

# THORN

## Sports Floodlighting

High performance lighting ideal for sports fields and stadiums





## Thorn floodlighting can be one of your best supporters

Floodlighting can really help your club by being there on the sidelines projecting the required amount of light from the most economical source just where and when you need it.

### More playing time

Darkness robs of you of a third of the time that you could be using your club's most valuable asset - the pitch or court. With Thorn's silent supporters - precision floodlights - you can arrange your schedule to suit your pleasure and not the sun's. And it can be achieved without disturbing your neighbours.

### Social functions

But playing and training aren't the only club functions to benefit. It also gets dark in the summer so think of the barbecues and events you run to raise funds. They can benefit from outdoor lighting too. And what about a well lit car park with no more crunched wings and crumpled tempers? Remember, all the time your ground is lying dark and idle it could be bursting with life and activity. And that's what a club's for isn't it?





### Planning and preparation

- You'll be wanting to light the pitch, car park and possibly the changing rooms. So our lighting engineers can help you with your planning of the floodlights and columns. Floodlights are normally mounted as high as possible to ensure optimum performance at the lowest installation cost. The choice of support, whether stand roof, columns or masts, will be influenced by site conditions, access for maintenance and the sport(s) involved. Columns, which can be lowered to the ground by means of a hydraulic jack are popular for smaller schemes. All columns will need to be ordered separately and, again, our sales engineers can help you with this.
- Contact your electrical contractor and discuss the cabling and installation of columns, floodlights, switching and control gear.
- Check the legal requirements. Your local authority planning services will usually have views on planning issues and restricting obtrusive light, and will often refer to documents published by national lighting bodies. In the UK reference is made to the Institution of Lighting Engineers guidance notes ([www.ile.org.uk](http://www.ile.org.uk)). Detailed plans will have to be submitted so take a look at the lighting equipment and "standard" layouts specified overleaf. Additionally, Thorn can provide specific data to illustrate just what the obtrusive light contribution will be from your particular project.

### Lighting experience

Thorn has the experience to provide the equipment and skill to design the best and most suitable lighting solution for you whether you need it for a single tennis court or a complete Olympic complex.

You see, Thorn has systems for everyone, everywhere. Ask the people at Super Bowl XLI in Miami; or look around you next time you're at Croke Park in Dublin. Take an evening stroll around Eastleigh Skateboard Park; it's floodlit by Thorn, of course, with just four floodlights.

With the help of Thorn not only are the competitors winning but you win in several ways also, with economical lighting that lifts illumination levels while reducing obtrusive light and running costs.

**Better lighting improves safety standards, encourages better performances and lets the crowd see more of what it wants to see. Which, of course, is rather good for business. So contact Thorn today. And stay ahead of the competition.**





## Essentials of getting it right

So far we have discussed the lighting on the playing area. But we also have to consider the effects this lighting might have on the surrounding environment. Sports lighting has been criticised because it uses high powered projectors, often mounted high up, and therefore visible from a great distance, and also because there is a lot of poor sports lighting still in use. This is usually the result of poor equipment, allied to poor layout design and poor set up.

So what do we do about obtrusive light?

- Use a professional lighting design service to develop a scheme, taking into account the need to restrict obtrusive light
- Select floodlights which do not give upward light when they are mounted in their normal configuration
- The lighting design should ensure a “cut-off” very near the boundary so that spillage (trespass) is minimal
- If possible select playing services of lower reflectance to minimise upward reflected light
- Light only to the required level, and no more
- Ensure the floodlights are installed and aimed as planned
- And, when the job is finished maintain the system

Thorn has responded to the challenges with improved floodlights having optical systems and distribution characteristics designed to satisfy the sports players as well as the neighbours and authorities.

Because of the wide range of sporting activities it is necessary to analyse the visual requirements of each and choose the floodlights carefully in order to produce the best results. Here are some of the floodlights Thorn manufacture.



### Troika

A popular “flat-glass” floodlight with adjustable lampholder giving a good quality of light for smaller sports. Troika uses various discharge lamps and the range is from 250 to 600W.



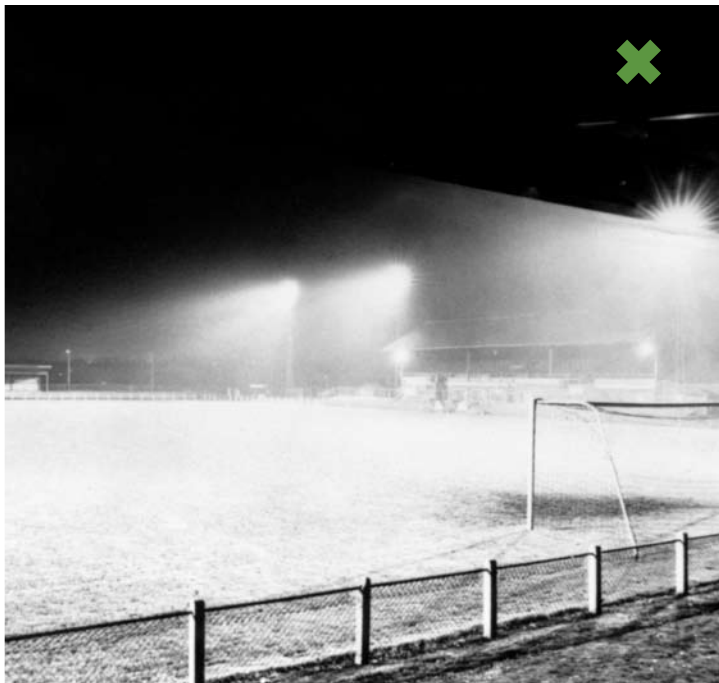
### Champion

Number one solution to floodlighting small sports stadia where the control of obtrusive light is critical. Instead of having a ‘flat glass’ construction Champion’s front glass enclosure is inclined inside the floodlight. The front of the body acts as a cowl for full cut-off and provides a ‘virtual’ light emitting surface, which is aimed parallel (flat) to the ground. Furthermore, each lamp option has a minimum of 3 lamp positions to provide different photometries from just one installed position. As a result illuminance and uniformity of floodlighting projects can be optimised without the need to tilt the floodlight, thus reducing obtrusive light.



### Mundial

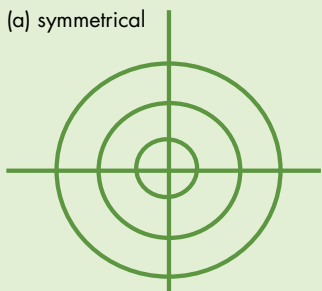
This powerful linear metal halide floodlight combines very high light output – 220,000 lumens from the 2kW lamp – with a pure white light the colour temperature of which makes it suitable for colour television broadcasts. Ideal for major stadiums.



## Floodlighting optical characteristics

The light distribution from floodlights is for convenience classified into three groups. The general shape of the intensity contours on a graph identifies these. Shown here are the general shapes of the three groups that are described as symmetrical, asymmetrical, and double asymmetrical.

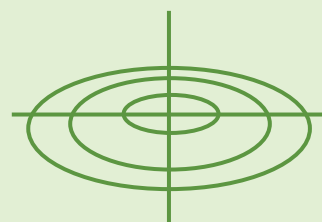
(a) symmetrical



(b) asymmetrical



(c) double asymmetrical



## FAQs

### 1. What is a lumen?

Lumen is the measurement of the rate of flow of the luminous energy, or luminous flux as it is often called.

### 2. What is illumination?

When a ray of light hits a solid surface, the process is known as illumination.

### 3. What is luminous intensity?

The luminous intensity is a measure of how much flux is emitted within a small conical angle in the direction of the surface and the unit is the candela.

### 4. What are Lux levels?

Lux is the basic SI unit of illuminance, equal to one lumen per square metre ( $\text{lm}/\text{m}^2$ ).

### 5. What is peak intensity?

Peak intensity is data used to cover the optical characteristics of floodlights and is usually evaluated in candelas per thousand lamp lumens.

### 6. What is maintenance factor?

All lighting systems need to be serviced, i.e. failed lamps replaced, equipment faults rectified, and lamps and luminaires cleaned. Lamp flux will also depreciate over the age of an installation. Data is produced which enable a maintenance factor to be estimated for an installation with a particular cleaning and maintenance interval.

### 7. What is uniformity?

This describes the measurement of light levels to ensure the light is evenly spread across the playing surface and "looks uniform" to the eye with no obvious variation. Average Uniformity would be calculated by dividing the average lux level by the maximum lux level.

### 8. What is Glare and how must it be considered?

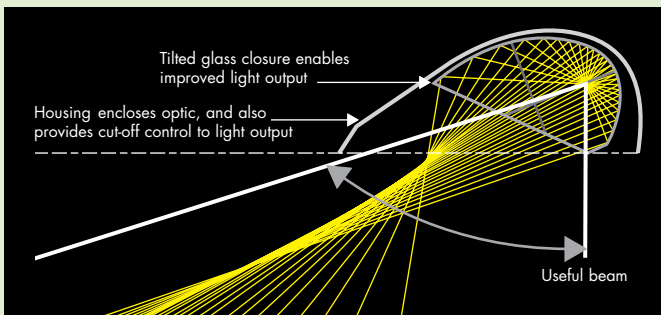
Glare can be described as uncomfortable light, as perceived by players or spectators when viewed at certain angles from the playing surface or viewing area. It's a temporary blinding effect or discomfort. Glare is measured as a figure and should not exceed a certain level. Column placement, column and fitting count and fitting mounting heights are crucial to minimize glare, both at the design and installation stages.

### 9. What is spill light?

Spill or obtrusive light is light which spills out of the playing surface and into surrounding areas, such as residential zones. This is a natural phenomenon, which cannot be avoided but can be minimized by the use of a professional lighting design and the appropriate location and aiming of fittings. certain level. Column placement, column and fitting count and fitting mounting heights are crucial to minimize glare, both at the design and installation stages.

# Champion

Our number one solution to floodlighting small sports stadia and general areas where the control of obtrusive light is critical



Cross sectional view



- Asymmetric floodlight for 1 and 2 kW lamps, incorporating an innovative design concept which takes the performance of asymmetric floodlights to the next level
- Champion combines many of the performance features of classic 'projectors' (high levels of light output) with those of 'flat glass' projectors (control of obtrusive light)
- Instead of having a true 'flat glass' construction, which can limit the efficiency of a flood light, Champion's front glass is inclined inside the floodlight
- The front of the body acts as a cowl for full-cut-off and provides a 'virtual' light emitting surface which remains parallel to the ground
- The optical design of Champion is unique and sets new standards for providing 'on-pitch' performance whilst minimising the number of flood lights required and the contributions to obtrusive light
- Each lamp option has a minimum of 4 lamp positions, adjustable on-site, to provide different photometries from just one installed position
- Excellent colour appearance and colour rendering can be achieved through the use of Metal Halide lamps\*
- Excellent glare control is provided through Champion's unique optical construction
- Additional accessories for increased control of obtrusive light available
- The inherent design features of Champion make installation and maintenance both simple and safe
- A simple 'aiming sight' is supplied with each floodlight to enable aiming in azimuth

## Accessories/Attachments

- Adjustable visor (front and sides)
- Adjustable visor (rear)
- Wire guard
- Reverse mounting Stirrup (required for certain mounting positions)

## Materials/Finish

Body: die-cast aluminium (ENAB 44300), unpainted  
 Glass: 4mm toughened.  
 Wiring/ignitor box: polyamide (66 V0 Black: 20% glass fibre re-inforced).  
 Screws: stainless steel.

## Installation/Mounting

Rear access to lamp.  
 Automatic power interruption on opening of rear access door.  
 Stirrup fixed by M20 bolt through 22mm diameter hole, or through 15mm diameter holes.  
 Ballast and capacitors to be mounted separately.  
 Cable gland for 7.5-13mm cable.

## Specification










To specify state:  
 Die cast aluminium asymmetric floodlight for 1/2kW lamps, IP66 rated, rear lamp access, adjustable lamp position with internally inclined front glass and integral front cowl.  
 As Thorn Champion.

•	HQI-TS/S (MD)	1/2kW
•	HQI-TS/L (MD)	2kW
•	MHN-LA (MD)	1/2kW
•	HST (ST)	E40 1kW
EN 60598	⊕	Class I electrical
⊕	IP66 (inc the wiring/ignitor box)	
⚠	IP65 (ignitor box - Hot Restrike)	
CE	CE	

# Mundial

A high specification, high performance discharge floodlight ideal for sports field and stadium lighting, both indoor and outdoor, illumination versions available

- Choice of lamps giving flexibility in lumen package, Ra index and colour temperature
- Computer optimised optical systems - choice of asymmetric distribution for side lighting (S/S versions), or circular reflector giving a symmetric distribution for long-throw applications (R/S versions)
- Asymmetric version (S/S) available in standard and "extensive" extra wide distribution. Symmetric (R/S) available in intensive, and also optional 2 x 8° and 2 x 10° distribution
- Low glare, spill and upward light preventing light pollution
- Easy installation and maintenance with rear access and automatic power interruption
- IP65 dust tight and waterproof
- Hot restrike (HR) versions available for sports field stadium lighting and any applications where prolonged lack of lighting is not permitted
- Variable lampholder positions enable choice of distribution

	HIT-DE (MD) HQI-TS/S	2kW
	HIT-DE (MD) HSI-TD	2kW
	HIT-DE (MD) MHN-LA	2kW
	HIT (MT)	E40 1kW
	HIT-DE (MD) Rx7s	1.5-2kW
	HST (ST)	E40 1kW
EN 60598		 Class II Electrical
		Class I Electrical (HR version)
IK09 - Glass IK07 - Connection box		
		

## Materials/Finish

Body and frame: die-cast aluminium  
Front glass: thermal resistant 4mm clear glass  
Stirrup: unpainted galvanised steel  
Hood and louvre: black aluminium  
Wiring box for electrical connection: polyamid  
For Hot Restrike item version ignitor box including timer unit: Polyester Cable protection for cables used to connect the HR Ignitor on Mundial: rigid black PVC in spiral

## Installation/Mounting











Stirrup fixed by single M20 bolt through 22mm Ø central hole, or twin bolts through 15mm Ø holes.  
Cable clamp supplied for 7.5-13mm Ø flexible cable.  
Ignitor mounted on floodlight. Control gear to be selected and mounted remotely.  
Hood accessory fixes via 4 screws. Remote gear tray and lamp to be ordered separately

## Specification

To specify state:  
Standard/Hot restrike/floodlight for 1/1.5/2/kW linear metal halide lamps, in die-cast aluminium with asymmetric/symmetric optical system with three lamp positions (narrow, medium and wide photometric distribution). Rear access to the lamp with automatic power interruption. IP65. Class II insulation, Class I for HR version. As Thorn Mundial.



# Troika

	HST (ST)	E40	250-600W
	HIT (MT)	E40	250-400W
	HST-DE (SD)	Fc2	250-400W
	HIT-DE (MD)	Fc2	250-400W
EN 60598		 Class II Electrical	
 Class I available with a special kit			
850° Fire retardant			
IK08 without wire guard IK10 with wire guard			
   IP65 			

An asymmetric 'flat glass' floodlight for 250-600W discharge lamps, using adjustable lampholder

- Ideal for sports, functional and architectural applications
- Wide choice of lamp types
- Innovative reflector optimises performance and adjustable lampholder offers a variety of light distributions
- Light output is finely controlled to minimise light pollution
- Four different light distributions for each lamp option. Troika Variable (60°-70°) uses a reflector in conjunction with a variable position lampholder, providing three distributions varying in intensity, beam width and peak angle intensity (I peak). Ideal for tennis courts, sports applications and car parks. Troika Fixed has a fixed lamp position with a nominal 45° I peak angle. Ideal for swimming pools and uplighting.
- Broad selection of attachments, including a 'Lux Guillotine'. This adjustable vertical light shield enables the light beam to be cut-off exactly where required and is therefore suitable for areas of extreme sensitivity to light spill



## Materials/Finish

Body: recyclable pressure die-cast aluminium LM2, powder coat painted in grey. Standard finish close to RAL 9007.  
 Gear tray cover: recyclable technopolymer (Polyamide reinforced with 20% glass fibre).  
 Glass: toughened, 5mm thick  
 Stirrup: galvanised steel, painted in grey.  
 Bolts and screws: stainless steel.  
 Glass fixing toggles: recyclable technopolymer (Polyamide reinforced with 20% glass fibre).  
 Reflector: ultra specular pre-anodised high grade aluminium.  
 Accessories frame: aluminium.

## Installation/Mounting

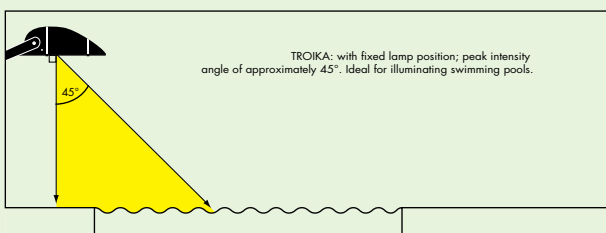
Access to lamp via hinged glass released by four retained Allen screws and sliding toggles. Lamp replacement possible without removing attachments. Installation of gear tray and access to gear compartment via removable gear cover released by four retained Allen screws. Cable gland for 7.5 - 13mm diameter cable. Additional knock out provided for through wiring. Aiming is simplified by indicator on floodlight body. Stirrup fixed by bolts through central 22mm diameter hole and two further 15mm diameter holes positioned 100mm either side of the central hole.

## Specification

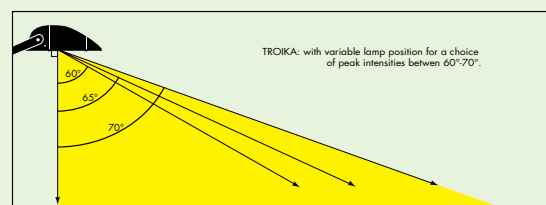
To specify state: 'Flat glass' asymmetric floodlight in die-cast aluminium with high grade technopolymer gear tray cover and adjustable lamp holder mechanism, sealed to IP65 (optical and gear compartment). Access to lamp via hinged glass with four retained fixing points. Installation of, and access to, gear tray via removable cover with integral respirator. Suitable for 250-600W HST/250-400W HIT/250-400W HST-DE/250-400W HIT-DE. As Thorn Troika.

## Accessories

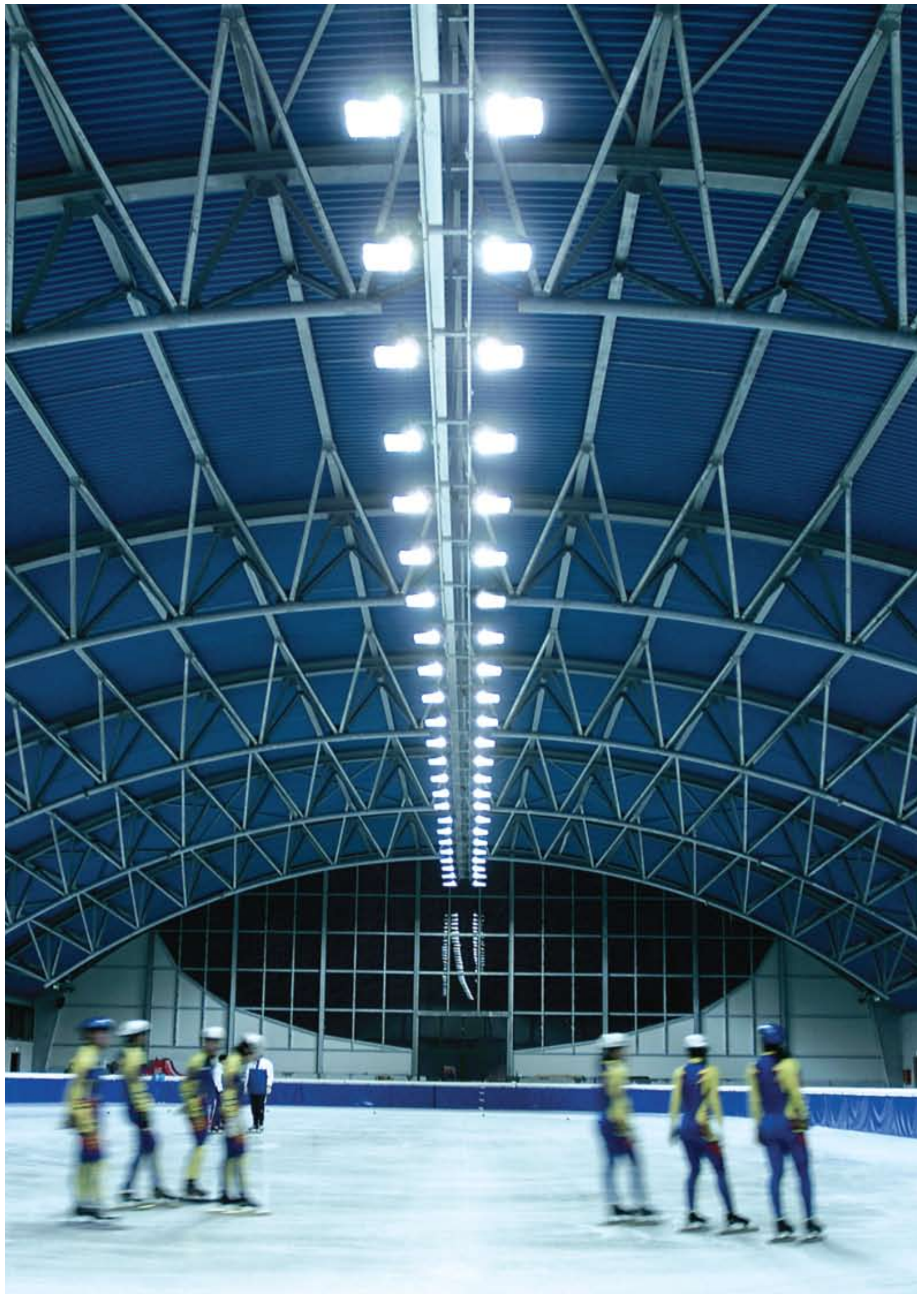
All accessories are mounted in a common aluminium frame which fixes to the face of the floodlight and is hinged along one side to ease lamp maintenance. Access to the lamp can be achieved without the need to fully remove the accessories.



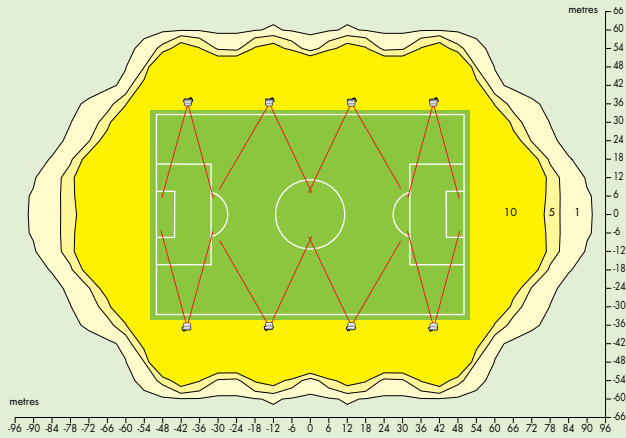
Troika fixed 45



Troika Variable 60 - 70

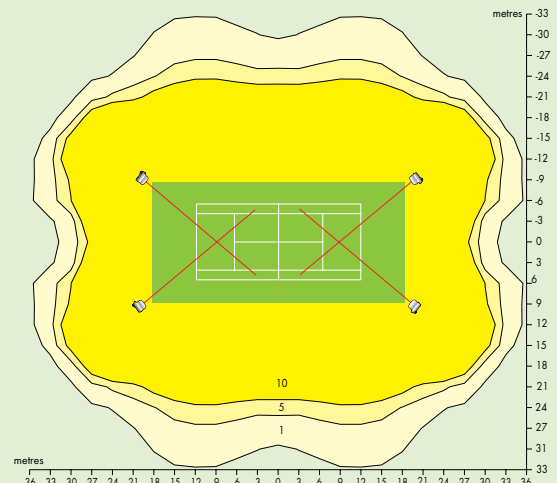


# Application



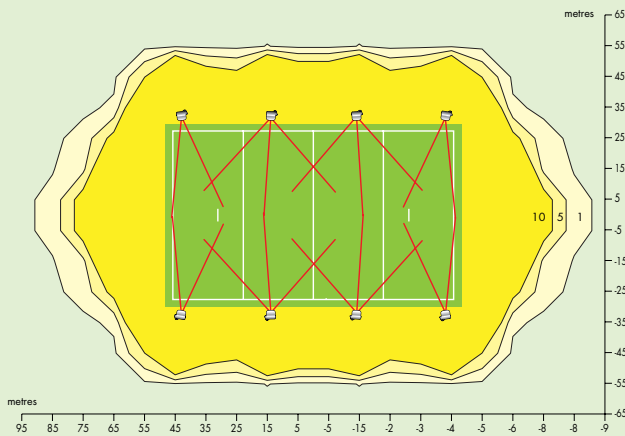
Football/Rugby Pitch (Standard used: Sport England Class II)

Pitch dimensions	100m x 65m	Lamp type	2KW HQITSWNL	Required	Achieved	
		Initial lamp lumens	225000	Maintained Average Illuminance	200 lux	223lux
		No of floodlights	16	Uniformity	0.6	0.7
		No of columns	8			
		Mounting height	15m			



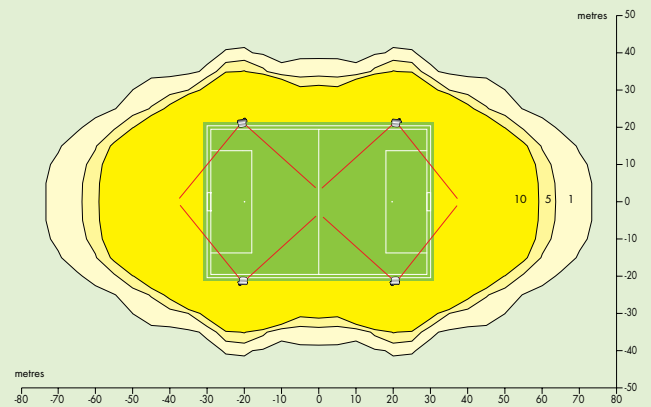
Singles Tennis Court (Standard used ITA)

Court dimensions	60m x 40m	Lamp type	2KW HQI TS WNL	Required	Achieved	
PPA Principal playing area	23.8m x 11m	Initial lamp lumens	225000	Maintained Average Illuminance PPA	500 lux	616 lux
TPA Total playing area	36.6m x 17.4m	No of floodlights	4	Maintained Average Illuminance TPA	400 lux	532 lux
		No of columns	4	Uniformity PPA	0.7	0.8
		Mounting height	10m	Uniformity TPA	0.6	0.7



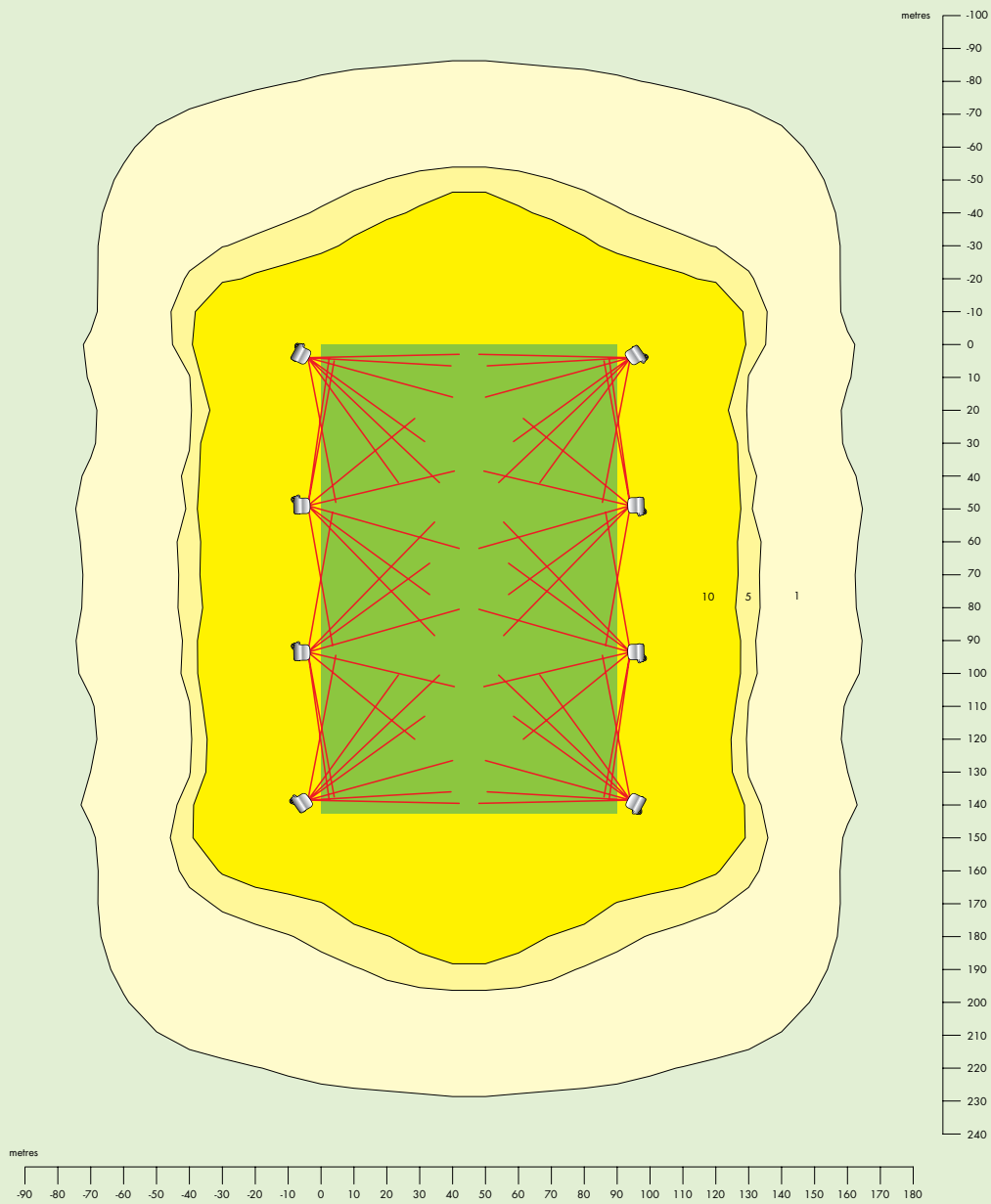
Hockey Pitch (Standard used: Sport England)

Pitch dimensions	92 x 55m	Lamp type	2KW HQITSL	Required	Achieved	
		Initial lamp lumens	225000	Maintained Average Illuminance	350 lux	354 lux
		No of floodlights	20	Uniformity	0.7	0.7
		No of columns	8			
		Mounting height	15m			



MUGA Pitch 60m x 40m (Standard Sport of England, Class II)

Pitch dimensions	60m x 40m	Lamp type	2KW MHN-LA 4200K	Required	Achieved	
		Initial lamp lumens	220000	Maintained Average Illuminance	200 lux	245 lux
		No of floodlights	8	Uniformity	0.6	0.6
		No of columns	4			
		Mounting height	12m			



Typical GAA Pitch Standard used Gaelic Athletics Association

Pitch dimensions	140m x 90m	Lamp type	2KW MHNIA 4200K	Required	Achieved
		Initial lamp lumens	220000	Maintained Average Illuminance	400 lux 400 lux
		No of floodlights	60	Uniformity	0.7 0.7
		No of columns	8		
		Mounting height	20m		

# Champion

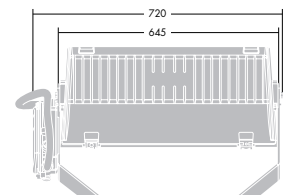
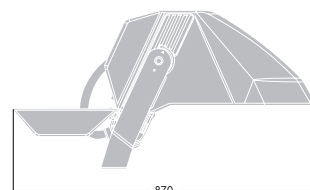
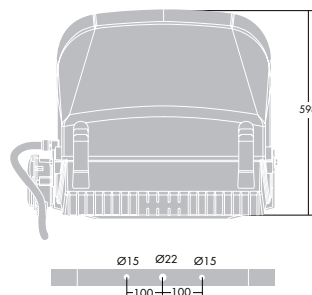
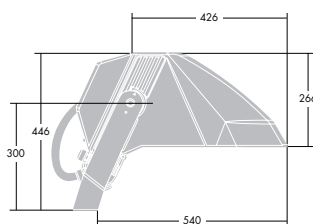
**Ordering Guide** Lamps (from others) and control gear (trays, boxes or loose) to be ordered separately

Description	Lamp manufacturer	Ilcos Code	Socket	Weight (kg)	SAP Code	Old Cat. No.
<b>Champion floodlight with internal ignitor</b>						
CHAMPION 1KW HST E40 WI	ALL	ST	E40	20.6	96012471	CHAMP1HPS
CHAMPION 1KW HQI - TSS OS WI	FOR OSRAM (SHORT ARC) LAMP	MD	Cable	20.6	96012473	CHAMP1SSA
CHAMPION 1KW MHN - LA PH WI	FOR PHILIPS (LONG ARC) LAMP	MD	Cable	20.6	96012474	CHAMP1PLA
CHAMPION 2KW HQI - TSL OS WI	FOR OSRAM (LONG ARC) LAMP	MD	Cable	20.6	96012475	CHAMP2SLA
CHAMPION 2KW HQI - TSS OS WI	FOR OSRAM (SHORT ARC) LAMP	MD	Cable	20.6	96012476	CHAMP2SSA
CHAMPION 2KW MHN - LA PH WI	FOR PHILIPS (LONG ARC) LAMP	MD	Cable	20.6	96012477	CHAMP2PLA
<b>Champion hot restrike floodlight with internal ignitor</b>						
CHAMPION HR 1KW HQI - TSS OS WI	FOR OSRAM (SHORT ARC) LAMP	MD	Cable	24.6	96012478	CHAMP1SSAHR
CHAMPION HR 2KW HQI - TSS OS WI	FOR OSRAM (SHORT ARC) LAMP	MD	Cable	24.6	96012479	CHAMP2SSAHR
<b>Accessories</b>						
CHAMPION WG	WIRE GUARD			1.8	96012480	CHAMPWG
CHAMPION REVERSE STIRRUP	REVERSE STIRRUP ACCESSORY			4.4	96012481	CHAMPPRS
CHAMPION AJ VS FRONT	ADJUSTABLE FRONT AND SIDE VISOR			1.7	96012482	CHAMPFSW
CHAMPION AJ VS REAR	ADJUSTABLE REAR VISOR			0.9	96012483	CHAMPRV

**Ordering Guide** Select from pre-wired gear trays or gear boxes complete with gear or loose gear

Lamp type and rating	Lamp manufacturer	Weight (Kg)	Pre-wired gear tray SAP Code	Old Cat. No.	Supply voltage
1KW HQI-TS (SHORT ARC)	OSRAM	13.9	96012078	PIM1000	230/240
2KW HQI-TS (SHORT ARC)	OSRAM	14.1	96002281	PIM2000	380/400/415
2KW HQI-TS (LONG ARC)	OSRAM	14.1	96002281	PIM2000	380/400/415
1KW MHN-LA (LONG ARC)	PHILIPS	13.9	96012078	PIM1000	230/240
2KW MHN-LA (LONG ARC)	PHILIPS	13.7	96002379	MUNAG2.T	380/400/415
1KW HPS E40 CAP	ALL	13.9	96012078	PIM1000	230/240
<b>IP 65 Boxed gear Set</b>					
1KW HQI-TS (SHORT ARC)	OSRAM	14	96012191	MUNBGS1000	230/240
2KW HQI-TS (SHORT ARC)	OSRAM	18	96012190	MUNBGS2000	380/400/415
2KW HQI-TS (LONG ARC)	OSRAM	18	96012190	MUNBGS2000	380/400/415
1KW MHN-LA (LONG ARC)	PHILIPS	14	96012191	MUNBGS1000	230/240
2KW MHN-LA (LONG ARC)	PHILIPS	18	96012190	MUNBGS2000	380/400/415
1KW HPS E40 CAP	ALL	14	96012191	MUNBGS1000	230/240
<b>Loose components - Ballast</b>					
1KW HQI-TS (SHORT ARC)	OSRAM			OLGI 1000 (SM)	
2KW HQI-TS (SHORT ARC)	OSRAM	11.7	20566616	OGLI 2000 180	
2KW HQI-TS (LONG ARC)	OSRAM	11.7	20566616	OGLI 2000 180	
1KW MHN-LA (LONG ARC)	PHILIPS				
2KW MHN-LA (LONG ARC)	PHILIPS	11.7	20566616	OGLI 2000 180	
1KW HPS E40 CAP	ALL		96216320 (S&N)	OGLIS 1000 PC023W	
<b>Loose components - Capacitor</b>					
1KW HQI-TS (SHORT ARC)	OSRAM				
2KW HQI-TS (SHORT ARC)	OSRAM	0.3	96007449	CAP16/420 X 4	380/400/415/2KW
HQI-TS (LONG ARC)	OSRAM	0.3	96007449	CAP16/420 X 4	380/400/415
1KW MHN-LA (LONG ARC)	PHILIPS				
2KW MHN-LA (LONG ARC)	PHILIPS	0.3	96007449	CAP16/420 X 4	380/400/415
1KW HPS E40 CAP	ALL		96216340	CAP50	

\*Packages (floodlight, gear and lamp available upon request)

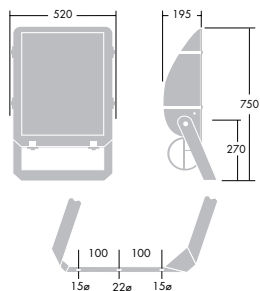


Windage: 0.21m<sup>2</sup>

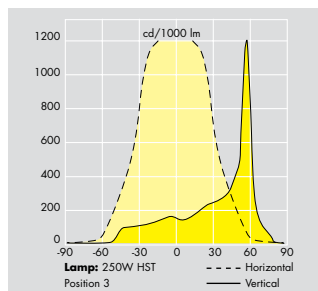
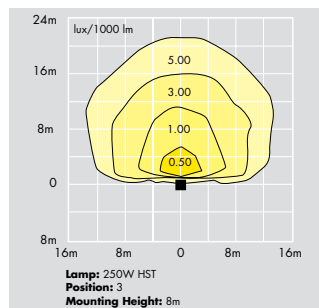
**Ordering Guide** Order floodlight plus gear tray for complete luminaire. Lamps to be ordered separately from others.

Description	Lamp and lamp holder/ manufacturer	Ilcos Code	Socket	Wt (Kg)	SAP Code	Old Cat. No.
<b>Floodlight*</b>						
TROIKA 250/400W HST/HIT 60/70D	VARIABLE LAMPHOLDER	ST/MT	E40	15.4	96007508	QTKA2540MSE40
TROIKA 250/400 HST/HIT 45D	FIXED POSITION LAMPHOLDER	ST/MT	E40	15.4	96008490	QTKB2540MSE40
TROIKA 250/400W HIT-DE 60/70D	VARIABLE LAMPHOLDER	MT	Fc2	15.8	96008453	QTKA2540MSFC2
TROIKA 250/400W HIT-DE 45D	FIXED POSITION LAMPHOLDER	MT	Fc2	15.4	96008491	QTKB2540MSFC2
TROIKA 250W HIT-DE/OS 60/70D	OSRAM LAMP - VARIABLE LAMPHOLDER	MT	Fc2	15.4	96008455	QTKA25MFC2
TROIKA 250W HIT-DE/OS 45D	OSRAM LAMP - FIXED POSITION LAMPHOLDER	MT	Fc2	15.4	96008492	QTKB25MFC2
TROIKA 600W HST 60/70D	VARIABLE LAMPHOLDER	ST	E40	15.6	96008452	QTKA600SE40
TROIKA 600W HST 45D	FIXED POSITION LAMPHOLDER	ST	E40	15.6	96008493	QTKB600SE40
<b>Gear Trays*</b>						
CONTRAST C2 E40 HIT 250W	HIT 250W (PHILIPS HPI-T)	MT	E40	4.2	96068123	CON2HPI-T250.4
CONTRAST 2 GT 250W HIT-DE	HIT-DE 250W (OSRAM)	MT	Fc2	5.0	96011248	CON2MH250.4
CONTRAST 2 GT 250W HST CL2	HST 250W	ST	E40	3.9	96011251	CON2SHP250.4
CONTRAST C2 E40 HIT 400W	HIT 400W (PHILIPS HPI-T)	MT	E40	4.0	96011250	CON2HPI-T400.4
CONTRAST 2 GT 400W HIT	HIT 400W (OSRAM HQI-T)	MT	E40	5.9	96011252	CON2HQI-T400.4
CONTRAST 2 GT 400W HST CL2	HST 400W	ST	E40	5.9	96011253	CON2SHP400.4
CONTRAST 2 GT 400W HIT-DE/FC2 CL2	HIT-DE 400W	MT	Fc2	5.9	96011254	CON2MH400.4
TROIKA GT 600W HST	(PHILIPS) 600W	ST	E40	7.8	96008454	QTKG600HPS
<b>Accessories</b>						
TROIKA CL1 KIT	CLASS 1 KIT (TO BE FITTED TO THE GEAR TRAY ON SITE)			0.1	96009607	QTKEK
TROIKA VS	LUX GUILLOTINE AND ACCESSORY FRAME			3.3	96008494	QTKLG
TROIKA AGS (X2)	BARN DOORS			1.1	96008495	QTKBD
TROIKA WG	WIRE GUARD			2.0	96008496	QTKWG
TROIKA LV	LOUVRE			1.0	96008497	QTKLV
TROIKA FILTER BLU	FILTER (BLUE)			1.6	96008499	QTKFI/B
TROIKA FILTER RED	FILTER (RED)			1.6	96008498	QTKFI/R

\*Please ensure compatibility between gear tray and fitting based on lamp manufacturer.

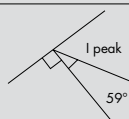


Windage: 0.12m<sup>2</sup>



#### Beam data

Peak intensity (I) cd/km	1240
Beam factor to 10% peak (I)	0.51
Beam angle to 10% of peak (I)	Horizontal 2 x 56° Vertical 12°/78°
Beam angle to 50% of peak (I)	Horizontal 2 x 34° Vertical 5°/5°
Beam angle to 1% of peak (I)	Horizontal 2 x 68° Vertical 23°/112°



## Ordering Guide

For complete package order floodlight and gear set. Lamps to be ordered separately from others.

Description	Lamp manufacturer/beam angle	Projected Area (m <sup>2</sup> )	Icos Code	Socket	Weight (Kg)	SAP Code	Old Cat. No.
MUNDIAL 2KW S/S WB WI MHN-LA	FOR PHILIPS LAMP	0.26	MD	Cable connections	16.8	96009880	MUNC2000DEPMD
MUNDIAL 2KW S/S WB WI MBIL/H	FOR GE (SPL) OR VENTURE LAMP	0.26	MD	Cable connections	16.5	96011294	MUNC2000DEGMD
MUNDIAL 2KW S/S WB WI HQI-TS	FOR OSRAM OR SYLVANIA (HSI/TD) LAMP	0.26	MD	Cable connections	16.1	96002378	MUNC2000DESMD
MUNDIAL 2KW S/S EXT WB WI MHN-LA	WITH EXTENSIVE DISTRIBUTION FOR PHILIPS LAMP	0.26	MD	Cable connections	16.8	96012046	MUNCX2000DEPMD
MUNDIAL HR 2KW S/S WB WI HQI-TS	WITH HOT RE-STRIKE IGNITOR FOR OSRAM OR SYLVANIA (HSI/TD) LAMP	0.26	MD	Cable connections	23.0	96012168	MUNC2000DEHR
MUNDIAL 1.5KW S/S WB WI MBIL/H	FOR GE (SPL) OR VENTURE LAMP	0.26	MD	RX7S	12.0	96011344	MUNC1500DEGMD
MUNDIAL 1KW S/S WB E40 WI HPI-T	FOR PHILIPS LAMP	0.26	MT	E40	15.8	96102322	MUNC1000E40PMT
MUNDIAL 1KW S/S WB E40 WI HQI-T	FOR HPS-T LAMPS OR OSRAM MH LAMP	0.26	MT	E40	15.8	96009659	MUNC1000E40STMT
MUNDIAL 1KW S/S WB E40 NI/1.5M	FOR PHILIPS (HPI-T) LAMP	0.26	ST	E40	15.6	96002377*	MUNC1000E40PMRT*
MUNDIAL 1KW S/S WB E40 WI HST	FOR HST LAMP	0.26	ST	E40	15.8	96217498	MUNC1000E40HPST
MUNDIAL 1KW S/S WB WI HQI-TS	FOR OSRAM LAMP	0.26	MD	Cable connections	15.3	96010429	MUNC1000DESMD

(\* this unit is supplied without integral ignitor [requires ignitor on gear tray])

Mundial C, Asymmetric floodlight	Lamp manufacturer/beam angle	Projected Area (m <sup>2</sup> )	Icos Code	Socket	Weight (Kg)	SAP Code	Old Cat. No.
MUNDIAL 2KW R/S INT WB WI HQI-TS	WITH INTENSIVE BEAM, FOR OSRAM LAMP	0.26	MD	Cable connections	16.2	96002553	MUNR12000DESMD
MUNDIAL HR 2KW HQI-TS R/S INT WB WI	WITH INTENSIVE BEAM AND HOT RE-STRIKE IGNITOR FOR OSRAM LAMP	0.26	MD	Cable connections	23.0	96012169	MUNR2000DESHR
MUNDIAL 2KW R/S 8D WB WI HQI-TS	WITH 8 DEGREE BEAM FOR OSRAM LAMP	0.26	MD	Cable connections	15.6	96011346	MUNR812000DESMD
MUNDIAL 2KW R/S 10D WB WI HQI-TS	WITH 10 DEGREE BEAM FOR OSRAM LAMP	0.26	MD	Cable connections	15.6	96011349	MUNR102000DESMD
MUNDIAL 1KW R/S INT WB WI HQI-TS	WITH INTENSIVE BEAM, FOR OSRAM LAMP	0.26	MD	Cable connections	16.2	96012379	MUNRINT1000DESMD
MUNDIAL 1KW R/S 8D WB WI HQI-TS	WITH 8 DEGREE BEAM FOR OSRAM LAMP	0.26	MD	Cable connections	15.6	96012380	MUNR81000DESMD
MUNDIAL 1KW R/S 10D WB WI HQI-TS	WITH 10 DEGREE BEAM FOR OSRAM LAMP	0.26	MD	Cable connections	15.6	96012382	MUNR101000DESMD

All above Mundial floodlights include ignitor, except where indicated \*

### Attachments (for use with Mundial C versions only)

MUNDIAL VS	HOOD ATTACHMENT FOR MUNDIAL ASYMMETRIC FLOODLIGHT	96011307	MUNH
MUNDIAL LV	HOOD/LOUVRE ATTACHMENT FOR MUNDIAL ASYMMETRIC FLOODLIGHT	96008489	MUNHL

## Ordering Guide

Select from pre-wired gear trays or gear boxes complete with gear or loose gear

Lamp Type	Lamp Manufacturer	Pre-wired gear tray*			IP 65 Boxed gear box			Loose gear				
		SAP Code	Old Cat No.	Supply voltage	SAP Code	Old Cat No.	Supply voltage	SAP Code	Old Cat No.	Supply voltage		
<b>For use with floodlights which have integral ignitor</b>												
MHN-LA 2000W	PHILIPS	96002379	MUNAG2.T	380/400/415	96012190	MUNBGS2000	380/400/415	20566616	OGI 2000 180	96007449	CAP16/420 (3 NEEDED)	380/400/415
HPI-T 2000W	PHILIPS	-	-	-	96012184	MUNBGS2000PMT	380/400/415	-	-	-	-	-
HQI-TS/DS 2000W	OSRAM	96002281	PIM2000	380/400/415	96012190	MUNBGS2000	380/400/415	20566616	OGI 2000 180	96007449	CAP16/420 (3 NEEDED)	380/400/415
HQI-TS/DS 2000W HOT RESTRIKE OPERATION	OSRAM	96102386 or 96002280	PIM2000HR/380/400 OR PIM2000HR/400/415	380/400/415	TO SPECIAL ORDER			20566616	OGI 2000 180	96007449	CAP16/420 (4 NEEDED)	380/400/415
HQI-T 2000W	OSRAM	-	-	-	96012190	MUNBGS2000	380/400/415	-	-	-	-	-
HQI-TS N & SUPER SN 2000W	OSRAM	-	-	-	96012184	MUNBGS2000PMT	380/400/415	-	-	-	-	-
SPL 2000W	GE	96102439	MUNBG2.T	380/400/415	96012190	MUNBGS2000	380/400/415	20566616	OGI 2000 180	96007449	CAP16/420 (3 NEEDED)	380/400/415
MBIL/H 2000W	VENTURE	96102439	MUNBG2.T	380/400/415	96012190	MUNBGS2000	380/400/415	20566616	OGI 2000 180	96007449	CAP16/420 (3 NEEDED)	380/400/415
HSITD 2000W	SYLVANIA	96002281	PIM2000	380/400/415	96012190	MUNBGS2000	380/400/415	20566616	OGI 2000 180	96007449	CAP16/420 (3 NEEDED)	380/400/415
HIS-TD 2000W HOT RESTRIKE	SYLVANIA	96102386 or 96002281	PIM2000HR/380/400 OR PIM2000HR/400/415	380/400/415	TO SPECIAL ORDER			20566616	OGI 2000 180	96007449	CAP16/420 (4 NEEDED)	380/400
SPL 1500W	GE	96102387	MUNBG1.5T	380/400/415	TO SPECIAL ORDER			22148693	SIM1500G	96007449	CAP16/420 (2 NEEDED)	380/400/415
MBIL/H 1500W	VENTURE	96102387	MUNBG1.5T	380/400/415	-	-	-	-	-	-	-	-
MHN-LA 1000W	PHILIPS	96012078	PIM1000	230/240	96012191	MUNBGS1000	230/240	-	-	-	-	-
HPI-T 1000W	PHILIPS	96102340	MUNAG1.T	230/240	-	-	-	96216350	OGI1000	96216109	CAPPH (4 NEEDED)	230/240
HQI-TS/DS 1000W	OSRAM	-	-	-	96012191	MUNBGS1000	230/240	-	-	-	-	-
HQI-T 1000W	OSRAM	96012078	PIM1000	230/240	96012191	MUNBGS1000	230/240	96216320	OGUS1000PC023W	1X96216340 & 2X96216109	1 CAP50+2 CAPPH	230/240
HPS-T 1000W	ALL	96102388	PHP1000 230/240 S/AM	230/240	96012191	MUNBGS1000	230/240	96216320	OGUS1000PC023W	96216340	CAP50	230/240

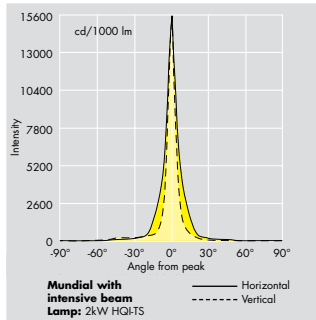
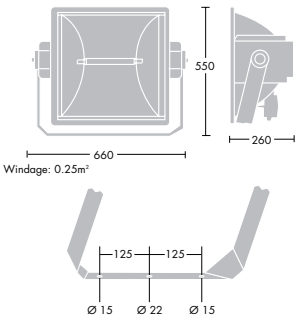
### For use with projectors which require a remote ignitor. Gear set must be within stated max distance of projector

HPI-T 1000W	PHILIPS	96002283	MUND1G1.T distance limit: max 15m	230/240	96012185	MUNBGS1000 PMTR 230/240 distance limit: max 10m	230/240	-	-	-	-	-
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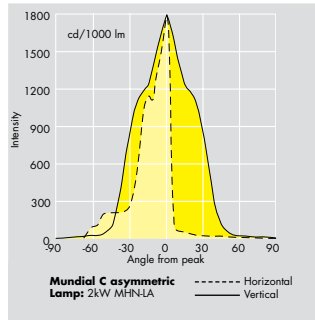
\* All gear tray dimensions are 520mm (L) x 128mm (W) x 130mm (H) (excluding hot restrike)



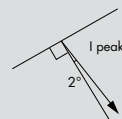
© A. M. Oberlé



Beam data	
Peak intensity (I) cd/klm	15400
Beam factor to 10% peak (I)	0.41
Beam angle to 10% of peak (I)	Horizontal 2 x 15° Vertical 8°/9°
Beam angle to 50% of peak (I)	Horizontal 2 x 4° Vertical 3°/3°
Beam angle to 1% of peak (I)	Horizontal 2 x 31° Vertical 22°/47°



Beam data	
Peak intensity (I) cd/klm	1800
Beam factor to 10% peak (I)	0.67
Beam angle to 10% of peak (I)	Horizontal 2 x 42° Vertical 6°/53°
Beam angle to 50% of peak (I)	Horizontal 2 x 29° Vertical 3°/20°
Beam angle to 1% of peak (I)	Horizontal 2 x 55° Vertical 69°/66°



# THORN

Lighting people and places

## Thorn Lighting Main Offices

### Australia

Thorn Lighting Pty Limited  
43 Newton Road,  
Wetherill Park NSW 2164  
Tel: (02) 9604 4300  
Fax: (02) 9604 4588  
E-mail: info@thornlight.com.au  
Website: www.thornlight.com.au

### Austria

Thorn Licht GmbH  
Donau-City-Straße 11, 1220 Wien, Austria  
Tel: (43) 1 202 66 11  
Fax: (43) 1 202 66 11 12  
E-mail: office@thorn.at

### China

Thorn Lighting (Guangzhou) Operations Ltd  
No. 12 Lian Yun Road, Eastern Section, GETDD,  
Guangzhou 510760, China  
Tel: (86) 20 3228 2706  
Fax: (86) 20 3228 1777  
E-mail: sales@thorn.com.cn

Thorn Lighting (Tianjin) Co. Ltd  
332 Hongqi Road, Tianjin 300190, China  
Tel: (86) 22 8369 2303  
Fax: (86) 22 8369 2302  
E-mail: marketing@thornlight.com.cn

### Czech Republic

Thorn Lighting CS spol. s.r.o.,  
Na Březince 6/930, 150 00 Praha 5  
Czech Republic  
Tel: (420) 224 315 252  
Fax: (420) 233 326 313  
E-mail: thorn@thornlight.cz  
Website: www.thornlight.cz

### Denmark

Thorn Lighting A/S  
Albuen 44, 6000 Kolding, Denmark  
Tel: (45) 7696 3600  
Fax: (45) 7696 3601  
Website: www.thornlight.dk

### France

Thorn Europhane SA  
156 Boulevard Haussmann,  
Cedex 08, Paris 75379, France  
Tel: (33) 1 49 53 6262  
Fax: (33) 1 49 53 6240  
Website: www.thorn.fr

### Hong Kong

Thorn Lighting (Hong Kong) Limited  
Unit 4301, Level 43, Tower 1, Metroplaza,  
223 Hing Fong Road, Kwai Chung, N.T.,  
Hong Kong, China  
Tel: (852) 2578 4303  
Fax: (852) 2887 0247  
E-mail: info@thorn.com.hk  
Website: www.thorn.com.hk

### India

Thorn Lighting India Pvt. Ltd  
RH-2 Nirav CHS, 636A, 90 Ft. D.P. Road,  
Near Thakur Polytechnic  
400 101 Mumbai, India  
Tel: (91) 22285 41056  
Fax: (91) 22285 1120  
E-mail: international\_sales@thornlight.com  
Website: www.thornlighting.com

### Ireland

Thorn Lighting (Ireland) Limited  
320 Harold's Cross Road, Dublin 6W, Ireland  
Tel: (353) 1 4922 877  
Fax: (353) 1 4922 724  
E-mail: enq.dublin@thornlight.com

### Italy

Thorn Europhane Spa  
Via G Di Vittorio, 2, Cadriano di Granarolo,  
Bologna 40057, Italy  
Tel: (39) 051 763391  
Fax: (39) 051 763088  
E-mail: info@thornlighting.it  
Website: www.thornlighting.it

### New Zealand

Thorn Lighting (NZ) Ltd  
399 Rosebank Road, P O Box 71134, Rosebank,  
Auckland 7, New Zealand  
Tel: (64) 9 828 7155  
Fax: (64) 9 828 7591

### Norway

Thorn Lighting AS  
Strømsveien 344, 1081 Oslo, Norway  
Tel: (47) 22 82 07 00  
Fax: (47) 22 82 07 01  
E-mail: info@thornlight.no  
Website: www.thornlighting.no

### Poland

Thorn Lighting Polska Sp.z.o.o.,  
Ul. Gazowa 26A, Wrocław 50-513, Poland  
Tel: (48) 71 7833 740  
Fax: (48) 71 3366 029  
E-mail: thorn@thornlight.pl  
Website: www.thornlight.pl

### Russia

Thorn Lighting  
Novoslobodskaya Str., 21, office 406 Business Center  
"Novoslobodskaya 21", Moscow 127030, Russia  
Tel: (7) 495 981 35 41  
Fax: (7) 495 981 35 42  
E-mail: office.moscow@thorn.ru  
Website: www.thorn.ru

### Singapore

Thorn Lighting (Singapore) Pte Ltd  
5 Kaki Bukit Crescent, 04-02 Koyotech Building,  
416238 Singapore  
Tel: (65) 6844 5800  
Fax: (65) 6745 7707  
E-mail: info@thornlight.com.sg  
Website: www.thornlight.com.sg

### Sweden

Thorn Lighting AB  
Industrigatan, Box 305,  
SE-261 23 Landskrona, Sweden  
Tel: (46) 418 520 00  
Fax: (46) 418 265 74  
E-mail: thorn@thornlight.se  
Website: www.thornlight.se

### United Arab Emirates

Thorn Lighting Ltd Dubai  
Al Shoala Building, Office 301, Block E,  
Airport road, P.O. Box 1200,  
Deira, Dubai, UAE  
Tel: (971) 4 2940181  
Fax: (971) 4 2948838  
E-mail: thuae@emirates.net.ae

### Thorn Gulf LLC

Al Shoala Building, Office 301/2, Block E,  
Airport road, P.O. Box 22672,  
Deira, Dubai, UAE  
Tel: (971) 4 2948938  
Fax: (971) 4 2948838  
E-mail: thorgm@emirates.net.ae

### United Kingdom

Thorn Lighting Limited  
Silver Screens, Elstree Way,  
Borehamwood, Hertfordshire, WD6 1FE, UK  
Tel: (44) 20 8732 9800  
Fax: (44) 20 8732 9801  
E-mail: brochures@thornlight.com  
Website: www.thornlighting.co.uk

### Thorn Olympics Sports Lighting Team

Tel: 07796 303176  
E-mail: olympicsteamuk@thornlighting.com

### International Sales

Thorn Lighting Limited  
Silver Screens, Elstree Way, Borehamwood,  
Hertfordshire, WD6 1FE, UK  
Tel: (44) 20 8732 1915  
Fax: (44) 20 8732 1911  
E-mail: international\_sales@thornlight.com

**www.thornlighting.com**

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