



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 02ATEX5301X

4 Equipment: Type SA9* Ignition Coil

5 Applicant: Igniters Combustion Engineering Limited

6 Address: Unit 6 Prospect Drive
Enterprise Industrial Estate
Lichfield
Staffs
WS14 9UX
England

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number R53A8699A.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 1127-1:1997

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.


11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2 G
IIC T6

Project Number 53A8699
Date 11 April 2003
C. Index 18


~~R Cooper~~ Eng InstMC
Deputy Chief Executive

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Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900 Fax: +44 (0) 1244 681330
Email: exhazard@siratc.co.uk



SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 02ATEX5301X

13 DESCRIPTION OF EQUIPMENT

The Type SA9* Ignition Coil consists of an encapsulated coil assembly fitted within a cylindrical steel body. The steel body has two threaded steel end caps, one of which is centrally threaded to accept a cable gland with a supply cable, the other end cap is either similarly threaded or has a raised threaded centre section. End caps are secured in place with either thread sealant or encapsulant during assembly.

The cable gland may be a Hawke Type 501/453 that is certified by BASEEFA and coded EEx d IIC/EEx e II. Alternatively, any EEx d IIC or EEx e II ATEX approved cable gland may be used provided it is suitable for the cable i.e. it clamps the cable screen securely.

The supply cable may be either SY (PVC/PVC/GSAB/PVC), SWA or Silicone (Steel overbraid). It has 3 cores with a conductor size between 0.75 mm² and 1.5 mm². The integral earth conductor is connected directly to an earthing terminal on the inside face of the end cap and the armour or braid is earthed to the cable gland.

It is intended that the primary winding of the coil shall be supplied from a pulsed DC low voltage supply that has a nominal peak voltage of 175 V. The secondary winding, which is connected directly to the primary winding, produces a similar pulsed output at a nominal peak voltage of 8 750 V.

The secondary winding output terminal is made by use of an insulated threaded stud fitted into the end of the coil assembly. This connection either extends out of the whole assembly onto a spark ignition device fitted in the combustion chamber of the associated fuel-burning apparatus or is fitted into a quick release screwed connector. Either the quick release connector or the screw thread of the end cap is used to safely mount the ignition coil directly onto the fuel-burning apparatus.

The coil must be supplied through a pulsing circuit, which provides the specified input signal. This is limited by a 250 mA output fuse.

14 DESCRIPTIVE DOCUMENTS

14.1	Drawing No.	Sheet	Rev.	Date	Title
	A2/1G/9441E	1 of 1	E	28 Mar 03	General Arrangement with long quick release connector
	A4/1G/9442D	1 of 1	D	28 Mar 03	Label
	A2/1G/9443D	1 of 1	D	28 Mar 03	General Arrangement - screw in
	A4/1G/9568	1 of 1	-	15 Jan 03	General Arrangement with short quick release connector

14.2 Report No. R53A8699A

15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

- 15.1 The electrical input to the coil shall only be supplied by a pulsing unit, as specified by the manufacturer, that produces a pulsed DC low voltage supply that has a nominal peak voltage of 175 V at a limiting current of 250 mA (protected by a 250 mA fuse). This 250 mA fuse shall have at least a 35A breaking capacity.
- 15.2 The pulsing unit shall either be situated in a non-hazardous area or, if it is in a hazardous area, it shall be protected by a suitably ATEX approved enclosure.

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- 15.3 The supply lead shall either be terminated in a non-hazardous area or, if it is connected in a hazardous area, then it shall be suitably terminated and protected.
- 15.4 The quick release connector shall not be connected or disconnected when it is energised in a hazardous area.
- 15.5 The coil shall not be energised if the quick release connector is separated.
- 15.6 The minimum cable bending radii are listed below:

Cable Type	Minimum Bend Radius
SY (PVC/PVC/GSWB/PVC)	20 x Cable Diameter
SWA	20 x Cable Diameter
Silicone (Steel Overbraid)	20 x Cable Diameter

The cable shall not be subjected to bends that are more onerous than these values.

- 15.7 The ambient temperature ranges applicable to the SA9* Ignition Coil are listed below:

Cable Type	Installation Type	
	Flexible (°C)	Fixed (°C)
SY (PVC/PVC/GSWB/PVC)	0 to 60	-25 to 60
SWA	Not applicable	-35 to 60
Silicone (Steel Overbraid)	-50 to 60	-50 to 60

The SA9* Ignition Coil shall only be used within these temperature ranges.

- 15.8 The quick release connector must only be connected to the mating parts fitted to the fuel-burning apparatus, as shown on the certified drawings.
- 15.9 When the SA9* Ignition Coil with a Steel Wire Armoured supply cable is being installed, it shall not be subjected to temperatures below 0°C.

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in Report No. R53A8699A.

17 CONDITIONS OF CERTIFICATION

- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.
- 17.3 The encapsulated parts of the apparatus shall be subjected to a visual inspection. No visible damage of the compound shall be evident, such as cracks, exposure of the encapsulated parts, flaking, impermissible shrinkage, discoloration, swelling, decomposition or softening, as required by EN 50 028:1987 clause 7.1.

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- 17.4 An electric strength test of $2U + 1000$ V (where U is the supply voltage) with a minimum of 1500 Vac, shall be applied between circuit and casing for at least 1 minute as required by clause 7.2 of EN 50 028:1987. No breakdown shall occur.
- 17.5 The electrical data shall be checked by measurement of voltage, current and active power, as required by clause 7.3 of EN 50 028:1987. Alternatively, the following functional test may be carried out in lieu.
- The functional test requires connection to a suitable control unit and spark gap. Operate control unit and check for a continuous spark across the spark gap. When spark stops (after 5 seconds approx.), fit a diode-probe across the spark-gap to simulate flame and check flame signal on control unit.
- 17.6 This certificate relies on the following previously certified product. When used as part of the Type SA9* Ignition Coil, the key attributes listed in the table below shall still be maintained by their original certificate.

Description	Certificate No.	Key attributes
Hawke, Type 501/453	BAS01ATEX2078X	EEx d IIC/EEx e II
Any suitable ATEX approved gland	As appropriate	EEx d IIC or EEx e

- 17.7 The manufacturer shall clearly identify the type of supply cable that is used in the SA9* Ignition Coil so that the user/installer can comply with the special conditions for safe use that are applicable.

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 02ATEX5301X **Dated** 11 April 2003

VARIATION NUMBER 1 (ONE) **Dated** 18 December 2003

VARIATION TO EQUIPMENT

To permit:

- 1 The introduction of two alternative types of supply cable; these are either **HOFR** (Heat and Oil resistant, Flame-Retardant), or **RFOU** (R [Ethylene Propylene rubber] F [Flame retardant, halogen free - bedding] O [tinned copper wire braid - armour] U [Flame retardant, halogen free - outer sheath]).
- 2 A reduction in the minimum bending radius of the existing Steel Wire Armoured (SWA) supply cable from 20 x diameter to 6 x diameter.
- 3 The amendment of clauses 15.6 and 15.7 of the special conditions for safe use
- 4 The replacement of the ceramic insulation with one of three alternatives on the screw-in Type SA91 Ignition Coils. These are either, Filamic mica tube FT 19, PTFE, or Nylon 66.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
A2/1G/9441F	1 of 1	F	11 Nov 03	General Arrangement with long quick release connector
A2/1G/9443F	1 of 1	F	8 Dec 03	General Arrangement - screw in

File No 53V10990

Report No. R53V10990A

C Ellaby
Certification Officer

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 02ATEX5301X Dated 11 April 2003

VARIATION NUMBER 1 (ONE) Dated 18 December 2003

AMENDED SPECIAL CONDITIONS FOR SAFE USE

15.6 The minimum cable bending radii are as listed below:

Cable Type	Minimum Bend Radius
SY (PVC/PVC/GSWB/PVC)	20 x Diameter
SWA	6 x Diameter
Silicone (Steel Overbraid)	20 x Diameter
HOFR	8 x diameter
RFOU	8 x diameter

The cable shall not be subject to bends that are more onerous than these values.

15.7 The ambient temperature ranges applicable to the SA9* Ignition Coil are listed below:

Cable Type	Installation Type	
	Flexible (°C)	Fixed (°C)
SY (PVC/PVC/GSWB/PVC)	0 to 60	-25 to 60
SWA	Not applicable	-35 to 60
Silicone (Steel Overbraid)	-50 to 60	-50 to 60
HOFR	-20 to 60	-20 to 60
RFOU	-20 to 60	-50 to 60

The SA9* Ignition Coil shall only be used within these temperature ranges.

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