



Type Examination Certificate CML 13ATEX3007 Issue 19

- 1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU
- 2 Equipment **Spartan SPX FL** Luminaire**
- 3 Manufacturer **Raytec Ltd.**
- 4 Address **Unit 15 Wansbeck Business Park,
Rotary Parkway, Ashington,
Northumberland,
NE63 8QW, UK**
- 5 The equipment is specified in the description of this certificate and the documents to which it refers.
- 6 CML B.V., Chamber of Commerce No 6738671, Koopvaardijweg 32, 4906CV Oosterhout, The Netherlands, 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 of Directive 2014/34/EU.


The examination and test results are recorded in the confidential reports listed in Section 12.
- 7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe use (affecting correct installation or safe use). These are specified in Section 14.
- 8 This Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Annex VIII apply to the manufacture of the equipment or component and are separately certified.
- 9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN IEC 60079-0:2018	EN 60079-1:2014	EN IEC 60079-7:2015+A1:2018
EN 60079-18:2015+A1:2017	EN 60079-31:2014	


- 10 The equipment shall be marked with the following:

Spartan Power Supply


FL Versions**

 II 2 G D
 Ex eb mb IIC T5/T4 Gb
 Ta = -52 °C to +55 °C
 Ex eb mb IIC T6 Gb
 Ta = -52°C to 48°C
 Ex tb IIIC T82 °C Db
 IP66 IP67
 Ta = Up to -52 °C to +55 °C
 All Emergency variants have a lower ambient of -20°C only

BL Versions**

 II 2 G D
 Ex eb mb IIC T4 Gb
 Ta = -52 °C to +55 °C
 Ex eb mb IIC T5 Gb
 Ta = -52°C to +48°C
 Ex tb IIIC T98 °C Db
 IP66 & IP67
 Ta = -52 °C to +55 °C

BL Emergency Version**

 II 2 G D
 Ex eb mb IIC T5/T4 Gb
 Ex tb IIIC T98 °C Db
 IP66 IP67
 Ta = -20°C to +46 °C





CML 13ATEX3007
Issue 19

Marking continued:

Sockets Fitted:



II 2 G D

Ex db eb mb IIC T6 Gb

Ex tb IIIC T82°C Db

Ta= Up to -20°C to +40°C

Socket GHG 54** Fitted:



II 2 G

Ex db eb mb IIC T6 Gb

Ta= Up to -20°C to +40°C

When latest version of GHG 5118*** socket is fitted lower ambient may be marked -55°C.

Universal Power Supply

FL** Versions



II 2 G D

Ex e mb IIC T4 Gb

Ex tb IIIC T82 °C Db

Ta = Up to -52 °C to +55 °C

IP66 IP67

BL** Versions



II 2 G D

Ex e mb IIC T4 Gb

Ex tb IIIC T98 °C Db

Ta = Up to -52 °C to +55 °C

IP66 IP67

BL** Emergency Version



II 2 G D

Ex e mb IIC T4 Gb

Ex tb IIIC T98 °C Db

Ta = -20°C to +46 °C

IP66 IP67

11 Description

The Spartan SPX FL** luminaire is a range of LED luminaires. There are three sizes available in the range FL12 (Small) FL24 (Medium) and FL48 (Large). All size enclosures are offered as LV (Low Voltage); rated at 18V - 48V AC / 18V – 68V DC or HV (High Voltage); rated at 110V – 254V AC or DC (when using the Universal Power Supply). The ELV (Extra Low Voltage); rated at 12V AC or DC is also available. The HV luminaires may be supplied with a battery pack and inverter to enable operation in 'emergency' mode.

The luminaire enclosure comprises, front, centre, and rear cast aluminium housings that are fixed together with bolts. There are fixing points for a mounting bracket that enable the luminaire to be fixed in any orientation, alternative fixing points are also provided for additional mounting accessories.

Inside the centre housing there are two independent encapsulated power supplies (electronic control gear) and supply /connection terminal blocks, cable entries are also present for the connection of mains electrical supply. Internal and external earth points are available. Alternatively, a single 700 mA encapsulated Universal Power Supply may be installed. The Universal Power Supply, rated at 110 – 254 V AC or DC with a maximum power of 45 W. The Universal Power Supply may be installed in each of the FL24, FL48 and FL72 enclosures.

The front housing has a soda lime toughened glass lens that is available in clear or coloured options, Suitable for the portable/transportable variant an additional gasket is required to support the glass.

Internally the LED's are mounted onto two independent IMS PCBs which are attached to the rear heat sink, each PCB utilises twelve LED's which can be white, infra-red, coloured or a combination.

The LED's must be fitted with individual optics, these optics are available in a range of beam patterns to suit the end user application. The LED's/optics are positioned in groups of four, each group of four is in turn covered with an individual clear polycarbonate cover which is then partially encapsulated.



The emergency version utilises a modified rear housing which incorporates a rechargeable battery pack, connection terminal block and encapsulated fuse. An optional encapsulated single green LED can be fitted to the wall of the centre housing which provides the end user with an indication that the emergency system is healthy.

The luminaire is available in three sizes, small, medium and large. The medium variant as described above, the small variant which only utilises one power supply/LED board and the larger variants which consist of a number of medium luminaires fixed together with unions and alternative mounting brackets.

The small, medium and large variants may all be fitted with an optional encapsulated photocell which is located in the wall of the centre housing positioned to suit the customer's application. Also on all variants a 'Vario' holographic diffuser film may be fitted behind the glass to give alternative light patterns. The front and middle/rear housing of the luminaires may be split to allow the LED assembly to be mounted remotely from the power supply/emergency enclosure.

An EMC filter module may be fitted as an optional extra, this is an additional encapsulated board, located in place of the terminal block bracket (when fitted).

A Spartan SPX FLT** transportable variant of the luminaire is available which consists of one of the luminaires above mounted in a sturdy frame and supplied with suitable cable and certified ATEX plugs and sockets.

A Bulkhead variant of the luminaire is available, the Spartan SPX BL24. Based on the FL24 floodlight it is modified to utilise a narrower enclosure and run at half of the power. It is offered as standard with the LV version, HV version or as HV emergency where it is supplied with a battery pack and inverter.

The BL24 is designed for wall mounting in any orientation using steel brackets at the back of the luminaire. The enclosure consists of a front cover and rear body and utilises the power supply, inverter, control board and modified light engine from the FL24. The BL luminaire can be offered as transportable and with an optional photo cell.

The FL 12, FL 24 and BL 24 are offered as portable variants FLP 12, FLP 24 and BLP 24.

The SPX range may be fitted with a selection of separately certified sockets mounted onto the back of the existing luminaire enclosures. When sockets are mounted onto the portable variants they are fitted with an essential carrying frame.

An optional replaceable antistatic lens film is available across the range.

The equipment may be fitted with alternative labels, when fitted with these labels, the equipment is marketed under the product range name HAZX Nero or WADCO BOSSE LED, carrying the following alternative model names:

Original Model Name	Alternative Model Name	Alternative Model Name
FL12	HAZ-NER-M	WBF34S
FL24	HAZ-NER-S	WBF68S
FL48	HAZ-NER-D	WBF136S
FL72	HAZ-NER-T	WBF204S
BL24	HAZ-NEB-S	WBF34S



CML 13ATEX3007
Issue 19

FLP12	HAZ-NEP-M	
FLP24	HAZ-NEP-S	
BLP24	HAZ-NEP-B	
FLT24	HAZ-NET-S	

Variation 1

This variation introduces the following modifications:

- i. An additional designation reference has been added to the product name.
- ii. The option to include an additional EMC filter module.
- iii. The option to include an additional resistor (R4) in the emergency power supply module for EMC purposes.
- iv. To allow the use of an alternative separately certified terminal block.
- v. To allow minor enclosure modifications.
- vi. To allow the lower ambient range to be extended from -50°C to -52°C.
- vii. The 'conditions of manufacture' were clarified to allow alternative d.c. dielectric strength test to be conducted.

Variation 2

This variation introduces the following modifications:

- i. To allow a Low Voltage Power Supply option and subsequent amendment to the condition of manufacture for electric strength testing.
- ii. To include a cable lengthening and repair procedure to the constructional drawings.
- iii. To include clarification notes to the constructional drawings.
- iv. To include change to conductors of cables entering the encapsulant for PSU's and LED's.

Variation 3

This variation introduces the following modifications:

- i. The introduction of an alternative bulkhead luminaire version, housed in a modified enclosure. The battery pack and inverter modules have been changed as part of this addition. The description has changed to include the bulkhead version.

Variation 4

This variation introduces the following modification:

- i. To permit the use of alternative terminal blocks.

Variation 5

This variation introduces the following modification:

- i. To allow an additional larger FL72 (X Large) version to be included for use in the Spartan SPX FL** Luminaire range. The Spartan SPX FL72 (X Large) Luminaire consists of 3 medium modules fitted together with unions and alternative mounting brackets.



CML 13ATEX3007
Issue 19

Variation 6

This variation introduces the following modification:

- i. To allow transparent antistatic film to be fitted to the outer lens cover.
- ii. To allow separately certified panel mounted socket connectors to be fitted.
- iii. To allow a portable range of luminaires to be included.
- iv. The description was amended to reflect the modifications above.
- v. The description was corrected to add LV reference to bulkhead which was omitted in error on previous issues.

Variation 7

This variation introduces the following modification:

- i. To increase the voltage range for the low voltage options. The product description was updated to reflect the changes made by this variation.
- ii. To update certificate to reference the 2014/34/EU Directive.

Variation 8

This variation introduces the following modification:

- i. To allow an alternative label to be fitted.
- ii. To allow the use of alternative model names

Variation 9

This variation introduces the following modifications:

- i. To assess product against EN 60079-28:2015.
- ii. To include Ex op is marking in line with EN 60079-28:2015.
- iii. To update EN/IEC 60079-18:2009 to EN 60079-18:2015.
- iv. To update EN 60079-31:2009 to EN 60079-31:2014.
- v. To update the conditions of manufacture to reflect updated standards and clause numbers.

Variation 10

This variation introduces the following modifications:

- i. To introduce a new ELV variant which contains a new encapsulated power supply operating at nominal 12V
- ii. To allow the use of additional alternative certified sockets
- iii. The description is modified in accordance with the modifications above.
- iv. To allow an alternative label to be fitted. To allow the use of alternative model names

Original model name	Alternative model name
FL12	WBF34S
FL24	WBF68S
FL48	WBF136S
FL72	WBF204S
BL24	WBB34S



CML 13ATEX3007
Issue 19

Variation 11

This variation introduces the following modifications:

- i. Replace discrete logic components with microprocessor system.
- ii. Addition of 3 indication LEDs.

Variation 12

This variation introduces the following modifications:

- i. To implement minor changes to the PSU electronic circuit that do not affect the types of protection.
- ii. To remove EN 60079-28:2015 / IEC 60079 28:2015 Ed. 2 from the scope and to amend the marking to remove "op is".
- iii. To transfer the CML UK ATEX Certificates to CML BV
- iv. To update the address on certificates from Unit 3 to Unit 15 (CML 13ATEX3007 and IECEx CML 14.00001 only)
- v. To update the Temperature Class and Ingress Protection marking.

Variation 13

This variation introduces the following modifications:

- i. To review and update the certification against the latest Version/Edition of standards as listed in section 1.4 of this evaluation report.
- ii. To assess and permit the introduction of an alternative toughened glass window assembly for the portable/transportable luminaire variant.
- iii. To assess and permit an additional silicone gasket for the glass cover.
- iv. To amend the high voltage variant upper limit from 280V AC to 254V AC.
- v. To assess and permit a non-metallic paint layer (applied externally to the equipment).

Variation 14

This variation introduces the following modification:

- i. To introduce a Universal Power Supply.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
1	13 Dec 2013	R34A/00	The release of the prime certificate
2	03 Jan 2014	R34A/01	Re-issued to correct a typographical error to drawing 910-SD-001
3	05 Mar 2014	R114A/00	The issue of variation 1. Issue dates corrected.
4	26 Mar 2014	R114A/01	Re-issued to correct a typographical error to drawing 910-SD-001
5	24 Nov 2014	R328A/00	The issue of variation 2.
6	09 Dec 2014	-	Minor edit to first paragraph of description.
7	17 Feb 2015	R423A/00	The issue of variation 3.
8	15 May 2015	R589A/00	The issue of variation 4.



CML 13ATEX3007
Issue 19

9	21 Aug 2015	R705A/00	The issue of variation 5.
10	01 Apr 2016	R1019A/00	The issue of variation 6.
11	13 July 2016	R1424A/00	The issue of variation 7.
12	30 Aug 2016	R1499A/00	The issue of variation 8.
13	03 Apr 2017	R1869D/00	The issue of variation 9.
14	22 Sep 2017	R2267A/00 R11340A/00	The issue of variation 10.
15	04 Oct 2017	R1870A/00	The issue of variation 11.
16	03 Feb 2020	R12972A/00	The issue of variation 12.
17	09 Oct 2020	R13480A/00	The issue of variation 13.
18	08 Dec 2020	R13480A/01	Re-issued to correct a typographic error to the marking
19	02 Sep 2022	R15050A/00	The issue of variation 14.

Note: Drawings that describe the equipment or component are listed in the Annex.

13 Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

- i. Where the product incorporates certified parts or safety critical components, the manufacturer of the product defined on this certificate shall continually monitor these parts/components for any modifications introduced by the manufacturer(s) of these constituent parts. If the manufacturer of any constituent part introduces any changes which affect the compliance of the certified product that is the subject of this certificate, the manufacturer is required to have this certificate updated'.
- ii. A dielectric strength test shall be carried out on all units manufactured in accordance with EN 60079-7, clause 7.1 and EN 60079-18, clause 9.2, at 1560 VAC for 1 minute, or alternatively at 1.2 times this test voltage for 100ms. Alternatively, a 1.4 times d.c. voltage dielectric strength test may be carried out. No breakdown shall occur. Tests shall be carried out between each circuit and earth and between each circuit and the surface of the encapsulated parts.
- iii. A visual inspection shall be carried out on the encapsulated parts to check for damage, in accordance with EN 60079-18, clause 9.1.
- iv. When fitted with universal PSU module, equipment shall only be marked T4 for Gb applications.

14 Specific Conditions of Use (Special Conditions)

None

Certificate Annex

Certificate Number CML 13ATEX3007
Equipment Spartan SPX FL** Luminaire
Manufacturer Raytec Ltd



The following documents describe the equipment or component defined in this certificate:

Issue 1

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	1 to 4	A	13/12/2013	Spartan LED Floodlight Ex em
910-SD-0002	1 to 2	A	13/12/2013	Standard and Emergency PCB Schematic Diagram
910-SD-0003	1 to 5	A	13/12/2013	Parts List FMEA Spartan Floodlight Main Power Supply
910-SD-0004	1 to 5	A	13/12/2013	Parts List FMEA Spartan Floodlight Emergency Power Supply

Issue 2

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	1 of 4	B	03/01/2014	Spartan LED Floodlight Ex em
910-SD-0005	1 to 2	A	16/12/2013	Component tolerance driver circuit

Issue 3

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	1 of 4	C	05/03/2014	Spartan LED Floodlight Ex em
910-SD-0001	2 of 4	B	05/03/2014	Spartan LED Floodlight Ex em
910-SD-0001	4 of 4	B	05/03/2014	Spartan LED Floodlight Ex em
910-SD-0002	1 to 2	B	05/03/2014	Standard and Emergency PCB Schematic Diagram
910-SD-0004	1 of 5	B	05/03/2014	Parts List FMEA Spartan Floodlight Emergency Power Supply
910-SD-0005	2 of 2	B	05/03/2014	Parts List Emergency PCB

Issue 4

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	1 of 4	D	26/03/2014	Spartan LED Floodlight Ex em

Certificate Annex

Certificate Number CML 13ATEX3007
Equipment Spartan SPX FL** Luminaire
Manufacturer Raytec Ltd



Issue 5

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	1 of 4	E	24/11/2014	Spartan SPX FL assy Dwg
910-SD-0001	2 of 4	C	24/11/2014	Spartan SPX FL assy Dwg
910-SD-0001	3 of 4	B	24/11/2014	Spartan SPX FL assy Dwg
910-SD-0009	1 of 1	A	24/11/2014	LV PSU Schematic
910-SD-0010	1 of 5	A	24/11/2014	LV PSU Parts List/FMEA
910-SD-0010	2 to 5	A	24/11/2014	LV PSU Parts List/FMEA
910-SD-0011	1 of 1	A	24/11/2014	LV Component Tolerances

Issue 6

No additional drawings.

Issue 7

Drawing No	Sheets	Rev	Approved Date	Title
940-SD-0001	1 to 3	A	17/02/2015	Spartan Bulkhead
910-SD-0004	3 of 5	B	17/02/2015	FMEA Emergency Power supply

Issue 8

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0012	1 of 1	A	15/05/2015	Alternative Mains Terminal Block for Spartan Product Range of LED Luminaires

Issue 9

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	2 of 4	D	21/08/2015	Spartan LED Floodlight Ex em
910-SD-0001	3 of 4	C	21/08/2015	Spartan LED Floodlight Ex em

Issue 10

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	1 of 5	F	01/04/2016	Spartan LED Floodlight Ex e m
910-SD-0001	2 of 5	E	01/04/2016	Spartan LED Floodlight Ex e m
910-SD-0001	3 of 5	D	01/04/2016	Spartan LED Floodlight Ex e m
910-SD-0001	4 of 5	C	01/04/2016	Spartan LED Floodlight Ex e m
910-SD-0001	5 of 5	A	01/04/2016	Spartan LED Floodlight Ex e m

Certificate Annex

Certificate Number CML 13ATEX3007
Equipment Spartan SPX FL** Luminaire
Manufacturer Raytec Ltd



Issue 11

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	2 of 4	F	13/07/2016	Spartan SPX FL assy Dwg
920-SD-0030	1 to 2	A	13/07/2016	18-48 AC/18-68V DC PSU Circuit diagram
920-SD-0031	1 of 1	A	13/07/2016	Component Tolerance LV Power Supply
920-SD-0032	1 to 4	A	13/07/2016	LV PSU Parts List/FMEA

Issue 12

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0033	1 of 1	A	02/09/2016	LED.CO.UK Certification nameplate FL24 Floodlight

Issue 13

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0001	1 of 4	G	03/04/2017	Spartan LED Floodlight em
910-SD-0001	2 of 4	G	03/04/2017	Spartan LED Floodlight em
940-SD-0001	1 of 3	B	03/04/2017	Spartan Bulkhead
940-SD-0001	2 of 3	B	03/04/2017	Spartan Bulkhead
910-SD-0033	1 of 1	B	03/04/2017	LED.CO.UK Certification nameplate FL24 Floodlight

Issue 14

Drawing No	Sheets	Rev	Approved Date	Title
910-SD-0044	1 of 1	A	21/09/2017	12V low voltage PCb schematic
910-SD-0046	1 to 5	A	21/09/2017	FMEA Spartan floodlight 12V low voltage supply
910-SD-0001	1 of 6	H	21/09/2017	Spartan LED floodlight Ex em
910-SD-0001	2 of 6	H	21/09/2017	Spartan LED floodlight Ex em
910-SD-0001	3 of 6	E	21/09/2017	Spartan LED floodlight Ex em
910-SD-0001	4 of 6	D	21/09/2017	Spartan LED floodlight Ex em
910-SD-0001	5 of 6	B	21/09/2017	Spartan LED floodlight Ex em
910-SD-0001	6 of 6	A	21/09/2017	Spartan LED floodlight Ex em
940-SD-00002	1 of 1	A	22/09/2014	WADCO BL24 CERT. NAMEPLATE

Certificate Annex

Certificate Number CML 13ATEX3007
Equipment Spartan SPX FL** Luminaire
Manufacturer Raytec Ltd



Issue 15

Drawing No	Sheets	Rev	Approved date	Title
910-SD-0001	2 of 6	J	04/10/2017	SPARTAN LED FLOODLIGHT Ex EM
910-SD-0047	1 of 1	A	04/10/2017	SPARTAN INTELLIGENT EMERGENCY PCB SCHEMATIC.
910-SD-0048	1 of 1	A	04/10/2017	PARTS LIST SPARTAN INTELLIGENT EMERGENCY POWER SUPPLY
910-SD-0049	1 to 8	A	04/10/2017	FMEA SPARTAN INTELLIGENT EMERGENCY POWER SUPPLY

Issue 16

Drawing No.	Sheets	Rev	Approved date	Title
910-SD-0051	1 of 1	A	03/02/2020	Spartan Standard Power Supply PCB Schematic
910-SD-0052	1 to 6	A	03/02/2020	FMEA Spartan Standard Power Supply
910-SD-0053	1 of 1	A	03/02/2020	Parts List Spartan Standard Power Supply
910-SD-0054	1 of 1	A	03/02/2020	Spartan Emergency Power Supply PCB Schematic
910-SD-0055	1 to 5	A	03/02/2020	FMEA Spartan Emergency Power Supply
910-SD-0056	1 of 1	A	03/02/2020	Parts List Spartan Emergency Power Supply
910-SD-0057	1 to 2	A	03/02/2020	Spartan Dual Power Supply PCB Schematic
910-SD-0058	1 to 7	A	03/02/2020	FMEA Spartan Dual Power Supply
910-SD-0059	1 of 1	A	03/02/2020	Parts List
910-SD-0060	1 of 1	A	03/02/2020	Spartan Encapsulated Power Supply With Minor Modifications
940-SD-0001	1 of 3	C	03/02/2020	Spartan Buklhead
910-SD-0001	1 of 6	J	03/02/2020	Spartan LED Floodlight

Issue 17

Drawing No.	Sheets	Rev	Approved date	Title
910-SD-0001	1 of 6	K	09 Oct 2020	Spartan LED Floodlight

Certificate Annex

Certificate Number CML 13ATEX3007
Equipment Spartan SPX FL** Luminaire
Manufacturer Raytec Ltd



910-SD-0001	2 of 6	J	09 Oct 2020	Spartan LED Floodlight
910-SD-0001	3 of 6	E	09 Oct 2020	Spartan LED Floodlight
910-SD-0001	4 of 6	E	09 Oct 2020	Spartan LED Floodlight
910-SD-0001	5 of 6	C	09 Oct 2020	Spartan LED Floodlight
910-SD-0001	6 of 6	A	09 Oct 2020	Spartan LED Floodlight
940-SD-0001	1 to 3	D	09 Oct 2020	Spartan Bulkhead
940-SD-0001	2 to 3	C	09 Oct 2020	Spartan Bulkhead
940-SD-0001	3 to 3	B	09 Oct 2020	Spartan Bulkhead

Issue 18

No new drawings.

Issue 19

Drawing No.	Sheets	Rev	Approved date	Title
910-SD-00061	1 of 1	A	24 Aug 2022	ALTERNATIVE UNIVERSAL OUTPUT POWER SUPPLY FOR FL AND BL PRODUCT RANGES
910-SD-0001	1 of 6	M	24 Aug 2022	SPARTAN LED FLOODLIGHT Ex Em
910-SD-0001	2 of 6	K	24 Aug 2022	SPARTAN LED FLOODLIGHT Ex EM
910-SD-0001	6 of 6	D	24 Aug 2022	SPARTAN LED FLOODLIGHT Ex EM
940-SD-0001	2 of 3	E	24 Aug 2022	SPARTAN BULKHEAD
940-SD-0001	1 of 3	F	24 Aug 2022	SPARTAN BULKHEAD