



1 EU-TYPE EXAMINATION CERTIFICATE

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: CSACa 23ATEX1001 Issue: 0

4 Equipment: Gas Chromatograph, Model 470XA

5 Applicant: Rosemount Inc.

6 Address: 10241 W. Little York Ste. #200  
Houston, TX  
77040  
United States

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

8 CSA Group Testing & Certification Inc., notified body number 2899 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN IEC 60079-0:2018/AC:2020

EN 60079-1:2014/AC:2018

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2G

Ex db IIB+H2 T6 Gb

T<sub>a</sub> = -20°C to 60°C

Project Number 80134810

Signed: Inga Hipsz

Title: RVP, America Operations

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#### 13 DESCRIPTION OF EQUIPMENT

The 470XA analyzer is a high speed gas chromatograph (GC) which measures multiple hydrocarbon stream's compositions and concentrations. The analyzer is housed in a proprietary flameproof enclosure, which is divided into two compartments. The upper compartment is mainly composed of analytical components and electrical hardware and the lower compartment primarily contains the electronic printed circuit board assemblies and associated hardware. The two compartments are isolated by a threaded bulkhead and potted seals.

##### Upper Compartment

The upper compartment contains the analytical components of the GC. The analytical assembly includes the columns, detectors, pneumatically operated switching valves, solenoids, and some of the supporting electronic hardware. The assembly is temperature controlled through an RTD and electrical heater. Insulation is used to isolate the heated space from the outer enclosure. The analytical components and electrical hardware interface with the lower compartment using wiring that is fed through the bulkhead using potted seals. The entire upper compartment is contained mechanically inside of the dome and mating bulkhead.

##### Lower Compartment

The lower compartment contains the analytical PCBA's and user interface. The user interface assembly interfaces with the electronic PCBA's using operating rods which penetrate the casting. Each of the operating rods uses a retaining ring as a mechanical retention method. Also, a glass window is embedded within the casting using epoxy. The sheet metal assembly behind the operating rods and the glass window acts as the mechanical retention device for the window. An overlay is attached to the outside of the enclosure covering the operating rods and glass window. The overlay is attached using an adhesive backing. The lower compartment also contains a tubing feed-thru assembly for connection of all gases required for operation. An adapter fitting is used to interface between the tubing feed-thru assembly and casting wall. A threaded side cover is provided for internal access of the lower compartment. Three M32 entries are provided for external field connections.

##### Flamepath Details

Side Cover: A side cover with M160x3-6g threads mates with the lower compartment of the enclosure, which contains the matching M160x3-6H threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite Graphite 50 or H2O H2OTL08BC lubricants may be applied on the threaded joints. An o-ring is located outside of the flame path and is used for IP purposes.

Bulkhead/Dome: A dome with M190x3-6H threads mates with a bulkhead, which contains the matching M190x3-6g threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite Graphite 50 or H2O H2OTL08BC lubricants may be applied on the threaded joints. An o-ring is located outside of the flame path and is used for IP purposes.

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Bulkhead/Enclosure: The bulkhead contains M190x3-6g threads and mates with the lower compartment of the enclosure, which contains the matching M190x3-6H threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite Graphite 50 or H2O H2OTL08BC lubricants may be applied on the threaded joints.

Feedthru/Enclosure: A feedthru adaptor contains M32x1.5-6g threads and mates with the lower compartment of the enclosure, which contains the matching M32x1.5-6H threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite Graphite 50 or H2O H2OTL08BC lubricants may be applied on the threaded joints. An o-ring is located outside of the flame path and is used for IP purposes.

Window Glass: An approximately 12.7mm tempered glass window is embedded within the casting wall of the lower compartment of the enclosure. The window is cemented using a Stycast 2850FR-FT and Catalyst 9 epoxy mixture with a COT of -40 -> 130°C (An alternative window/epoxy combination is listed in project 2548848). A neoprene gasket is located outside of the flamepath and is used for spacing and IP purposes. A sheet metal/LCD assembly, located behind the window, acts as the mechanical retaining feature for the glass window feature.

Operating Rod: Nineteen stainless steel cylindrical operating rods are inserted through the lower compartment of the enclosure. A lubricant may be used to prevent corrosion between the operating rods and the casting. Retaining rings are located outside the flamepath to keep the operating rods in normal operating position.

Shoulder Screw: Three M5x0.8 cylindrical shoulder screws are inserted through the lower compartment of the enclosure.

Set screw: Two set screws contain M5x0.8-6g threads and mates with the lower compartment of the enclosure, which contains the matching M5x0.8-6H threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite 209 lubricants may be applied on the threaded joints.

Feedthru/Tube entry: The tube feed thru fitting slides inside the tube feed thru adaptor located in the lower compartment. The length of the cylindrical flame path between the fitting and the adaptor is approximately 26.16 mm and maintains a gap of approximately 0.038mm.

Bulkhead/Feedthru: Refer to dwg. 7R04011 for details.

Cable Gland/Bulkhead: Refer to dwg. 7R04011 for details.

Capillary Tubes: Tubing, 1/16", 0.040" ID, manufactured from 316 SST, Fully Annealed, crimp length 27.9mm (1.10 in) at max. 0.750mm (0.0295")/ min.0.615mm (0.0242").

Capillary Tubes: Tubing, 1/16", 0.010" ID, manufactured from 316 SST, Fully Annealed, minimum length of 479.8mm (18.89").

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Analytical Valves – Emerson 6 Port XA Valve, Model 2-3-0710-100. Three valves are used to control the flow of gas through the analyzer, and have been evaluated as a gas containment system under CSA Project 80134806. The valves are installed in the upper compartment of the 470XA, as shown in drawing 7R04011 Page 2.

NPT adapter: CSA certified threaded M32x1.5 to 3/4in NPT.

Plug: CSA certified threaded M32x1.5.

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### FLAMEPATH DIMENSIONS

Flame-path #	Joint type	Minimum length L	Maximum gap G
1. (Side Cover)	Threaded M160x3	25.7mm (1.011") 7 THD (casting)	class 2 fit tolerance 6H/6g
2. (Bulkhead/Dome)	Threaded M190x3	28.25mm (1.112") 7 THD (bulkhead)	class 2 fit tolerance 6H/6g
3. (Bulkhead/Enclosure)	Threaded M190x3	29.25mm (1.151") 7 THD (bulkhead)	class 2 fit tolerance 6H/6g
4. (Feedthru/Enclosure)	Threaded M32x1.5-6g/ M32x1.5- 6H	14.6mm (0.574") 7 THD (casting)	class 2 fit tolerance 6H/6g
5. (Window Glass)	Cemented	18.60mm (0.73 in) (12.7mm + 5.9mm) (window)	
6. (Operating Rod)	Cylindrical (Operating Rod)	28mm (1.102in) (casting)	0.03mm
7. (Shoulder Screw/ Enclosure)	Threaded M5x0.8-6g/ M5x0.8-6H	38.00mm (1.496in)	0.09mm
8. (Set screw)	Threaded M5x0.8	15.7mm (0.618in) 7THD (casting)	
9. (Feedthru/ Tube entry)	Cylindrical	26.16mm (1.030in) (Feedthru)	0.151mm
10. (Bulkhead/Feedthru)	Cylindrical	27.80mm (1.09in) (Feedthru)	0.142mm
11. (Cable Gland/ Bulkhead)	Cylindrical	26.10mm (1.02in)	0.152mm
12. NPT adapter	Threaded M32x1.5 to 3/4in NPT		

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Flame-path #	Joint type	Minimum length L	Maximum gap G
13. Plug	Threaded M32x1.5		

Internal free volume: 15,378 cc (938 cubic inches), approximately.

#### 14 DESCRIPTIVE DOCUMENTS

##### 14.1 Drawings

Refer to Certificate Annexe.

##### 14.2 Associated CSA Reports and Certificate History

Issue	Date	Report number	Comment
0	May 9, 2023	R80134809A	The release of the prime certificate.

#### 15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

##### 15.1 None.

#### 16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

#### 17 CONDITIONS OF MANUFACTURE

##### 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of CSA Certificates.

##### 17.2 Holders of EU-Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.

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## Certificate Annexe



Certificate Number: CSACa 23ATEX1001  
Equipment: Gas Chromatograph, Model 470XA  
Applicant: Rosemount Inc.

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### Issue 0

Drawing	Sheets	Rev.	Date	Title
7R04011	1 to 10	A	29 Mar 23	470XA GC, Certification Details
7R04081	1 of 1	A	29 Mar 23	470XA, Certification Tag, ATEX/IECEx/UKCA

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