



**Federal Aviation  
Administration**

# **International Aircraft Materials Fire Test Working Group Meeting**

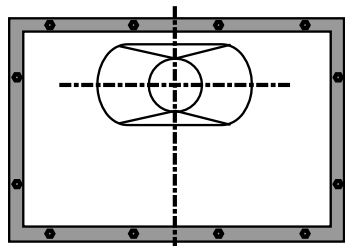
## **Sonic Cargo Burner Final Settings for AC Material**

Presented to: International Aircraft Materials Fire Test  
Working Group, Manchester, United  
Kingdom

By: Richard Hill, FAA Technical Center

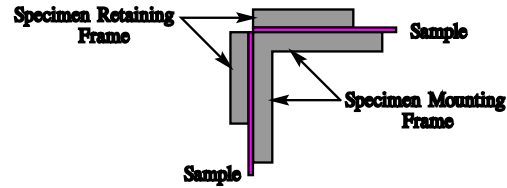
Date: June 19-20, 2013



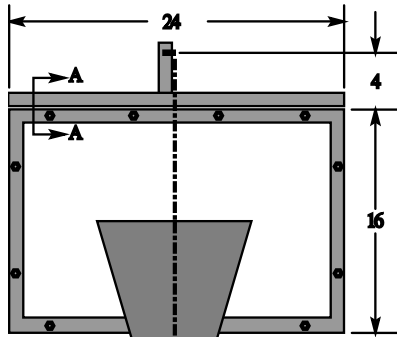


Top View

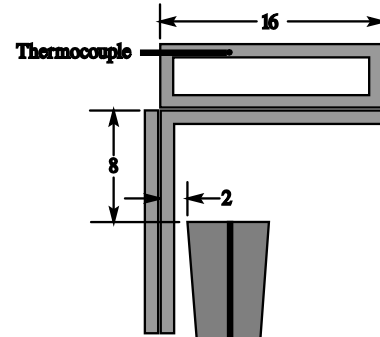
Horizontal and vertical specimens are clamped in place on all edges between angles as shown in View A-A



View A-A



Front View



Side View

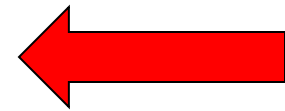
Burner Cone

Burner Assembly

Thermocouple

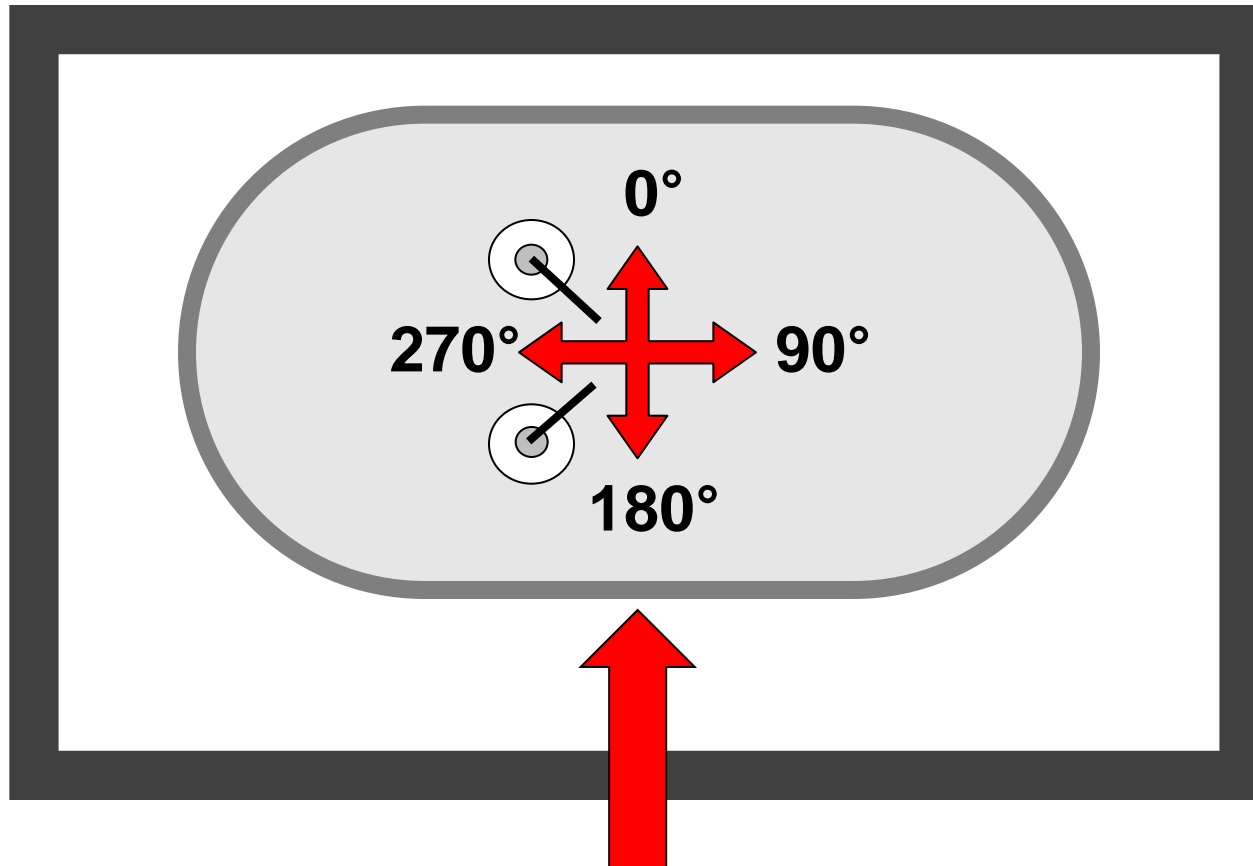
Sonic Orifice

Air Supply Entering Burner



# View from above Burner Cone

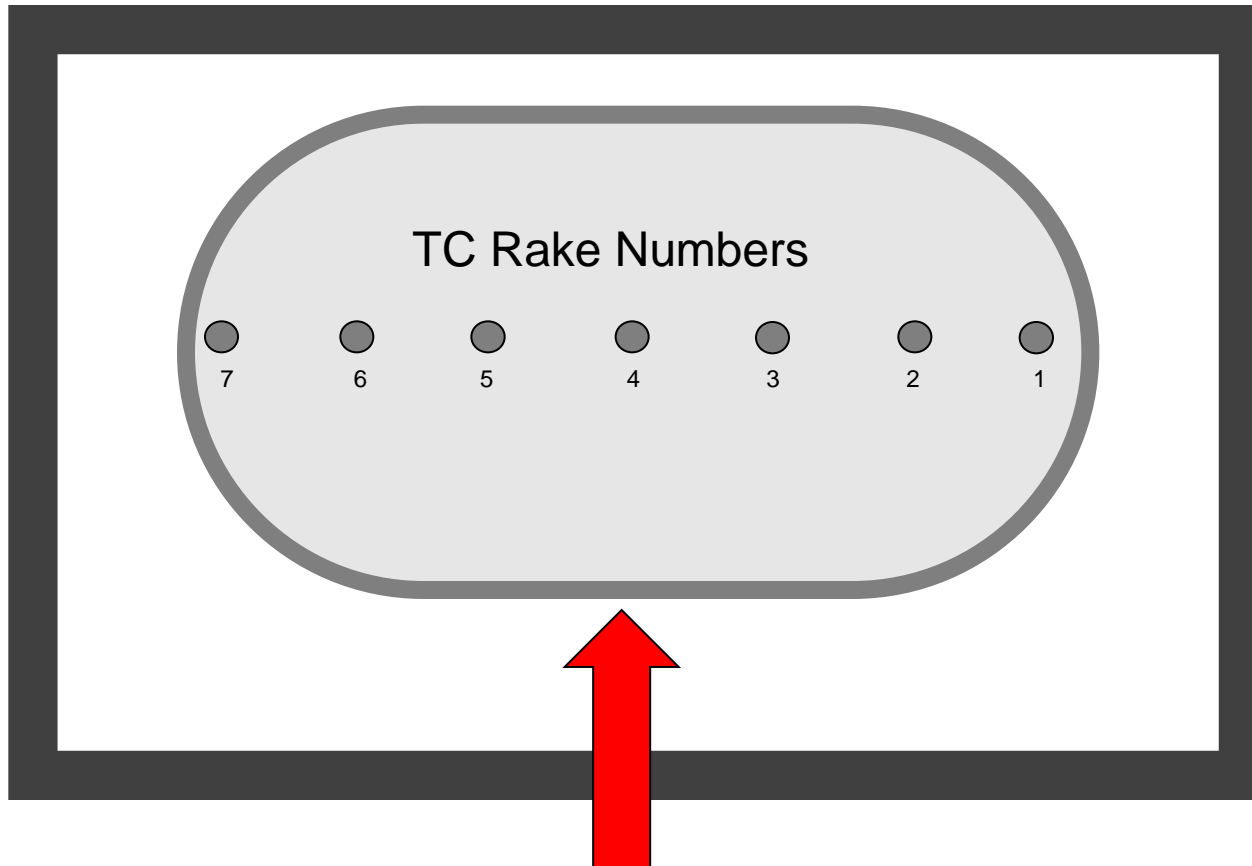
Back Panel Side of Sample Rig



Air Supply Entering Burner

# View from above Burner Cone

## Back Panel Side of Sample Rig

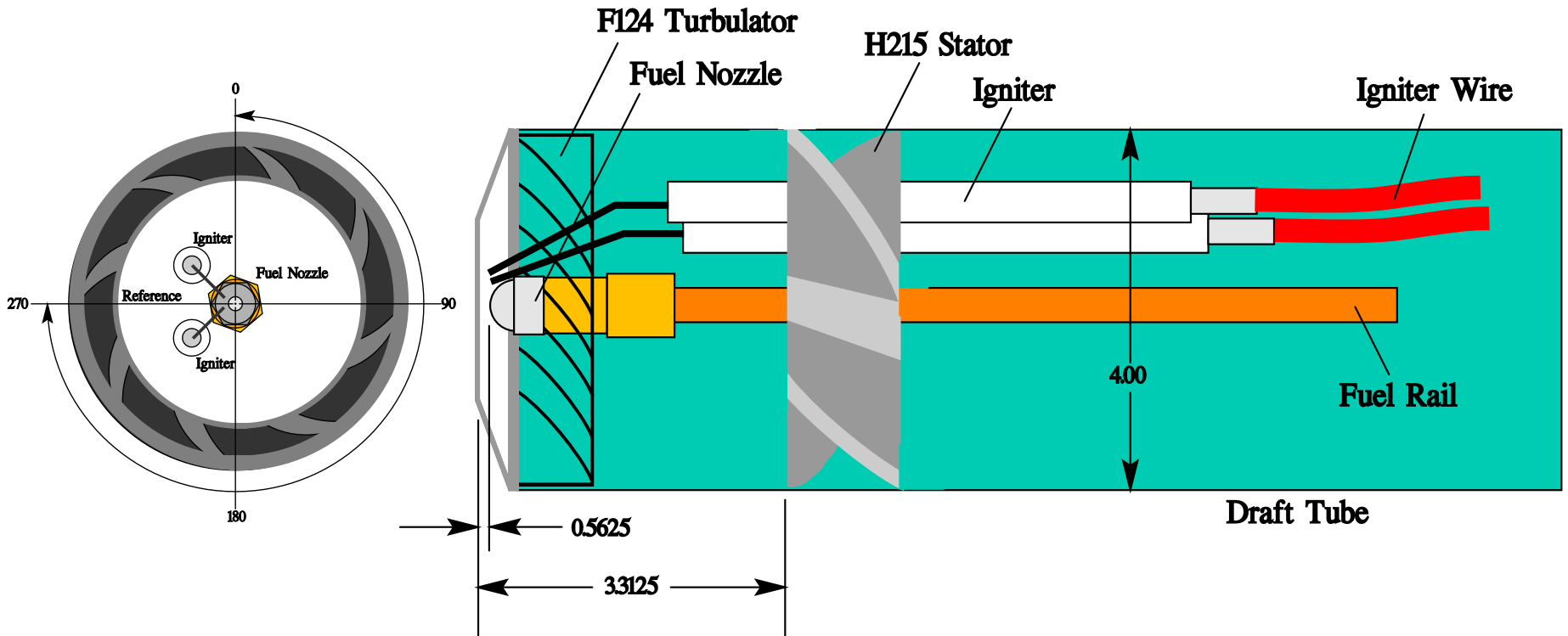


**Air Supply Entering Burner**

# Cargo Sonic Burner Settings

- **Sonic burner settings for use as Park burner replacement**
  - All depths are measured from the exit plane of the turbulator to the nozzle tip or front stator face
  - Recommended Nozzle: Delevan 2.0 gal/hr type B
  - Nozzle Depth: 9/16”
  - Stator Depth: 3 5/16”
  - Stator Angle: 270° (centerline from vertical)
  - Turbulator: Notch will face bottom of tube (180°)
  - Air Pressure: 47.5 psi
  - Air Temperature: 40-60°F
  - Fuel Temperature: 32-52°F

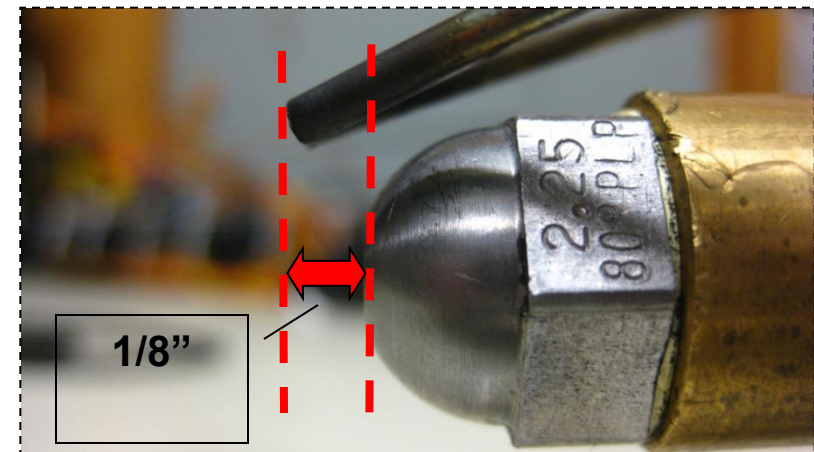
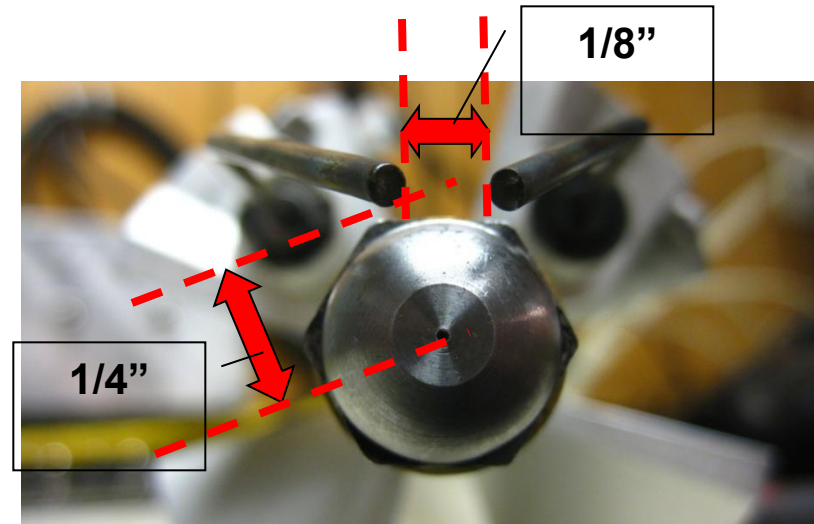
# Sonic Burner Settings



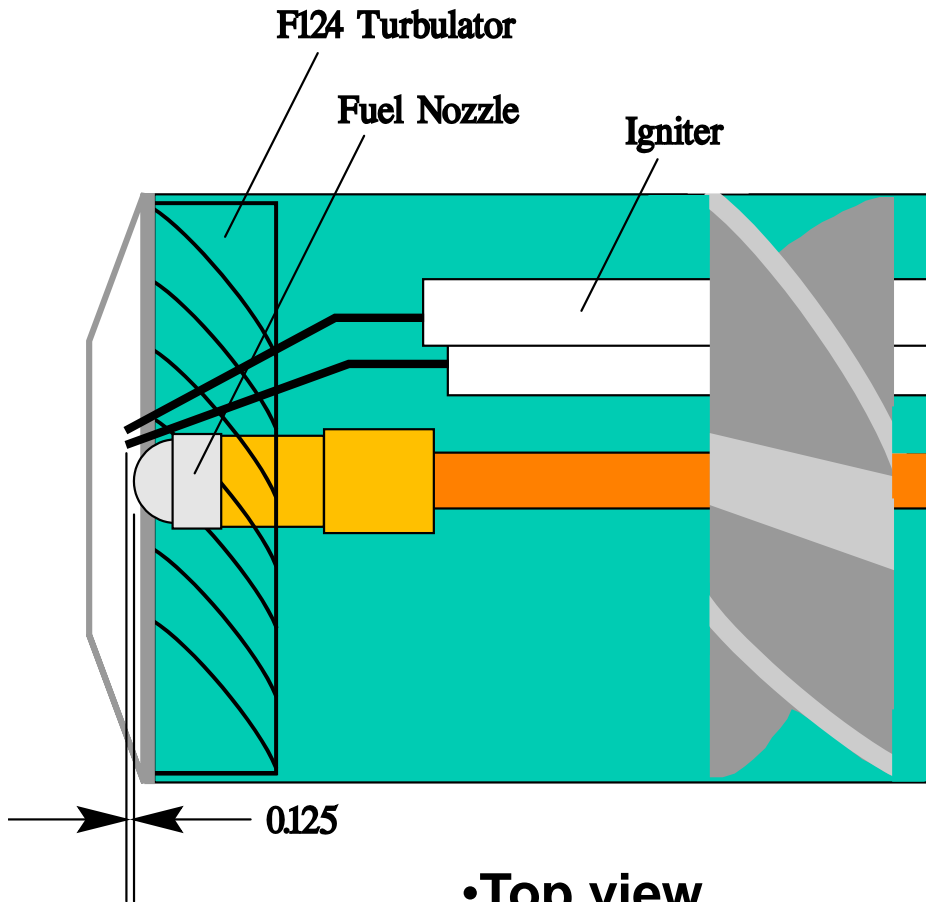
# Igniter Positions

- **Gap between igniters**
  - 1/8"
- **Nozzle center to igniter**
  - 1/4"
- **Nozzle face to igniter**
  - 1/8"

\*Diagrams shown only for igniter tip spacing

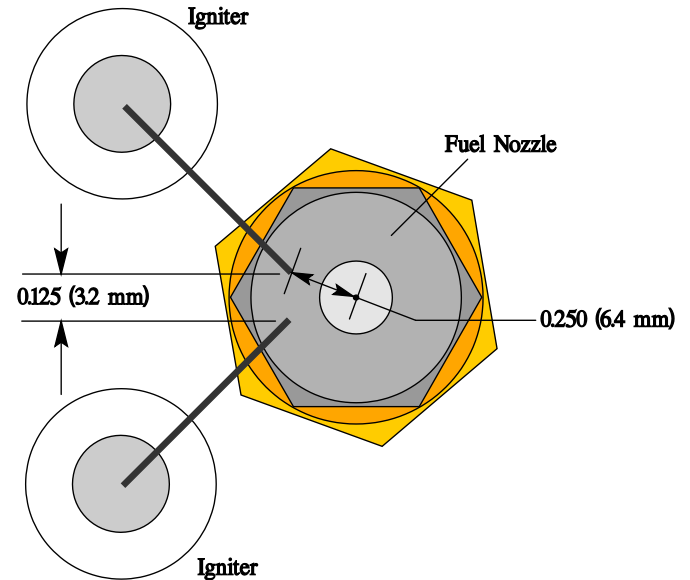


# Igniter Positions



•Top view

(side facing sample wall  
on test rig)



•Front view

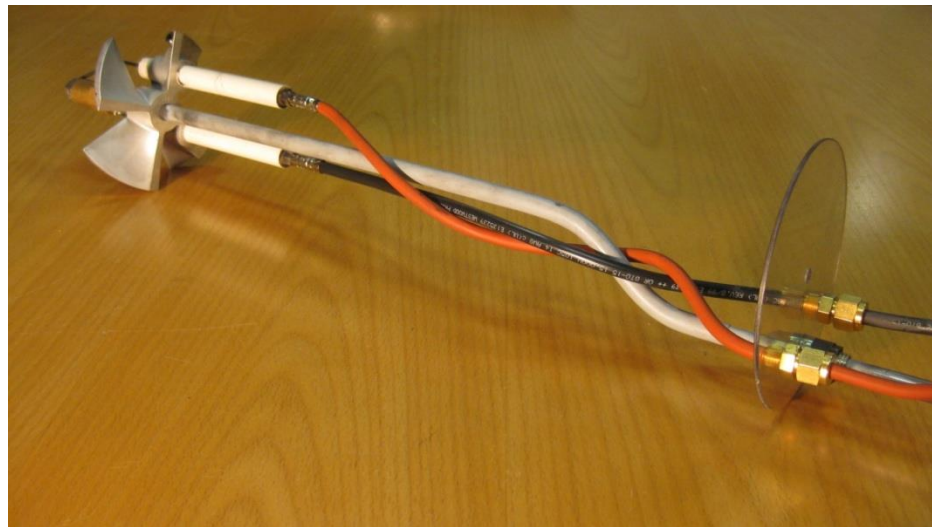
(looking into cone)



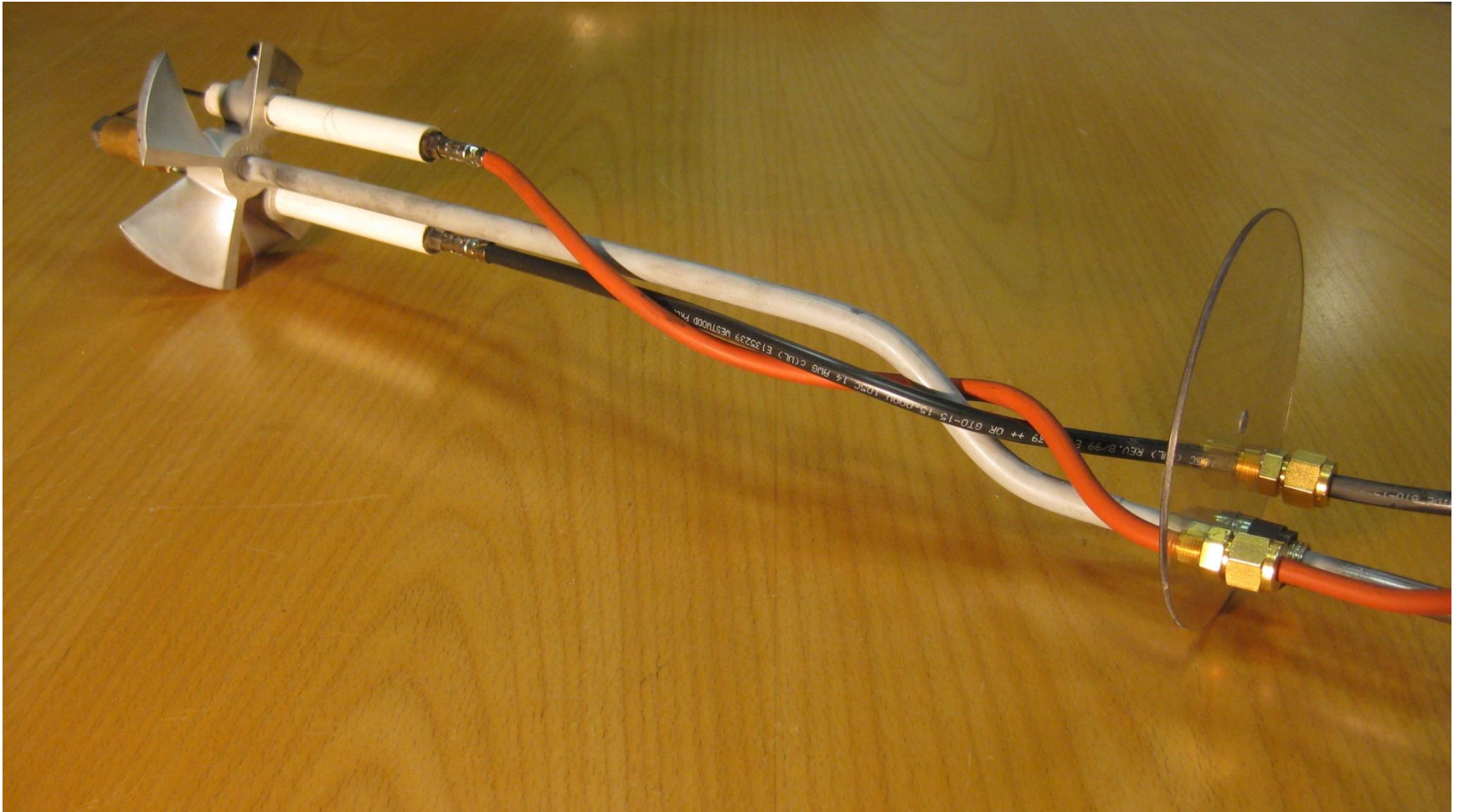
# Ignition Wires

- New wire length and routing scheme minimize airflow disturbance
- Wires should be positioned exactly as shown in picture
- It is important to ensure each wire crosses over or under the other wire or fuel rod as shown
- There should be no slack or excess wire length
- Wire lengths (tip of metal wire terminal to rear of draft tube)

- Red: 13.75”
- Black: 13.5”



# Ignition Wire Routing Method



# Cargo Sonic Burner Settings

- **Sonic burner settings for use as Park burner replacement**
  - All depths are measured from the exit plane of the turbulator to the nozzle tip or front stator face
  - Recommended Nozzle: Delevan 2.0 gal/hr type B
  - Nozzle Depth: 9/16”
  - Stator Depth: 3 5/16”
  - Stator Angle: 270° (centerline from vertical)
  - Turbulator: Notch will face bottom of tube (180°)
  - Air Pressure: 47.5 psi
  - Air Temperature: 40-60°F
  - Fuel Temperature: 32-52°F