



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 07ATEX3027** Issue: **2**

4 Equipment: **Wolf ATEX Worklite Type WL-****

5 Applicant: **Wolf Safety Lamp Company**

6 Address: Saxon Road Works
Sheffield
S8 0YA
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 the confidential reports listed in Section 14.2.

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 60079-0:2004	EN 60079-7:2003	EN 60079-18:2004
EN 50020:2002	EN 61241-0:2004	EN 61241-1:2004

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 D
Ex e ib mb IIC T4 (Tamb = -20°C to +40°C)
Ex tD A21 IP65 T135°C

Project Number 59A16885
C. Index 05

C Ellaby
Certification Manager

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 07ATEX3027
Issue 2

13 DESCRIPTION OF EQUIPMENT

Wolf ATEX Worklite Type WL-** is a portable battery powered luminaire for use in the hazardous area. It comprises a 12 V, sealed lead acid battery and encapsulated electronics, these are housed inside a rugged, stainless steel enclosure that provides an ingress protection to at least IP65. The enclosure has a welded frame, which secures a lamp head containing an array of LEDs that provide the light. The lamp housing can be swivelled to point the light in the desired direction. Also attached to the welded frame above the lamp housing is a carry handle made from stainless steel or plastic.

There are four version of the Worklite:

- A Worklite with a 12 LED lamp head powered from a 12 V, 35 Ah.
- A Worklite with a 12 LED lamp head powered from a 12 V, 18 Ah.
- A Worklite with a 6 LED lamp head powered from a 12 V, 35 Ah.
- A Worklite with a 6 LED lamp head powered from a 12 V, 18 Ah.

The battery and the encapsulated electronic block, inside the steel housing, are held in place using plastic packing material. The battery is fitted with vents to allow gases generated by the cells to escape outside the battery housing.

The lamp comprises a panel of high output LEDs (either an array of 6 or 12) and a terminal block, both mounted behind a 6 mm toughened glass window and inside an extruded aluminium heat sink, which forms part of the lamp housing. Connections between the lamp and the encapsulated electronics are made via a braided, multi-core cable through Ex e approved glands at each end.

The encapsulated control electronics ensure a constant current supply to the lamp LEDs giving maximum light output. Fitted to the battery enclosure lid is an intrinsically safe push-button, this controls the output in high power or low power mode, offering extended battery life on the low power setting. Also fitted to the lid is an intrinsically safe indication LED, this indicates the state of charge for the battery. The control circuit uses a microcontroller to monitor the battery voltage and cut off the connection to the battery to prevent deep discharge. The battery is recharged in the safe area and the charging socket is fitted with a blanking cover.

Variation 1 - This variation introduced the following changes:

- i. The value of resistor R37 was changed to 33 K Ω and zener diode ZD1, connected in series, was added.
- ii. The modification of the existing stock of print circuit boards by retrofitting ZD1.
- iii. The pcb track layout was altered to incorporate ZD1.
- iv. An alternative internal wiring scheme using a 6-way terminal block in place of the existing 8-way terminal block was recognised.
- v. Minor modifications to the screw fixing and production notes were introduced.

Variation 2 - This variation introduced the following changes:

- i. The printed circuit board layout was modified to incorporate the following changes:
 - The addition of resistor R23 (100K) and a change of package for C15 in the Switcher Circuit.
 - The addition of diode D9 in series with resistor R39 (1K5) in the Power Circuit.
 - The addition of transistor T10, resistors R9 (10K) and R40 (10K) in the Control Circuit, additionally the pushbutton is connected directly to +VBAT and the return connection is connected via resistor R10 (10K).

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Sira Certification Service

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 07ATEX3027
Issue 2

- ii. The use of following batteries as alternatives in the x 12 LED Worklite: Yuasa Model YC33 and Panasonic LC-R1233.
- iii. The use of following batteries as alternatives in the x 6 LED Worklite: Yuasa Model NPC17, Genesis NP18-12R and Panasonic LC-X1220P.
- iv. Two alternative arrangements of venting the battery were recognised.
- v. The introduction of an optional arrangement regarding the indexing system for the lamp head for both x 12 LED and x 6 LED Worklite.
- vi. The recognition of changes to packaging arrangements to secure the battery and the encapsulated electronics inside the Worklite.
- vii. The recognition of changes to the LED type numbers, which reflects their selection process.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	8 May 2007	R52A14837A	The release of prime certificate.
1	22 June 2007	R52A16775A	The introduction of Variation 1.
2	2 November 2007	R59A16885A	The introduction of Variation 2.

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

None

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 the reports listed in Section 14.2.

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 Each item of encapsulated electronics shall be inspected and no damage shall be evident, such as cracks in the compound, exposure of the encapsulated parts, flaking, inadmissible shrinkage, swelling, decomposition, failure of adhesion or softening.
- 17.4 Each Worklite manufactured shall be subjected to a dielectric strength test at 500 V r.m.s. for at least 1s, between the circuit and the external surface of the encapsulated assembly without a breakdown occurring.

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Certificate Annexe

Certificate Number: Sira 07ATEX3027
Equipment: Wolf ATEX Worklite Type WL-**
Applicant: Wolf Safety Lamp Company



Issue 0

Number	Sheet	Rev.	Date	Description
W-701	1 of 1	1	22 Jan 07	Worklite - Assembly (x12 led)
W-702	1 of 1	2	15 Feb 07	Worklite - Lamp Housing Assembly (x12 led)
W-703	1 of 1	1	22 Jan 07	Worklite - Battery Box Assembly (x12 led)
W-704	1 of 1	1	05 Jan 07	Worklite - Battery Box Assembly (x12 led)
W-705	1 of 1	1	22 Jan 07	Worklite - Pictorial layout (x12 led)
W-711	1 of 1	1	22 Jan 07	Worklite - Assembly (x6 led)
W-712	1 of 1	2	15 Feb 07	Worklite - Lamp Housing Assembly (x6 led)
W-713	1 of 1	1	22 Jan 07	Worklite - Battery Box Assembly (x6 led)
W-714	1 of 1	1	22 Jan 07	Worklite - Battery Box Assembly (x6 led)
W-715	1 of 1	1	22 Jan 07	Worklite - Pictorial layout (x6 led)
W-801	1 of 1	1	22 Jan 07	Worklite - Switcher Circuit
W-802	1 of 1	1	22 Jan 07	Worklite - Control Circuit
W-803	1 of 1	1	22 Jan 07	Worklite - Power Circuit
W-804	1 of 1	1	22 Jan 07	Worklite - Control Circuit Board
W-805	1 of 1	1	22 Jan 07	Worklite - LED Circuit Boards (x12 led)
W-806	1 of 1	1	22 Jan 07	Worklite - LED Circuit Boards (x6 led)

Issue 1

Number	Sheet	Rev.	Date	Description
W-703	1 of 1	2	05 Jun 07	Battery Box Assembly x12LED
W-705	1 of 1	2	05 Jun 07	Pictorial Layout x12 LED
W-713	1 of 1	2	05 Jun 07	Battery Box Assembly x6 LED
W-715	1 of 1	2	05 Jun 07	Pictorial Layout x6 LED
W-801	1 of 1	3	11 Jun 07	Switcher Circuit
W-802	1 of 1	2	24.05.07	Control Circuit
W-804	1 of 2	3	08 Jun 07	Control Circuit Board (Version 1)
W-804	2 of 2	3	08 Jun 07	Control Circuit Board (Version 2)

Issue 2

Number	Sheet	Rev.	Date	Description
W-702	1 of 1	3	12 Sep 07	Lamp Housing Assembly x12 LED
W-703	1 of 1	3	06 Aug 07	Battery Box Assembly x12 LED
W-704	1 of 1	2	06 Aug 07	Battery Box Assembly x12 LED
W-712	1 of 1	3	12 Sep 07	Lamp Housing Assembly x6 LED
W-713	1 of 1	3	17 Sep 07	Battery Box Assembly x6 LED
W-714	1 of 1	2	17 Sep 07	Battery Box Assembly x6 LED
W-801	1 of 1	4	02 Sep 07	Switcher Circuit
W-802	1 of 1	3	14 Aug 07	Control Circuit
W-803	1 of 1	2	02 Jul 07	Power Circuit
W-804	1 of 1	4	14 Aug 07	Control Circuit Board
W-805	1 of 1	2	09 Oct 07	LED Circuit Board x12 LED
W-806	1 of 1	2	09 Oct 07	LED Circuit Board x6 LED

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