Caution: *The Duct Adaptor is not suitable for use with Certified Sensors.*

The Duct Adaptor, Part No: 2110B2160, provides a mounting point for a sensor in a duct. The Duct Adaptor is supplied with a kit of parts for fitting to the duct. The installation uses a minimum number of holes drilled into the ductwork, and allows quick change over when exchanging sensors.

The Duct Adaptor is designed to divert 700cc of sample flow to a sensor over a wide variety of duct sizes (4in -16in diameter) and flow rates. For installations with high flow rates, an adjustable flow restrictor can be attached to the adaptor.

The Duct Adaptor kit of parts enables it to be fitted to round ducts. The adaptor is first installed to the duct and then the sensor is fitted to it.

Checking the Components

Before fitting the Duct Adaptor check that the kit consists of the following parts:

| Item	Part Number
Duct Adaptor	-
O-ring (1 off)	Dowty 200-212-9775
Self-tapping screw (2 off)	No 8 x 19mm
Insulator bush (2 off)	Richco MINI #8-12
Seal (2 off)	Parker #600-015-8
Flow restrictor (1 off)	2110D0721
Accessories Quick Start Guide	2110M8008

Fitting the Duct Adaptor

To fit the DuctAdaptor accessory carry out the following procedure.

1. Drill the gas Pitot tube clearance hole and adaptor mounting holes in the duct.

Use the following dimensions.
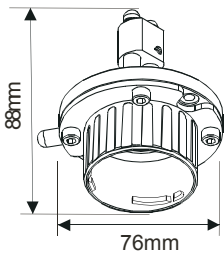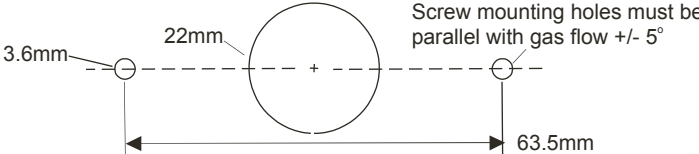
Note : Drawing is not to scale.

2. If required fit the flow restrictor to the Duct Adaptor.

Use one the following charts to determine if the flow restrictor needs to be fitted to the Duct Adaptor and what setting the restrictor requires. If it is necessary to measure the gas flow in the duct refer to the sub-section at the end of this procedure.

Restrictor Settings for Electrochemical Sensors

Dia. (in)	Flow Rate (cubic feet / minute)				
	Not Recommended	No Restrictor	Set to Line A	Set to Line B	Set to Line C
4	<65	65 - 90	90 - 130	130 - 180	180 - 220
6	<145	145 - 200	200 - 300	300 - 400	400 - 500
8	<260	260 - 360	360 - 500	500 - 725	725 - 875
10	<400	400 - 560	560 - 800	800 - 1125	1125 - 1400
12	<575	575 - 800	800 - 1200	1200 - 1600	1600 - 2000
14	<790	790 - 1100	1100 - 1550	1550 - 2200	2200 - 2700
16	<1025	1025 - 1430	1430 - 2000	2000 - 2900	2900 - 3500

Dia. (mm)	Flow Rate (cubic metres / second)				
	Not Recommended	No Restrictor	Set to Line A	Set to Line B	Set to Line C
100	<0.030	0.030 - 0.043	0.043 - 0.060	0.060 - 0.085	0.085 - 0.104
150	<0.068	0.068 - 0.094	0.094 - 0.142	0.142 - 0.189	0.189 - 0.236
200	<0.123	0.123 - 0.170	0.170 - 0.236	0.236 - 0.342	0.342 - 0.413
250	<0.189	0.189 - 0.264	0.264 - 0.378	0.378 - 0.531	0.531 - 0.660
300	<0.271	0.271 - 0.378	0.378 - 0.566	0.566 - 0.755	0.755 - 0.944
350	<0.373	0.373 - 0.519	0.519 - 0.732	0.732 - 1.038	1.038 - 1.274
400	<0.484	0.484 - 0.675	0.675 - 0.944	0.944 - 1.369	1.369 - 1.652

Refer to the following diagram for restrictor positioning information.

Caution: *Ensure that the restrictor is positioned so that when the adaptor is subsequently fitted to the duct the set screw will be downstream of the air flow.*

Each Pitot tube has 3 scribed lines (shown as A, B and C on the diagram) that represent different restrictor settings. Restrictor Line C offers the most restriction, and is the line closest to the end of the Pitot tubes.
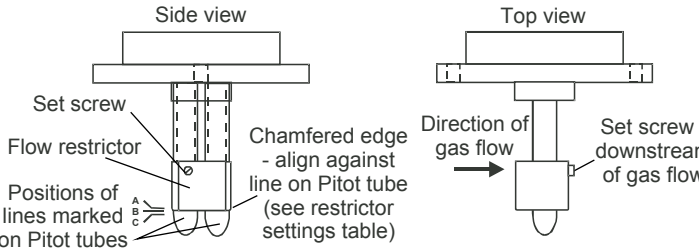
3. Align the chamfered edge of the restrictor with the required line on the Pitot tube.

See the previous table.

4. Tighten the set screw.

Caution: *Do not overtighten. Overtightening the screw can shear off the screw head.*

5. Fit the rubber O-ring seal to the adaptor.

6. Fit the adaptor to the duct.

See the following assembly diagram. Ensure that the barb cover is fitted over the barb tube connector if no connection is made.

Caution: *To prevent an earth loop, ensure that the duct adaptor centre does not come in contact with metal ductwork. Ensure that the O-rings, seals and insulator bushes provided in the kit are used.*

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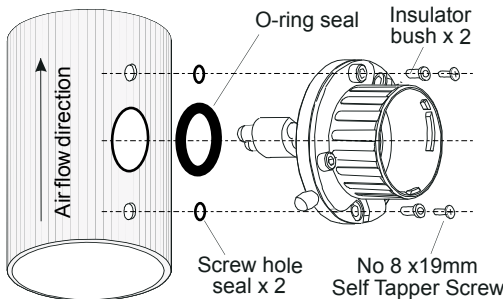
7. Remove the sensor cap.

Rotate the cap in an anticlockwise direction by 1/4 turn to release the bayonet fitting and pull off. Put the cap to one side as it is no longer required.

8. Remove the rubber seal or filter from the sensor cap.

The rubber seal or filter is held in place in the cap by its three lugs. Carefully prise the rubber seal or filter free from the lug location points in the cap or accessory.

9. Fit the rubber seal or filter to the Duct Adaptor bayonet end.

Ensure that the rubber seal or filter is correctly placed in the Duct Adaptor bayonet end the correct way round with the three lugs closest to the front face of the adaptor and correctly engaged in the locators.

10. Fit the sensor (without the cap) to the Duct Adaptor.

Push the sensor onto the bayonet fitting and rotate the sensor in a clockwise direction by 1/4 turn.

If the sensor has an Oxygen cartridge fitted ensure that the Oxygen adaptor is left fitted to the sensor.

Measuring duct gas flow

If the gas flow in the duct is not known, a mass flowmeter must be connected to the Duct Adaptor (for details see the ApexTechnical Handbook).

Quick Start Guide

Honeywell

Accessories

CONTENTS

The types of information notices used throughout this document are as follows:

> **WARNING**
> Indicates hazardous or unsafe practice which could result in severe injury or death to personnel.

Caution: *Indicates hazardous or unsafe practice which could result in minor injury to personnel, or product or property damage.*

Note: Provides useful/helpful/additional information.

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1. INTRODUCTION

This document provides information about the installation and use of the accessories available for the Certified Sensor used with the Apex Transmitter Unit and the sensor used with the Opus Transmitter Unit. The accessories has been made with materials that prevent static build up and are resistant to attack by common chemicals and sunlight. Only use accessories from this range with the sensors.

- Flow Housing (Part No: 21110B2140). Enables test, calibration or sample gas to be flown over the sensor correctly. Conforms to CSA C22.2 No. 152 when fitted to the Certified Sensor with cartridge Part No: 2110B3754 installed.
- Weather Housing (Part No: 2110B2150). Protects sensor from extreme weather conditions (torrential rain, storms, gales etc.). Also provides some protection from hose down. Conforms to CSA C22.2 No. 152 when fitted to the Certified Sensor with cartridge Part No: 2110B3754 installed.
- Collecting Cone (Part No: 2110B2151). Increases the collection area for lighter than air gases. Conforms to CSA C22.2 No. 152 when fitted to the Certified Sensor with cartridge Part No: 2110B3754 installed.
- Sun Shade (Part No: 2110B2152). Shades the sensor preventing overheating from direct, intense sunlight. Conforms to CSA C22.2 No. 152 when fitted to the Certified Sensor with cartridge Part No: 2110B3754 installed.
- Duct Adaptor (Part No: 2110B2160). Kit containing parts required to install Sensor in a duct. Not for use with Certified Sensors fitted with combustible gas cartridges.

Associated Documentation:

Apex Technical Handbook, MAN0604 — Part No: 2110M8030
Certified Sensor Quick Start Guide, MAN0598 — Part No: 2110M8005
Certified Junction Box Quick Start Guide, MAN0607 Part No: 2110M8007

If information outside the scope of these instructions is required please contact Honeywell Analytics Ltd.

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2. FLOW HOUSING

The Flow Housing accessory, Part No: 2110B2140, provides a means of applying gas to the sensor for calibration and test.

43mm

53mm
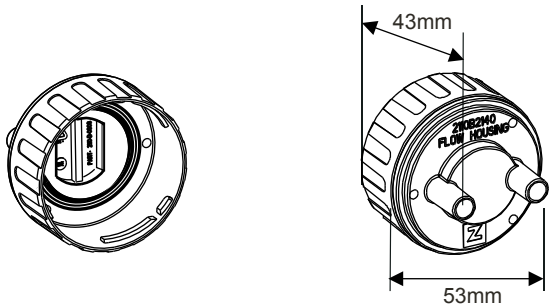
It can also be used in sampling systems where a sample of gas is drawn through a tube to the sensor. The accessory conforms to CSA C22.2 No. 152 when fitted to Certified Sensor with cartridge Part No: 2110B3754 installed.

It provides:

• Two ports to take 6mm tubing.

• A seal to stop gas dilution.

The housing works irrespective of which pipe the gas is applied to and flows gas across the face of the sensor rather than onto its face. It is recommended for most "sticky" gases the tubing should be PTFE with short pieces of rubber tube to make the final connection due to the inflexibility of PTFE. This minimises adhesion of the gas to the tube surface and allows for more accurate measurement.

The Flow Housing is suitable for flow rates in the range of 0.7 - 1 litre per minute flow across the cell.

FLOW HOUSING

A hydrophobic filter is supplied with the housing which must be used when calibrating sensors fitted with flammable gas cartridges.

When calibrating sensors fitted with other types of cartridge then the filter mounted in the sensor cap for normal gas sensing operation (if fitted) must be removed and used in the Flow Housing.

The Flow Housing accessory is attached to the sensor by means of a bayonet fitting.

To fit the Flow Housing accessory carry out the following procedure.

1. **Remove the sensor cap.**

    Rotate the cap in an anticlockwise direction by 1/4 turn to release the bayonet fitting and pull off.

2. **Fit the accessory onto the sensor body.**

    Reverse the cap removal procedure.

3. SUN SHADE

The Sunshade accessory, Part No: 2110B2152, shades the sensor preventing overheating from direct sunlight. The accessory conforms to CSA C22.2 No. 152 when fitted to Certified Sensor with cartridge Part No: 2110B3754 installed.

The accessory is fitted over the sensor body and is held in place using a clamp. The shade should be located so that the whole sensor is shielded.

The sun shade can be used with other accessories in the range such as the Flow Housing, Weather Protection and Collecting Cone, but should be attached before any other accessories are fitted, or after their removal.

145mm

115mm
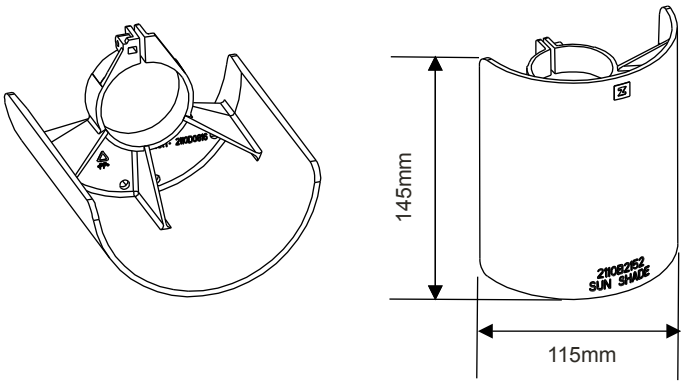
To fit the Sunshade accessory carry out the following procedure.

1. **Remove the sensor cap or accessory.**

    The cap or accessory is held by means of a bayonet fitting. Unscrew 1/4 turn anticlockwise and pull off.

2. **Slide the Sunshade clamp over the sensor body.**

    The shade should be positioned so that the whole sensor is shielded.

SUN SHADE

3. **Fit the supplied self-tapping screw through the Sunshade clamp's left-hand hole looking from the clamp end of the Sunshade).**

   *The self-tapping screw is a K40x16PT Pan Flange PZ Head.*

4. **Drive the screw home into the clamp's right-hand hole until the Sunshade's clamp grips the sensor body tightly.**

5. **Refit the sensor cap or accessory.**

4. WEATHER PROTECTION

Caution: *This accessory should not be used for calibration purposes.*

The Weather Protection accessory, Part Number 2110B2150, protects the sensor from hosing down/cleaning operations and from extreme weather conditions, (e.g. torrential rain, storms, gales etc.).
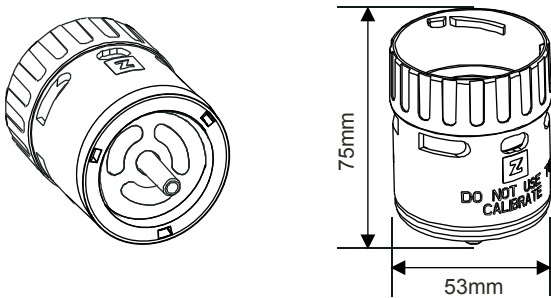
75mm

53mm

The accessory conforms to CSA C22.2 No. 152 when fitted to the Certified Sensor with cartridge Part No: 2110B3754 installed.

As well as providing weather protection it also provides a means to directly inject gas to the front of the sensor via a 6mm tube for gas response checking. Accuracy of reading is not guaranteed. Do not carry out response checks at wind speeds greater than 10m/s (22mph).

The accessory is attached to the sensor by means of a bayonet fitting.

WEATHER PROTECTION

To fit the Weather Protection accessory carry out the following procedure.

1. **Remove the sensor cap.**

    Rotate the cap in an anticlockwise direction by 1/4 turn to release the bayonet fitting and pull off.

2. **Fit the accessory onto the sensor body.**

    Reverse the cap removal procedure.

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5. COLLECTING CONE

Caution: *This accessory should not be used for calibration purposes.*

The Collecting Cone accessory, Part No: 2110B2151, is designed to increase the collection area for lighter than air gases. The accessory conforms to CSA C22.2 No. 152 when fitted to Certified Sensor with cartridge Part No: 2110B3754 installed.

127mm

160mm
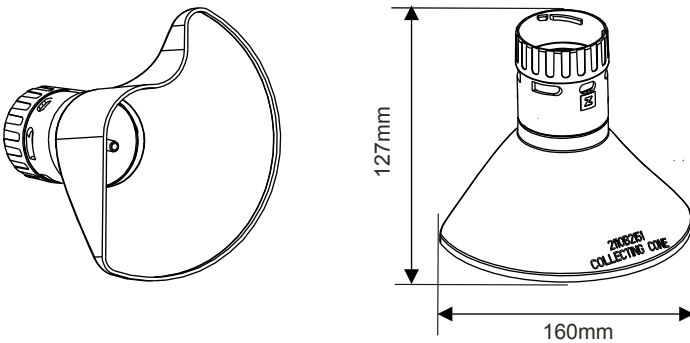
The Collecting Cone accessory is shaped to fit against a wall or other flat surfaces, and is designed to allow the gases collected to escape in a controlled manner so that the time to clear an alarm is not excessively prolonged.

Inside the cone is a nozzle that can accept a 6mm tube to allow test gas to be applied without having to remove the cone. Accuracy of reading is not guaranteed. Do not carry out response checks at wind speeds greater than 10m/s (22mph).

When fitting the collecting cone ensure that the rubber seal supplied with the sensor cartridge is fitted to the location in the collecting cone.

The Collecting Cone accessory is attached to the sensor by means of a bayonet fitting.

COLLECTING CONE

To fit the Collecting Cone accessory carry out the following procedure.

1. **Remove the sensor cap.**

    Rotate the cap in an anticlockwise direction by 1/4 turn to release the bayonet fitting and pull off.

2. **Fit the cone onto the supplied housing.**

    The Collecting Cone is supplied as a kit of two parts that clip together.

3. **Fit the accessory onto the sensor body.**

    Reverse the cap removal procedure.