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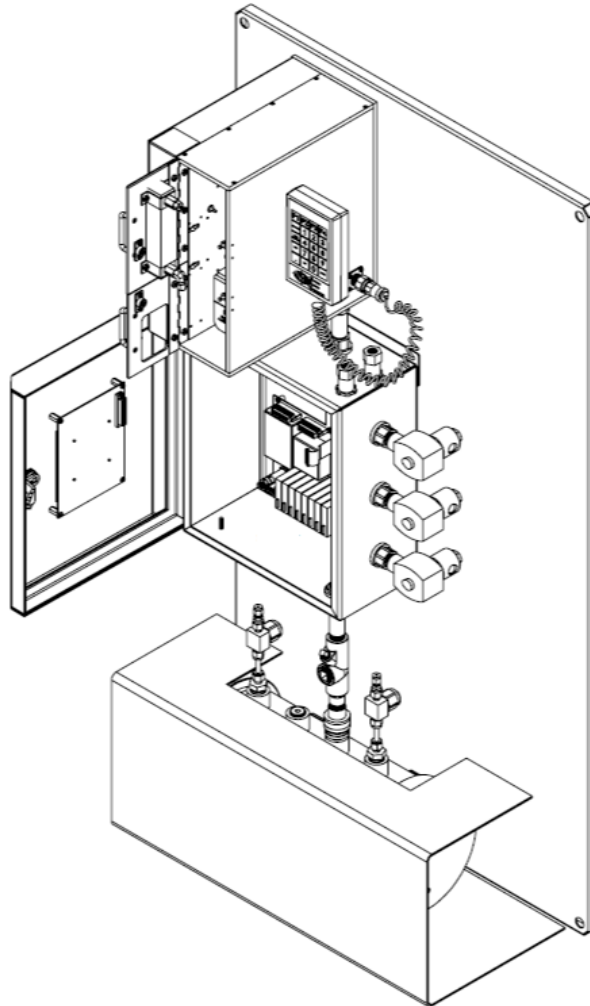
APPLIED SCIENCES

ProTech903™

TOTAL SULFUR ANALYZER

MANUAL ADDENDUM – FURNACE GUARD

Revision 0 – January 2023



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NOTICES

This system is covered by a limited warranty. A copy of the warranty is included with this manual. The operator is required to perform routine maintenance as described herein on a periodic basis to keep the warranty in effect. For routine maintenance procedures, refer to Section 6.

All information in this manual is subject to change without notice and does not represent a commitment on the part of Galvanic Applied Sciences, Inc.

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Note: Changes or modifications not expressly approved by Galvanic Applied Sciences, Inc. could void the user's authority to operate the equipment.

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Safety Symbols used in Manual



The Danger symbol indicates a hazardous situation that, if not avoided will result in death or serious injury.



The Warning symbol indicates a hazardous situation that, if not avoided could result in death or serious injury.



The Caution symbol with the safety alert symbol indicates a hazardous situation that, if not avoided could result in minor or moderate injury.



The Notice symbol is used to highlight information that will optimize the use and reliability of the system.

Important Safety Guidelines for the Protech 903 Total Sulfur Furnace Guard

Please read the following warnings and cautions carefully before using the Protech 903 Total Sulfur Furnace Guard



This equipment must be used as specified by the manufacturer or overall safety will be impaired.



Access to this equipment should be limited to authorized, trained personnel ONLY.



Use of unauthorized parts may impair suitability of the equipment for Class I, Div 1 or Class I, Div 2 locations.



Observe all warning labels on the analyzer enclosures.

Any safety recommendations or comments contained herein are suggested guidelines only. Galvanic Applied Sciences Inc. bears no responsibility and assumes no liability for the use and/or implementation of these suggested procedures.

This system, when operating in its normal mode, and/or when it is being serviced, maintained, installed and commissioned contains items which may be hazardous to humans if handled or operated incorrectly or negligently. These items include, but are not limited to;

- a) High surface temperature

The 903 Analyzer is designed to be safely operated in either a Class 1, Div 1, Group B, C and D areas or a Class 1, Div 2, Groups B, C, D areas. The certified designation will be indicated on the nameplate.

Manufacturer's Warranty Statement

Galvanic Applied Sciences Inc. ("Seller") warrants that its products will be free from defects in materials and workmanship under normal use and service in general process conditions for 12 months from the date of Product start-up or 18 months from the date of shipping from Seller's production facility, whichever comes first (the "Warranty Period"). Products purchased by Seller from a third party for resale to Buyer ("Resale Products") shall carry only the warranty extended by the original manufacturer. Buyer agrees that Seller has no liability for Resale Products beyond making a reasonable commercial effort to arrange for procurement and shipping of the Resale Products. Buyer must give Seller notice of any warranty claim prior to the end of the Warranty Period. Seller shall not be responsible for any defects (including latent defects) which are reported to Seller after the end of the Warranty Period.

THIS WARRANTY AND ITS REMEDIES ARE IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS EXPRESSED OR IMPLIED, ORAL OR WRITTEN, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO, WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH SELLER SPECIFICALLY DISCLAIMS.

Seller's obligation under this warranty shall not arise until Buyer notifies Seller of the defect. Seller's sole responsibility and Buyer's sole and exclusive remedy under this warranty is, at Seller's option, to replace or repair any defective component part of the product upon receipt of the Product at Seller's production facility, transportation charges prepaid or accept the return of the defective Product and refund the purchase price paid by Buyer for that Product. If requested by Buyer, Seller will use its best efforts to perform warranty services at Buyer's facility, as soon as reasonably practicable after notification by the Buyer of a possible defect provided that Buyer agrees to pay for travel time, mileage from the Seller's facility or travel costs to the airport / train station closest to Buyer's facility plus all other travel fees, hotel expenses and subsistence.

Except in the case of an authorized distributor or seller, authorized in writing by Seller to extend this warranty to the distributor's customers, the warranty herein applies only to the original purchaser from Seller ("Buyer") and may not be assigned, sold, or otherwise transferred to a third party. No warranty is made with respect to used, reconstructed, refurbished, or previously owned Products, which will be so marked on the sales order and will be sold "As Is".

Limitations

These warranties do not cover:

- Consumable items such as lamps.
- Analyzer components which may be damaged by exposure to contamination or fouling from the process fluid due to a process upset, improper sample extraction techniques or improper sample preparation, fluid pressures in excess of the analyzer's maximum rated pressure or fluid temperatures in excess of the analyzer's maximum rated temperature. These include but are not limited to sample filters, pressure regulators, transfer tubing, sample cells, optical components, pumps, measuring electrodes, switching solenoids, pressure sensors or any other sample wetted components.
- Loss, damage, or defects resulting from transportation to Buyer's facility, improper or inadequate maintenance by Buyer, software or interfaces supplied by Buyer, operation

- outside the environmental specifications for the instrument, use by unauthorized or untrained personnel or improper site maintenance or preparation.
- Products that have been altered or repaired by individuals other than Seller personnel or its duly authorized representatives, unless the alteration or repair has been performed by an authorized factory trained service technician in accordance with written procedures supplied by Seller.
 - Products that have been subject to misuse, neglect, accident, or improper installation.
 - The sole and exclusive warranty applicable to software and firmware products provided by Seller for use with a processor internal or external to the Product will be as follows: Seller warrants that such software and firmware will conform to Seller's program manuals or other publicly available documentation made available by Seller current at the time of shipment to Buyer when properly installed on that processor, provided however that Seller does not warrant the operation of the processor or software or firmware will be uninterrupted or error-free.

The warranty herein applies only to Products within the agreed country of original end destination. Products transferred outside the country of original end destination, either by the Seller at the direction of the Buyer or by Buyer's actions subsequent to delivery, may be subject to additional charges prior to warranty repair or replacement of such Products based on the actual location of such Products and Seller's warranty and/or service surcharges for such location(s).

Repaired Products

Repaired products are warranted for 90 days with the above exceptions.

Limitation of Remedy and Liability

IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY INDIRECT, CONSEQUENTIAL, INCIDENTAL, SPECIAL OR PUNITIVE DAMAGES, OR FOR ANY LOSS OF USE OR PRODUCTION, OR ANY LOSS OF DATA, PROFITS OR REVENUES, OR ANY CLAIMS RAISED BY CUSTOMERS OF BUYER OR ANY ENVIRONMENTAL DAMAGE OR ANY FINES IMPOSED ON BUYER BY ANY GOVERNMENTAL OR REGULATORY AUTHORITIES, WHETHER SUCH DAMAGES ARE DIRECT OR INDIRECT, AND REGARDLESS OF THE FORM OF ACTION (WHETHER FOR BREACH OF CONTRACT OR WARRANTY OR IN TORT OR STRICT LIABILITY) AND WHETHER ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR NOT.

Section 1 Total Sulfur Furnace Guard

1.1 Overview

The Protech 903 Total Sulfur Furnace is designed to convert gaseous sulfur species into H₂S by pyrolysis reaction with hydrogen gas at high temperature. The nature of the operation generates high surface temperatures on the furnace enclosure. A guard plate is provided by Galvanic Applied Sciences Inc as a standard feature to prevent incidental contact with the furnace enclosure. The Total Sulfur Furnace Guard consists of 3 main parts: the guard plate (MC3209), a pair of mounting bars (MC3210), and the fasteners to attach the parts together.

1.2 Features of the Furnace Guard

- Single piece aluminum plate construction
- Access to furnace enclosure end caps for routine inspection and maintenance
- May be installed and removed in-field for increased access to the Total Sulfur Furnace

Section 2 Guard Components

2.1 Guard Plate (MC3209)

The guard plate forms the main physical barrier between the Total Sulfur Furnace enclosure and incidental contact by an operator or maintenance personnel. The guard plate is made from a single piece of gauge 10 aluminum sheet (alloy 6061 or equivalent), bent to encircle the furnace enclosure.

The guard plate is 61cm (24 in) wide and 27cm (10.5 in) deep. When installed, the guard protrudes 24cm (9.5 in) from the analyzer back panel.

An isometric depiction of the guard panel is shown in Figure 1. The Guard Plate attaches to mounting bars at the two elliptical slots at the back edge of the bottom face with a $\frac{1}{2}$ " \varnothing bolt, 3.4" long.

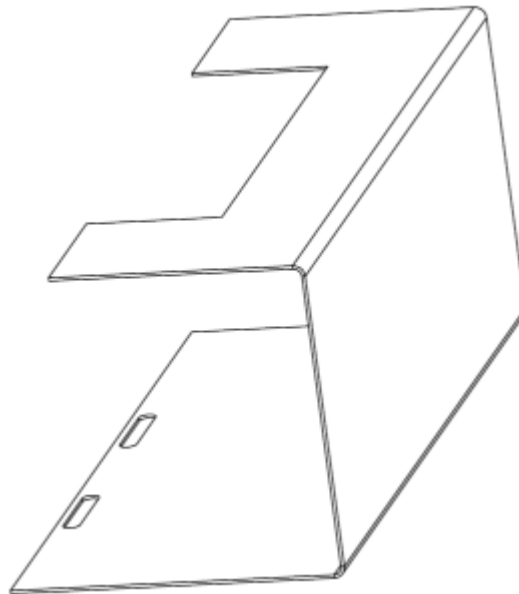


Figure 1: Illustration of a furnace guard plate

2.2 Mounting Bar (MC3210)

Two mounting bars are used to connect the Guard Plate to the Protech903 back panel. Two mounting bars may also be used to connect the Guard Plate to L-bars where the Protech903 analyzer is housed in an enclosure and the Total Sulfur Furnace attached to the enclosure by L-bars. A mounting bar is machined from a single piece of aluminum bar (alloy 6061 or equivalent).

Each mounting bar is 7cm (5.5 in) long with a 2.5cm (1 in) square profile. When installed, the mounting bar protrudes 1.9cm (0.75 in) below the analyzer back panel and extends out 0.6cm (0.22 in) from the rear lip of the back panel.

An isometric depiction of a mounting bar is shown in Figure 2. The mounting bar attaches to the ProTech903 back panel or L-bar with a 5/16" \varnothing bolt, 1-1/2" long.

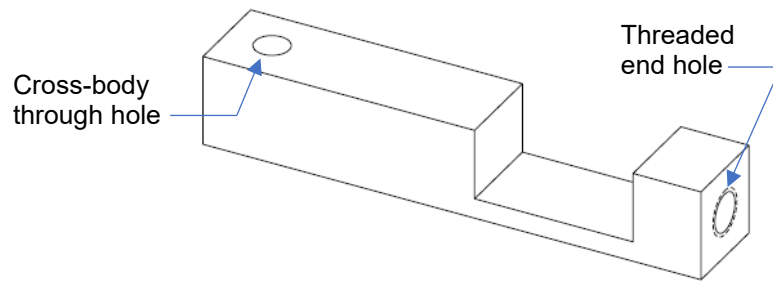


Figure 2: Illustration of a furnace guard mounting bar

Section 3 Installation

3.1 Installation Requirements

To install the Total Sulfur Furnace Guard, you will need one (1) furnace guard plate, two (2) mounting bars and one (1) fastener kit. The fastener kit contains the required bolts for fastening the parts.

3.1.1 Space Requirements

The analyzer dimensions with a Total Sulfur Furnace Guard are provided in Figure 3 for Class 1 Division 1 systems and Figure 4 for Class I Division 2 systems. Clearance of at least 30cm (12 in) must be left below the analyzer to permit access to the furnace Guard Plate attachment points.

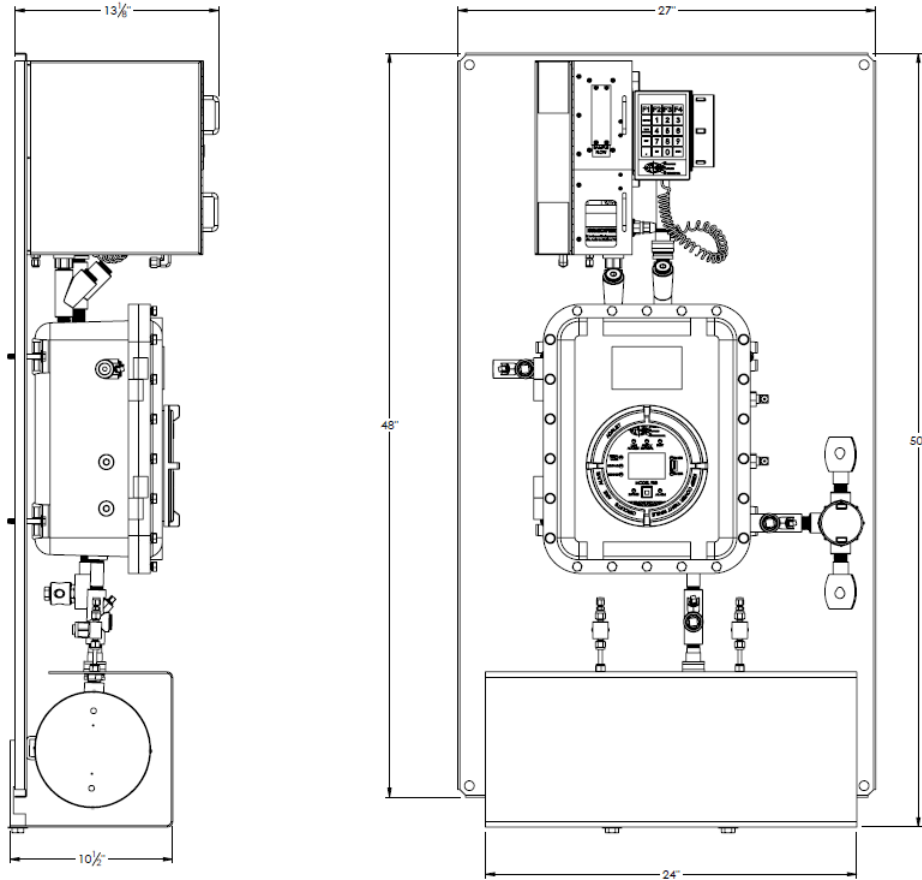


Figure 3: Class I Division 1 analyzer dimensions with Total Sulfur Furnace guard (Front and Side View)

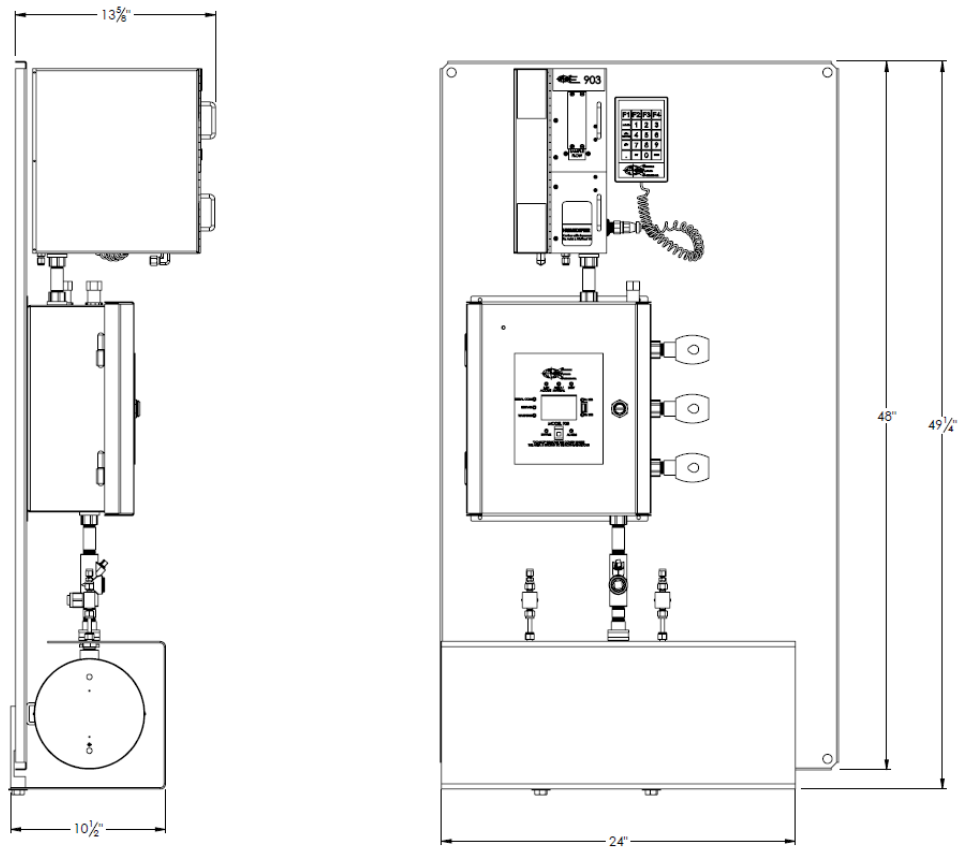


Figure 4: Class I Division 2 analyzer dimensions with Total Sulfur Furnace guard (Front and Side View)

3.2 Furnace Guard Installation

Your Protech903 analyzer may not come pre-assembled with the Total Sulfur Furnace Guard. Mounting bars must be installed on the back panel or L-bars prior to installing the analyzer in-field. The guard plate may be attached after the analyzer is installed and commissioned.



The furnace guard is not load bearing. Do not use the furnace guard as a handhold for lifting or other load bearing maneuvers.

3.2.1 Mounting Bar (MC3210) Installation

To install the Mounting Bars (MC3210), access is required to the rear of the analyzer back panel. Use the following steps to install the Mounting Bars.

1. Remove any existing bolts attaching the Total Sulfur Furnace to the back panel.
2. Line up the cross-body through-hole of the Mounting Bar with the Total Sulfur Furnace mounting hole of the back panel (see Figure 5).
3. Thread in 5/16" \varnothing bolt with 1" stainless steel split washer and torque to 41Nm (30 ft-lbs)
4. Ensure square alignment between Mounting Bar and bottom edge of the analyzer back panel.

To install the Mounting Bars on an L-bar, use the Total Sulfur Furnace mounting hole in the L-bar, and the Mounting Bars must be aligned in parallel with the L-bar.

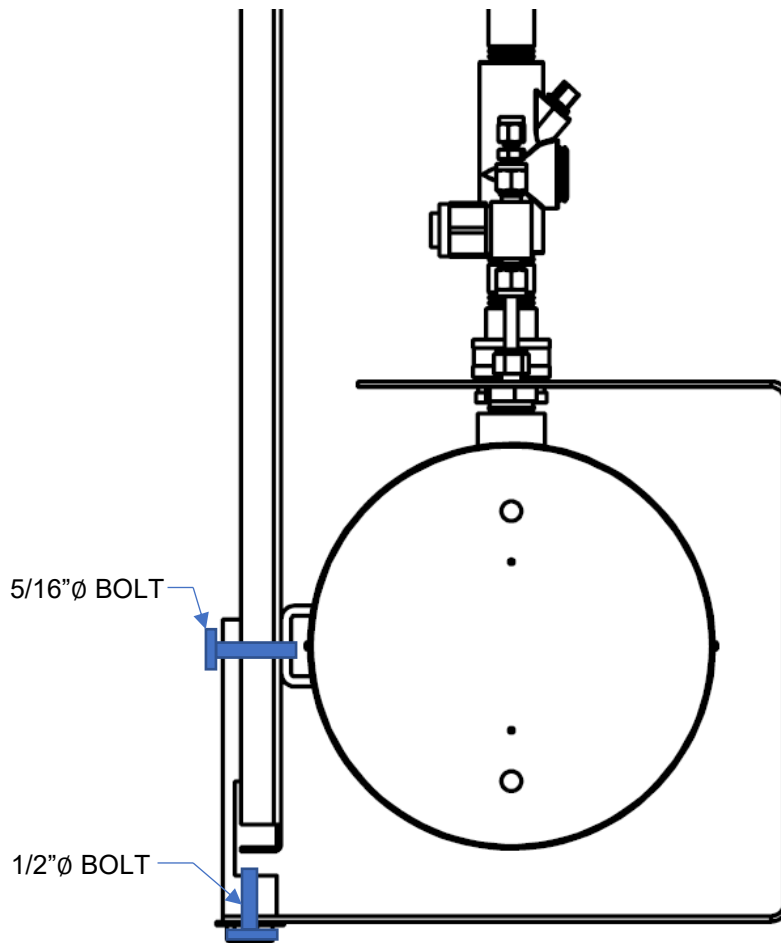


Figure 5: Detail illustration of Total Sulfur Furnace Guard assembly

3.2.2 Guard Plate (MC3209) Installation

The Guard Plate (MC3209) may be installed before or after the analyzer is installed in the field as long as the recommended 30cm clearance is provided at the installed location. Use the following steps to install the Guard Plate.

1. Line up the mounting slots on the Guard Plate and the threaded end holes of the Mounting Bars
2. Thread in 1/2"Ø bolt with 1" stainless steel split washer
3. Adjust position of Guard Plate side-to-side for required protection
4. Torque bolts to 41Nm (30 ft-lbs)

3.2.3 Guard Plate Removal In-Field

Prior to removing the Guard Plate in-field, the Total Sulfur Furnace must be deactivated through the PC GUI application or the analyzer must be powered down. Allow up to 30 minutes for the Total Sulfur Furnace to cool down to non-hazardous temperatures.



The Total Sulfur Furnace may be hot enough to cause burns if not allowed to cool down before removing the Guard Plate.



Although the exterior surface of the Total Sulfur Furnace may be non-hazardous to the touch, the internal components could be hot enough to cause severe burns and ignite flammable atmospheres. Refer to the latest revision of the Protech 903 Operation Manual for proper procedures to access the Total Sulfur Furnace.

Use the following steps to remove the Guard Plate.

1. Slightly loosen the two 1/2"Ø bolts attaching the Guard Plate to the Mounting Bars.
2. Brace the underside of the Guard Plate such that the 1/2"Ø bolts are not bearing the weight of the Guard Plate
3. Fully loosen the two 1/2"Ø bolts from the Guard Plate and Mounting Bars
4. Remove the Guard Plate keeping clear of plumbing and electrical lines between the Total Sulfur Furnace and analyzer enclosure.

Section 4 **Physical Specifications**

Assembled Dimensions	250mm H x 610mm W x 270mm D (10" H x 24" W x 10.5" D)
Material	Aluminum alloy 6061

Section 5 Spare Parts



Substitution of any component with unauthorized parts may impair suitability of the equipment for hazardous location certificates Class I, Div 1 or Class I, Div 2.

Part Number	Description
MC3209	TOTAL SULFUR GUARD PLATE
MC3210	GUARD PLATE MOUNTING BAR
RKxxxx	TOTAL SULFUR GUARD FASTENER KIT

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