JEL PRODUCTS
SUSTAINABLE | LIGHTING | SOLUTIONS

INSTRUCTION MANUAL

Orca Series

High output industrial LED floodlight, one manual for three families: cast aluminium AC and DC, 316L stainless steel, and the high temperature range.

DOCUMENT	REVISION	DATE	LANGUAGE
MAN-ORS-EN	1	04 / 09 / 2026	EN



Read before installation

Keep for future use

Qualified personnel only

ORAC01 · ORDC01 · ORDC02

ORSS01 · ORSS02

ORHT01 · ORHT02

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Contents

This manual covers the whole Orca Series. Most of what follows applies to every version, because the housing, the mounting foot, the connectors and the wiring are shared. Where a section applies to one family only, the family is named in the heading or in the row.

BEFORE YOU START

1	**About this document**	Who it is for, symbols, hazard classes, revision history
2	**The product**	The three families, intended use, order codes, the type label
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WHICH VERSION DO YOU HAVE

Code on the label	Family
ORAC01	Cast aluminium, AC, remote TLD800 driver
ORDC01	Cast aluminium, DC 24 V, drivers on board
ORDC02	Cast aluminium, DC 48 V, drivers on board
ORSS01	316L stainless steel, AC
ORSS02	316L stainless steel, DC 48 V
ORHT01	High temperature, without optics
ORHT02	High temperature, with a 20, 40 or 60 degree HT optic

The code is on the type label on the rear of the housing. Section 2.5 explains the label, including the second code that is not an article number.

PRODUCT PAGE

Photometric files per optic, drawings, the datasheets and the current version of this manual.

jelproducts.nl/en/products/orca

KEEP THIS MANUAL

Store it with the site documentation and pass it on to every person who works on the luminaire.

1 About this document

Read this manual and understand its safety instructions before you install, operate or maintain the luminaire. Failure to do so can result in serious injury or death.

1.1 Who this document is for

This manual is written for the buyer, the installer, the maintenance technician and the end user. Assembly, installation, commissioning and maintenance may only be carried out by a qualified person: someone with electrical training who can recognise the risks described here and avoid the hazards that arise during the work.

Every person who works on the luminaire must have read these warnings and must follow them. Keep the manual for the service life of the installation.

1.2 Hazard classes

Safety information in this manual is graded. The class tells you how serious the consequence is if the instruction is ignored.

DANGER
A hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING
A hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION
A hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

NOTE
Information that matters for a correct result but that is not related to a hazard.

1.3 Symbols


Electrical hazard
Live parts. Isolate the supply before working on the luminaire.


General hazard
Described in the text beside the symbol.


Optical radiation
Do not look into the operating light source.


Hot surface
High temperature range. The housing reaches process temperature.


Crush hazard
Moving parts during mounting and aiming, and a 22.7 or 36.3 kg mass at height.


Two persons
This step must be carried out by two people.


Read the manual
Read and understand it before use.


Protective earth
Terminal for the protective earth conductor.


CE marking
Complies with the applicable European legislation.


Separate collection
Not unsorted municipal waste.

1.4 Feedback

The latest version is on the product page. If you find an error, write to info@jelproducts.nl. We would rather correct a sentence than have an installer guess.

1.5 Revision history and what this edition replaces

Orca luminaires have been supplied since before 2024 and earlier editions exist. **This edition supersedes all of them, including the DCbright Orca operating instruction of 2024** and the separate high temperature instruction. Where an older document and this manual disagree, this manual applies.

Date	Revision	Change
2024 and earlier	-	Operating Instruction DCbright Orca, the separate operating instruction for the high temperature version, and earlier editions issued per version. All superseded
4 September 2026	1	First edition of the combined manual, covering the cast aluminium, the 316L and the high temperature Orca in one document. Rewritten to the JEL Products manual standard: numbered chapters, hazard classes and symbols, intended use and foreseeable misuse, weight and wind load, the AC and DC wiring diagrams, the high temperature system, the cleaning protocol, the type label, cable length, fault finding and spare parts. **Corrected against the documents in circulation:** the 316L housing and foot dimensions follow the production drawing DCB-OR-SS, and the driver box for this range is the DRB-2

2 The product

The Orca is the highest output floodlight in the JEL range: 111,300 lumens from 156 lenses in one cast aluminium or 316L stainless steel housing, in AC and in 24 and 48 V DC. It is specified where mounting points are few and expensive to reach.

2.1 The three families

Same housing, same mounting foot, same optics and the same wiring. Front view of each, because that is where they differ most.



Cast aluminium. Titanium-based e-coating, 111,300 lm AC or 100,200 lm DC at 22.7 kg. ORAC01, ORDC01 and ORDC02



316L stainless steel. Solid stainless, electrolytically polished, twenty years on the housing, 36.3 kg. ORSS01 and ORSS02



High temperature. Rated to plus 120 degrees Celsius, 65,000 lm at 320 W, glass front. ORHT01 and ORHT02

	Cast aluminium	316L stainless steel	High temperature
Article base code	ORAC01 · ORDC01 · ORDC02	ORSS01 · ORSS02	ORHT01 · ORHT02
Luminous flux	111,300 lm AC · 100,200 lm DC	111,300 lm AC · 100,200 lm DC	65,000 lm without optics · 52,000 lm with an optic, at 320 W
Power	800 W	800 W	320 W, or 240 W as the .240W build
Efficacy	139 lm/W AC · 125 lm/W DC	139 lm/W AC · 125 lm/W DC	203 lm/W without optics
Ambient	minus 45 to plus 50 °C	minus 45 to plus 50 °C	minus 45 to plus 120 °C, peaks to plus 130
Housing	Cast aluminium, e-coated Titanium Black	316L, electrolytically polished	Cast aluminium, e-coated Titanium Light Grey. 316L on request
Front	Polycarbonate IK10, chemically hardened glass IK09 on request	Polycarbonate IK10, chemically hardened glass IK09 on request	Chemically hardened glass IK09, or borosilicate
Optics	14, 38, 69 and 14 by 46 degrees, or .NOP without lenses	14, 38, 69 and 14 by 46 degrees	None, 136 degrees very wide, or a 20, 40 or 60 degree HT optic
Supply	180 to 528 VAC, or 20 to 35 VDC, or 35 to 60 VDC	180 to 528 VAC, or 35 to 60 VDC	90 to 305 or 180 to 528 VAC
Ingress	IP66, IP67, IP68, IP69K	IP66, IP67, IP68, IP69K	IP66, IP67, IP68, IP69K
Cable as supplied	H07BQ-F, 2.0 m	H07BQ-F, 2.0 m	SiHF-OB silicone, 15.0 m
Corrosion class	C5, ISO 9223	C5 and CX, ISO 9223	C5, ISO 9223
Weight incl. bracket	22.7 kg	36.3 kg	22.7 kg
Warranty	5 years complete luminaire	20 years housing, 5 years electrical and seals	5 years to plus 120 °C

The aluminium and the 316L versions share their photometry: same optics, same IES files, so a site can mix the two materials across positions without a second lighting calculation. The high temperature range has its own photometry, without optics or with the three HT optics, and is the only family in the range that carries a 240 W setting.

2.2 Intended use

The Orca is intended for permanent professional installation as area and long throw lighting, within the ambient temperature range and the supply range of the version you have. It is mounted on a mast, a bracket, a crane boom or a structure capable of carrying its weight and wind load, and is aimed according to a lighting design. Typical applications:

Family	Where it is used
Cast aluminium, AC and DC	Offshore platform deck lighting, ring cranes and heavy lift cranes, shipyard building docks and dry docks, steel plant bays and casting floors, open cast mining benches and haul roads, large excavators and mining machines, quarry crushing and screening plant, log yards and bulk storage yards, heavy lift and project cargo quays, scrap yards and recycling plant, cement and aggregate terminals, large equipment maintenance halls
316L stainless steel	Offshore platforms and jack up rigs, chemical and fertiliser plant, splash zones and permanent salt spray, water and waste water treatment, food and beverage process areas, fish farms and aquaculture, desalination and brine handling, heavy lift vessels and dredgers, coastal terminals and quays, flue gas and scrubber areas, cleanrooms and washdown zones, any position where a coating cannot be repaired
High temperature	Steel plant bays and casting floors, rolling mills and reheat furnace fronts, foundries and melt shops, coke plant and sinter lines, glass works and annealing lehrs, cement kilns and clinker coolers, aluminium smelters and potrooms, drying ovens and paint lines, paper machines and drying sections, asphalt and bitumen plant, waste incineration and boiler halls, heat treatment and forging shops

2.3 What the luminaire is not for

The following uses are outside the intended use. They are not covered by the warranty and, in several cases, they are unsafe.

- **Explosive atmospheres.** No Orca is ATEX or IECEx certified. None may be installed in a zoned hazardous area.
- **Ambient above plus 50 degrees Celsius, for the aluminium and the stainless steel families.** Above that the driver is the limit. For process heat, use the high temperature range instead.
- **Ambient above the rating of a high temperature version:** plus 120 degrees Celsius continuous. Short peaks to plus 130 are permitted. Sustained operation above the rating is not.
- **Permanent immersion.** IP68 is verified as a test class, not as a continuous operating condition.
- **A 24 V luminaire on a 48 V system, or the reverse.** ORDC01 and ORDC02 are physically identical and only the type label tells them apart.
- **Direct mounting against thermal insulation or a closed ceiling.** A minimum of 100 mm clear space to insulation and building parts is required.
- **A structure that has not been checked.** At 22.7 kg and 0.227 square metres of frontal area, the Orca is never fitted on the assumption that the bracket which carried three smaller floodlights will carry it.
- **Consumer, decorative, domestic or vessel accommodation lighting.**
- **Emergency or escape route lighting.** No Orca has battery back up or a self test.
- **Uplight applications.** Nothing is emitted above the horizontal at nil tilt, and the luminaire is not designed to be aimed upward.
- **Operation with a damaged housing, front, cable or bracket**, or with a driver other than the driver supplied for that luminaire.

2.4 Order codes

ORAC01-65K.38

ORAC01	Cast aluminium, AC 180 to 528 VAC, remote TLD800
ORDC01	Cast aluminium, DC 20 to 35 VDC, 24 V nominal, drivers on board
ORDC02	Cast aluminium, DC 35 to 60 VDC, 48 V nominal, drivers on board
ORSS01	316L stainless steel, AC
ORSS02	316L stainless steel, DC 48 V. 24 V on request
ORHT01	HT, without optics, 136 degrees very wide
ORHT02	HT, with a 20, 40 or 60 degree HT optic
65K to 22K	6500, 5000, 4000, 2700 K, amber 2200 K. HT: 6500, 4000, 2700 K only
BIC	Bi-colour 4000 K with amber 2200 K. Not available on HT
.14 .38 .69 .14x46	Optic, aluminium and 316L. Lens combinations within one luminaire are possible
.NOP	Supplied without lenses, aluminium version
.20 .40 .60	HT optic, on the ORHT02 only
240W	The 240 W build of the Orca HT

A lower wattage is ordered as an extra suffix on any AC version, because power is a driver setting. DC versions run at a fixed constant current, so another power level there is a custom build. Bracket type, control protocol, cable length, the front material and the Ra 80 or Ra 90 option are confirmed at order and are not part of the code.

High voltage DC between 250 and 740 V is available on request, through the TLD800. That is an AC version on a DC supply, not a DC version.

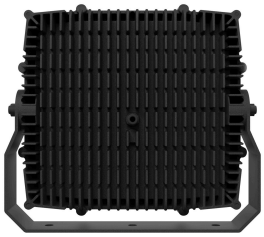
2.5 The type label, and the second code on it

The type label on the housing carries the article code, and the driver carries a label of its own. Both labels also show a **second code that is not an article number and that will not match what you ordered**. That is correct and it is deliberate.

> **NOTE**
>
> The second code is a JEL Products internal production code, such as OR156-800AC. It records the specific printed circuit board fitted, the production batch and the production date. We use it for traceability, for warranty and for service. It carries no information you need in order to specify, order or reorder a luminaire.

When you contact us about a luminaire, quote both. The article code tells us what it is. The internal code tells us exactly which one it is, which board is in it and when it was built, and that is usually what settles a service question in one call instead of three.

> **WARNING, 24 V AND 48 V LOOK IDENTICAL**
>
> ORDC01 and ORDC02 are the same housing, the same bracket, the same cable and the same two conductors. **Only the type label tells them apart, and a 24 V luminaire on a 48 V system is destroyed immediately.** Read the label before you connect, and photograph it before the luminaire goes up.



The rear of the Orca: the fin field, the central cable entry and the type label

3 Technical data

All values apply to the standard configuration at 25 degrees Celsius ambient, including lens losses and driver consumption. A hyphen means the entry does not apply to that version. A bi-colour or high CRI build changes the luminous flux; the quotation states the figure.

	ORAC01, AC	ORDC01, DC 24 V	ORDC02, DC 48 V	ORSS01 and ORSS02, 316L	ORHT01 and ORHT02
PERFORMANCE					
Luminous flux	111,300 lm	100,200 lm	100,200 lm	111,300 lm AC, 100,200 lm DC	65,000 lm without optics, 52,000 lm with an optic
Power consumption	800 W	800 W	800 W	800 W	320 W, or 240 W as the .240W build
Efficacy	139 lm/W	125 lm/W	125 lm/W	139 lm/W AC, 125 lm/W DC	203 lm/W without optics
LED count	156 lenses in one cast housing				156 positions, HT board
Colour temperature	6500 K, 5000 K, 4000 K, 2700 K, amber 2200 K. 6500 K delivers the same flux as 4000 K				6500, 4000 or 2700 K. No amber and no bi-colour
Colour rendering	Ra above 70 standard, Ra 80 or Ra 90 on request. MacAdam step 3 or better				
Optics	14, 38, 69 and 14 by 46 degrees, or .NOP without lenses			14, 38, 69 and 14 by 46 degrees	None, 136 degrees very wide, or a 20, 40 or 60 degree HT optic
Upward light output ratio	0 per cent at nil tilt				
TEMPERATURE AND LIFETIME					
Ambient temperature	minus 45 to plus 50 degrees Celsius				minus 45 to plus 120 degrees Celsius continuous, peaks to plus 130
LED service life, TM-21 L90B05	above 360,000 h at 50 °C, so the driver is the wear part				See the ladder in section 3.3
ELECTRICAL AND DRIVER					
Supply voltage range	180 to 528 VAC, or 250 to 740 VDC via the TLD800, 50/60 Hz	20 to 35 VDC, 24 V nominal	35 to 60 VDC, 48 V nominal	As the aluminium versions. On ORSS02, 48 V is standard and 24 V is on request	90 to 305 VAC or 180 to 528 VAC, 50/60 Hz
Current draw	3.5 A at 277 V, 3.6 A at 220 V, 2.1 A at 380 V, 2.0 A at 480 V	33.4 A at 24 V	16.7 A at 48 V, 13.4 A at 60 V	As the aluminium versions	1.5 A at 220 V and 0.8 A at 380 V at 320 W. 1.1 A and 0.6 A at 240 W
Power factor at full load	Above 0.9 at 60 to 100 per cent load	-	-	Above 0.9 on AC	Above 0.9 at 60 to 100 per cent load
THD at full load	Below 15 per cent at 60 to 100 per cent load	-	-	Below 15 per cent on AC	Below 15 per cent at 60 to 100 per cent load
Inrush current at 220 V	5.4 A peak, T50 8 ms	-	-	5.4 A peak, T50 8 ms on AC	See section 7.3
Surge protection	6 kV line to line, 10 kV line to earth, IEC 61000-4-5, on all AC versions				
Leakage current	0.7 mA maximum at 400 VAC, IEC 60598-1	-	-	0.7 mA maximum on AC	0.7 mA maximum
Dimming and control	0 to 10 V, PWM, DALI-2, or over NFC	On request		As the aluminium versions	0 to 10 V, PWM, DALI-2, or over NFC
Driver	Remote TLD800, 237 × 125 × 49 mm, 2,600 g. Bare or in the DRB-2	DC drivers on board, no external box		Remote TLD800 on AC, DC drivers on board on DC	Remote 800 W driver, always outside the hot zone, bare or in the DRB-2
Driver life	At least 100,000 h at case temperature 75 degrees Celsius, MTBF at least 320,000 h, case temperature range minus 40 to plus 90 degrees Celsius. Replaced without opening the luminaire				

3 Technical data, continued

	ORAC01, AC	ORDC01, DC 24 V	ORDC02, DC 48 V	ORSS01 and ORSS02, 316L	ORHT01 and ORHT02
CONSTRUCTION					
Housing	Cast aluminium, less than 0.08 per cent copper			Solid 316L stainless steel	Cast aluminium. A 316L high temperature version is available on request
Surface finish	Conversion layer plus two layer titanium-based e-coating, Titanium Black			Electrolytically polished	E-coating, Titanium Light Grey
Bracket	High tensile 316L stainless steel, adjustable in 30 degree steps. See section 6.1				
Front	Polycarbonate IK10 as standard, chemically hardened glass IK09 on request				Chemically hardened glass IK09, or borosilicate glass
Protection class	Class II				
Ingress protection	IP66, IP67, IP68 and IP69K, each class tested separately, so IP69K does not imply IP68				
Impact resistance	IK10 with polycarbonate, IK09 with glass, IEC 62262				IK09, set by the front cover
Corrosion class	C5 industrial and marine, ISO 9223			C5 and CX, ISO 9223. 316L is CRC III per EN 1993-1-4, PREN approximately 24	C5 industrial and marine, ISO 9223
Vibration and shock	6 G at resonant frequency, IEC 60068-2-6. Shock tested to IEC 60068-2-27				
CABLE, WEIGHT AND WARRANTY					
Cable and termination	H07BQ-F, 4 cores, 2 × 2.5 mm² plus 2 × 0.5 mm², 2.0 m, free wire ends	H07BQ-F, 2 cores, 2 × 2.5 mm², 2.0 m		As the aluminium versions	SiHF-OB heat resistant silicone, 4 cores, 2 × 2.5 mm² plus 2 × 0.5 mm², 15.0 m as standard, up to 150 m
Dimensions	Luminaire with bracket 515 × 440 × 95 mm, housing 484.0 × 441.2 × 93.5 mm			Housing 487.0 × 478.3 × 93.5 mm from the drawing	As the aluminium versions
Weight	22.7 kg incl. bracket, 25.3 kg with the loose driver, 33.1 kg with the DRB-2	22.7 kg incl. bracket		36.3 kg incl. bracket, 46.7 kg with the DRB-2	22.7 kg incl. bracket, driver box separate
Storage temperature	minus 45 to plus 50 degrees Celsius, dry, in the original packaging				
Warranty	5 years on the complete luminaire			20 years on the housing, 5 years on the electronics, the components and the seals	5 years on the complete luminaire up to plus 120 degrees Celsius

POWER IS A DRIVER SETTING

Every AC version can be ordered programmed to a lower wattage, by adding the wanted power to the article code as an extra suffix. DC versions run at a fixed constant current, so another power level there is a custom build. High voltage DC between 250 and 740 V is available on request, through the TLD800.

> **NOTE, 800 W ON 24 V IS 33.4 A**
>
> At 24 V nominal the Orca draws **33.4 A**. That is a real cable, a real fuse and a real terminal, and it is the reason the 48 V version exists: at 48 V the same luminaire draws **16.7 A** and the cable cross section for the same run roughly halves. Where the machine offers both, choose 48 V. The cable length table is in section 7.7.

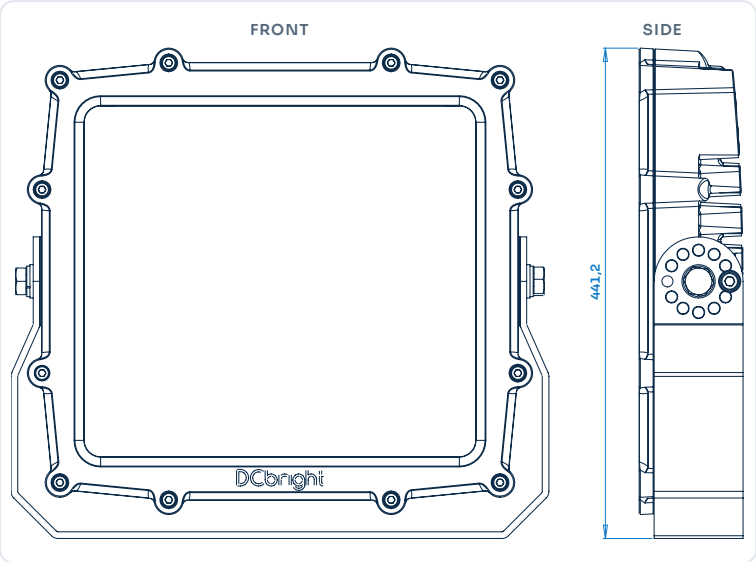
THREE THINGS THIS RANGE DOES NOT DO

DC on the HT	Not available. Every Orca HT is an AC luminaire with a remote driver. For high temperature on DC, see the Barracuda HT or the Snapper HT
Bi-colour on the HT	Not available on the high temperature versions
ATEX or Ex	No JEL Products luminaire is ATEX or Ex certified

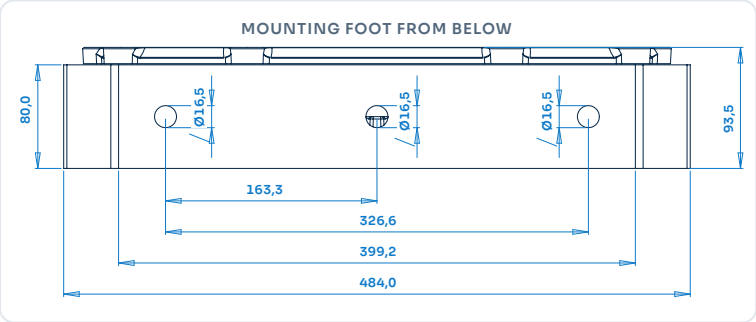
Photometry is measured in house to IES LM-79 and the IES files are downloadable per optic from the product page.

3.1 Dimensions, weight and wind load, cast aluminium

All drawings are dimensioned in millimetres. DXF and STEP models are available on request. The figures below are what the structural engineer needs. On the Orca that conversation is not short: 22.7 kg of luminaire and 0.227 square metres of frontal area at the top of a mast is a load that has to be calculated, not assumed.



Cast aluminium Orca, front and side. Housing 484.0 × 441.2 × 93.5 mm, 515 × 440 × 95 mm including the bracket



The mounting foot from below. Three holes of Ø 16.5 on the centre line at 163.3 mm pitch, in a foot 399.2 mm wide and 80.0 mm deep

DIMENSIONS, FROM THE DRAWING

Housing	484.0 × 441.2 × 93.5 mm, w × h × d
With bracket	515 × 440 × 95 mm
Mounting foot	399.2 mm wide, 80.0 mm deep

MOUNTING INTERFACE

Fixing holes	3 × Ø 16.5 mm on the centre line
Hole centres	326.6 mm between the outer holes, 163.3 mm pitch
Bolt size	M16, grade 8.8 or better. See the torque table in section 6.6
Adjustment	In 30 degree steps, see section 6.1

WEIGHT

Luminaire with bracket	22.7 kg
Plus the loose TLD800 driver	25.3 kg
Plus the driver in a DRB-2	33.1 kg

WIND LOAD, CALCULATED FROM THE DRAWING

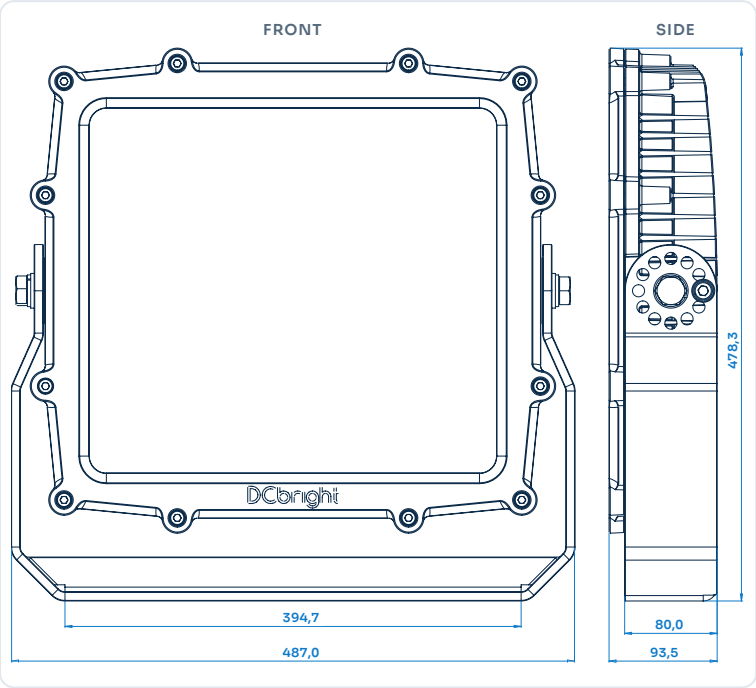
Frontal area	0.227 m²
Side view area	0.042 m²
Cd · A at Cd 1.2	0.272 m²
Force at 45 m/s	Approximately 344 N frontal, at an air density of 1.25 kg/m³

WARNING, THE MOUNTING ATTITUDE

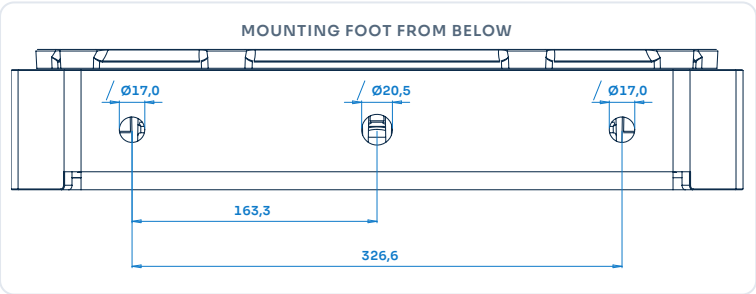
The frontal area assumes the luminaire is mounted **facing the wind**, which is the normal case on a mast, a bracket or a boom. That is the larger of the two figures and it is the one to use unless the position is known to be different. The wind load figure is the area, not the force: multiply by the drag coefficient and the dynamic pressure for your site. **On the Orca the wind moment is what sizes the bracket, not the weight.**

3.2 Dimensions, weight and wind load, 316L stainless steel

Solid 316L is 13.6 kg heavier than the cast aluminium housing. The bolt pattern is the same 163.3 mm pitch, so the footprint carries over, but **the load does not: check the structure again**, and note that the hole diameters and the foot width differ.



Orca SS, front and side. Housing 487.0 × 478.3 × 93.5 mm from the production drawing



The 316L mounting foot from below. 394.7 mm wide, two holes of Ø 17.0 and a centre hole of Ø 20.5, at the same 163.3 mm pitch

DIMENSIONS, FROM THE DRAWING

Housing	487.0 × 478.3 × 93.5 mm
Mounting foot	394.7 mm wide, 80.0 mm deep
Datasheet figure	515 × 440 × 95 mm with bracket, 484.0 × 441.2 × 93.5 mm housing, the same as the aluminium version

MOUNTING INTERFACE

Fixing holes	2 × Ø 17.0 mm and 1 × Ø 20.5 mm in the centre
Hole centres	326.6 mm between the outer holes, 163.3 mm pitch

WEIGHT

Luminaire with bracket	36.3 kg
Plus the driver in a DRB-2	46.7 kg

WIND LOAD, CALCULATED FROM THE DRAWING

Frontal area	0.233 m²
Side view area	0.045 m²
Cd · A at Cd 1.2	0.280 m²

NOTE, A DIFFERENCE BETWEEN THE DRAWING AND THE DATASHEET

The Orca SS datasheet quotes the same envelope as the aluminium version. The production drawing **DCB-OR-SS** gives 487.0 × 478.3 mm and a 394.7 mm foot with Ø 17.0 and Ø 20.5 holes. The drawing is the one to build the bracket to. This has been reported for correction on the datasheet.

WHY 316L

Sea water, chlorides and process chemistry do not attack a luminaire, they attack its coating. Where that coating cannot be inspected or repaired, the Orca SS removes the question: the housing is solid 316L, electrolytically polished, with twenty years of warranty on the housing.

3.3 Dimensions and lifetime, high temperature range



Orca HT, Titanium Light Grey, with a chemically hardened glass front. The housing, the bracket and the mounting foot are those of the cast aluminium version, section 3.1

	ORHT01, no optics	ORHT02, with optic
Flux at 320 W	65,000 lm	52,000 lm
Flux at 240 W	51,000 lm	39,000 lm
Beam	136 degrees very wide	20, 40 or 60 degree HT optic
Dimensions	515 × 440 × 95 mm with bracket, as the aluminium version	
Weight incl. bracket	22.7 kg, driver box separate	
Driver	Remote 800 W driver, programmed to 320 or 240 W, in a DRB-2 or on a tray	
System weight	33.1 kg with the DRB-2	
Wind load	As the aluminium version: 0.227 m² frontal, Cd · A 0.272 m²	
Cable	SiHF-OB silicone, 2 × 2.5 plus 2 × 0.5 mm², 15.0 m, up to 150 m	

NOTE, ONE LUMINAIRE, TWO POWER SETTINGS

The Orca HT is one article with two driver settings. The 240 W build is ordered as the **.240W** suffix and gives 51,000 lm without optics and 39,000 lm with one. The power level is programmed into the driver and is not a field setting.

LUMEN MAINTENANCE AT ELEVATED AMBIENT

The headline figure is measured at 50 degrees Celsius. In a hot zone the ambient governs, so use the row that matches the position. This ladder applies to every JEL high temperature luminaire.

Ambient	TM-21 L90B05
plus 50 degrees Celsius	360,000 h
plus 85 degrees Celsius	103,000 h
plus 105 degrees Celsius	71,700 h
plus 120 degrees Celsius	51,400 h

NOTE

Even at plus 120 degrees Celsius continuous the LED engine outlasts more than five driver lifetimes. That is the whole point of putting the driver outside the heat. See section 7.5.

BUILT-IN SELF-PROTECTION, HIGH TEMPERATURE RANGE

An HT luminaire protects itself. As its internal temperature rises it dims back automatically, and on overheating it switches itself off and comes back when it has cooled.

That feedback is why the HT cable has four cores and not two: two of 2.5 mm² carry the power and two of 0.5 mm² carry the temperature signal between the luminaire and the driver. Conductors 7, 8, 11 and 12 in section 7.2 are that pair.

DANGER

Never install an HT luminaire with the temperature pair disconnected, shorted or left out of an extended cable run. Without it the luminaire has no thermal protection and will run itself past its rating in a hot zone.

An HT luminaire that comes up at full output when the process is cold and drops back when the furnace is at temperature is doing exactly what it is designed to do. See chapter 11 before you report it.

3.4 Standards and verification

Subject	Standard	By
Luminaire safety	IEC/EN 60598-1, -2-5	In house
EMC emission and immunity	EN 55015, EN 61547	TÜV
Marine EMC	IEC 60533, bridge and open deck	TÜV
Ingress	IEC 60529, ISO 20653	In house
Impact	IEC 62262, IK10 with polycarbonate, IK09 with glass	In house

Subject	Standard	By
Vibration	IEC 60068-2-6, at 6 G	In house
Shock	IEC 60068-2-27	In house
Corrosion	ISO 9223, EN 1993-1-4 for 316L	In house
Photometry	IES LM-79, TM-21 for lifetime	In house
Substances	RoHS, REACH	Self-declaration

This table lists how the product is verified. The harmonised standards named on the declaration of conformity are listed separately in section 14.1. Photobiological safety is covered in section 4.3. To check the authenticity of a test or inspection report and certificate, contact JEL Products on +31 (0)33 785 9809 or at info@jelproducts.nl.

OPTICS AND BEAM ANGLES

The optic is part of the order code and is chosen from the lighting calculation. The beam angle is the full angle between the two directions where the intensity has fallen to 50 per cent of the peak; the field angle uses 10 per cent. Both are read from the IES files on the product page.

Lens	Distribution	Beam angle	Field angle	Typical use
14°	Spot, symmetric	13°	27°	Very long throw beyond 150 m: high masts, crane booms, stockpiles
38°	Medium, symmetric	37°	69°	Long throw beyond 40 m: yards, quays, terminals, mining benches
69°	Wide, symmetric	72°	103°	Up to around 45 m: decks, aprons, casting floors, work areas
14 by 46°	Flare, asymmetric	13 by 45°	30 by 70°	Throws far forward and stays wide across: quay edges, haul roads
.NOP	Very wide, no lenses	136°	168°	Close range over a very wide field
HT 20, 40, 60°	HT optic on ORHT02	20, 40 or 60°	-	Throw onto a target through a hot atmosphere

Lens combinations within one luminaire are possible. Nothing is emitted above the horizontal at nil tilt; section 6.7 shows what tilt does to that figure.



DRB-2 driver box, 441 × 290 × 145 mm, 10.4 kg, IP66 and IP67. The box the TLD800 fits

TEST REPORTS

Photometric measurement to IES LM-79 per optic, in situ temperature measurement and the inrush current measurement behind section 7.3 are issued on request and with the project documentation.

4 Safety

This chapter lists the hazards that arise when an Orca is installed, operated and maintained, and what to do about each of them. It does not replace the national and local electrical and working at height regulations that apply on your site.

4.1 Electrical hazard

DANGER, LIVE PARTS

Working on the luminaire, the driver or the driver box while the supply is on can cause death or serious injury. Isolate the supply, secure it, and verify that the circuit is dead before you start. Check twice.

DANGER, NEVER MAINS TO THE LUMINAIRE

An AC Orca is **always** fed by its driver. The luminaire itself must never be connected directly to any mains supply. Mains goes to the driver, the driver output goes to the luminaire. Connecting mains to the luminaire destroys it and creates a serious electrical hazard. See section 7.8.

- Every Orca is a Class II luminaire. The housing is not earthed through the supply cable, but the driver box, driver tray and any metal enclosure must be earthed correctly.
- Only use the driver and the cable supplied for that luminaire. Another driver can create a dangerous situation and voids the warranty.
- Make the connection to the standards and directives that apply in your country, within the supply range in chapter 3 and of the right type: AC, DC 24 V or DC 48 V. **Read the nominal voltage on the label before you connect a DC luminaire.**
- Provide surge protection where the installation sees lightning or switching transients, and keep one metre between the luminaire and a radio receiver.

4.2 Falling objects

WARNING, FALLING LUMINAIRE

A luminaire that comes loose from height can kill. Verify the load capacity of the mast, bracket or structure before mounting, and fit a secondary retention where the luminaire is above a walkway, a working area or a road, or on anything that moves.

The luminaire and bracket weigh 22.7 kg in cast aluminium and 36.3 kg in 316L, and up to 46.7 kg with a driver box. Under EN 60598-1 the suspension has to withstand four times the mass. **The Orca is specified to replace three smaller floodlights, and the bracket those three sat on was never sized for it.** Have the structure checked, then fit the retention anyway.

4.3 Optical radiation

WARNING, OPTICAL RADIATION

Never look into the operating light source. Direct exposure at close range can cause permanent eye damage.

Photobiological safety is classified to **EN 62471**, with the blue light hazard assessed to **IEC/TR 62778**. That gives a **hazard distance**: beyond it the luminaire is Risk Group 1 and no exposure limit is reached in normal viewing. **It follows the optic**, because it is set by the peak intensity and not by the light output. The figures below come from our own LM-63 photometric files.

Version and optic	Peak intensity	Hazard distance
AC, 14 degree spot	1,260,000 cd	**19.0 m**
DC, 14 degree spot	1,135,000 cd	18.0 m
AC, 14 by 46 flare	480,000 cd	11.7 m
DC, 14 by 46 flare	432,000 cd	11.1 m
HT 320 W, 20 degrees	263,000 cd	8.7 m
AC, 38 degrees	218,000 cd	7.9 m
DC, 38 degrees	197,000 cd	7.5 m
HT 320 W, 40 degrees	118,000 cd	5.8 m
AC and DC, 69 degrees	83,000 to 92,000 cd	4.9 to 5.1 m
HT 320 W, 60 degrees	56,000 cd	4.0 m
AC and DC, without lenses	30,000 to 34,000 cd	2.9 to 3.1 m
HT 320 W, without optics	18,000 cd	2.3 m

The rule on site. Take **20 m** where the version and the optic are not known, because that covers the sharpest build in the whole JEL range. Take **12 m** where no spot optic is fitted and **8 m** where nothing narrower than 38 degrees is fitted. Nobody works or stands within that distance looking towards the front.

Method: the square root of the peak intensity divided by the threshold illuminance at the Risk Group 1 boundary, taken as 3,500 lx for the 6500 K LED. Calculated from our own photometric files, not a measurement report. At a lower colour temperature the threshold is higher and the distance shorter, so the 6500 K figure is the conservative one.

4.4 Hot surfaces, high temperature range



WARNING, HOT SURFACE

An Orca HT in a hot zone reaches the temperature of its surroundings, up to plus 120 degrees Celsius and briefly plus 130. Touching it causes immediate and severe burns. It stays hot long after the supply is switched off.

- Isolate the supply and let the luminaire cool to hand temperature before any work. Do not judge the temperature by looking at it.
- Wear heat resistant gloves and the personal protective equipment required for that zone.
- Never run cold water onto hot glass. The thermal shock can break the front. See section 10.5.
- Do not apply water at all to a luminaire warmer than plus 60 degrees Celsius.
- The silicone cable is rated for the hot zone but it also gets hot. Treat the cable as a hot surface up to the point where it leaves the zone.
- The aluminium and stainless steel families also become warm in service: at 800 W the housing is a large heat sink and it runs warmer than a smaller floodlight. Let them cool anyway.

4.5 Crush and handling

CAUTION, MOVING PARTS AND A HEAVY MASS

The housing rotates against the bracket during mounting and aiming. Keep fingers clear of the pivot and of the detent ring. **Two people on every Orca:** 22.7 kg in aluminium and 36.3 kg in 316L is at or over the limit for one person at height with the arms extended.

- Wear gloves, safety boots and a hard hat during assembly and installation.
- Hoist the luminaire to the position with a rated lifting arrangement and hold it while the first bolt is started. Nobody stands under it.

4.6 Heat and surroundings

- Keep at least 100 mm clear between the luminaire and thermal insulation or building parts. Do not cover or wrap the luminaire. Direct ceiling mounting is not recommended.
- Keep the space between the cooling fins clear. Trapped dirt reduces cooling and shortens the life of the LEDs. The Orca has no fan and no vents, so the fin field is the only cooling path for 800 W.
- Do not install an aluminium or stainless steel Orca near a heat source that takes it beyond plus 50 degrees Celsius ambient. For process heat, use the high temperature range.
- Do not expose the luminaire to corrosive chemicals outside its corrosion class without checking with your supplier first. For permanent salt exposure and process chemistry beyond C5, see the 316L version.

4.7 Laying the luminaire down

CAUTION

Rest the luminaire on its **front** or on its bracket, on the packaging or on a clean soft surface. **Never rest it on its back**, the side the cable comes out of.

On the Orca the cable gland sits centrally in the **rear face**, inside the fin field, and it stands proud of that face. Put 22.7 kg of luminaire on it and you load the gland in exactly the direction it is not designed for: the seal is disturbed, the ingress protection is no longer guaranteed, and the damage does not show. The front is a flat plate in a raised frame with twelve bolts and it carries the weight without complaint. It may pick up a scratch on grit, which is cosmetic. A crushed gland is not.

NOTE

On the 316L version the rear face is polished stainless. Rest it on the packaging, not on bare concrete or on a steel deck: a carbon steel particle picked up there is where the first pit on a stainless housing starts. See section 10.5.

4.8 What must never be done

DANGER, DO NOT OPEN THE LUMINAIRE

Do not remove the front or the glass, and do not open the housing. The seal, the ingress protection and the electrical safety all depend on a housing that has not been opened. Opening it voids the warranty and the declaration of conformity.

- Do not modify, repair or open the luminaire. Repairs are carried out by JEL Products or by a company it appoints.
- Do not install or switch on a luminaire with a cracked front, a damaged housing, bracket or cable, and do not use it in the applications listed in section 2.3.
- Do not connect mains directly to an AC luminaire, do not reverse the polarity on a DC luminaire, and do not connect a 24 V luminaire to a 48 V system.
- Do not disconnect, short or omit the temperature pair on an AC or a high temperature version. See section 3.3.
- Do not fit the luminaire through fewer than three of the foot holes, and do not put the driver box of a high temperature installation inside the hot zone.

4.9 Emergency and exceptional situations

- If an electrical fault occurs in a luminaire, a driver or a driver box, switch off the supply immediately.
- If a luminaire is severely damaged during operation, switch off the supply immediately and do not switch it on again until the luminaire has been replaced or released by JEL Products.
- No Orca has battery back up. None of them provides emergency or escape route lighting.

4.10 Potential health consequences

If ignored	Consequence
Working on a live luminaire, driver or box	Severe injury or death by electric shock
Mains connected directly to an AC luminaire	Destroyed luminaire, arc, fire and shock risk
Looking into the operating light source	Permanent eye damage, and on the Orca from further away than on any other JEL luminaire
Touching a hot HT housing or its cable	Immediate severe burns
No secondary retention above a walkway	Fatal injury from a falling 22.7 or 36.3 kg luminaire
One person handling the luminaire at height	Dropped luminaire, back and hand injuries
Fingers at the pivot or the detent ring	Crushing, minor to moderate injury
Cold water on hot glass	Broken front, glass fragments, loss of ingress protection
Luminaire rested on its back, on the gland	Damaged gland, water ingress, later failure
Temperature pair disconnected	No thermal protection, LED and driver run past their rating

NEVER, ON ANY ORCA


Never open the housing or remove the front


Never rest the luminaire on its back, the cable side


Never carry or suspend it by the cable


Never aim a pressure washer at the gland


Never cover or wrap the luminaire


Never fit a driver other than the one supplied

5 Preparation

Everything that has to be right before the first bolt goes in.

5.1 Transport and storage

- Transport and store the luminaire in its original packaging, in a dry place, at **minus 45 to plus 50 degrees Celsius**. That applies to every family, including the high temperature range: the rating of plus 120 degrees Celsius is an operating rating, not a storage rating.
- Do not stack pallets beyond the marking on the packaging.
- Store the box the right way up and keep the front off the ground.
- Move the boxed luminaire with two people or with a trolley. At 22.7 kg, and 36.3 kg in 316L, this is not a box that is carried under one arm.
- On a high temperature version the cable is 15 m long and is coiled in the box. Keep it coiled until the run is measured out. Silicone insulation is softer than PVC and picks up damage from being dragged.

5.2 Contents of the delivery

1 ×	Orca luminaire in the ordered configuration, with the standard bracket fitted and a pre-fitted cable with free wire ends
1 ×	Remote driver on the AC versions: TLD800 on the ORAC01 and the ORSS01, the 800 W remote driver programmed to 320 or 240 W on the high temperature versions. Bare, or in a DRB-2 driver box or a 316L Power Box if ordered
1 ×	This instruction manual

> **NOTE, CABLE LENGTH**
>
> The standard length is **2.0 m** on the aluminium and 316L versions and **15.0 m** on the high temperature versions. Longer runs are specified per order, and the silicone cable runs to roughly 150 m. **Check the length against the packing list or the quotation**, not against a figure in a manual or a datasheet.

The contents change with the accessories ordered: rear mount bracket, SS rear mount bracket, safety cable, Crane Light Stabilizer or tower crane frame. Mounting bolts for the structure are not supplied, because they depend on the structure. **The safety cable is not supplied as standard**, see section 6.5.

5.3 Unpacking

1. Read the label on the box and check that the article code matches what you ordered and what the lighting design specifies. Optics and colour temperatures differ between luminaires on the same project, and on a DC project 24 V and 48 V luminaires look identical.
2. Cut the tape along the seams. Do not push the knife deeper than the tape.
3. Lift the luminaire out with two people, holding the housing and not the cable.
4. Check that the article code on the type label matches the code on the box, note the internal production code as well, see section 2.5, and **read the nominal voltage on a DC luminaire**.
5. Inspect the housing, the front, the bracket, the cable and the cable gland for cracks, impact damage or exposed conductors.
6. Keep the packaging until the luminaire is installed and working. A luminaire that has to be returned travels in its own box.

> **WARNING, DAMAGED PRODUCT**
>
> If you find any damage, do not install the luminaire and do not switch it on. Contact JEL Products.

5.4 Tools

The sizes follow the bolts you use for the structure, so the list names the bolt and not a spanner size. Bring a socket or ring spanner that fits the bolt you have chosen.

Tool	Used for
Socket or ring spanner for the pivot and index bolts	Setting the aiming angle on the bracket
Socket or ring spanner for the structure bolts	M16 through the Ø 16.5 mm holes, or M20 through the Ø 20.5 mm centre hole on the 316L
Torque wrench, 20 to 250 Nm	The foot bolts, see section 6.6
Torque wrench, 5 to 30 Nm	The bracket bolts and the cable gland
Two open ended spanners for the cable gland	One holds the body, one turns the cap nut
Wire stripper and cutter	Preparing the cable ends
End sleeve crimping tool	Preparing the cable ends
Voltage tester	Verifying that the circuit is dead
Insulation resistance tester	Commissioning, chapter 8
Heat gun	Heat shrink tubing over the gland, section 7.6
Rated lifting arrangement, or a hoist	Getting 22.7 or 36.3 kg to the position and holding it there
NFC reader or smartphone with the driver app	Setting the output level over NFC, where fitted
Heat resistant gloves	Any work in a hot zone on the HT range

Do not use a percussion drill on or near the bracket.

NOT SUPPLIED WITH THE LUMINAIRE

Mounting bolts	They depend on the structure. Use A4 or 316 stainless steel, or hot dip galvanised class 8.8, matched to the environment
Safety cable	Ordered separately, see section 6.5
Cable gland for an extended run	Where the run is extended on site
Heat shrink tubing and self amalgamating tape	For sealing the gland, section 7.6
Anti-seize compound	For a stainless bolt in a stainless thread, section 6.6
Threadlocker	Where the installation calls for it

> **NOTE**
>
> The reason the tool list names bolts and not spanner sizes is that the bolt is your choice, not ours. The mounting foot offers three holes of Ø 16.5 mm, and what goes through them follows from the structure and the wind load.

TWO PEOPLE OR ONE

Two. An Orca with bracket is 22.7 kg in aluminium and 36.3 kg in 316L, and with the DRB-2 the system is 33.1 or 46.7 kg. On a platform at height that is a two person job with a lifting arrangement, every time. There is no version of this luminaire that one person holds while the bolts go in.



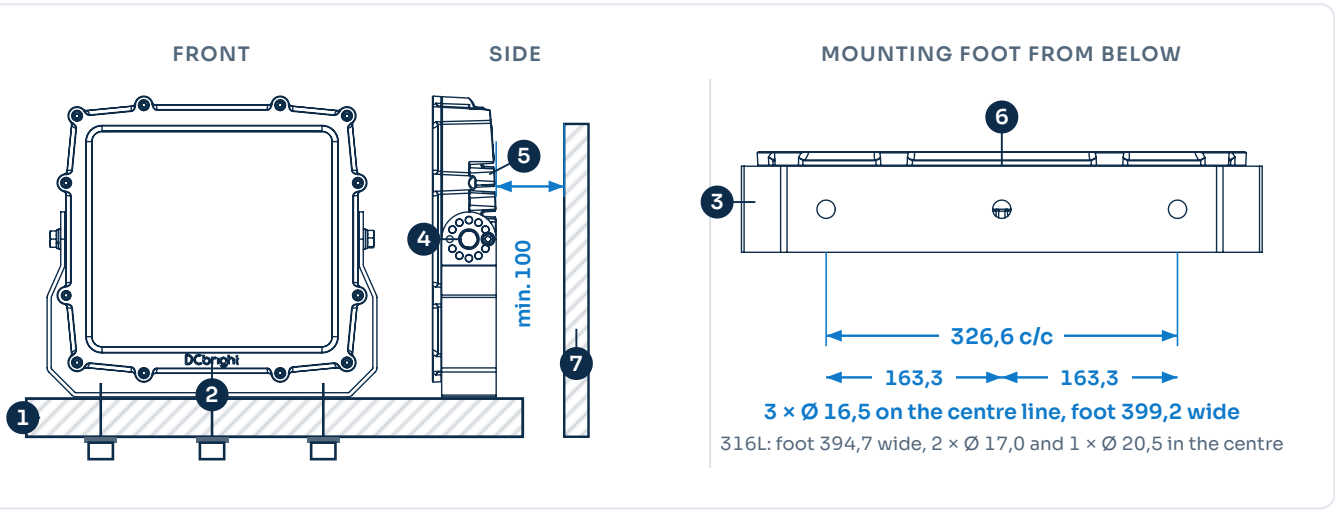
Cast aluminium Orca in the standard bracket, as delivered

6 Mechanical mounting

Every Orca is delivered with the standard bracket fitted. Mount the bracket to the structure first, then set the angle, then make the electrical connection. The procedure is identical for all three families; the hole pitch is the same on aluminium and on 316L, and only the weight and the hole diameters of the 316L differ.

DANGER

Isolate the supply and secure it against being switched on again before you start. Installation may only be carried out by a qualified person, and by two of them: the luminaire is 22.7 or 36.3 kg.



Mounting principle. The three views are the production drawing of the cast aluminium version, all to the same scale, including the clearance behind. The 316L foot is 394.7 mm wide with holes of Ø 17.0 and Ø 20.5, but **the hole pitch is identical**, so one footprint carries either housing

1. Load bearing structure. Verify its capacity for the weight in chapter 3 plus the wind load. On an Orca that is a calculation, not a judgement
2. Three M16 bolts through the fixing holes, a washer under each head and nut, tightened to the torque in section 6.6. **All three bolts must be used**
3. Mounting foot in plan. Three holes of Ø 16.5 mm on the centre line at 163.3 mm pitch, 326.6 mm between the outer holes, in a foot 399.2 mm wide and 80.0 mm deep. On the 316L the same pitch in Ø 17.0 and a Ø 20.5 centre hole
4. Central pivot through the detent ring, one on each side. Slacken both to set the aiming angle
5. Index bolt in the detent ring, one on each side. The ring has **twelve positions**, and that is where the 30 degree steps come from
6. Cooling fin field on the rear, with the type label and the cable gland central in it. Route the cable clear of the fins and clamp it so that no load reaches the gland
7. Minimum **100 mm** free space behind the luminaire, drawn here to scale from the deepest point of the assembly. The Orca has no fan and no vents, so the fin field is the only cooling path for 800 W

BEFORE YOU GO UP

- The lighting design is on site, with the position, angle and optic per luminaire.
- The mounting surface is clean, flat and suitable for the mounting method.
- The load capacity of the structure is known and sufficient for the weight in chapter 3 plus the wind load. On a retrofit, the old bracket is checked for one load at one point.
- Mounting hardware is certified and suited to the environment: A4 or 316 stainless steel, or hot dip galvanised class 8.8.
- HT range: the driver position outside the hot zone is chosen and reachable, section 7.5.
- The lifting arrangement is rigged, two people are on the platform, and the supply circuit can be isolated and secured.

6.1 Standard bracket

1. **Check the position.** Follow the lighting design. Check that the mounting surface is flat, clean and free of obstructions, and that the structure carries the load.
2. **Mark and prepare the holes,** or check the existing pattern on a retrofit. Three holes on one line at 163.3 mm pitch, Ø 18 mm for an M16 bolt. Do not use a percussion drill.
3. **Hoist the luminaire** to the position with a rated lifting arrangement and hold it there. Nobody stands under it.
4. **Fit the bracket.** Start the centre bolt first, then the two outer bolts, a washer under each head and nut. A4 or 316 stainless steel, or hot dip galvanised class 8.8.
5. **Tighten to the torque** in section 6.6, with a torque wrench.
6. **Set the aiming angle.** Slacken the index bolt and the central pivot on each side plate, turn the housing to the required angle, move each index bolt into the hole of the detent ring for that angle, and retighten. The ring has **twelve positions at 30 degrees, all the way round**, so any attitude can be set and indexed.
7. **Check the tilt.** Do not tilt more than fifteen degrees above the design angle. Beyond that the upward light output ratio is no longer nil, see section 6.7.
8. **Fit the secondary retention** if section 6.5 applies.

> **CAUTION, CRUSH HAZARD**
>
> The housing swings freely once the pivots are slack, and 22.7 kg swinging is a real force. Support the housing with two hands while a second person sets the angle, and keep fingers out of the detent ring.

> **NOTE, THE RETROFIT TRAP**
>
> An Orca is usually specified to replace three smaller floodlights. The bracket those three sat on was sized for three small loads spread over three points, **not for 22.7 kg and 0.227 square metres on one point**. The bolt pattern may fit. The load path almost never does. Have the structure checked.



The bracket side plate with the detent ring and the index bolt, seen from the rear

HOLE PATTERN PER FAMILY

	Aluminium and HT	316L
Fixing holes	3 × Ø 16.5	2 × Ø 17.0 plus 1 × Ø 20.5
Pitch and centres	163.3 mm pitch, 326.6 mm outer holes	
Foot	399.2 × 80.0 mm	394.7 × 80.0 mm
Bolt	M16	M16, or M20 in the centre
Adjustment	In 30 degree steps, see step 6	
Weight to carry	22.7 kg	36.3 kg

AFTER MOUNTING, BEFORE WIRING

- [ ] All three foot bolts tightened to torque and marked.
- [ ] Housing angle set, index bolts seated in the detent ring, pivots tightened.
- [ ] Secondary retention fitted where required.
- [ ] Cable is free, is not under tension, and does not carry any part of the weight of the luminaire.
- [ ] Cable is supported and clamped so that movement cannot be transmitted to the gland or to the terminations.
- [ ] Nothing obstructs the cooling fins on the rear.
- [ ] HT only: the driver sits outside the hot zone.

6.2 The three mounting configurations

Which one you have follows from the order code and the accessories. The standard bracket is available on every version. The rear mount bracket is available on the AC versions, with an SS version for the Orca SS. The Crane Light Stabilizer carries the AC and the DC Orca.



Standard bracket. High tensile 316L, twelve positions in steps of 30 degrees. Driver remote, in a driver box elsewhere

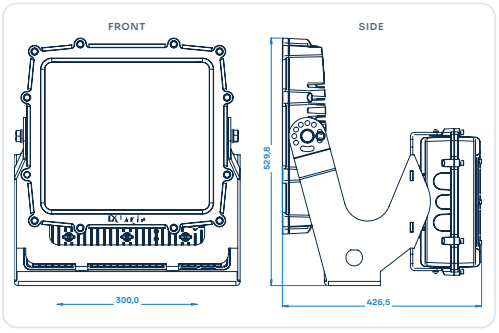


Rear mount bracket. AC only. Flat against a structure, the driver carried on the bracket behind the luminaire. Overall 484 × 530 × 427 mm



Crane Light Stabilizer. For a crane boom. The spring loaded disc joint holds the aim while the boom moves. Separate datasheet

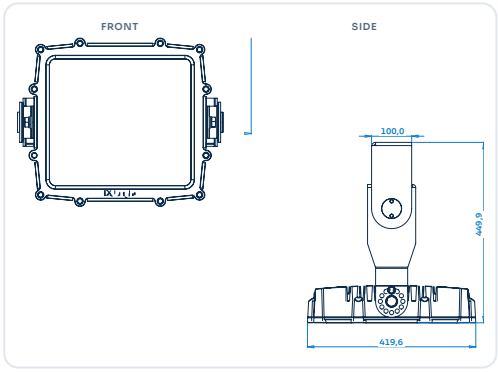
6.3 Rear mount bracket, AC versions



Rear mount bracket with the driver, from drawing DCB-OR-D. 529.8 mm high, 426.5 mm deep

Mounting plate	300 × 180 mm
Fixing holes	Ø 15.7 mm at 100.0 and 120.0 mm pitch, plus slots of Ø 15.5 and Ø 13.5 mm
Cable entry	Ø 24.5 mm through the plate
Stainless version	SS rear mount bracket for the Orca SS, 316L fasteners throughout

6.4 Other mounting options



Orca stabilizing bracket, from drawing DCB-OR-SB. 501.0 × 419.6 × 449.9 mm

Option	Note
Crane Light Stabilizer	AC and DC. Plate 100 mm wide, Ø 15.7 mm holes at 250.5, 180, 100, 90 and 50 mm. A version that carries the driver, 513 × 583 × 619 mm. Damping class set at the enquiry; the disc set is a wear part
Tower crane frame	For tower crane jib mounting. Separate datasheet
Retrofit bracket	On request, codes are issued per structure

WARNING

On anything that moves, the secondary retention in section 6.5 is not optional. The CLS is never sold on its own: every version is calculated on the weight and the shape of its luminaire.

6.5 Secondary retention

WARNING

Fit a secondary retention wherever the luminaire is mounted above a walkway, a working area or a road, and always on anything that moves: a crane boom, a mobile mast, a vehicle or a vessel.

NOTE, THE SAFETY CABLE IS AN ORDERED ITEM

On the Orca the safety cable is **not supplied as standard**. It must be ordered separately. There are variants matched to the housing and to the weight: the 316L version at 36.3 kg uses a different cable from the aluminium version at 22.7 kg. State the luminaire type when you order it.

Length	1 m
Rating	Matched to the weight of the luminaire it is supplied for
Variants	Per housing material. The 316L version has its own cable
Supply	Ordered separately, never as standard

1. Choose an anchor point independent of the bracket fixing that carries four times the mass of the luminaire. At 1 m the cable is short, so the anchor has to be close. Pick it before you mount the bracket.
2. Loop the cable around that anchor and attach the other end to the luminaire bracket, not to the housing and not to the cable.
3. Leave a little slack, enough to adjust the aiming later but not so much that the luminaire can gather speed if the main fixing fails.
4. Record the safety cable in the installation documentation, so that it is inspected at every maintenance visit.

DANGER

Do not substitute a cable, chain or strap of your own without having it rated. The supplied cable is matched to the mass of that luminaire and to a drop of one metre. A longer cable turns a drop into a swing, and a 22.7 kg swing at the end of a boom is not survivable for whoever is under it.

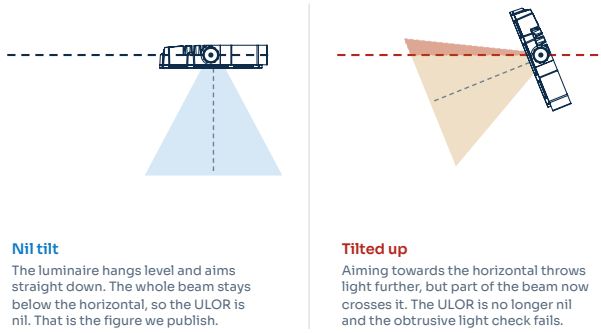
6.6 Tightening torques

Use a torque wrench. Overtightening a stainless bolt in a stainless thread causes galling and the joint cannot be undone. Undertightening lets it work loose under vibration, and the Orca is qualified to 6 G and is fitted to cranes that shake.

Connection	Size	Torque
Bolts on the luminaire	M8	20 Nm
Bolts on the bracket, class 8.8	M16	175 Nm
Bolts on the bracket, class 8.8	M20	341 Nm
Bolts on the bracket, class 8.8	M24	590 Nm
Bolts on the bracket, class 12.9	M20	576 Nm
Bolts on the bracket, class 12.9	M24	995 Nm

This is the range table. On the Orca the foot holes are Ø 16.5 mm, so **M16 at 175 Nm is the figure for the three foot bolts**, and the Ø 20.5 mm centre hole of the 316L takes an M20 at 341 Nm where the structure calls for it. Torques apply to clean, dry, undamaged threads. For a stainless bolt in a stainless thread, use an anti-seize compound and reduce the torque accordingly. Where the mounting hardware comes from another supplier, that supplier's torque takes precedence.

6.7 Aiming and obtrusive light



The bracket turns in steps of 30. What tilting costs you

Nil tilt means the luminaire hangs level and aims straight down. In that position the upward light output ratio is nil. That is the figure a permitting authority asks for when a terminal borders a residential area or a protected zone, and it is the starting point for an assessment against NEN-EN 12464-2 and the NSVV guidance on obtrusive light.

Every degree away from straight down eats into that figure, and beyond a certain angle the beam crosses the horizontal. Aim from the lighting design; where none is available keep the tilt at or below fifteen degrees and have the result verified. A wide optic crosses the horizontal at a smaller tilt than a narrow one, so a 69 degree Orca is less forgiving than a 14 degree one.

7 Electrical installation

DANGER, LIVE PARTS

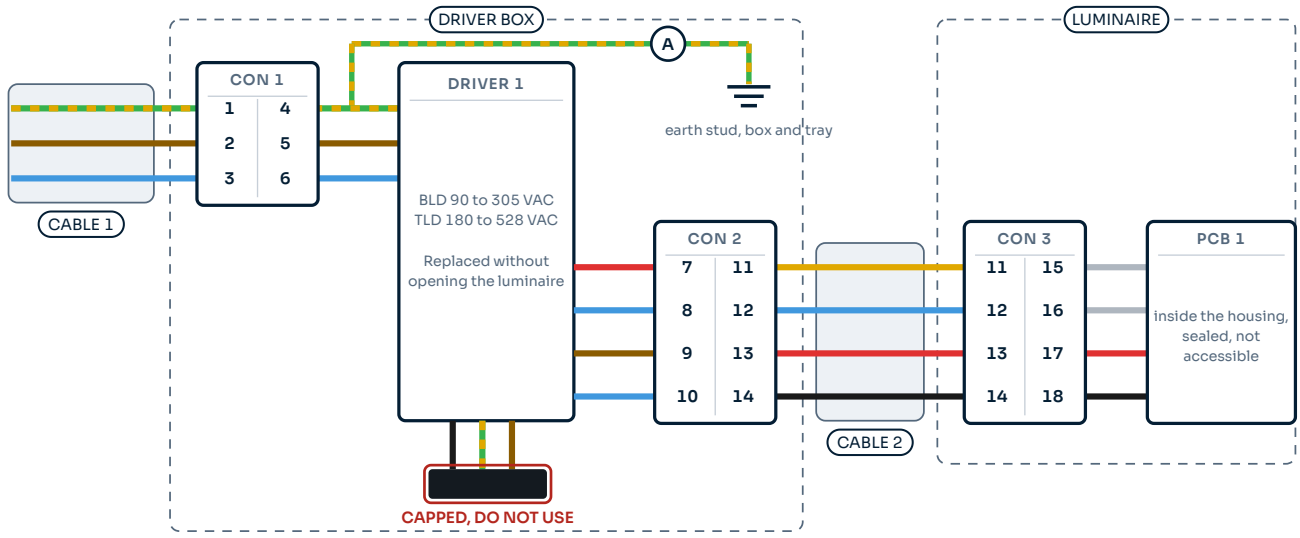
Isolate the supply, secure it against being switched on again, and verify that the circuit is dead. Only a qualified person may make the electrical connection.

7.1 Architecture, all AC versions

On every AC Orca the driver sits outside the luminaire. Mains arrives at connector 1 in the driver box, the driver feeds connector 2, and cable 2 carries the driver output and the temperature signal to the luminaire. That is why a driver fault is a ground level job.

ONE DIAGRAM FOR EVERY AC VERSION

The diagram below applies to **all** AC versions of the Orca: ORAC01, ORSS01 and both high temperature models. It is the same diagram as in the other JEL floodlight manuals, because the conductor count, the colours, the connectors and the terminal numbering are shared across the range. Only the cable differs.



CABLE 1, mains	1 green and yellow earth · 2 brown phase · 3 blue phase or neutral. Mains voltage
DRIVER to CON 2	7 red TEMP + · 8 blue TEMP – · 9 brown DRI OUT + · 10 blue DRI OUT –
CABLE 2	11 yellow TEMP + · 12 blue TEMP – · 13 red DRI OUT + · 14 black DRI OUT –. No mains, no earth
CON 3 to PCB 1	15 grey · 16 grey · 17 red DRI OUT + · 18 black DRI OUT –
A	The incoming earth conductor lands on the earth stud of the driver box, and earths the box and the tray. The luminaire is Class II and is not earthed
CAPPED	**The black, green and brown conductors on the driver are capped off and are not connected. Do not use them**

Every conductor, colour and terminal number as on the production drawing. Cable 1 carries mains, cable 2 the driver output and the temperature feedback

DANGER, THE CAPPED CONDUCTORS ARE NOT SPARE WIRES

The driver leaves the factory with **three capped conductors: black, green and brown**. They are part of the driver control lead and they are **not connected on purpose**. Leave the cap in place. Do not use them as an earth, as a neutral or as a spare core. If dimming has to be added later, that is a driver change, done by JEL Products or by a qualified person with the driver documentation in hand.

The incoming **earth conductor lands on the earth stud of the driver box**, marked **A**, and earths the box and the tray. Cable 2 carries no protective earth and the luminaire itself is not earthed: the driver sits outside the housing, so the luminaire is Class II.

This diagram applies to models from 2025 onward. For an older luminaire, check the connection against the diagram supplied with it. Nothing in this chapter requires the luminaire to be opened.

7.2 Conductors, all AC versions

Cable 1 runs from the grid to connector 1 inside the driver box. Cable 2 runs from connector 2 in the driver box to the luminaire. Connector 3 and the printed circuit board are inside the luminaire. The numbers match the diagram in section 7.1.

No	Colour	From, to	Function
1	Green and yellow	Incoming cable to CON 1	Earth
2	Brown	Incoming cable to CON 1	Phase
3	Blue	Incoming cable to CON 1	Phase or neutral
4	Green and yellow	CON 1 to driver 1	Earth
5	Brown	CON 1 to driver 1	Phase
6	Blue	CON 1 to driver 1	Phase or neutral
7	Red	Driver 1 to CON 2	Temperature, plus, NTC plus
8	Blue	Driver 1 to CON 2	Temperature, minus, NTC minus
9	Brown	Driver 1 to CON 2	Driver output, plus
10	Blue	Driver 1 to CON 2	Driver output, minus
11	Yellow	CON 2 to CON 3	Temperature, plus
12	Blue	CON 2 to CON 3	Temperature, minus
13	Red	CON 2 to CON 3	Driver output, plus
14	Black	CON 2 to CON 3	Driver output, minus
15	Grey	CON 3 to PCB	Dimming signal, plus
16	Grey	CON 3 to PCB	Dimming signal, minus
17	Red	CON 3 to PCB	Driver output, plus
18	Black	CON 3 to PCB	Driver output, minus

WARNING, CONDUCTORS 7 AND 8 ARE THE TEMPERATURE PAIR

Conductors 7 and 8, red and blue, carry the temperature signal from the luminaire to the driver. **Grey is the dimming pair, conductors 15 and 16, and nothing else.** An installation that treats 7 and 8 as a dimming input leaves the thermal protection disconnected.

On the production drawing the last four rows are labelled against PCB 1 and PCB 2. There is one printed circuit board assembly in the luminaire; conductors 15 to 18 run from connector 3 to that board. This has been reported for correction on the drawing.



DRB-2 driver box. It takes systems to 2,000 W and it is the box the TLD800 fits. 441 × 290 × 145 mm, 10.4 kg, IP66 and IP67

WARNING

One conductor per terminal entry point. Two conductors in one terminal is a loose connection waiting to happen.

7.3 Circuit breakers

Maximum number of luminaires on one miniature circuit breaker, the manufacturer figure for ABB S200 at 220 V. A guide for the engineering phase, not a substitute for the installation calculation.

Driver	B16	C16	C25	D16
TLD800, Orca 800 W	2	2	4	3

The high temperature versions run the same 800 W driver programmed to 320 or 240 W, so more of them fit on one breaker. **That figure is confirmed per project** rather than published here, because it depends on the programmed power.

On the Orca it is the **running current that limits the count, not the inrush**. The TLD800 peaks at only 5.4 A but over a long 8 ms T50, while the luminaire draws 3.6 A continuously at 220 V. Two luminaires on a B16 is the running current, not a conservative guess.

NOTE

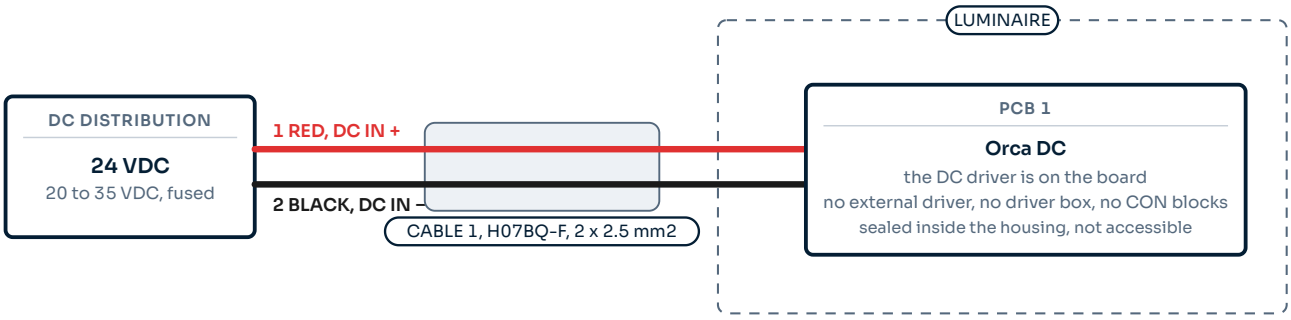
Where a residual current device is fitted, size it for the leakage current of all luminaires on the circuit together. One Orca draws at most **0.7 mA** at 400 VAC.

7.4 Architecture, all DC versions

The DC versions have their drivers on board. There is no external driver and no driver box: a two core cable carries the supply from the distribution to the luminaire, and that is the installation.

ONE DIAGRAM FOR EVERY DC VERSION

The diagram below applies to **all** DC versions: the cast aluminium ORDC01 at 24 V and ORDC02 at 48 V, and the stainless steel ORSS02. Red is plus and black is minus on every one of them, the two cores go straight to the board, and there is no connector block and no earth conductor in that cable.



CABLE 1 1 red DC IN + · 2 black DC IN –. Two cores, no earth conductor and no control conductors
POLARITY **Reversing plus and minus does not light the luminaire and can damage the board. Check the marking at both cable ends**
CLASS II No protective earth conductor runs to the luminaire. Earth the DC distribution and any metal enclosure per the installation

Never connect a DC luminaire to an AC supply, and never connect an AC luminaire to mains without its driver.

CONDUCTORS, DC VERSIONS

No	Colour	Function
1	Red	DC IN plus. 20 to 35 VDC on ORDC01, 35 to 60 VDC on ORDC02 and ORSS02
2	Black	DC IN minus

The cable is H07BQ-F, 2 cores of 2.5 mm², 2.0 m as supplied, with no protective earth, because the luminaire is Class II.

DANGER, READ THE LABEL BEFORE YOU CONNECT

ORDC01 is a **24 V** luminaire and ORDC02 is a **48 V** luminaire. They are the same housing, the same bracket, the same cable and the same two conductors. **Only the type label tells them apart, and connecting a 24 V luminaire to a 48 V system destroys it immediately.** On a mixed fleet, label the cable at the distribution end as well.

WARNING, REVERSE POLARITY

The DC versions are protected against reverse polarity and against surge, so a reversed connection does not destroy the luminaire. It also does not light it: a DC Orca that stays dark on first power up is a polarity check first.

WHY THE 48 V VERSION EXISTS

At 800 W the current is the whole story. On a 24 V system the Orca draws **33.4 A**, on a 48 V system **16.7 A**. Halving the current quarters the loss in the cable for the same cross section, which on a long run to a boom tip is the difference between a practical cable and an impossible one.

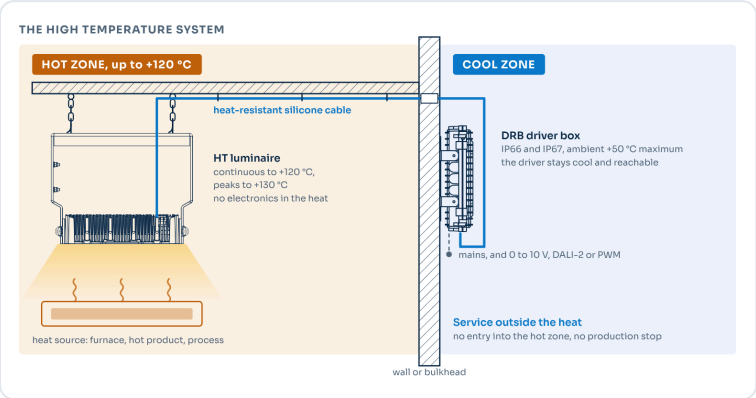
ORDC01	20 to 35 VDC, 24 V nominal, 33.4 A at 24 V
ORDC02	35 to 60 VDC, 48 V nominal, 16.7 A at 48 V
ORSS02	48 V standard. 24 V on request
Fusing	Fuse to the cable, not to the luminaire. At 33.4 A continuous, with the usual derating
Dimming	On request. Not a site fitted option
High voltage DC	250 to 740 VDC through the TLD800, on request. An AC version with a DC supply, not a DC version

NOTE, ONE LUMINAIRE PER SUPPLY RUN

Each DC Orca is fed from the distribution on its own pair. Do not daisy chain: at 33.4 A the first pair carries the current of every luminaire behind it.

7.5 The high temperature system

Standard industrial LED luminaires stop at roughly plus 50 degrees Celsius, because the driver does. In virtually every failure of LED lighting in heat, the driver gives up first. The HT range is therefore a system in two parts: the luminaire in the hot zone and the driver outside it. That split is why the luminaire arrives with 15 m of silicone cable on it.



The luminaire in the heat, the driver outside it, joined by silicone cable. On the Orca the driver box is the DRB-2

WARNING, THE DRIVER BOX IS NOT A HOT ZONE ITEM

The luminaire is rated to plus 120 degrees Celsius. **The driver box is not.** Mounting it just outside the furnace door, on a wall that is at plus 80 degrees Celsius, is the single most common installation error on a high temperature job and it destroys the driver within a season.

What this means on site

1. **Choose the driver position first, not last.** Outside the hot zone, within minus 40 to plus 50 degrees Celsius ambient, and reachable. Everything else follows from that choice.
2. **Measure the run against what you were sent.** The cable is **15.0 m** as standard; confirm it on the packing list. Beyond that the cable goes to roughly 150 m, but only as a custom build.
3. **Use only the silicone cable supplied,** and keep it off hot surfaces. SiHF-OB is rated for the ambient in the hot zone, not for contact with a furnace wall, and an H07BQ-F cable is not rated for either. Route it clear and support it.
4. **Connect all four cores.** Two of 2.5 mm² carry the power, two of 0.5 mm² carry the temperature signal. Without the thin pair the luminaire has no thermal protection, see section 3.3.
5. **Earth the driver box and the tray.** The luminaire is Class II.

THE ORCA HT SYSTEM

Luminaire ambient	minus 45 to plus 120 °C continuous, peaks to plus 130
Driver ambient	minus 40 to plus 50 °C, outside the hot zone
Cable	SiHF-OB silicone, 4 cores, 2 × 2.5 plus 2 × 0.5 mm². 15.0 m, to roughly 150 m as a custom build
Driver	800 W remote driver at 320 or 240 W, 90 to 305 or 180 to 528 VAC
Driver box	**DRB-2**, 441 × 290 × 145 mm, 10.4 kg. The DRB-1 does not fit this driver
Front	Chemically hardened glass IK09, or borosilicate
Optics	None on the ORHT01, a 20, 40 or 60 degree HT optic on the ORHT02
Self-protection	Dims back on rising internal temperature, switches off on overheating

Above plus 130 degrees Celsius, or where the thermal load is not known, JEL Products calculates the load per position and designs the system, including the driver location and the cable route.

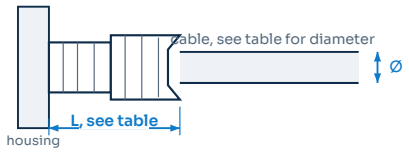


Orca HT from the rear: the fin field and the gland for the silicone cable

7.6 Cable glands

Tighten the cap nut of the cable gland to the dimension in the table, measured over the gland. That is a more reliable instruction on a mast than a torque figure, because the gland is usually tightened by hand with a spanner and no torque wrench fits. Then apply heat shrink tubing and self amalgamating tape over the gland to seal against moisture and dust.

Dimension L runs from the face of the housing to the end of the cap nut, with the cable fitted. It is not the thread length. On the Orca the cable entry is central in the rear face inside the fin field, so leave yourself room for two spanners before the luminaire is fixed.



Where dimension L is measured

Cable	M12×1.5 -D-SI 4 to 8	M20×1.5 -2H 4 to 8	M20×1.5 -H 5 to 10	M20×1.5 6 to 12	M20×1.5 -D 8 to 14
H07BQ-F 4G0.5 mm², Ø 6.7 mm	17.7 mm	19.8 mm	n/a	n/a	n/a
H07BQ-F 2G2 mm², Ø 7.3 mm	18.4 mm	19.9 mm	n/a	n/a	n/a
H07BQ-F 2G1.5 + 2G0.5 mm², Ø 8 mm	18.9 mm	20.0 mm	20.4 mm	n/a	n/a
H07BQ-F 4G1.5 + 2G0.5 mm², Ø 10.4 mm	n/a	n/a	21.3 mm	22.2 mm	n/a
H07BQ-F 6G1.5 + 2G0.5 mm², Ø 13.6 mm	n/a	n/a	n/a	n/a	20.8 mm
H07BQ-F 2G2.5 + 2G0.5 mm², Ø 9.5 mm	n/a	n/a	**21.1 mm**	n/a	n/a
H07BQ-F 4G2.5 + 2G0.5 mm², Ø 12.3 mm	n/a	n/a	n/a	n/a	**21.0 mm**
H07BQ-F 6G2.5 + 2G0.5 mm², Ø 13.8 mm	n/a	n/a	n/a	n/a	21.1 mm
SiHF-08 2×1 mm², Ø 7.9 mm	18.9 mm	20.0 mm	n/a	n/a	n/a
SiHF-08 2×2.5 + 2×0.5 mm², Ø 10.7 mm	n/a	n/a	**21.3 mm**	n/a	n/a
EPDM H07RN-F 3G1.5 mm², Ø 10 mm	n/a	n/a	21.3 mm	n/a	n/a

This table is identical across the JEL floodlight range, so a site with Orcas, Barracudas and Snappers on it works to one set of figures. The rows in bold are the ones that apply to the Orca: the four core H07BQ-F on the AC versions, the two core on the DC versions, and the four core silicone on the high temperature range. Dimensions are measured over the assembled gland. Here n/a means the combination is outside the clamping range of that gland and must not be used. Where a cable and a gland do not appear together in this table, ask JEL Products before you fit them.

7.7 Cable length and voltage drop

The cable as supplied is 2.0 m on the standard versions and 15.0 m on the high temperature versions, see section 5.2. Where the run is extended on site, the voltage drop between the source and the luminaire must not exceed 2 V.

Both circuits are low voltage DC: the driver output to an AC luminaire is **50 VDC**, the supply to a DC luminaire is 24 or 48 VDC. Neither of them carries mains.

AC VERSIONS, DRIVER OUTPUT TO LUMINAIRE, 50 VDC

Cross section	800 W 16.0 A	HT 320 W 6.4 A	HT 240 W 4.8 A
2.5 mm²	9 m	22 m	30 m
4 mm²	14 m	36 m	48 m
6 mm²	21 m	54 m	71 m
10 mm²	36 m	89 m	119 m
16 mm²	57 m	143 m	190 m
25 mm²	89 m	223 m	298 m

DC VERSIONS

Cross section	24 V, 33.4 A	48 V, 16.7 A
2.5 mm²	4 m	9 m
4 mm²	7 m	14 m
6 mm²	10 m	21 m
10 mm²	17 m	34 m
16 mm²	27 m	55 m
25 mm²	43 m	86 m
35 mm²	60 m	120 m

All lengths are the maximum at a 2 V drop, copper, two conductors, one way. On a 24 V system 2 V is already **8 per cent** of the supply, which is why these lengths are short and why the 48 V version is the better choice on a long run.

NOTE, THE HT CABLE AT LENGTH

The supplied silicone cable is **2 × 2.5 mm²** for the power pair, and at 15.0 m the drop is 0.34 V. That cross section stays inside 2 V up to **22 m**. For a run towards the 150 m maximum the power pair has to go up, and that is one of the reasons a long run is a custom build rather than a longer reel.

7.8 Making the connection

DANGER, MAINS NEVER GOES TO THE LUMINAIRE

On an AC Orca, **mains goes to the driver and the driver output goes to the luminaire**. The luminaire itself must never be connected directly to 230 VAC, 400 VAC or any other mains supply, not even briefly and not even to test it. The luminaire runs on the driver output, which is not mains voltage. Connecting mains to the luminaire destroys it immediately and creates a serious electrical hazard.

1. Confirm the circuit is dead and secured.
2. Mount the driver or the driver box outside the wash down zone, in a position with an ambient between **minus 40 and plus 50 degrees Celsius**, and reachable from the ground or from a platform. On the high temperature range that means outside the hot zone, see section 7.5.
3. Earth the driver box, the driver tray and any metal enclosure. Use the earth clamp or the pre-installed earth conductor.
4. Strip and terminate the conductors according to the table in section 7.2, or section 7.4 for a DC luminaire. Use end sleeves. One conductor per terminal.
5. Keep the dimming conductors separated from the mains conductors.
6. Tighten the cable glands to dimension L in the table in section 7.6, then seal with heat shrink tubing and self amalgamating tape.
7. Support and clamp the cable so that no load reaches the gland. Where the position moves, clamp within 300 mm of the gland.
8. Close the driver box. Check that the seal is in place and undamaged and that no conductor is pinched.

The driver case may reach plus 90 degrees Celsius in service and its lifetime figure is quoted at a case temperature of 75 degrees Celsius, which is the metal case and not the air around it. Position the driver by the **ambient**, limit plus 50 degrees Celsius.

DRIVER BOXES AND THE 316L POWER BOX

DRB-2	Systems to 2,000 W, and the box the TLD800 fits. 441 × 290 × 145 mm, 10.4 kg, IP66 and IP67
DRB-1	One driver up to 320 W. **Too small for the TLD800**, so not a box for the Orca
316L Power Box BLD600	Solid 316L, 390 × 225 × 100 mm. Chosen where the box has to sit in the same wash down or salt zone as the luminaire

8 Commissioning

Do not switch on until every item below has been checked. Most warranty cases that turn out not to be a product fault trace back to a step skipped here.

8.1 Checks before switching on

- ☐ Conditions within the range for that version, chapter 3, and no broken mechanical part: front, housing, bolts, bracket, gland.
- ☐ Cable and glands show no breach of insulation and no exposed conductor.
- ☐ All three foot bolts tightened to torque and marked, pivot bolts tight, detent ring engaged on both sides, and secondary retention fitted where section 6.5 requires it.
- ☐ **AC only:** the luminaire is fed from the driver output and not from mains.
- ☐ **DC only:** the nominal voltage on the type label matches the supply, 24 V or 48 V, and the polarity is red to plus and black to minus.
- ☐ **HT only:** the driver sits outside the hot zone within plus 50 °C ambient, and all four cores are connected.
- ☐ Driver box closed, seal intact, no pinched conductor, earthing verified by a competent person.
- ☐ Supply voltage measured, within range and of the right type, and the count per breaker within section 7.3.
- ☐ No insulation or building part within 100 mm, cooling fins clear, and nobody working within the hazard distance of section 4.3 in front of the luminaire.

8.2 First power up

1. Restore the supply.
2. Confirm that it illuminates. **Do not look into the beam**, see section 4.3.
3. Check that the light lands where the design says, from beside or behind the luminaire.
4. Correct the aiming if required: isolate, support the luminaire, slacken the pivot bolts, adjust, reseat, retighten to torque, restore the supply and check again.
5. Record the installation: both label codes, the serial number, the position, the optic, the colour temperature, the tilt, the date and the installer.

> **WARNING**
> Never adjust, open or work on the luminaire while it is energised. Isolate first, every time.

8.3 Handover

Leave this manual with the site documentation, together with the record from step 5 of section 8.2 and the lighting design.

> **NOTE, MARK THE OPTICS ON THE DRAWING**
> Mark the position and the optic of each luminaire on the drawing. A 14 degree and a 38 degree optic in the same housing look identical from the ground, and a luminaire swapped between two positions during maintenance takes its optic with it.

> **NOTE, AN HT LUMINAIRE ON FIRST POWER UP**
> An Orca HT in a cold furnace comes up at full output and dims back once the process is at temperature. That is the thermal protection working, not a fault, see section 3.3. Note it at handover.



Orca SS in 316L. On a wash down or offshore site the first wash is where a badly sealed gland shows up, so commission with section 10.5 in hand

9 Operation and dimming

9.1 Normal operation

An Orca needs no operator action in normal service. It switches with the circuit and reaches full output immediately.

9.2 What each version accepts

Control is not the same across the range, and part of it is built to order. The table is what is available per family, not what is fitted to your luminaire. **What your luminaire actually accepts is set at order and is stated on the quotation.**

Method	Aluminium and SS, AC	DC versions	High temperature
0 to 10 V	Available	On request	Available
PWM	Available	On request	Available
DALI-2	Available	On request	Available
NFC	Available	Not available	Available
LoRa Mesh	On request	Not available	On request
Not dimmable	Available on every family, and the default where no control is specified		

> **NOTE**
>
> Do not assume a protocol is present because the range offers it. Sending a DALI signal to a luminaire built for 0 to 10 V does nothing, and wiring a control pair into a non dimmable build does nothing either. Check the quotation, or read the driver over NFC where that is fitted.

0 to 10 V	Analogue. Two dimming conductors, conductors 15 and 16, kept separate from the mains conductors along the whole run
PWM	Pulse width over the same two conductors
DALI-2	Addressable. For a site with a night regime or a lighting management system
NFC	The output level is written into the driver with an NFC reader or a smartphone, without power and without control wiring. Useful where one luminaire in a row has to be turned down

POWER IS A DRIVER SETTING, NOT A DIFFERENT LUMINAIRE

Any AC Orca can be ordered programmed to a lower wattage, and the wanted power is added to the article code as a suffix. That is why an ORAC01 on site may draw less than 800 W and still be the right luminaire. DC versions run at a fixed constant current, so a different power level there is a custom build.

9.3 Bi-colour and amber

A bi-colour build switches between 4000 K and amber 2200 K, for a site with a night regime or a light sensitive surrounding. The switching is part of the control design and is described in the project documentation, not here.

> **NOTE**
>
> Amber and bi-colour are **not available on the high temperature versions**. Those are 6500, 4000 or 2700 K only.

9.4 The two power settings of the HT

The Orca HT runs at 320 W or, as the .240W build, at 240 W. That is a driver setting made at order. It is not switched in service, and a luminaire that is to change from one to the other is reprogrammed by JEL Products or by a qualified person with the driver documentation.

9.5 What the luminaire does not do

- It does not report its own status. There is no feedback channel on 0 to 10 V or PWM, and a luminaire that is off looks the same as one that has failed.
- It does not switch itself. Time control, daylight control and presence detection sit in the installation, not in the luminaire.
- It does not carry an emergency function. See section 4.9.

> **NOTE**
>
> On a DALI-2 build the driver does report, and that is the reason to choose it on a site large enough that walking the yard to find a dark luminaire costs more than the control gear.

> **THE ONE EXCEPTION**
>
> A high temperature version does act on its own: it dims back as its internal temperature rises and switches off on overheating. That is thermal self-protection and it is not controllable. See section 3.3.

10 Maintenance

DANGER

Isolate the supply and secure it before any maintenance work. Let the luminaire cool to hand temperature before touching it. On the high temperature range that takes time, and the housing gives no visual warning that it is still hot.

10.1 Interval

Environment	Interval
Normal outdoor, aluminium or stainless	Once a year
Dust, salt, exhaust or process residue	Twice a year or more
Crane booms and moving structures	Twice a year, and check the retention every time
Crane Light Stabilizer	Disc set every one to two years
Bird fouling	As required, before the fin field closes up
Food production and washdown	Weekly, daily on heavy soiling, and after every run on a high fat load. Protocol in section 10.5
Hot process zones, HT range	Every planned shutdown, never while hot

Too little cleaning shortens the life of the product, most of all on the HT range.

10.2 Inspection

- [ ] Housing, front and seals: damage, cracks, corrosion, rust.
- [ ] All three foot bolts tight. Retighten to the torque in section 6.6.
- [ ] Pivot and index bolts tight, index bolts still seated in the detent ring.
- [ ] Bracket, mast and structure sound and free of corrosion.
- [ ] Secondary retention present, intact and correctly attached.
- [ ] Cable and wiring: damage, corrosion, loose connections, intact insulation, no exposed conductor.
- [ ] Cable gland tight, seal effective, and the clamp within 300 mm of it still holding on anything that moves.
- [ ] Cooling fins clear of dirt.
- [ ] Nothing built or stacked within 100 mm of the luminaire or in the beam.
- [ ] Aiming unchanged since installation.
- [ ] **HT only:** the driver is still outside the hot zone and nothing has been built around it.
- [ ] **HT only:** the silicone cable is not resting against a hot surface and its insulation is intact.

10.3 Records

Record every inspection, fault, repair and replacement, with both codes from the label. Under warranty, that record is the difference between a fast decision and a long discussion.



The fin field on the rear, with the cable gland central in it. This is what has to stay clear

WHY THE FINS MATTER

The Orca has no fan, no vents and no moving part. Everything 800 W of LEDs produce leaves through this surface, and the housing is sealed precisely so that nothing gets in. Dirt between the fins raises the junction temperature, and the lifetime figures in chapter 3 assume a clean heat sink. **The efficacy holds for the life of the installation, but only if the fin field is kept clear.** An Orca on a crane boom in a bulk terminal collects dust with every grab cycle, so brush it out at every inspection.

CAUTION

Do not hammer, pry or scrape between the fins. A soft brush and compressed air clear them. A screwdriver breaks a fin, and the fin is cast into the housing.

10.4 Cleaning, cast aluminium versions

1. Switch off the supply and let the luminaire cool.
2. Remove loose debris with a soft brush.
3. Clean the housing and the front with a soft cloth or sponge, water and a mild detergent.
4. Clear the space between the cooling fins, then dry the front with a soft cloth.

CAUTION

Do not use solvents, caustic cleaners or abrasives. Do not aim a high pressure washer at the cable gland. The cast aluminium Orca is rated IP69K, but the installation around it may not be, and the gland is the one place where pressure does damage.

10.5 Cleaning, stainless steel and high temperature versions

Stainless steel and high temperature luminaires are cleaned to JEL Products protocol B5.17, version 1.0 of 27 May 2026. Written for the food industry, it is the stricter of the two procedures. One exception: the HT range does tolerate steam.

BEFORE YOU START

- Switch off the supply to the luminaire.
- Let the luminaire cool to hand temperature.
- Inspect the glass, the seals, the glands, the cable and the housing for damage.

PERMITTED

Water	Clean mains water, lukewarm, maximum plus 40 degrees Celsius
Cloth	Soft microfibre cloth
Sponge	Soft sponge

NOT PERMITTED

Cleaning agents	No aggressive or chemical cleaners, no foaming agents, no solvents
Chemistry	No chlorine based, acid based or alkaline cleaners, no alcohols, no degreasers
Mechanical	No wire brushes, no abrasives, no scouring agents. **Never a steel brush on 316L**: embedded carbon steel particles rust and start pitting in the stainless surface
Steam	No steam cleaning on a stainless steel luminaire outside the high temperature range. **On the high temperature range steam cleaning is permitted**
Pressure	No high pressure above 80 bar

IP69K is what makes this possible. Every Orca carries IP69K, the high pressure steam jet test, and that is what a wash-down regime actually applies. Where the coating cannot be inspected or repaired, the 316L version is the right choice even so: sea water and process chemistry attack a coating, not a solid stainless housing.

PROCEDURE

1. **Pre-rinse.** Rinse the luminaire with clean water to remove loose soiling. Use a broad jet and do not hold it on the seals or the glands.
2. **Manual cleaning.** Clean the surface with a soft sponge or microfibre cloth and clean lukewarm water only.
3. **High pressure cleaning.** Maximum 80 bar, maximum plus 40 degrees Celsius, minimum distance 50 cm. Do not spray at right angles onto the seals for any length of time.
4. **Rinse.** Rinse the luminaire with clean water.
5. **Inspect.** Check the glass, the seals, the fixings and for any sign of moisture inside.

PREVENTING DAMAGE

WARNING, THERMAL SHOCK

Never clean hot glass with cold water. Avoid large temperature differences. **Do not apply water at all to a luminaire warmer than plus 60 degrees Celsius.** Let it cool first. On the high temperature range that is not a formality: the front can break, and it breaks towards whoever is holding the lance.

Cleaning outside these limits can damage the glass, cause leakage, attack the seals and void both the ingress classification and the warranty.

FREQUENCY

Normal production environment	Weekly
Heavy soiling	Daily
High fat load	After every production run

Source: JEL Products document B5.17, version 1.0, 27 May 2026. Ask us for the full protocol if you need it for a HACCP file.

11 Fault finding

Work through this table before reporting a fault. Isolate the supply before any action that involves touching the wiring. Most faults reported to us turn out to be one of the first five rows.

Symptom	Applies to	Probable cause	Action
No light at all	All	Supply off, breaker tripped, or a break in the run	Check the breaker and measure the supply at the driver input, or at the DC distribution
No light, supply present at the driver	AC, HT	Driver failed	Replace the driver, see section 12.3. The luminaire does not have to be opened
No light, supply present at the luminaire	DC	Reversed polarity, a 48 V luminaire on a 24 V system, or an on board driver failed	Check red to plus and black to minus, and the nominal voltage on the label against the supply. If both are correct, the luminaire is exchanged
Luminaire destroyed on switch on	AC, HT	Mains connected directly to the luminaire instead of to the driver	Not a warranty case. Rewire per section 7.1 and replace the luminaire
Luminaire destroyed on switch on	DC	A 24 V luminaire connected to a 48 V system	Not a warranty case. Read the label, see section 2.5, and replace the luminaire
Breaker trips on switch on	AC, HT	Too many luminaires on one breaker for the running current	Reduce the number per breaker or change the characteristic, see section 7.3
Residual current device trips	AC, HT	Combined leakage current of the circuit	Split the circuit or size the device for 0.7 mA per luminaire
Output drops back after the process heats up	HT	**Normal behaviour.** The thermal self-protection is dimming the luminaire	No action. See section 3.3. Report it only if the output drops with the process cold
Luminaire switches itself off in the hot zone	HT	Ambient above the rating, or radiant heat onto the front	Measure the ambient at the luminaire. Consider the borosilicate front where the glass sees direct radiant heat
Flicker or unstable output	All	Loose terminal, or a dimming signal picking up interference from the mains conductors	Retighten the terminals and separate the dimming conductors from the mains conductors
Luminaire stays at partial output	AC, HT	Dimming input at a low level, an NFC setting from a previous project, or a programmed lower wattage	Check the control signal, then read the driver over NFC. Check the article code for a wattage suffix, see section 9.2
Control signal does nothing	All	That protocol is not in this build	Check the quotation against section 9.2. Sending DALI to a 0 to 10 V build has no effect
Output visibly lower than the design	All	Dirty front or blocked cooling fins	Clean per section 10.4 or 10.5, then measure again
Part of the light field is dark	All	Wrong optic fitted for that position	Compare the article code on the type label with the lighting design. A 14 and a 38 degree optic look identical from the ground
Water inside the driver box	AC, HT	Gland not tightened, seal damaged, or the box not closed correctly	Isolate, dry, replace the seal, retighten to dimension L in section 7.6 and reseal
Moisture inside the luminaire	All	Damaged gland or a luminaire that has been rested on its back	Do not open it. Return to JEL Products, see section 12.2
Corrosion on a stainless housing	SS	Deposit from carbon steel tooling or grinding dust, not the 316L itself	Clean per section 10.5. Do not use a wire brush, it makes it worse
Luminaire has moved out of aim	All	Index bolts not seated in the detent ring, or pivots loosened by vibration	Re-aim, seat the index bolts and retighten to torque. Check the secondary retention
Aim wanders while the boom moves	All, on a CLS	Disc set worn, or the damping class is too light for the work	Replace the disc set. Where it recurs within a year, the damping class is wrong for that crane and JEL Products resets it
Luminaire came loose on moving plant	All	Vibration, and no secondary retention	Refit per chapter 6 with a rated safety cable. At 22.7 kg this is the failure mode that matters most
Early driver failure, repeated	AC, HT	The driver box ambient is above plus 50 degrees Celsius, or the box is inside the hot zone	Measure the ambient at the driver. Relocate it, see section 7.5

If the fault is not in this table, or if the action does not resolve it, contact JEL Products with the article code and the internal production code from the type label, the position on site, the date of installation and what you have already checked. See section 2.5 for the two codes.

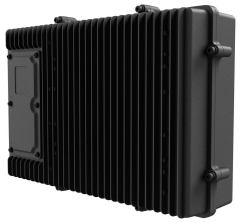
12 Repair and spare parts

The Orca is built so that the part that wears is the part you can reach. On the AC and HT versions the LEDs outlive three drivers, and the driver sits outside the housing. On the DC versions the driver is on board, and that changes the answer.

12.1 What is replaceable on site

Part	Reference	Note
Remote driver, 800 W	TLD800	237 × 125 × 49 mm, 2,600 g, 180 to 528 VAC or 250 to 740 VDC. Used on the ORAC01 and the ORSS01. Replaced without opening the luminaire
Remote driver, HT	800 W remote driver	90 to 305 or 180 to 528 VAC, programmed to 320 or 240 W. Quote the programmed power
Driver box, systems to 2,000 W	DRB-2	441 × 290 × 145 mm, 10.4 kg, IP66 and IP67. **The box for this range.** The DRB-1 is too small for the TLD800
316L Power Box	Power Box BLD600	Solid 316L, 390 × 225 × 100 mm. Same driver as the DRB, chosen where the box sits in the same wash-down or salt zone as the luminaire
Standard bracket	On request	High tensile 316L. Same hole pitch on aluminium and 316L, see section 6.1
Rear mount bracket	On request	AC versions. Separate SS part for the Orca SS
CLS disc set	Per bracket version	Wear part, kept in stock, fitted by your own technical service. Quote the crane and the damping class
Safety cable	On request	1 m, rated to the luminaire weight. Separate variant for the 316L version. Not supplied as standard, see section 6.5
Cable assembly	On request	H07BQ-F, or SiHF-OB silicone for the HT range. Length per order

Brackets, safety cables and cable assemblies are supplied against a specification rather than a shelf article number, because they follow the structure, the housing material and the run length. State both codes from the type label and we issue the right part.



DRB-2 driver box. Systems to 2,000 W, and the box the TLD800 fits



The rear mount bracket with the driver carried on it, reached from the same platform as the luminaire

Quote the article code and the internal production code from the type label in any spare part order, see section 2.5. A TLD800 and the HT driver at 320 W are not interchangeable, and a driver programmed for another luminaire gives the wrong output.

12.2 What is not replaceable on site

DANGER

Do not open the housing and do not remove the front or the glass. Opening the luminaire ends its ingress protection, its electrical safety, its warranty and its declaration of conformity.

- The light source is not replaceable in the field. At the end of its life the complete luminaire is returned or replaced.
- The optics are fitted at the factory. A change of beam angle is a change of luminaire.
- The pre-fitted cable is not replaceable in the field. If it is damaged, the luminaire returns to JEL Products. On a high temperature version that means the 15 m silicone cable comes back with it.
- **On a DC luminaire the driver is on board** and is not a field part. A driver fault means the luminaire is exchanged.
- Repair, overhaul and modification are carried out by JEL Products or by a company it appoints. In case of doubt, return the luminaire for inspection.

12.3 Driver replacement, AC and HT

1. Isolate the supply and secure it. Verify the circuit is dead. On the HT range, let the luminaire and the cable cool.
2. Open the driver box and photograph the wiring before you disconnect anything. Note the ambient: if it is above plus 50 degrees Celsius, the position is the fault and the new driver will fail as well.
3. Disconnect the driver at CON 1 and CON 2, following the table in section 7.2.
4. Fit the replacement driver of the same type and the same programmed power, and reconnect according to section 7.2, one conductor per terminal. A different driver is not permitted.
5. Close the box, check the seal, restore the supply and run the checks in section 8.1. Record the replacement, with the date and both codes from the label, in the site documentation.

NOTE

The internal production code tells us which board is in the luminaire the driver has to work with. Quote both codes.

12.4 Returning a luminaire

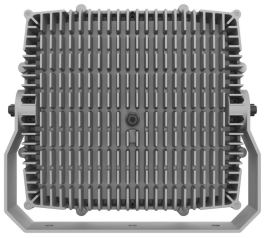
1. Contact JEL Products before you send anything. We will tell you whether the fault is a field repair, a driver exchange or a return.
2. Have both codes from the type label ready, plus the position on site, the date of installation and what you have already checked from chapter 11.
3. Pack the luminaire in its original box, resting on its front and never on its back. At 22.7 or 36.3 kg an under-packed return arrives damaged, and that damage masks the fault.
4. On an HT luminaire, let it cool completely and state the ambient it was working in. Coil the silicone cable rather than folding it.

NOTE

Do not open a luminaire before returning it, not even to look. An opened housing changes a warranty assessment into a discussion, and the evidence we need is usually inside the seal you would break.

WHAT WE LOOK AT ON A RETURN

The internal code	Which board, which batch, which production date
The seal and the gland	Whether water got in, and from where
The driver, if returned with it	Case temperature history and failure mode
The front	Thermal shock, impact or abrasion
The bracket	Whether it came loose, and whether a retention was fitted
The supply, DC	Whether a 24 V luminaire saw 48 V



Orca HT. The high temperature version returns with its silicone cable, which is part of the luminaire and not an accessory

13 Removal and disposal

13.1 Taking the luminaire out of service

1. Isolate the supply and secure it. Verify the circuit is dead, then disconnect the luminaire at the driver box or at the DC distribution.
2. On the HT range, let the luminaire and its cable cool to hand temperature. It gives no visual warning that it is still hot.
3. Rig the lifting arrangement and have a second person on the platform before you release anything. Two people, every time, on every Orca.
4. Release the secondary retention last, not first.
5. Undo the outer foot bolts and then the centre bolt, with the luminaire held throughout.
6. Lower the luminaire in a controlled way, never on its cable. If it is to be reinstalled, pack it in its original box, resting on its front and never on its back.

WARNING, WORKING AT HEIGHT

Removal is the moment a luminaire falls. Rig the lifting arrangement before you loosen anything, and keep the area below clear for the whole operation. A 22.7 kg luminaire on a boom is not held by one person from a basket, and a 36.3 kg one is not held by two without a hoist.

13.2 Disposal



Electrical equipment does not belong in household or unsorted municipal waste. Under European Directive 2012/19/EU it must be collected separately and processed by an approved recycling facility. Observe the national and regional rules at the place of disposal.

The cast aluminium housing, the 316L housing and the 316L bracket are all recyclable materials, and a 36.3 kg stainless steel luminaire has a real scrap value. Separate the housing from the electronics at the recycler rather than in the field.

Glossary

Cd · A	Drag coefficient times frontal area, the figure used for wind load
CLS	Crane Light Stabilizer, the damped bracket for a crane boom
CRC	Corrosion resistance class, EN 1993-1-4
CRI, Ra	Colour rendering index
CX	Extreme corrosion category, ISO 9223
DALI-2	Addressable digital lighting control protocol
Detent ring	The perforated plate in the bracket side plate. Twelve positions give the 30 degree steps
Hazard distance	The distance beyond which the luminaire is Risk Group 1 per IEC/TR 62778
HT	High temperature range
L90B05	90 per cent of initial output retained by 95 per cent of the units
MCB	Miniature circuit breaker
MTBF	Mean time between failures
NFC	Near field communication, used to set the driver without power
NTC	Negative temperature coefficient, the temperature sensor in the luminaire
PREN	Pitting resistance equivalent number, a measure of stainless steel corrosion resistance
PWM	Pulse width modulation, a dimming method
SiHF-OB	Heat resistant silicone cable, used on the high temperature range
Ta	Ambient temperature
Tc	Case temperature of the driver, not the ambient
THD	Total harmonic distortion
ULOR	Upward light output ratio
WEEE	Waste electrical and electronic equipment

Specifications are subject to change. This manual describes the standard configurations. Where a project specification differs, the project documentation takes precedence.

14 Appendix

14.1 Declaration of conformity

EU Declaration of Conformity, 9 December 2025

JEL Products B.V., Ampèrestraat 19e, 3861 NC Nijkerk, The Netherlands, declares under its sole responsibility that the products it covers are in conformity with the essential requirements of the directives below. The Orca Series is named in its product scope as **Orca Series, OR156 including HT and SS versions**, with all electrical, optical and mechanical variants within the defined type codes, wattages, voltages and colour temperatures.

DIRECTIVES	
Low Voltage	2014/35/EU
EMC	2014/30/EU
RoHS	2011/65/EU and (EU) 2015/863
WEEE	2012/19/EU

DECLARATION	
Date	9 December 2025
Place of issue	Nijkerk
Signed by	L. de Graaf, Technical Director
Serial number	See product marking
Year of manufacture	2024 to 2026

APPLIED HARMONISED STANDARDS

EN IEC 60598-1 luminaires, general requirements. EN IEC 60598-2-x particular requirements. EN IEC 61347-1 lamp controlgear, general. EN IEC 61347-2-13 LED controlgear. EN IEC 62384 LED driver performance. EN IEC 60529 IP classification. EN IEC 61000-6-2 EMC immunity, industrial. EN IEC 61000-6-4 EMC emission, industrial. EN ISO 12100 risk assessment, where applicable.

The technical file is compiled and maintained by JEL Products B.V. at the address above. The **signed declaration** is available on request and is supplied with the project documentation. Document: EU DECLARATION OF CONFORMITY_DCbright_EU_09122025.

14.2 Warranty

Family	Housing	Electrical and seals
Cast aluminium, AC and DC	5 years on the complete luminaire	
316L stainless steel	20 years	5 years
High temperature	5 years on the complete luminaire, to plus 120 degrees Celsius	
Crane Light Stabilizer	5 years on the bracket. The disc set is a wear part and is not covered	

Warranty runs from the date of delivery under the JEL Products warranty terms and covers material and manufacturing defects.

It does not apply where the luminaire has been installed, operated or maintained contrary to this manual, where the housing has been opened, where a driver or cable other than the one supplied has been used, where mains has been connected directly to an AC luminaire, where the polarity of a DC luminaire has been reversed or a 24 V luminaire has been connected to a 48 V supply, where the temperature pair has been disconnected or shorted, where the driver has been installed inside a hot zone, where it has been cleaned outside the limits in section 10.5, or where it has been used outside the intended use in section 2.2.

> **NOTE**
> Improper installation, operation or maintenance may also invalidate the certificate and the declaration of conformity, not only the warranty.

14.3 Related documents

Document	Where
Orca datasheet, cast aluminium	Product page
Orca SS datasheet	Product page
Orca HT datasheet	Product page
Crane Light Stabilizer datasheet and documentation	Product page and on request
Photometric files per optic, EULUMDAT and IES	Product page, per optic and per version
Dimensioned drawings DCB-OR, DCB-OR-SS, DCB-OR-D, DCB-OR-SB and DCB-OR-SBD, DXF and STEP	On request
Driver box manual, DRB-2 and the 316L Power Box	On request
Cleaning protocol B5.17, stainless and HT	On request
Tower crane frame documentation	On request
Signed declaration of conformity	On request, and with the project documentation
Test and inspection reports, see section 3.4	On request

14.4 What this manual replaces

This edition supersedes all earlier Orca operating instructions, including the DCbright Orca operating instruction of 2024 and the separate high temperature instruction. Where an older document and this manual disagree, this manual applies. See section 1.5 for the full revision history.

Three points are corrected or clarified against documents in circulation: the Orca SS production drawing DCB-OR-SS gives a 487.0 by 478.3 mm housing and a 394.7 mm foot with Ø 17.0 and Ø 20.5 holes, which the datasheet does not yet state; the driver box for this range is the **DRB-2**, because the TLD800 does not fit a DRB-1; and the detent ring has twelve positions at 30 degrees all the way round, as on the production drawing, where the datasheets state plus or minus 240 degrees.

> **NOTE**
>
> If you hold a printed copy, check the revision on the cover against the version on the product page before you rely on a figure. A manual in a site file can be several years old.

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To verify the authenticity of a test or inspection report and certificate, contact us on the number above. Quote both codes from the type label.

Product page

Photometric files, drawings, the datasheets and the current version of this manual.

jelproducts.nl/en/products/orca