Continental Disc® Corporation

Installation and Maintenance of the Composite Type (QL) Rupture Disc and the Low Pressure QUICK-CHANGE® Housing and Cartridge Assembly

WARNING

USER SHOULD READ AND THOROUGHLY UNDERSTAND THESE INSTRUCTIONS BEFORE INSTALLING RUPTURE DISC. THESE INSTRUCTIONS DO NOT PURPORT TO ADDRESS ALL OF THE SAFETY FACTORS ASSOCIATED WITH THE RUPTURE DISC'S USE IN SERVICE. IT IS THE RESPONSIBILITY OF THE USER TO ESTABLISH APPROPRIATE SAFETY, HEALTH, AND TRAINING MEASURES FOR THEIR PERSONNEL INSTALLING, SERVICING, OR WORKING IN AN AREA WHERE RUPTURE DISC ASSEMBLIES ARE IN USE. SERVICE AND/OR MAINTENANCE ON OR AROUND THE RUPTURE DISC DEVICE MUST NOT BE PERFORMED WHILE THE DEVICE IS SUBJECTED TO OPERATING PRESSURES AND/OR TEMPERATURES.

NOTE: THE CONTINENTAL DISC QUICK-CHANGE RUPTURE DISC ASSEMBLY UTILIZES A HOUSING FOR BOLTING INTO THE RELIEF PIPING AND A RUPTURE DISC CARTRIDGE FOR EASY CHANGEOUT OF RUPTURE DISCS. THE HOUSING IS A PRE-ASSEMBLED UNIT WITH PRE-INSTALLED SEAL RINGS.

IT IS THE USER'S SOLE RESPONSIBILITY FOR DESIGN AND PLACEMENT OF RUPTURE DISCS WITHIN THEIR FACILITY AND UPON THE EQUIPMENT UPON WHICH THE RUPTURE DISC OF USER'S SELECTION IS TO BE LOCATED. IT IS USER'S SOLE RESPONSIBILITY FOR THE DESIGN OF ADEQUATE VENTING AND INSTALLATION OF ADEQUATE VENT PIPING OR DIRECTIONAL FLOW AFTER RUPTURE OCCURS WITH THE RUPTURE DISC AS INTENDED. WHEN SIZE IS SPECIFIED, CONTINENTAL DISC CORPORATION ASSUMES THAT ADEQUATE PROVISIONS HAVE BEEN MADE BY PURCHASER FOR PROPER VENTING OF A SYSTEM TO RELIEVE THE SPECIFIC PRESSURE. LOCATE RUPTURE DISC WHERE PEOPLE OR PROPERTY WILL NOT BE EXPOSED TO THE SYSTEM DISCHARGE IN CASE OF RUPTURE. VENT TOXIC OR FLAMMABLE FUMES OR LIQUIDS TO A SAFE LOCATION TO PREVENT PERSONAL INJURY OR PROPERTY DAMAGE.

IT IS THE USER'S SOLE RESPONSIBILITY TO SPECIFY THE BURST PRESSURE RATING OF A RUPTURE DISC AT A COINCIDENT TEMPERATURE AT WHICH THE RUPTURE DISC IS TO BE USED. A RUPTURE DISC IS A TEMPERATURE SENSITIVE DEVICE. THE BURST PRESSURE OF THE RUPTURE DISC IS DIRECTLY AFFECTED BY ITS EXPOSURE TO THE COINCIDENT TEMPERATURE. GENERALLY, AS THE TEMPERATURE AT THE RUPTURE DISC INCREASES, THE BURST PRESSURE DECREASES; INVERSELY, AS THE TEMPERATURE AT THE RUPTURE DISC DECREASES, THE BURST PRESSURE MAY INCREASE. FAILURE TO PROPERLY UTILIZE A RUPTURE DISC AT THE SPECIFIED COINCIDENT TEMPERATURE COULD CAUSE PREMATURE FAILURE OR OVERPRESSURIZATION OF A SYSTEM.

THE INSTANTANEOUS RELEASE OF PRESSURE FROM THE RUPTURE DISC CAN CREATE VIOLENT NOISES DUE TO THE DISCHARGE AT SONIC VELOCITY. IT IS THE USER'S SOLE RESPONSIBILITY TO PROTECT AGAINST HEARING DAMAGE TO ANY BYSTANDERS.

RUPTURE DISCS AND TAGS ARE MADE OF METAL FOILS OF VARYING THICKNESS. THE METAL EDGES MAY BE SHARP. PERSONNEL INSTALLING OR EXAMINING THE RUPTURE DISCS SHOULD PROTECT AGAINST CUTS OR INJURY WHEN HANDLING THE RUPTURE DISC. DO NOT LIFT A RUPTURE DISC BY ITS ATTACHED TAG.

PARTICLES MAY BE DISCHARGED WHEN THE RUPTURE DISC RUPTURES. THESE PARTICLES MAY BE PART OF THE RUPTURE DISC ITSELF, OR OTHER ENVIRONMENTAL MATTER IN THE SYSTEM. IT IS THE USER'S SOLE RESPONSIBILITY TO ASSURE THAT THESE PARTICLES ARE DIRECTED TO A SAFE AREA TO PREVENT PERSONAL INJURY OR PROPERTY DAMAGE.

THERE IS NO GUARANTEE OF RUPTURE DISC LIFE. SUCH LIFE SPAN IS AFFECTED BY CORROSION, CREEP AND FATIGUE, AND PHYSICAL DAMAGE. THESE CONDITIONS WILL DERATE THE RUPTURE DISC TO A LOWER SET PRESSURE. THE CUSTOMER AND/OR USER SHOULD BE PREPARED TO HANDLE PREMATURE FAILURE OF THE RUPTURE DISC. THE MEDIA OR OTHER ENVIRONMENTAL CONDITIONS SHOULD NOT ALLOW ANY BUILDUP OR SOLIDIFICATION OF MEDIA TO OCCUR ON A RUPTURE DISC. THIS MAY INCREASE THE PRESSURE SETTING OF THE RUPTURE DISC.

CUSTOMER AND/OR ITS INSTALLER SHALL BE SOLELY RESPONSIBLE FOR THE PROPER INSTALLATION OF SELLER'S HOLDERS AND RUPTURE DISCS INTO A SYSTEM. CUSTOMER AND/OR ITS INSTALLER SHALL BE SOLELY RESPONSIBLE FOR IMPROPER INSTALLATION AND PHYSICAL DAMAGE RESULTING THEREFROM, INCLUDING BUT NOT LIMITED TO, DAMAGE RESULTING FROM LEAKAGE, IMPROPER TORQUING OR SEATING OF A RUPTURE DISC OR FAILURE TO FOLLOW INSTALLATION INSTRUCTIONS WHERE PROVIDED.

RUPTURE DISCS ARE PRECISION SAFETY DEVICES AND MUST BE INSTALLED PROPERLY. RUPTURE DISCS MUST BE INSTALLED BY TRAINED, KNOWLEDGEABLE INSTALLERS AND ONLY WITHIN ENVIRONMENTS SUITABLE AND APPROPRIATE FOR A RUPTURE DISC. CARE MUST BE USED IN A FACILITY'S DESIGN TO PROTECT BOTH THE RUPTURE DISC FROM INADVERTENT DAMAGE WHICH COULD CAUSE ITS PREMATURE RELEASE AND TO PROTECT INDIVIDUALS EXPOSED TO HAZARDS CREATED BY SUCH SUDDEN RELEASE.

PROPER INSTALLATION OF A RUPTURE DISC IS CRITICAL TO PERFORMANCE AND TO SAFETY. FAILURE TO PROVIDE PROPER SEATING OF A RUPTURE DISC MAY AFFECT RUPTURE DISC PERFORMANCE, BURST PRESSURE ACCURACY AND MAY RESULT IN ITS PREMATURE FAILURE.

A. INSTRUCTIONS FOR NEW HOUSING AND CARTRIDGE INSTALLATION

I. Safety Precautions Before Installation

1. The exterior sliding surfaces of the cartridge inlet and cartridge outlet have been machined to a very smooth surface for easy cartridge insertion. Use care to not scratch, dent, or otherwise damage these surfaces while assembling or carrying the cartridge unit.

2. Any disassembly or assembly of the cartridge should be done on a clean surface.

II. QUICK-CHANGE® Housing Installation (See Figure A)

1. Install the housing unit between the vent piping companion flanges using appropriate gasketing at the inlet and outlet mating surfaces. Note that the flow direction arrow points downstream when installing the housing assembly.

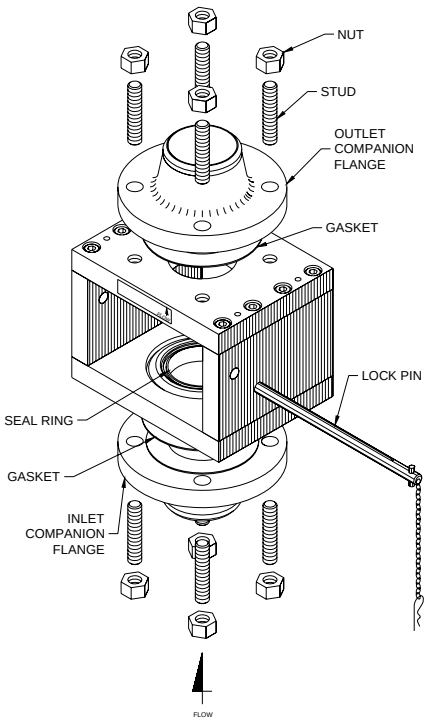
2. Thread the studs provided into the blind tapped holes in the inlet and outlet plates of the QUICK-CHANGE housing assembly.

3. Install and torque all nuts using good piping practice, to a torque necessary to seal the gaskets.

4. Remove lockpin from the housing assembly to prepare for installation of the QUICK-CHANGE cartridge.

5. Visually inspect the seal rings in the housing. All contact surfaces should be free of dirt and severe scratches or burrs. Visually inspect the O-rings on the seal ring contact surface to assure integrity of their sealing capabilities. Physically depress the seal rings to ensure freedom of movement.

Figure 'A'



III. Assembly of the Rupture Disc and Cartridge (See Figure B)

1. Carefully remove and discard any shipping protectors furnished with rupture discs or cartridge. **DO NOT INSTALL A SHIPPING PROTECTOR IN A QUICK-CHANGE CARTRIDGE.**

2. **ENSURE THAT THE RUPTURE DISC DOES NOT EXCEED THE MAXIMUM DISC RATING STAMPED ON THE CARTRIDGE NAMEPLATE.** If this condition occurs, consult the factory.

3. Place the cartridge inlet on a clean flat surface with the alignment pins pointing up.

4. Position the rupture disc on the alignment pins with the dome side up as shown.

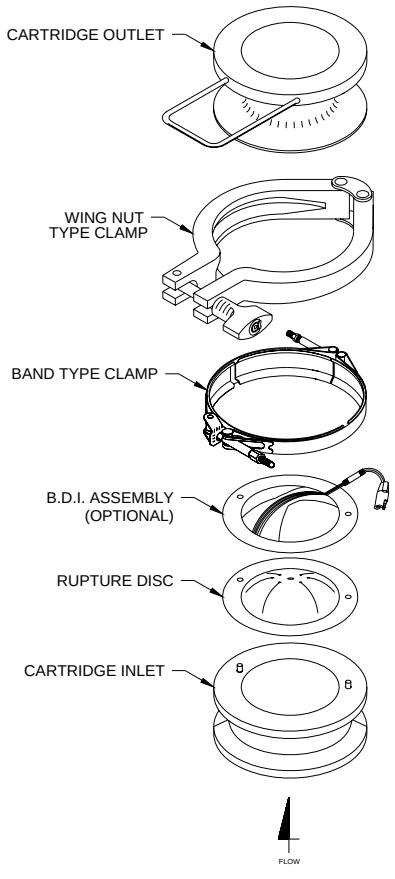
5. (NOTE: The B.D.I.® Assembly can be used with band type clamps only.) If the B.D.I. assembly is used, visually inspect the adhesion of the strip to the Teflon®* seal and the electrical circuit. If the strip has become detached or the circuit has been broken, **DO NOT INSTALL THE RUPTURE DISC.** Ensure that the B.D.I. connector tail extends straight and flat across the cartridge seat.

6. Align and lower the cartridge outlet carefully onto the alignment pins in the cartridge inlet, ensuring that the rupture disc is not damaged.

7. Install the sanitary fitting clamp with the hinge directly below the handle and the B.D.I. strip extending through the gap in the clamp.

*Teflon is a registered trademark of E.I. du Pont de Nemours and company used under license.

Figure 'B'

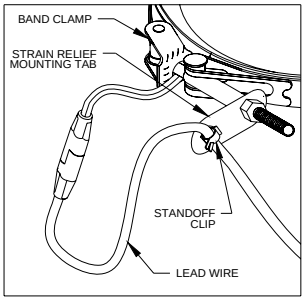


8. If the B.D.I. Assembly is used, installation of the strain relief mounting tab is necessary.

   a. Before tightening the clamp, install the strain relief mounting tab.
   b. Slide the hole in the mounting tab through the clamp stud as shown in Figure C and then torque as necessary.
   c. Insert the lead wire into the standoff clip.
   d. Plug the B.D.I. connector into the lead wire connector using a slight twisting action.

   Fasten the assembly together by tightening the clamp nut(s). There are two types of clamps that can be used: wing nut or band type. On band clamp sizes 8" through 10", the distance between the clamp halves should be approximately equal after tightening. The clamp hinges should be in line with the handle centerline to ease cartridge installation.

Figure 'C'



9. If the wing nut clamp is used, torque the clamp to 25 In•Lbs / (2.8 N•m) using a 1-5/16" hex socket.

10. If the band clamp is used, use recommended torquing requirements listed below.

Disc Size	3"	4"	6"	8"
Clamp Size	4"	6"	8"	10"
Torque	100 In•Lbs (11 N•m)	20 Ft•Lbs (27 N•m)	20 Ft•Lbs (27 N•m)	20 Ft•Lbs (27 N•m)

11. After tightening, verify that the horizontal surfaces of the cartridge inlet and the cartridge outlet are parallel to one another.

IV. QUICK-CHANGE Cartridge Installation

1. Visually inspect the cartridge sliding and sealing surfaces to ensure they are clean and free of severe scratches and burrs.

2. Verify that the cartridge flow arrows point downstream and slowly slide the cartridge into the housing, over the seal rings, until the seal rings lock into the cartridge sealing grooves and the cartridge comes into contact with the stop pins. Note: To ease insertion, tilt cartridge up and down slightly while slowly sliding it into the housing. **CAUTION: DO NOT ATTEMPT TO FORCE THE CARTRIDGE ASSEMBLY INTO THE HOUSING. IF DIFFICULTY IS EXPERIENCED, REVERIFY THAT THE HORIZONTAL SURFACES OF THE CARTRIDGE INLET AND CARTRIDGE OUTLET ARE PARALLEL TO ONE ANOTHER AND THAT THE FLOW ARROWS POINT DOWNSTREAM.**

3. Replace the lockpin in the housing.

4. The QUICK-CHANGE unit is now ready for service.

B. INSTRUCTIONS FOR REPLACEMENT RUPTURE DISC INSTALLATION

I. Safety Precautions Before Installation

1. The COMPOSITE Type rupture disc is a precision instrument and must be handled with extreme care. Rupture discs should be installed only by qualified personnel familiar with rupture discs and proper piping practices.

2. Do not install rupture disc if there is any damage in the dome area. A damaged rupture disc is any rupture disc with visible nicks or dents in the dome.

II. Preparation of The Cartridge Assembly for Installation

1. If the Burst Disc Indicator (B.D.I.) Assembly is used, disconnect the alarm strip from the monitor by unplugging the B.D.I. connector from the lead wire connector.

2. Remove the cartridge from the system and place on a clean flat surface.

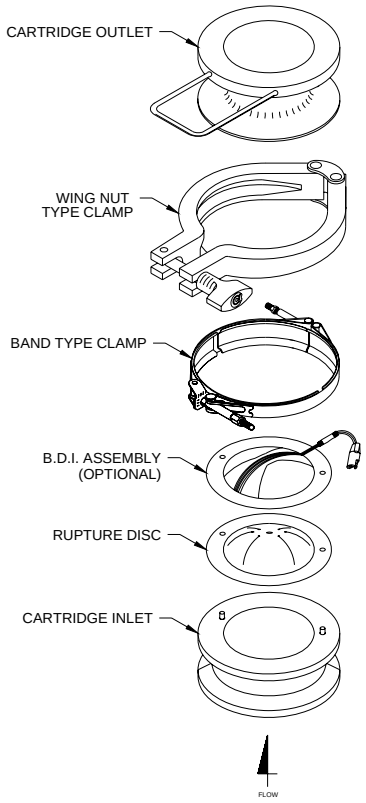
3. Disassemble the cartridge by loosening the clamp. Lift the cartridge outlet up and set aside; then remove the burst rupture disc.

4. Clean the rupture disc sealing area of both the cartridge inlet and cartridge outlet. These surfaces must be completely clean and free of all rust, corrosion, and foreign material to ensure a proper seal. Use of solvents, steel wool, or fine emery cloth is permissible. Do not re-machine. Do not use scraper or abrasives.

5. Inspect the rupture disc sealing area for nicks, scratches, or pitting. If any of these conditions are present, consult the factory for repair.

III. Assembly of the Rupture Disc and Cartridge (See Figure D)

Figure 'D'



1. Carefully remove and discard any shipping protectors furnished with the rupture disc or cartridge. **DO NOT INSTALL A SHIPPING PROTECTOR IN A QUICK-CHANGE CARTRIDGE.**

2. **ENSURE THAT THE RUPTURE DISC DOES NOT EXCEED THE MAXIMUM DISC RATING STAMPED ON THE CARTRIDGE NAMEPLATE.** If this condition occurs, consult the factory.

3. Place the cartridge inlet on a clean flat surface with the alignment pins pointing up.

4. Position the rupture disc on the alignment pins with the dome side up as shown.

5. (NOTE: The B.D.I.® Assembly can be used with band type clamps only.) If the B.D.I. assembly is used, visually inspect the adhesion of the strip to the Teflon® seal and the electrical circuit. If the strip has become detached or the circuit has been broken, **DO NOT INSTALL THE RUPTURE DISC.** Ensure that the B.D.I. connector tail extends straight and flat across the cartridge seat.

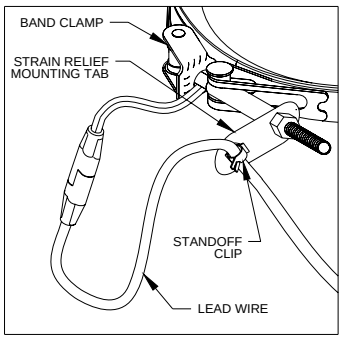
6. Align and lower the cartridge outlet carefully onto the alignment pins in the cartridge inlet, ensuring that the rupture disc is not damaged.

7. Install the sanitary fitting clamp with the hinge directly below the handle and the B.D.I. strip extending through the gap in the clamp.

8. If the B.D.I. Assembly is used, installation of the strain relief mounting tab is necessary.

   a. Before tightening the clamp, install the strain relief mounting tab.
   b. Slide the hole in the mounting tab through the clamp stud as shown in Figure E and then torque as necessary.
   c. Insert the lead wire into the standoff clip.
   d. Plug the B.D.I. connector into the lead wire connector using a slight twisting action.

Figure 'E'



9. Fasten the assembly together by tightening the clamp nut(s). There are two types of clamps that can be used: wing nut or band type. On band clamp sizes 8" through 10", the distance between the clamp halves should be approximately equal after tightening. The clamp hinges should be in line with the handle centerline to ease cartridge installation.

10. If the wing nut clamp is used, torque the clamp to 25 In•Lbs / (2.8 N•m) using a 1-5/16" hex socket.

11. If the band clamp is used, use recommended torquing requirements listed below.

Disc Size	3"	4"	6"	8"
Clamp Size	4"	6"	8"	10"
Torque	100 In•Lbs (11 N•m)	20 Ft•Lbs (27 N•m)	20 Ft•Lbs (27 N•m)	20 Ft•Lbs (27 N•m)

12. After tightening, verify that the horizontal surfaces of the cartridge inlet and the cartridge outlet are parallel to one another.

IV. QUICK-CHANGE Cartridge Installation

1. Visually inspect the cartridge sliding and sealing surfaces to ensure they are clean and free of severe scratches and burrs.

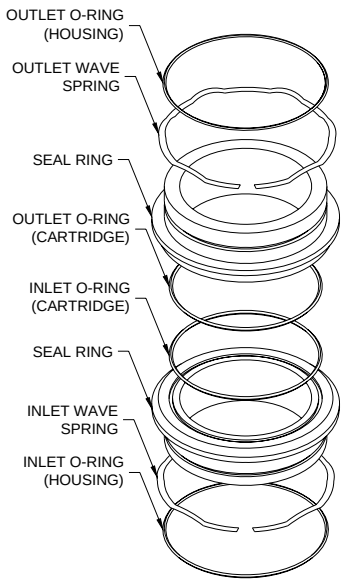
2. Verify that the cartridge flow arrows point downstream and slowly slide the cartridge into the housing, over the seal rings, until the seal rings lock into the cartridge sealing grooves and the cartridge comes into contact with the stop pins. Note: To ease insertion, tilt cartridge up and down slightly while slowly sliding it into the housing. **CAUTION: DO NOT ATTEMPT TO FORCE THE CARTRIDGE ASSEMBLY INTO THE HOUSING. IF DIFFICULTY IS EXPERIENCED, REVERIFY THAT THE HORIZONTAL SURFACES OF THE CARTRIDGE INLET AND CARTRIDGE OUTLET ARE PARALLEL TO ONE ANOTHER AND THAT THE FLOW ARROWS POINT DOWNSTREAM.**

3. Replace the lockpin in the housing.

4. The QUICK-CHANGE unit is now ready for service.

C. MAINTENANCE INSTRUCTIONS

Figure 'F'



I. Preventative Maintenance (See Figure F)

1. Every six months, or sooner if process conditions merit, remove the top and bottom seal rings. Inspect both O-rings for severe deformation, nicks, etc. Replace as necessary. The following should be checked:

   HOUSING ASSEMBLY:

   a. Check the angled sliding surface and the surfaces of the O-ring groove area of the seal rings for corrosion, burrs, scratches, etc. If present, lightly sand these smooth with fine grit emery cloth.
   b. Check the wave springs for corrosion or loss of resilience.
   c. Check the contact surfaces on the inlet plate and the outlet plate on which the Inlet / Outlet O-rings (Housing) ride, for corrosion, pitting or product buildup. If present, lightly sand these surfaces clean with fine grit emery cloth. Lubricate these surfaces and the O-rings with petroleum jelly before reinstalling the seal rings.
   d. Check for corrosion on the exterior surfaces of the housing. If necessary, wire-brush clean.

   CARTRIDGE ASSEMBLY:

   a. Check the cartridge sealing surfaces for product buildup, scratches, burrs, etc. If present, lightly sand these surfaces smooth with fine grit emery cloth.
   b. Check for corrosion on the exterior surfaces of the cartridge unit. If necessary, wire-brush clean.

5. Risk assessment and an annual rupture disc replacement are recommended. Rupture disc service life is determined by system operating conditions. The effects of severe pressure/vacuum cycles, corrosion, temperature variations, or other adverse conditions must be evaluated by the user through actual service experience to determine optimal service life.

6. **IF THE RUPTURE DISC IS NOT REPLACED PERIODICALLY WHEN EXPOSED TO THESE CONDITIONS, PREMATURE FAILURE OF THE RUPTURE DISC MAY OCCUR, THEREBY DISCHARGING THE PROCESS MEDIA.**

7. To avoid extended downtime, maintain three spare rupture discs in stock at all times for each cartridge in use. The number of spares required ultimately will be determined by service conditions.

II. Replacement Parts**

1. Inlet / Outlet O-Ring (Housing)
2. Inlet / Outlet O-Ring (Cartridge)
3. Inlet / Outlet Wave Spring

D. Customer Service

If you wish to discuss your application, installation, or maintenance, please contact the Customer Service Department at one of the addresses shown on the last page of these instructions.

**Specify Size, Class and Material when ordering.

COMPOSITE Type Rupture Disc incorporates U.S. Patent No.: 3,445,032.

QUICK-CHANGE incorporates U.S. Patent No.'s: 4,444,214 and 4,505,289; Canada Patent No.: 1,172,936; West Germany Patent No.: P.3174255.6-08; France, Belgium and Great Britain Patent No.: 0065050; Japan Patent No.: 1,370,132

Burst Disc Indicator (B.D.I.) Alarm System incorporates U.S. patent no. Re. 34,308 and 4,408,194; Australia patent no. 539415; Germany patent no. 3174227.0; Belgium, France and United Kingdom patent no. EP 0 033 867; Canada patent no. 1199990; Japan patent no. 2032464.

B.D.I. ALARM SYSTEM OPERATING LIMITS

TEMPERATURE: -40° F to + 400° F (-40° C to + 204° C)
MAX CURRENT: 50 Milli Amps
MAX VOLTAGE: 24 VDC RMS

BURST DISC INDICATOR (B.D.I.®): Sizes 25mm through 900mm (1 inch through 36 inches)

a. Mark II 2 G D EEx ia IIC (Tamb = -40° C to +204° C)

EC Type Examination Certificate: ITSO3ATEX 21357U

FULFILL THE REQUIREMENTS OF DIRECTIVE 94/9 EC (ATEX) FOR: COMPONENTS of equipment and protective systems intended for use in potentially explosive atmospheres.

APPLIED HARMONIZED STANDARD: EN 50 014: 1997 + Amds 1 & 2 General Requirements
EN 50 020: 2002, Intrinsic Safety

ADDITIONAL INFORMATION: Conformity assessment performed by Notified Body no. 0359,ITS Testing and Certification Limited, Leatherhead, Surry, UK.

Continental Disc® Corporation

Performance Under Pressure®

Certified Quality System
First Certified In 1992

ASME Code Symbol Stamp
If stamped, this product is built in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

China Manufacture License
Products are in full compliance with the provisions of the Peoples Republic of China Import Regulations for Boiler and Pressure Vessel safety devices.

3A Sanitary Standards Stamp
If stamped, this product is in full compliance with the 3A standards, Serial #60-00, of the International Association of Milk, Food, and Environmental Sanitarians, Inc.

European Union CE Mark Type Approval Stamp
If stamped, this product is certified to conform to the essential requirements of the Pressure Equipment Directive.

Continental Disc Corporation has representatives located throughout the world.
Contact the C.D.C. office nearest you for the authorized representative in your area.

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