

Flame control for brazing torches

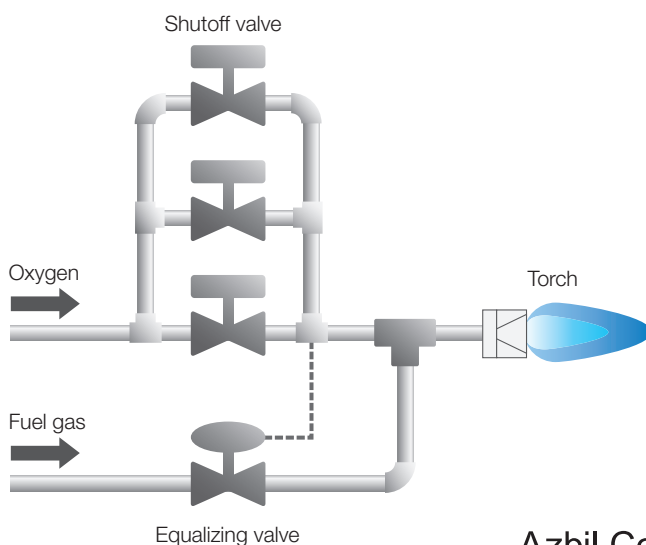
## Improved control of gas flow rate stabilizes the flame and the brazing quality



Product	Process sensor Digital Mass Flow Controller	Process/ equipment	Brazing
Model No.	F4Q_____		

### Current Situation

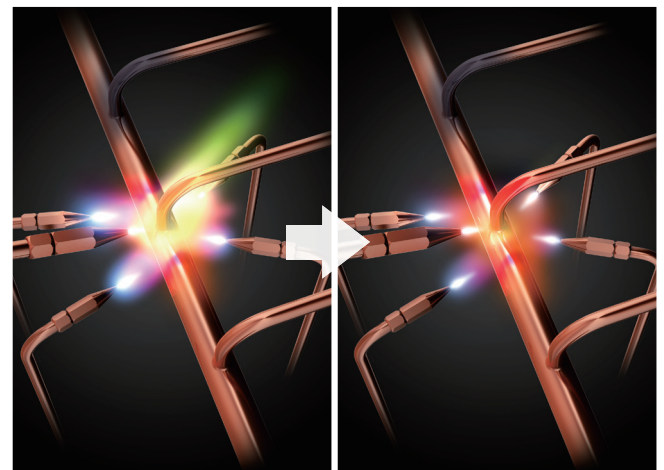
- Even if the flame is precisely adjusted, it changes because the gas pressure fluctuates. Then we have to touch up the brazing. The touch-up work is done manually by skilled workers, which increases our costs.
- We often have to change the flame's intensity depending on how the torch is positioned in relation to a particular part. With the usual mass flow controller, it takes time for the flame to stabilize after the flow rate setting is changed, so we have a long takt time.
- In the process of changing the combustion mode, the air-fuel ratio tends to fluctuate, and then we may get a misfire or backfire.



### Current Problems

- We want the flame to remain stable even if the gas pressure fluctuates, and we want to reduce the touch-up work.
- We want to be able to change the torch flame quickly so we can shorten the takt time.
- We want to prevent misfire and backfire when the combustion mode is changed.

We want to change the flame instantly



## Solution 1

**With automatic control of the oxygen and fuel flow rates, they remain stable even if the differential pressure fluctuates, and touch-up work can be reduced.**

The auto-control function of the mass flow controller keeps the gas flow rate at the preset value. The flow rate stays the same even if the source gas pressure fluctuates, so the flame is stable and brazing touch-up work can be reduced.

## Solution 2

**0.3 s high-speed response over a wide flow rate range reduces takt time.**

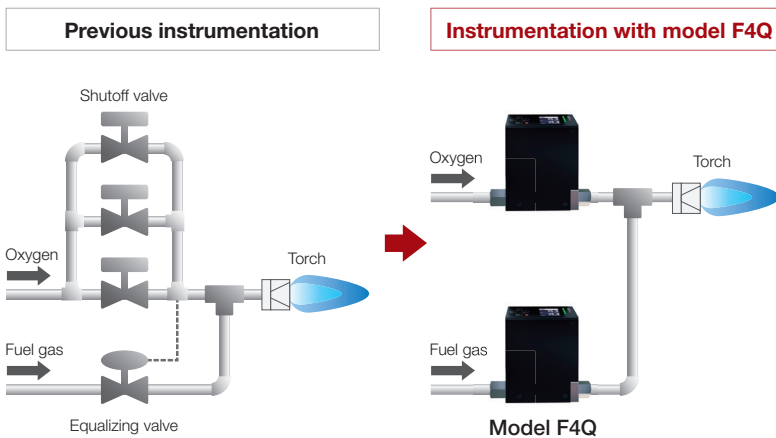
Our model F4Q achieves a 0.3 s high-speed response for a wide range of flow rates by using a quick-response micro thermal flow sensor and Azbil's PID control technology. Even when the combustion mode is changed, the flame stabilizes instantaneously, enabling shorter takt times.

## Solution 3

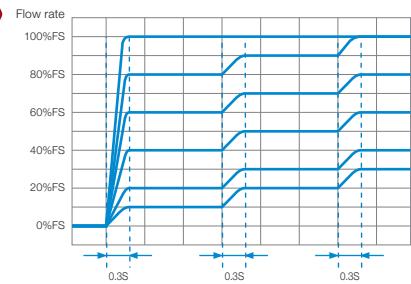
**When the combustion mode is changed, a rich mixture is used to decrease combustion speed and prevent backfire or misfire.**

The F4Q uses an SP ramp function to quickly increase the fuel flow when transitioning from low heat to high heat, and to quickly decrease the oxygen flow when transitioning from high heat to low heat, keeping a rich mixture. With a rich mixture the combustion speed slows down, making misfire and backfire unlikely.

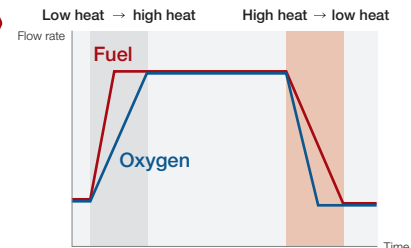
### Solution 1



### Solution 2



### Solution 3



### Related products



#### Network Instrumentation Module Smart Device Gateway\* Model NX-SVG

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\* A communication gateway that allows the interchange of information between various kinds of control device without programming, enabling smarter development work.

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