

Part Nos.
S01749
S01750
S01751
S01752
S01753
S01754

96HD/FL
 96HD/HS
 96HD/CO
 96HD/AM
 96HD/OX
 96HD/TC

96HD

Sensor Housing

Installation, operating and maintenance instructions, MO7181

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1. INTRODUCTION

1.1 Product overview

The 96HD sensor housing is a modular stainless steel assembly which dismantles to allow plug in sensors to be replaced easily. The 96HD can accommodate flammable, thermal conductivity, toxic and oxygen sensors. It is used throughout Crowcon's range of gas detectors and may also be used to replace older gas detectors previously manufactured by Crowcon or its' competitors. Once assembled the 96HD is certified EEx d IIC T6 and may be used in a zone 1 or 2 hazardous area when terminated in a suitable certified junction box.

1.2 Product description

Diagrams 1, 2 and 3 detail the 96HD sensor housing.

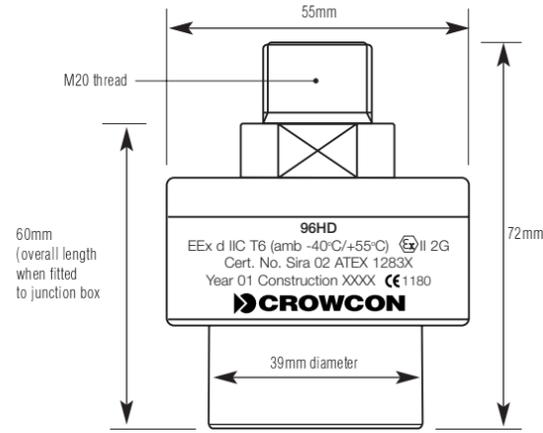


Diagram 1: 96HD dimensions

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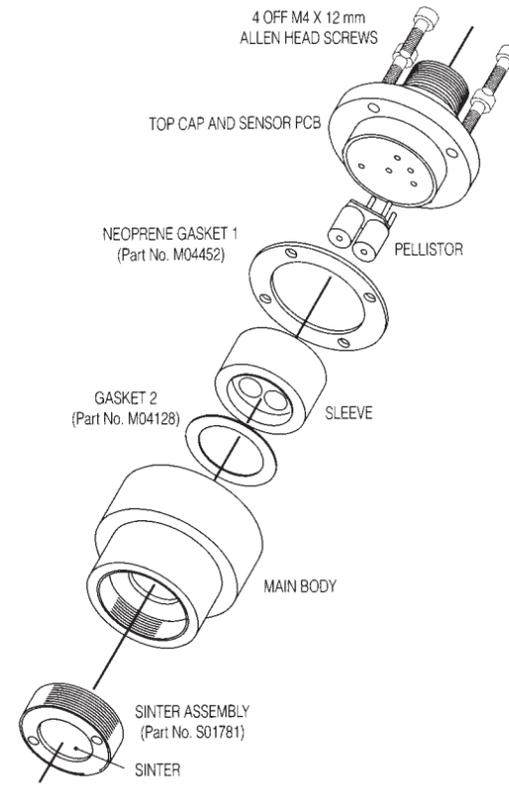


Diagram 2: 96HD sensor housing with flammable sensor.

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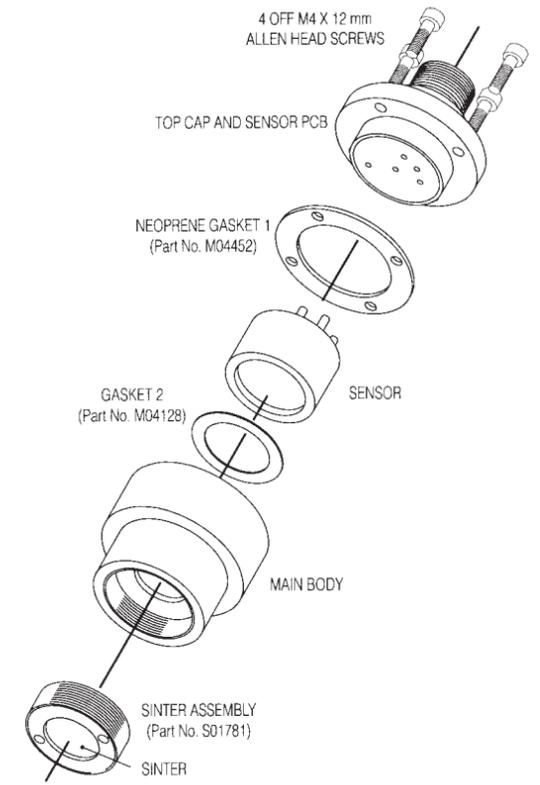


Diagram 3: 96HD sensor housing with toxic sensor.

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2. ELECTRICAL CONNECTIONS

The 96HD is supplied with either 2, 3 or 4, colour coded, flying wires depending on the sensor fitted. Wires must be terminated at an

appropriate certified junction box/amplifier and connected in accordance with the information in Table 1, below.

Sensor type and part number	Electrical connections	Amplifier	Notes/applicable products
Pellistor S01-637/letter A VQ21T B 300P C VQ8 D VQ16 E VQ22 F VQ25 G VQ41 H VQ1			EXD90/FL S01-633 Flamgard 4/20 (formerly EXD90/FL) DI9 or DI5/6 replacement (3-wire) 96HD (3-wire) used in Flamgard EXE, D, Plus
Thermal conductivity S01-638			EXD90/TC S01-636 TCgard (formerly EXD90/TC)
Oxygen E01-488			EXD90/OX S01-756 Txxgard-D/OX (formerly EXD90/OX)
Toxic E01-229/HS E01-344/CO E01-618/AM			EXD90/TOX S01-755 Txxgard-D/HS (formerly EXD90/HS) Txxgard-D/CO (formerly EXD90/CO) Txxgard-D/AM (formerly EXD90/AM)

Table 1: Application summary.

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3. REPLACEMENT/RETROFIT APPLICATIONS

96HD may be easily retrofitted to any system previously supplied by Crowcon. This allows customers to upgrade old disposable detectors to the serviceable 96HD, thus reducing the on going cost of ownership of the system. While the 96HD is electrically identical to older products mechanical changes have been essential to obtain certification to the latest standards. Table 2 summarises the compatibility of the 96HD with older detectors. If the detector you are using is not listed or you require assistance please contact Crowcon.

	Certification	Electrical	Performance	Dimensions	Calibration Equipment	Weatherproof cap or spray deflector	Collector cone	Flow adaptor
DI9	✓	✓	✓	X*1	✓	✓	✓	X*3
DI 5/6	✓	✓	✓	X*1	✓	✓*2	✓*2	X*3
81HD	✓	✓	✓	X*1	✓	✓	✓	X*3
73HT	✓	✓	✓	X*1	✓	n/a	n/a	X*3
96HT	✓	✓	✓	X*1	✓	n/a	n/a	X*3

Table 2: 96HD capability guide

✓ = identical or superior performance
 X = not directly compatible

Notes:
 *1 = Wherever possible dimensions have been maintained to be compatible with existing accessories.
 *2 = Existing accessories may be used with the addition of an adaptor (Crowcon part no. C01664).
 *3 = Contact Crowcon.

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4. OPERATION

4.1 Setting up

Please refer to the original instruction manual as this procedure may vary depending on the type of equipment the 96HD is connected to.

4.1.1 Flammable sensors only

If 96HD is used to replace flammable detectors connected to conventional control equipment (ie 3 wire mV bridge configuration) the correct bridge voltage must be applied to the detector. This varies depending on the sensor fitted and is summarised in Table 3. Sensor part number labels are located on the outside of the 96HD housing.

Sensor Part No.	Element	Bridge Volts (V dc)	Comment
S01-637/A	VQ21T	2.0	Poison resistance alternative
B	300P	2.0	Poison resistance
C	VQ8	2.5	Lead resistance
D	VQ16	2.5	Early model
E	VQ22	2.0	Low power for marine applications
F	VQ25	2.0	For halogens
G	VQ41	2.0	For ammonia/aviation fuel
H	VQ1	2.0	Early model

Table 3: Bridge voltage requirements for flammable sensors.

The voltage must be measured in the junction box between the red (-ve) and black (+ve) wires and should be +/- 0.1 V dc of the stated value. For setting up instructions refer to the original equipment instruction manual.

Site practices will dictate the frequency with which detectors are tested. Crowcon would recommend that detectors be gas tested at least every 6 months and re-calibrated as necessary. To re-calibrate a detector refer to the original equipment instruction manual.

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4.3 Sensor replacement/servicing of detectors

WARNING

This work should be carried out by Crowcon or an approved service centre unless suitable training has been received.

The 96HD sensor housing allows the user to replace the sensors, gaskets and sinter if necessary. An exploded view of the 96HD sensor housing is given in Diagram 2 for reference. The following procedure may be followed when servicing a 96HD device.

- Open the 96HD sensor housing by removing the four Allen head screws from the Top Cap with a 3mm Allen key.
- Remove the sensor from the Top Cap PCB. Flammable sensors have an extra black sleeve which may be separate from the sensor. This is normal and the sleeve may be re-used.
- Fit the replacement sensor checking the part number is correct. This part number is labelled on the main body of the detector. Observe pin alignment with PCB.
- Inspect the gaskets and replace if necessary.
- The sinter assembly will only need to be replaced if it has become blocked by dust or oil. Such blockage causes the response time of the detector to be slow and may affect sensitivity. To remove the sinter a removal tool (Part # M01614) is required. Loctite No 243 must be used on the sinter assembly threads to maintain certification.
- Re-assemble the 96HD housing taking time to ensure that the 3 mm Allen head screws are securely fixed into position.
- The 96HD is ready for use with the appropriate detector/system.

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5. SPARE PARTS AND ACCESSORIES

Description	Part number
Sensors:	
Flammable (0-100% LEL)	S01637/letter See sensor replacement label on detector
Thermal conductivity (0-100% vv binary gas)	S01638 / TC
Oxygen (0-25% vv)	E01488 / OX
Toxic (0-25 ppm hydrogen sulphide)	E01229 / HS
Toxic (0-250 ppm carbon monoxide)	E01344 / CO
Toxic (0-50 ppm ammonia)	E01735 / AM
Accessories:	
Collector cone	C01051
Weatherproof cap	C01442
Swivel mounting bracket	C01340
96HD to DI5/6, DI8 adaptor	C01664
Service items:	
Sinter removal tool	M01614
Loctite No. 243	Contact Crowcon
Sinter assembly	S01781
Gasket 1	M04452
Gasket 2	M04128
Calibration gas	Contact Crowcon

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6. SPECIFICATION

Material	316 Stainless steel
Dimensions	Max diameter 55mm (2.2 inches) Overall length 72mm (2.8 inches) (60mm (2.4 inches) fitted to junction box)
Weight	0.5 kg (1.1 lbs)
Electrical Output	Sensor dependent
Operating temperature	Flammable -40 to +55°C (-40 to 131°F) Toxic -10 to +55°C (14 to 131°F)
Humidity	0-99% RH non-condensing
Degree of protection	IP66 when fitted with weatherproof cap and connected to suitable junction box
Approval code	Ex II 2 G EEx d IIC T6 (+55°C)
Safety Certificate No.	Sira02ATEX1283X
Standards	EN50014, EN50018, EN50270
Zones	Certified for use in Zone 1 or Zone 2 areas. (see area classifications section)
Gas groups	IIA, IIB, IIC
Termination	Must be used with suitable certified junction box or transmitter/amplifier

Note: The 96HD detector must be effectively earthed for electrical safety and to limit the effects of radio frequency interference. This may be achieved by mounting the 96HD into an earthed Exd junction box or an Exe plastic junction box fitted with an earth continuity plate. There are no internal connections to the 96HD head body.

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NOTES

Area Classifications:-

Zone 0: An area classified, as Zone 0 will have ignitable concentrations of flammable gases, vapours or liquids present continuously or for long periods of time under normal operating conditions.

Zone 1: An area classified, as Zone 1 is likely to have ignitable concentrations of flammable gases, vapours or liquids present under normal operating conditions.

Zone 2: An area classified, as Zone 2 is not likely to have ignitable concentrations of flammable gases, vapours or liquids present under normal operating conditions.