



MARSTON BURSTING (RUPTURE) DISCS OPERATING AND SAFETY INSTRUCTIONS (PED)

Before installing any bursting disc these instructions must be read fully and understood

WARNING

For safety reasons, it is important that the following advice is noted:

1. The correct personal protective equipment must be used when handling bursting discs.
2. The use of the correct tools and equipment must be observed.
3. Bursting discs will continue to discharge until the pressure has equalized.
4. The discharge may include parts of the bursting disc.
5. The discharged product must be vented to a safe place.
6. Extreme noise levels may occur.
7. The blast may be severe and reaction forces will be imposed.
8. Incorrect fitting can induce over-pressure in the system.
9. The service life of a bursting disc cannot be guaranteed.
10. Various disc types are not suitable for hydraulic applications.
11. Bursting disc devices may be heavy.
12. Bursting discs may be fragile.

INTRODUCTION

Rupture discs provide the weak link in a pressurized system and as such, can be delicate and sometimes fragile. Therefore it is important that, as with any safety equipment, great care and attention is given when storing, handling and using them. During operation, rupture discs have no moving parts and therefore are considered generally a maintenance free item. During service the disc can be subjected to varying conditions which can cause the disc to deteriorate. The rate of deterioration depends on many aspects of the service conditions; pressure, temperature and corrosion are the three main causes. These effects may in time weaken a rupture disc, possibly causing it to fail at a lower pressure than that at which it is rated. Each application is different and the rates of deterioration vary accordingly, from rapid, where an incorrect disc is fitted, to virtually none. Only service experience will determine a disc's resistance to the conditions and from this an optimum service life and changeover time can be established. Often it is preferred to replace discs annually to minimize any risks of premature failures although

there are instances where discs have remained untouched in service for fifteen years or more.

STORAGE

Due to their potentially fragile nature, it is recommended that rupture discs be stored off ground level and in a position where no other equipment can be stacked on top of them. Generally, rupture discs do not require any special preservation procedures. Providing that the discs and holders are kept dry and protected from light whilst in storage, they should have an unlimited shelf life. Discs must be removed from packing with care so as to prevent any damage to the dome, which could result in premature failure. It is recommended that discs remain in their original packing until they are required for service.

HANDLING

Often, rupture discs are manufactured from thin foils and, as such, may have some sharp edges. Although every effort is made to eliminate sharp edges, care must be taken to prevent injury.

SPARE RUPTURE DISCS

Spare rupture discs are supplied complete with gaskets and seals. Old gaskets and seals should not be re-used. Where the rupture disc has an integral vacuum support or burst indicator, this will also be supplied, fixed to the rupture disc.

IDENTIFICATION

All bursting discs are supplied with an identification label. This label identifies the unique equipment number for the disc and related holder, a tag number where relevant, the bore size and rated pressure and temperature details. These must be checked against the application requirements before installation to ensure a safe and satisfactory installation. Read all warning labels before carrying out any operation.

INFORMATION

For further information on bursting discs, visit our web site at:
Emerson.com/FinalControl

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ESSENTIAL CUSTOMER INFORMATION

- UG** User Information - General information not specific to a particular disc design.
- MG** Maintenance instructions - General information, not specific to a particular disc design.
- M** Maintenance and installation instructions for a specific design of bursting disc assembly.

UG - MG - M - Important notes

- UG** The following notes are important to the safe handling and use of bursting discs/bursting disc safety devices. Therefore, they must be understood fully by the user and any personnel who use them or work in the vicinity of them before handling, installing or using them.
- MG** Bursting discs are non-reclosing pressure relief devices and therefore will continue to discharge product from the system until the pressure each side of the disc has equalized.

UG GENERAL NOTES FOR USERS OF BURSTING DISCS OR BURSTING DISC SAFETY DEVICES

Important notes

1. The following notes are important to the safe handling and use of the bursting discs / bursting disc safety services. Therefore they must be understood fully by the user and any personnel who use them or work in the vicinity of them before handling installing or using them in service.
2. Bursting discs are non re-closing pressure relief devices and therefore will continue to discharge system contents until pressure each side of the disc has equalized.
3. The discharge may include parts of the bursting disc itself as well as any harmful contents of the system. Extreme noise levels may occur when the disc bursts and during discharge of contents where the discharge flow may reach sonic velocity. The blast from the disc bursting may be severe. At the initial disc burst and during the subsequent discharge of the system, reaction forces will be imposed on the associated equipment and mounting structures.
4. The bursting pressure of a bursting disc is related directly to its temperature at burst. Generally, increases in temperature will give lower relative bursting pressures while lower temperatures will give higher bursting pressures. The use of the bursting disc/ bursting disc safety device at other than its specified coincident temperature may result in premature disc failure or over-pressurization of the system.

5. Incorrect fitting of the bursting disc/bursting disc safety device e.g. vent side to process or incorrect fitting of temperature shields etc. can result in over-pressurization of the system. The use or introduction of gaskets other than those supplied integral with the bursting disc device or designated for site joints can lead to uncontrolled leakage etc.
6. The service life and bursting pressure of a bursting disc is affected by various conditions such as corrosion, fatigue, creep or physical damage during handling or operation. Any of these may cause failure and, as such, the bursting disc life cannot be guaranteed.
7. A build up of solids or sublimates on the bursting disc may increase the bursting pressure of the disc and should be avoided. Consider smooth surfaces, no niches, steam heating etc.
8. The bursting disc is activated by differential pressure. Any build up of liquid, solids or pressure on the vent side therefore will require a higher actual pressure to activate the disc. The effect of vacuum must also be considered.
9. When draining, cleaning or cooling an enclosed volume a vacuum condition may be induced unless venting is provided. Deformation of the bursting disc, e.g. inversion due to reverse pressure/vacuum or careless handling, can result in wrinkling and pin holing. When a bursting disc is fitted below an enclosed volume, e.g. upstream of a valve or another disc, the interspace must be provided with adequate means of monitoring or venting as stated in BS2915, ISO6718, EN ISO4126 etc.
10. Various disc types are not suitable for hydraulic applications. Incorrect use may result in over-pressure situations.
11. Bursting discs/bursting disc safety devices may be heavy and require suitable lifting devices.
12. Bursting discs may be fragile and/or made from thin materials. Damaged discs must not be used and care must be taken when handling thin materials to avoid injury to personnel.
13. Certain disc types are subject to limitations on bolting torque during assembly or on-site installation. Incorrect torque loading may result in excessive pressure or premature failure depending on the disc type. Misalignment or damage of site faces may result in leakage and, ultimately, damage to the bursting disc/bursting disc device.
14. It is not recommended to re-use discs.
15. The use of asbestos materials e.g. gaskets, must be avoided where possible. Where no other solution exists then all the relevant safety precautions must be observed.

16. Modification to, or refurbishment of, discs or holders is not allowed except by Emerson.
17. Any attempt to machine plastic materials may result in dangerous fumes.

It is the user's responsibility:

18. To observe and comply with all national, local, HSE, COSHH etc. regulations when assembling, installing, dismantling and disposing of the equipment and in the provision of safe and adequate operating and venting conditions.
19. To provide adequate training for personnel using, installing or working with these devices, or who may be working in the vicinity of them, and to ensure safe working practices. When fitting or removing bursting discs/bursting disc safety devices the system must be made safe before starting.
20. To ensure that the disc is adequate for the duty envisaged and that all relevant conditions of temperatures, pressures, working environment etc, are taken into account. It is the user's responsibility to specify the burst pressure, coincident temperature, suitable materials of construction, size and type of disc and to be aware of and advise of any changes during plant operation that may affect the bursting disc. Where reverse pressure supports are fitted, their effect on the available flow area must be considered.
21. To assess the life of the bursting disc/ bursting disc safety device by monitoring its performance under service conditions.
22. To ensure that the associated equipment/ structure can sustain the reaction forces when the bursting disc ruptures.
23. To ensure that the venting system is designed, located and installed so that people or property will not be exposed to harmful effects of system discharge and that all discharges are directed to a safe place.
24. To ensure that any emissions do not contravene applicable regulations.

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25. To ensure that all people in the affected vicinity are protected at all times against violent noise and any associated blast when the bursting disc ruptures.
26. To be prepared to handle any failure of the disc, whether premature or otherwise.
27. All persons involved with the use and fitting of bursting discs/bursting disc safety devices should refer to the applicable national/international standards in force relating to their use and application.
28. The customer/user/installation personnel are responsible for the correct installation of the bursting disc/bursting disc safety device in accordance with the instructions provided. Care should be taken that the bursting disc is fitted to its correct holder and that the bursting disc/bursting disc safety device is installed correctly in the location for which it was designed. Where extra safety precautions are required (e.g. flange bolts, spigots or mating features on components to give physical location/orientation) these must be stipulated by the customer.

The user/installer MUST check:

29. That the particular installation instructions are available and understood.
30. That the system to which the bursting disc/bursting disc device is to be installed is safe.
31. That the bursting disc/bursting disc safety device is identified correctly for its purpose.
32. That all components are in good condition and free from damage as per instructions.
DAMAGED DISCS MUST NOT BE FITTED.
33. That the bursting disc and any associated component such as gaskets, vacuum support, temperature shield, burst indicator etc, are positioned correctly and fitted in accordance with manufacturer's instructions.
34. That the flow direction indicated on the disc tag/disc is in agreement with the flow direction shown on the holder.
35. That lifting facilities are fitted at positions provided.
36. That, on installation, the flow-direction of the bursting disc/bursting disc safety device is in agreement with the flow direction of the venting system.
37. That, where torque limitations are specified for installation, the bolting torque is applied in accordance with instructions.
38. That site mating flanges are aligned correctly and that their sealing faces are undamaged and in good condition.

MG. MAINTENANCE: GENERAL INSTRUCTIONS

Important notes

1. Bursting discs are non re-closing pressure relief devices and therefore will continue to discharge system contents until the pressure each side of the disc has equalized. The discharge may include parts of the bursting disc itself as well as any harmful contents of the system. Extreme noise levels may occur when the disc bursts and during discharge of contents where discharge flow may reach sonic velocity. The blast from the disc bursting may be severe. At the initial disc burst and during the subsequent discharge of the system, reaction forces will be imposed on the associated equipment and mounting structures.
2. The service life and the bursting pressure of a bursting disc are affected by various conditions such as corrosion, fatigue, creep or physical damage during handling or operation. Any of these may cause failure and, as such, the bursting disc life cannot be guaranteed.
3. Bursting discs/bursting disc safety devices may be heavy and require suitable lifting devices.
4. Bursting discs may be fragile and/or made from thin materials. Damaged discs must not be used and care must be taken when handling thin materials to avoid injury to personnel.
5. The bursting pressure of a bursting disc is related directly to its temperature at burst. Generally, increases in temperature will give lower relative burst pressures while lower temperatures will give higher burst pressures. The use of the bursting disc/bursting disc safety device at other than its specified coincident temperature may result in premature disc failure or over-pressurization of the system.
6. It is not recommended to re-use discs.
7. The use of asbestos materials, e.g. gaskets, must be avoided where possible. Where no other solution exists, then all relevant safety precautions must be observed.
8. Modifications to, or refurbishment of, discs or holders is not allowed except by Emerson.
9. Any attempt to machine plastic materials may result in dangerous fumes.

It is the user's responsibility:

10. To ensure that the associated equipment/structure can sustain the reaction forces when the bursting disc ruptures.
11. To ensure that the venting system is designed, located and installed so that people or property will not be exposed to harmful effects of system discharge and that all discharges are directed to a safe place.
12. To ensure that all people in the affected vicinity are protected at all times against violent noise and any associated blast when the disc ruptures.
13. To assess the life of the bursting disc/bursting disc safety device by monitoring its performance under service conditions.
14. To observe and comply with all national, local, HSE, COSHH etc. regulations when assembling, installing, dismantling and disposing of the equipment and in the provision of safe and adequate operating and venting conditions.
15. To provide adequate information and training for personnel using, installing or working with these devices, or who may be working in the vicinity of them, and to ensure safe working practices. When fitting or removing bursting discs/bursting disc safety devices the system must be made safe before starting.
16. To ensure that the disc is adequate for the duty envisaged and that all relevant conditions of temperatures, pressures, working environment etc, are taken into account. It is the user's responsibility to specify the burst pressure, coincident temperature, suitable materials of construction, size and type of disc and to be aware of and advise of any changes during plant operation that may affect the bursting disc. Where reverse pressure supports are fitted, their effect on the available flow area must be considered.
17. To ensure that any emissions during venting do not contravene applicable regulations.

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The user/installer MUST check:

18. That the bursting discs and any associated component such as gaskets, vacuum supports, temperature shields, burst indicators, etc, are positioned correctly and fitted in accordance with manufacturer's instructions. Refer to the 'Assembly diagram and Instructions'. That the flow direction indicated on the disc tag/disc is in agreement with the flow direction shown on the holder. Refer to the 'Assembly diagram and Instructions'.
19. That all components are in good condition and free from damage as per the instructions.

DAMAGED DISCS MUST NOT BE FITTED.

20. That lifting facilities are fitted at positions provided.
21. That the bursting disc/bursting disc safety device is identified correctly for its purpose.
22. That the system to which the bursting disc/bursting disc device is to be installed is safe for working.

M. MAINTENANCE INSTRUCTIONS PARTICULAR TO DISC TYPE

Important notes

1. The bursting pressure of a bursting disc is related directly to its temperature at burst. Generally, increases in temperature will give lower relative burst pressures while lower temperatures will give higher burst pressures. The use of the bursting disc/bursting disc safety device at other than its specified coincident temperature may result in premature disc failure or over-pressurization of the system.
2. Incorrect fitting of the burst disc/bursting disc safety devices e.g. vent side to process or incorrect fitting of temperature shields etc, can result in over-pressurization of the system.
3. Certain disc types are subject to limitations on bolting torque at assembly or on-site installation. Incorrect torque loading may result in excessive pressure or premature failure depending on the disc type.

4. The service life and bursting pressure of a bursting disc are affected by various conditions such as corrosion, fatigue, creep or physical damage during handling or operation. This may cause failure and, as such, the bursting disc life cannot be guaranteed.
5. The use or introduction of gaskets other than those supplied integral with the bursting disc device or designated for site joints can lead to uncontrolled leakage, etc.
6. Misalignment or damage of site faces may result in leakage and, ultimately, damage to the bursting disc/bursting disc device.

It is the user's responsibility:

7. The customer/user/installation personnel are responsible for the correct installation of the bursting disc/bursting disc safety device in accordance with the instructions provided. Care should be taken that the bursting disc is fitted to its correct holder and that the bursting disc/bursting disc safety device is installed correctly in the location for which it was designed.
8. Where extra safety precautions are required (e.g. flange bolts, spigots or mating features on components to give physical location/orientation) these must be stipulated by the customer.
9. To assess the life of the bursting disc/bursting disc safety device by monitoring its use under service conditions.
10. To observe and comply with all national, local, HSE, COSHH etc regulations when assembling, installing, dismantling and disposing of the equipment and in the provision of safe and adequate operating and venting conditions.

The user/installer MUST check:

11. That the bursting disc/bursting disc safety device is identified correctly for its purpose. That the bursting disc and any associated component such as gaskets, vacuum supports, temperature shields, burst indicators, etc. are positioned correctly and fitted in accordance with manufacturer's instructions. Refer to the 'Assembly diagram and Instructions'. That the flow direction indicated on the disc tag/disc is in agreement with the flow direction shown on the holder. Refer to the 'Assembly diagram and Instructions'.
12. That, on installation, the flow-direction of the bursting disc/bursting disc safety device is in agreement with the flow direction on the venting system.
13. That, where torque limitations are specified for installation, the bolting torque is applied in accordance with those instructions.
14. That site mating flanges are aligned correctly and that their sealing faces are undamaged and in good condition.

In all cases, Emerson's liabilities are limited to those stated in their conditions of sale.

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