JEL PRODUCTS
SUSTAINABLE | LIGHTING | SOLUTIONS

INSTRUCTION MANUAL

Piranha Series

Heavy duty LED work lamp, one manual for the whole series: the Piranha 9 in AC and DC, the Piranha 6 in DC, and the 316L stainless steel Piranha SS.

DOCUMENT	REVISION	DATE	LANGUAGE
MAN-PIS-EN	2	18 / 11 / 2026	EN



Read before installation · Keep for future use · Qualified personnel only · PIAC01 · PIDC01 · PIDC02 · PISS01 · PISS02

Contents

This manual covers the whole Piranha Series. Most of what follows applies to every version, because the bracket, the optics and the aiming are shared. Where a section applies to one family only, the family is named in the heading or in the row.

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WHICH VERSION DO YOU HAVE

Code on the label	Version
PIAC01	Piranha 9 AC, 70 W, remote BLD075
PIDC02	Piranha 9 DC, 70 W, 20 to 32 VDC
PIDC01	Piranha 6 DC, 55 W, 9 to 35 VDC
PISS01	Piranha 9 SS AC, 316L, remote BLD075
PISS02	Piranha 9 SS DC, 316L, 20 to 32 VDC
No code yet	Piranha 6 SS DC, 316L, section 2.4

The 9 and the 6 are the number of LEDs, not the wattage, and **PIDC02 is the 9, PIDC01 the 6**. The label is on the rear of the housing; section 2.5 explains it.

PRODUCT PAGE

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

jelproducts.nl/en/products/piranha

KEEP THIS MANUAL

Store it with the machine or 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 machine builder, 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, and on a machine, with the machine file.

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
The housing and the driver run warm in service.



Crush hazard
Moving parts during mounting and aiming.



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

The Piranha has been supplied with the DCbright operating instruction of 22 April 2024, one document for every version. **This edition supersedes it.** Where they disagree, this manual applies.

Date	Revision	Change
22 April 2024	-	DCbright Operating Instruction Piranha Series, nine pages, aluminium and 316L. Superseded
7 September 2026	1	First edition of the JEL Products manual, aluminium and 316L versions in one document, to the JEL Products manual standard. **Corrected against the 2024 instruction:** the ambient range is minus 45 to plus 50 degrees Celsius, the service life is TM-21 L90B05 above 360,000 h and not the LM80 figure printed there, the wide optic is 69 degrees, and the hazard distance is given per optic in section 4.3 instead of one figure for the series
18 November 2026	2	EMC corrected: EN 55015 and EN 61547 third-party tested, not by TÜV. IEC 60533 withdrawn.

2 The product

The Piranha is the heavy duty work lamp of the range: a cast aluminium or solid 316L housing rated IP69K, an IK10 polycarbonate or IK09 glass front, and a high tensile 316L bracket that swings from minus 45 to plus 90 degrees. It is built for machines, cranes and heavy plant, where a lamp is struck by material, by tools and by a pressure washer every week.

2.1 The three families

Same footprint, same bracket, same optic set. What differs is the number of LEDs, the supply, and the material of the housing.



Piranha 9. Nine LEDs, 70 W, 8,400 lumens. In AC with a remote BLD075 driver, PIAC01, or in 24 V DC with the drivers on board, PIDC02



Piranha 6. Six LEDs, 55 W, 6,300 lumens, 9 to 35 VDC for 12 and 24 V machines, drivers on board. DC only, PIDC01



Piranha SS. The 9 and the 6 in solid 316L stainless steel, electrolytically polished, glass front, twenty years on the housing. PISS01 and PISS02

	Piranha 9 AC	Piranha 9 DC	Piranha 6 DC	Piranha SS
Article base code	PIAC01	PIDC02	PIDC01	PISS01 on AC · PISS02 on DC · 6 SS on request
Luminous flux	8,400 lm	8,200 lm	6,300 lm	As the aluminium of the same number
Power	70 W	70 W	55 W	70 or 55 W
Supply	90 to 305 or 180 to 528 VAC	20 to 32 VDC, 24 V nominal	9 to 35 VDC, 12 or 24 V	As the aluminium of the same number
Driver	Remote BLD075, bare or in a DRB-1	On the board in the housing	On the board in the housing	Remote BLD075 on AC, on board on DC
Housing	Cast aluminium, less than 0.08 per cent copper, e-coated Titanium Black			Solid 316L stainless steel, electrolytically polished
Front	Polycarbonate IK10 as standard, chemically hardened glass IK09 on request			Chemically hardened glass IK09, or borosilicate
Bracket	High tensile 316L stainless steel, tilt from minus 45 to plus 90 degrees, 30 degrees of pan on the foot			
Optics	14 degree spot, 38 and 69 degree symmetric, 14 × 46 degree flare, or without optics at 136 degrees. Combinations in one luminaire possible			
Termination	H07BQ-F 4 cores, 0.3 m, free ends	H07BQ-F 2 cores, 0.3 m, Deutsch DT04-2P	H07BQ-F 2 cores, 0.3 m, Deutsch DT04-2P	H07BQ-F 2.0 m: free ends on AC, DT04-2P on DC
Ingress and impact	IP66, IP67, IP68, IP69K · IK10 with polycarbonate, IK09 with glass			IP66, IP67, IP68, IP69K · IK09
Ambient	minus 45 to plus 50 °C			
Weight, with bracket	3.1 kg	3.1 kg	3.1 kg	5.0 kg
Warranty	5 years on the complete luminaire			20 years on the housing, 5 years on the rest

The SS versions share their photometry with the aluminium versions, so one lighting calculation serves a mixed fleet. There is no Piranha 6 in AC and there will not be one, and there is no standard high temperature Piranha: a 316L HT build exists on request, otherwise see the Goby HT or the Snapper HT.

2.2 Intended use

The Piranha is intended for permanent professional installation as a work lamp on a machine, a vehicle, a vessel or a fixed structure, indoors or outdoors, within the ambient temperature range and the supply range of the version you have. It is bolted to the structure through the foot of its bracket, panned on the foot and tilted on the pivot, and aimed at a work point or a work area according to a lighting design or the machine builder's specification. Typical applications:

Family	Where it is used
Piranha 9 and 6, DC	Mining haul trucks and excavators, loaders, dozers and rough terrain machines, crane cabs, booms and service positions, service and maintenance vehicles, grinding, digging and material handling zones, ship gangways and mooring stations, engine rooms and pump rooms, walkways, stairs and access platforms, conveyor and transfer point lighting, vehicle inspection pits and wash bays
Piranha 9 AC	The same positions on a fixed structure with a mains supply: machine and process area task lighting, inspection pits, wash bays, transfer points, fixed cranes and gantries, with the driver in a box outside the wash zone
Piranha SS	Offshore platform machine positions, deck cranes and mooring equipment, chemical and fertiliser plant, water and waste water treatment, food and beverage process areas, fish farms and aquaculture equipment, splash zones and permanent salt spray, washdown regimes, dredgers and hopper equipment, desalination and brine handling, harbour and terminal vehicles, and any machine position where a coating cannot be repaired

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 Piranha is ATEX or IECEx certified. None may be installed in a zoned hazardous area.
- **Mains on a DC version, or a battery supply on an AC version.** The AC and the DC Piranha 9 are the same housing. Only the type label and the tail tell them apart.
- **Mains directly into any Piranha.** On the AC version mains goes to the remote driver. The luminaire itself is a 50 V device.
- **Ambient above plus 50 degrees Celsius.** There is no high temperature Piranha. Above an engine, in a drying zone or near an exhaust, use the Goby HT or the Snapper HT.
- **Permanent immersion.** IP68 is verified as a test class, not as a continuous operating condition. IP69K covers washdown, not submersion.
- **Area floodlighting from a mast.** The Piranha is a work lamp with a 3.1 kg housing on one foot. For a mast or a high bay use the Barracuda, the Snapper or the Orca.
- **Road lighting or any position where the cut off matters.** The Piranha is a controlled floodlight. Where a site borders houses or a protected zone, the DarkLicht range is the correct answer.
- **Consumer, decorative or domestic lighting.**
- **Emergency or escape route lighting.** No Piranha has battery back up or a self test.
- **Mounting on one bolt.** The foot has a centre hole and two slots for three bolts. On a machine that vibrates at 6 G, one bolt through the centre is a lamp on a pendulum.
- **Operation with a damaged front, housing, bracket, tail or connector**, or on the AC versions with a driver other than the BLD075 supplied.

2.4 Order codes

PIDC02-65K.38

PIAC01	Piranha 9, AC, 70 W, remote BLD075, 90 to 305 or 180 to 528 VAC
PIDC02	Piranha 9, DC, 70 W, 20 to 32 VDC
PIDC01	Piranha 6, DC, 55 W, 9 to 35 VDC, 12 or 24 V
PISS01 · PISS02	Piranha 9 SS in 316L, AC and DC
65K to 22K	6500, 5000, 4000, 2700 K, amber 2200 K. 6500 K delivers the same flux as 4000 K
BIC	Bi-colour 4000 K with amber 2200 K, switched in operation, section 9.3
.14 .38 .69 .14x46	Optic. Combinations within one luminaire are possible and are stated at quotation
.NOP	Supplied without optics, 136 degrees. Aluminium versions
BORO	Borosilicate front instead of chemically hardened glass, on the 316L versions

Power is a driver setting on the AC version: a lower wattage is ordered as a suffix. DC versions run at a fixed constant current, so another power level there is a custom build. Glass front on the aluminium versions, cable length beyond 0.3 or 2.0 m, the mating Deutsch connector and the Ra 80 or Ra 90 option are confirmed at quotation and are not part of the code. High voltage DC between 250 and 740 V is available on request.

> **NOTE, THE PIRANHA 6 SS**
>
> The Piranha 6 in 316L exists and is built to order, but **it has no article code yet**. Our photometric files carry it as PISS03. Until the code is issued it is quoted by description; the label on a delivered luminaire shows the code that applied at the time.

2.5 The type label, and the second code on it

The type label on the rear of the housing carries the article code, the electrical data, the protection class, the ingress rating and the serial number. It also shows 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 PI-9 70DC-OP. 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. **Photograph the label before you fit the luminaire:** on a machine the label ends up facing the structure.

> **WARNING, AC AND DC LOOK IDENTICAL**
>
> PIAC01 and PIDC02 are the same housing and the same bracket. From the front nothing tells them apart. **Read the label and look at the tail:** four cores with free ends is the AC version, two cores ending in a Deutsch connector is DC. Mains on a DC luminaire destroys it immediately.



The rear of the Piranha: the fin field, the cable entry in the centre and the bracket foot with its centre hole and two slots

3 Technical data

All values apply to the standard configuration at 6500 K and 25 degrees Celsius ambient, including lens losses and driver consumption. A hyphen means the entry does not apply to that version. The 316L versions share every electrical and optical value with the aluminium version of the same number.

	Piranha 9 AC PIAC01, PISS01	**Piranha 9 DC PIDC02, PISS02**	**Piranha 6 DC PIDC01, 6 SS**
PERFORMANCE			
Luminous flux	8,400 lm	8,200 lm	6,300 lm
Luminous flux, without optics	9,200 lm	9,000 lm	6,900 lm
Power consumption	70 W	70 W	55 W
Efficacy	120 lm/W	117 lm/W	115 lm/W
Colour temperature	6500, 5000, 4000, 2700 K, amber 2200 K, and bi-colour 4000 K with amber 2200 K		
Colour rendering	Ra above 70 standard, Ra 80 or Ra 90 on request. MacAdam step 3 or better		
Optics	14 degree spot, 38 degree medium, 69 degree wide, 14 × 46 degree flare, or without optics 136 degrees. Combinations possible		
Upward light output ratio	0 per cent at nil tilt		
ELECTRICAL AND DRIVER			
Supply voltage range	90 to 305 VAC or 180 to 528 VAC, 50 or 60 Hz	20 to 32 VDC, 24 V nominal	9 to 35 VDC, 12 or 24 V nominal
Current draw	0.6 A at 120 V, 0.3 A at 220 to 277 V, 0.2 A at 380 to 480 V	2.9 A at 24 V	2.3 A at 24 V, 4.6 A at 12 V
Driver	Remote BLD075, 131 × 68 × 33.5 mm, 650 g. Fits the DRB-1	DC drivers on the board	DC drivers on the board
Driver case temperature and life	Tc minus 40 to plus 90 °C. Above 100,000 h at Tc 75 °C, MTBF above 320,000 h	-	-
Inrush current	66 A peak, T50 170 µs at 220 V	-	-
Luminaires per MCB, B16 · C16 · C25 · D16	11 · 19 · 30 · 32	-	-
Surge protection	6 kV line to line, 10 kV line to earth, IEC 61000-4-5	Surge and reverse polarity protected on the board	Surge and reverse polarity protected on the board
Power factor and THD	Above 0.9 at 65 to 100 per cent load, THD below 15 per cent at 60 to 100 per cent load	-	-
Dimming	0 to 10 V, PWM, DALI-2, or set over NFC on the driver	On request	On request
Cable and termination, aluminium	H07BQ-F, 4 cores, 2 × 1.5 plus 2 × 0.5 mm², 0.3 m, free ends	H07BQ-F, 2 × 1.5 mm², 0.3 m, Deutsch DT04-2P	H07BQ-F, 2 × 1.5 mm², 0.3 m, Deutsch DT04-2P
Cable and termination, 316L	H07BQ-F, 2.0 m, free ends	H07BQ-F, 2.0 m, Deutsch DT04-2P	H07BQ-F, 2.0 m, Deutsch DT04-2P

Luminaires per MCB is the manufacturer figure for the BLD075 on an ABB S200 at 220 V, a guide for engineering and not a substitute for the installation calculation. A bi-colour or high CRI build changes the luminous flux, and the quotation states the figure that applies.

3 Technical data, continued

	Piranha, aluminium	Piranha SS, 316L
CONSTRUCTION		
Housing	Cast aluminium, less than 0.08 per cent copper	Solid 316L stainless steel, 316L fasteners throughout
Surface finish	Conversion layer plus two layer titanium-based e-coating, Titanium Black	Electrolytically polished, no coating
Bracket	High tensile 316L stainless steel. Tilt from minus 45 to plus 90 degrees on the pivot, 30 degrees of pan on the foot, section 3.3	
Front	UV resistant polycarbonate IK10 as standard, chemically hardened glass IK09 on request	Chemically hardened glass IK09, or borosilicate where the front sees radiant heat
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
Vibration and shock	6 G at the resonant frequency, IEC 60068-2-6. Shock tested to IEC 60068-2-27	
Corrosion class	C5 industrial and marine, ISO 9223	C5 and CX, ISO 9223. 316L is CRC III to EN 1993-1-4 at a PREN of approximately 24
DIMENSIONS, LIFE AND WARRANTY		
Dimensions, from the drawing	135 mm wide, 152 mm over the bracket, 150 mm high, 131.5 mm deep, section 3.1	134 mm wide, 166.4 mm over the bracket, 166 mm high, 102.7 mm deep, section 3.2
Weight, with bracket	3.1 kg	5.0 kg
Ambient temperature	minus 45 to plus 50 degrees Celsius	
Storage temperature	minus 45 to plus 50 degrees Celsius, dry, in the original packaging	
LED service life, TM-21 L90B05	above 360,000 h at 50 °C	
Warranty	5 years on the complete luminaire	20 years on the housing, 5 years on the electronics, the components and the seals

WHERE THE DRIVER IS

On the DC versions there is nothing outside the luminaire at all: the drivers sit on the board, with reverse polarity and surge protection, and the machine gets one sealed component on a Deutsch connector. On the AC version the driver is a separate BLD075, joined to the luminaire by the four core tail. It is supplied bare, or in a DRB-1 driver box, and it lives outside the wash zone. That is the trade: the DC Piranha is simpler to fit and the AC Piranha has a driver that can be replaced at ground level.

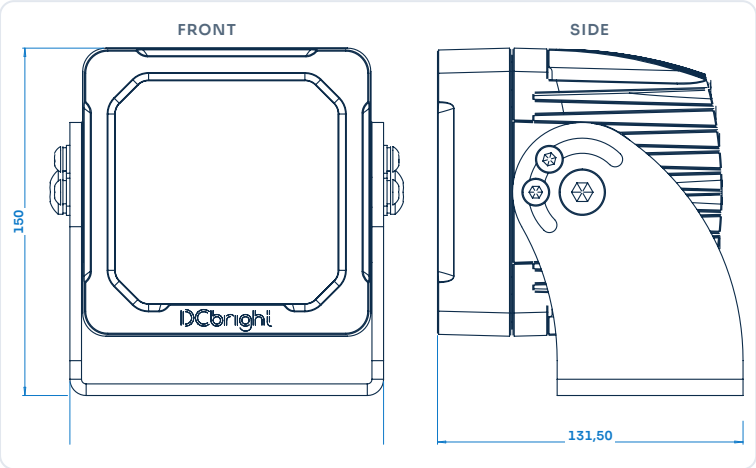
> **NOTE, BUILT HEAVIER THAN ITS SIZE SUGGESTS**
>
> At 3.1 kg the aluminium Piranha weighs almost as much as the far larger Snapper, and the 316L version is 5.0 kg. That is deliberate: the wall thickness is what survives a haul road. Size the structure and the bolts for that weight at 6 G, not for the size of the lamp.

THREE THINGS THIS RANGE DOES NOT DO

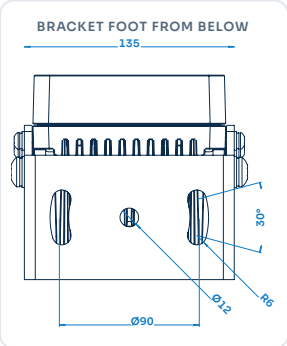
Piranha 6 in AC	Not available and not planned. The 6 is a 12 and 24 V machine lamp
High temperature	No standard HT version. A Piranha HT in 316L exists as a custom build without an article code, on request; otherwise use the Goby HT or the Snapper HT above plus 50 degrees Celsius
IK10 in 316L	The 316L front is glass, so IK09. For IK10 take the aluminium Piranha with the polycarbonate front

3.1 Dimensions, weight and wind load, aluminium versions

All drawings are dimensioned in millimetres and are taken from the production drawing of the aluminium Piranha. DXF and STEP models are available on request. The 9 and the 6 share the housing, the bracket and the foot; only the LED count differs.



Piranha 9, front and side. Housing 135 mm wide, 150 mm high on its foot, 131.5 mm deep. The pivot with its arc slot is on the side of the bracket arm



The foot from below: one hole of Ø 12 in the centre and two slots of R6 on a pitch circle of Ø 90, over 30 degrees



The Piranha 9 from the side. The bracket arm and the foot are one bent 316L plate

DIMENSIONS, FROM THE DRAWING

Housing	135 mm wide, 131.5 mm deep
Over the bracket	152 mm wide over the pivot bolts
Height on the foot	150 mm at nil tilt

MOUNTING INTERFACE

Centre hole	1 × Ø 12 mm, for M10
Slots	2 × R6, 12 mm wide, on Ø 90, over 30 degrees
Bolts	3 × M10, section 6.1
Pan	30 degrees, plus or minus 15 about the centre bolt
Tilt	minus 45 to plus 90 degrees on the pivot, section 3.3

WEIGHT

Luminaire with bracket	3.1 kg, every aluminium version
Remote driver, AC	plus 650 g, outside the luminaire

WIND LOAD, CALCULATED FROM THE ENVELOPE

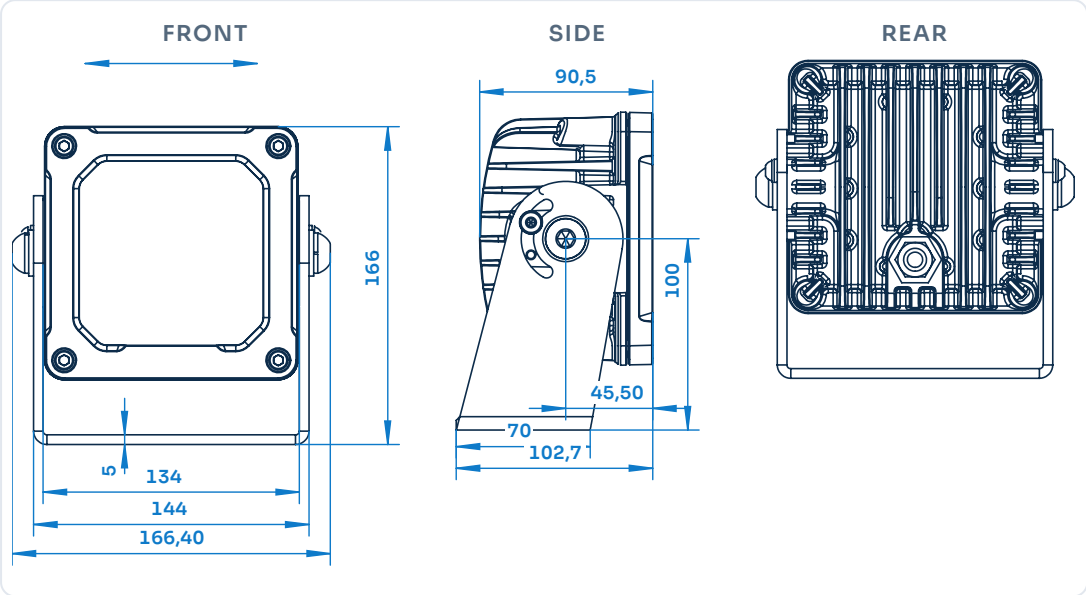
Frontal	0.018 m²
Side	0.014 m²
Maximum, tilted	0.022 m²
Force at 45 m/s	Approximately 33 N at Cd 1.2 and an air density of 1.25 kg/m³

NOTE, THE DATASHEET ENVELOPE

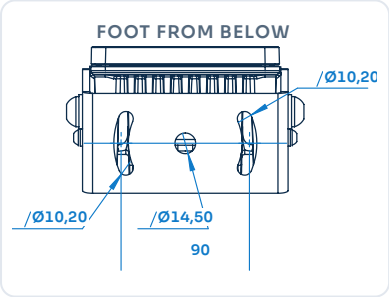
The datasheet gives 150 × 122 × 115 mm including the bracket. The production drawing dimensions the housing at 135 mm wide, 152 mm over the pivot bolts, 150 mm high on its foot and 131.5 mm deep. This manual follows the drawing; use its figures when you check the space in a cab or under a platform. On a machine the wind figure is academic; the 6 G vibration rating is what sizes the bolts.

3.2 Dimensions, weight and wind load, 316L versions

The Piranha SS is a different casting in a different material, not a coated Piranha. It is wider over the bracket, taller and shallower, and its foot carries a larger centre hole and narrower slots. The drawings are taken from the production drawing DCB SS9_V1.



Piranha 9 SS, front, side and rear. Housing 134 mm wide, 144 mm over the bracket arms, 166.4 mm over the pivot bolts, 166 mm high on its foot, 102.7 mm deep. The cable gland sits in the centre of the rear face



The 316L foot from below: Ø 14.5 in the centre and two slots of Ø 10.2 on a pitch of 90 mm

DIMENSIONS, FROM THE DRAWING

Housing	134 mm wide, 102.7 mm deep, 100 mm high
Over the bracket	144 mm over the arms, 166.4 mm over the pivot bolts
Height on the foot	166 mm at nil tilt, foot 90.5 mm deep

MOUNTING INTERFACE

Centre hole	1 × Ø 14.5 mm, for M12
Slots	2 × Ø 10.2 mm on a pitch of 90 mm, for M8
Pivot	2 × M12 × 20 button head, 316L, with spring and plain washer
Lock screw in the arc slot	2 × M6 × 20 button head, 316L
Cable entry	M20 × 1.5 gland, 4 to 8 mm, 316L, in the rear face

WEIGHT AND WIND

Luminaire with bracket	5.0 kg. Plus 650 g driver outside on the AC version
Frontal · side · tilted	0.028 · 0.017 · 0.033 m²
Force at 45 m/s	Approximately 50 N, Cd 1.2, 1.25 kg/m³

NOTE, TWO HOLE PATTERNS

The datasheet envelope of 166 × 166 × 102 mm agrees with the drawing. The aluminium and the 316L foot do not share a hole pattern: **a 316L Piranha does not drop onto holes drilled for an aluminium one**. Drill from the foot you have.

3.3 The bracket, pan and tilt

Every Piranha is delivered on a high tensile 316L bracket: one bent plate that forms the foot and the two arms. The luminaire tilts about the two pivot bolts in the arms and is locked by a screw in an arc slot on each side. The bracket pans on its foot, about the centre bolt, with the two slots giving 30 degrees. That combination is what lets the structure decide the mounting position instead of the lighting designer.



The pivot on the side of the arm: the large pivot bolt, and the lock screw in the arc slot next to it. Both sides are the same

TILT, ON THE PIVOT

Range	minus 45 to plus 90 degrees, without a stop
Pivot bolt	M8 on the aluminium bracket, M12 on the 316L bracket
Lock	Screw in the arc slot on each arm, both sides in the same position

PAN, ON THE FOOT

Range	30 degrees, plus or minus 15 about the centre bolt
Lock	The two bolts through the slots, torqued after aiming

NOTE, THE RANGE AND THE ARC SLOT

The datasheet states the tilt as unlimited from minus 45 to plus 90 degrees. The arc slot on the arm is shorter than that range: it is the locking position for the working angles. Where a design angle lies outside the slot, the lock screw is moved to the other end of the slot or the luminaire is aimed on the pivot torque alone, and the aim is checked at the first maintenance visit. **On a machine that vibrates, always seat the lock screw.** A Piranha that has slowly rolled on its pivots is the most common aiming complaint on this product.

WARNING, THREE BOLTS, ALWAYS

The foot offers a centre hole and two slots. Use all three. The centre bolt alone lets the luminaire pan freely, and on a vibrating machine it works loose within days. The two slot bolts are what lock the pan and what carry the shock load.

WHY 316L FOR THE BRACKET ON AN ALUMINIUM LAMP

The bracket is the part that is hit, bent back and hit again. A stainless plate takes that without cracking, and it takes it in the same salt spray that would strip a coated steel bracket in a season. The aluminium housing is e-coated to C5; the bracket needs no coating at all.



The 316L Piranha on its 316L bracket: the same range, with 316L fasteners throughout

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	Third party
Ingress	IEC 60529, ISO 20653	In house
Impact	IEC 62262, IK10 polycarbonate, IK09 glass	In house
Vibration	IEC 60068-2-6, 6 G at resonance	In house
Shock	IEC 60068-2-27	In house
Corrosion	ISO 9223, class C5, CX on 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. ISO 20653 is the road vehicle ingress standard, where the IP69K high pressure and steam test comes from; on a machine lamp that test is the weekly pressure wash. 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

Every Piranha carries a lens per LED, chosen from the lighting calculation or from what the machine has to see, and combinations within one luminaire are possible. The beam angle is the full angle at 50 per cent of the peak intensity, the field angle at 10 per cent.

Optic	Distribution	Beam angle	Field angle	Typical use
14°	Spot, symmetric	13°	27°	Long throw from a boom
38°	Medium, symmetric	37°	69°	Machine areas, decks, platforms
69°	Wide, symmetric	72°	103°	Cabs, walkways, engine rooms
14° × 46°	Flare, asymmetric	13° × 45°	30° × 70°	Haul roads, gangways
None	Very wide, symmetric	136°	168°	Machine interiors, confined spaces

Nothing is emitted above the horizontal at nil tilt; section 6.7 shows what tilt does to that figure. The 14 degree spot is the optic that sets the hazard distance in section 4.3. The lens is part of the sealed front and is not changed on site.



Piranha 9 with the 14 degree spot. Nine lenses, one per LED, behind one polycarbonate or glass front

WHAT EACH RATING MEANS HERE

IK10	The polycarbonate front. 20 joules, a 5 kg mass from 400 mm. It is the reason the aluminium Piranha is specified where material flies
IK09	The glass front, on request on the aluminium and standard on the 316L. Glass is chosen for chemical resistance and radiant heat, not for impact
6 G	The vibration rating at resonance. It applies to the luminaire on its bracket; the bolts into the machine are yours
Class II	No protective earth of its own. On the AC version the driver box and the tray **are** earthed

4 Safety

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

4.1 Electrical hazard

DANGER, LIVE PARTS

Working on the driver, in the driver box or on the tail of an AC luminaire 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 touch a conductor. Check twice.

DANGER, MAINS NEVER ENTERS THE LUMINAIRE

On PIAC01 and PISS01 mains goes to the **remote driver**. The four core tail carries the driver output and the temperature signal, and nothing else. Mains on the tail destroys the luminaire and creates a shock hazard on a Class II housing.

- Every Piranha is a Class II luminaire. The housing is not earthed through the supply, but on the AC version the driver box, the driver tray and any metal enclosure must be earthed correctly.
- Make the connection to the standards and directives that apply in your country and, on a machine, to the Machinery Directive file. Stay within the supply range in chapter 3 and of the right type: AC to the driver, or 20 to 32 VDC on the 9 and 9 to 35 VDC on the 6. **Read the label before you connect.**
- Only use the driver and the cable supplied for an AC luminaire. Another driver can create a dangerous situation and voids the warranty. Keep one metre to a radio receiver.

4.2 Falling objects

WARNING, FALLING LUMINAIRE

A luminaire that comes loose from a boom, a cab roof or a structure can injure whoever is under it. Verify the structure before mounting, use all three bolts in the foot, and fit a secondary retention wherever the luminaire is above a walkway or a working area, and always on anything that moves.

The luminaire weighs 3.1 kg in aluminium and 5.0 kg in 316L, on one foot. Under EN 60598-1 the suspension has to withstand four times the mass; on a machine rated at 6 G, six times, in every direction, repeatedly. A Piranha on a boom hangs on three bolts into a bracket that someone welded on: **the weld and the bolts are the weak point, not the foot**.

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 and apply to the 316L versions alike.

Optic	Piranha 9 AC	Piranha 9 DC	Piranha 6 DC
14 degree spot	**5.2 m**	**5.2 m**	4.5 m
14 × 46 flare	3.2 m	3.2 m	2.8 m
38 degrees	2.2 m	2.1 m	1.9 m
69 degrees	1.4 m	1.4 m	1.2 m
No optic	0.9 m	0.8 m	0.7 m

The rule on site. Take **6 m** where a 14 degree spot or a flare is fitted and **3 m** for anything else. Nobody works or stands within that distance looking towards the front. On a machine that means the lamp is aimed at the work, not at the banksman, the deck crew or the driver of the next machine. Aim or focus with the luminaire switched off.

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. The Piranha 9 with the 14 degree spot peaks at about 95,000 cd, which is where the 5.2 m comes from. The 2024 instruction gave one figure of 11.7 m for the series; that figure does not follow from the photometry and is withdrawn. Calculated from our own photometric files, not a measurement report.

4.4 Hot surfaces



CAUTION, WARM HOUSING

A Piranha runs warm in service: 70 W in a housing the size of a hand, with the fin field as the only cooling path. In a plus 50 degrees Celsius cab or engine room the housing is uncomfortable to hold. Let it cool before handling. The driver case of an AC version may reach plus 90 degrees Celsius.

- Isolate the supply and let the luminaire cool to hand temperature before any work.
- Do not mount the luminaire against an exhaust, a hydraulic tank return or an engine block. The ambient limit of plus 50 degrees Celsius applies to the air around the fins, not to the cab.
- Never run cold water onto a hot glass front. The thermal shock can break it. See section 10.5. Polycarbonate tolerates it, but the pressure washer rule in that section still applies.
- The BLD075 on an AC version sits in an ambient of at most plus 50 degrees Celsius. On a machine that rules out the engine bay.

4.5 Crush and handling

CAUTION, MOVING PARTS

The housing swings freely on the two pivots once the lock screws and the pivot bolts are slack, through 135 degrees. Keep fingers clear of the pivots and of the gap between the housing and the bracket arms while aiming. On a boom, the machine is switched off and locked out before anyone climbs to the lamp.

- Wear gloves, safety boots and a hard hat during assembly and installation.
- Do not work alone at height. Use rated and secured ladders, lifts or the machine's own access, and never use the luminaire or its bracket as a handhold or a step.

4.6 Heat and surroundings

- Keep at least 75 mm clear behind the fin field and around the housing, and 150 mm around a driver box. Do not cover or wrap the luminaire and do not mount it against insulation material.
- Keep the fins on the rear of the housing clear. On a machine they fill with mud, dust and grease, and trapped dirt reduces cooling and shortens the life of the LEDs. The Piranha has no fan and no vents.
- Do not install a Piranha near a heat source that takes it beyond plus 50 degrees Celsius ambient. There is no standard high temperature version; for process heat use the Goby HT, the Snapper HT, or the custom Piranha HT in 316L.
- Do not expose an aluminium Piranha to corrosive chemicals outside its corrosion class without checking with your supplier first. For permanent salt exposure and process chemistry beyond C5, use the Piranha SS.

4.7 Laying the luminaire down

CAUTION

Stand the luminaire on its **bracket foot**, the way it was delivered. **Never rest it on its lens**, and never on its back: the cable leaves the centre of the rear face, and the luminaire's weight on the gland is the load it is not designed for.

On the Piranha the front is the whole face of the luminaire. A polycarbonate front put down on grit takes scratches that show in the beam, and a glass front on the 316L version takes a chip at the edge that becomes a leak path at the first washdown. The foot is a flat 316L plate and carries the weight without complaint, which is why the luminaire is shipped standing on it.

NOTE

Keep the cap on the Deutsch connector until the mating connector goes on. A DT04 with grit in the cavities does not seal, and on a DC version the connector is the one place where the IP69K rating leaves the luminaire.

4.8 What must never be done

DANGER, DO NOT OPEN THE HOUSING

Do not remove the front, the front frame or any part of the housing, and do not shorten or cut the tail. The seal, the ingress protection and the electrical safety all depend on a housing that has not been opened. Nothing on a Piranha is designed to be opened in the field. 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, tail or connector, and do not use it in the applications listed in section 2.3.
- Do not connect mains to a DC luminaire or to the tail of an AC luminaire, do not reverse the polarity on a DC luminaire, and do not put a luminaire on a supply outside the range on its label. The Piranha 9 DC stops at 32 V; the Piranha 6 at 35 V.
- Do not mount the luminaire on the centre bolt alone, and do not aim it without seating the lock screws on both sides.
- Do not put the driver of an AC version in the wash zone, in the engine bay or above plus 50 degrees Celsius.

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, by a rock, a bucket or a collision, switch off the supply immediately and do not switch it on again until the luminaire has been replaced or released by JEL Products. A cracked front on a lamp that still works is still a luminaire out of service.
- No Piranha 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 driver, box or tail	Severe injury or death by electric shock
Mains connected to a DC luminaire or to a tail	Destroyed luminaire, arc, fire and shock risk
Looking into the operating light source	Permanent eye damage, at close range with the 14 degree spot
Touching a hot housing or driver	Burns, minor to moderate
One bolt, or no secondary retention above a walkway	Injury from a falling luminaire of up to 5.0 kg
Luminaire used as a handhold or step	Fall from height, bent bracket
Fingers at the pivot	Crushing, minor to moderate injury
Cold water on hot glass	Broken front, glass fragments, loss of ingress protection
Luminaire rested on its lens or its back	Scratched or chipped front, damaged gland, water ingress, later failure
Lock screws not seated on a vibrating machine	Luminaire rolls out of aim, glare to other operators, loosened pivots

NEVER, ON ANY PIRANHA


Never open the housing or remove the front


Never rest the luminaire on its lens or on its back, the cable side


Never carry or suspend it by the cable or the connector


Never aim a pressure washer at the cable entry or the connector


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 into the structure.

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**.
- Do not stack pallets beyond the marking on the packaging.
- Store the box the right way up, so that the luminaire stands on its foot and the front does not carry the weight.
- Keep the cap on the Deutsch connector and the tail coiled in the box until the luminaire is at its position. A 0.3 m tail is short enough to be pinched under the foot during handling.
- On a 316L version, keep the luminaire in its wrapping until it is at the machine. Polished 316L picks up iron contamination from a steel bench or a grinder in the same workshop, and that is where surface rust on stainless comes from.

5.2 Contents of the delivery

1 ×	Piranha luminaire in the ordered configuration, on its 316L bracket, with the tail: 0.3 m on the aluminium versions, 2.0 m on the 316L versions. Free ends on AC, a Deutsch DT04-2P connector on DC
1 ×	Remote BLD075 driver on PIAC01 and PISS01. Bare, or in a DRB-1 driver box or a 316L Power Box if ordered
1 ×	This instruction manual

> **NOTE, THE MATING CONNECTOR IS AN ACCESSORY**
>
> The DC versions end in a Deutsch DT04-2P receptacle. **The mating DT06-2S plug is not supplied as standard**; it is ordered with the luminaire or fitted from the machine builder's stock. Check the packing list.

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 or the machine specification says. Optics and colour temperatures differ between luminaires on the same machine, and an AC and a DC Piranha 9 look identical.
2. Cut the tape along the seams. Do not push the knife deeper than the tape.
3. Lift the luminaire out by the bracket, never by the tail or the connector.
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 supply type on the label**.
5. Inspect the front, the housing, the bracket, the tail and the connector for cracks, impact damage or a missing cap.
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 list names the bolt and not a spanner size, because the bolt into the structure is your choice: bring a socket or ring spanner that fits the M10 or M12 you have chosen for the foot.

Tool	Used for
Socket or ring spanner for the foot bolts	Three per luminaire: M10 on the aluminium foot, M12 plus 2 × M8 on the 316L foot
Socket or ring spanner, 13 mm	The M8 pivot bolts on the aluminium bracket
Hex key, 8 mm	The M12 button head pivot bolts on the 316L bracket
Hex key, 4 mm	The M6 lock screws in the arc slots
Torque wrench, 5 to 100 Nm	Foot bolts, pivots and lock screws, section 6.6
Deutsch DT crimp tool, size 16 contacts	The mating DT06-2S plug on the site cable, DC versions, section 7.4
Two open ended spanners for the cable gland	The gland in the junction box or the driver box, one holds the body, one turns the cap nut
Wire stripper and cutter, end sleeve crimping tool	Preparing the tail and the site cable for the terminals
Voltage tester	Verifying that the circuit is dead before a cover comes off
Multimeter	Checking the supply voltage, on DC under load at the connector
Insulation resistance tester	Commissioning an AC installation, chapter 8
Heat gun	Heat shrink tubing over a gland or a joint, section 7.6
Inclinometer, or a phone with one	Setting and recording the tilt
Anti-seize compound	Every stainless bolt in a stainless thread, section 6.6

Do not drill the foot to another pattern. The centre hole and the two slots are what the 6 G rating was tested with.

NOT SUPPLIED WITH THE LUMINAIRE

Site cable	Sized from section 7.7, to the connector on DC or to the driver on AC
Mating connector, DC	Deutsch DT06-2S with wedge lock and two size 16 contacts. Ordered as an accessory, section 7.4
Junction box, AC aluminium	An IP67 box where the 0.3 m tail meets the cable to the driver, unless the driver box is within reach of the tail, section 7.5
Mounting bolts	Three per luminaire, A4 or 316 stainless steel or hot dip galvanised class 8.8, with locking
Safety cable	Ordered separately, see section 6.5
Heat shrink tubing and self amalgamating tape	For sealing a gland or a joint, section 7.6
Threadlocker	On a machine, always. A Piranha is fitted to things that shake at 6 G

> **NOTE**
> The reason the tool list names a bolt and not a spanner size is that the bolt into the structure is your choice, not ours. The foot offers a centre hole and two slots, and what goes through them follows from the structure: a welded bracket on a boom, a cab roof, a handrail post or a concrete wall each ask for a different fixing.

ONE PERSON OR TWO

One person fits a Piranha at ground level or on a platform. On a boom, a mast or over an open deck the second person holds the ladder or works the lift, and nobody carries a 5.0 kg 316L Piranha up a ladder in one hand.



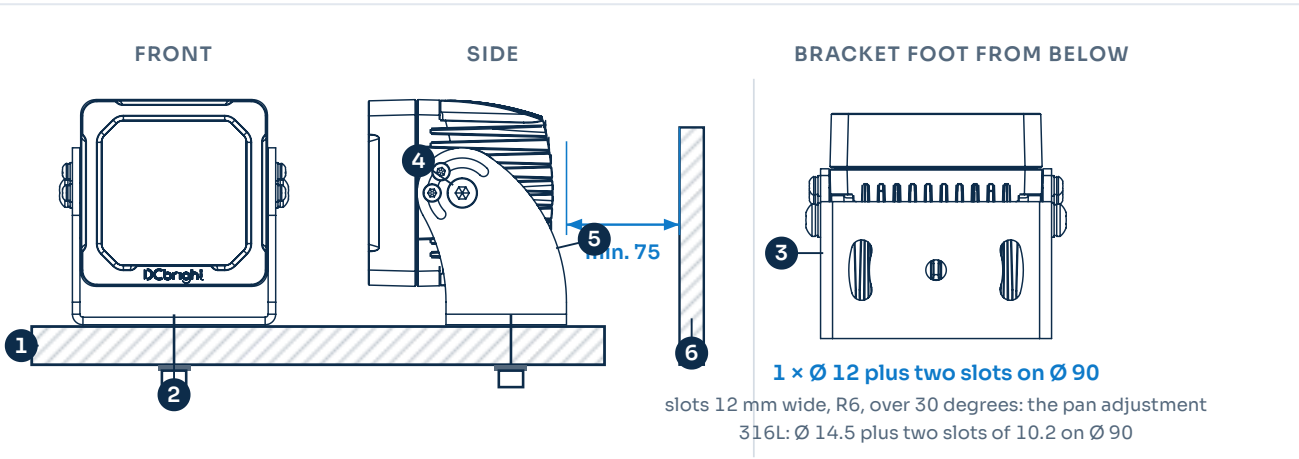
The Piranha as delivered: housing, bracket and the tail with its connector

6 Mechanical mounting

Every Piranha stands on the foot of its bracket. Bolt the foot to the structure first, then pan on the foot, then tilt on the pivots, then make the electrical connection. The procedure is identical for the aluminium and the 316L versions; only the bolt sizes and the weight differ.

DANGER

Isolate the supply and secure it against being switched on again before you start. On a machine, switch the machine off and lock it out. Installation may only be carried out by a qualified person.



Mounting principle. Three views from the production drawing to scale. Three bolts through the foot, the centre bolt as the pan axis and the slot bolts as the lock, and the fin field 75 mm clear of anything behind it

1. Load bearing structure: a welded bracket on the machine, a cab roof, a handrail post, a wall or a beam. Verify it for four times the weight in chapter 3, and on a machine for 6 G in every direction
2. Bolt through the centre hole, M10 on the aluminium foot and M12 on the 316L foot, washer under the head, torque per section 6.6. The pan axis
3. Bracket foot with its centre hole and the two slots on Ø 90. Two more bolts through the slots, M10 or M8, after the pan is set
4. Pivot bolt with the lock screw in the arc slot, one set on each arm. Both lock screws in the same position, section 6.1
5. Cable entry in the centre of the rear face, with the tail leaving downward. Leave room for the tail and a drip loop behind the fin field
6. Minimum **75 mm** free space behind the fins. No fan, no vents: the fin field is the only cooling path

BEFORE YOU GO UP

- The lighting design or the machine specification is on site, with position, optic, tilt and pan per luminaire.
- The surface under the foot is flat and at least 90 mm across: a foot bolted onto a curved boom section without a plate is under permanent bending load and cracks at the bend.
- The structure carries four times the weight, and on a machine 6 G. A retrofit onto the fixings of a lighter work lamp is checked for the new load.
- Mounting hardware is A4 or 316 stainless steel or hot dip galvanised class 8.8, with a locking method. The cable route and, on AC, the driver position outside the wash zone are decided.
- The supply circuit can be isolated and secured, and the machine can be locked out.

6.1 The bracket foot

1. **Check the position.** Follow the lighting design or the machine specification. Check that the mounting surface is flat, clean and free of obstructions, and that the structure carries the load.
2. **Mark and drill the holes from the foot,** three per luminaire: Ø 11 mm for M10 through the centre hole and the slots on the aluminium foot, or Ø 13 mm for M12 in the centre and Ø 9 mm for M8 through the slots on the 316L foot. Drill with the luminaire off the structure.
3. **On an AC version, mount the driver first,** outside the wash zone, in an ambient of at most plus 50 degrees Celsius, section 7.5.
4. **Offer the luminaire up** and fit the centre bolt with a washer under the head, A4 or 316 stainless steel or hot dip galvanised class 8.8, finger tight.
5. **Fit the two slot bolts** in the middle of the slots, finger tight, so the foot can still pan 15 degrees either way.
6. **Set the pan.** Turn the foot to the design direction and **tighten all three bolts to the torque** in section 6.6 with a torque wrench, centre bolt first.
7. **Set the tilt.** Slacken the lock screw and the pivot bolt on both arms, turn the housing to the design angle with an inclinometer rather than by eye, seat both lock screws in the same position in the arc slots, and tighten the pivots and the lock screws to the torque in section 6.6. Both sides the same, or the housing is twisted on its arms.
8. **Check the tilt.** On a fixed installation 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. Record the angle.
9. **Fit the secondary retention** if section 6.5 applies.

NOTE, WHY THE LOCK SCREW MATTERS

The pivot bolt clamps the arm by friction, and at 6 G friction is not enough over months. The screw in the arc slot is what holds the angle. Always seat it, and always in the same position on both arms.

WARNING, DO NOT USE THE LUMINAIRE AS A HANDHOLD

A Piranha on a handrail post or a cab roof looks like a grab handle. It is not. Neither the housing nor the bracket is a handhold or a step.



The foot with its centre hole and the two slots. The 316L foot is the same idea with a larger centre hole and narrower slots

FIXING PER LUMINAIRE

	Aluminium	316L
Centre hole	Ø 12, M10	Ø 14.5, M12
Slots	2 × R6, M10	2 × Ø 10.2, M8
Pitch circle	Ø 90	90 mm
Pivot	M8, 20 Nm	M12, 40 Nm
Lock screw	M6, 8 Nm	M6, 8 Nm
Weight to carry	3.1 kg	5.0 kg

AFTER MOUNTING, BEFORE WIRING

- [ ] Three foot bolts tightened to torque, locked and marked.
- [ ] Pan set and the slot bolts torqued.
- [ ] Tilt set and recorded, both lock screws in the same position, pivots at torque.
- [ ] Secondary retention fitted where required.
- [ ] Tail free, not pinched under the foot, with room for a drip loop.
- [ ] Nothing within 75 mm of the fin field.
- [ ] AC only: the driver sits outside the wash zone.

6.2 The mounting configurations

Which one you have follows from the position, not from the order: the same foot does all three. What changes is what the foot is bolted to, how the cable arrives, and whether the luminaire is steered.



On the machine. Foot to a welded plate or bracket on the boom, the cab roof, the counterweight or the chassis. The usual position, DC from the machine



On a structure. Foot to a wall, a beam, a handrail post or a gantry, on site power through the remote driver, or DC from a distribution



Crane Light Director. The DC Piranha as a tilting module in a steerable boom lighting system, aimed from the cabin, section 6.3

6.3 The Crane Light Director

The Crane Light Director is a steerable boom lighting system for mobile cranes, fitted as a retrofit. The DC Piranha is one of the luminaires it carries, as a tilting module of 8,400 lumens that the operator aims from the cabin. It has its own datasheet and its own instruction; this section tells you what changes for the Piranha on it.

Versions	PIDC02, PIDC01 and the 316L DC versions. Not the AC Piranha: the driver box would have to ride the boom
Mounting	The foot bolts to the tilting module. Pan is set on the foot once; tilt is the module's job, and the pivot is locked at nil
Control	From the cabin, over a LoRa controller or a cabin switch, per the system instruction
Supply	12 and 24 VDC from the machine, or 230 and 400 VAC site power through the system's own supply. The luminaire always sees DC
Connection	The DT04-2P on the tail mates with the module harness. No joint on the boom

WARNING

On a Crane Light Director the luminaire moves in service. Fit the secondary retention to the module, not to the boom, so that it moves with the luminaire, and inspect it at every crane inspection.

6.4 Mounting attitude and position

Attitude	Foot down, front forward, at nil tilt. That is the attitude the photometry and the ULOR of nil assume. The bracket allows any attitude from minus 45 to plus 90 degrees, including hanging from a ceiling with the foot up
Cable exit	The tail leaves the centre of the rear face. Route it down and away with a drip loop, and clamp it within 300 mm on anything that moves
Clearance	At least 75 mm behind the fin field. The gap between the housing and the structure stays open; do not pack it
Driver box clearance	At least 150 mm around a DRB-1 or a 316L Power Box on an AC installation
Maximum mounting height	50 m. No limit on the elevation of the site itself
Wash down zones	The luminaire is IP69K and may sit in the wash down zone, aluminium or 316L. **A DRB-1 may not**: put it outside, or use the 316L Power Box
Salt and chemistry	Aluminium to C5. Beyond that, on deck, in fertiliser or in brine, the 316L version
Cabs and enclosed spaces	The ambient at the fins must stay below plus 50 degrees Celsius. A closed cab in the sun does not
Cold	Every version runs to minus 45 degrees Celsius and starts at full output. Keep the connector capped until it is mated, so no frost forms in the cavities

6.5 Secondary retention

WARNING

Fit a secondary retention wherever the luminaire is mounted above a walkway, a working area or a deck, and always on anything that moves: a crane, a machine, a vehicle or a vessel. A Piranha lives on things that move, so on a Piranha the retention is the rule and the fixed wall the exception.

NOTE, THE SAFETY CABLE IS AN ORDERED ITEM

The safety cable is **not supplied as standard**. It is supplied with the luminaire when it is ordered, and it is rated for the weight of the luminaire it is supplied for. State the version when you order it: a 316L Piranha at 5.0 kg needs a different cable from an aluminium one at 3.1.

Length	1 m
Rating	Matched to the weight of the luminaire it is supplied for
Anchor	To the structure, independent of the foot bolts, not to the tail and not to the connector
Supply	Ordered separately, never as standard

1. Choose an anchor point independent of the three foot bolts 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 drill.
2. Loop the cable around that anchor and attach the other end to the bracket, through the arc slot or around the arm, not to the housing and not to the tail.
3. Leave a little slack, enough to adjust the tilt later but not so much that the luminaire can gather speed if the fixings fail.
4. Record the safety cable in the site or machine documentation, so that it is inspected at every maintenance visit and every crane inspection.

DANGER

Do not substitute a cable, chain or strap of your own without having it rated. A longer cable turns a drop into a swing, and a 5.0 kg housing swinging under a boom hits whoever is on the deck before it hits anything else.

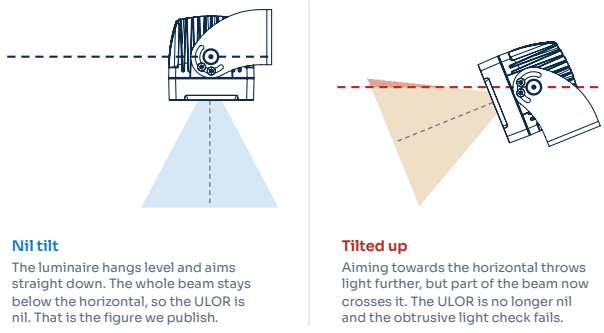
6.6 Tightening torques

Use a torque wrench. Overtightening a stainless bolt in a stainless thread causes galling; undertightening lets it work loose at 6 G.

Connection	Size	Torque
Pivot bolt, aluminium bracket	M8	20 Nm
Pivot bolt, 316L bracket, button head	M12	40 Nm
Lock screw in the arc slot	M6	8 Nm
Foot bolts, aluminium foot, class 8.8	3 × M10	45 Nm
Foot bolt, 316L foot, centre, class 8.8	M12	80 Nm
Foot bolts, 316L foot, slots, class 8.8	2 × M8	20 Nm
Cable gland cap nut, box or 316L housing	M20	2.5 Nm, and dimension L in section 7.6

Torques apply to clean, dry, undamaged threads. For an A4 or 316 bolt in a stainless thread, and on the 316L bracket every bolt is one, use an anti-seize compound and reduce the torque by about a third. Where the hardware comes from another supplier, that supplier's torque takes precedence.

6.7 Aiming and obtrusive light



The bracket tilts the housing about the pivots. What tilting costs you

Nil tilt means the front is vertical and the beam axis is horizontal. In that position the upward light output ratio is nil. On a machine the operator aims where the work is; on a fixed structure near houses or a protected zone the nil tilt figure is what a permitting authority asks for, and the starting point for an assessment against NEN-EN 12464-2 and the NSVV guidance on obtrusive light.

Every degree of upward tilt puts light above the horizontal, and a 69 degree lens crosses it sooner than the spot. Aim from the lighting design; where none is available keep the upward tilt at or below fifteen degrees on a fixed installation and have the result verified.

7 Electrical installation

DANGER, LIVE PARTS

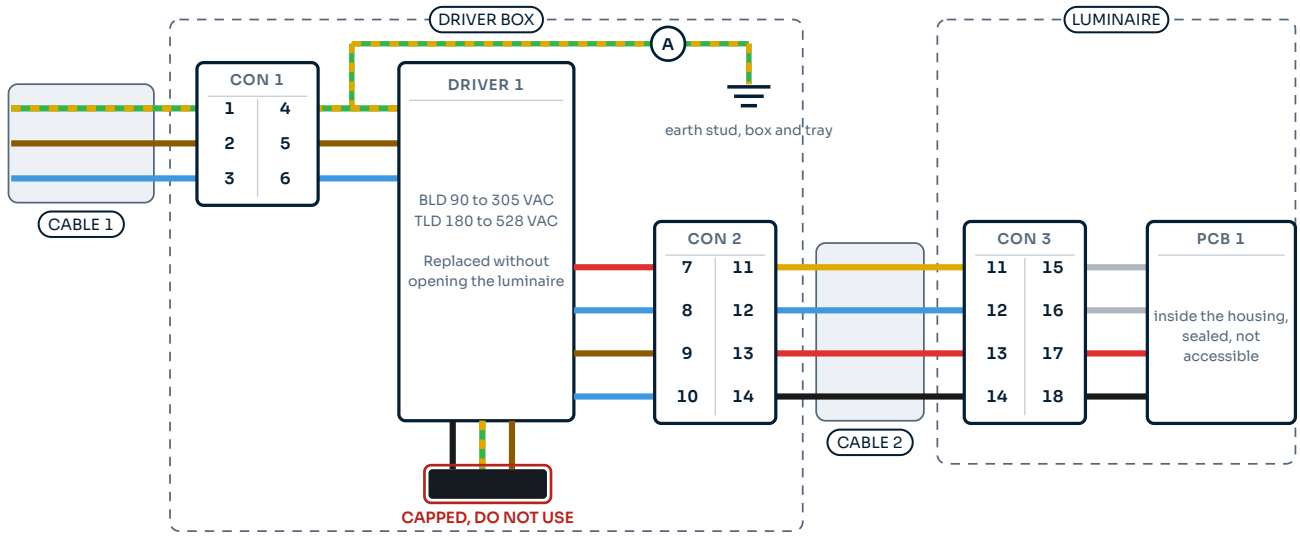
Isolate the supply, secure it against being switched on again, and verify that the circuit is dead before a cover comes off or a connector is opened. Only a qualified person may make the electrical connection.

7.1 Architecture, the AC versions

On PIAC01 and PISS01 the driver sits **outside the luminaire**. Mains arrives at connector 1 in the driver box, the driver feeds connector 2, and cable 2, which on the Piranha is the four core tail, carries the driver output and the temperature signal to the luminaire. That is why a driver fault on an AC Piranha is a ground level job.

ONE DIAGRAM FOR EVERY AC VERSION IN THE RANGE

The diagram below is the same diagram as in the other JEL floodlight manuals: the conductor count, the colours, the connectors and the terminal numbering are shared across the range. On the Piranha the driver is the **BLD075**, and cable 2 is the H07BQ-F tail of the luminaire, 2 × 1.5 mm² for the driver output and 2 × 0.5 mm² for the temperature signal: 0.3 m on the aluminium version, 2.0 m on the 316L version. Connector 3 is inside the luminaire and is not accessible.



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**, part of the driver control lead and **not connected on purpose**. Leave the cap in place and do not use them as an earth, a neutral or a spare core. Adding dimming later is a driver change, done by JEL Products or by a qualified person with the driver documentation.

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 before you rewire anything.

7.2 Conductors, PIAC01 and PISS01

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, the tail	Temperature, plus, 0.5 mm²
12	Blue	CON 2 to CON 3, the tail	Temperature, minus, 0.5 mm²
13	Red	CON 2 to CON 3, the tail	Driver output, plus, 1.5 mm²
14	Black	CON 2 to CON 3, the tail	Driver output, minus, 1.5 mm²
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, THE THIN PAIR IS THE TEMPERATURE PAIR

The two 0.5 mm² cores in the tail, conductors 11 and 12, carry the temperature signal from the luminaire to the driver. **They are not a dimming input.** Dimming enters at the driver, conductors 15 and 16 are inside the luminaire. An installation that leaves the thin pair unconnected leaves the thermal protection disconnected.

Connectors 3 and the board are inside the sealed housing. Rows 15 to 18 are listed so that the numbering matches the other JEL manuals and the production drawing; nothing in those rows is touched on site.

7.3 Circuit breakers

Maximum number of luminaires on one miniature circuit breaker, the manufacturer figure for the BLD075 on an ABB S200 at 220 V. It applies to PIAC01 and PISS01 alike, because the driver is the same.

Driver	B16	C16	C25	D16
BLD075, Piranha 9 AC	11	19	30	32

It is the **inrush** that limits the count on this driver, not the running current: the BLD075 peaks at 66 A with a T50 of 170 microseconds, while the luminaire draws 0.3 A at 220 V. A guide for the engineering phase, not a substitute for the installation calculation.

NOTE

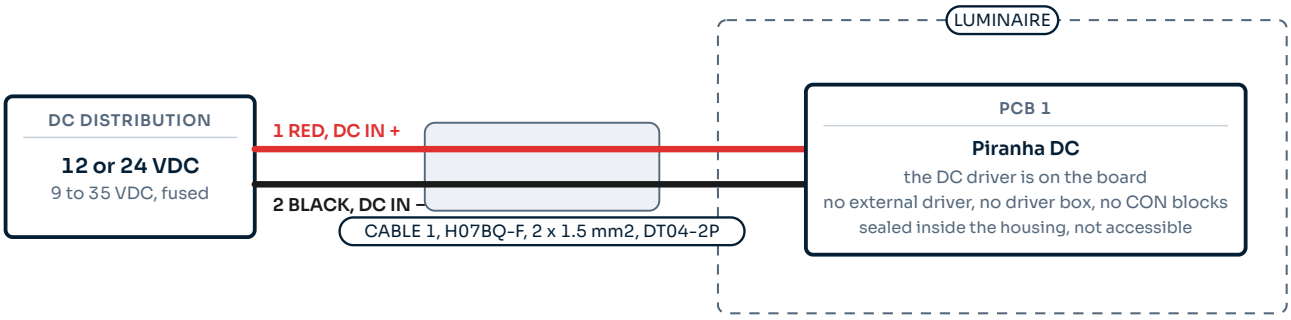
Where a residual current device is fitted, the combined leakage current of the circuit decides the count. One Piranha AC draws at most 0.7 mA.

TWO SUPPLY RANGES

The BLD075 is ordered for 90 to 305 VAC or for 180 to 528 VAC. The second range is the one for a 400 V machine supply between two phases. Check the driver label against the supply before you connect: a 90 to 305 V driver on 400 V is a driver exchange at best.

7.4 Architecture, all DC versions, and the Deutsch connector

The DC versions have their drivers on board. There is no external driver and no driver box. A two core tail leaves the luminaire and ends in a **Deutsch DT04-2P receptacle**; the site cable carries the mating plug, and that is the installation. PIDC02, PIDC01 and the 316L DC versions are wired the same.



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.

Two conductors and a fuse. Red is plus, black is minus, on every DC luminaire in the JEL range

Pin	Tail	Function
1	Red	DC in, plus. 20 to 32 V on the 9, 9 to 35 V on the 6
2	Black	DC in, minus

Receptacle on the tail	Deutsch DT04-2P, two pole, size 16 contacts
Mating plug	Deutsch DT06-2S with wedge lock W2S and two size 16 socket contacts, for 1.0 to 2.0 mm². An accessory, not supplied as standard
Rating	13 A per contact, so the 4.6 A of a Piranha 6 on 12 V is well inside it
Current at 24 V	2.9 A on the 9, 2.3 A on the 6
Current at 12 V	4.6 A on the 6. The 9 is not a 12 V luminaire
Protection	Reverse polarity and surge protected on the board
Fuse	Sized to the cable, per luminaire or per circuit
Dimming	On request, built to order

DANGER, POLARITY AND SUPPLY TYPE

Never connect a DC luminaire to an AC supply. Never reverse the polarity. Never exceed 32 V on a Piranha 9 or 35 V on a Piranha 6. Any of these destroys the luminaire and is covered by no warranty.

WARNING, 20 V IS THE FLOOR ON THE 9

The Piranha 9 DC is a 24 V luminaire with a range of 20 to 32 V. On a 12 V machine, or on a 24 V machine with a flat battery and a long run, it goes out. **For 12 V take the Piranha 6**, which runs from 9 to 35 V. Measure at the connector under load, not at the battery.

FITTING THE MATING PLUG

1. Strip the site cable and crimp the two size 16 socket contacts with the Deutsch crimp tool. A pair of pliers does not make a Deutsch crimp.
2. Push the contacts into the DT06-2S until they click, red to 1 and black to 2, and fit the wedge lock.
3. Mate the plug to the receptacle on the tail until the latch clicks, and pull to check.
4. Clamp the cable within 300 mm of the connector, so that vibration works on the clamp and not on the contacts.

A DT04 with grit in the cavities does not seal. Keep the cap on until the plug goes on.

7.5 Extending the tail, and where the driver goes

The aluminium Piranha leaves the factory with a tail of 0.3 m and the 316L version with 2.0 m. On a machine the DC tail plugs straight into the harness. On an AC installation the tail rarely reaches the driver, so the tail is extended to the driver box, and how that joint is made decides whether the luminaire stays IP69K.

1. **Choose the driver position first, not last.** Outside the wash zone, outside the engine bay, within minus 40 to plus 50 degrees Celsius ambient, and reachable. Everything else follows from that choice. On a fixed structure the DRB-1 near the luminaire is the usual answer; in a wash zone the 316L Power Box.
2. **Where the tail reaches the box, land it in the box.** The tail enters the DRB-1 or the Power Box through its own gland and lands on connector 2, four cores, per section 7.2. That is the cleanest installation: one gland, no joint.
3. **Where it does not, make the joint in an IP67 junction box.** The 0.3 m tail and the site cable to the box, four cores of the same colours, meet in a sealed box within reach of the tail, with a gland for each cable and dimension L per section 7.6. Never in a heat shrink splice on a machine that is washed.
4. **Keep the pairs together.** The 2 × 1.5 mm² carry the driver output and the 2 × 0.5 mm² carry the temperature signal. Extend both pairs; a run with the thin pair left out has no thermal protection.
5. **Size the extension on section 7.7.** The driver output is 50 VDC at 1.4 A, so 1.5 mm² goes to about 60 m; the thin pair carries no current worth mentioning and follows the power pair in the same cable.
6. **Earth the driver box and the tray.** The luminaire is Class II; the box is not.

> **DANGER**
> Never put the driver in the wash zone, in the engine bay or above plus 50 degrees Celsius, and never extend the tail with a cable that is not rated for the position. A driver failure in an engine bay is a fire risk as well as a light failure.

THE DRIVER AND ITS BOX, AC VERSIONS

Driver	BLD075, 131 × 68 × 33.5 mm, 650 g, 90 to 305 or 180 to 528 VAC. Fits the DRB-1
Driver ambient	minus 40 to plus 50 °C, Tc to plus 90 °C
DRB-1	One driver up to 320 W, 276 × 194 × 86.5 mm, 4.2 kg, IP66 and IP67. Aluminium, outside the wash zone
316L Power Box	Power Box BLD075, solid 316L, 260 × 130 × 80 mm. The same driver, where the box sits in the same wash down or salt zone as the luminaire
Bare driver	Supplied bare as standard, for an existing enclosure or a tray, with both connections inside an IP67 junction box
Drivermount bracket	A 316L bracket that carries the driver behind the luminaire on the 316L version, on request

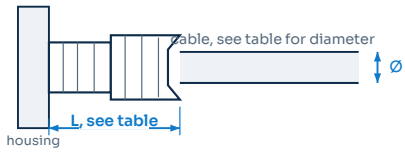


DRB-1 driver box. One driver up to 320 W, so it takes the BLD075 of a Piranha with room to spare

Position the driver by the **ambient**, not by its case temperature. The DC versions have none of this: there is nothing outside the luminaire at all.

7.6 Cable glands

The aluminium Piranha has no gland to tighten on the luminaire: the tail is moulded in at the factory. The glands you meet are the M20 × 1.5 in the rear face of the 316L version, which is factory tightened and not touched in service, and the glands of the driver box and the junction box where the tail is extended. Tighten a cap nut to 2.5 Nm and to the dimension in the table, measured over the gland. That is a more reliable instruction on a boom than a torque figure alone. Then apply heat shrink tubing and self amalgamating tape over the gland on anything that is washed. Dimension L runs from the face of the box to the end of the cap nut, with the cable fitted; it is not the thread length.



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 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
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 Piranhas, Snappers and Barracudas on it works to one set of figures. The rows in bold are the ones that apply to the Piranha: the four core tail of the AC version, 2 × 1.5 plus 2 × 0.5 mm², where it enters a driver box or a junction box, and the H07RN-F 3G1.5 recommended for the mains side of the driver box. The two core DC tail, 2 × 1.5 mm² at about 8 mm, works to the same 20.4 mm in an M20 × 1.5-H gland where a DC luminaire is landed in a box instead of on its connector. 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

On a Piranha the cable beyond the tail is supplied by the machine builder or the installer, so the cross section is a decision and not a given. The rule is that the voltage drop between the source and the luminaire must not exceed **2 V**. On the AC versions that is a normal mains calculation at 0.3 A and the cable is never the limit; on DC it is.

DC VERSIONS AT 24 V, ONE LUMINAIRE

Cross section	Piranha 9 2.9 A	Piranha 6 2.3 A
1.5 mm²	29 m	37 m
2.5 mm²	49 m	62 m
4 mm²	79 m	99 m
6 mm²	118 m	149 m
10 mm²	197 m	249 m

PIRANHA 6 AT 12 V, ONE LUMINAIRE

Cross section	Piranha 6, 4.6 A
1.5 mm²	9 m
2.5 mm²	15 m
4 mm²	24 m
6 mm²	37 m
10 mm²	62 m

NOTE, THE 12 V TABLE USES A 1 V LIMIT

At 24 V a drop of 2 V is 8 per cent. At 12 V the same 2 V would be 17 per cent, so the 12 V lengths are calculated at **1 V**. On a 12 V machine with a long run to the boom tip, the answer is a thicker cable or a 24 V feed. **Several luminaires on one cable: divide the length by their number**, as a first estimate.

AC VERSIONS, THE EXTENDED TAIL

Driver output	50 VDC at about 1.4 A. An extension in 1.5 mm² stays inside 2 V to about **60 m**, in 2.5 mm² to about **100 m**. The thin pair follows in the same cable

All lengths are the maximum at the stated drop, copper, two conductors, one way, rho 0.0175. Where the installation calls for a tighter limit, size the cross section on that.

7.8 Making the connection

DANGER, READ THE LABEL FIRST

On PIAC01 and PISS01 **mains goes to the driver and only the driver output reaches the luminaire**. On every DC version the luminaire is a 20 to 32 V or a 9 to 35 V device and mains destroys it instantly. The AC and the DC Piranha 9 look the same from the front; the tail tells them apart.

1. Confirm the circuit is dead and secured, and on a machine that it is locked out.
2. **DC versions:** fit the mating DT06-2S to the site cable per section 7.4, red to 1 and black to 2, check the polarity with a meter at the plug, and mate it to the tail until the latch clicks.
3. **AC versions:** mount the driver or the driver box outside the wash zone and the engine bay, in an ambient between minus 40 and plus 50 degrees Celsius, reachable. Earth the box, the tray and any metal enclosure.
4. **AC versions:** land the tail on connector 2 in the box, or extend it in an IP67 junction box per section 7.5. Use end sleeves. One conductor per terminal. Keep the thin pair with the power pair and the mains conductors on their own side of the box.
5. Tighten every gland to 2.5 Nm and to dimension L in section 7.6, then seal with heat shrink tubing and self amalgamating tape on anything that is washed.
6. Support and clamp the tail and the site cable with a drip loop below the entry, so that no load reaches the gland or the connector. On anything that moves, clamp within 300 mm.
7. Check that no conductor is pinched under a cover and that every gasket sits in its groove all the way round.

MACHINE BUILDERS

Fuse	Per luminaire or per circuit, sized to the cable, 5 A on a single Piranha 9 at 24 V is typical
Switching	On the supply. A relay that chatters toggles a bi-colour luminaire, section 9.3
Load dump and cranking	The board is surge protected, and the Piranha 6 rides through a 9 V crank. The Piranha 9 goes out below 20 V and comes back by itself

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, bracket, tail, connector.
- [ ] Supply type and voltage checked against the label: mains to the driver on an AC luminaire, 20 to 32 V or 9 to 35 V measured **under load at the connector** on a DC luminaire.
- [ ] DC only: polarity checked at the plug, red to 1 and plus, black to 2 and minus. Plug latched and the cable clamped.
- [ ] AC only: all four cores of the tail through to connector 2, the driver outside the wash zone within plus 50 °C ambient, the box earthed and closed, driver range matching the supply.
- [ ] Foot: three bolts at torque, locked and marked. Pivots at torque, both lock screws seated in the same position.
- [ ] Secondary retention fitted where section 6.5 requires it, and on anything that moves.
- [ ] Tail and cable supported with a drip loop and clamped, with no weight on the gland or the connector.
- [ ] Nothing within 75 mm of the fin field, and nobody working within the hazard distance of section 4.3.

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 or the operator says, from beside the luminaire.
4. Correct the aim if required: switch off, slacken both pivots and lock screws, adjust, seat both lock screws in the same position, torque, switch on and check again. Pan on the foot the same way with the slot bolts.
5. Record the installation: both label codes, the serial number, the position on the machine or the site, the optic, the colour temperature, the tilt and the pan, the date and the installer.

8.3 Handover

Leave this manual with the machine or site documentation, together with the record from step 5 of section 8.2.

WARNING

Never adjust, open or work on the luminaire while it is energised, and never on a machine that is not locked out. Isolate first, every time.

NOTE, MEASURE THE VOLTAGE AT THE LUMINAIRE

On a machine the battery may read 24.6 V while the lamp on the boom tip sees 20 V under load, because of the run and the other consumers on the same feed, and at 20 V the Piranha 9 is on its floor. **Measure at the connector with everything running**, not at the battery with the engine off.

NOTE, MARK THE OPTICS ON THE DRAWING

Mark the position and the optic of each luminaire. A 38 degree and a 69 degree lens look identical from the front, and a spot where the wide lens belongs is glare to the man on the ground.

NOTE, A BI-COLOUR LUMINAIRE ON FIRST POWER UP

A bi-colour build comes up in its default colour, which is normally the white one. Section 9.3 explains how it is switched, and it is worth demonstrating that to the operator at handover.



The Piranha fitted and aimed. The first weeks on a machine are what show whether the lock screws and the slot bolts were tightened properly

9 Operation and dimming

9.1 Normal operation

A Piranha needs no operator action in normal service. It switches with the circuit and reaches full output immediately, with no warm up and no restrike delay, and it may be switched as often as the machine requires. At minus 45 degrees Celsius it starts at full output. There is no lamp to change and nothing to adjust from year to year.

9.2 What each version accepts

Version	What it accepts
PIAC01, PISS01	**0 to 10 V, PWM or DALI-2**, at the remote BLD075, on a driver ordered with dimming. Or a fixed level set over **NFC** on the driver without power. A lower wattage is a driver setting and is ordered as a suffix
PIDC02, PIDC01 and the 316L DC versions	**On request.** The drivers are on the board, so dimming is a build option and not a site fitted accessory. A standard DC Piranha is a switched luminaire
Bi-colour, BIC	4000 K with amber 2200 K, switched with the supply. See section 9.3. Available on every version

9.3 Bi-colour and amber

A bi-colour Piranha carries two colours in one housing and switches between them **on the supply itself**, using how long the luminaire has been off. There is no second control line and no separate switch on the luminaire. On a machine that is the fog, dust and night regime: white for the work, amber when the dust comes up.

What you do	What happens
Switch on after more than 5 seconds off	The luminaire comes up in its **default colour**, normally the white one, whatever colour it was showing before
Switch off and back on within 5 seconds	The luminaire changes to the **second colour**, the amber one
Repeat the short cycle	It toggles back and forth between the two colours, as often as you like
Several luminaires out of step	Switch the whole group off, **wait 30 seconds**, and switch on. All of them reset to the default colour and are back in step

Because the switching is on the supply, a bi-colour luminaire fed from a relay that chatters, or from a machine circuit that dips at cranking, can change colour on its own. Where the colour has to be dependable, feed it from a clean switched circuit. Amber 2200 K on its own is available on every optic, for light sensitive surroundings such as a quay near a nature area.

NOTE, DIMMING AND THE FLUX FIGURES

Every luminous flux figure in chapter 3 is the figure at full output. A dimmed luminaire delivers proportionally less light and slightly better efficacy. If the design relies on a dimmed level, the lighting calculation states that level.

9.4 What the luminaire does by itself

- **Thermal foldback.** The luminaire measures its internal temperature and reduces the current as it rises. On overheating it switches off and comes back when it has cooled. On the AC version that runs through the temperature pair in the tail.
- **Reverse polarity protection.** On DC, a reversed supply does not damage the luminaire and does not light it.
- **Surge protection.** On every version, on the board on DC, and on the AC driver 6 kV line to line and 10 kV line to earth.
- **Undervoltage.** The Piranha 9 DC shuts down below 20 V and restarts by itself when the supply returns; the Piranha 6 runs down to 9 V. The AC driver behaves the same below its input range.

9.5 What the luminaire does not do

- It does not carry an emergency function. See section 4.9.
- It does not accept a control protocol that is not in its build. Sending DALI to a 0 to 10 V driver has no effect, and a DC luminaire has no control input at all.
- It does not share a driver. Every AC Piranha has its own BLD075, programmed for it.

10 Maintenance

DANGER

Isolate the supply and secure it before any maintenance work, and lock out the machine. Let the luminaire cool to hand temperature before touching it.

10.1 Interval

Environment	Interval
Fixed structure, workshop, walkway	Once a year
Machines, cranes, vehicles and vessels	Every machine service, and check the foot bolts, the lock screws and the retention every time
Mining, quarrying, dust or mud	Every service, clean the fins at every wash
Offshore, deck and salt spray	Every three months on aluminium, every six on 316L
Food production and washdown	Weekly, daily on heavy soiling, and after every run on a high fat load. Protocol in section 10.5

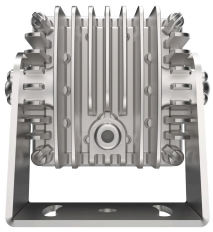
Too little cleaning shortens the life of the product, most of all where the fins fill with mud or grease.

10.2 Inspection

- [ ] Front, housing and seals: impact damage, cracks, a scratched polycarbonate front, a chipped glass edge, corrosion on aluminium, iron staining on 316L.
- [ ] Three foot bolts tight. Retighten to the torque in section 6.6.
- [ ] Pivots tight, both lock screws still seated in the same position in the arc slots.
- [ ] Bracket and structure sound: no cracks at the bend of the foot, no cracked weld under it.
- [ ] Secondary retention present, intact and correctly attached.
- [ ] Tail and site cable: chafe, damage, intact insulation, no exposed conductor, drip loop still below the entry, clamp still holding.
- [ ] Connector latched and clean, or the gland tight and the box cover bolts tight, no moisture trace at a gasket.
- [ ] Fins on the back clear of mud, dust and grease, the 75 mm behind them open.
- [ ] Nothing fitted, stacked or welded within 75 mm of the luminaire or in the beam.
- [ ] Tilt and pan unchanged since installation.
- [ ] **AC only:** the driver is still outside the wash zone and its box is dry inside.

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 of the 316L Piranha. This is what has to stay clear

WHY THE FINS MATTER

The Piranha has no fan, no vents and no moving part. Everything the LEDs produce leaves through this surface, and the housing is sealed precisely so that nothing gets in. Mud on the fins raises the junction temperature, and the lifetime figures in chapter 3 assume a clean heat sink. **On a haul truck the fins fill in a shift**, so the fins are cleaned at every wash, and the wash is done with the luminaire cold.

CAUTION

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

NOTE, 316L AND IRON STAINING

Brown spots on a 316L housing are almost always iron picked up from a grinder, a steel brush or a steel bench, not the stainless corroding. Remove them with a stainless cleaner or a passivating paste, never with a steel brush, which puts more iron on.

10.4 Cleaning, on a machine and in a normal environment

1. Switch off the supply, lock out the machine and let the luminaire cool.
2. Remove loose mud and debris with water and a soft brush.
3. Clean the housing and the front with a soft cloth or sponge, water and a mild detergent.
4. Clear the fins on the back, then dry the front with a soft cloth. A scratched polycarbonate front shows in the beam, so no grit under the cloth.

CAUTION

Do not use solvents, caustic cleaners or abrasives. Do not aim a high pressure lance at the connector, at the cable entry or at a box cover. The Piranha is rated IP69K, but the connector and the gland are the places where pressure does damage, and the machine around it may not be IP69K at all.

10.5 Cleaning, washdown areas and food production

In a food or washdown area the Piranha is 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 and it is the one a HACCP file asks for. It applies to the aluminium and the 316L version alike.

BEFORE YOU START

- Switch off the supply to the luminaire.
- Let the luminaire cool to hand temperature.
- Inspect the front, the seals, the connector or the gland, 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
Steam	No steam cleaning
Pressure	No high pressure above 80 bar

IP69K is what makes this possible. Every Piranha carries IP69K, the high pressure steam jet test, and that is what a wash-down regime actually applies. Chlorine on an aluminium housing takes the coating; on 316L it pits the surface. That is why the chemistry row is there.

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 connector, the cable entry or a box cover.
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 front seal or the connector for any length of time.
4. **Rinse.** Rinse the luminaire with clean water.
5. **Inspect.** Check the front, the seals, the fixings and for any sign of moisture inside.

PREVENTING DAMAGE

WARNING, THERMAL SHOCK

Never clean hot glass with cold water. **Do not apply water at all to a luminaire warmer than plus 60 degrees Celsius.** On the 316L version with its glass front the front can break, towards whoever is holding the lance.

Cleaning outside these limits can damage the front, 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 opening a box or a connector. Most faults reported to us on this product turn out to be the supply voltage at the boom tip, a connector, or a luminaire that was connected as the wrong version.

Symptom	Applies to	Probable cause	Action
No light at all	All	Supply off, breaker tripped, fuse blown, or a break in the harness	Check the breaker or fuse and measure the supply at the connector or at connector 2
No light, supply present at the connector	DC	Reversed polarity, a contact not seated in the plug, or the on board driver failed	Check red to 1 and black to 2, check that both contacts click in the plug. Otherwise the luminaire is exchanged, section 12.2
No light, supply present at the driver	AC	Driver failed, or the temperature pair not connected so the driver reads an open circuit	Check all four cores of the tail through to connector 2, then replace the driver at ground level, section 12.3
Goes out when the machine works, comes back at idle	9 DC	Supply below 20 V at the luminaire under load: long run, thin harness, weak battery	Measure at the connector under load. Increase the cross section, shorten the run, or use the Piranha 6 on a 12 V machine, section 7.7
Luminaire destroyed on switch on	DC, AC tail	Mains connected to a DC luminaire or to the tail	Not a warranty case. Read the label, section 2.5, and replace the luminaire
Breaker trips on switch on	AC	Too many drivers on one breaker for the inrush	Reduce the number per breaker or change the characteristic, section 7.3
Residual current device trips	AC	Combined leakage current of the circuit	Split the circuit or size the device for 0.7 mA per luminaire
Dims back by itself	All	Thermal foldback: ambient above plus 50, fins packed with mud, or mounted against an exhaust	Check the ambient, clear the fins, move the luminaire
Flicker or unstable output	All	Loose contact in the plug, a corroded connector, or a dimming signal picking up interference	Reseat the contacts, replace a corroded plug, separate the dimming conductors from the mains conductors
Luminaire stays at partial output	AC	Dimming input at a low level, or an NFC setting from a previous project	Check the control signal and the driver setting, section 9.2
Control signal does nothing	All	That protocol is not in this build, or the luminaire is DC	Check the quotation against section 9.2
Changes colour on its own	Bi-colour	The supply is being interrupted for less than 5 seconds: a chattering relay or a dip at cranking	Feed it from a clean switched circuit, section 9.3
Output visibly lower than the design	All	Dirty or scratched front, or blocked fins	Clean per section 10.4 or 10.5, then measure again. A sandblasted polycarbonate front is a return
Glare to other operators	All	Wrong optic in that position, or the luminaire has rolled upward	Compare the article code with the specification, re-aim, seat both lock screws
Moisture inside the luminaire	All	Chipped glass edge, a luminaire rested on its front, or a lance held on the front seal	Do not open it. Return to JEL Products, section 12.4
Water in the plug	DC	Wedge lock missing, a contact seal missing, or the receptacle left open on a washed machine	Dry the cavities, refit the plug complete with wedge and seals, cap anything unmated
Luminaire has rolled out of aim	All	Lock screws not seated, or pivots loosened by vibration	Re-aim, seat both lock screws in the same position and retighten to torque
Luminaire came loose	All	Centre bolt only, a cracked weld under the foot, or no secondary retention	Refit per chapter 6 on three bolts with a rated safety cable and a plate under the foot
Brown spots on a 316L housing	316L	Iron contamination from a grinder or a steel brush	Clean with a stainless cleaner or passivating paste, section 10.3. Not a warranty case
Early driver failure, repeated	AC	The driver ambient is above plus 50 degrees Celsius, or the driver is in the engine bay	Measure the ambient at the driver. Relocate it, 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 the machine or the 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 Piranha is built so that nothing needs to be reached in service, and that cuts both ways. On the AC versions the driver sits outside the housing and is replaced at ground level. On the DC versions it is on the board: there, a driver fault is a luminaire exchange, and the Deutsch connector is what makes that exchange a five minute job.

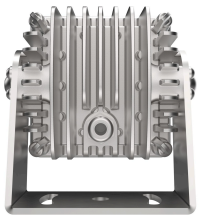
12.1 What is replaceable on site

Part	Reference	Note
Remote driver, AC	BLD075	131 × 68 × 33.5 mm, 650 g, 90 to 305 or 180 to 528 VAC. Replaced without opening the luminaire. Quote the version and the supply range
Driver box	DRB-1	276 × 194 × 86.5 mm, 4.2 kg, IP66 and IP67. One driver up to 320 W
316L Power Box	Power Box BLD075	Solid 316L, 260 × 130 × 80 mm, where the box sits in the same wash-down or salt zone as the luminaire
Bracket	On request	316L, complete with pivot bolts and lock screws. Aluminium and 316L versions have different brackets, section 3.2
Pivot bolts and lock screws	On request	Supplied as a set per luminaire, 316L
Mating connector, DC	DT06-2S	With wedge lock W2S and two size 16 contacts. The accessory of section 7.4
Connector cap	On request	For a receptacle that is unmated on a washed machine
Safety cable	On request	1 m, rated to the luminaire weight. Not supplied as standard, see section 6.5
Cable gland, 316L version	M20 × 1.5, 316L	4 to 8 mm. Factory fitted; replaced by JEL Products, because it seals the housing

Brackets, connectors, safety cables and glands are supplied against a specification rather than a shelf article number, because they follow the version. State both codes from the type label and we issue the right part.



DRB-1 driver box. One driver up to 320 W, so it takes the BLD075 of an AC Piranha with room to spare



The 316L Piranha from the rear: the gland in the centre of the fin field is the only entry into the housing, and it is not opened in service

Quote the article code and the internal production code from the type label in any spare part order, see section 2.5. A BLD075 for 90 to 305 V does not run on a 400 V supply, and a driver programmed for a lower wattage runs the luminaire at that wattage.

12.2 What is not replaceable on site

DANGER

Do not open the housing, do not remove the front or the front frame, and do not cut the tail. 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 lenses are fitted at the factory behind the front. A change of beam angle is a change of luminaire.
- **On a DC luminaire the driver is on the board** and is not a field part. A driver fault means the luminaire is exchanged on its connector. That is the trade for having nothing outside the housing on a machine.
- The front and its seal are not replaceable in the field. A cracked, sandblasted or chipped front returns to JEL Products.
- The tail is moulded into the housing. A damaged tail or receptacle is a return, not a splice.
- 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

1. Isolate the supply and secure it. Verify the circuit is dead. Let the driver cool.
2. Open the driver box or the junction box the bare driver sits in, 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 BLD075 of the same supply range and programmed for the same wattage, 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 machine or 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 the machine or the site, the date of installation and what you have already checked from chapter 11.
3. Pack the luminaire in its original box, standing on its foot, front protected, never resting on the lens. Leave the bracket on it and the cap on the connector.
4. State what the luminaire was doing when it failed: the machine, the supply voltage measured at the connector, and whether it was washed that day.

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 front seal and the entry	Whether water got in, and from where
The board	Overvoltage, reverse polarity or mains on a DC luminaire leave a signature
The front	Impact, sandblasting, thermal shock or a chipped edge
The bracket	Whether three bolts were used, and whether a retention was fitted
The driver	Case temperature history and failure mode, on the AC version



Piranha 6. A DC luminaire returns on its connector, with the bracket on it

13 Removal and disposal

13.1 Taking the luminaire out of service

1. Isolate the supply and secure it, and lock out the machine. Verify the circuit is dead, then unmate the Deutsch connector, or disconnect the tail at the driver box on an AC version.
2. Cap the receptacle, so the connector stays clean in storage.
3. Release the secondary retention last, not first.
4. Undo the three foot bolts with the housing held throughout. Leave the bracket on the luminaire.
5. Label the luminaire with its position and article code before it leaves the machine or the site. If it is to be reinstalled, pack it in its original box, standing on its foot and never resting on its lens.

WARNING, WORKING AT HEIGHT

Removal is the moment a luminaire falls. On a boom or a mast have the second person in place before you loosen anything, and keep the area below clear. A 5.0 kg housing that comes off two of its three bolts swings before it drops.

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 or 316L housing and the 316L bracket are recyclable materials; the LED board, the driver of an AC version, the front and the cable go to electronic waste, glass or plastics. Separate the housing from the electronics at the recycler rather than in the field. The Piranha contains no mercury and no lead above the RoHS limits.

Glossary

Arc slot	The curved slot on each bracket arm in which the lock screw fixes the tilt
Beam angle	Full angle between the directions where the intensity has fallen to 50 per cent of the peak. The field angle uses 10 per cent
BIC	Bi-colour build, 4000 K with amber, switched from the supply
C5, CX	Corrosivity categories per ISO 9223. CX is the extreme class, offshore and permanent salt
Cd · A	Drag coefficient times frontal area, the figure used for wind load
CRC III	Corrosion resistance class of 316L per EN 1993-1-4
CRI, Ra	Colour rendering index
Crane Light Director	Steerable boom lighting system for mobile cranes that carries the DC Piranha
DALI-2	Addressable digital lighting control protocol, on the AC driver
DT04-2P, DT06-2S	The Deutsch two pole receptacle on the tail and its mating plug
Flare	The 14 × 46 degree asymmetric optic
Hazard distance	The distance beyond which the luminaire is Risk Group 1 per IEC/TR 62778
IK	Impact rating per IEC 62262
L90B05	90 per cent of initial output retained by 95 per cent of the units
MCB	Miniature circuit breaker
NFC	Near field communication, used to set the driver without power
NTC	Negative temperature coefficient, the temperature sensor in the luminaire
Pan	Rotation of the foot about the centre bolt, 30 degrees
PREN	Pitting resistance equivalent number, about 24 for 316L
PWM	Pulse width modulation, a dimming method
Tail	The factory fitted cable on the luminaire, 0.3 or 2.0 m
Ta, Tc	Ambient temperature, and the case temperature of the driver
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 Piranha Series is named in its product scope as **Piranha Series, PI-9 and PI-6, aluminium and 316L stainless steel**, 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 60598-2-5 floodlights. 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. On a machine, the luminaire is a component and the machine builder's declaration under the Machinery Directive covers the installation.

14.2 Warranty

Family	Housing	Electrical and seals
Piranha 9 and 6, aluminium	5 years on the complete luminaire	
Piranha SS, 316L	20 years	5 years on the electronics, the components and the seals
Remote driver, AC	5 years, within the driver ambient of section 7.5	
Bracket	5 years, 20 years on the 316L version with the housing	

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 or the tail cut, where mains has been connected to a DC version or to a tail, where the supply was outside the range on the type label, where the temperature pair of an AC version has been disconnected, where the driver has been installed in the wash zone, the engine bay or above plus 50 degrees Celsius ambient, where the luminaire has been mounted on fewer than three bolts, 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
Piranha datasheet, cast aluminium, Rev. 1, 20 August 2026	Product page
Piranha SS datasheet, 316L stainless steel, Rev. 1, 20 August 2026	Product page
Photometric files per optic, EULUMDAT and IES	Product page
Dimensioned drawings, DXF and STEP	On request
Crane Light Director datasheet and instruction	Product page, on request
Driver box manual, DRB-1 and 316L Power Box	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 the DCbright Operating Instruction Piranha Series of 22 April 2024. Where the older document and this manual disagree, this manual applies.

Four points are corrected against that document: the ambient range is **minus 45 to plus 50 degrees Celsius**, not minus 40; the expected life is stated as **TM-21 L90B05 above 360,000 h at 50 degrees Celsius**, not as the LM80 figure of 60,500 h printed there; the wide optic is **69 degrees**, as measured, not 70; and the hazard distance is given **per optic in section 4.3**, from 0.7 to 5.2 m, instead of the single figure of 11.7 m for the series, which does not follow from the photometry. Two points are stated more precisely: the 2024 instruction lists a driver box in the package contents of every AC version, where the driver is supplied bare unless a box is ordered; and it names the Dual Driver Mount and the Drivermount Bracket as accessories, which still exist as custom items, supplied on request without a catalogue code and not as standard.

> **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 machine 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, both datasheets and the current version of this manual.

jelproducts.nl/en/products/piranha

DOCUMENT

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