

Saf-T-Graf™ Plus Graphite Rupture Disks

Models: MB Plus, MBV Plus, AMB Plus,
and AMBV Plus



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Introduction

The Saf-T-Graf™ Plus series of graphite rupture disks is comprised of models MB Plus, AMB Plus, MBV Plus, and AMBV Plus. All are manufactured from high quality graphite impregnated with advanced, environmental-friendly resin. Saf-T-Graf Plus disks may be applied in gas, liquid or two phase flow applications.

Saf-T-Graf Plus disk devices do not require a separate holder and are designed for simple installation between companion flanges. Depending upon the application, different models of Saf-T-Graf Plus monobloc disks are available. The Saf-T-Graf Plus series of rupture disks are described in the table below:

Performance Features

	MB Plus	AMB Plus	MBV Plus	AMBV Plus
Armored	-	Yes	-	Yes
Sizes available	0.5 – 14 inches (15 – 350mm)	0.5 – 14 inches (15 – 350mm)	0.5 – 14 inches (15 – 350mm)	0.5 – 14 inches (15 – 350mm)
Vacuum resistant	≥22 psi (≥1.52bar)	≥22 psi (≥1.52bar)	≥22 psi (≥1.52bar)	≥22 psi (≥1.52bar)
Standard temperature range	-100°F to +400°F (-73°C to +205°C)	-100°F to +400°F (-73°C to +205°C)	-100°F to +400°F (-73°C to +205°C)	-100°F to +400°F (-73°C to +205°C)
*Vacuum support option	-	-	Yes	Yes
High temperature option	Type MB Plus + HTA<800°F (427°C)	Type AMB Plus +HTA<800°F (427°C)	-	-

*Note: Required for disks rated below 22 psig (1.5 barg) where the disk may be exposed to a vacuum.

Armoring

Armor is recommended for all graphite disks for added safety, easier installation and avoidance of breakage during installation. Armor consists of a steel ring encircling the outside diameter of the graphite rupture disk. Designated as models AMB Plus or AMBV Plus.

Armor is standard on disks with burst pressures in excess of 150 psig or to fit ANSI Class 300 / 600 flanges. Carbon steel armor is standard with 300 series stainless steel as an option. BS&B recommends armor for all applications particularly when rated pressure is equal to or exceeds the values in the following chart:

Size		Burst pressure	
in	mm	psig	barg
0.5 – 3	15 – 80	>150	>10.3
4	100	>100	>6.9
6-10	150 – 250	>75	>5.2
12-14	300 – 350	>50	>3.5

Gaskets

Gaskets are available upon request. Standard gasket material for all Saf-T-Graf Plus disks is Klinger-Sil® C-4401. Optional materials include PTFE, Neoprene, Garlock® 3000, Grafoil® and Gylon® 3510. Please designate type A, B or C at time of order to obtain the desired gasket option.

Type A	Disk arrives with Gaskets attached on the inlet and outlet side of the disk.
Type B	The inlet and outlet Gaskets are included in the box for customer to affix to the disk.
Type C	No gaskets provided. Customer supplies gasket.

Klinger®-Sil is a registered trademark of Thermoseal Inc.

Garlock® and Gylon® are registered trademarks of Garlock Sealing Technologies.

GRAFOIL® is a registered trademark of Neograf Solutions, LLC

Temperature

Saf-T-Graf Plus graphite disks are available for coincident temperatures from -290° to 800°F (-179° to 427°C). Above 400°F (205°C) a high temperature assembly (HTA) is required. The HTA acts as a thermal barrier, reducing the temperature by up to 200°F (93°C). HTA's are armored. Up to two HTA's may be deployed in series, upstream.

Note: HTA's shall not be used with graphite disks having a vacuum support. The vacuum support will block the release of the HTA insulation material, restricting flow. Do not use with models MBV Plus or AMBV Plus.

Burst Alert Sensor

GAS™ (graphite alert sensor), and AGAS™ (armored graphite alert sensor) are available to provide warning of an activated graphite rupture disk when used with an appropriate monitoring system.

Burst Tolerance

Marked burst pressure	Burst tolerance
< 1 psig (0.07 barg)	-0/+0.75 psig (-0/+0.05 barg)
1-15 psig (0.07-1.03 barg)	+/-0.75 psig (+/-0.05 barg)
> 15 psig (1.03 barg)	+/-5%

Operating Ratio

Service life is maximized for operating ratios up to 80% of the disk minimum burst pressure in a static environment. Operating ratio can vary depending upon operating conditions. BS&B can provide custom testing to specific operating conditions as an engineering support service.

Consult factory for more details.

Model MB Plus, MBV Plus, AMB Plus, AMBV Plus

The Saf-T-Graf Plus family of graphite rupture disks satisfy most applications that require low pressure, full opening, broad corrosion resistance where disk fragmentation is acceptable.

Traditional monobloc graphite rupture disks require special attention to gasket dimensions as the gasket inside diameter contributes to burst pressure accuracy. The BS&B Saf-T-Graf products (catalog #77-8500) are always supplied with gaskets for this reason. All Saf-T-Graf Plus graphite rupture disk models have a recess on both sides of the device that contributes to burst pressure control and removes the sensitivity to gasket inside diameter. This allows the 'Type C' gasket option to be offered (No gaskets provided. Customer provides gasket.) Though the user is cautioned to select gaskets whose installation bolt torque requirements are consistent with the values reflected in the Saf-T-Graf Plus installation instructions for Type A and Type B (consult BS&B whenever higher levels of bolt torque might be under consideration).

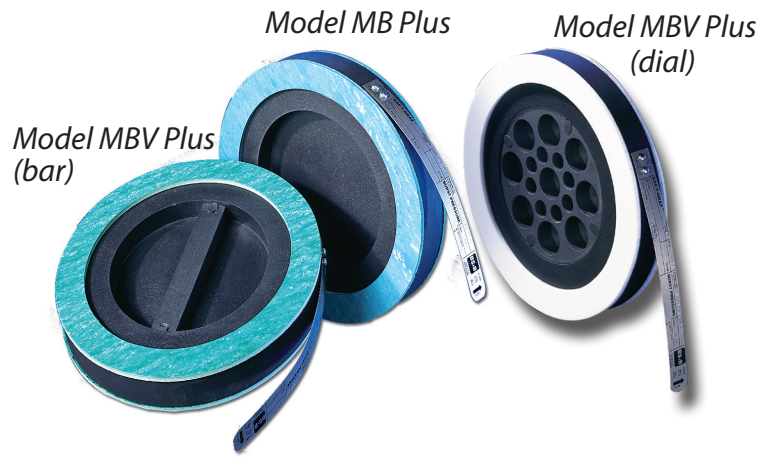
For models MB Plus and AMB Plus the dual recess characteristic provides the user with a 'fail safe' configuration with the same burst pressure in both directions. All Saf-T-Graf Plus series rupture disks are marked with a single direction of flow, which is to be followed during installation. Models MBV Plus and AMBV Plus include a non-opening vacuum support and therefore the burst pressure is achieved in the marked flow direction only.

Specifications

Nominal size		Burst ratings				Disk thickness		ANSI flange rating	DIN
		psig		barg					
in	mm	Min	Max	Min	Max	in	mm		
0.5	15	25	150	1.7	10.3	0.6	16	150	10/16
0.8	20	25	150	1.7	10.3	0.6	16	150	10/16
1	25	10	150	0.7	10.3	0.9	22	150	10/16
1.5	40	7	150	0.5	10.3	0.9	22	150	10/16
2	50	2	150	0.1	10.3	0.9	22	150	10/16
3	80	1	150	0.1	10.3	0.9	22	150	10/16
4	100	1	150	0.1	10.3	0.9	22	150	10/16
6	150	1	150	0.1	10.3	0.9	22	150	10/16
8	200	0.5	150	0.04	10.3	1.1	29	150	10/16
10	250	0.25	125	0.02	8.6	1.5	38	150	10/16
12	300	0.25	125	0.02	8.6	2.0	51	150	10/16
14	350	0.25	100	0.02	6.9	2.3	57	150	10/16

Companion Flange Rating

Saf-T-Graf Plus monobloc rupture disks are supplied for installation between companion flanges of all international standards including ANSI / ASME, EU / DIN / AFNOR and JIS. The flange standard and its pressure rating must be identified at the time of order.



Vacuum Support

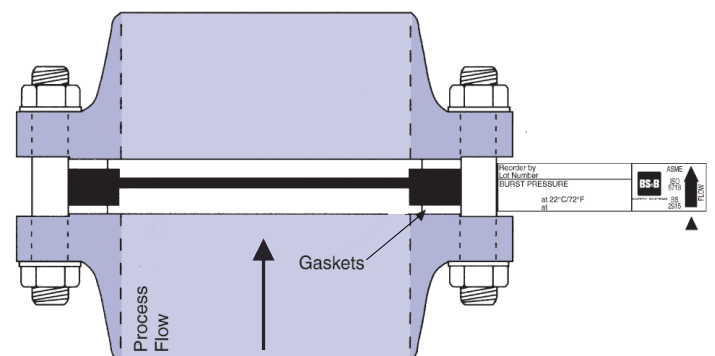
Monobloc graphite disks require vacuum supports under the following application conditions:

- Burst pressure is below 22 psig (1.52 barg) and full vacuum may be present (-14.5 psi / -1 barg).
- Vacuum exceeds 30% of burst pressure. For example, if a 10 psig (0.7 barg) burst pressure disk will experience a -3 psig (-0.2 barg) partial vacuum.
- Cycling between vacuum conditions and positive pressure may occur and burst pressure is below 22 psig (1.52 barg).
- Model MBV Plus or AMBV Plus vacuum supports are not required on 0.5 and 0.75 inch (15 and 20mm) disks.

The monobloc type MBV Plus and AMBV Plus may include either a 'bar' or 'dial' type vacuum support. Both types are non-opening when the rupture disk activates. The 'bar' type support is supplied for disks having burst pressure between 10 and 22 psi (0.69 and 1.52 barg). The 'dial' type support is supplied for disks having burst pressures below 10 psi (0.69 barg). The adjustment in free flow area varies by support type and MBV Plus and AMBV Plus disk nominal size; see below table.

Size	0.5	0.75	1	1.5	2	3	4	6	8-14
Dial type	-	-	-	.56	.57	.60	.62	.58	.60
Bar type	-	-	.70	.80	.80	.80	.80	.80	.80

Dial type 1/4-9 psig (0.02-0.6 barg); Bar type: 10-22 psig (0.7-1.5 barg)





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