Rosemount™ Hx438

Amperometric Steam Sterilizable Dissolved Oxygen Sensors

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The Rosemount Hx438 dissolved oxygen sensor is used in a variety of industries and applications and is designed to meet strict steam sterilization requirements required by top tier life sciences and food and beverage customers.

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Overview

Steam Sterilizable and Autoclavable Design

- Allows for fixed or retractable mounting configurations.

- Measures after many Steam-in-Place (SIP) applications.

- Provides fast and stable readings.

- Short polarization time.

Versatile Installation Options

- The sensor features a PG 13.5 process connection and is compatible with insertion mounting assemblies (sold separately).

- Installs easily with quick cable-to-sensor connections.

- Easily installs into insertion mounting assembly for mounting into G 1–¼ in. sockets.

Contents

Ordering Information

Rosemount Hx438 dissolved oxygen sensor provides a drift-free signal and maintains its calibration value for up to 50 steam sterilization cycles. It can be used in the biotechnology, pharmaceutical, chemical, and food processing industries. Rosemount Hx438 dissolved oxygen sensor uses a 4-pin connection plug for quick disconnection from the cable (sold separately).

The sensor can be used with the Insertion mounting assembly or similar assemblies typically used with large scale batch processes that perform SIP cleaning. For smaller batch processes, it can be threaded directly into the top plate and autoclaved if necessary.

NOTE: For clean-in-place (CIP) applications, consult factory.

Table 1. Rosemount Hx438 dissolved oxygen sensors ordering information

Model	Sensor Type
Hx438	Amperometric Steam Sterilizable Dissolved Oxygen Sensors
Sensor Length	
01	120 mm
Typical Model Number: Hx438-01	

Specifications

Table 2. Rosemount Hx438 dissolved oxygen sensors specifications

Operating Temperature Range	32 to 266 °F (0 to 130 °C)
Maximum Pressure	43 psig (400 kPa abs, 4 bar)
Measurement Range	0 to 20 ppm, 0 to 250% saturation, depending on instrument
Wetted Materials	Stainless steel and EPDM
Process Connections	PG 13.5 thread
Cable Connector	Standard 4-pin connector
Cable Compatibility	Standard 4-pin connector cable
Compatible Mounting Accessory	Insertion mounting assembly. See page 8.
Compatible Transmitters	Rosemount transmitter models 56, 1056, 5081, and 1066
Temperature Compensation	22K NTC

Table 3. Insertion mounting assembly specifications (P/N 9160478)

Mechanical Connection	G-1–¼ in.
Total Length	215 mm
Maximum Diameter	57 mm
Material of Construction	316L SS/DIN 1.4435, EPDM
Surface Finish	< 16 micro inch Ra
Temperature Range	14 to 284 °F (-10 to 140 °C)
Maximum Pressure	6 bar (87 psi)
Insertion Length	70 mm
Compatible Sensors	Rosemount Hx438 dissolved oxygen sensors All electrodes with PG 13.5 threads and 120 mm length.
Mounting accessory needed for installation	PN 9160483 weld-in socket or other G 1–¼ in. threaded socket

Dimensional Drawings

Figure 1. Rosemount Hx438-01 dimensional drawing

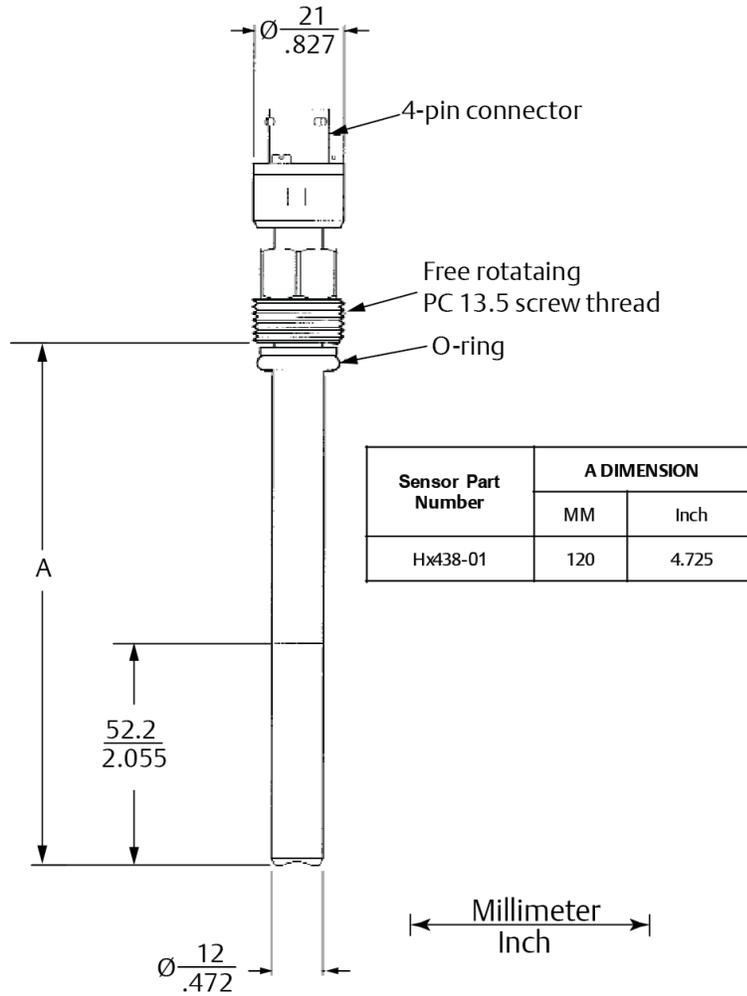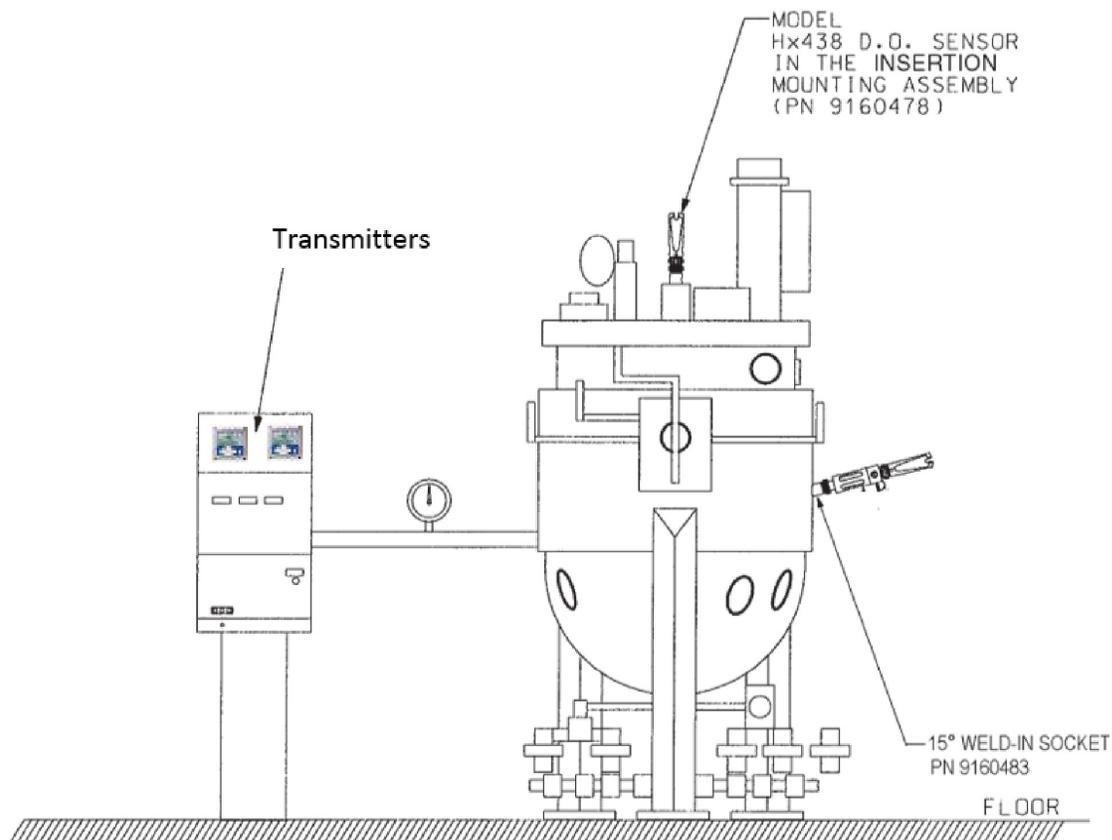| Sensor Part Number	A DIMENSION	
	MM	Inch
Hx438-01	120	4.725

Figure 2. Rosemount Hx438 dissolved oxygen sensor sample installation drawing

Sample Installation Drawing. Production Size (500 L to 20,000 L+) Fermentor (or Bioreactor, typically maximum up to 5000 L) with combination of top plate and side mounting using Hx438 in various mounting assemblies.

Sensor Mounting Hardware

Rosemount mounting hardware offers many unique features and was designed with input from valued customers. The practical construction of the insertion mounting assembly makes daily use safe and easy.

Cable-to-Sensor Electrical Connection Protected

The integrity of the electrical connection between the sensor and cable is maintained by the unique cable guard system. This design is the newest industry standard and allows the user to remove the sensor and cable easily without threading the cable through older standard hardware with rubber plugs. When the cable guard system cap is installed on the mounting hardware, seals are pressed onto the cable and held secure, protecting the electrical connection from dirt and moisture.
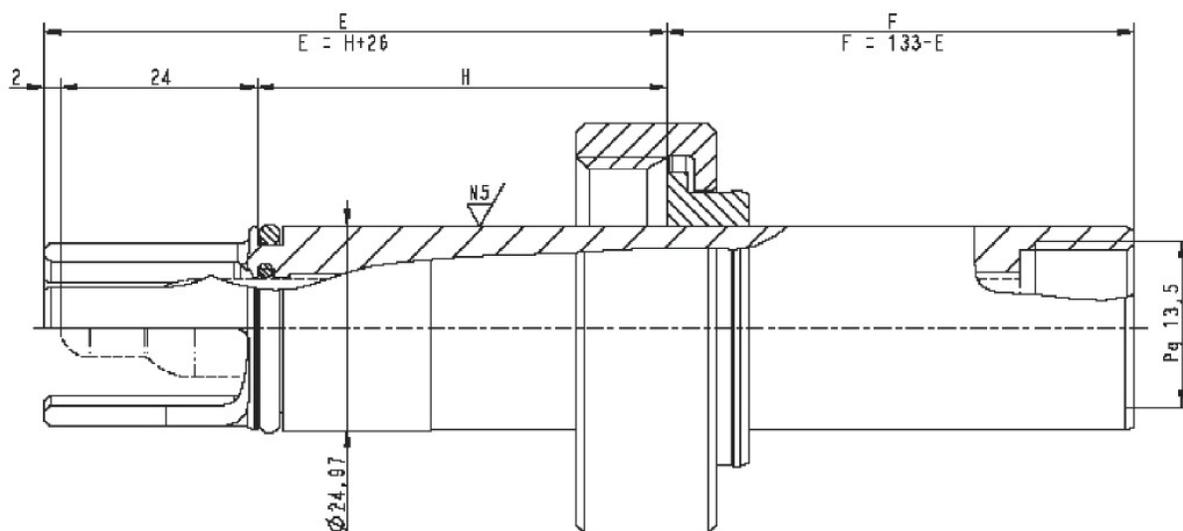
Sensor Protection from Process Solids

All new Rosemount mounting assemblies have a sensor protection system. This design protects the electrode measuring tip from possible damage from solid components of the sample, e.g. undissolved reagents of ice. The insertion assembly uses three rugged pins for sensor protection.

Insertion Mounting Assembly

The Rosemount Insertion Mounting Assembly (PN 9160478) is the best selection for all bio-pharmaceutical and standard industrial applications. It is designed for the installation of 120-mm sensors with PG 13.5 threads, for either pH or dissolved oxygen measurement. It is easily mounted into G 1–¼ in. sockets and the Viton O-rings can be changed without special tool. The practical cable guard system protects the electrical connection from dirt and moisture.
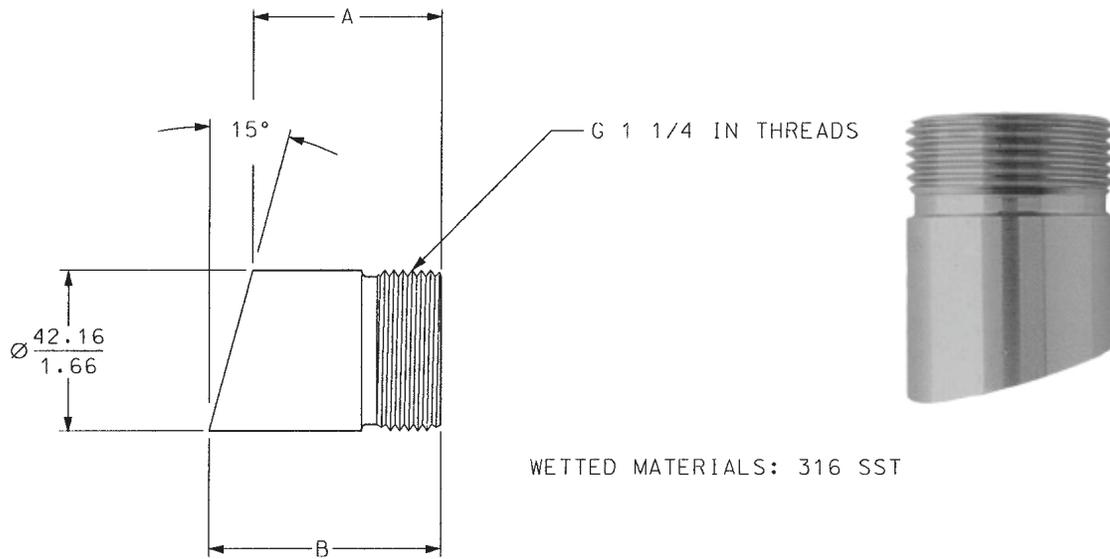
Figure 3. Insertion mounting assembly

Note: H = O-ring position = 22 mm (0.866 in.)

Installation Accessories

Weld-in Socket

The weld-in socket is the base for the installation of Rosemount's mounting hardware. Made of stainless steel, it is easily welded into a tank, fermentor, or pipe. Due to the special design, it maintains its exact inner diameter after welding, which is important with respect to the correct tightening of the holder's O-rings. The socket has an installation angle of 15° that enables an optimal and flexible installation.

Figure 4. Weld-in Socket

Part Number	Description	Dimension			
9160483	Weld-in threaded socket, G1-¼ in., 44 mm	A		B	
		44	1.74	55	2.17

Accessories

Table 4. Rosemount Hx438 dissolved oxygen sensors accessories information

Part number	Description
Cable Accessories	
9160493	5m (16.4 ft), 4-pin connector, bare wire on transmitter end
Mounting Accessories	
9160478	Insertion 70mm insertion, use 120 mm sensor
9160484	Service kit for insertion mounting assembly
9160483	15° weld-in socket, G1–¼ in. thread, 44 mm
Servicing Accessories	
9160487	Service kit for sensors, includes three FDA approved membranes modules, O-rings, polishing tool, 20 ml electrolyte
9160489	30 ml bottle electrolyte
242000	Third party labeled connector cap for 4-pin connector for autoclaving (compatible with Hx438-01)
24262-00	Third party labeled replacement anode/cathode cartridge.

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