

Q-Aviation Lighting / Airfield Lighting / Q- L806 Wind Direction Indicator

L806 Wind Direction Indicator

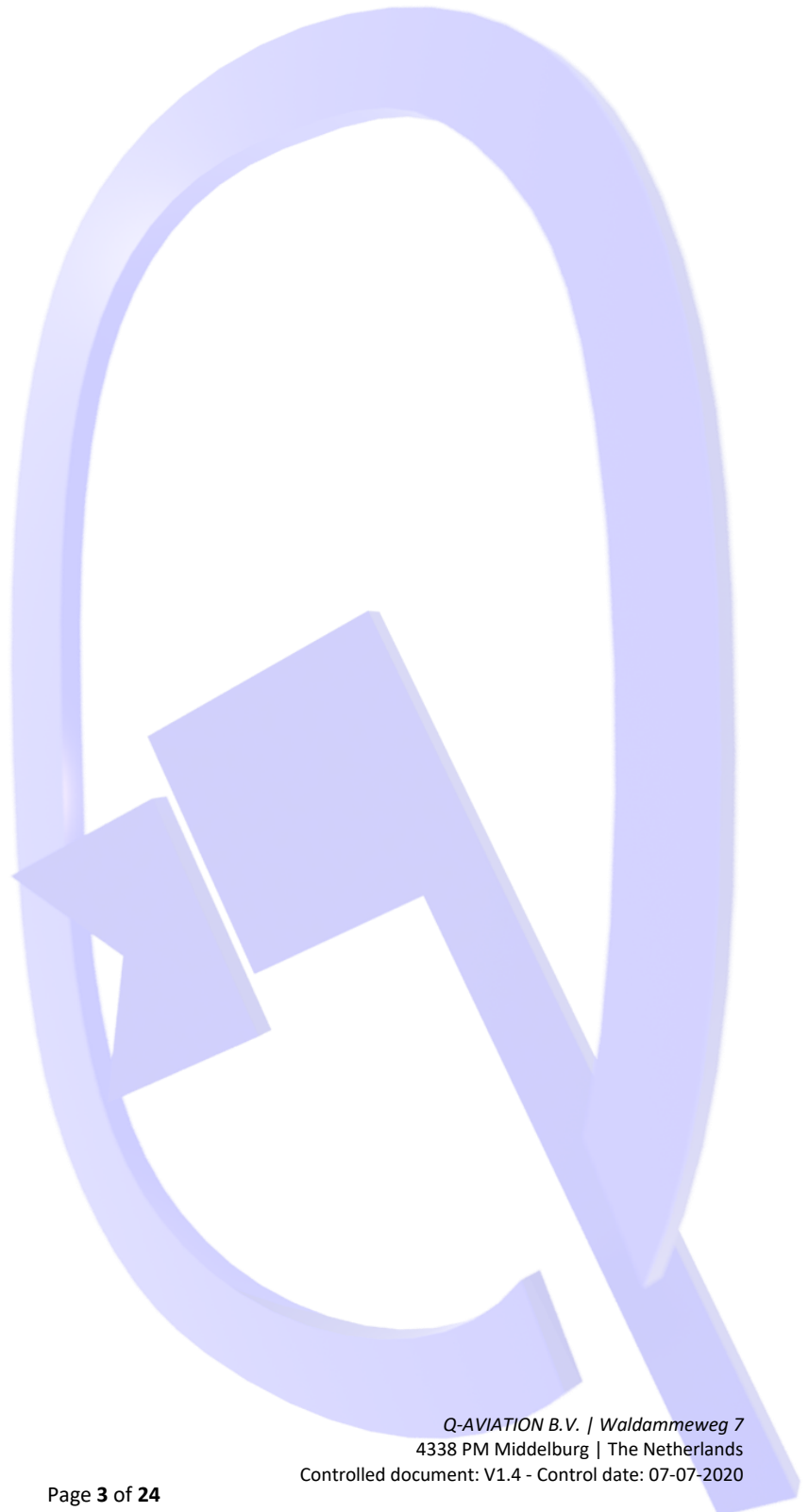
Unlighted, Internally Lighted and Externally Lighted



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2 About this manual

The manual shows the information necessary to:

- Install;
- Carry out maintenance; on the Wind Direction Indicator

2.1 How to work with this manual

- Familiarize yourself with the structure and content.
- Carry out the actions completely and in the given sequence.

2.2 Record of changes

Edition	Editor	Check	Date	Description
1.0	JR	Q-Aviation	11/2021	Original Version by Q-Aviation

2.3 This manual can be used for the following products

Article	Description
Q23-L806F1	L-806 FAA 1.8 meter Orange mast Windsock Ø45 x 250 cm
Q23-L806I1	L-806 ICAO 1.8 meter Red/White striped mast Windsock Ø45 x 250 cm
Q23-IAF-806	Externally lighted Wind Direction Indicator top unit
Q23-IAI-806	Externally lighted Wind Direction Indicator top unit
Q23-IBI	Internally lighted WDI ICAO top unit
Q23-IBF	Internally lighted WDI FAA top unit
Q23-II	WDI TOP unit unlighted
Q23-024	Wind direction indicator Junction box 24 VDC
Q23-066	Wind direction indicator Junction box 2,8-6,6 A
Q23-230	Wind direction indicator Junction box 100-240 VAC

3 How to work with this manual

3.1.1 Safety

Read all warnings carefully. Failure to do so may result in personal injury, death, or property damage.

3.1.2 Use

To use the equipment safely:

1. Observe all safety regulations. To avoid injuries, always remove power prior to making any wire connections and touching any live part. Refer to the International Standards IEC 61820 and IEC 61821.
2. In addition, for a parallel power supply also consider the International Standard IEC 60598 (for class I equipment).
3. Read and become familiar with the general safety instructions provided in this chapter before you install, operate, maintain or repair the equipment.
4. Read and carefully follow the instructions given throughout this manual before installing, operating, maintaining, or repairing the equipment.
5. Store this manual within easy reach of personnel installing, operating, maintaining or repairing the equipment.
6. Follow all applicable safety procedures required by your company, industry standards, and government or other regulatory agencies.

3.1.3 Safety symbols

Become familiar with the safety symbols presented in this chapter. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.



WARNING 1: Failure to observe this warning may result in personal injury, death, or equipment



WARNING 2: Risk of electrical shock. Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damages.



WARNING 3: Wear personal protective equipment. Failure to observe may result in serious



WARNING 4: Do not touch. Failure to observe this warning may result in personal injury, death, or equipment damage.

3.2 Skilled personnel

The term skilled personnel is defined here as individual who thoroughly understand the equipment and its safe operation, maintenance, and repair. Skilled personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain, and repair the equipment. It is the responsibility of the company operating the equipment to see that its personnel meet these requirements.

3.3 Liability

Q-AVIATION B.V. cannot be held responsible for injuries or damages resulting from non-standard, unintended uses of its equipment. The equipment is designed and intended only for the purpose described in the manual. Uses not described in the manual are considered unintended uses and may result in serious personal injury, death or property damage.

Unintended uses includes the following actions:

1. Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Q-AVIATION B.V. replacement parts or accessories.
2. Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards if not in contradiction with the general rules.
3. Using materials or auxiliary equipment that are inappropriate or incompatible with your Q-AVIATION B.V. equipment.
4. Allowing unskilled personnel to perform any task on or with the equipment.

3.4 Installation

Read the installation section of all system component manuals before installing your equipment. A thorough understanding of system components and their requirements will help you install the equipment safely and efficiently. Use of the equipment in ways other than described in the catalogue leaflet and the manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in the manual.

1. Allow only skilled personnel to install Q-AVIATION B.V. and auxiliary equipment. Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals and will void the warranty.
2. Make sure all equipment is rated and approved for the environment in which you are using it.
3. Follow all instructions for installing components and accessories.
4. Install all electrical connections to local code provided they are not in contradiction with the general rules.
5. Use only electrical wire of sufficient gauge and insulation to handle the rated current and voltage demand. All wiring must meet local codes.
6. Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment and animals (e.g. rodents).
7. Protect components from damage, wear, and harsh environment conditions.
8. Allow ample room for maintenance, panel accessibility (power products), and cover removal (power products).
9. Protect equipment with safety devices as specified by applicable safety regulations.
10. If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.
- 11.



WARNING:

Failure to follow these safety procedures can result in personal injury or death.

3.5 Operation

Only skilled personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.

Read all system component manuals before operating the equipment. A thorough understanding of system components and their operation will help you operate the equipment safely and efficiently.

1. Before starting this equipment, check all safety interlocks and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the equipment if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
2. Never operate equipment with a known malfunction.
3. Do not attempt to operate or service electrical equipment if standing water is present.
4. Use the equipment only in the environments for which it is rated. Do not operate the equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
5. Never touch exposed electrical connections on equipment while the power is ON. Make sure the exposed electrical connections are proven to be dead.

3.6 Photobiological safety

Photobiological safety conform with IEC 62471

3.7 For beams emitted in white colour.

RISK GROUP 2: Possibly hazardous optical radiation emitted from this product. Do not stare at the operating lamp. May be harmful to the eyes.

1. For viewing distances superior to 1600 mm, the product is Risk Group 1 or lower.
2. Use protection goggles or any similar protection method.

3.8 For beams emitted in other colours

RISK GROUP 0 or 1: Optical radiation emitted from LED lights may be harmful to the eyes. Do not stare with bare eyes at a fixture operating at high intensity. Use protection goggles or any similar protection method.

3.9 Goggles

Goggles with a transmission factor not higher than 5% in the 400-530 nm band have been tested and provide adequate protection.

3.10 Action in the event of an equipment malfunction

Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.

1. Disconnect and lock out electrical power.
2. Allow only skilled personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

3.11 Maintenance and repair

Allow only skilled personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with Q-AVIATION B.V. equipment are permitted to service the equipment.

1. Always use safety devices when working on the equipment.
2. Follow the recommended maintenance procedures in your equipment manuals.
3. Do not service or adjust any equipment unless another person trained in first aid and Cardio Pulmonary Resuscitation (CPR) is present.
4. Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
5. Use only approved Q-AVIATION B.V. replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals, impair specified performance and create safety hazards.
6. Check interlock systems periodically to ensure their effectiveness.
7. Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
8. Use tools with insulated handles when working with electrical equipment.

3.12 Guarantee

LED Products of Q-AVIATION B.V. manufactured and sold by Q-AVIATION B.V. or its licensed representatives, meets the corresponding requirements of FAA, ICAO and IEC. They are, with the exception of Windsock, guaranteed against mechanical, electrical, and physical defects for a period of two years after the date of installation.

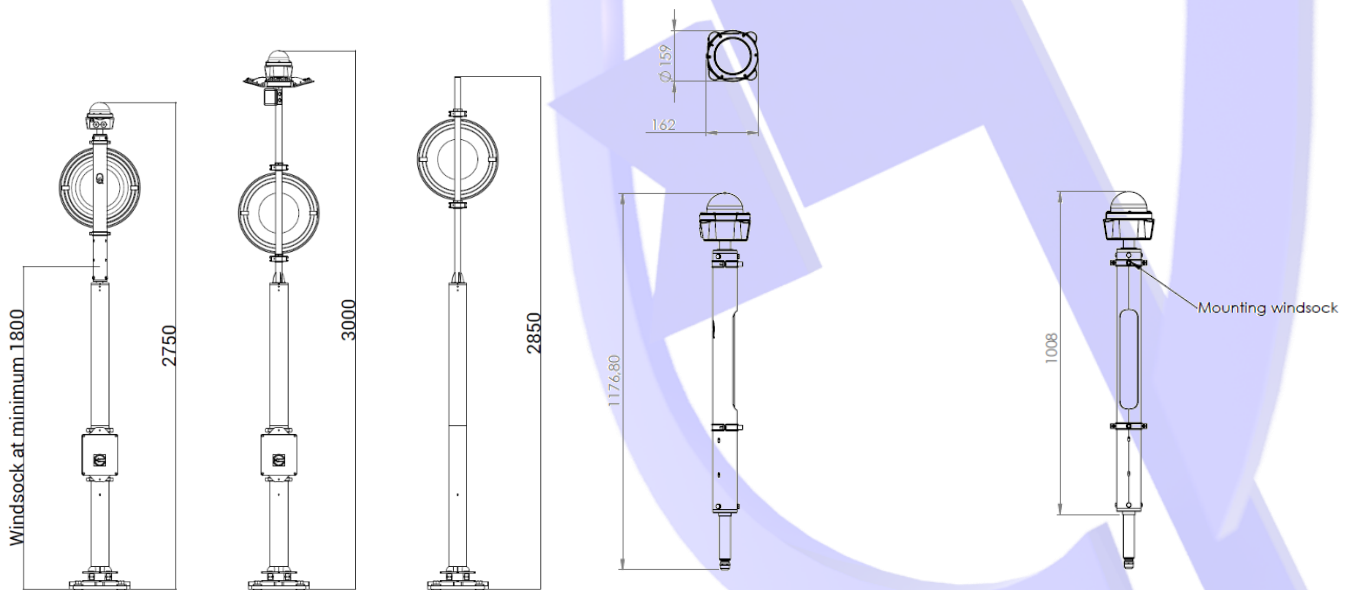
Said products are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.

4 Technical Data WDI Internally Lighted



TECHNICAL DETAILS

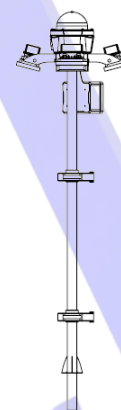
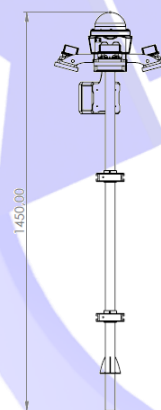
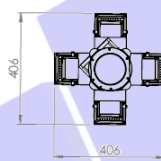
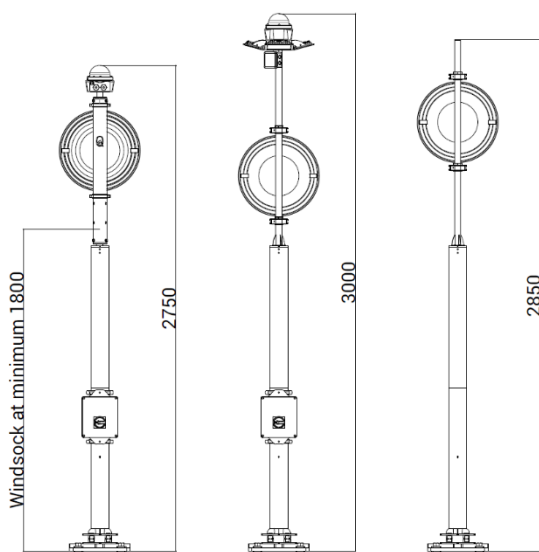
Application:	Airfield/Runway
Colours:	ICAO Red/White or FAA Orange
Lighting styles:	Style I-A: Externally lighted
Windsock size:	Size 1: Ø45 x 250 cm - Ø18" x 8 ft.
Windsock Material:	Reinforced double stitched Polyester, PU Coated
Windsock frame material:	SS316
Power consumption:	Internally: 26 Watt Toplight / Obstruction: 6 Watt
Obstruction Light:	1x L-810, Low intensity Q81R103-12
Mast material:	Aluminium
Mast dimensions:	195x195 x 1800 mm
Weigt:	Mast 7,7Kg/mtr Hinged Footplate 8,9Kg Top Plate 1,4Kg
Base:	Tiltable foot, Mounted on concrete.
Ambient Temp:	-20°C to + 60°C
In Compliance With:	ICAO Annex 14 Vol.2 2020 FAA L-806
Life expectancy:	100.000+ hours
System warranty:	24 months
Windsock Warranty:	6 months
IP index:	IP 66
Power input options:	100-240 VAC 50-60 Hz 2.8 - 6.6A 24 VDC



5 Technical Data WDI Externally Lighted

TECHNICAL DETAILS

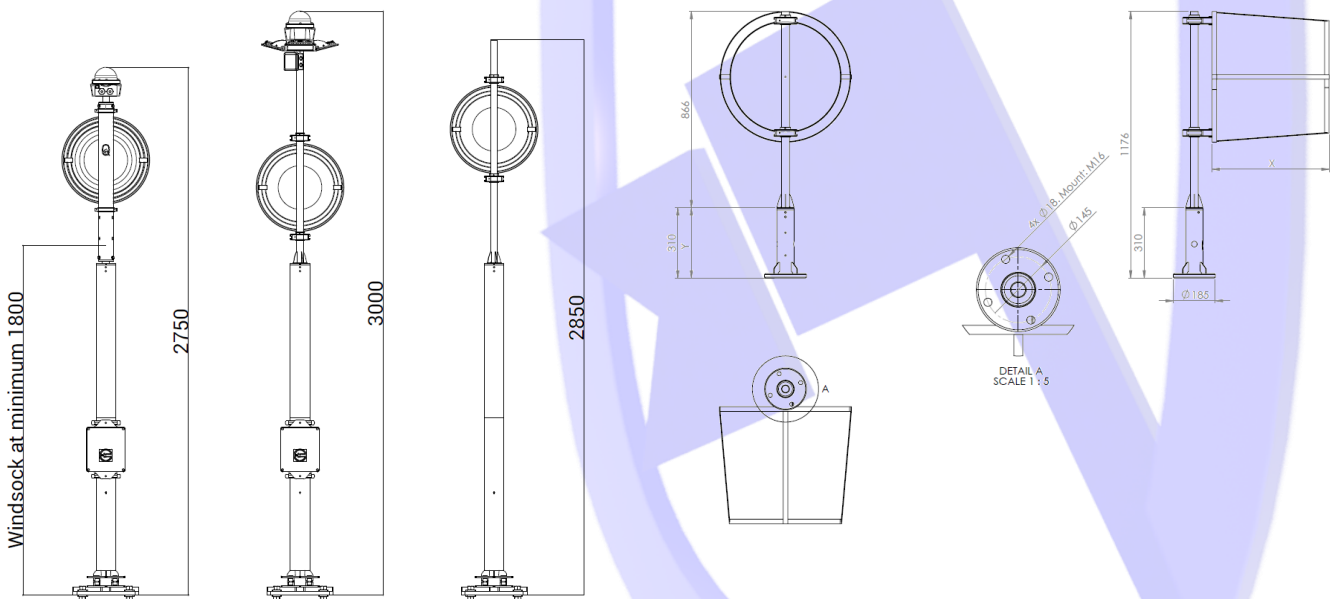
Application:	Airfield/Runway
Colours:	ICAO Red/White or FAA Orange
Lighting styles:	Style I-B: Internally lighted
Windsock size:	Size 1: Ø45 x 250 cm - Ø18" x 8 ft.
Windsock Material:	Reinforced double stitched Polyester, PU Coated
Windsock frame material:	SS316
Power consumption:	Externally: 40 Watt Toplight / Obstruction: 6 Watt
Obstruction Light:	1x L-810, Low intensity Q81R103-12
Mast material:	Aluminium
Mast dimensions:	195x195 x 1800 mm
Weigt:	Mast 7,7Kg/mtr Hinged Footplate 8,9Kg Top Plate 1,4Kg
Base:	Tiltable foot, Mounted on concrete.
Ambient Temp:	-20°C to + 60°C
In Compliance With:	ICAO Annex 14 Vol.2 2020 FAA L-806
Life expectancy:	100.000+ hours
System warranty:	24 months
Windsock Warranty:	6 months
IP index:	IP 65
Power input options:	100-240 VAC 50-60 Hz 2.8 - 6.6A 24 VDC



6 Technical Data WDI Unlighted

TECHNICAL DETAILS

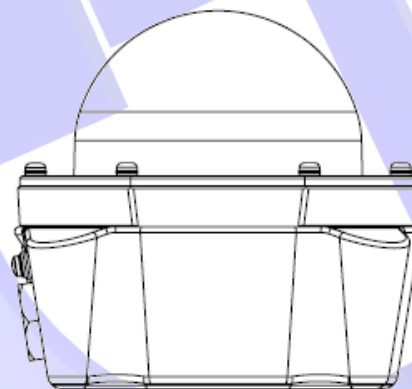
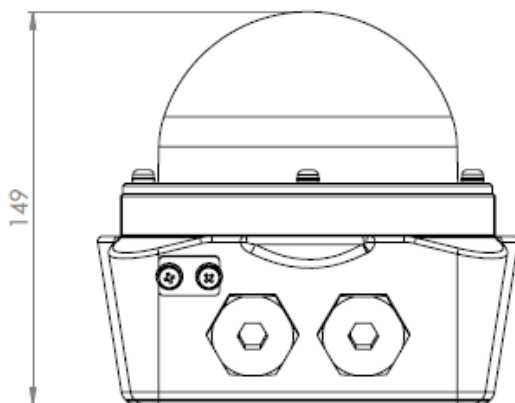
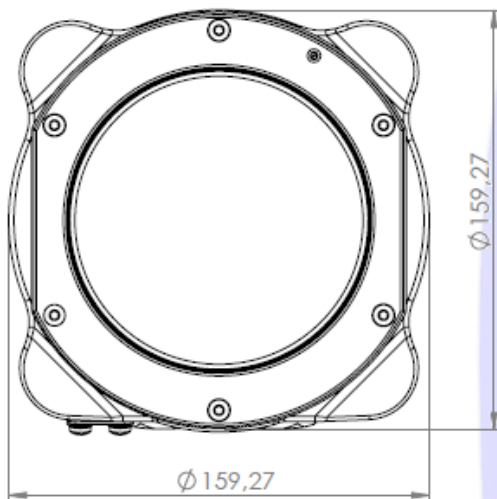
Application:	Airfield/Runway
Colours:	ICAO Red/White or FAA Orange
Lighting styles:	Style II: Unlighted
Windsock size:	Size 1: $\varnothing 45 \times 250 \text{ cm} - \varnothing 18'' \times 8 \text{ ft.}$ Mast length 1167mm
Windsock Material:	Reinforced double stitched Polyester, PU Coated
Windsock frame material:	SS316
Power consumption:	N/A
Mast material:	Aluminium
Mast dimensions:	195 x 195 x 1800 mm
Weight:	Mast 7,7Kg/mtr Hinged Footplate 8,9Kg Top Plate 1,4Kg
Base:	Tiltable foot, Mounted on concrete.
Ambient Temp:	-20°C to + 60°C
In Compliance With:	ICAO Annex 14 Vol.2 2020 FAA L-806
System warranty:	24 months
Windsock Warranty:	6 months
IP index:	N/A



7 Technical Data WDI Obstruction Light



Application:	Q81R103-12
Hazardous Area:	Safe Area
Light Colour:	Red, 630 nm
Light Source:	LED, steady burning
Light Intensity:	32 cd
Vertical Beam Profile:	as per CAP437/ICAO
Colour chromaticity:	as per CAP437/ICAO
Input Voltage:	2) 24 VDC
Inrush current:	70A / 120µs
Ambient Temp:	-20°C to + 60°C
In Compliance With:	CAP437 /ICAO
Consumption:	6 Watt
Life expectancy:	100.000+ hours
IP index:	IP 66
Enclosure:	Aluminium, Powder coated RAL5015 / Borosilicate glass



8 Label

The below image shows the label that can be located on the light as shown below. .

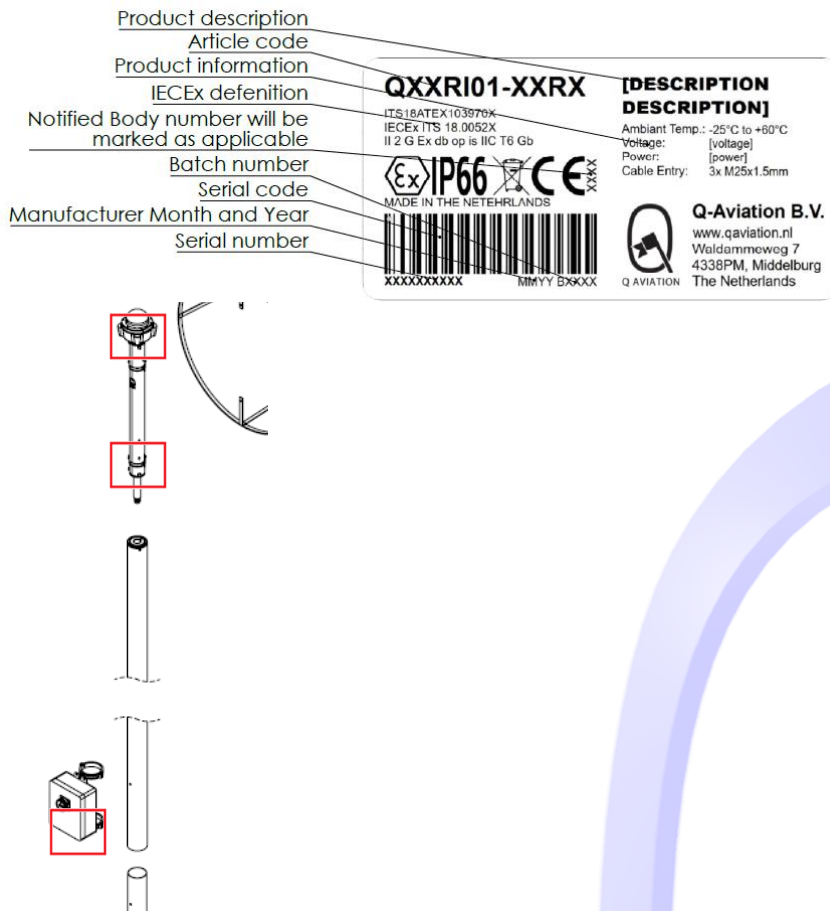


Figure 1; 3x Label and label location marked in red

The table below shows the label information.

Article code	[DESCRIPTION]	[voltage]	[power]
Q23-L806F1	L-806 FAA 1.8 meter Orange mast Windsock Ø45 x 250 cm	N/A	N/A
Q23-L806I1	L-806 ICAO 1.8 meter Red/White striped mast Windsock Ø45 x 250 cm	N/A	N/A
Q23-IAF-806	Externally lighted Wind Direction Indicator top unit	N/A	40 Watt
Q23-IAI-806	Externally lighted Wind Direction Indicator top unit	N/A	40 Watt
Q23-IBF	Internally lighted WDI FAA top unit	24 VDC	32 Watt
Q23-IBI	Internally lighted WDI ICAO top unit	24 VDC	32 Watt
Q23-II	WDI TOP unit unlighted	N/A	N/A
Q23-024	Wind direction indicator Junction box 24 VDC	24 VDC	2 Watt (no load)
Q23-066	Wind direction indicator Junction box 2,8-6,6 A	N/A	2 Watt (no load)
Q23-230	Wind direction indicator Junction box 100-240 VAC	100-240 VAC 50-60Hz	0 Watt (no load)

Table 1; Article codes on label and packing list

9 Q-WDI Light

This chapter contains the necessary information for the installation of the Q-Wind Direction Indicator Light.

9.1 Unboxing

When unboxing the Q-Wind Direction Indicator, make sure that all parts are included in the shipment. Parts that in the shipment are:

- Q-WDI Wind Direction Indicator internally Lighted with Obstruction Light fixture (Figure 2)
- Q-WDI Wind Direction Indicator Externally Lighted with Obstruction Light fixture (Figure 3)
- Q-WDI Wind Direction Indicator Un Lighted (Figure 4)
- WDI Mast 195 x 195 x 1800 mm (Figure 5)
- Tiltable foot (Figure 6)
- Junction Box with mounting brackets (Figure 7)
- Wind sock frame (Figure 8)
- Wind Sock included Tie-wraps (Figure 9)



Figure 2; Q-WDI Light unit with obstruction Light



Figure 3; Q-WDI Externally Lighted with obstruction Light



Figure 4; Q-WDI Unlighted



Figure 5; Mast 195 x 195 x 1800 mm

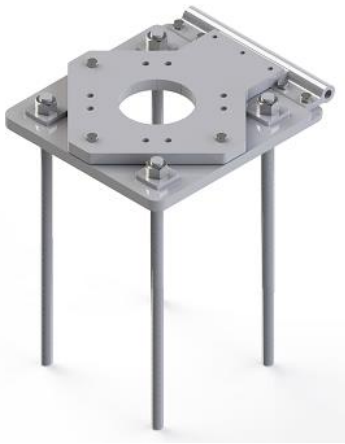


Figure 6; Tilttable foot



Figure 7; Junction Box



Figure 8; Wind sock Frame



Figure 9; Wind sock incl. Tie-wraps



10 Install the Wind Direction Indicator

10.1 Mounting

WARNING: Lifting the mast requires 2 or more persons.

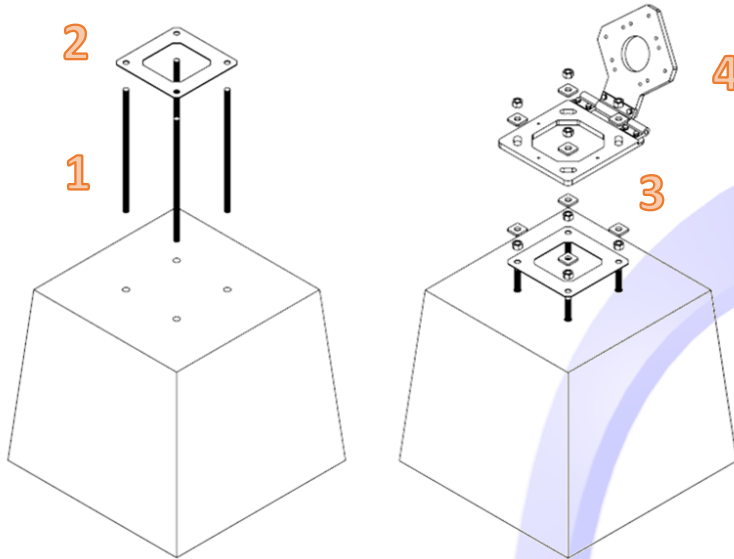
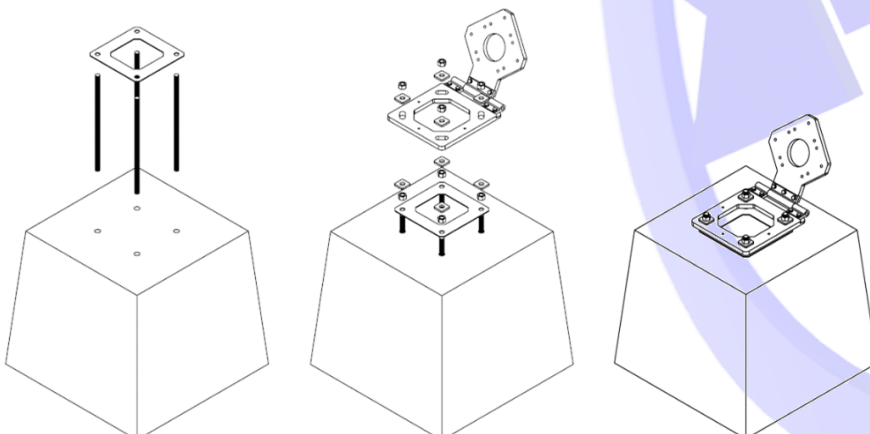


Figure 10; Mounting holes dimensions and part overview

ID.	Quantity	Description
1	4	M20 thread ends
2	1	Base plate
3	8 / 8	M20 rings and nuts
4	1	Tiltable foot

Mount the plate of the mast fixture to the Surface.

- Use only A-Quality fasteners as delivered.
- Thread ends 125mm above concrete surface.
- Cover M20 thread ends during pouring concrete to avoid damaging thread.
- Use the General Arrangement drawing for the location of the Lights if available.



Before pouring the concrete Before assembly Finished base with hinge

10.2 Install the Windsock

Use tie-wraps to attach the windsock to the frame. See the image below.



Image 1; Attaching the windsock

1. Pull the windsock over the metal frame. Note that the complete assembly is still on the ground (not vertical).
2. Make sure that the seam(s) of the windsock is located on horizontal sides as shown in the image above (straight yellow arrow)
3. Secure the windsock using tie-wraps. Work your way around the windsock.
4. Cut off the excess parts of the tie-wraps.

10.3 Install the Lighting Unit onto the Mounting Plate

In this part of the installation the preassembled lighting unit from the previous chapter will be installed onto the mast.

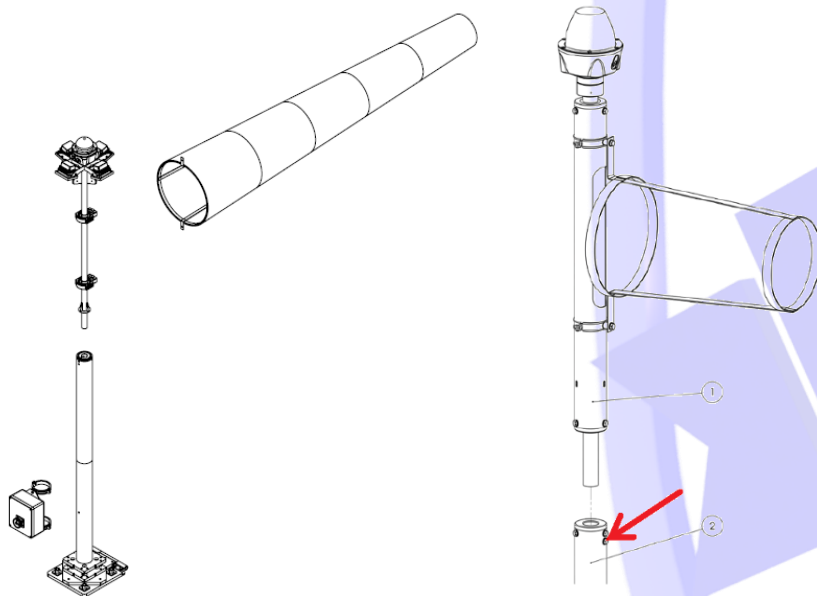


Figure 11; Assembly WDI indicator with mast inside Mounting plate

5. Run the cable through the mast assembly.
6. Once the cable(s) is completely inside the mast assembly,
7. mount the metal frame with wind sock on Internally lighted WDI top unit. With 2x M8 bolts.
8. Secure the bolt indicated with the red arrow in the image above. This will lock the lighting unit into place.
9. Lift the complete mast assembly and secure it onto its mounting position.
10. Mount the Junction Box onto mast.

10.4 Level mast

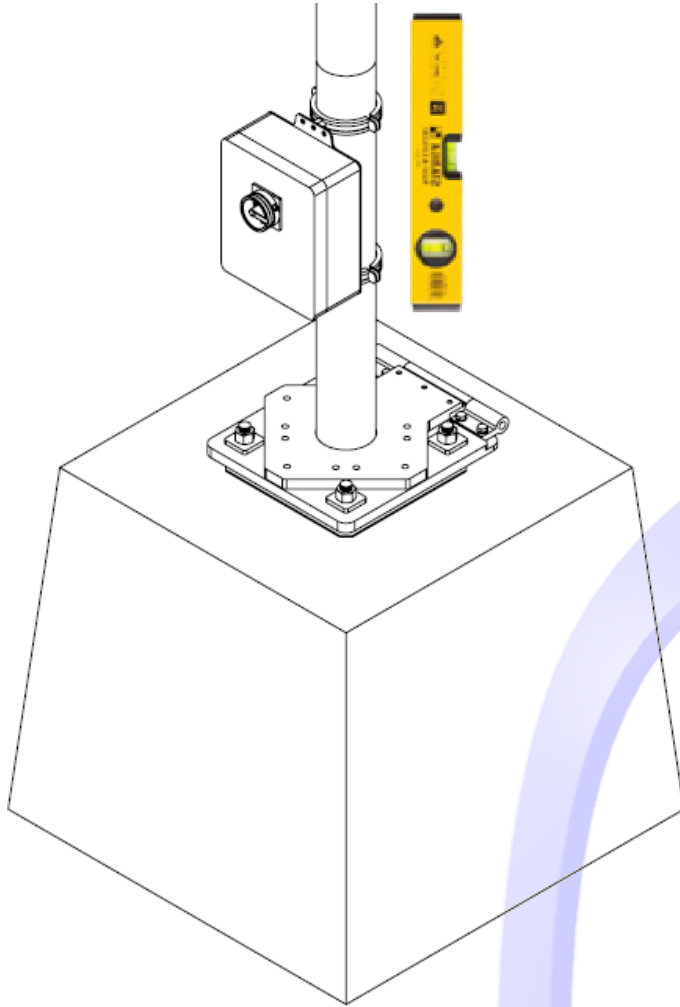


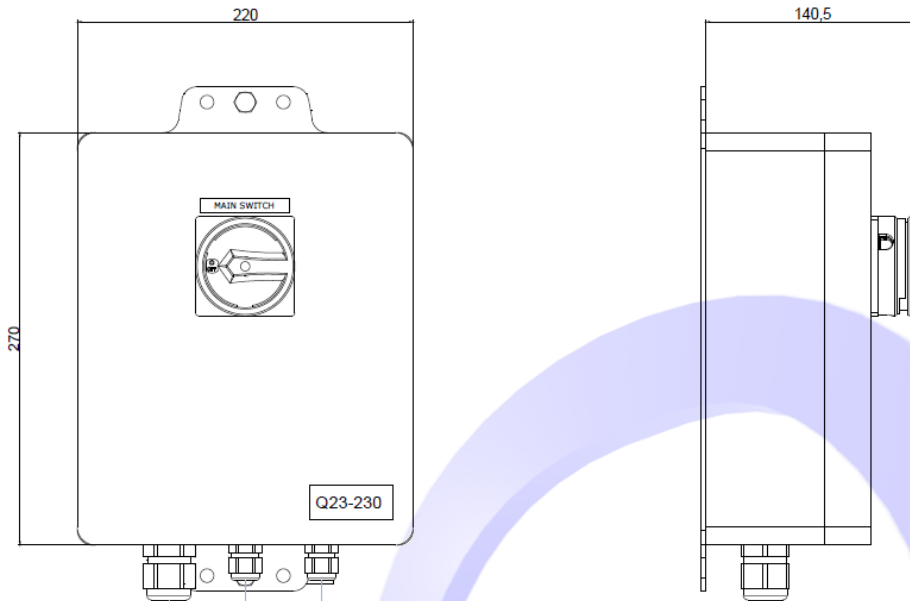
Figure 12; Level mast by adjusting Mounting plate

11. Use a spirit level tool to check the level of the complete mast.
12. Level the complete assembly using the upper bolts and nuts.
13. After mast is correctly leveled tighten all bolts.
14. Make sure that there is enough cable length from either WDI Lights and Main power cable to lift and tilt the mast.

10.5 Electrical Installation

This chapter explains three types electrical installations. 230VAC, 24VDC and 6.6A.

- **230VAC**



MAIN input power, single phase 100-240Vac | M25 10-17mm

24Vdc power output top light or externally lighted version | M16

24Vdc power output for internal or external lighting | M16

Figure 13; Junction Box

Open the junction box and install according table below.

ID.	Terminal color	Description
XD001/1	GREY	L for 100-240 VAC
XD001/2	BLUE	N for 100-240 VAC
XD001/3	GREEN/YELLOW	Protective earth PE contact
XD002/1	GREY	+ 24 VDC
XD002/2	BLUE	- 24 VDC
XD002/3	GREEN/YELLOW	Protective earth PE contact

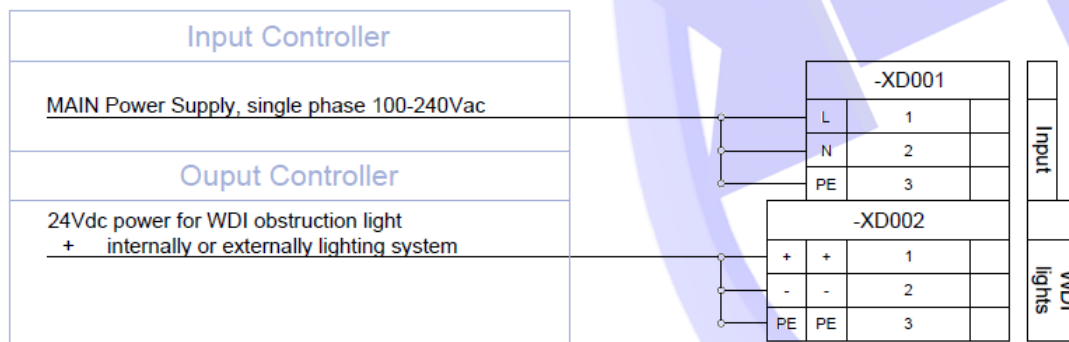


Figure 14; Terminal connection inside Junction Box

When Q-Aviation has provided suitable cable glands mount the light with cables with an outer dimension between 7 and 13 mm. Mounting cables with different dimensions will void the warranty of the lights.

- **24VDC**

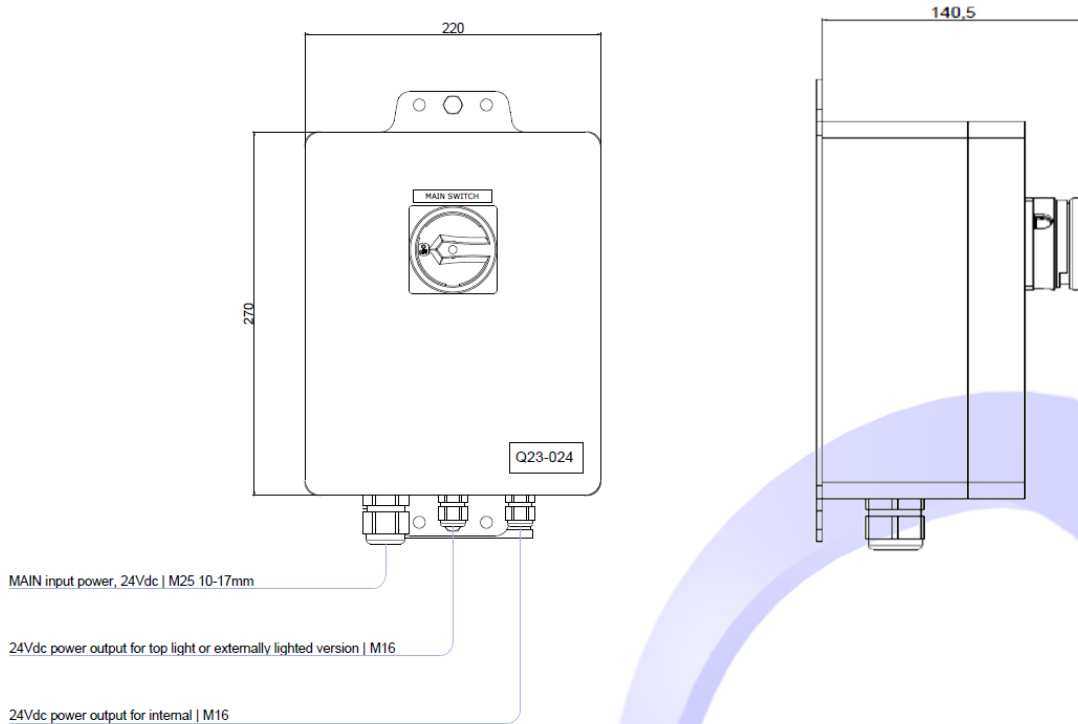


Figure 15; Junction Box 24VDC

Open the junction box and install according table below.

ID.	Terminal color	Description
XD001/1	GREY	+ for 24VDC
XD001/2	BLUE	- for 24VDC
XD001/3	GREEN/YELLOW	Protective earth PE contact
XD002/1	GREY	+ 24 VDC
XD002/2	BLUE	- 24 VDC
XD002/3	GREEN/YELLOW	Protective earth PE contact

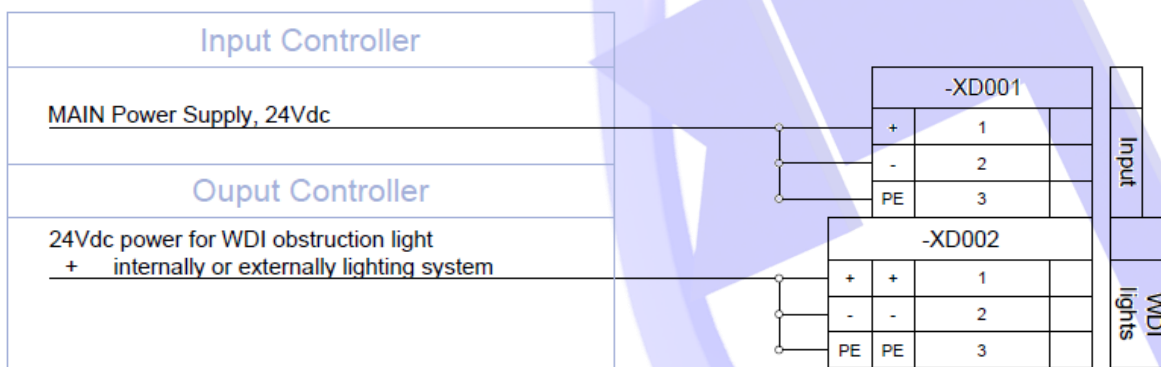


Figure 16; Terminal connection inside Junction Box

When Q-Aviation has provided suitable cable glands mount the light with cables with an outer dimension between 7 and 13 mm. Mounting cables with different dimensions will void the warranty of the lights.

• **6.6A**

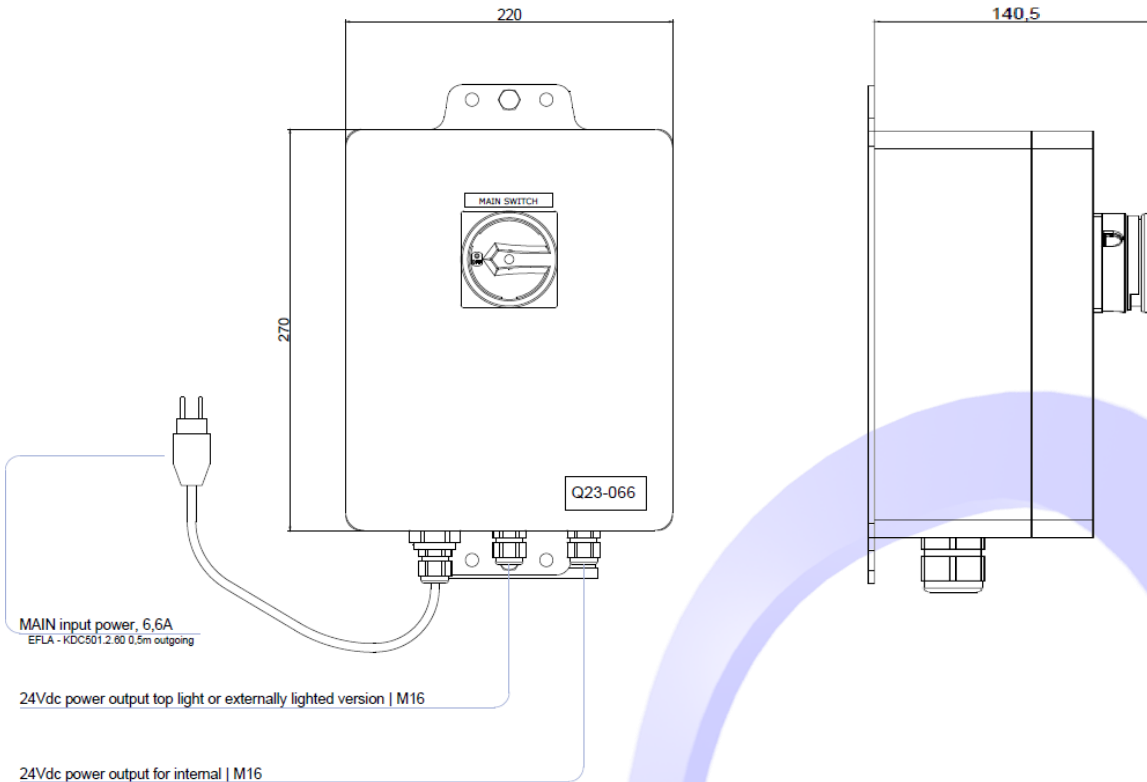


Figure 17; Junction Box 6,6A

Open the junction box and install according table below.

ID.	Terminal color	Description
XD001/1	GREY	+ for 6.6A
XD001/2	BLUE	+ for 6.6A
XD001/3	GREEN/YELLOW	Protective earth PE contact
XD002/1	GREY	+ 24 VDC
XD002/2	BLUE	- 24 VDC
XD002/3	GREEN/YELLOW	Protective earth PE contact

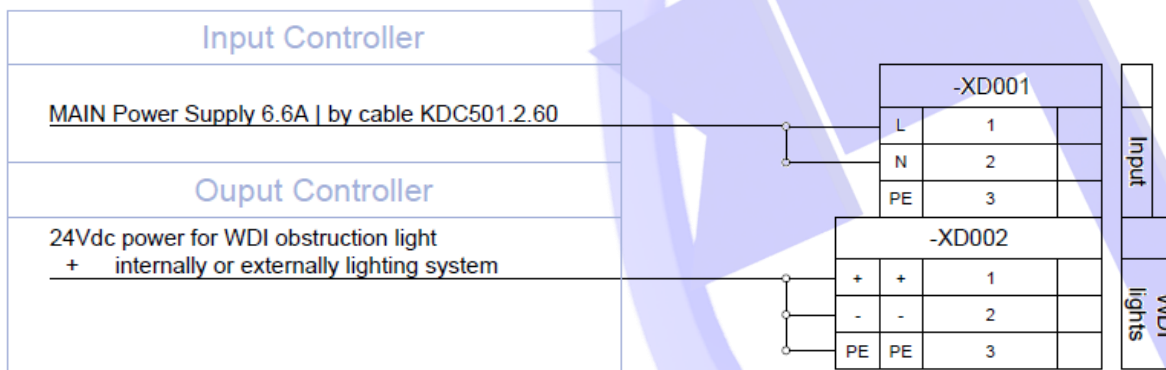


Figure 18; Terminal connection inside Junction Box

When Q-Aviation has provided suitable cable glands mount the light with cables with an outer dimension between 7 and 13 mm. Mounting cables with different dimensions will void the warranty of the lights.

10.6 Post Installation

After the Wind Direction Indicator Light fixture is installed, follow the post installation checklist:

Check if all wires are installed correctly. Test the correct installation of the wires by pulling on the wires gently.

11 Maintenance, Trouble shooting and Spare parts

11.1 Maintenance WDI Mast with Lights

To keep the WDI light fixtures operating efficiently, follow a preventive maintenance schedule. Refer to FAA AC 150/5340-26 for more detailed information.

WARNING: Lifting the mast requires 2 or more persons.

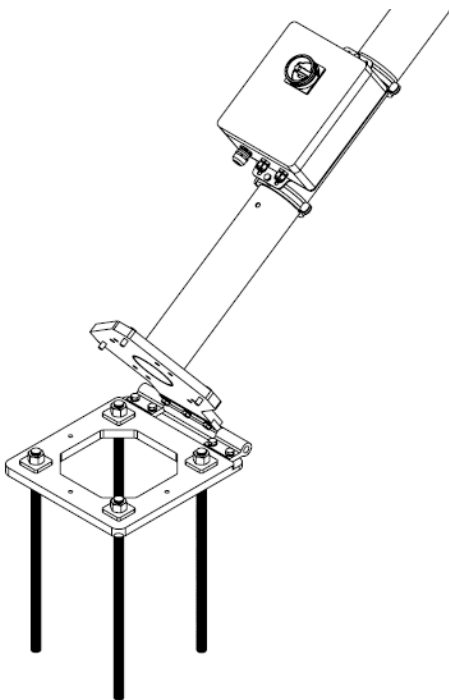


Figure 19; Lower mast for Maintenance

Interval	Maintenance task	Action
Weekly	-Check for proper function. -Check for dirty lens. -Clean glass dome inside only if there is moist inside	Fixture has to function. Clean dirty lenses with glass cleaner. Unscrew Glass Dome as described (9.2 and Figure 12)
Monthly	-Check windsock for defects -Check for misaligned fixture. -Check for moisture and dirt inside fixture.	Check attachment windsock to frame and visual defects. Straighten, level, and align light fixture. Open fixture and clean. Replace all seals and cracked/broken lens. (Figure 11)
Bi-Annually	-Check for improper light elevation. -Check for presence of corrosion or loose or chipped paint.	Maintain same elevation for all light fixtures. Scrape and repaint light fixture.
Annually	-Check for loose wire connections.	Repair faulty / improper wire connections
	-Replace Windsock	

Table 3; Maintenance

11.2 Maintenance Mast

- Control the tightening of bolts and nuts installed at site e.g foundation nuts, for tightening torque see table 4 below, lowering arm attachment and lights tube attachments.
- Remove any buildup of organic material, excessive amounts of dirt etc. Pay extra attention to the areas around foundation bolts.
- Inspect the masts for visible defects which may affect the structural performance of the mast installations.

Dimension	Material	Torque
M10	A4-80	44Nm
M12	A4-80	85Nm
M16	A4-80	187Nm

Table 4; Torque table

11.3 Unscrew the Glass dome for Obstruction light Maintenance

The glass dome of the Housing has a metric M135x1,5 screw thread that is loosened by twisting the dome part counter-clockwise. As shown in the loose instruction in the image below.

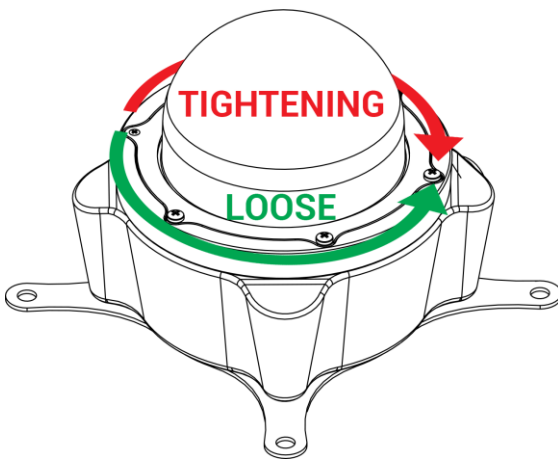


Figure 16; loose or tightening the housing

11.4 Trouble shooting WDI with Light Warning!

Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation. Lock out the circuit fuse inside Control system unit so that the circuit cannot be energized by remote before/during attempting to service the fixture.



Problem	Possible cause	Corrective Action
LED will not turn on	Defect supply cable	Check if the supply cable from controller is not damaged and the wires to WDI / Obstruction light are working
	Loose connection(s)	Repair faulty / improper wire connections inside WDI Obstruction light and controller unit
	Defective LED	Replace Led Unit part as described in spare parts list
	Defect driver	Replace driver part as described in spare parts list
	Moisture present in fixture	Open up and dry light fixture. Inspect lens for cracks and replace if necessary. Replace all electric damaged parts.

Table 5; Trouble shooting

11.5 Repair section Spare parts

Use only approved Q-AVIATION B.V. replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals, impair specified performance and create safety hazards.

Part number	Part description	Extra
Q24NA-22OR	Q-Windsock Ø45x250 cm Orange	Replace correct colour and size
Q24NA-22RW	Q-Windsock Ø45x250 cm Red/White	Replace correct colour and size
Q23-IBF	Internally lighted WDI FAA top unit	
Q23-IBI	Internally lighted WDI ICAO top unit	
Q23-IAF-806	Externally lighted Wind Direction Indicator top unit	
Q23-IAI-806	Externally lighted Wind Direction Indicator top unit	
Q23-II	WDI TOP unit unlighted	
Q23WSF45	Windsock Frame SS316 Ø45	Replace correct size
Q23-024	Wind direction indicator Junction box 24 VDC	
Q23-230	Wind direction indicator Junction box 100-240 VAC	
Q23-066	Wind direction indicator Junction box 2,8-6,6 A	

Table 6; Repair spare part list