

High Pressure Hydrogen Valve and Regulator

As concerns for environmental conservation have risen over the past few years, fuel cell vehicles which utilize hydrogen as fuel are being highlighted within the automotive industry.

With fuel cell vehicles, it is necessary to stack a large amount of hydrogen within the automobile to achieve a cruising distance which equals that of vehicles fueled by gasoline. Vehicles installed with a high pressure hydrogen tank therefore comprise the majority of fuel cell vehicles. This paper introduces a high pressure hydrogen valve and high pressure hydrogen regulator which we have developed for utilization on vehicles installed with a high pressure hydrogen tank.



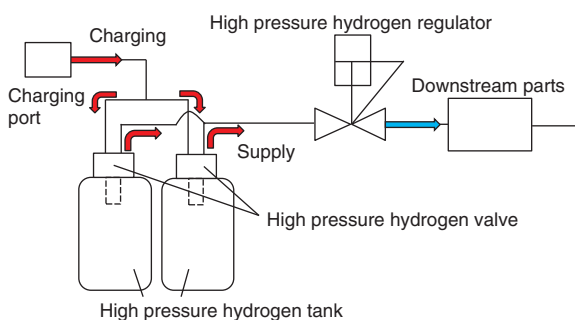
High pressure hydrogen valve



High pressure hydrogen regulator

1. Structure

Hydrogen replenished through the charging port of a fuel cell vehicle passes through a high pressure hydrogen valve before being stored in the high pressure hydrogen tank. The high pressure hydrogen valve, which prevents back flow of the replenished hydrogen, contains an inbuilt solenoid valve, which opens to allow hydrogen to flow downstream, and closes to cut off hydrogen flow. The high pressure hydrogen regulator depressurizes high pressure hydrogen to a pressure able to be controlled by downstream parts before feeding the hydrogen downstream.



High pressure hydrogen charging and supply system

2. Features

2.1 High pressure hydrogen valve

- (1) Approved by European Regulations EC79/2009 and EU406/2010, and passed the tests of Global Technical Regulation No.13.
- (2) Lighter weight by reduction in SUS parts and utilization of aluminum body anodized to reduce wear.
- (3) Higher durability through improvements in shape of seal for solenoid valve.

2.2 High pressure hydrogen regulator

- (1) Approved by European Regulations EC79/2009 and EU406/2010.
- (2) Lighter weight by reduction in SUS parts and utilization of aluminum body anodized to reduce wear.
- (3) Contributes to better fuel efficiency through reduced friction on sliding contact parts, which in turn suppresses variation in pressure (regulated value) decreased by the high pressure hydrogen regulator.

(FC Business Dept.)