Flashback Arrestors

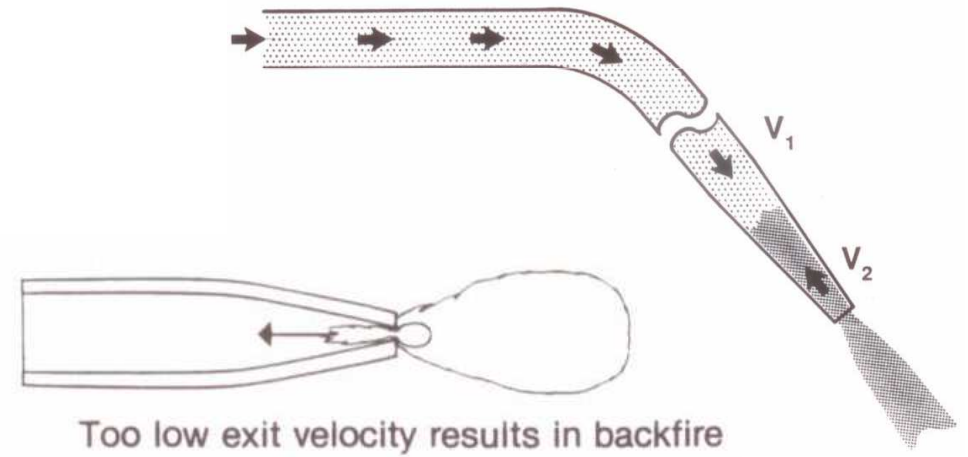
FR1000, FRT & FT

Backfire

- Flame burns back into the torch with a sharp bang
- Flame is either extinguished or reignited at nozzle opening
- Fairly harmless in itself, but sign of some fault in Gas supply / Equipment

Causes

- Combustion velocity (V2) exceeds Exit velocity of gas mixture (V1).



Too low exit velocity results in backfire

Safeguard Element

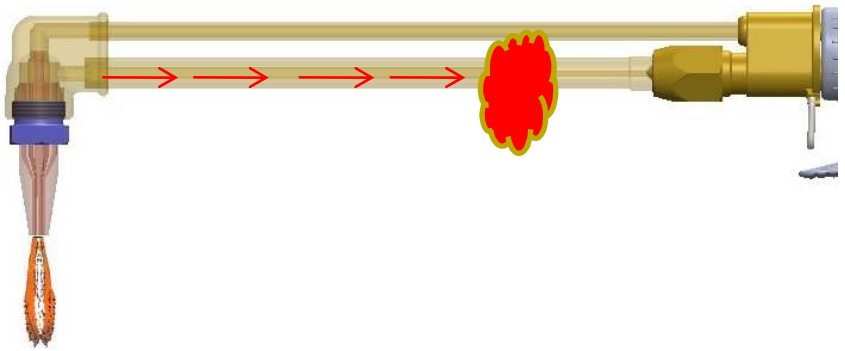
NRV PV TV FA

Sustained Backfire

- Flame burns back into torch with continued burning in mixer, often at mixing point
- Identified by initial bang followed by whistling / screeching sound
- Can cause melting of torch, escaping combustion products can cause injuries

Causes

- Gas Starvation
- Flow restriction
- Loose connections
- Incorrect pressure



Safeguard Element

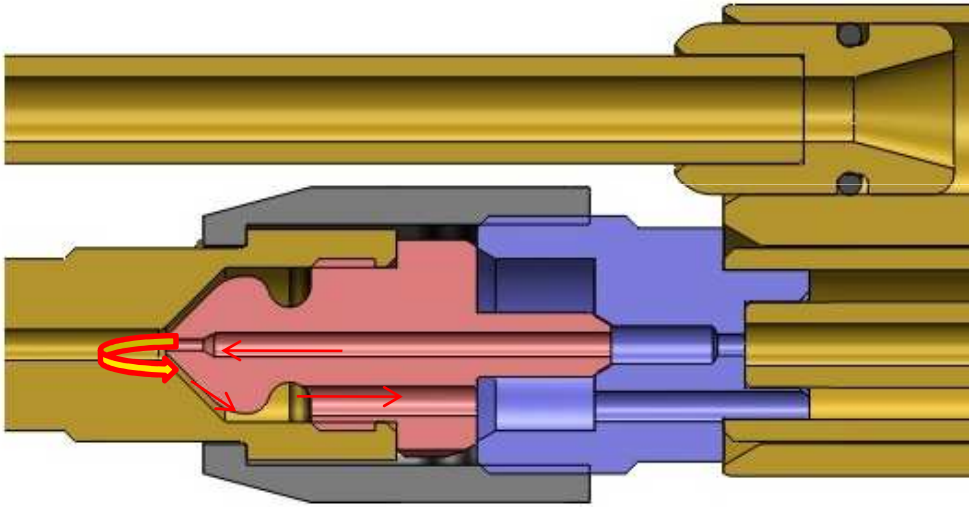
NRV | PV | TV | FA

Reverse Flow

- Gas at higher pressure flows into the gas line with lower gas pressure

Causes

- Nozzle clogging
- O_2 pressure lower than Fuel gas
- High O_2 pressure when igniting torch.



Safeguard Element

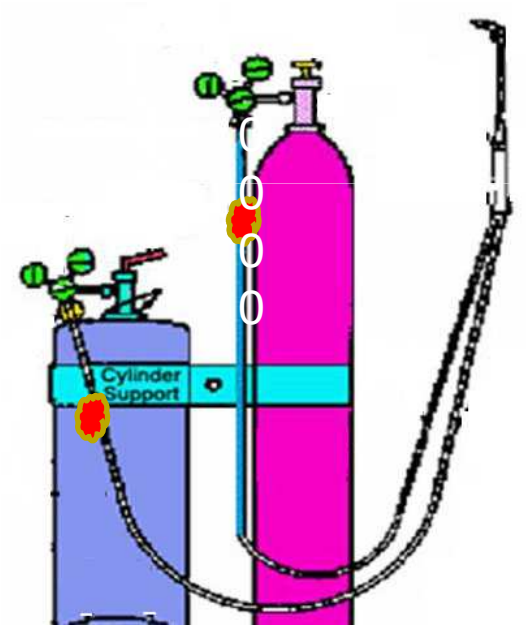
NRV PV TV FA

Flashback

- Flame burns back through torch into hoses and sometimes to regulators
- If flashback reaches an acetylene cylinder with no safety equipment, a serious accident can occur.

Causes

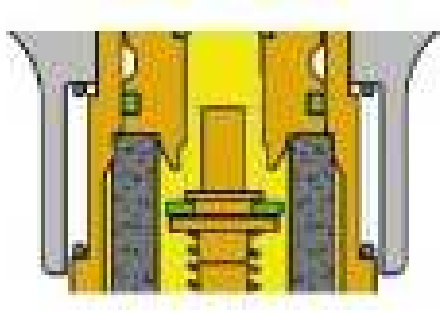
- Reverse flow e.g. flow of Oxygen into Acetylene hose, so that an explosive mixture is present in the hose
- Mixture gets ignited by a backfire which occurs when the torch is lit
- Hose could explode



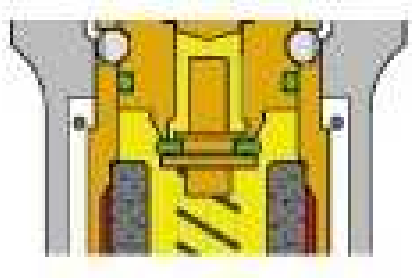
Safeguard Element **NRV** **PV** **TV** **FA**

Safety Element : Non-Return Valve

- Allows gas to flow in one direction only
- Prevents mixing of gases



NRV OPEN WHEN FLOW IS NORMAL

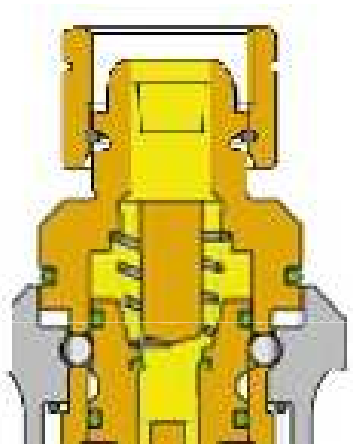


NRV CLOSED IN BACK FLOW

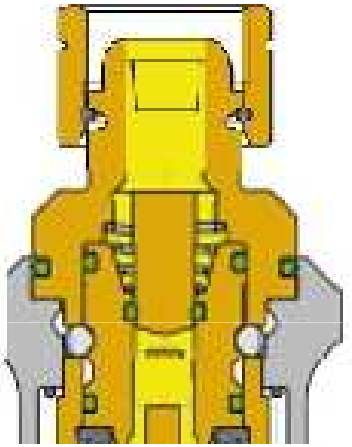
Backfire	Sustain Backfire	Reverse Flow	Flashback

Safety Element : Pressure Sensitive Cut-off Valve

- Prevents a further flow of gas in the event of sudden pressure build-up
- Gas flow can then be manually released
- The pressure valve can be re-set for subsequent use



PV OPEN IN NORMAL FLOW



PV CLOSED IN BACK SHOCK WAVE

Backfire	Sustain Backfire	Reverse Flow	Flashback

Safety Element : Temperature Sensitive Cut-off Valve

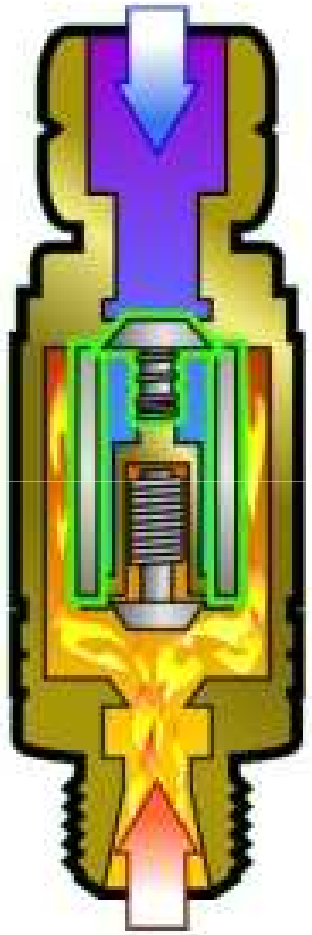
- Prevents the arrestor from overheating
- Shuts off gas flow automatically when a specific temperature is reached.

Backfire	**Sustain Backfire**	**Reverse Flow**	**Flashback**

TEMPERATURE SENSITIVE CUT OFF VALVE ACTUATION IN CASE OF OVERHEATING

Safety Element : Flame Arrestor

- Cools advancing flame to below ignition temperature
- Prevents a flashback from occurring



Backfire	Sustain Backfire	Reverse Flow	Flashback

SINTERED METAL QUENCHES THE FLASH

Flashback Arrestor : ESAB FR1000

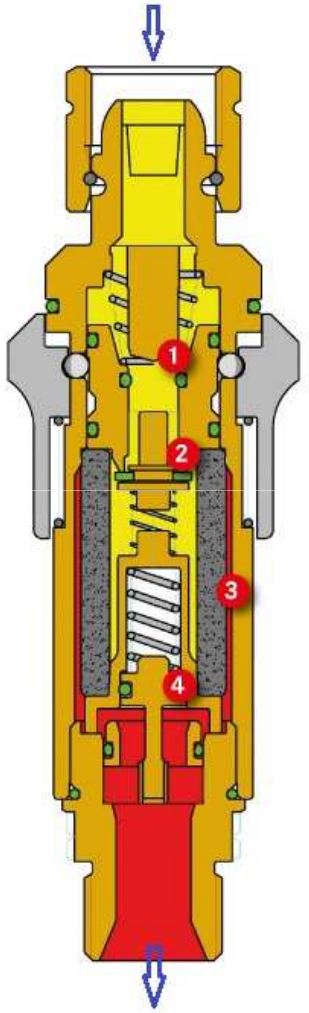
- Regulator mounted FBA
- Provides 4 Safety Elements

NRV	PV	TV	FA

- Easy Re-set option by lifting Black Cover Body upward

- Angled inlet connection convenient for safe hose connection.

- BAM Certified.

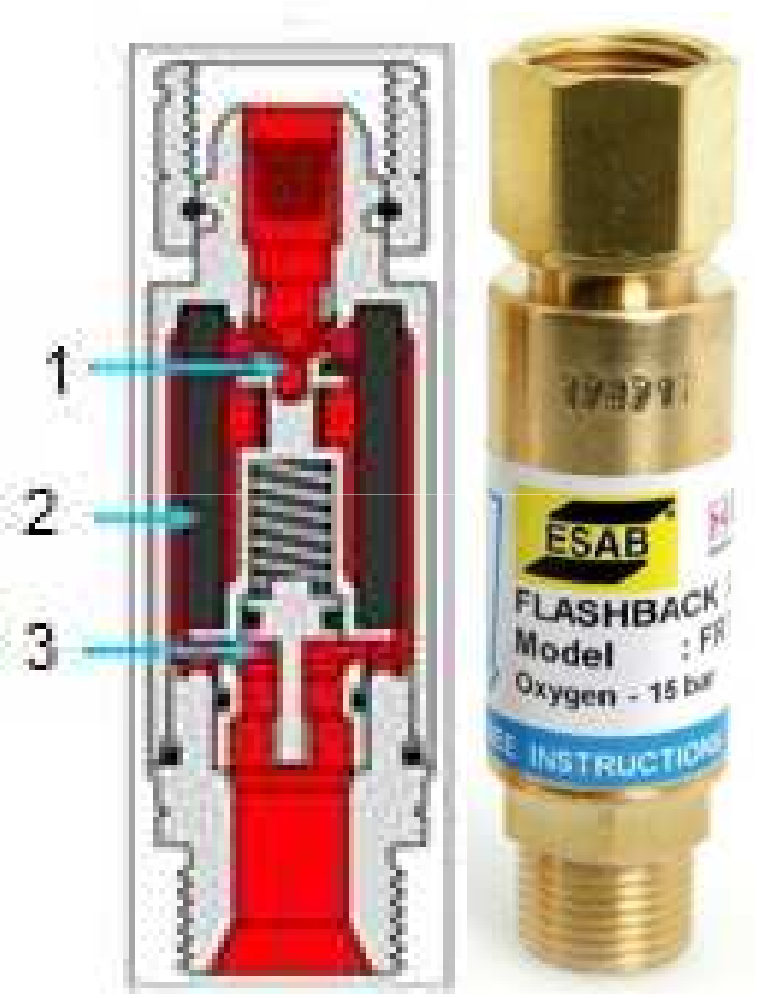


Flashback Arrestor : ESAB FRT

- Regulator mounted FBA
- Provides 3 Safety Elements

NRV	PV	TV	FA

- Advanced design for higher flow rate
- Large cylindrical flame arresting element
- Automatic reset non-return valve
- Heat sensitive thermal cut-off valve
- BAM Certified

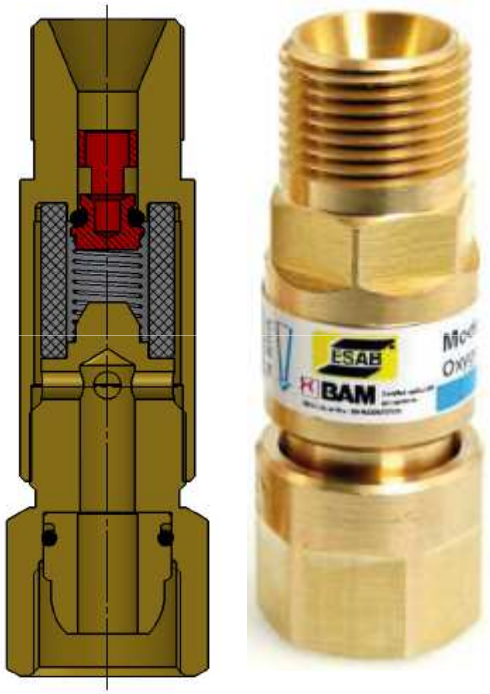


Flashback Arrestor : ESAB FT

- Regulator mounted FBA
- Provides 2 Safety Elements

NRV	PV	TV	FA

- Advanced design for higher flow rate
- Large cylindrical flame arresting element
- Automatic reset non-return valve
- Heat sensitive thermal cut-off valve
- BAM Certified



THANK YOU