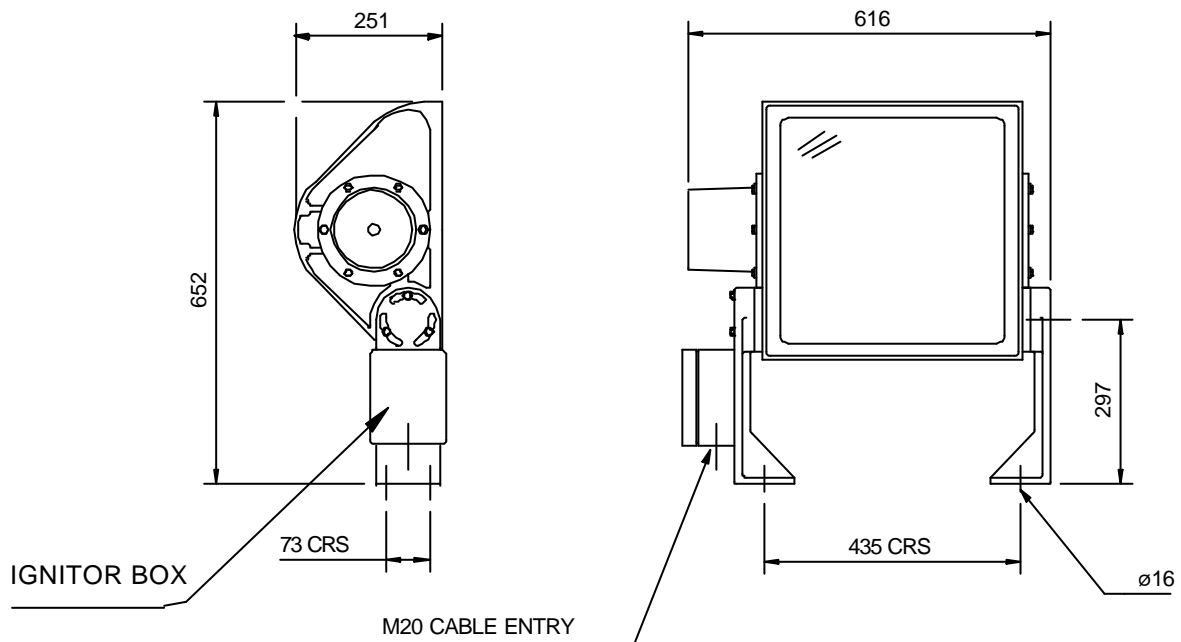


INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

503 High Wattage Industrial Floodlight

Important : Please read these instructions carefully before installing or maintaining this equipment. Good electrical practices should be followed at all times and this data should be used as a guide only.



WEIGHT: 25kg

WINDAGE AREA: 0.22m²



0.0 Specification

Area Classification	Non Hazardous
Standard	EN 60598-1 : 2000
Ingress Protection	IP66 and IP67 to BS EN 60529

CE Mark



The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 1994", "The Electromagnetic Compatibility Regulations 1992", the "Waste Electrical and Electronic Equipment Regulations 2006" and the "Equipment and Protective Systems intended for use in Explosive Atmospheres Regulations 1996". [This legislation is the equivalent in UK law of EC directives 73/23EEC, 89/336/EEC and 2002/96/EC respectively].

1.0 Introduction - 503 High Wattage Floodlight

The 503 series of Industrial floodlights are designed for area lighting applications. The maximum ambient temperature is as shown. The unit is used in conjunction with a 502 series control gear box.

Note : *Lamp ranges and ambient temperature ratings are as indicated in TABLE 0.*

2.0 Storage

Luminaires and control gear boxes are to be stored in cool dry conditions preventing ingress of moisture and condensation.

Any specific instructions concerning emergency luminaires must be complied with.

3.0 Installation and Safety

3.0.1 General

There are no health hazards associated with this product whilst in normal use. However, care should be exercised during the following operations. Installation should be carried out in accordance with good electrical procedure and local code of practices.

In the UK the requirements of the '*Health and Safety at Work Act*' must be met.

Handling and electrical work associated with this product to be in accordance with the '*Manual Handling Operations Regulations*' and '*Electricity at Work Regulations, 1989*'. Your attention is drawn to the paragraphs (i) 'Electrical Supplies', (ii) 'Electrical Fault Finding and Replacement' and (iii) 'Inspection and Maintenance'. The luminaires are Class 1 and should be effectively earthed.

The luminaires are quite heavy and suitable means of handling on installation must be provided.

The information in this leaflet is correct at the time of publication. The company reserves the right to make specification changes as required.

3.1 Special conditions for Installation.

3.1.1 Special conditions for safe use

- 1 The method of cable entry shall be such as to retain the ingress protection properties of the luminaire. In particular, if conduit entry is used, a stopper gland shall be inserted in the conduit.
- 2 High pressure sodium lamps shall be used only in conjunction with ballasts which limit the power input to a lamp to its rated value, when operating at the rated supply voltage. The ignitor circuit shall not produce a pulse voltage in excess of 4.5kV peak.

Note: *Unless authoritative information to the contrary is available from the manufacturer of a particular lamp, it must be assumed that the use of a lamp with an internal ignitor will infringe this requirement.*

- 4 For luminaires fitted with high pressure mercury vapour lamps or tungsten halogen lamps, the cable from the luminaire to the adjacent leg mounted junction box or the control gear box shall be suitable for 150°C (Silicone Rubber or better).
- 5 For luminaires fitted with high pressure sodium lamps, the cable from the luminaire to the adjacent leg mounted junction box or the control gear box shall be suitable for 120°C and shall comply with one of the following :
 - a) Glass braided cores (300/500V grade to Table 10 of BS 6500), formed in a 3-core cable with an outer sheath selected from Table 8 in BS 6500.
 - b) 450/750V grade cable to Table 8 in BS 6500 but with the thickness of the outer sheath increased to approximately 1½ times the value given in the table.
- 6 With the exception of Item 5a), the cores of the incoming cable shall be sleeved with the glass braided sleeving provided by the manufacturer.

Note : *The cable standards quoted are now obsolete or superseded by later editions. We can interpret the cable requirements as 150°C or 120°C, as appropriate. For HPS luminaires, the cable carrying the ignition pulse should be 600/1000V rating.*

3.2 Tools

3mm and 5mm flat blade screwdriver.
14mm and 15mm A/F spanners.
Suitable spanners for installing cable glands.
Pliers, knife, wire strippers/cutters.

3.3 Electrical Supplies

The discharge lamp luminaires are supplied from separate 502 series control gear boxes. The installation and operating instructions for these boxes are dealt with in a separate leaflet.

The supply voltage and frequency should be specified for the control gear box when ordering. The Tungsten Halogen luminaires are suitable for lamps in the range 220/240V ac and dc. The correct lamp for the supply must be used. Incandescent lamps must be selected for the supply voltage. Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the fitting. A maximum voltage variation of +/-6% on the nominal is expected. (The safety limit for operation is +10%). Luminaires should not be operated continuously at more than +6%/-10% of the rated supply voltage of the control gear or tapping. The user must determine the **actual** underlying site supply and purchase or adjust accordingly. **Care is needed in connecting to the nominal 230V UK public supply.**

In some cases, the control gear boxes have multi-tap control gear which can be set to a range of 50 and 60Hz cycle voltages. The tappings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in a high or low voltage section of the system, an appropriate voltage tap should be selected to obtain the best lamp performance, but care must be taken to log or mark the equipment so that the tappings can be reset if the equipment is re-located. If in doubt, tappings should be set on the high side.

For Tungsten Halogen sources, the voltage drop calculation will be made to cover the voltage drop from the main supply point.

In the case of the HPS lamp the ignitor is fitted in a box attached onto the foot mounting bracket. In this case, a control gear box *without* an ignitor is ordered to supply the luminaire. A calculation can then be made to cover the voltage drop between the control gear box and the luminaire. 20V maximum nominal drop is acceptable for Tungsten-Halogen, 10V maximum drop is desirable for HPS. The lamp power will be reduced. In all cases, the calculation is made on the lamp current, not the corrected circuit current.

The HPS circuit uses a SIP (superimposed pulse) ignitor. This means there are only two connections to the choke and the tap selection is obvious.

When the construction site supply is different to that of the service location, the tappings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

3.4 Lamps

The lamps are of a standardised type and there is no preference between make and colour. When fitting lamps, a check should be made that the lamp steady assembly does not become solid before the access cover has been fully bolted down. There may be some variation in length on the 1000W SON/T lamps available. In the later models, the length variation is catered for by a lamp steady using a spacer. This spacer can be put either on the stem or inside the steady cup to allow for a 2mm shift in the steady spring compression range. The assembly is available for retrofit for older models.

Care must be taken to fit the correct lamp in order that it will operate properly, maintain the certification conditions and obtain the design photometric performance.

HPS lamps should be replaced shortly after they do not light. One indication of the end of life for HPS lamps is "cycling", where the lamp goes out and then re-ignites after a minute or so interval. If discharge luminaires are burnt continuously, they should be switched off occasionally. This allows old lamps to fail to re-ignite, reducing the possibility of them becoming diodes with detrimental effects to the control gear.

The above information is current at the time of preparation. The development of lamps and control gear is ongoing and detailed advice on the lamp performance can be obtained from the lamp supplier.

Note : *HPS circuits should not be energised without the lamp fitted.
HPS lamps with internal ignitors must not be used.*

3.5 Mounting

Luminaires should be installed where access for maintenance is practical and in accordance with any lighting design information provided for the installation. This will usually consist of aiming points and aiming angles. The foot mounting brackets should be secured with lock washers or self-locking nuts and bolts.

3.6 Cabling and Cable Glands

3.6.1 Cables

The temperature conditions at the supply cable point are such that high temperature cable must be used in all the luminaires. This is referred to in the special conditions for safe use. In the case of HPS luminaires, the cable between the luminaire and the ignitor must be able to withstand the starting impulse (wherever located). Chalmit Type 4891 cable meets the requirements of the application. The cable make-up must be suitable to ensure the maintaining of the restricted breathing enclosure when the cable gland assembly is fitted.

3.6.2 Cable Glands

Cable glands and sealing plugs when installed must maintain the ingress protection of the enclosure. Rubber sealing washers and steel compression washers are provided with the unit. The user must ensure that the assembly fulfils the above requirement.

Cable entries suitable for M20 cable glands are standard.

3.7 Cabling and Fitting Lamps

Access for cabling is via the top hat shaped cover which carries the lampholder. The cable assembly is screwed into the cover after it has been removed from the luminaire. The lampholder assembly is slackened to allow access. The ignitor output goes to the lampholder centre contact, marked L at the terminal D at the ignitor

3.8 Inspection and Maintenance

Visual inspection should be carried out at suitable intervals, frequently if conditions are severe. The time between lamp changes could be very infrequent and this is too long a period without inspection.

3.8.1 Routine Examination

The equipment must be de-energised before opening. Individual organisations will have their own procedures. What follows are guidelines based on Chalmit's own experience:-

- 1 Ensure that the lamp is lit when energised and that the lampglass is not damaged.
- 2 When de-energised and left to cool, there should be no significant sign of internal moisture. If there are signs of water ingress, the luminaire should be opened up, dried out, and any likely ingress points eliminated by re-gasketing. With the type of construction used in the 503, anything other than slight condensation should be very rare.
- 3 Check the cable gland for tightness and nip up if necessary.
- 4 Check any external earthing connections.
- 5 Check the access cover and lamp housing screws for tightness and nip up if necessary. Torque 16Nm. If the covers are removed it is good practice to replace the gasket.
- 6 Check the silicone sealant used to secure the lampglass. If it has become seriously discoloured or very soft, the luminaire will need to be returned to Chalmit for re-glazing. The material used for glazing has a long life and in normal applications would not be expected to deteriorate. Direct contamination with hydrocarbon oils could cause degradation.
- 7 Check that the lamp glass retaining clamps are in place and secure. (The purpose of these clamps is to reduce the load on the lamp glass caused by internal pressure build up from the high temperature of the light sources).
- 8 Clean the lamp glass.
- 9 When re-lamping, the incoming and lampholder terminals should be checked for signs of overheating and the terminals tightened up.

3.9 Electrical Fault Finding and Replacement

With Tungsten Halogen lamps the faults are simple, namely loose or broken connections, unserviceable lamps or open circuit. Similarly, a bad contact at the lamp cap will usually result in discoloration as a sign of overheating. Any fault finding must be done by a competent electrician and, if carried out with the luminaire in place, under a permit to work. With HPS the ignitor can become faulty. If the lamp is fitted, the choke has continuity and the connections are good and correct, they should produce an "attempt to start" flicker effect on the lamp and a buzzing sound from the ignitor. It will be unusual to have no other parts available to perform a substitution fault finding routine and this is the normal procedure. Before re-assembling, all connections should be re-checked and any damaged cable replaced. The supply must be isolated.

4.0 Overhaul

The unit is largely made of materials, which are very corrosion resistant. Overhaul consists of cleaning and replacement of gaskets where necessary. All the spares required are available from Chalmit. Please state the model number and lamp type. No unauthorised modifications should be made.

5.0 Fuse Ratings

The following remarks concern HID lamp circuits at the input side of the control gear box. The output side of the control gear box carries the lamp current, not the circuit current. The lamp current is shown in Table 1. This value should be used for any calculations of voltage drop between the control box and luminaire. Where the ignitor for HPS is contained in the control gear box, the cable also carries the starting pulse. The choke acts as a current limiter, therefore there is no means of protecting against a line to neutral fault on the electrical circuit beyond the choke. Extra care must therefore be taken to ensure sound cable installations. The fuse ratings for HID lamp circuits need to take into account three components of circuit current. Current inrush to PFC capacitors, which can be up to 25 x the rated capacitor current and last 1-2 milliseconds; lamp starting current including steady capacitor current, which together may decline from up to 200% of normal at 10 seconds after switch-on to normal after 4 minutes; rectification effects caused by asymmetrical cathode heating for a few seconds after starting, this effect is random and very variable.

With the availability of MCB's with a wide range of characteristics, the individual engineer can make a better judgement of what is required. Use MCB's suitable for inrush currents to reduce ratings. The normal capacitor current will probably be the determining factor, 0.076A per μF at 240V, 50Hz (adjust for other volts by multiplication, $\times 6/5$ for 60Hz). For HBC fuses use 1.5 x normal capacitor current. For T/Hal inrush, use 8 x rated current. All calculations must satisfy wiring regulations.

Note : *Starting and running currents for 240V, 50Hz. are as indicated in TABLE 1.*

6.0 Disposal of Material

The unit is mostly made from incombustible materials. The capacitor is of the dry film type and does not contain PCB's. The control gear contains plastic parts and polyester resin. The ignitor contains electronic components and synthetic resins. All electrical components and the body parts may give off noxious fumes if incinerated. Take care to render these fumes harmless or avoid inhalation. Any local regulations concerning disposal must be complied with. Any disposal must satisfy the requirements of the WEEE directive [2002/96/EC] and therefore must not be treated as commercial waste. The unit is mainly made from incombustible materials. The control gear contains plastic, resin and electronic components. All electrical components may give off noxious fumes if incinerated.

6.1 Lamps

Incandescent lamps and discharge lamps in modest quantities are not "special waste". The outer envelope should be broken in the container to avoid injury.

This applies to the UK, there may be other regulations on disposal operating in other countries.

Note : *Do not incinerate lamps.*



To comply with the Waste Electrical and Electronic Equipment directive 2002/96/EC the apparatus cannot be classified as commercial waste and as such must be disposed of or recycled in such a manner as to reduce the environmental impact.

0.0 Tables 0/1

Table 0 Lamp Ranges and Ambient Temperature Ratings

Refer to Section : 1.0

Lamp	Ambient Rating
600W SON/T	T amb -40°C to +60°C
1000W SON/T	T amb -40°C to +40°C
1000W MBI	T amb -40°C to +40°C
2000W MBI	T amb -40°C to +40°C
2000W T/HAL	T amb -40°C to +40°C

Table 1 Starting and Running Currents

Refer to Section : 5.0

Lamp	Lamp A	Start A	Run A	Capacitance µF
600W SON/T	6.2	5.6	3.1	60
1000W SON/T	10.6	6.9	5.0	100
1000W MBI	10.6	6.9	5.0	100
2000W MBI	16.5	15.8	9.9	100
2000W MBI Cross Phase	10.3	8.9	5.6	30
1kW T/HAL	4.166	Approx. x 6	4.16	N/A
2kW T/HAL	8.33	approx. x 6	8.33	N/A

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Note :

Chalmit Lighting reserve the right to amend characteristics of
our products, and all data is for guidance only.



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