



UNITED KINGDOM CONFORMITY ASSESSMENT

1 UK TYPE EXAMINATION CERTIFICATE

2 Equipment Intended for use in Potentially Explosive Atmospheres
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 Certificate Number: CSAE 23UKEX1020 Issue: 0

4 Product: Gas Chromatograph, Model 470XA

5 Manufacturer: Rosemount Inc.

6 Address: 10241 W. Little York Ste. #200
Houston, TX
77040
UNITED STATES

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

8 CSA Group Testing UK Limited, Approved Body number 0518, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations. 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 has been assured by compliance with:
EN IEC 60079-0:2018/AC:2020 EN 60079-1:2014/AC:2018

Except in respect of those requirements listed at Section 16 of the schedule to this certificate. The above standards may not appear on the UKAS Scope of Accreditation, but have been added through flexible scope of accreditation, which is available on request.

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

11 This UK TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of this product shall be in accordance with Regulation 41 and include the following:



II 2G
Ex db IIB+H2 T6 Gb
Ta = -20°C to 60°C

Name: Michelle Halliwell
Title: Director of Operations



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13 DESCRIPTION OF PRODUCT

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.

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.



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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 adapter 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").

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		
13. Plug	Threaded M32x1.5		

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



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14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Reports and Certificate History

Issue	Date	Report number	Comment
0	17 May 2023	R80134809A	The release of the prime certificate.

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

None

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS (REGULATIONS SCHEDULE 1)

In addition to the Essential Health and Safety Requirements covered by the standards listed in Section 9, all other requirements are demonstrated in the relevant reports.

17 PRODUCTION CONTROL

17.1 Holders of this certificate are required to comply with production control requirements defined in Schedule 3A, as applicable, and CSA Group Testing UK Regulations for Certificate Holders



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Certificate Annexe

Certificate Number: CSAE 23UKEX1020
Product: Gas Chromatograph, Model 470XA
Manufacturer: Rosemount Inc.

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Drawing	Sheets	Rev.	Date (Stamp)	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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