

# QUENCHER™

## Spark Arrester & Air Mixer

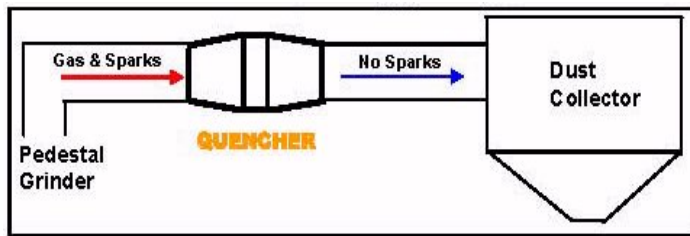


84 inch diameter QUENCHER custom paint, integral Booster

- EXTINGUISHES and cools sparks & burning embers
- PREVENTS Explosions and Fires
- IN-LINE DEVICE, Easy to apply and use
- No additional dust collection point required
- NO MOVING PARTS, Static device
- Thoroughly mixes stratified air streams
- Most advanced technology available today

**Beware of Imitators!** Air mixing/blending devices applied to and/or passed off as spark arresters or spark cooling devices. They are not 100% effective. Quencher™ is the first and only in-line device designed specifically as a spark arrester, first and foremost. Its secondary function is as an air mixer.

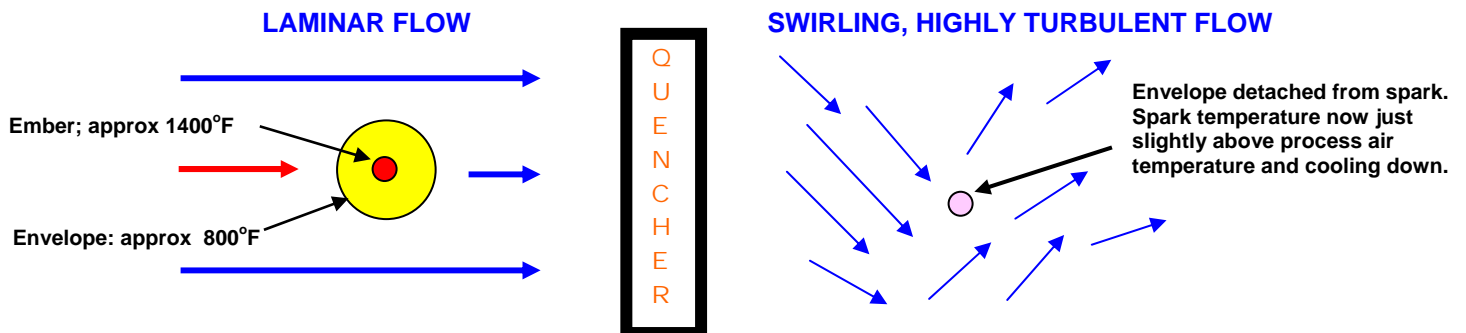
TYPICAL APPLICATION (welding, grinding, plasma / laser cutting, arc furnaces):



View of QUENCHER cell

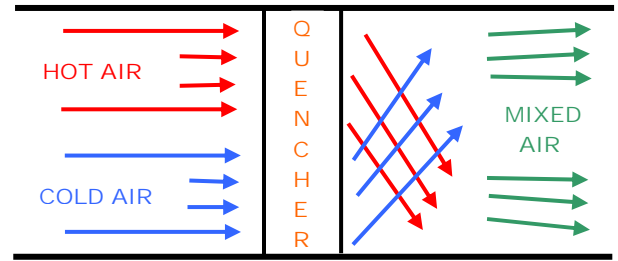
### How It Works; Spark Arrester

Refer to the figure below. The spark is surrounded by an envelope of hot air. The envelope keeps the spark in contact with oxygen which fuels the burning ember. The gas in the envelope is less dense than the gas in the gas stream; therefore, it is buoyed up and floats along in the gas stream. By design, the flow in the duct is laminar, the spark and its envelope moves along in the gas stream undisturbed, at the same velocity as the gas stream and may be carried for hundreds of feet. Eventually it reaches the dust collector and the spark gets deposited on the filter media surface or in the hopper where it will ignite flammable dust or combustible media. The QUENCHER creates extreme turbulence which breaks apart the hot air envelope, stripping the oxygen (fuel) away from the burning ember/spark, therefore extinguishing and cooling it. The temperature of the spark is now too low to cause an ignition. The cooled sparks are carried safely along the gas stream to the dust collector. **Air mixing or air blending devices, which are marketed as spark arresters/coolers, do not create enough turbulence and have gaps in the cells permitting sparks to slip through.**



## How It Works; Air Mixing / Blending

In order to keep the pressure drop low and save on power consumption, duct systems are designed so the gas stream travels in the form of "laminar flow". The gas stream is divided into cylinders that flow parallel in the ductwork. If we mix two gas streams flowing through well designed transitions that maintain laminar flow, the result is that the gas streams will continue in the duct with little or no mixing of the combined gas streams. Referring to the adjacent sketch, there is a hot gas stream stratified above a cold gas stream traveling in the ductwork. The QUENCHER design is such that the whole cross section of the duct produces an effective mixing with a minimum penalty of pressure drop by producing turbulent flow through the mixing element.



Gas Flow in Duct

## BOOSTER – DUCT CLEANER (Option)

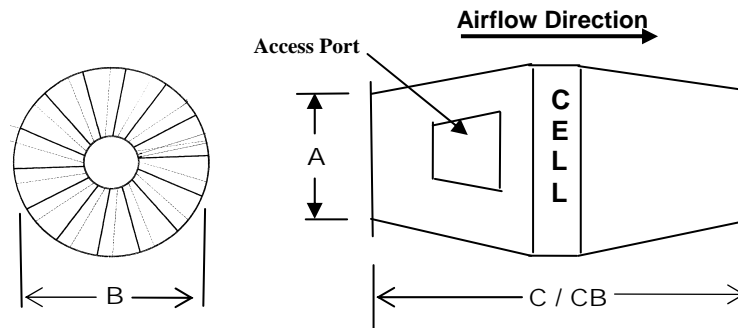
Sometimes dust and dirt can dropout in the duct work or within the QUENCHER cell. To help reduce the issues associated with dust accumulations, an optional BOOSTER – DUCT CLEANER device can be installed in front of the Quencher. This device can be actuated manually or automatically to give a burst of air into the duct or Quencher, thereby blowing the dust down the duct to be collected at the dust collector. For more information on this device, ask for our technical bulletin, "Auto Booster – Duct Cleaner".

## DESCRIPTION

The "Cell" consists of concentric & overlapping radial curved turbulator vanes in a round housing, which gives the air a full 90deg turn, thereby creating maximum agitation / turbulence of the air stream.

**This is a static device, with no moving parts.**

It is **not an air blending / air mixer falsely applied to spark cooling**, as others are sold as. The Quencher is designed and built specifically for spark arresstance.



All dimensions are inches.

Model	SCFM	A	B	C	CB	.....	Model	SCFM	A	B	C	CB
Q-08	490 - 820	6	8	14	28		Q-38	11,300 - 18,800	28	38	56	86
Q-10	790 - 1310	8	10	14	30		Q-48	18,300 - 30,600	36	48	66	96
Q-12	1100 - 1840	10	12	16	34		Q-60	28,900 - 48,200	44	60	78	116
Q-16	1800 - 3000	12	16	28	46		Q-72	41,600 - 69,300	54	72	88	126
Q-20	2980 - 4960	14	20	36	54		Q-84	56,500 - 94,200	64	84	96	144
Q-24	4420 - 7360	18	24	38	60		Q-96	74,200 - 123,700	72	96	116	164
Q-30	7070 - 11,800	22	30	46	70		Q-108	94,200 - 157,100	72	96	116	164

A = standard duct connection size. Other sizes are available upon request.

CB = length of Quencher when a Booster – Duct Cleaner is included.

**"Cell only" models, without the inlet and outlet reducer sections are also available.**

QAM has a policy of continuous research and improvement, and, reserves the right to change design and specifications, without notice.

Sold and Serviced by:



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