware
- Water-tight Nema-4X/6P harsh environment enclosure.

The main difference between this arrestor and others is the use of a static bleed component in combination with a gas discharge tube (GDT). The high voltage bleeder in the AS-309H suppressor is constantly draining static and voltage charge build up from the antenna. It also relieves the gas tube from handling the current that would cause voltage build up and would ultimately lead the tube to fire. This can happen before the gas tube conducts, as gas tubes exhibit a delay. In addition, the suppressor appears as a mismatched load when a surge is applied (combined operation of these components and gas tube) and much of the surge energy is reflected back to the antenna. The antenna is also a mismatched load to much of the surge energy, so some of that energy is reflected back to the surge arrestor, and goes back and forth. In the process, the energy is dissipated in both the feed line and the arrestor.

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Dissipating the energy among several components of the system helps these small suppressors to survive fairly large surges.

The gas tubes used are typically rated for up to 20,000 amperes. Their life is limited at that current level, though. The voltage across them while conducting is typically only 15 V to 20 V. Gas discharge tubes operate just like spark gaps and can fire hundreds of times from small EMP pulses. The advantage over a simple spark gap (an automotive spark plug, for example) is that the characteristics are regulated by the composition of the gas, the electrodes and the gas pressure in the tube. Thus, they can survive high operating voltages when not conducting, low operating voltage while conducting, and stable characteristics that are independent of atmospheric conditions, pressure and temperature. The components in this arrestor are protected from contaminants and oxidation, all of which can affect simple spark gaps.

A major component of this type of suppressors is the blocking capacitor, which limits the energy that is passed to the rig while energy is being dissipated in the suppressor, feed line, and antenna.

Installation:

1. Choose a mounting location for your arrestor as close to ground level as practical while not contacting the ground directly.
2. Use of anti-oxidant paste from the electrical aisle in most home improvement stores is recommended between metal surfaces that are dissimilar. You can also use this on all connections to keep them from galling and oxidizing. A thin film is all you need. Get a small container.
3. The arrestor label is marked for Antenna side and Radio side for your single wire or ladder line transmission line. Connect to the appropriate connections for your installation.
4. The body of the arrestor has removable top. The arrestor is water tight, but you may chose to augment this by smearing some silicone grease on the gasket. If condensation build up becomes an issue, you may drill a few small (1/16" or 1.6 mm max.) weep holes in the end of the arrestor that faces down to allow it to breathe and evaporate / drain any condensation inside.
5. The 4 bottom flanges of the box have holes for mounting using #8 hardware. Optional: An aluminum "Balun Mounting Plate" (<http://www.arrayolutions.com/bmp-4>) or a Delrin plastic "Dipole Mounting Plate" (<http://www.arrayolutions.com/dmp>) may be ordered from the Array Solutions website. If you order a plate with your arrestor, Array Solutions will mount the arrestor to the plate with the appropriate #8 stainless steel hardware at no extra charge.
6. There is an 8-32 ground terminal on the antenna side of the arrestor. Connect this directly to your ground system.
7. **Keep all ground connections as short as practical and avoid sharp bends.**

Thank you for your purchase of the Array Solutions Arrestor