

# **SERVOTOUGH OxyExact 2232**

## **Wet Gas Sampling System**

for use with 2200 oxygen analysers

# **QUICK START MANUAL**

Part Number: 02232003A  
Revision: 0  
Language: UK English



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## 1 INTRODUCTION

### 1.1 Warnings, Cautions and Notes

This manual includes **WARNINGS**, **CAUTIONS** and **NOTES** which provide information relating to the following

#### **WARNINGS**

Hazards which could result in personal injury or death.

#### **CAUTIONS**

Hazards which could result in equipment or property damage.

#### **NOTES**

Alert the user to pertinent facts and conditions.

### 1.2 Scope of this manual

This manual covers installation, commissioning and routine maintenance of the Servomex 2232 Wet Gas Sampling System. Addresses for technical assistance and spares are given on the rear cover of the manual.

#### **About this manual**

Ref: 02232/003A/0

Order as part no.: 02232003A

### 1.3 Use of the product

The 2232 is basically the proven Servomex model 1162 Wet Gas Sample System, adapted for use with the Servomex type 2223 oxygen transmitter.

#### **NOTE**

The sample system is only compatible with the low flow options within the transmitter, ie: the sample flow will not exceed 200ml/minute.

## 2 INSTALLATION

### 2.1 Unpacking and inspection

Remove the sample system and accessories from their packing and inspect for any damage due to transit.

If damage has occurred, inform Servomex or its agent immediately. Retain all packing and shipping information.

Check that the supplied parts agree with the purchase specification. See also any Instrument Modification Sheets which may form part of this manual.

### 2.2 Location

The sample system must be located beneath the associated transmitter.

### 2.3 Mechanical Installation

Installation is detailed below, making reference to Figure 1.

Secure support brackets to wall/panel to dimensions shown.

Ensure 1/8" nuts, bushes and 'O' rings are correctly located to both sample tubes and carefully remove end caps.

Assemble tubes to the respective connectors on the wet gas sample unit. Do not tighten fittings.

Fit the two 1/8" OD to 1/8"NPT adaptors to the transmitter gas ports.

Fit the wet gas sample system to the support brackets, using M6 fixings supplied. Ensure that the inlet/outlet connections go to the correct ports at the transmitter.

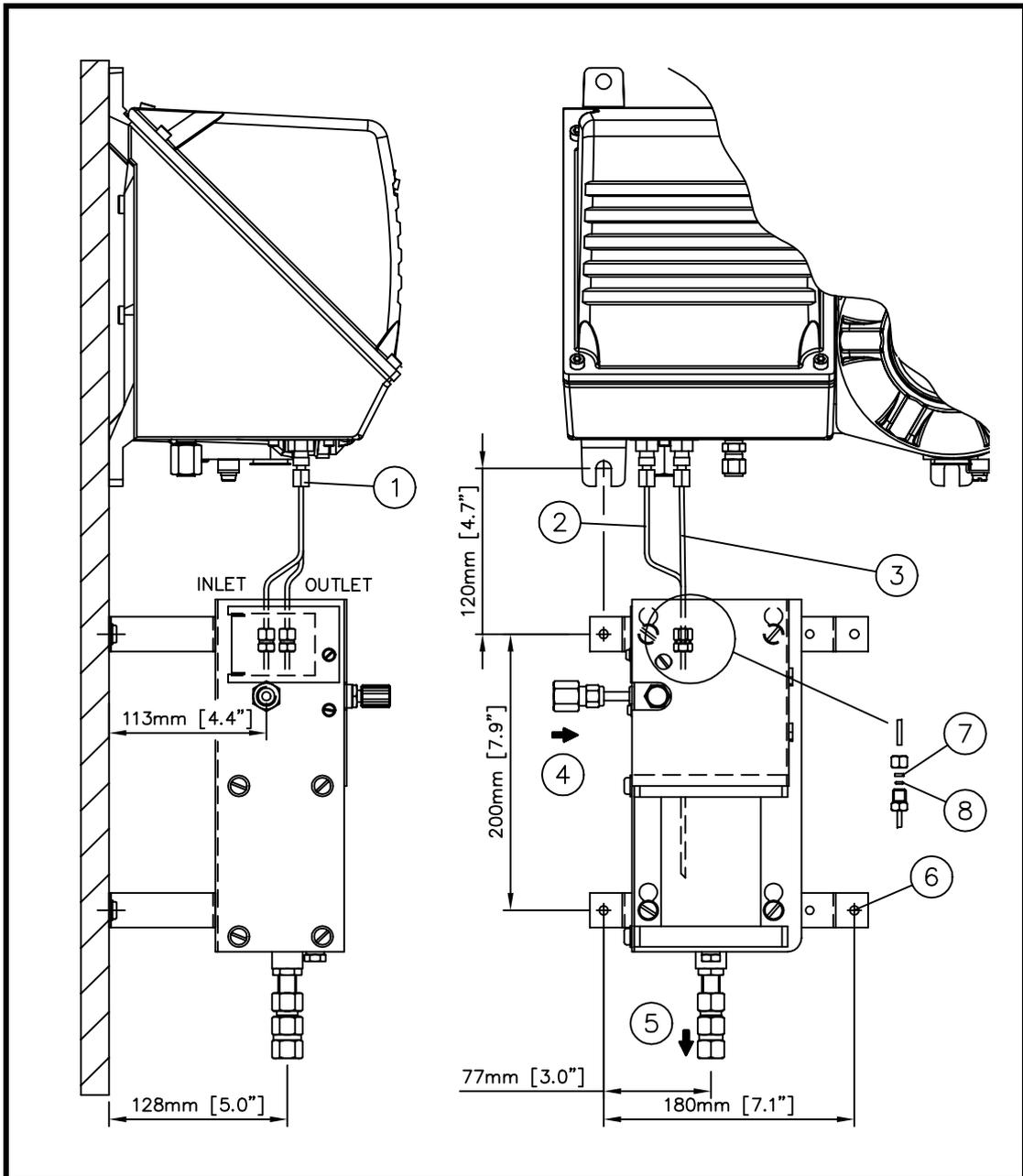
Tighten all gas connections.

#### **WARNING**

Verify that connections are leak free at full operating pressure before applying sample or calibration gases as these gases may be toxic or asphyxiant.

#### **CAUTION**

The transmitter should be allowed to warm up before allowing sample gas to flow through it, this will prevent condensation of the sample in the measuring cell.



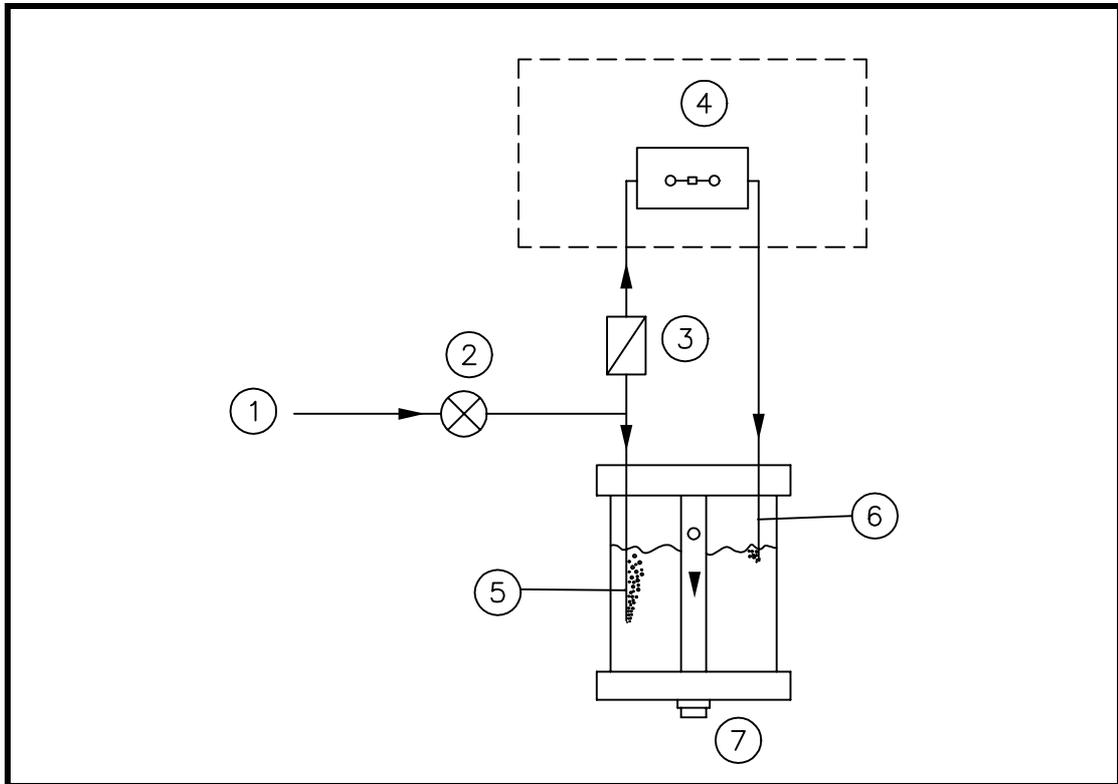
**Figure 1 Mechanical Installation**

**Key to Figure 1**

- 1 - Adaptor, 1/8" OD to 1/8" NPT (2 off)
- 2 - Transmitter sample inlet tube
- 3 - Transmitter sample outlet tube
- 4 - Sample inlet port, 1/4" NPT
- 5 - Sample outlet port, 1/4" NPT
- 6 - Support bracket fixing holes, 6.5mm diameter
- 7 - 'O' Ring
- 8 - Metallic bush

### 3 OPERATION

The sample system comprises a water filled bubbler, a filter with replaceable element and a needle valve to control the flow, see Figure 2



**Figure 2 Sample System Schematic**

Key to Figure 2

- 1 - Sample inlet
- 2 - Needle valve
- 3 - Filter
- 4 - Measuring cell in 2223 transmitter
- 5 - Bypass dip leg
- 6 - Sample dip leg
- 7 - Sample outlet/drain

Set up is as follows:

Close the flow control valve.

Fill the bubbler bowl with water, using the filling port on the top plate, until it has reached the level of the drain hole in the central sample outlet tube.

Adjust the flow control valve so that there is a constant stream of bubbles from the shorter (small diameter) sample dip leg and a steady stream of bubbles through the longer (large diameter) bypass dip leg.

If the by pass flow is excessive, the oxygen reading will be noisy. If the by pass flow rate is too slow, the oxygen reading will have a long response time.

## 4 ROUTINE MAINTENANCE

### 4.1 Cleaning

Cleaning should be carried out in the following way. Parts are identified in Figure 3.

Turn off sample/calibration gas supply

Drain water out of the bubbler (by removing the drain plug)

Disconnect vent / drain pipe and adaptors if fitted

Unscrew and remove 2 x M6 slot head screws in the base

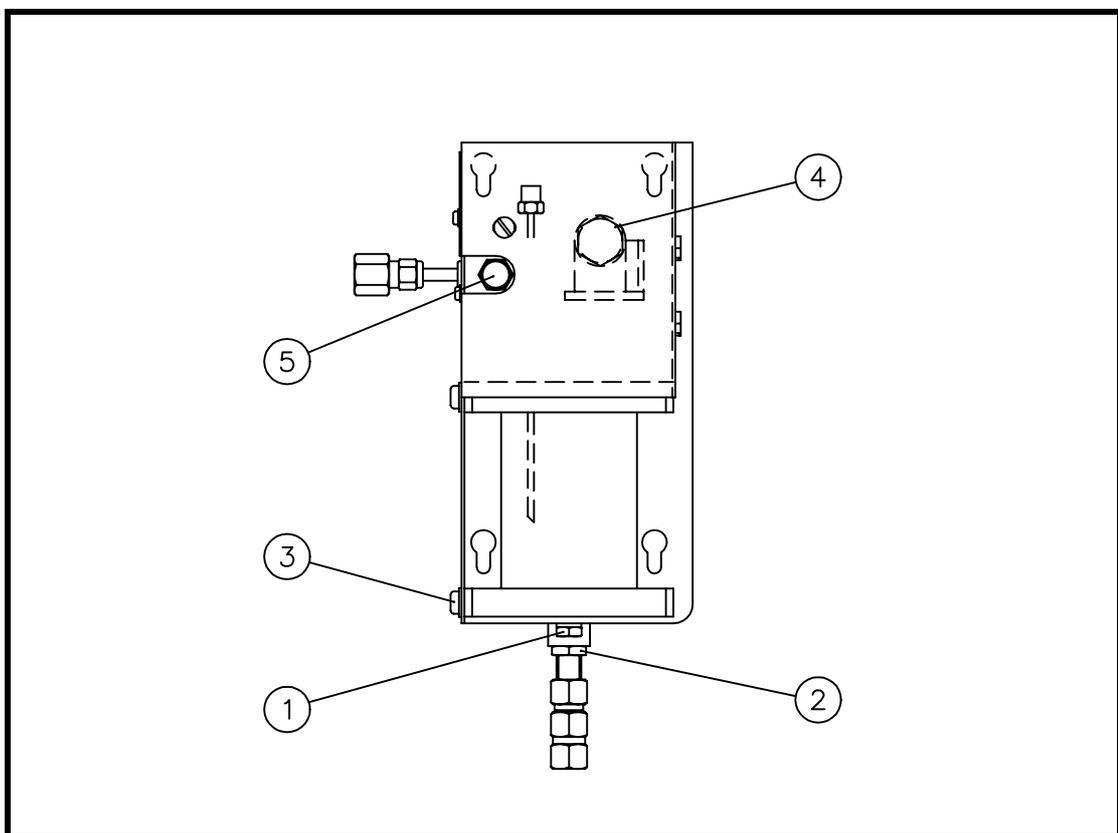
Remove ¼" BSP locknut and collar whilst holding the bubbler base

Slide glass tube and base down carefully

Clean with soapy water and rinse thoroughly with clean water

Replace 'O' rings as necessary

Reassemble the unit, do not overtighten locknut



**Figure 3 Sample System Components**

Key to Figure 3

- 1 - Liquid drain plug
- 2 - ¼" BSP locknut and collar
- 3 - 2 x M6 slot head screws
- 4 - Filter assembly
- 5 - Needle valve

## 4.2 Replacing the Filter

The system includes a filter. This may need replacing on a regular basis. Parts are identified in Figure 4.

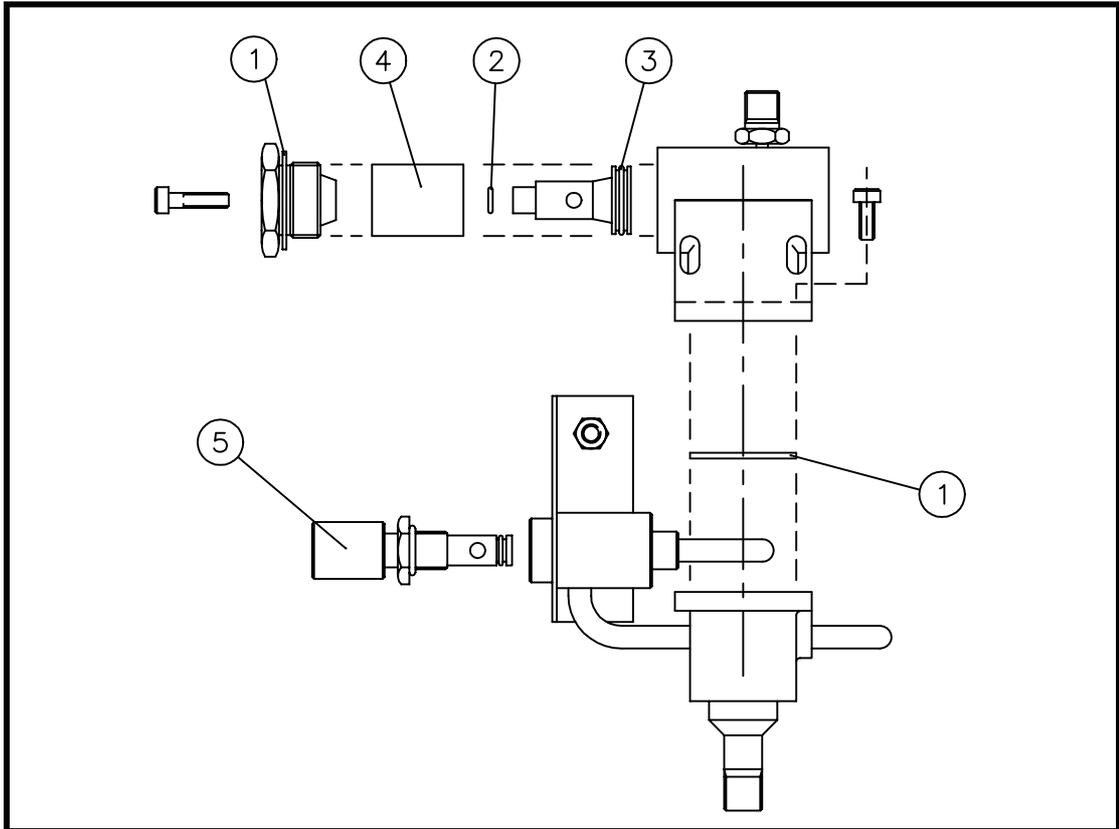
Turn off sample/calibration gas supply

Unscrew the filter end cap and remove the filter sub-assembly

Unscrew the hexagon socket screw, dismantle the sub-assembly

Replace the filter element

Check/replace 'O' rings then rebuild and refit the sub-assembly



**Figure 4 Filter Block Assembly**

Key to Figure 4

- 1 - Seal washer PTFE ¾" BSP
- 2 - 'O' Ring BS006 PTFE
- 3 - 'O' Ring BS112 Viton A
- 4 - Filter element
- 5 - Needle valve

## 5 RECOMMENDED SPARES

The following spares are required to maintain normal operation of the sample system.

Description	Part Number
Filter Element	2377-3608
Needle Valve	2372-0572
Spare seals kit - viton/PTFE	01162998
Spare seals kit EPDM/PTFE	01162999

## 6 TECHNICAL SPECIFICATION

### FUNCTIONAL

Physical:	Width:	150mm
	Height:	300mm
	Depth:	120mm (200mm including mounting)
	Weight:	2.7kg (5.95lbs)
Inlet/Outlet Connection:		¼"NPT (Int) connectors

### ENVIRONMENTAL

General:	Suitable for indoor and sheltered outdoor locations
Atmospheric pressure:	79 to 124 kPaa (11 to 18 psia)
Altitude:	3000m (10,000 feet) maximum
Warm up time:	Not applicable
Operating temperature*:	-10 to 50°C (14°F to 122°F)
Storage temperature:	-20 to 65°C (-4°F to 149°F)

\* Below 0°C the water in the bubbler should be replaced by ethylene glycol.

### OPERATIONAL

Suitable for use with samples saturated at temperatures up to +45°C (+113°F).

Sample inlet pressure:	2 to 140 kPa (0.3 to 20 psig)
Sample Flow Rate:	200ml/min recommended
By Pass Flow Rate:	400 to 1100 ml/min
Noise**:	< +/-0.02% oxygen at the optimum flow with Nitrogen
Filter Retention:	90% of 0.6 µm particles
Response Time T90**:	< 14 seconds (includes 2223 transmitter)

\*\*With By Pass flow of 400ml/min, Sample flow of 200ml/min and the 2223 user filter set to '0'. (The filter time constant may be used to reduce 'noise' at the expense of 'response time'.)

Standard materials of construction of sample wetted components:

Stainless Steel SS316, PTFE, Polypropylene, Glass fibre/epoxy resin, Glass, Viton  
(Viton may be replaced by EPDM)