

# THORN

## X-Force

A range of specialist fluorescent 'proof' luminaires for harsh environments



# Introducing X-Force

The X-Force range is designed to withstand difficult and demanding environments. Sharing the same high build quality and strong IP65 compliance, X-Force products continue to perform even in the most arduous wet and dusty conditions.

But not all industrial working locations are the same; each presents different challenges. Maintaining good lighting levels and a safe working environment requires the right luminaire to be selected, one that can face up to these challenges and come out on top.

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## ImpactForce

ImpactForce takes its name from the tough polycarbonate diffuser, able to withstand high impacts of up to IK09. ImpactForce is suitable for locations where impact to the luminaire may occur or vandal resistance is required. Typical applications are loading bays, multi storey car parks, subways, sports stadiums and warehouses.



## CorrosionForce

As the name suggests CorrosionForce is the answer when you need to light an area where the atmosphere contains trace chemicals that may contaminate a standard IP65 luminaire. Typical applications include food processing and preparation areas where specialist-cleaning agents are used.



## ColdForce

Lighting a cold store or chill room is challenging, the low temperatures would impair most luminaires. ColdForce with its high specification industrial ballast and thermal over tubes ensures good light performance down to temperatures of -30°C. Typical applications include cold stores and chill rooms.



## HeatForce

High ambient temperatures have a lasting effect on the reliability of most luminaires. HeatForce is designed to operate in temperatures up to 65°C. The tough construction and special control gear provides reliable lighting even when things start to heat up. Typical applications are boiler rooms and any areas where machinery or other equipment generate high ambient temperatures.



## StormForce

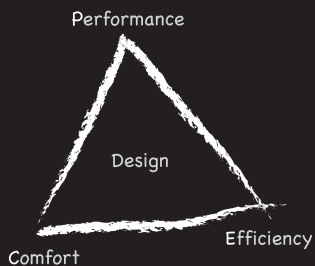
StormForce is a rugged luminaire with inner strength. Internal steel supports for strength, fixing brackets for mounting onto stanchions or flexible structures that are exposed to high winds and rain. Ideal for power stations and exposed coastal areas.





## Performance, Efficiency and Comfort (PEC) – for a better lit environment

X-Force evokes the spirit of Thorn Lighting's dynamic, results-orientated PEC programme



The PEC programme is based on the principle that Performance, Efficiency and Comfort determine the effectiveness of lighting, its impact on the people using it, and its impact on the natural environment. X-Force delivers the right light on the right place at the right time.

**Performance:** Providing the best visual effectiveness

- The X-Force range has an optical system optimised for fluorescent lamps. The high reflectance back plate and specially designed prismatic controller give a wide light distribution with good glare control, uniformity and modelling. The optic gives high light output ratios, up to 93%.
- Fluorescent light sources ensure very good colour rendition (Ra over 80)

**Efficiency:** Conserving energy and effort, reducing CO<sub>2</sub> emissions and waste, providing lighting that is practical and efficient to install, operate and maintain

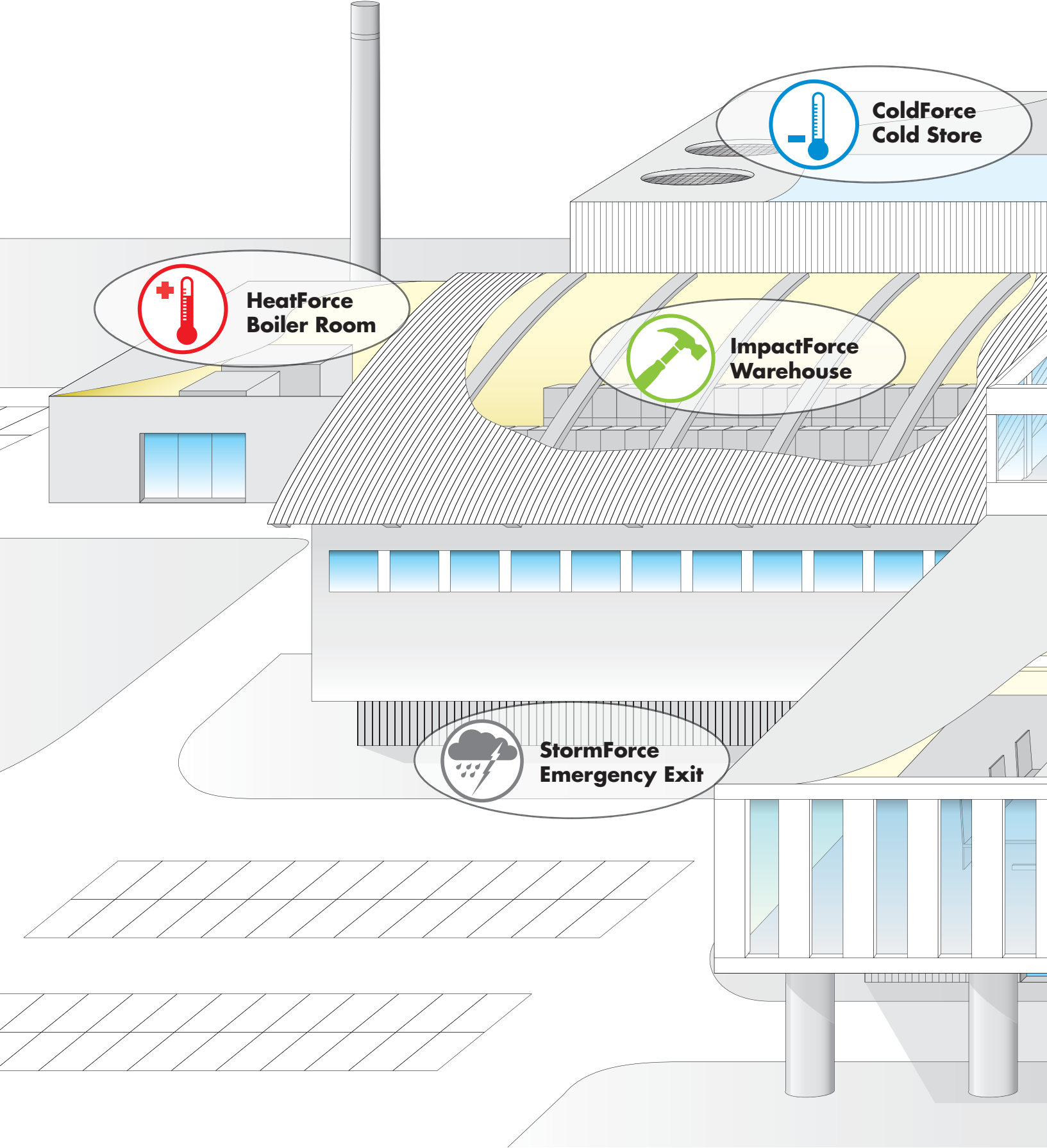
- X-Force uses the latest technologies to set the pace in environmental sensitivity. With the latest lamp technology, such as T16 high output and high efficiency lamps. Digital dimmable versions are also available
- X-Force is fit for purpose. Within the range there is a choice of diffuser materials depending on the industrial application the luminaire is operating within. The clever design of the deep channel gasket ensures the long life of the IP65 seal
- With a focus on easy installation and maintenance the range comes with Quick-fix brackets as standard and easy to use stainless steel gear tray clips

**Comfort:** giving people satisfaction and stimulation

- A HF electronic ballast offers the option to remove any flicker effect associated with fluorescent lighting and helps to remove any discomfort in the workplace
- Material choice and emergency versions ensure a feeling of safety
- Effective glare free light



# X-Force application areas





## CorrosionForce Food Preparation



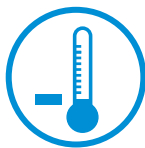
ImpactForce is a vandal resistant luminaire that can withstand accidental damage. Typical applications are loading bays, multi storey car parks, subways, sports stadiums and warehouses.

- High impact polycarbonate diffuser
- T16 and T26 options
- Dimmable and emergency options



CorrosionForce is suitable for any location where the atmosphere contains trace chemicals or where specialist cleaning agents are used. Typical applications include kitchens, food processing areas, dairies and agricultural buildings.

- PMMA diffuser
- T16 and T26 options
- Dimmable and emergency options



ColdForce provides an IP65 lighting solution in low temperature locations. Typical applications are cold stores and chill rooms.

- High impact polycarbonate diffuser
- -30°C low temperature operation
- Long life industrial ballast



HeatForce is a lighting solution for any location that generates high ambient temperatures. Typical applications are boiler rooms or industrial locations.

- High impact polycarbonate diffuser
- 65°C high temperature operation
- Long life industrial ballast



StormForce can be used on walkways, metal gantries and flexible structures. Ideal for power stations and exposed coastal areas.

- Polycarbonate or PMMA diffuser options
- T16 and T26 options
- Emergency options

# X-Force - designed to meet the toughest of applications

In situations where conventional luminaires are ready to give up, the new X-Force range really comes into its own. Whether confronted with dirt, dust, moisture or chemical atmospheres, within the X-Force range there is a product that gives durable functionality and appropriate lighting quality in difficult environments.

## **Stainless Steel tamper proof toggles**

The stainless steel toggles are supplied as standard. The toggle easily fits into the canopy, once fitted it is secure.

The diffuser is clamped into position with a simple click of the toggles. To remove the diffuser a screwdriver is required deterring any unwanted interference or tampering with the luminaire.



## **Quick-fix brackets**

The X-Force range is supplied with Quick-fix brackets as standard. The bracket fits onto the ceiling and then the canopy can be snapped into place.

Using the Quick-fix bracket avoids the need to perforate the top of the canopy and ensures the luminaire maintains its IP65 rating.



## **Easy to clean**

The X-Force range meets the recommendations of the International Food Standards (IFS) and British Retail Consortium (BRC).

The sleek design has a 15° slope which makes it difficult for dust or moisture to accumulate, so it is easy to clean and keep clean.



## **Stainless steel gear clips**

Within the canopy of X-Force sit the stainless steel gear tray retaining clips. Cleverly designed to allow the gear tray to be easily clipped and locked into position.

When essential maintenance is required the gear tray can be released and will hang from the clips.





# X-Force - its construction

The key materials employed in the manufacture of X-Force luminaires are:

- **Glass Reinforced Plastic (GRP)**

The main advantages of GRP are chemical resistance and strength. It has a high strength to weight ratio and flexural strength. It is ideal where luminaire bodies are exposed to harsh environments as it provides resistance to UV light, extreme temperatures, salt air, and a variety of chemicals.

- **Polycarbonate (PC)**

Transparency, excellent toughness and a good dimensional stability make polycarbonate (PC) one of the most widely used thermoplastics for lighting diffusers. Constraints include fair resistance to UV radiation.

- **Polymethylmethacrylate (PMMA)**

Better known as acrylic this material is used for diffusers because of its high light transmittance and good UV resistance. Its limitations are low impact strength and poor flame resistance.

### Comparison table

	<b>PMMA</b>	<b>PC</b>	<b>GRP</b>
UV Resistance	Good	Fair	Good
Impact Resistance	0.2Nm	10Nm	0.35Nm
Resistance to ageing	Excellent	Good	Excellent
Silicone free	Yes	Yes	Yes
Halogen free	Yes	Yes	Yes
Glow wire test	650°C	850°C	850°C
Heat resistance of plastics	95°	125°	160°
UV Transmittance	91%	89%	N/A



# X-Force for emergency

European safety standards specify that emergency lighting is required in all public places to enable a safe exit if the normal lighting fails. Emergency lighting has to provide sufficient lighting to aid safe evacuation.

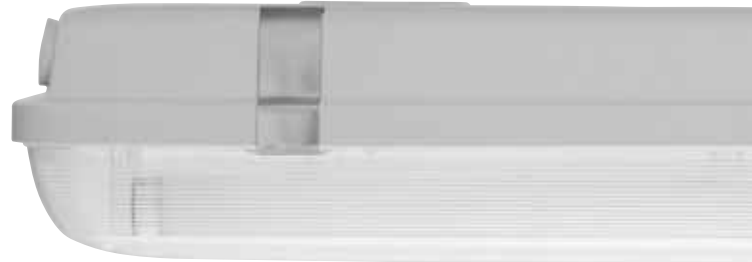
Thorn's X-Force range of luminaires offers a number of emergency lighting options that are integrated into the waterproof luminaire ensuring a totally compliant lighting scheme. This approach improves the appearance of the location while reducing installation cost and complexity.

The options support integrated emergency operation for three hours, allowing full continuity of emergency lighting after an evacuation. To meet legal requirements for the inspection, test and maintenance of emergency lighting, Self Test emergency lighting options include a diagnostic microprocessor that will automatically perform functional tests and duration tests.

Quick and easy to install without additional cabling, it monitors and automatically tests emergency luminaires at specified intervals, displaying the status of each unit using a two-colour LED. As a result, any problems with battery and lamp health are detected early, without requiring manual inspection.

## Key Features in emergency lighting

- Compliant with EN60598 2.22.
- Automatic commissioning without programming saves time and money
- Faster than average recharge time of 10-15 hours allows earlier reinstatement of emergency system after full battery discharge
- Thorn Explorer Project or Vision versions, where the user can monitor the emergency luminaire status centrally, and record the status as required by the legislative norm, are available on request
- Three hours operation provides continuity of emergency systems after testing or evacuation
- Two-colour LED provides clear status indication (red for faults, green for healthy)
- Boost starting gives higher lumen output during the critical switchover phase, ensuring greater visibility of potential danger



# X-Force for dimming and energy saving

The X-Force range offers energy saving with the option of dimmable luminaires or Switchlight detectors

In combination with Sensa, Thorn's Indoor Lighting Control range, X-Force installations will provide light at the right time, the right place and with the right light level, to increase efficiency and comfort.

SensaLite is a range of stand-alone products that are ideal for the use with the X-Force range.

- SwitchLite detectors will link together fixed output versions of X-Force (HF) providing light only when it is needed. For indoor or outdoor applications where a high IP rating is required the SWITCHLITE MWA SLD IP64 (available in white 96233650, or black 96233649) is the right choice. In corridor or warehouse applications there are a number of options including the wall mounted SWITCHLITE SLD LONG RANGE (96012710) with a 12m detection range and the recessed wall mounted SWITCHLITE SLDM (96019208) with a 30m detection range, an ideal solution for saving energy when the location is not being used.
- The ROTARYDIM RDMR (96218669) enables users to manually control the dimmable versions of X-Force (HFD). This product is used like a standard domestic rotary dimmer, but provides the benefits of digital dimming. For example in smaller production areas (indoors) where a manual change of light levels is requested.

- Installing SensaDigital allows the HFD versions of X-Force to be daylight and presence linked. The surface mounted multisensor head SENSEA MSF SEND DSI (96013491) controls a group of X-Force luminaires incorporating up to 8 DSI ballasts in total. Using the infra-red programming tool SENSEA SENP (96004189) the multisensor's parameters can be easily configured, e.g. SensaDigital will maintain the same light levels over the day. SensaDigital is typically used in zoned areas and with ceiling heights around 3m. Typical applications are daylight-lit corridors, staircases and production areas.

If you require more information on energy saving or if you wish to learn more about the Sensa Indoor Lighting Controls portfolio, please contact your Thorn representative, or visit our website: [www.thornlighting.com](http://www.thornlighting.com)



Presence-link indoors and outdoors with SWITCHLITE MWA SLD IP64



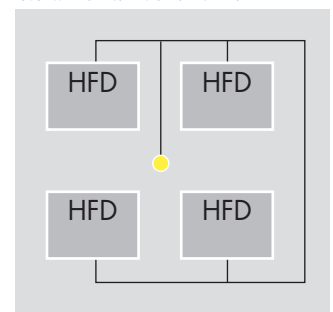
Presence-link indoors with SWITCHLITE SLD LONG RANGE IP64



Manual dimming and brightening with ROTARYDIM RDMR



Presence-link and maintained illuminance level with SENSEA MSF SEND DSI



Sensor connected to luminaire group (max. 8 ballasts in total)

# X-Force luminaires - tested to the highest standards

In harsh and difficult environments it is important to know that when the X-Force luminaire is selected to do a job it will perform to the highest standards.

We expect an IP65 luminaire to resist the effects of dust and moisture, but there are other additional features that are required such as resistance to...

- Impact
- Chemical corrosion
- High temperatures
- Low temperatures
- Strong winds/rain
- Fire

The Thorn X-Force range includes luminaires which are designed to satisfy these protection requirements and at the same time provide high standards of performance and economy.

When a professional IP65 proof range is designed it is essential that it will perform to the highest standard expected from a Thorn luminaire. To this end the X-Force range is tested to a number of industry recognised tests and procedures that will reinforce the quality of the product.

## Resistance to dust and moisture

The X-Force range of luminaires are classified as IP65 under the ingress protection classification system known as an IP classification. The IP classification defines the degree of protection provided by an enclosure using a two digit number. The first number identifies resistance to the ingress of solids and the second digit to the ingress of liquids.

First Digit	Degree of protection	Second Digit	Degree of protection
5	Protection against harmful dust - (dustproof)	5	Protection against water jets (jetproof)
6	Protection against any dust - (dust-tight)	6	Protection against heavy seas (ships deck water tight)

## Reliability in service

The X-Force range of luminaires are subjected to a wide range of tests in accordance with national and international standards, such as EN 60598. Indeed our testing capabilities extend beyond the standard requirements, covering areas such as Electromagnetic Compatibility (EMC) and Electromagnetic Fields (EMF). These standards ensure that the luminaires are safe as regards their electrical, thermal and mechanical properties.

However, a deterioration in performance or appearance could occur during service. This may be the result of attack from the environment or the lamp within the luminaire itself. Additional tests are therefore applied to ensure these factors are controlled. Fortunately changes in technology result in accelerated testing being successfully incorporated in new product design. These include: life tests, UV degradation, chemical resistance, spectrum analysis, corrosion and salt spray tests.





#### **Mechanical tests**

Tests subject components to torques and forces that may occur in practice. A spring-operated impact hammer is used to test the mechanical strength of components and a vibration rig to replicate exterior windage.

#### **IP tests**

For an IP65 classification (dust-tight and jetproof) luminaires must resist ingress of dust with a particle size down to 1 micron and resist ingress of water from a hose or jet pressure of 30KN/m<sup>2</sup>. Luminaires are switched on during testing and allowed to reach their normal operating temperature as it needs to be established whether the water or dust is drawn in when the pressure drops.

#### **Electrical tests**

A safety requirement is that no live parts should be accidentally touched. This is checked by using a standard test finger. Also luminaires must satisfy requirements such as minimum creepage distances across the surface of insulating materials, and minimum clearance distances between live parts and earth or touchable metal parts. Luminaires must pass high-voltage flash tests and insulation resistance tests in humid conditions.

#### **Thermal tests**

A standard draught-free room is usually used for luminaire temperature measurement. The components inside the luminaire are fitted with many thermocouples and it is operated under specific conditions until the temperatures indicated by these thermocouples are stable.

#### **Environmental tests**

Luminaires are subjected to long-term environmental testing and installed outdoors so the effect of weathering can be seen. UV degradation tests (discharge rig) and salt spray test chambers are employed for accelerated corrosion testing. The latter consists of a controlled temperature environment in which corrosive mist, usually based on sodium chloride, is produced. Likewise chemical and stress crazing tests are conducted with samples being immersed or suspended above various chemicals.



# X-Force - easy to install



1.



2.



3.



4.



5.



6.



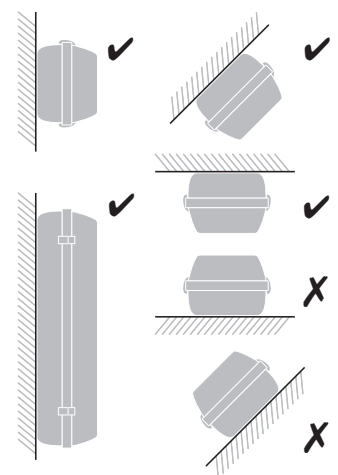
7.



8.



1. Unpack the luminaire, open and remove the bag of installation accessories from the canopy.
2. Fit the toggles to canopy. Once fitted the toggles are designed so they do not come adrift from the canopy and it's almost impossible to lose them, a great advantage during installation or maintenance.
3. Fit the Quick-fix brackets onto the ceiling.
4. Snap the canopy into the Quick-fix brackets, it will easily click into place.
5. Prepare the luminaire for the electrical connection, for easy installation hinge the gear tray on the gear tray clips, insert cables through the sealing grommet and attach to the plug-in terminal block.
6. Align the gear tray with the stainless steel gear clips.
7. Snap the gear tray into place.
8. Align the diffuser into the canopy and complete the insulation by snapping the toggles into place, which will hold the diffuser.
9. Test the luminaire.



Luminaire mounting positions

# Chemical resistance table

When selecting an X-Force for an application you will need to consider how external chemical substances may affect the luminaire. This may be a corrosive element in the atmosphere or even cleaning agents used in the location. No materials can withstand the effects of every chemical and it would be difficult to display the entire list. But the table below is a selection of the most common chemicals that are used in applications the X-Force would come into contact with. The information contained in the table is valid under the following conditions:

- The chemical substance listed in the table is an element and not part of a chemical compound
- The ambient temperature is 22°C

Chemical Type	Chemicals Specific	ImpactForce	CorrosionForce	ColdForce	HeatForce	StormForce	StormForce		
		GRP body	GRP body	GRP body	GRP body	GRP body	GRP body		
		PC diffuser	PMMA diffuser	PC diffuser	PC diffuser	PC diffuser	PMMA diffuser		
		Stainless toggle	Stainless toggle	Stainless toggle	Stainless toggle	Stainless toggle	Stainless toggle		
<b>Acids</b>	acetic <30%	✓	-	✓	✓	✓	-		
	nitric <10%	✓	✓	✓	✓	✓	✓		
	sulphuric <20%	✓	✓	✓	✓	✓	✓		
	hydrochloric <10%	✓	✓	✓	✓	✓	✓		
	chromic <20%	✓	✓	✓	✓	✓	✓		
	phosphoric <40%	✓	✓	✓	✓	✓	✓		
<b>Salts</b>	marine salts	✓	✓	✓	✓	✓	✓		
	copper sulphate	✓	✓	✓	✓	✓	✓		
	sodium chloride	✓	✓	✓	✓	✓	✓		
<b>Organics (aliphatics)</b>	ethanol <30%	✓	✓	✓	✓	✓	✓		
	propanol <30%	✓	✓	✓	✓	✓	✓		
	methane	✓	✓	✓	✓	✓	✓		
	propane	✓	✓	✓	✓	✓	✓		
	formaldehyde/formalin	✓	✓	✓	✓	✓	✓		
	formic acid <5%	✓	✓	✓	✓	✓	✓		
	stearic acid soap	✓	✓	✓	✓	✓	✓		
	urea	✓	✓	✓	✓	✓	✓		
	ethylene glycol (antifreeze)	✓	✓	✓	✓	✓	✓		
	glucose sugar	✓	✓	✓	✓	✓	✓		
	<b>(aromatics)</b>	glycerol/glycerine	✓	✓	✓	✓	✓	✓	
		milk	✓	✓	✓	✓	✓	✓	
		<b>Foodstuffs, cooking products, drinks, beverages</b>	fruit juices	✓	✓	✓	✓	✓	✓
			vegetable oils (cold)	✓	✓	✓	✓	✓	✓
vegetable oils (hot)		-	✓	-	-	-	✓		
meats, beef, lamb, pork, game, poultry		✓	✓	✓	✓	✓	✓		
fish		✓	✓	✓	✓	✓	✓		
pork fat		-	✓	-	-	-	✓		
cooking fats (cold)		✓	✓	✓	✓	✓	✓		
cooking fats (hot)		-	✓	-	-	-	✓		
alcoholic beverages beer	✓	✓	✓	✓	✓	✓			
carbonated beverages, lemonade	✓	✓	✓	✓	✓	✓			
wines & spirits	✓	✓	✓	✓	✓	✓			
water <60°C	✓	✓	✓	✓	✓	✓			
vinegar	✓	✓	✓	✓	✓	✓			
<b>Gases</b>	ozone	✓	✓	✓	✓	✓	✓		
	sulphur dioxide industrial pollutant	✓	✓	✓	✓	✓	✓		
<b>Building materials, paints</b>	emulsion paints water based	✓	✓	✓	✓	✓	✓		
	oil based paint	-	✓	-	-	-	✓		
	white spirit/turps substitute	✓	✓	✓	✓	✓	✓		
	cement	✓	✓	✓	✓	✓	✓		
<b>Oils, fats fuels</b>	mineral oils	✓	✓	✓	✓	✓	✓		
	animal fats (cold) but not pork	-	✓	-	-	-	✓		
	silicone oil	✓	✓	✓	✓	✓	✓		
	diesel	✓	✓	✓	✓	✓	✓		
	kerosene/paraffin oil	-	✓	-	-	-	✓		
	petroleum spirit/petroleum ether	✓	✓	✓	✓	✓	✓		
<b>Disinfectants, cleaning agents</b>	hydrogen peroxide <40%	✓	✓	✓	✓	✓	✓		
	sodium hypochlorite <10%	✓	✓	✓	✓	✓	✓		
	soaps	✓	✓	✓	✓	✓	✓		
	wetting agents/biocides (dilute)	✓	✓	✓	✓	✓	✓		

This information is provided to give guidance about luminaire selection assuming prolonged exposure to potentially aggressive chemicals or atmospheres. Occasional exposure to low concentrations of potential aggressors is unlikely to be harmful to any of these luminaires. The risk of damage to the luminaires is dependent on the concentration of the aggressor, the duration and frequency of exposure and environmental conditions. If there is any doubt about the suitability of a luminaire for a particular application please enquire with details of the chemicals which will be present and the conditions of use.

# X-Force in action

It is the choice of lighting that determines whether an area is safe - or potentially dangerous. Wherever water, dust and electrical lighting are combined, and especially in the presence of corrosive vapours or extreme temperatures, dependable lighting is essential.

And that is why Thorn's X-Force range has a lot to live up to. Specific products cater for hot, cold, stormy, corrosive and impact related conditions, enabling individual design and performance requirements to be met. Chosen for safety and dependability, X-Force luminaires provide highly effective and efficient lighting in the most hostile of environments.

Many areas can be considered as hostile, from an open walkway in a coastal power plant to a large and complex brewery. Here we have selected frequently occurring applications and explored the particular lighting issues relating to them. These illustrations show a flagship installation of X-Force luminaires at a large food distributor in the UK, where chilled and frozen food products are stored and distributed from a modern warehouse.

The varied range of X-Force luminaires has enabled the customer to exceed the requirements of each specific application area whilst maintaining clear uniformity of design throughout the distribution centre.

## Warehousing

The leading image shows ImpactForce luminaires mounted in a racking area. The main issues here centre on the dangers from moving vehicles, such as forklift trucks, that can collide with fittings and cause potentially disruptive vibration. The high impact polycarbonate diffuser of ImpactForce will resist a direct impact of up to IK09 and still continue to operate. ImpactForce offers a wide range of variants, including emergency, digital dimming and T16 (T8) lamp options.

## Cleaning areas

Lighting in the food industry needs to ensure strong task illumination and help maintain uncompromising standards of hygiene. The food and drink industry covers a vast range of working areas, some of which are dusty, damp, corrosive and laden with oil and fat vapours. In the case of this food distributor, specialised cleaning agents have to be used, which could damage or inhibit the performance of the luminaires.






CorrosionForce overcomes these issues and meets tough regulations set by the British Retail Consortium (BRC) and the International Food Standards (IFS). These guidelines state that luminaires positioned near the product must be housed in a secure enclosure, where no component parts can fall into the product. The luminaires need to be easily cleaned, maintained and re-lamped. Crucially, the light fittings must be constructed

using materials with a finish that will withstand frequent cleaning with inorganic chemical agents and possible hosing down.

X-Force exceeds all these requirements. It is IP65 rated and supplied with stainless steel toggles, quick-fix brackets and a chemical resistant PMMA diffuser (see page 15). A range of dimmable versions is also available.

## Cold store

The final image shows ColdForce luminaires installed in the frozen food section of the distribution centre. Special attention must be given to cold stores to ensure the lamp and luminaires chosen are capable of optimum performance at very low temperatures. The most common problems in this kind of application are starting and icing up. Although fluorescent lamps are sensitive to temperature, the ColdForce luminaire range is specifically designed for cold stores. Fully tested lamp sleeves and special control gear enable luminaires to operate at temperatures down to -30°C, whilst maintaining good light output and strong reliability.

Location					
Abattoirs	-	✓	-	-	*
Agricultural buildings	-	✓	-	-	-
Beer and wine cellars	✓	✓	-	-	-
Boiler rooms	-	-	-	✓	-
Breweries	-	✓	-	-	-
Canopy roofs	✓	-	-	-	*
Canteen kitchens	-	✓	-	-	-
Car park	✓	-	-	-	*
Car wash	-	✓	-	-	-
Changing rooms	✓	-	-	-	-
Cheese dairies	-	✓	-	-	-
Chill stores	-	*	✓	-	-
Cold rooms	-	-	✓	-	-
Exposed coastal locations	-	-	-	-	✓
Factories	✓	✓	✓	✓	✓
Food process areas	-	✓	-	-	-
Heavy plant rooms (high temperature)	-	-	-	✓	-
Industrial warehouses	✓	-	-	-	-
Kitchens	-	✓	-	-	-
Lavatories	✓	-	-	-	-
Loading bays	✓	-	-	-	-
Machinery rooms (high temperature)	-	-	-	✓	-
Multi storey car park	✓	-	-	-	-
Outdoor processing plants	-	-	-	-	✓
Paper processing	-	✓	-	-	-
Pedestrian subways	✓	-	-	-	-
Piers	-	-	-	-	✓
Plant rooms	-	-	-	✓	-
Power stations	-	-	-	-	✓
Process areas	-	✓	-	-	-
Railway platforms	✓	-	-	-	*
Seafloor areas	-	-	-	-	✓
Sport stadiums	✓	-	-	-	-
Storage sites	✓	-	-	-	-
Subways	✓	-	-	-	-
Textile processing plants	-	✓	-	-	-
Transport terminals	✓	-	-	-	-
Underground car parks	✓	-	-	-	-
Utility rooms	-	-	-	✓	-
Wine Cellars	-	✓	-	-	-

\* depends on application, please contact your Thorn representative





*ImpactForce has been fitted in the storage and racking areas because of its robust construction and resistance to impacts and vibrations.*



*Luminares used in the cleaning bays have to serve a dual function of hygiene and resistance to cleaning agents. CorrosionForce overcomes the problem by maintaining optimum performance in atmospheres where inorganic chemicals are present.*



*In the frozen food sector the food has to be stored at temperatures well below freezing. The logical answer here is ColdForce, which will perform at temperatures as low as -30°C.*



# ImpactForce

A high performance impact resistant, IP65 proof fluorescent range

ImpactForce is a rugged tough luminaire suitable for a wide range of applications that are indoors or in semi outdoor areas. In industrial locations there are dangers from moving vehicles or machinery, which can cause accidental impact damage to the luminaire. The diffuser has been designed to withstand impacts of up to IK09 and continue to operate. Other suitable locations are car parks and pedestrian subways, where the tough construction and vandal resistant toggles deter any unwanted interference.

ImpactForce has a wide range of variants including T16 and T26 lamp options plus emergency and dimmable options.

### Lamps

- ☐ 18-70W T26 (FD) linear fluorescent. Cap: G13
- ☐ 28-80W T16 (FDH) linear fluorescent, Cap: G5

### Materials/Finish

Canopy: glass-fibre reinforced polyester.  
 Diffuser: polycarbonate with linear prisms.  
 Gasket: expanded polyurethane  
 Toggles: stainless steel  
 Gear tray: steel, white enamelled finish

### Installation/Mounting

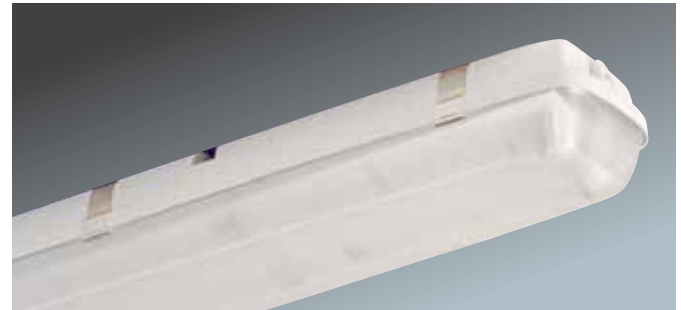
Cable entry positions at the back and each end of the fitting. Supplied with IP65 grommet  
 Stainless steel quick fix brackets supplied with each luminaire, Stainless steel toggles are captive in the canopy to prevent loss during maintenance, and steel gear tray is retained by finger operated spring latches.  
 Accessory kits for BESA box mounting, conduit mounting, chain suspension and catenary suspension are all available. Through wire kits can be specified for use with non-emergency versions (see accessories listing).

### Standards

Designed and manufactured to comply with EN 60598 Emergency EN60598 2.22.  
 Ⓛ Class I Electrical  
 IK09 (diffuser)  
 IK03 (canopy)  
 850°C fire retardant (glow wire test)  
 ⚡ IP65  
 Ⓢ CE

### Specification

To specify state:  
 High performance, IP65, dust and moisture proof impact resistant luminaire with GRP canopy, polycarbonate diffuser and stainless steel toggles, 18-70W T26 linear fluorescent lamps or 28-80W T16 linear fluorescent lamps, digital dimming and emergency options, with HF gear or magnetic gear.  
 As Thorn ImpactForce.



### Key Features

- GRP canopy
- High impact polycarbonate diffuser
- Choice of T26 or T16 lamps
- Switchstart or High Frequency control gear
- Integral 3 hour maintained emergency versions
- Digital Dim options
- Horizontal or vertical applications
- Vandal resistant
- Stainless steel toggles
- Through wire options
- Quick-fix brackets supplied
- LSOH cable as standard

### Applications

- Industrial warehouses
- Subways
- Storage sites
- Lavatories
- Changing rooms
- Garages
- Underground car parks
- Railway platforms
- Loading bays
- Factories
- Sport stadiums
- Work areas
- Multi storey car parks
- Stadia

ImpactForce	Diffuser PC	Canopy GRP
UV Resistance	Fair	Good
Impact Resistance	10Nm	0.35Nm
Resistance to ageing	Good	Excellent
Silicone free	Yes	Yes
Halogen free: Luminaire Internal Wiring	Yes Yes	Yes n/a
Food grade certification (15° angle)	Yes	Yes
Glow wire test	850°C	850°C
Heat resistance of luminaire plastics	125°C	160°C
UV Transmittance	89%	n/a



4

TRANSKONA  
Logistics



# CorrosionForce

A high performance, corrosion resistant IP65 proof range. Made from materials selected to withstand aggressive atmospheres laden with salts, acids and mineral oils.

CorrosionForce is constructed from materials that make it suitable for locations that are exposed to liquids or atmospheres that contain potentially corrosive chemicals. Typical areas include food processing areas or milk dairies but also in areas where specialised cleaning agents are used.

When selecting CorrosionForce for an application care needs to be taken that it is suitable. Please check page 15 of this brochure for guidance or contact your local Thorn office if there is any doubt about the suitability of a luminaire.

## Lamps

- ☐ 18-70W T26 (FD) linear fluorescent. Cap: G13
- ☐ 28-80W T16 (FDH) linear fluorescent, Cap: G5

## Materials/Finish

Canopy: glass-fibre reinforced polyester.  
 Diffuser: PMMA with linear prisms. Gasket: expanded polyurethane.  
 Toggles: stainless steel.  
 Gear tray: steel, white enamelled finish

## Installation/Mounting

Cable entry positions at the back and each end of the fitting. Supplied with IP65 grommet, Stainless steel quick fix brackets supplied with each luminaire, Stainless steel toggles are captive in the canopy to prevent loss during maintenance, and steel gear tray is retained by finger operated spring latches. Accessory kits for BESA box mounting, conduit mounting, chain suspension and catenary suspension are all available. Through wire kits can be specified for use with non-emergency versions (see accessories listing).

## Standards

Designed and manufactured to comply with EN 60598 Emergency EN60598 2.22.  
 Ⓢ Class I Electrical  
 IK02 (diffuser)  
 IK03 (canopy)  
 650°C fire retardant (glow wire test)  
 ⚡⚠️ IP65  
 Ⓢ CE

## Specification

To specify state:  
 High performance, IP65, dust and moisture proof corrosion resistant luminaire with GRP canopy, PMMA diffuser and stainless steel toggles, 18-70W T26 linear fluorescent lamps or 28-80W T16 linear fluorescent lamps, digital dimming and emergency options, with HF gear or magnetic gear. As Thorn CorrosionForce.



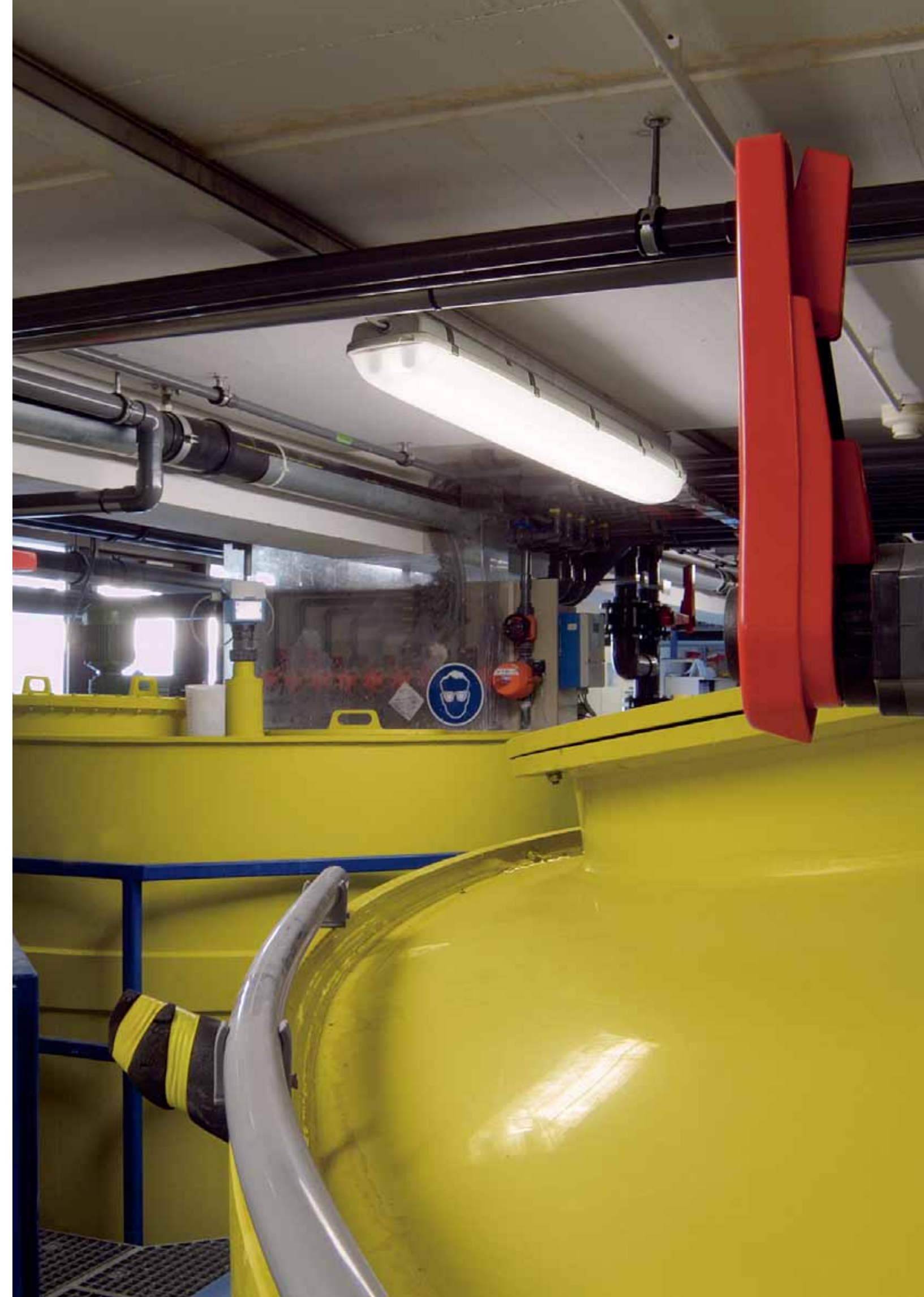
## Key Features

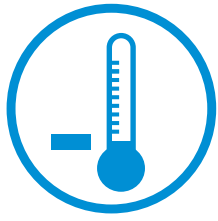
- GRP canopy
- Corrosion resistant PMMA diffuser
- Choice of T26 or T16 lamps
- Switchstart or High Frequency control gear
- Integral 3 hour maintained emergency versions
- Digital Dim options
- Good chemical resistance
- Horizontal or vertical applications
- Stainless steel toggles
- Through wire options
- Quick-fix brackets supplied
- LSOH cable as standard

## Applications

- Abattoirs
- Agricultural buildings
- Factories
- Garages
- Kitchens
- Plant rooms
- Process areas
- Transport terminals
- Wine Cellars
- Paper processing
- Textile processing plants
- Cheese dairies

CorrosionForce	Diffuser PMMA	Canopy GRP
UV Resistance	Good	Good
Impact Resistance	0.2Nm	0.35Nm
Resistance to ageing	Excellent	Excellent
Silicone free	Yes	Yes
Halogen free:		
Luminaire	Yes	Yes
Internal Wiring	Yes	n/a
Food grade certification (15° angle)	Yes	Yes
Glow wire test	650°C	850°C
Heat resistance of luminaire plastics	95°C	160°C
UV Transmittance	91%	n/a





# ColdForce

A high protection IP65 proof fluorescent range for use in low temperature environments

ColdForce has been developed for use in low temperature applications. There are problems associated with standard fluorescent lamps when lighting low temperature locations such as chill rooms and cold stores; the low temperatures have an effect the starting circuit and light output. ColdForce overcomes these problems by incorporating an industrial ballast. This allows ColdForce luminaires to operate at temperatures as low as -30°C, perfect for cold food storage areas. To minimise maintenance costs ColdForce allows the user to install standard lamps which are fitted into the supplied over tubes.

### Lamps

36-58W T26 (FD) linear fluorescent. Cap: G13

### Materials/Finish

Canopy: glass-fibre reinforced polyester.  
 Diffuser: polycarbonate with linear prisms.  
 Gasket: expanded polyurethane.  
 Toggles: stainless steel.  
 Gear tray: steel, white enamelled finish

### Installation/Mounting

Cable entry positions at the back and each end of the fitting. Supplied with IP65 grommet. Stainless steel quick fix brackets supplied with each luminaire, Stainless steel toggles are captive in the canopy to prevent loss during maintenance, and steel gear tray is retained by finger operated spring latches. BESA box and conduit mounting, chain suspension and catenary suspension kits, plus through wire kits are all available (see accessories listing)

### Standards

Designed and manufactured to comply with EN 60598  
 Class I Electrical  
 IK09 (diffuser)  
 IK03 (canopy)  
 850°C fire retardant (glow wire test)  
 IP65  
 CE

### Specification

To specify state: High performance, IP65, dust and moisture proof impact resistant luminaire with GRP canopy, polycarbonate diffuser and stainless steel toggles, 36-58W T26 linear fluorescent lamps, industrial ballast for reliable operation down to -30°C, thermal over tubes fitted to standard tubes for low maintenance. As Thorn ColdForce.



### Key Features

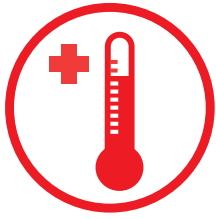
- GRP canopy
- High impact polycarbonate diffuser
- Low temperature Industrial Ballast
- Low temperature over tubes
- Horizontal or vertical applications
- Stainless steel toggles
- Does not require special fluorescent lamps
- Low maintenance costs
- Quick-fix brackets supplied
- LSOH cable as standard

### Applications

- Chill rooms
- Process areas
- Wine Cellars
- Cheese dairies
- Cold stores

ColdForce	Diffuser PC	Canopy GRP
UV Resistance	Fair	Good
Impact Resistance	10Nm	0.35Nm
Resistance to ageing	Good	Excellent
Silicone free	Yes	Yes
Halogen free: Luminaire Internal Wiring	Yes Yes	Yes n/a
Food grade certification (15° angle)	Yes	Yes
Glow wire test	850°C	850°C
Heat resistance of luminaire plastics	125°C	160°C
UV Transmittance	89%	n/a





# HeatForce

High performance IP65 proof luminaire that will continue to perform in high ambient temperature locations

HeatForce is suitable for tough industrial applications where ambient temperatures can rise up to 65°C. Extreme temperatures have a lasting effect on the reliability of standard proof luminaires. HeatForce has been designed to operate safely in such demanding conditions, fitted with a high performance industrial ballast that will give over 50,000 hours operation.

### Lamps

— 36-58W T26 (FD) linear fluorescent. Cap: G13

### Materials/Finish

Canopy: glass-fibre reinforced polyester.  
 Diffuser: polycarbonate with linear prisms.  
 Gasket: expanded polyurethane.  
 Toggles: stainless steel.  
 Gear tray: steel, white enamelled finish

### Installation/Mounting

Cable entry positions at the back and each end of the fitting. Supplied with IP65 grommet. Stainless steel quick fix brackets supplied with each luminaire, Stainless steel toggles are captive in the canopy to prevent loss during maintenance, and steel gear tray is retained by finger operated spring latches. BESA box and conduit mounting, chain suspension and catenary suspension kits, plus through wire kits are all available (see accessories listing)

### Standards

Designed and manufactured to comply with EN 60598  
 Ⓢ Class 1 Electrical  
 IK09 (diffuser)  
 IK03 (canopy)  
 850°C fire retardant (glow wire test)  
 ⚡ IP65  
 Ⓢ CE

### Specification

To specify state: High performance, IP65, dust and moisture proof impact resistant luminaire with GRP canopy, polycarbonate diffuser and stainless steel toggles, 36-58W T26 linear fluorescent lamps, industrial ballast for reliable operation up to 65°C, 50,000 hours at maximum temperature. As Thorn HeatForce.



### Key Features

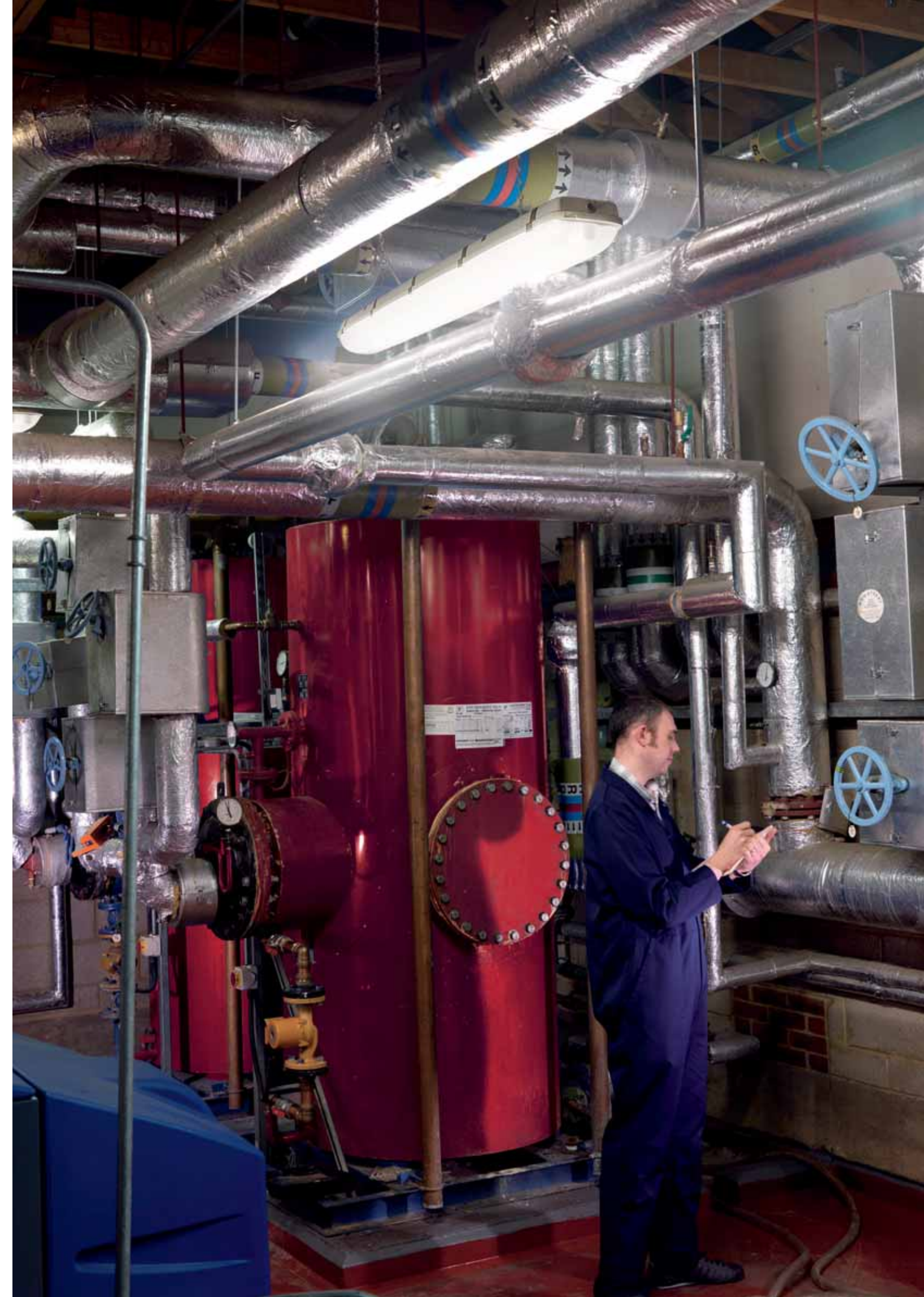
- GRP canopy
- High impact polycarbonate diffuser
- High temperature industrial ballast
- Operation up to 65°
- Horizontal or vertical applications
- IP65-Dust and moisture proof
- Stainless steel toggles
- Quick-fix brackets supplied
- 65°C maximum temperature for 36W. 55°C maximum temperature for 58W.
- LSOH cable as standard

### Applications

- Boiler rooms
- Utility rooms
- Machinery rooms
- Heavy plant rooms

HeatForce	Diffuser PC	Canopy GRP
UV Resistance	Fair	Good
Impact Resistance	10Nm	0.35Nm
Resistance to ageing	Good	Excellent
Silicone free	Yes	Yes
Halogen free: Luminaire Internal Wiring	Yes Yes	Yes n/a
Food grade certification (15° angle)	Yes	Yes
Glow wire test	850°C	850°C
Heat resistance of luminaire plastics	125°C	160°C
UV Transmittance	89%	n/a







# StormForce

A specialist range of IP65 proof luminaires suitable for exterior environments that are subject to rain and strong winds

StormForce has been developed for applications that require IP65 proof luminaires to perform in environments exposed to rain and strong winds. Luminaires mounted on poles, metal gantries or flexible structures that may distort under high winds causing the housing to twist and deform the IP65 seal. StormForce is specifically designed for tough outdoor applications such as power stations, process plants and coastal locations.

### Lamps

- ☐ 36-70W T26 (FD) linear fluorescent. Cap: G13
- ☐ 35-49W T16 (FDH) linear fluorescent, Cap: G5

### Materials/Finish

Canopy: Glass-fibre reinforced polyester.  
 Diffuser: Choice of PMMA or polycarbonate with linear prisms.  
 Gasket: expanded polyurethane  
 Toggles: stainless steel  
 Gear tray: steel, white enamelled finish

### Installation/Mounting

Cable entry positions at the back and each end of the fitting. Supplied with IP65 grommet, stainless steel toggles are captive in the canopy to prevent loss during maintenance, and steel gear tray is retained by finger operated spring latches. Accessory kits for BESA box mounting, conduit mounting, chain suspension and catenary suspension are all available. Through wire kits can be specified for use with non-emergency versions (see accessories listing).

### Standards

Designed and manufactured to comply with EN 60598 Emergency EN60598 2.22.  
 ⚡ Class I Electrical  
 IK09 (PC diffuser)  
 IK02 (PMMA diffuser)  
 IK03 (canopy)  
 850°C fire retardant (glow wire test)  
 ⚡ IP65  
 ⚡ CE

### Specification

To specify state: High performance, IP65, dust and moisture proof impact resistant luminaire with a reinforced GRP canopy suitable for exposed exterior locations, polycarbonate diffuser or acrylic diffuser, stainless steel toggles, internal steel channel, gull wing brackets, 36-70W T26 linear fluorescent lamps or 35-49W T16 linear fluorescent lamps, HF gear. As Thorn StormForce.



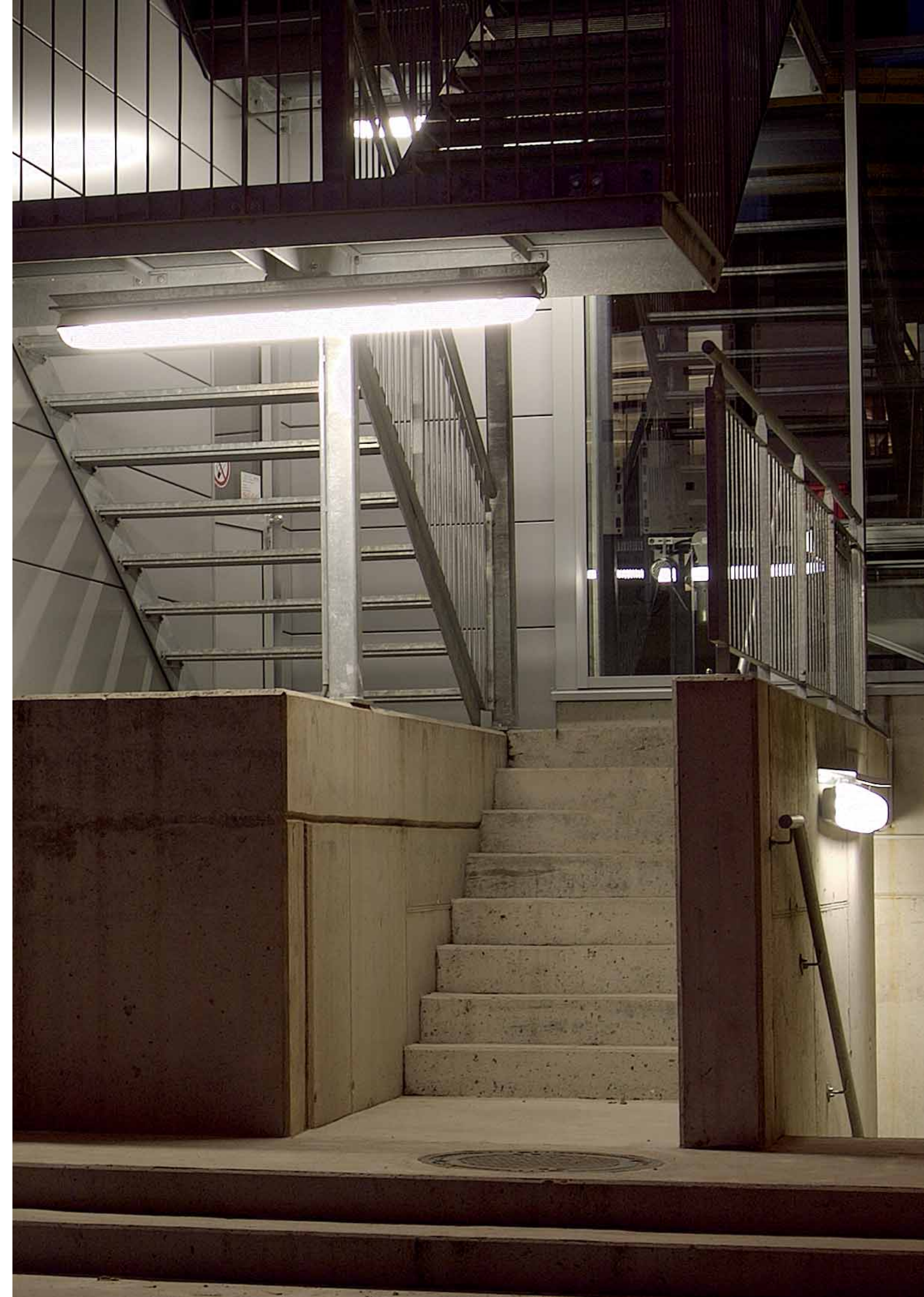
### Key Features

- Reinforced GRP Canopy
- Choice of PMMA or PC diffuser
- Internal steel channel
- High Frequency control gear
- IP65-Dust and moisture proof
- Stainless steel toggles
- Robust enclosure and long life seal
- Factory fitted gull wing brackets
- Emergency versions available
- Dimmable versions available on request
- LSOH cable as standard

### Applications

- Outdoor processing plants
- Seafront areas
- Piers
- Transport areas
- Outdoor processing plants
- Power stations
- Exposed coastal locations

StormForce	Diffuser PMMA	Diffuser PC	Canopy GRP
UV Resistance	Good	Fair	Good
Impact Resistance	0.2Nm	10Nm	0.35Nm
Resistance to ageing	Excellent	Good	Excellent
Silicone free	Yes	Yes	Yes
Halogen free: Luminaire Internal Wiring	Yes Yes	Yes Yes	Yes n/a
Food grade certification (15° angle)	Yes	Yes	Yes
Glow wire test	650°C	850°C	850°C
Heat resistance of luminaire plastics	95°C	125°C	160°C
UV Transmittance	91%	89%	n/a







# Ordering Guides Accessories

## **ColdForce** Lamps must be ordered separately

Description	Ilcos Code	Socket	Weight (Kg)	SAP Code
<b>T26 High Frequency versions</b>				
COLDF2 1X36W T26/38 HF TT L000	FD	G13	1.88	96234623
COLDF2 1X58W T26/38 HF TT L000	FD	G13	2.45	96234624
COLDF2 2X36W T26/38 HF TT L000	FD	G13	2.62	96234625
COLDF2 2X58W T26/38 HF TT L000	FD	G13	3.17	96234626

## **HeatForce** Lamps must be ordered separately

Description	Ilcos Code	Socket	Weight (Kg)	SAP Code
<b>T26 High Frequency versions</b>				
HEATF2 1X36W T26 HF HT L000	FD	G13	1.88	96234627
HEATF2 1X58W T26 HF HT L000	FD	G13	2.45	96234628

## **StormForce** Lamps must be ordered separately

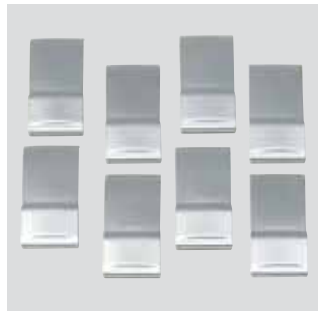
Description	Ilcos Code	Socket	Weight (Kg)	SAP Code
<b>PMMA Diffuser</b>				
<b>T16 High Frequency versions</b>				
STORMF2 AC 2X35W T16 HF L000	FDH	G5	5.0	96234965
STORMF2 AC 2X49W T16 HF L000	FDH	G5	5.0	96234966
<b>T26 High Frequency versions</b>				
STORMF2 AC 2X36W T26 HF L000	FDH	G13	4.2	96234981
STORMF2 AC 2X58W T26 HF L000	FDH	G13	5.6	96234982
STORMF2 AC 2X70W T26 HF L000	FDH	G13	7.0	96234967
<b>PC Diffuser</b>				
<b>T16 High Frequency versions</b>				
STORMF2 PC 2X35W T16 HF L000	FDH	G5	5.0	96234983
STORMF2 PC 2X49W T16 HF L000	FDH	G5	5.0	96234984
<b>T26 High Frequency versions</b>				
STORMF2 PC 2X36W T26 HF L000	FDH	G13	4.2	96234944
STORMF2 PC 2X58W T26 HF L000	FDH	G13	5.6	96234945
STORMF2 PC 2X70W T26 HF L000	FDH	G13	7.0	96234985
<b>Emergency</b>				
STORMF2 PC 2X36W T26 HF E3 L000	FD	G13	5.2	96235726
STORMF2 PC 2X58W T26 HF E3 L000	FD	G13	6.5	96235727

## Accessories Ordering Guide

Description		SAP Code
FORCE2 28/36 TW KIT*	THROUGH WIRE KIT 28/36W	96503163
FORCE2 35/49/58 TW KIT*	THROUGH WIRE KIT 35/49/58W	96503164
FORCE2 70 TW KIT*	THROUGH WIRE KIT 70W	96503165
FORCE2 FIX KIT	QUICK FIT BRACKET (PAIR)	96503166
FORCE2 FIX/CH KIT	CHAIN SUSPENSION KITS (5 PAIRS)	96503167
FORCE2 28/36 RS CLIP KIT	STAINLESS STEEL TOGGLES	96503157
FORCE2 35/49/58 RS CLIP KIT	STAINLESS STEEL TOGGLES	96503158
FORCE2 70 RS CLIP KIT	STAINLESS STEEL TOGGLES	96503159
FORCE2 28/36 PC CLIP KIT	POLYCARBONATE TOGGLES	96503160
FORCE2 35/49/58 PC CLIP KIT	POLYCARBONATE TOGGLES	96503161

\*Only suitable for use with non-emergency versions

Description		SAP Code
FORCE2 70 PC CLIP KIT	POLYCARBONATE TOGGLES	96503162
FORCE2 MCA KIT	CATENARY SUSPENSION KIT	96233817
FORCE2 MRS KIT	CONDUIT KIT	96503169
FORCE2 BESA KIT	BESA BOX KIT	96503168
XFORCE2 R 1X28/36/54	REFLECTOR FOR SINGLE 28/36/54W	96235134
XFORCE2 R 1X35/49/58/80	REFLECTOR FOR SINGLE 35/49/58/80W	96235135
XFORCE2 R 2X28/36	REFLECTOR FOR TWIN 28/36W	96235136
XFORCE2 R 2X35/49/58	REFLECTOR FOR TWIN 35/49/58W	96235137



Stainless steel toggles



Chain fixing kit (Fix/Ch kit)



Quick fix bracket (Fix kit)



BESA kit



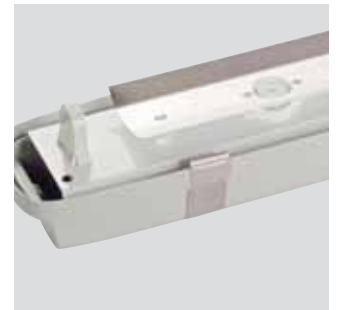
Through wire kit



Polycarbonate toggles (PC Clip kit)



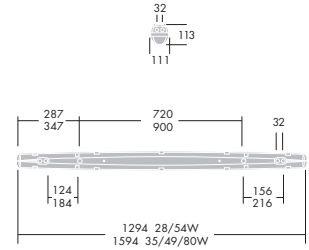
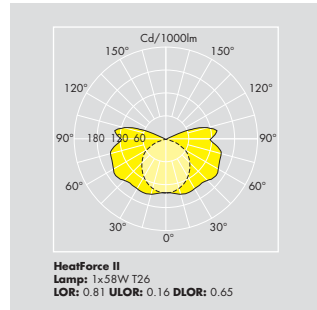
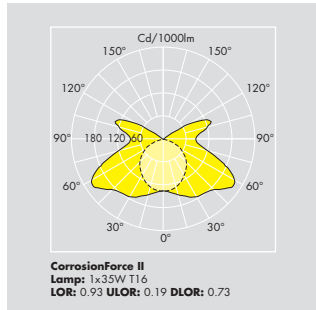
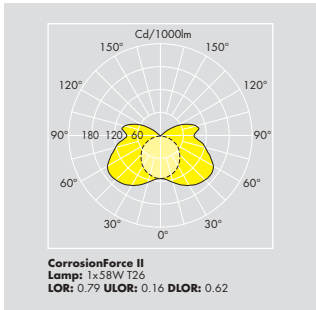
MRS kit



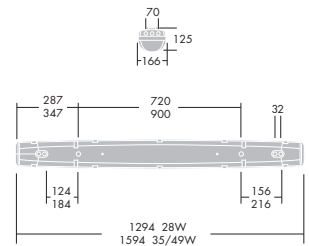
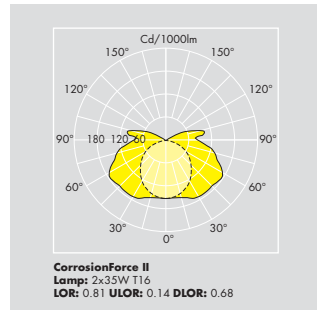
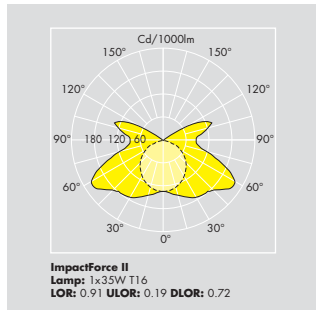
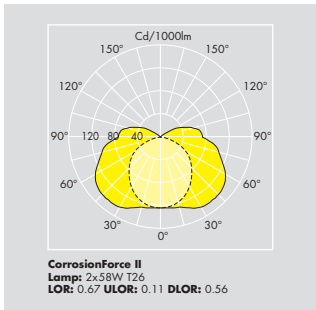
Reflector

# Photometrics

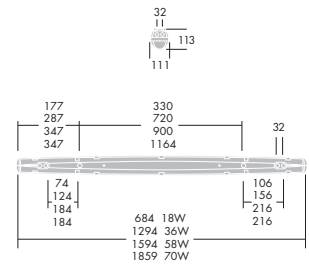
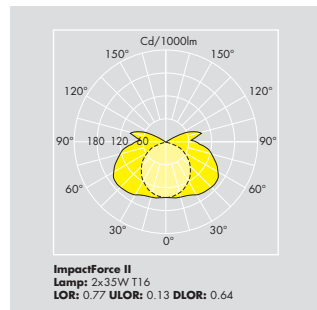
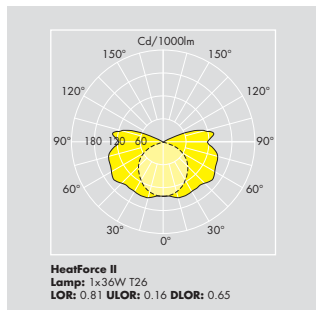
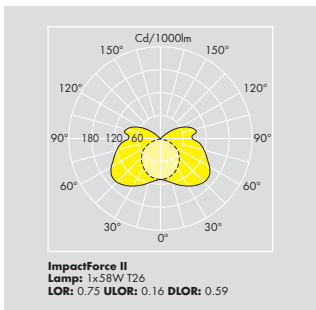
## Dimensions



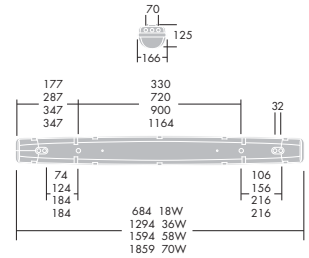
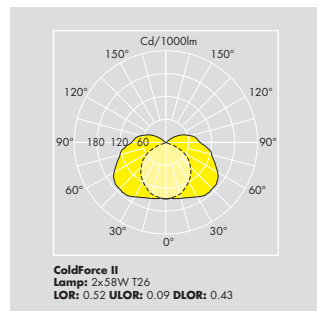
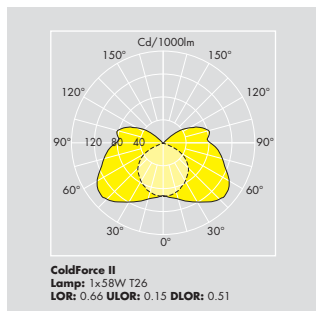
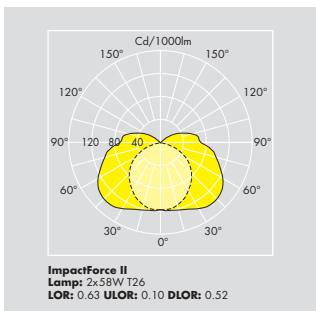
Single T16 version



Twin T16 version



Single T26 version



Twin T26 version

# THORN

Lighting people and places

## Thorn Lighting Main Offices

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Fax: (02) 9612 2700  
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Website: www.thornlighting.com.au

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1220 Wien, Austria  
Tel: (43) 1 202 66 11  
Fax: (43) 1 202 66 11 12  
E-mail: office.at@thornlighting.com  
Website: www.thornlighting.at

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Fax: (420) 233 326 313  
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E-mail: info.dk@thornlighting.com  
Website: www.thornlighting.dk

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Tel: (33) 1 49 53 6262  
Fax: (33) 1 49 53 6240  
Website: www.thornlighting.fr

### Hong Kong

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Kwai Chung, N.T., Hong Kong  
Tel: (852) 2578 4303  
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