1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

| | | |
|---|---|---|
| 3 | EC - Type Examination Certificate Number: | **Baseefa03ATEX0377 – Issue 6** |
| 4 | Equipment or Protective System: | **Range of Metallic Hydro-Pneumatic Devices That may be used as Pulsation Dampers, Surge Absorbers, Thermal Expansion Compensators and Accumulators** |
| 5 | Manufacturer: | **CoorsTek Ltd** |
| 6 | Address: | **Watford Bridge, New Mills, High Peak, Derbyshire, SK22 4HJ** |

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No's. **See certificate history.**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN 13463-1:2009 EN 13463-5:2003**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include the following :

**II 1GD c T6 to T2 or II 1GD c IIB T6 to T2**

Baseefa Customer Reference No. **5131**

Project File No. **15/0568**

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13 **Schedule**

14 **Certificate Number Baseefa03ATEX0377 – Issue 6**

15 **Description of Equipment or Protective System**

The CoorsTek Ltd range of metallic hydro-pneumatic devices may be used as Pulsation Dampers, Surge Absorbers, Thermal Expansion Compensators and Accumulators. The units can be divided into four main types: Bladder (Series: DS, FG, HG, FG/TD), Bellows (Series: FB), Diaphragm (Series: FD and RD) and Air Chamber/Pressure Vessel (Series VGV). They are designed and manufactured under the appropriate module of the Pressure Equipment Directive.

**BLADDER TYPES (DS, FG, HG, FG/TD)**

The bladder type units consist of a metallic body and end cap (complete with o-ring seal) and internal polymeric bladder. The body has a stainless steel single or double sealed charging valve and various types of pipeline connection such as threaded or welded flange.

The FG types include the DS series, which are standard options taken from the FG range.

The FG/TD types have two chambers and two bladders connected by a safe transfer fluid.

All metallic components have good electrical continuity with each other therefore there is no risk of electrostatic discharge.

The bladder types, volumes, pressure ratings and seals depend on the application and process fluid.

**BELLOWS TYPE (FB & FB/TD)**

The bellows type units consist of a metallic body and end cap (complete with o-ring seal) and internal one piece machined polymeric or metal alloy bellow. The body has a stainless steel single or double sealed charging valve and various types of pipeline connection such as threaded or welded flange.

The FB/TD units have a double membrane construction with a bellows process membrane and a bladder membrane.

All metallic components have good electrical continuity with each other therefore there is no risk of electrostatic discharge.

The membrane types, volumes, pressure ratings and seals depend on the application and process fluid.

**DIAPHRAGM TYPES (FD & RD)**

The diaphragm type units consist of a two piece metallic body/shell (complete with o-ring seal) and internal one piece moulded polymeric diaphragm (complete with integral button for positive location and strength). The body has a stainless steel double sealed charging valve and various types of pipeline connection such as threaded or welded flange.

All metallic components have good electrical continuity with each other therefore there is no risk of electrostatic discharge.

The RD types are standard options available with volumes up to 0.12 litres.

The membrane types, volumes, pressure ratings and seals depend on the application and process fluid.

**AIR CHAMBER/PRESSURE VESSEL TYPE (VGV)**

The air chamber type units consist of a metallic cylindrical type shell. At the top of the shell there is a welded upper metallic flange that is fitted with a metallic inspection flange. The two flanges are fixed with several stud bolt and nut assemblies and are sealed together by a polymeric spiral wound gasket. Within the flange assembly there is a support ring and gas header. At the bottom of the shell there is a lower metallic flange that is used for connection to the associated pipeline and this flange may be mounted on the base or side of the shell to suit customer specifications. The shell is mounted on raised metallic legs to suit the application.

Inside the lower section of the shell there is an internal one piece polymeric diaphragm (moulded or fabricated to suit) that covers the internal cross sectional area and passes up the inside of the walls of the shell and is clamped in the support ring and gas header within the top flange. In the central area of the diaphragm at the lower section of the shell there is a metallic port valve complete with screw cap, washer, backing washer and button seal for positive location and strength.

The air chamber is specially built to suit customer specification with no limit to size or pressure rating. They are designed and manufactured under Module H of the pressure Equipment Directive.

**THE IDENTIFICATION OF DAMPERS/AIR CHAMBERS IS EXPLAINED BELOW:**

Example only:

| Unit Type | | Unit Volume | | Design Pressure (Bar) | | Membrane Material | | Shell Material | | Connection No, & Position Type | | Connection Size | Connection Detail |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FG | - | 50 | - | 18 | - | NBR | - | SS | - | E | - | 1 ½" | 150RF/WN |

**TEMPERATURE CLASSIFICATION**

The temperature classification of a unit is dependent on the process fluid passing through the damper and the environmental temperature. This must be established in consultation between the manufacturer and end user and must not exceed the maximum temperature rating of the valve.

**MATERIAL SELECTION**

Material selection must take into account the process fluids being used.

**16 Report Number**

15(CI)0568

**17 Specific Conditions of Use**

1. The ambient temperature range for which these dampers are suitable depends on the process fluids, the materials used in their construction and the pressure at which they will be used. The maximum withstand temperature is included in the Pressure Equipment Directive (PED) marking. The lower ambient will be specified in the documentation provided with each damper.
2. Do not allow dust layers to build up on the equipment. The process fluid temperature shall not exceed the ignition temperature of the dust.

**18 Essential Health and Safety Requirements**

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

**19 Drawings and Documents**

New drawings submitted for this issue of certificate.

| Number | Sheet | Issue | Date | Description |
|---|---|---|---|---|
| FSD-5-2 | 1 to 3 | A4 | 28/01/15 | Labels and Markings |
| Z-200519 | 1 of 1 | A1 | 13 August 2015 | ATEX Paint Specification. |
| FSD-1-7 | 1 of 2 | B2 | 23/07/15 | ATEX Component Material Matrix |

Current drawings also associated with this certificate.

| Number | Issue | Date | Description |
|---|---|---|---|
| Z-200032 | A1 | 13/03/07 | FG & DS A – TYPES generic formats |
| Z-200033 | A1 | 13/03/07 | FG & DS E – TYPES generic formats |
| Z-200034 | A2 | 01/12/09 | HG A – TYPES generic formats |
| Z-200035 | A2 | 01/12/09 | HG E – TYPES generic formats |
| Z-200278 | A1 | 12/04/10 | FD E – TYPES generic formats |
| Z-200279 | A1 | 12/04/10 | FD C – TYPES generic formats |
| Z-200283 | A1 | 23/02/10 | Volumes/Masses – FD A Type |
| Z-200287 | A1 | 22/04/10 | FD SPINNING E – TYPE (Extra volume) generic formats |
| z-200371 | A1 | 12 Jul 11 | FG-C Type Generic Drawing |
| z-200372 | A1 | 12 Jul 11 | FG-F Type Generic Drawing |
| z-200373 | A1 | 07 Jul 11 | FG-F90 Type Generic Drawing |
| z-200374 | A1 | 07 Jul 11 | HG-C Type Generic Formats |
| z-200375 | A1 | 07 Jul 11 | HG-F Type Generic Formats |
| z-200376 | A1 | 12 Jul 11 | FG/TD T/E Type Generic Drawing |
| z-200377 | A1 | 12 Jul 11 | FG/TD T Type Generic Drawing |
| z-200378 | A1 | 12 Jul 11 | FB-A Type Generic Drawing |
| z-200379 | A1 | 12 Jul 11 | FB-E Type Generic Drawing |
| z-200380 | A1 | 12 Jul 11 | FB-F Type Generic Drawing |
| z-200381 | A1 | 12 Jul 11 | FB-F Type With 2 Gas Ports Generic Drawing |
| z-200382 | A1 | 12 Jul 11 | FB/TD E-Type With Retaining Ring Generic Drawing |
| z-200383 | A1 | 12 Jul 11 | FD E-Type With Retaining Ring Generic Drawing |
| z-200384 | A1 | 12 Jul 11 | FD A-Type With Extra Gas Generic Drawing |
| z-200385 | A1 | 12 Jul 11 | FD Bolted E-Type With Extra Gas Generic Drawing |
| z-200386 | A1 | 07 Jul 11 | FD Ring E-Type With Extra Gas Generic Drawing |
| z-200387 | A1 | 12 Jul 11 | FD Spinning A-Type Generic Drawing |
| z-200388 | A1 | 07 Jul 11 | VGV Generic Drawing |
| z-200389 | A1 | 12 Jul 11 | FB-C Type Generic Drawing |
| z-200277 | A1 | 23 Feb 10 | FD A-Types - Generic Formats |
| z-200337 | A1 | 07 Sep 10 | RD Generic Formats |
| Z-200395 | A1 | 01/09/11 | FG/TD C Type generic drawing |
| Z-200396 | A1 | 05/09/11 | HG Threaded ring both ends E-Type generic format |
| FSD-5-2 | A3 | 10/08/11 | Labels and marking |

## 20 Certificate History

| Certificate No. | Date | Comments |
|---|---|---|
| Baseefa03ATEX0377X | 3 February 2004 | The release of the prime certificate. The associated tests and assessment is documented in Test Report No. 03(CI)0461. |
| Baseefa03ATEX0377X/1 | 24 November 2004 | To allow the use of an alternative FB-C type device. |
| Baseefa03ATEX0377X/2 | 2 July 2009 | Minor drawing modification and change of name. |

| Certificate No. | Date | Comments |
|---|---|---|
| Baseefa03ATEX0377X/3 | 4 August 2010 | To include the optional 'DS' separate shell to the existing range, where applicable.<br>Add the 'FD C TYPES' to the range.<br>Reflect changes to the internal document numbering policy.<br>To update the standard from EN 13463-1:2001 to EN 13463-1:2009.<br>The above test and assessment is documented in certification report 10(CI)0468 |
| Baseefa03ATEX0377X/4 | 26 July 2011 | None technical drawing changes involving renumbering of each drawing and the transfer to a new drawing template, including new boarders, new title block and new numeric part itemisation with corresponding item balloons. |
| Baseefa03ATEX0377X/5 | 1 December 2011 | Add the HG threaded ring both ends E-Type. |
| Baseefa03ATEX0377X Issue 6 | 6 November 2015 | This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and confirms the current design meets the requirements of EN 13463-1: 2009, EN 13463-5:2003, including the revision of the marking in accordance with these standards. To include an option for painted equipment limited to IIB gasses, minor drawing and document changes. |

For drawings applicable to each issue, see original of that issue.