

JIS

JAPANESE INDUSTRIAL STANDARD

**Bursting Discs and Bursting
Disc Assemblies**

JIS B 8226—1986

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Bursting Discs and Bursting
Disc Assemblies

B 8226-1986

1. Scope

This Japanese Industrial Standard specifies the safety devices which are equipped for preventing tightly closed apparatus, such as pressure vessels, piping systems, ducts and the like from damage due to excessive pressures or negative pressures and are composed of accessories such as bursting discs, holders, vacuum supports and the like. The bursting discs and bursting assemblies given in the following are exempted from the application of this standard:

- (1) Those of which set bursting pressure of bursting disc exceeds 30 MPa { 300 kgf/cm² }.
- (2) Those which are intended to cope with abrupt pressure rise due to detonation.
- (3) Those which are specified in JIS B 8246.

Remark: The units and numerical values given in { } in this standard are in accordance with the conventional units and are the standard values.

2. Definitions

For the purpose of this standard, the following definitions apply:

- (1) pressure A magnitude of force acting on a surface divided by the surface area; unless otherwise specified, it is expressed in gauge pressure unless specified especially.
- (2) bursting disc A metallic plate or a graphite product (monoblock shape) which bursts under a set burst pressure at a set temperature.
- (3) holder A holding tool, to be used for fixing the periphery of bursting disc, which maintain the airtightness, to make the bursting disc to function correctly.

Applicable Standards, Corresponding International Standard and Reference Standard: See page 23.

- (4) vacuum support An accessory which is to be attached to the upper stream side of the dome type bursting disc by lapping its concave portion, as required, for the purposes of preventing the disc from deformation and buckling when a dome type bursting disc is used under a vacuum or backpressure condition.
- (5) set bursting pressure A pressure at which the bursting disc is guaranteed to burst at the set temperature.
- (6) test bursting pressure An actual bursting pressure measured at the bursting test which is carried out for ascertaining the set bursting pressure.
- (7) set temperature A temperature at which the bursting disc is guaranteed to burst in relation with the set bursting pressure.
- (8) tolerance on set bursting pressure Largest varied value at the bursting time of the set bursting pressure, which is indicated with a positive or negative real number, or with a percentage.
- (9) manufacturing range Tolerance range of the results of the bursting test at the manufacturing time. Previous consent of orderer is necessary for the manufacturer.
- (10) discharge area Minimum opening area of the bursting disc type safety device to be used for calculating the discharge capacity.
- (11) discharge capacity Amount of the fluid released from the bursting disc type safety device.
- (12) back pressure Pressure given to the down stream side of the bursting disc during operation.
- (13) using period Period from the attachment of a bursting disc to the replacement.

3. Construction and Classification of Component Parts

3.1 Construction in General The bursting disc type safety device shall be composed of bursting disc, holder and accessories such as vacuum support and the like which are attached, as required.

3.2 Bursting Disc

3.2.1 Classification The classification of bursting discs shall be as follows:

- (1) Domed Type Bursting Disc This type receives pressure at the concave portion and bursts by tension and is divided into the following types:
 - (a) Metallic Single Sheet Type The type produced from one sheet of metallic thin plate (see Fig. 1 and Fig. 2).
 - (b) Compound Type The type made of not less than two sheets materials such as metal and metal or plastic film and the like (see Fig. 3).

Fig. 1. Domed Type Bursting Disc (Metallic Single Sheet Type), Conical Seat

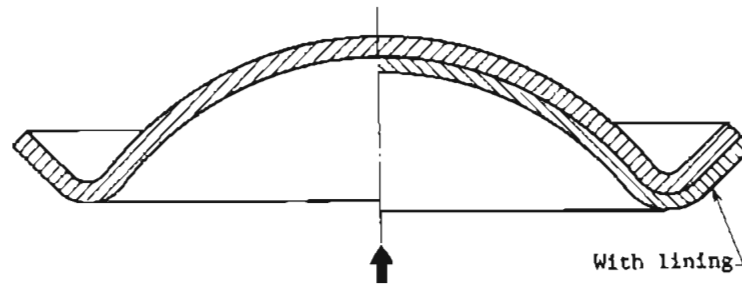


Fig. 2. Domed Type Bursting Disc (Metallic Single Sheet Type), Flat Seat

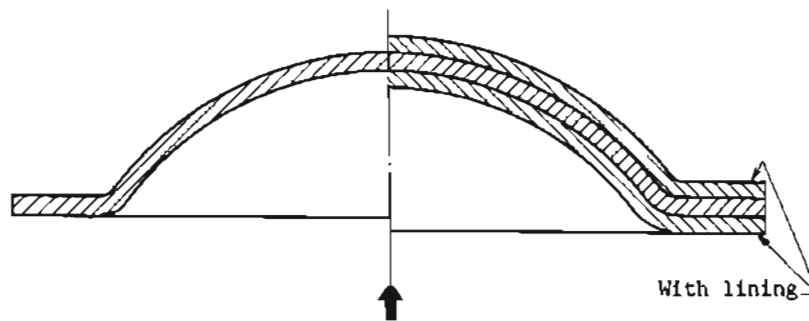
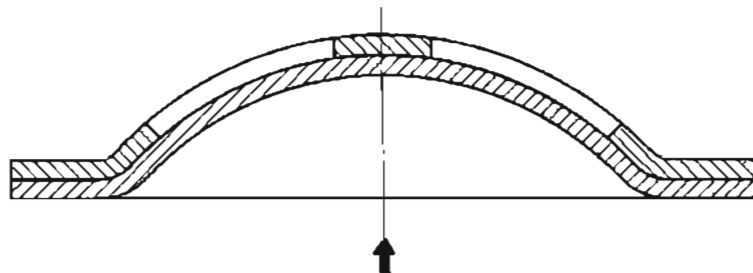


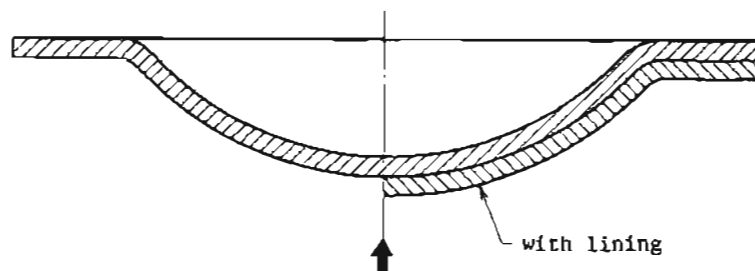
Fig. 3. Domed Type Bursting Disc (Compound Type), Flat Seat



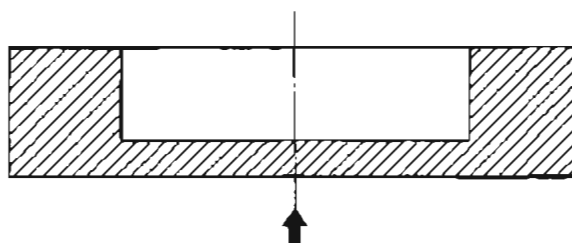
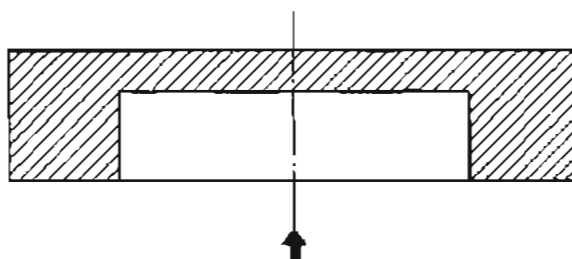
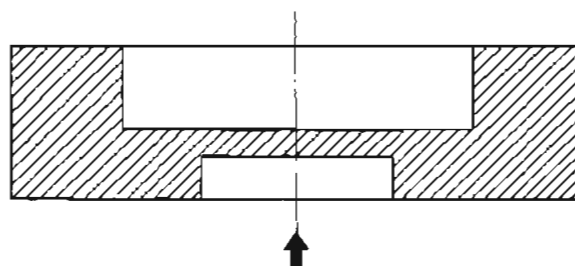
(2) Reverse Domed Type Bursting Disc This type receives pressure at the convex portion and bursts by buckling and is divided into the following types (see Fig. 4):

- (a) Reverse Type Fitted with Knife The type cut and released by a knife blade at the time of buckling reverse.
- (b) Reverse Type Fitted with Kerf One of which the kerf, given on the surface, develops at the time of the reverse and is released.

Fig. 4. Reverse Type Bursting Disc

(3) Monoblock Type Bursting Disc

- (a) Bursting disc of which the downstream side has been worked into a concave portion (see Fig. 5).
- (b) Bursting disc of which the upstream side has been worked into a concave portion (see Fig. 6).
- (c) Bursting disc of which both sides have been worked into a concave portion respectively (see Fig. 7).

Fig. 5. Monoblock Type Bursting Disc,
Recessed on the Outlet SideFig. 6. Monoblock Type Bursting Disc,
Recessed on the Inlet SideFig. 7. Monoblock Type Bursting Disc,
Recessed Both Sides

3.2.2 Construction The construction of the bursting disc shall be such that it will not deteriorate due to variation of temperature and pressure, corrosion, etc.

3.3 Holder

3.3.1 Classification The classification of holders shall be as follows:

- (1) The shape of connection and the supporting system of the holder shall be as given in Table 1.

Table 1. Shape of Connection and Supporting System of Holder

Shape of connection	Supporting system	Remark
Flange	Capsule type	A holder of which outside diameter is smaller than the circle inscribing bolt hole (see Fig. 8).
	Full face type	A holder of which outside diameter is the same as that of the flange, and which has the bolt hole common to that of the flange (see Fig. 9).
	Monolithic type	A holder which serves as companion flange at the same time (see Fig. 10).
Screw thread	Union type	A holder in which the bursting disc is fastened by a box nut, and the connection of upper and lower flows is made by the screw threads (see Fig. 11).
	Plug type	A holder in which the bursting disc is fastened by a single thread, and the connection of upper and lower flows is made by the screw threads (see Fig. 12).

Fig. 8. Capsule Type Holder

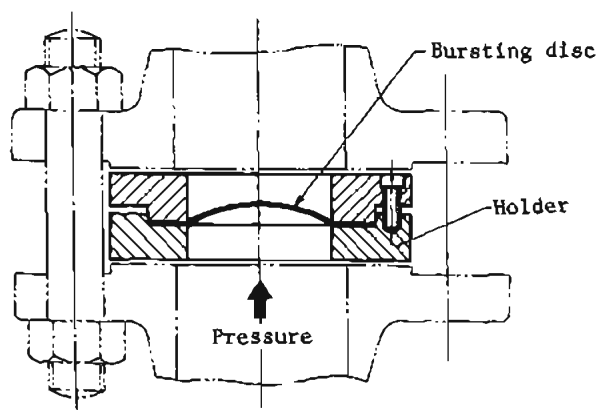


Fig. 9. Full Face Type Holder

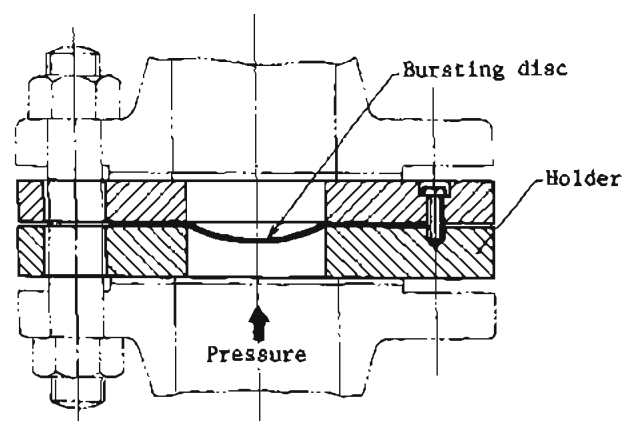


Fig. 10. Monolithic Type

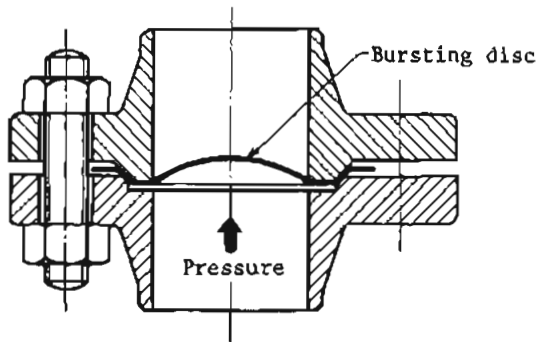


Fig. 11. Union Type Holder

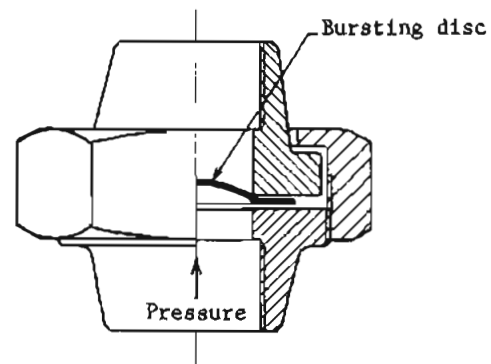
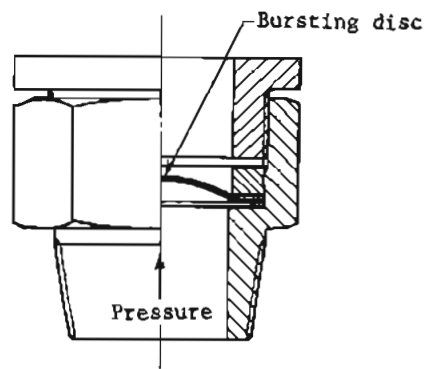


Fig. 12. Plug Type Holder



- (2) The classification by the shape of holder seat shall be as shown in Table 2.

Table 2. Classification of Holder Seats

Shape	Remark
Flat type	The type in which seat portion of the bursting disc has flat surface (see Fig. 8 and Fig. 9).
Conical type	The type in which seat portion of the bursting disc has a part of cone (see Fig. 10).

3.3.2 Construction The construction of holder shall be as given in the following:

- (1) The connection of holder shall be in accordance with the applied flange standard, screw thread standard or connection pipe standard.
- (2) The holder shall be so constructed as to be easily fastened uniformly and to facilitate its bursting disc to be easily replaced.