

Safety Device for Hydrogen-Oxygen Mixture

Safety device with multiple function: **FA HHO** and **FA HHO-u**

Type FA HHO and FA HHO-u for the protection of hydrogen-oxygen mixtures at the gas generator

The safety device FA HHO and FA HHO-u are based on ISO 5175-1:

- stops flashback through flame arrestor (FA)
- a temperature-sensitive cut-off valve stops the gas flow when a predetermined temperature is exceeded (TV)
- every safety device is 100% tested

Safety elements of the IBEDA Safety device FA HHO and FA HHO-u:

- FA Flame arrestor
- TV Temperature-sensitive cut-off valve

Maintenance:

The safety devices are to be tested by a qualified and authorised person at regular intervals according to country specific regulations. The safety device is to be tested for gas tightness, gas flow and gas return at least once a year.

It is not allowed to open the safety devices.



Technical Data:			
Gas Types:	Hydrogen-Oxygen-Mixtures (HHO)		
Working pressure:	0,20 (0,03)* MPa 2,0 (0,3)* bar		
Gas temperature:	-20°C up to +50°C		
Ambient temperature:	-20°C up to +50°C		
Threads: ISO/TR 28821	1/4NPT F/F G1/4LH G3/8LH M16x1,5LH UNF9/16-18LH UNF5/8-18LH		
Measure and weight:	diameter:	length:	weight:
	22,0 mm	87,0 mm	153,0 g
Applications:			
Process:	Gas production by electrolysis with e.g. micro soldering and welding devices		

Other materials, surface finishing, gas types and additional connections available on request.

* max. operating pressure 0.03 MPa (0.3 bar) when using micro soldering and welding units acc. to DIN32508 with integrated Hydrogen/Oxygen generation.

Application note:

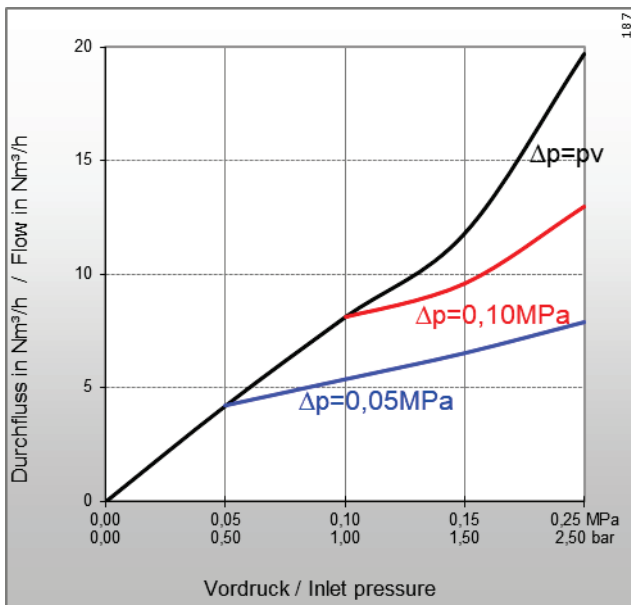
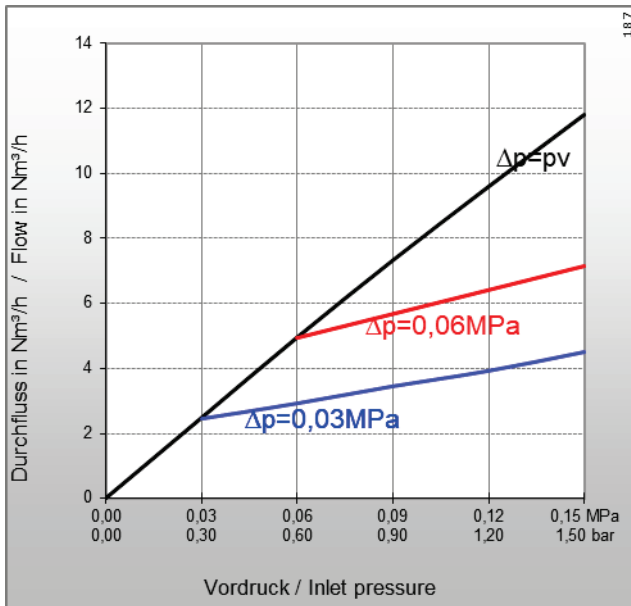
When using fuel gas-oxygen-mixtures, special safety measures are required.

Three safety functions, independently working from each other, must be provided:

For example

1. safety devices with multiple functions type FA HHO, FA HHO-u with FA and TV based on ISO5175-1
2. pipes/ hoses that are resistant to explosion pressure for all areas with mixed gases
3. sensors for pressure or temperature reliably interrupting the gas flow in the event of a flashback

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Type: FA HHO and FA HHO-u

Flow rates [air]:

pv = Primary pressure

ph = Secondary pressure

Δp = Primary pressure minus Secondary pressure

Conversion Factors:

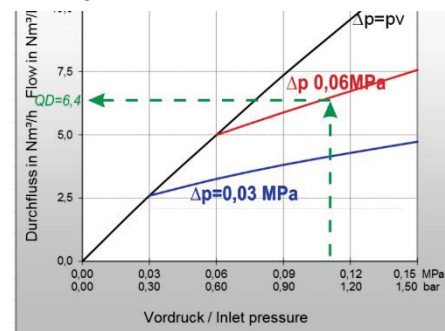
0,1 MPa = 1 bar = 100 kpa = 14,504 psi

1 m³/h = 35,31 cu ft/h

	A	H	P	M	M	O	E	L
QG ▶	C ₂ H ₂	H ₂	C ₃ H ₈	CH ₄ +C	CH ₄	O ₂	C ₂ H ₄	C ₃ H ₆
F	1,2	3,8*	0,90	1,25	1,4	0,95	1,02	0,92

* Conversion factor 2.5 for devices comprising a flame arrester
The conversion factor for free flow is 3.8.
(Reference: BAM report 220, D. Lietze)

Example:



$$QG = QD \times F$$

$$QG \blacktriangleright A = 6,4 \times 1,2 = 7,68 \text{ m}^3/\text{h C}_2\text{H}_2$$

QG = flow / gas type

F = conversion factor

QD = flow / air

Certification/ Technical Standards/ Rules

TRBS German Technical rules for operation safety, DVS German Association for Welding, Cutting and Allied Processes, DGUV German Employer's liability insurance association rules and regulations.

Standards/ Approvals

Company certified according to

ISO 9001:2015 and ISO 14001:2015,

CE-marking according to: Pressure Equipment Directive 2014/68/EU

(Subject to change without notice)