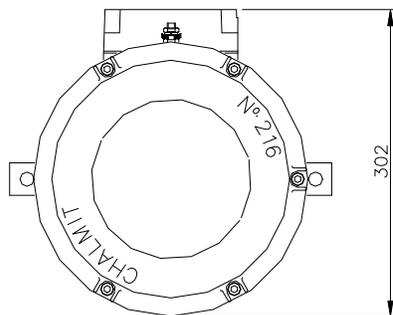
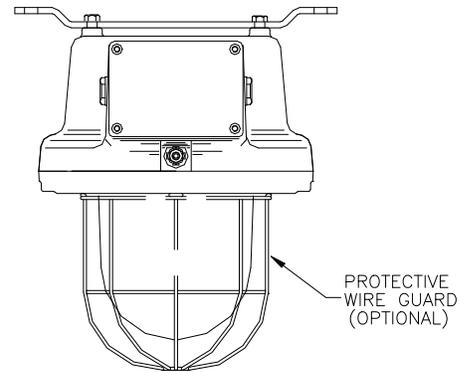
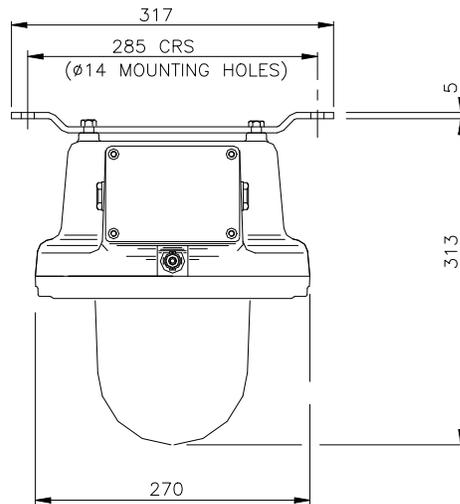


# INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

## 216 - Wellglass Luminaires

### ATEX

**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.





<b>0.0 Specification</b>	
Type Of Protection	Ex de (flameproof and increased safety)
Protection Standards	EN 50014, EN 50018, EN 50019
Area Classification	Zone 1 and Zone 2 areas to EN 60079-10-1
Installation	EN 60079-14
Certificate	EC Type Examination Certificate BAS01ATEX2307
Equipment Coding	Ex de IIB T* ≤ Ta ≤ T°C (see table 0 for details)
ATEX Coding	Ⓜ II 2G
Ingress Protection	IP66
CE Mark 	<p>The CE marking of this product applies to "The Electrical Equipment (Safety) Regulations 2006", "The Electromagnetic Compatibility Regulations 2004", 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 EU directives 2014/35/EU, 2014/30/EU, 2012/19/EU and 2014/34/EU respectively].</p> <p>The Equipment is declared to meet the provisions of the ATEX directive (2014/34/EU) by reason of the EC Type Examination and compliance with the Essential Health and Safety Requirements. M Poutney Technical Manager</p>

**SPECIAL CONDITIONS FOR SAFE USE**

None

**1.0 Introduction - 216 Wellglass Luminaire**

The type 216 wellglass luminaire is a general purpose wellglass suitable for a range of discharge and fluorescent lamps. The range of surface temperature classifications and ambient temperature ratings is large and care must be taken with the selection of equipment and lamps. The range of lamps and the temperature ratings will be individually shown on the rating plate. The ratings are summarised in the section below under the heading 'Lamps'.

**Note:** *Lamp ranges and temperature ratings are as summarised in TABLE 0.  
The wellglass is certified for –50°C.*

**2.0 Storage**

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

**3.0 Installation and Safety**

**3.1 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 BS EN 60079-14 or the local hazardous area code of practice, whichever is appropriate, and fitting of specified insulating material to be adhered to where a specific fire resistance rating is required.

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.

Guards can be supplied with or fitted retrospectively to protect glass if there is a higher than normal risk of mechanical damage.



This wellglass luminaire has passed thermal shock testing during certification, it is still advisable to mount the wellglass in locations to reduce the possibility of thermal shock.

Certification details on the rating plate must be verified against the application requirements before installation.

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

### 3.2 Tools

6mm, 5mm and 3mm A/F socket keys.

3mm and 5mm flat blade screwdriver.

Suitable spanners for installing cable glands.

Pliers, knife, wire strippers/cutters.

### 3.3 Electrical Supplies

The supply voltage and frequency should be specified when ordering. A maximum voltage variation of +6%/-6% on the nominal is expected. (The safety limit for T rating 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 must be taken in connecting to the nominal 230V UK public supply.** In some cases, the luminaires have multi-tapped control gear which can be set to a range of 50 and 60Hz voltages. The tapplings are shown on the control gear and the limits are shown on the rating plate. If the equipment is located in high or low voltage sections 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 tapping is re-set if the equipment is relocated. If in doubt, tapplings should be set on the high side. 20V Max. nominal drop is acceptable for MBF, 10V Max. drop is desirable for HPS. The light output will be reduced. Where MBI/Metal Halide lamps are used the tapping must be set accurately for best performance. All the HPS use impulser type ignitors. Reference should be made to the circuit diagrams.

Where shore or construction site supplies are used, which are different to the service location supplies, tapplings should be re-set. If not, advice on the effect of these temporary supplies should be sought from the Technical Department.

Where adverse system conditions occur, luminaires can be supplied without pfc. The circuit current will then be the lamp current, the circuit power does not change.

Running at over the rated supply voltage will reduce life and at greater than +10% will compromise the T rating.

### 3.4 Lamps

The high pressure sodium and mercury vapour lamps are of a standardised type and there is no preference between make or colour. All have E27 caps. The luminaires with electronic ballasts for the compact fluorescent lamps use the four-pin type and the luminaire is marked accordingly. (Earlier models used the two-pin lamp in the 240V range). The luminaires with fluorescent lamps, which have the conventional wound ballast, use the two-pin lamp with integral starter. (Four-pin is a special option). Replacement ballasts for the 240V ELECTRONIC types (Arcotronic) will be of the type suitable for four-pin lamps, so installations may become mixed. The 10/13W lampholder is different to the 18W and 26W.

**HPS/MBI lamps must be replaced shortly after they do not light.** The indication of the end of life for HPS lamps is 'cycling' where the lamp goes out then re-ignites after a minute or so interval, most HPS models now have timed ignitors to prevent cycling.

If discharge lamps are burned continuously, they should be switched off occasionally to allow old lamps to fail to re-ignite, rather than possibly become diodes with possible detrimental effects on control gear. **HPS circuits should not be energised without a lamp fitted. Lamps with internal ignitors should not be used.**

Lamp types are always changing and care must be taken to avoid using variations for which the luminaire is not certified.

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

### 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. Any mounting attitude may be used.



### **3.6 Cabling and Cable Glands**

#### **3.6.1 Cables**

The temperature conditions of the supply cable entry point are such that 70°C (ordinary PVC) cable can be used in all the luminaires. The standard maximum looping size is 2.5mm<sup>2</sup>. 6mm<sup>2</sup> looping is available as an option.

For luminaires specified for non-standard ambient temperatures, refer to the Technical Department.

300/500V cable ratings are adequate and no special internal construction is necessary as the terminations are Ex e. The selection of cable size will be suitable for the fuse rating. Some guidance on this is given below. The fuse ratings apply to the circuit on the supply side of the control gear. The luminaire is also rated with the temperature rise at the cable entry. This allows the user to adjust the cable spec. for an actual Tamb lower than that for which the luminaire is certified.

#### **3.6.2 Cable Glands**

Apparatus certified to *EN 50014, EN 50018, EN 50019*.

Cable glands for entry into Ex e enclosures, when fitted with any gland to body sealing method and the supply cable must reliably maintain the IP rating of the enclosure. The cable gland must withstand an impact value of 7Nm or 4Nm where the risk of mechanical damage is low.

Sealing plugs must be similarly rated and a tool must be used for their removal. Where the cable is not reliably clamped externally to the apparatus, the cable gland must clamp the cable against a pull in Newtons of 20 x the cable OD in mm for non-armoured cable and 80 x the cable OD for armoured cable. Selected metal industrial cable glands may meet this requirement.

Plastic cable glands must be Ex certified. Glands for metal covered mineral insulated cables must be Ex e certified.

Glands may be selected for low levels of mechanical risk and external clamping. Entry plugs can be selected as above. Where brass cable glands are used in a corrosive environment cadmium or nickel plating should be used.

Two tapped cable entries are provided, one with a plug and seal suitable for permanent use, the other has a travelling plug. M20 x 1.5 entries are standard, other sizes are available on request.

#### **3.6.3 Cabling**

Before fitting lamps or opening the terminal chamber the luminaire must be de-energised and isolated from the supply. Note should be taken of any time delay in opening to allow for cooling or the discharge of capacitors. The luminaires suitable for compact fluorescent lamps and having electronic control gear have not had their discharge times determined and for this reason the certificate states that they must not be opened when a hazardous atmosphere is present.

Access for cabling is via the terminal chamber. The lid is secured by four captive screws. Install the conductors in the appropriate terminals. Take care not to cut the conductor insulation excessively. 1mm of bare conductor outside the terminal is a maximum. With the clamp type terminals either there should be a pair of equal conductors or, where the conductors are not looped, a 'U' should be made to allow equal clamping on both sides. Unused terminal screws should be tightened. Before re-fitting the cover, the conductor should be neatly tucked away and a final check made on correct connection. Torque 5Nm.

Where taps need to be reselected, this is done by removing the lampglass cover and undoing the two screws to remove the reflector and gain access to the choke terminals.

### **3.7 Fitting Lamps**

Make sure the correct lamp is selected as detailed above.

Access for fitting lamps is gained through the lampglass cover. The lampglass cover assembly should be un-bolted and suspended using suspension chain. During this operation or if the lampglass assembly is removed from the suspension chain, care must be taken to ensure no damage to the glass occurs. Take care not to hang the lampglass on one bolt when removing or replacing. Before removing the lampglass on any occasion, check that the suspension chain is secure and in good condition. The lamp should be firmly screwed into place. The flameproof path should have a coat of silicone grease (Dow Corning 'Molykote' III or similar) or other protective non-setting grease suitable for high temperature. Replace all bolts and fully tighten. Torque 16Nm.



### 3.8 Inspection and Maintenance

Visual inspection should be carried out at a minimum of 12 monthly intervals and more frequently if conditions are severe. Refer to *EN 60079-17*. 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 and note taken of the rated cooling/discharge period alternatively the nameplate may read 'do not open when an explosive atmosphere is present' - see previous note. Individual organisations will have their own procedures. What follows are guidelines based on *EN 60079-17* and on our experience :

- 1 Ensure the lamp is lit when energised and that the lampglass is not damaged. If the glass is damaged it must be replaced. (ref. 3.7 if removing glass assembly).
- 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, re-greasing or other replacement.
- 3 Check the cable gland for tightness and nip up if necessary.
- 4 Check the terminal chamber gasket for external cracking.
- 5 Examine the lampglass for any signs of sealant damage, cracking or discoloration. If thought necessary, the silicone weather seal can be re-sealed with a proprietary brand of clear silicone, but only if the underlying sealant is in good condition.
- 6 Check all cover bolts for tightness.
- 7 Check for signs of corrosion between the lampglass cover and the main housing. Evaluation of this will be a matter for judgement gained by experience, as there may be little evidence on the outside. If there is any sign of corrosion remove the cover, wipe the flame proof paths with a clean cloth and non-metallic scraper. Examine the surfaces for pitting; any pitted component should be replaced. A damaged or non-resilient gasket must be replaced. The cover should re-greased with silicone (Dow Corning 'Molykote III' or similar) or other non-setting grease suitable for high temperatures, and re-fitted with all bolts fully tightened. Torque 16Nm. Any replacement bolts must be identical to the original. All are 18/8 stainless steel with a minimum of ISO 262 grade A2-70. With this type of flameproof path all bolts must be in place and tight. The maximum gap for IIB apparatus is 0.15mm. It will be unusual for any luminaire to have a gap of more than 0.1mm when tried with a feeler gauge. If 0.1mm is exceeded, check that no foreign body or debris at the bottom of the blind tapped holes is keeping the surfaces apart and, if not, a workshop overhaul should be carried out to bring the apparatus to as new condition. Periodically when the lampglass is removed, the opportunity should be taken to remove the reflector, check the lampholder connections for signs of overheating and similarly check the control gear.
- 8 The terminal chamber should be opened periodically and checked for moisture and dirt ingress. The cable connections should be checked for tightness. The gasket should be checked for cracks or lack of elasticity, and if necessary, replaced. (It may well be practical to also replace the gasket on each occasion if this is at a 2/3 year interval). Torque 5Nm.
- 9 If painting operations have taken place around the luminaire, ensure that coatings have not entered the flameproof path or been deposited on the lampglass. If they have, dismantle and clean carefully.
- 10 Check that mountings are secure. Clean the lampglass.
- 11 Cover the bolt heads with silicone grease to prevent corrosion and accumulation of dirt in screw threads.
- 12 If it has been suspected that the luminaire has suffered mechanical damage, a stringent workshop check should be made. Where spares are needed, these must be replaced with manufacturers parts. No modifications should be made without the knowledge and approval of the manufacturer.

### 3.9 Electrical Fault Finding and Replacement

The supply must be isolated before opening the luminaire.

With Mercury and T-H lamps the faults are simple, loose or broken connections, unserviceable lamps or open circuit control gear. Control gear will not normally go open circuit unless it has overheated first and the signs of this are obvious, being severe discoloration of the paint on the gear and cracks in any exposed insulation. Similarly, a bad contact at the lamp cap will usually result in signs 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 lamps 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' effect 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 checked and any damaged cable replaced. The ignition connection to the lampholder is sleeved with H.T. sleeving and this must be kept in place.

#### 4.0 Fuse Ratings

The fuse ratings for HID lamp circuits need to take account of 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 will probably be the determining factor 0.076A per  $\mu\text{F}$  at 240V, 50Hz (adjust for other volts by multiplication, x 6/5 for 60Hz). For HBC fuses use 1.5 x normal capacitor current. Use MCB's suitable for high inrush to reduce cable sizes. All calculations must satisfy wiring regulations

**Note:** *Starting and running currents for 240V, 50Hz are as indicated in TABLE 1.  
A conventional matrix for HBC fuses is outlined in TABLE 2.*

#### 5.0 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 [2012/19/EU] 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.

#### 5.1 Lamps

Fluorescent lamps and discharge lamps in modest quantities are not "special waste". They should be broken up in a container to avoid injury, avoid inhaling dust.

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

**Important:** *Do not incinerate lamps.*



To comply with the Waste Electrical and Electronic Equipment directive 2012/19/EU 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.



Table 0

Lamp	Wattage	Rated Supply	T Class	T amb °C	Rated Cable °C	Cable Temp Rise above Ambient. °C
<b>Single Lamp Versions</b>						
SON	50	210-250V 50Hz	T4	50	70	
SON	70	220-270V 60Hz	T4	40	70	
MBFU	80		T4	40	70	
Compact Fluorescent 2 Pin/4 Pin	10 & 13	220-240V ac/dc Electronic Ballast	T6	55	70	
Compact Fluorescent 4 Pin	10 & 13	220-260V, 50Hz and 60Hz	T6	55	70	
Compact Fluorescent 4 Pin	18 & 26	220-240V ac/dc Electronic Ballast	T5	55	70	
Compact Fluorescent 2 Pin/4 Pin	18 & 26	220-260V, 50Hz and 60Hz	T5	55	70	
<b>Twin Lamp Versions</b>						
Compact Fluorescent 4 Pin	10-13	12-130V ac/dc Electronic Ballast	T5	40	70	
Compact Fluorescent 4 Pin	10-13	220-260V, 50Hz and 60Hz	T5	40	70	
Compact Fluorescent 4 Pin	18	220-260V, 50Hz and 60Hz	T5	40	70	

Other voltages for compact fluorescents on request.

Table 1 Starting and Running Currents

Refer to Section : 4.0

Lamp	Start A	Run A	Capacitance µF
50W HPS	0.35	0.28	10
70W HPS	0.55	0.40	10
80W MBF	0.5	0.43	8

Table 2 Fuse Ratings

Refer to Section : 4.0

Lamp	Number of Lamps					
	1	2	3	4	5	6
50W SON	4A	4A	4A	6A	6A	10A
70W SON	4A	4A	4A	6A	6A	10A
80W MBF	4A	4A	4A	4A	6A	6A

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For technical support, please contact: techsupport@chalmit.com

Note: Chalmit Lighting reserves the right to amend characteristics of our products and all data is for guidance only.



<b>EU-Declaration of conformity</b>			
<b>UE-Déclaration de conformité</b>			
<b>EU-Konformitätserklärung</b>			
Manufacturer	Chalmit	Address	388 Hillington Road, Glasgow. G52 4BL Scotland UK
Product	216 Wellglass Luminaire.		
EC - Type Examination Certificate	BAS01ATEX2307		
Notified Body	SGS Fimko OY 0598		
ATEX Coding	II 2 G	ATEX Classification	Group II Category 2 G
Equipment Coding	Ex de IIB T* Gb,		
Ingress Protection	IP66		
The technical basis, with respect to equivalence of			
La base technique, en ce qui concerne l'équivalence de			
Die technische Grundlage hinsichtlich der Normen			
Protection Standards EN 50014, EN 50018, EN 50019.			
Area Classification EN 60079-10-1.			
of compliance with the EHSRs is valid as there are no changes which materially affect the state of technological progress of the product.			
en conformité avec les EESS est valide puisqu'il n'y a aucun changement qui affecte matériellement l'état de l'évolution technologique du produit.			
zur Erfüllung der GSGA ist gegeben, da keine Änderungen erfolgt sind, die einen Einfluss auf den technischen Stand des Produkts haben.			
Terms of the directive:		Standard & Date Certified to	Standards Date Declared to
Prescription de la directive:		Standard & date certifiée à	Normes date Déclaré
Bestimmungen der Richtlinie:		Standard & Datum Zertifiziert nach	Standards Datum erklärt
2014/34/EU	Equipment and protective systems intended for use in potentially explosive atmospheres.	EN 50014:1997 + Amds 1&2	
		EN 50018: 2000	
2014/34/UE	Appareils et les systèmes de protection destinés à être utilisés en atmosphères potentiellement explosibles.	EN 50019-7: 2000	
2014/34/EU	Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsfähigen Bereichen.		
2014/30/EU	Electromagnetic compatibility	EN 55015 : 2013	
2014/30/UE	Compatibilité électromagnétique	EN 61547 : 2009	
2014/30/EU	Elektromagnetische Verträglichkeit	EN 61000-3-2 : 2014	
2014/35/EU	Low voltage equipment	EN 60598-1 : 2015	
2014/35/UE	Équipements électriques à bas voltage	EN 60529 : 1992	
2014/35/EU	Niederspannungsgeräte / -systeme	EN 60598-2-5 : 2015	
2012/19/EU	Waste of electrical and electronic equipment		
2012/19/UE	Déchets d'équipements électriques et électroniques		
2012/19/EU	Entsorgung der elektrischen und elektronischen Geräte / Systeme		
2011/65/EU	RoHS II Directive		



On behalf of the Chalmit, I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms to all technical and regulatory requirements of the above listed directives.

En tant que représentant du fabricant Chalmit, je déclare qu'à la date où les équipements accompagnant cette déclaration sont mis sur le marché, ceux-ci sont conformes à toutes les dispositions réglementaires et techniques des directives énumérées ci-dessus.

Hiermit bestätige ich, im Namen von Chalmit, dass am Tag der Lieferung des Produkts/der Produkte zusammen mit dieser Erklärung das Gerät/die Geräte alle technischen und regulativen Anforderungen der oben aufgeführten Direktiven erfüllt.

Name and Date      Mark Poutney    01/01/2021  
Nom et Date  
Name und Datum

Technical Manager  
Directeur technique  
Technischer Leiter

Quality Assurance Notification by:      **SGS Fimko OY**  
Notification d'assurance qualité par:    **0598**  
Qualitätssicherungsnotifikation durch:

Quality Management System Accreditation:  
Système de Management Qualité Accréditation:  
Qualitätsmanagementsystem Akkreditierung:  
Environmental Management System.  
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