



# Maintenance-free servicing and monitoring of safety relief valves

...without removal of the safety valve  
 ...with extended lifetime of the safety valve

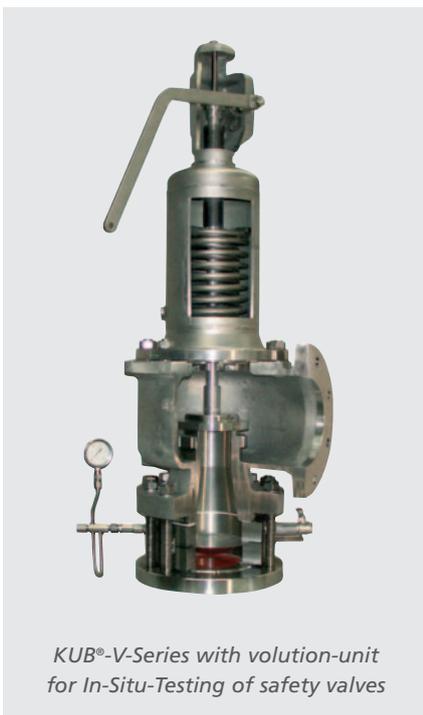
Processing plants are equipped with safety relief valves and/or bursting discs as protection against impermissible operation pressures. A safety relief valve with an upstream bursting disc has proved to be an excellent combination. These so-called Safety Integrated Systems (SIS) prevent hazardous substances from escaping or damage to the system from occurring in the event of a malfunction. Safety relief valves must be regularly dismant-

led for maintenance, although functional checks would be sufficient.

The wish of the plant operators - **extension of the maintenance intervals** - is in demand.

For the first time, this wish of the plant operators can be fully fulfilled with the unique BT-KUB®-V-Series bursting discs.

## Bursting disc in combination with safety relief valve



*KUB®-V-Series with volution-unit for In-Situ-Testing of safety valves*

Based on more than 35 years of experience in bursting discs the unique and innovative generation of bursting discs KUB®-V-Series has been developed. With this patented bursting disc it is possible to perform the Partial Stroke Test (PST) on safety relief valves (PSV) directly in running operation conditions, i.e. "in-situ" for the first time.

The concept is both ingenious and convincing: The KUB®-V-Series bursting disc is installed upstream of the safety relief valve. Apart from the absolute sealing tightness of the process line, the safety relief valve is now also protected against the effects of corrosion and contamination. The increased environmental requirements on the tightness of process systems that cannot be fulfilled by safety relief valves alone can now be met. The performance characteristics and the flow rate of the safety relief valve are not influenced by the upstream

KUB®-V-Series bursting disc.

The combination of KUB®-V-Series bursting disc and safety relief valve is also suitable:

- for protecting the safety relief valve against aggressive or polymerising media
- for protecting the safety relief valve at high temperatures

The user benefits:

- as the use of cost-intensive valve materials is not required
- as the highest (TA-Luft = Technical Instructions on Air Quality Control) tightness requirements, particularly for toxic or expensive media, can be guaranteed.

Only the combination of KUB®-V-Series bursting disc and safety relief valve meet these requirements.



Single layer discs...



...have limited lifetime.

## KUB®-V-Series

For the function test of the safety relief valves (Partial Stroke Test), only the space between the bursting disc and the safety relief valve is subjected to pressure until the safety relief valve responds. Thus the functionality of the safety relief valve is tested, documented and certified with minimum effort.

The function test takes place using the so-called volution kit, consisting of an accumulator and pressure sensor with response pressure recording function. As an extension, the results can be directly transferred to the process control unit via a wireless module.

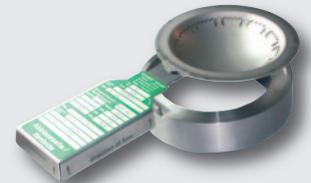
### Conclusion:

Complex disassembly processes, particularly of large and heavy safety relief valves, are no longer required. Running down the system is no longer necessary. The times of cost-intensive production shut down has finally come to an end. Maintenance intervals are extended. Maintenance costs are reduced.

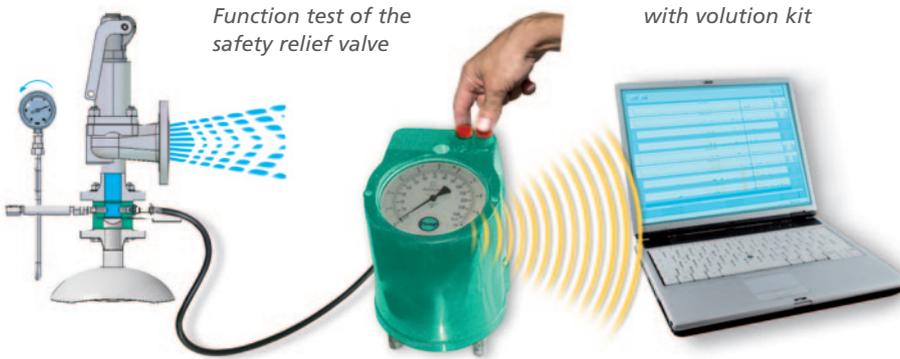
The bursting disc investment therefore pays off within a very short time.



KUB®-V-Series keeps safety valves performing like new

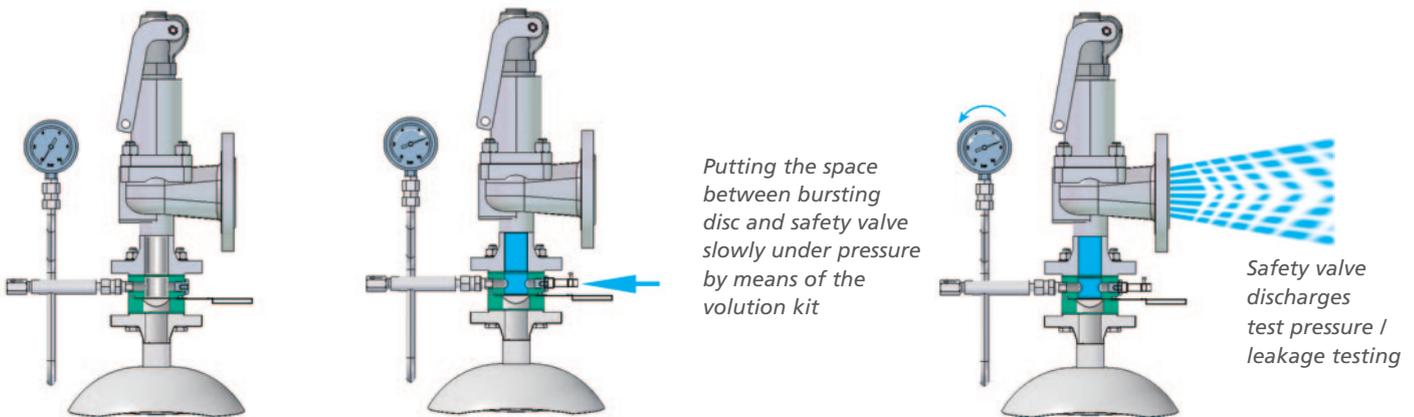


KUB®-V-Series with inlet part of the safety holder



Function test of the safety relief valve

with volution kit



Step 1: Normal operation, vessel under working pressure

Step 2: Test operation, chamber in between pressurized with test pressure

Step 3: Test operation, safety valve responds, function/leakage testing finalized

KUB® Pat. pend.	DN (mm)	25	40	50	65	80	100	150	200	250	300	350	400	450	500	600	700	800
	NPS (in)	1"	1,5"	2"	2,5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	32"
	Eff. Venting Area (cm²)	4.5	11	22	35	50	80	180	280	440	650	860	1100	1485	1855	2710	3680	4850
	Eff. Venting Area (in²)	0.7	1.70	3.29	4.72	7.33	12.4	27.9	43.4	68.2	100.7	133	171	230	288	420	570	752