

## Straight Duct Required Quencher Install

The question is often asked, "How much straight duct is required before and after the Quencher device?"

This gets quite technical:

1. We prefer 5 duct diameters upstream and downstream to ensure laminar flow entering the Quencher and re-establishing laminar flow leaving the device.
2. In fact, Dwyer indicates that you need at least 8 diameters of straight duct to get accurate static and velocity pressure readings, using common pressure reading devices.
3. If you are too close on the inlet and the air stream is turbulent or spinning in the same direction as our vanes impart, the spark may not tumble enough through the cell to get extinguished.
4. If you are too close on the inlet and the air stream is turbulent or spinning in the opposite direction as our vanes impart, you would add turbulence through the cell to extinguish the spark, which is good. However, this effect will cause the pressure drop to skyrocket exponentially. The pressure drop through the Quencher would be unpredictable.
5. If you have an elbow, or other flow changing device, too close to the inlet side, you can skew the profile of the air entering the Quencher. If the air is squeezed to one side of the Quencher cell, where you have higher volume flow and low volume flow on the other side, the area of low flow may actually run under the minimum flow required for spark arresting action. Sparks may fall out and ignite debris or just deviate through the Quencher, instead of turbulate through.
6. If you have an elbow, or other flow changing device, too close on the outlet side, the Quencher will still work to extinguish the sparks. However, the pressure drop rises exponentially through the combination of devices. It would be impossible to predict or assign a pressure drop through the combination of devices, let alone the Quencher itself.
7. If you have the recommended length of straight duct before and after the Quencher, then our pressure drop chart (see separate bulletin) will be a good estimate of the pressure drop through the Quencher.