





Thermally activated safety device







Excess flow valve for gas systems SAFETY DEVICES

## THERMALLY ACTIVATED SAFETY DEVICE





## **APPLICATIONS**

• Suitable for all types of gas as specified in EN 437 and DVGW G260/2013 standards (Methane, Butane, Propane).



## **TECHNICAL DATA**

Temperature	-20 °C ÷ +80 °C
Working pressure	MOP 5 (5 bar)
Connections	EN 10226-1 R/Rp thread EN 1092-1 flange
High temperature resistance	HTB 5 bar 650 °C for 30' (GT5)
Activation temperature	100°C - 5K
Reference standards	DIN 3586 EU 2016 / 426 regulation EN 1092-1 flange



## **FEATURES**

- Passive safety device for DIN 3586 certified gas systems.
- When the temperature of the device reaches 100 °C, the FIREBAG® permanently blocks the gas flow automatically to prevent saturation of the environment and the risk of explosion.
- Available as a single fitting or, thanks to its compactness, as a device built into the shut-off valves.
- Does not require maintenance.
- · Located upstream of open-flame gas appliances or in areas with a fire risk.
- Produced by TECO since 1995.
- TECO can develop customised versions on request.

## Firebag® FITTING, threaded version, female/male, DN15 / DN20 / DN25



Code	
TASK100FM1	
TASK200FM1	
TASK300FM1	

## Firebag® FITTING, female/male threaded version, DN32 / DN40 / DN50



Code	
TASK400FM1	
TASK500FM1	
TASK600FM1	

## Firebag® FITTING, female/female threaded version, DN15 / DN20 / DN25



Code	
TASK100FF1	
TASK200FF1	
TASK300FF1	



		Conne	ctions		
DN	FIREBAG TAE	D1	D2	L	Pack
DN15	•	Rp 1/2"	R 1/2"	46	60
DN20	•	Rp 3/4"	R 3/4"	49	50
DN25	•	Rp 1"	R 1"	56	25



		Conne	ctions		F	
DN	FIREBAG TAE	D1	D2	L	Pack	
DN32	•	Rp 1 1/4"	R 1 1/4"	100	6	
DN40	•	Rp 1 1/2"	R 1/2"	100	6	
DN50	•	Rp 2"	R 2″	118	6	



		Conne	ctions		$\rightarrow$
DN	FIREBAG TAE	D1	D2	L	Pack
DN15	•	Rp 1/2"	Rp 1/2"	54	60
DN20	•	Rp 3/4"	Rp 3/4"	61	30
DN25	•	Rp 1"	Rp 1"	69	20

Safety devices for gas systems

FIREBAG<sup>®</sup> THERMALLY ACTIVATED SAFETY DEVICE



## Firebag® FITTING, female/female threaded version, DN32 / DN40 / DN50





## MS1 assembly kit for FIREBAG® fitting, flanged version



• MOP 5 (5 bar)

Code	DI
MS1025	DN
MS1032	DN
MS1040	DN
MS1050	DN
MS1065	DN
MS1080	DN
MS1100	DN1
MS1125	DN1
MS1150	DN1

## Firebag® FITTING, flanged version, DIN EN 1092-1



• MOP 5 (5 bar)



			Connections							
Code	DN		D1	D2	D3	F	L	Holes	Pack	
TASF02500	DN25	•	115	68	85	14	80	4	1	
TASF03200	DN32	•	140	78	100	18	90	4	1	
TASF04000	DN40	•	150	88	110	18	90	4	1	
TASF05000	DN50	•	165	102	125	18	110	4	1	
TASF06500	DN65	•	185	122	145	18	125	4	1	
TASF08000	DN80	•	200	138	160	18	125	8	1	
TASF10000	DN100	•	220	158	180	18	175	8	1	
TASF12500	DN125	•	250	188	210	18	175	8	1	
TASF15000	DN150	•	285	212	240	22	200	8	1	
TASF20000	DN200	•	340	268	295	22	200	12	1	

## Choosing the FIREBAG®

The **FIREBAG**<sup>®</sup> must be chosen according to the following parameters:

- According to the working pressure: Max. 5 bar
- According to the application:

Natural Gas

• According to the **installed power (in kW)** of the individual appliances and the relative pressure drop.



- Air [Nm<sup>3</sup>/h] d=1
- Natural Gas [Nm<sup>3</sup>/h] d=0.62
  - Thermal Power [kW]
  - referred to Natural Gas



SAFETY DEVICES

Safety devices for gas systems

# FIREBAG® THERMALLY ACTIVATED SAFETY DEVICE



## **Operation of the FIREBAG®**

**FIREBAG**<sup>®</sup> is composed of an external steel body and an internal thermosensitive device.

When the external temperature reaches 100°C-5K, the metal alloy that holds the cut-off to the cartridge melts, and the compression force of the spring pushes the cut-off against the gas flow orifice, closing it completely. The **FIREBAG**<sup>®</sup> seals the system for 30 minutes at up to 650 °C in accordance with DIN 3586.





## Valves with built-in FIREBAG® thermal device



## Safety of FIREBAG® THERMAL DEVICES

**FIREBAG**<sup>®</sup> prevents gas from leaking out of the distribution network in the event of fire, thereby limiting the spread of flames.

Installing **FIREBAG**<sup>®</sup> in a gas distribution system raises the safety level because it intervenes even when the cause of the fire is not related to the system itself, making it a kind of passive safety.

### Moreover:

- it is maintenance free;
- it does not require periodic checks to ensure correct operation as needed for active devices;
- it cannot be disabled by an external action.

## **Reliability of FIREBAG® THERMAL DEVICES**

The **FIREBAG®** safety device must guarantee long-term operational reliability in accordance with the prescribed parameters.

Failure to operate or unwanted closure could create very hazardous critical conditions; for this reason, despite its simple construction, the FIREBAG<sup>®</sup> undergoes strict checks during the manufacturing process.



It remains functional even while the **FIREBAG®** device is undergoing maintenance. That is why since 1995 the German technical regulations (**TRGI**) prescribe the use of **FIREBAG®** upstream of the gas appliances.

## **EXCESS FLOW VALVE** FOR GAS SYSTEMS





## **APPLICATIONS**

• Suitable for all types of gas as specified in EN 437 and DVGW G260/2013 standards (Methane, Butane, Propane).



## **TECHNICAL DATA**

Temperature	-20 °C ÷ +60 °C
Working pressure	15–100 hPa
Connections	EN 10226-1 R/Rp thread
Pressure drop	Δp < 0.5 hPa
Closure factor (fs (fs = Vs / V <sub>GAS</sub> )	<i>fs</i> min. 1.30 <i>fs</i> max. = 1.45
Overflow value VL	37.5 l/h at 100 mbar (gas)
Heat resistance	650 °C for 30' externally
Device heat resistance == T	120 °C for 10' (with outside temperature at 200 °C)
Reference standards	DIN 30652-1 DVGW TRGI 2018 DVGW TRF 2021



## **FEATURES**

- Excess flow valve for gas systems.
- GST® is a DIN 30652-1 certified device that blocks the gas flow automatically when the flow rate exceeds the minimum trip threshold of the device (in the event of tampering, accidental system disconnection, e.g. in a fire or if the pipes burst).
- The GST® is equipped with an automatic reset system.
- · Available as a single fitting or, thanks to its compactness, as a device built into the shut-off valves.
- Does not require maintenance.
- Produced by TECO since 2002.
- TECO can develop customised versions on request.

## GST® fitting, male/female threaded version

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V



				Connections				
Code	DN	GS m³/	h	D1	D2	L	Pack	
GS01110100	DN15	$V_{gas}$ =1.6		R 1/2"	Rp 1/2"	52	20	
GS01210100	DN15	$V_{gas}$ =2.5		R 1/2"	Rp 1/2"	52	20	
GS02210200	DN20	V <sub>gas</sub> =2.5		R 3/4"	Rp 3/4"	52	15	
GS02310200	DN20	V <sub>gas</sub> =4.0		R 3/4"	Rp 3/4"	52	15	
GS03210300	DN25	V <sub>gas</sub> =2.5		R 1″	Rp 1"	54	10	
GS03310300	DN25	V <sub>gas</sub> =4.0		R 1″	Rp 1"	54	10	
GS03410300	DN25	V <sub>gas</sub> =6.0		R 1″	Rp 1"	54	10	
GS04510400	DN32	V <sub>gas</sub> =10.0		R 1 1/4"	Rp 1 1/4"	67	6	
GS05610500	DN40	V <sub>gas</sub> =16.0		R 1 1/2"	Rp 1 1/2"	75	6	
GS06610600	DN50	V <sub>gas</sub> =16.0		R 2″	Rp 2"	80	6	

## **GST<sup>®</sup>** fitting, female/male threaded version





## GST® fitting, male/female threaded version





1 Versions available on request.





#### **V**TECO 156

		Conne	ctions			
<b>GS T</b> GS m³/l	h	D1	D2	L	Pack	
V <sub>gas</sub> =1.6		Rp 1/2"	R 1/2"	52	20	
V <sub>gas</sub> =2.5		Rp 1/2"	R 1/2"	52	20	
V <sub>gas</sub> =2.5		Rp 3/4"	R 3/4"	46	15	
V <sub>gas</sub> =4.0		Rp 3/4"	R 3/4"	46	15	
V <sub>gas</sub> =2.5		Rp 1"	R 1″	54	10	
V <sub>gas</sub> =4.0		Rp 1"	R 1″	54	10	
V <sub>gas</sub> =6.0		Rp 1"	R 1″	54	10	
$V_{gas}$ =10.0		Rp 1 1/4"	R 1 1/4"	61	6	
V <sub>gas</sub> =16.0		Rp 1 1/2"	R 1 1/2"	68	6	
V <sub>gas</sub> =16.0		Rp 2"	R 2"	75	6	

		Connections				
GS m³/h		D1	D2	L	Pack	
V <sub>gas</sub> =2.5		R 3/4"	Rp 3/4"	52	15	
V <sub>gas</sub> =4.0		R 3/4"	Rp 3/4"	52	15	
V <sub>gas</sub> =2.5		Rp 1"	R 1"	54	10	
V <sub>gas</sub> =4.0		Rp 1"	R 1"	54	10	
V <sub>gas</sub> =6.0		Rp 1"	R 1"	54	10	
V <sub>gas</sub> =10.0		R 1 1/4"	Rp 1 1/4"	67	6	



## **Operation of the GST®**

Key	$\mathbf{V}_{\text{gas}}$	Nominal gas flow rate of GST® (d=0.64)			
	fs	Closure factor ( $fs=Vs / V_{GAS}$ ) fs min. = 1.30 fs max. = 1.45			
	Vs	Gas closure flow rate (d=0.64) Vs = $V_{GAS} x fs$			
	VL	Flow rate through the bypass orifice $\leq$ 37.5 l/h at 100 mbar (gas)			

When inserted in the system, the GST® remains inactive (FIG.1) until the closure flow rate (Vs) is reached. As soon as the flow reaches the closing value (Vs) due to any accidental cause, the GST® closes instantly (FIG.2).

The bypass orifice on the cut-off resets it automatically. This orifice creates a pressure balance upstream and downstream of the device through the VL overflow, once the conditions that caused the GST® to close have been removed (FIG.3).



The GST® is normally OPEN as long as the closure flow value Vs is not reached.



The GST® CLOSES when the closure flow value Vs is reached.

 $Vs = V_{GAS} x fs$  $(fs \min = 1.30 - fs \max = 1.45)$ 



The bypass orifice VL on the  $\text{GST}^{\texttt{0}}$  cut-off ensures an automatic reset after the system has been repaired and re-pressurised. When the upstream pressure P1 and downstream pressure

P2 are equal, the GST<sup>®</sup> reopens.

## Valves with built-in GST<sup>®</sup> device



## Choosing the GST®

following parameters:



ARAMETERS FOR CHOOSING THE GST® TRG 2008 METAL PIPES						
marking identification		Power in kW				
		Branch pipeline	Main pipeline			
V	/ <sub>GAS</sub> =2.5 m <sup>3</sup> /h	≤17	≤ 21			
V	/ <sub>GAS</sub> =4.0 m <sup>3</sup> /h	18 – 27	22 - 34			
V	/ <sub>GAS</sub> =6.0 m <sup>3</sup> /h	28 - 41	35 - 51			
V	/ <sub>GAS</sub> =10 m <sup>3</sup> /h	42 - 68	52 - 86			
V	/ <sub>GAS</sub> =16 m <sup>3</sup> /h	69 - 110	87 - 138			

PL	ASTIC P
marking identification	Brai pipe
V <sub>GAS</sub> =1.6 m <sup>3</sup> /h	≤
V <sub>GAS</sub> =2.5 m <sup>3</sup> /h	12 -
V <sub>GAS</sub> =4.0 m <sup>3</sup> /h	18 -
V <sub>GAS</sub> =6.0 m <sup>3</sup> /h	28 -
V <sub>GAS</sub> =10 m <sup>3</sup> /h	42 -
V <sub>GAS</sub> =16 m <sup>3</sup> /h	69 -



1 Further technical data available on request.

## **GST<sup>®</sup>** installation examples



1 The choice of GST<sup>®</sup> is the same regardless of whether it is upstream or downstream of the meter.







