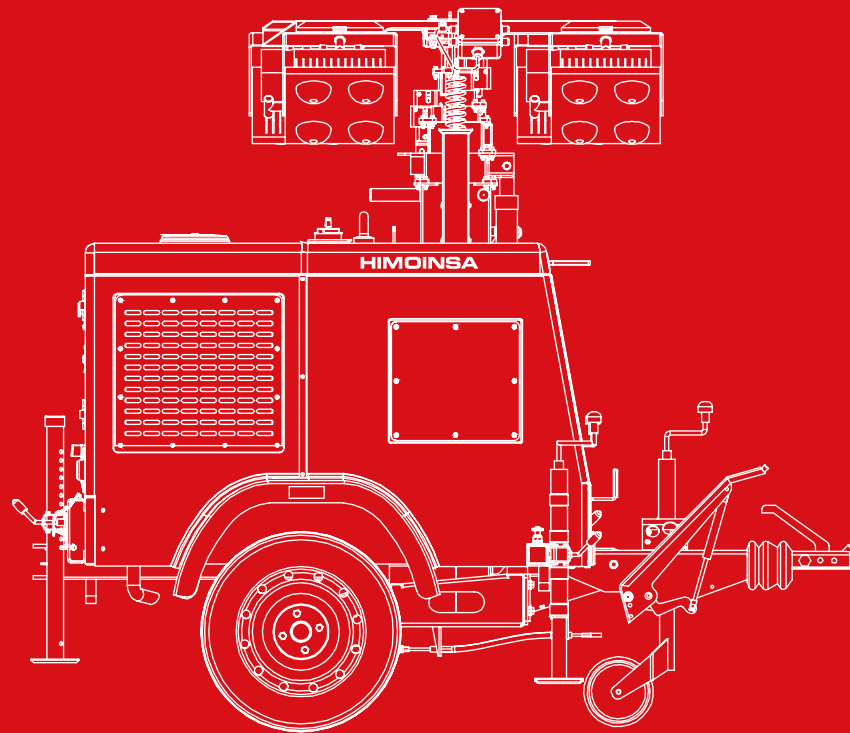


# OPERATING AND MAINTENANCE MANUAL



LIGHTING TOWER | COMPACT SERIES

STANDARD  
HEAVY DUTY  
ECO



**HIMOINSA**

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# 1. INTRODUCTION

Through this manual, we intend to provide information and basic instructions for a correct installation and use of your lighting tower. It is essential that you read all the safety rules and warnings before, during and after the commissioning of your lighting tower. Only in this way can we ensure an optimal service under totally reliable and secure conditions.

HIMOINSA, S.L. considers that it should note in all honesty that the information described in this manual is valid on the date on which such information is issued, given that aspects such as technological advances and updates of current regulations oblige us to make modifications without prior notice.

This manual and other documents of reference are part of the lighting tower that you have acquired and should be preserved and protected against any agent that can damage them during the life cycle of the tower. This documentation must accompany the equipment when it is transferred to another user or to a new owner.

You must always keep the manual close for reference in case of doubt. Although the information given in this manual has been verified to the detail, HIMOINSA refuses any responsibility arising from any handwriting errors, typographical, or transcription.

In accordance with European Directives concerning the Protection of Consumers and Users, HIMOINSA is excluded from any liability resulting from the defective installation and/or the improper use of the machine or from failure to comply with the rules contained in this manual.



## 2. SAFETY REGULATIONS

Before using this equipment read carefully the indicated safety regulations and find out about the local safety requirements.

The installation, operation, maintenance and repairs shall be carried out only by authorized and competent staff.

The owner is responsible for the maintenance of the lighting tower in conditions of security. Parts and accessories must be replaced if they are not in operating conditions.

As a premise to the content of this manual, you will find a detailed description of the basic criteria that you for your own and that of third parties security, must pay a close attention.

### 2.1 GENERAL SAFETY PRECAUTIONS

- It is necessary before any use, to know how to stop the equipment quickly in case of emergency, and fully understand the operation and all the controls of your lighting tower.
- Carry out all the relevant checks of the gens-set and the tower, before putting them into operation, in order to avoid possible accidents, both personal and to the equipment itself.
- Never allow other people to use the lighting tower unless you have previously given them the necessary instructions for its proper and safe use.
- Do not allow its use to minors without the supervision of an adult who is familiar with the use of the lighting tower.
- Avoid the access of children or pets to the operation area of the lighting tower, to prevent, to the extent possible, that they may be injured with any component of the equipment.
- Stop and disconnect the gen-set immediately, as soon as there is any abnormal situation during operation. Identify and correct the problem before starting it again.
- Make sure the correct location of the lighting tower on a surface completely level and stable to ensure a proper operation and get a perfect stability against the untimely action of the wind.



- Lower the mast if strong winds (more than 80km/h) or thunderstorms are expected in the area.
- The tower extends up to 9 m. Make sure area above it is open and clear of overhead wires and obstructions.
- If for any reason any part of the mast hangs up or the winch cable develops slack while raising or lowering the tower, STOP immediately and contact with the Technical Department at HIMOINSA.
- Make sure that chains, hooks, ramps, jacks and any other type of lifting devices are attached securely and have enough counterweight to lift and hold the equipment safely. Remain aware of the position of other people around you when lifting the mast.
- NEVER remove the safety lock or pull the locking pin while the mast is up.
- NEVER adjust the mast when the unit is in operation.
- NEVER turn on the lights without the protection glass cover placed or with a cracked or damaged glass.

### **IMPORTANT**

**Always put the support skids for achieving a secure and perfect stability of the lighting tower with the help of the spirit level.**

## **2.2 SAFETY AGAINST THE DANGER OF ELECTROCUTION**

- Never handle the lighting tower and its gen-set with wet hands of feet. If the tower is stored outside, check that the engine and alternator are dry. Dry them if they are wet.
- Never touch bare wires or disconnections. Keep electrical wires and connections in good condition.
- Always use the suitable plugs for the outlet bases provided on the generator set. Never use zinc or cables without a plug or with stripped ends. Introducing these cables directly into the outlet socket could create a high risk of electrocution.
- As soon as you notice any cable in a poor condition, replace it and make sure it is in perfect condition before switching on the lighting tower again.

## **2.3 SAFETY AGAINST THE DANGER OF FIRE**

- Always refuel the tank of the gen-set, in a ventilated area with the engine completely switched off.
- Do not fill the fuel tank of the gen-set when it is running or with the engine hot.
- Fill the fuel tank to a maximum 90% of its total capacity. Make sure that the cap of the tank is perfectly closed.
- Check that no fuel has been spilt on the gen-set. If this happens, you must clean it and let it dry well, before starting the equipment. The leftover fuel could ignite.
- Diesel is flammable and its vapours explosive. It is forbidden to smoke, use a naked flame or produce sparks while refuelling or using the equipment.
- Do not place flammable objects or materials close to the engine while running and refuel.
- Do not place anything on the air inlet /outlet area and on the exhaust outlet as this could cause the overheating of the engine and may create a fire hazard.
- Do not place anything on the spotlight immediately after use, because they come to reach very high temperatures.

## **2.4 SAFETY AGAINST BURNS**

- Never touch the engine or the gen-set exhaust while is running or some minutes after its stop, it can cause severe burns. Before handling and maintenance service, let the engine cools down.
- Never touch the halogen lamps during 20-25 minutes after its use, can cause severe burns.

## **2.5 SAFETY IN THE TOWING**

Towing a lighting tower requires care. Both trailer and vehicle must be in good conditions, and securely fastened to reduce the possibility of accidents. Some countries, requires the trailer be registered and licensed. Contact the Traffic



Agency of your country to check the necessary licenses for your particular unit.







- Check that the hitch and coupling on the towing vehicle are rated equal to, or greater than the trailer's "gross vehicle weight rating" (GVWR).
- Check the state of the tire on trailer, inflation and tread wear.
- Check the hitch and coupling for wear or damage. DO NOT tow the lighting tower using defective parts. Make sure that the hitch and coupling are compatible. Make sure that the coupling is securely fastened to the vehicle.
- Check that directional and brake light on the trailer are well connected and working properly.
- The maximum recommended speed for road towing is 80km/h. Recommended off-road towing speed is not to exceed 15km/h depending on terrain.
- Always maintain an extra safety space between vehicles and avoid verges, curbs and sudden lane changes. If you have not pulling a trailer before, practice turns, stops and the reverse in a traffic-free area.
- A film of grease on the coupling will extend its life. Wipe the coupler and apply fresh grease each time the trailer is towed.
- ALWAYS lower the mast before removing the hand brake.
- Before moving the tower, make sure ALWAYS that the mast is fully folded and with the safety lock.
- Make sure that the spotlights are folded and locked in the transport position.
- Make sure that the stabilizers are fully gathered and fastened.

### IMPORTANT



**NEVER move the lighting tower with the mast unfolded.**

## 2.6 SAFETY STICKERS AND INFORMATION

There are some safety stickers and information all over the gen-set. Following you can find a brief explanation of their location and information on each of them.

Picture	Location	Information
	Located on the connections from the alternator to the engine. Whenever there are timing belts or transmission shafts.	They warn of the danger in case an alien object collides with the timing belts or with the components in motion that they connect.
	Located on the parts of the genset that heat up during operation.	They indicate those areas which must not be touched while the set is in operation or shortly after having stopped.
	Placed on the coolant tank cap.	They warn of the precautionary measures to be taken when opening this cap. The liquid is hot and may spout and cause scald.
	Located on the bonnet and next to the lifting eye.	It indicates the point by which the set must be lifted in order to move it.
	Located next to the fuel cap. Depending on the model, it can be either on the bedplate or next to the engine.	Indicates the location of the fuel tank and the filler cap.
	Located on both sides of the bedplate skids.	It indicates the advisable area to move the set by means of a forklift truck.
	Located next to the oil fill dipstick and oil fill cap.	Indicates the location of the oil fill dipstick.
	Next to the derivations of the grounding protections.	They are the parts by means of which the genset is protected against possible electric shocks.
	Next to the protective thermal-magnetic switches of the genset.	They protect the genset against possible overcurrent that may occur during charge.
	On the emergency stop.	It indicates the location of the emergency stop button which allows the simultaneous stop of the genset.



Picture	Location	Information
	Located on the control panel.	They warn of electric shock hazard.
	Always located on the thermal-magnetic switch.	They indicate the prohibition of manipulating the genset when the switch is on.

## 3. GENERIC DESCRIPTION

### 3.1 COMPONENTS OF THE LIGHTING TOWER

HIMOINSA lighting towers have been made with top quality materials, and with the effort of our technical and production team, without sparing resources to achieve high-performance and versatile operation lighting towers. They are composed of a tower kit and a gen-set, all in a compact and well-balanced trailer.

1. The lighting tower kit is composed of:

- **Manual lift mast** and 9 expansions, to reach a total working height of 9 metres with a 360° manual rotation of the light beam.
- **Support for 4 floodlights (IP65)** with 1000w metal halide lamps and 100,000 lumens each (standard for COMPACT STANDARD and COMPACT HEAVY DUTY models). Lamps prepared to work in ambient temperatures of -20 to 45°C.
- **As an optional support for 4 LED 350W floodlights and with 47,955 lumens each (Standard for COMPACT ECO).** Lamps prepared to work in ambient temperatures of -20 to 45°C.

2. To highlight in between the other components of the lighting tower:

- **Soundproofed generator set** driven by a YANMAR diesel engine of high reliability, for model 3TNV76 - GGEH (STANDARD and HEAVY DUTY) and model L100N5 (50Hz) L100N6 (60Hz) (ECO), cooled by water and with a very low fuel consumption.
- **Sealed control panel for protection and manoeuver.** The control panel incorporates the M7 controller, circuit breakers for the protection of the spotlights and auxiliary sockets.
- **2 auxiliary power outlets.** The tower has two auxiliary sockets of 16 amps, for the supply of power to auxiliary equipment.
- **Double safety lock in mast.** Ensures the blockage of the mast and prevents involuntary turns during the transport. It is necessary to unlock it for the rotation and orientation of the floodlight.
- **Emergency stop.**
- **Wide access for maintenance and control.**





- **4 levelling jacks**, two of them extensible to ensure the perfect stability of the tower in any working surface. It cancels the risk of overturn in adverse environmental conditions.
- **Spirit level**, located in the upper part of the set, to ensure a perfect levelling of the tower.
- **Exhaust outlet**.
- **Light Sensor**, located on the bonnet of the generator set (**OPTIONAL**).
- **Inclination of lights**, using a servo motor, with possibility of turning by up to 30°C (**OPTIONAL**).

### 3. Mobile equipment:

- **Transportation kit**, the tower is ready for road transport. Including as standard: jockey wheel, straight drawbar with ball coupling and connections for signalling lights (brake lights, indicators), as well as position and handbrake reflectors. As optional we have swan neck and adjustable drawbars available, as well as the ring type hitches (See Fig. 1, 2 and 3).
- **Includes forklift pockets** to move it with a forklift.
- **Fixing rings for the transport** that ensure a perfect immobilization avoiding possible damage during the transport.

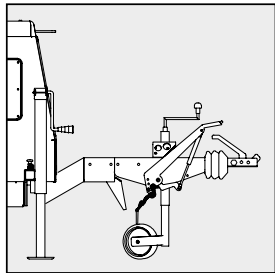


Fig. 1

Swan neck type drawbar

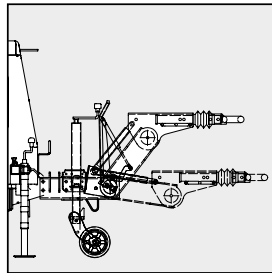


Fig.2

Adjustable type drawbar

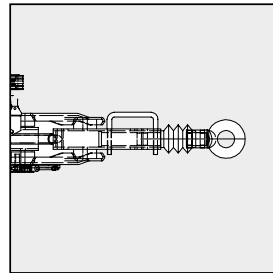


Fig.3

Ring type hitch

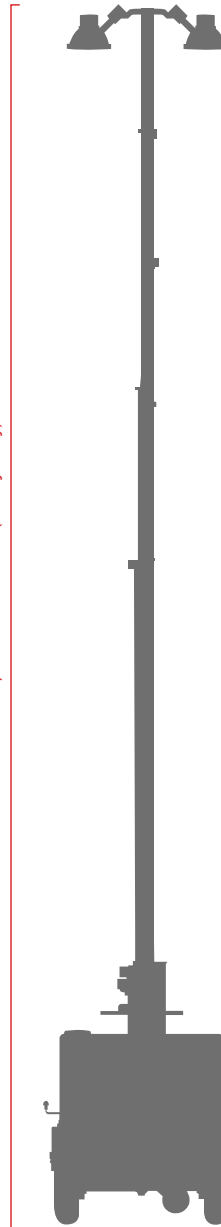
### 3.2 TECHNICAL DATA

	STANDARD		HEAVY DUTY		ECO		
	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
<b>LIGHTING TOWER</b>							
Tower Model		APOLO COMPACT STD M5	APOLO COMPACT STD M6	APOLO COMPACT HD M5	APOLO COMPACT HD M6	APOLO COMPACT ECO M5	APOLO COMPACT ECO M6
Power (PR.R)	kVA	6,4	7,2	6,4	7,2	4,5	5,2
Voltage (3P + N + T)	V	230	240	230	240	230	240
Maximum dimensions - mm. (in working position)	(LxWxH)	2,425 x 2,634 x 9,219		2,457 x 2,645 x 9,298		2,425 x 2,634 x 9,219	
Minimum dimensions - mm. (in transport mode)	(LxWxH)	2,425 x 1,340 x 2,033		2,457 x 1,340 x 2,155		2,425 x 1,340 x 2,033	
Weight	Kg	911		911		749	
Type of fuel		Diesel		Diesel		Diesel	
Tank capacity	L	100		100		100	
Filling of the tank		External		External		External	
Running time	Hr	63	54	63	54	166	
Noise level (power - at 7m)		90LWA-65dB(A)	92LWA-67dB(A)	90LWA-65dB(A)	92LWA-67dB(A)	90LWA-65dB(A)	92LWA-67dB(A)
<b>ENGINE</b>							
Model		YANMAR - 3TNV76 - GGEH	YANMAR - 3TNV76 - GGEH	YANMAR - 3TNV76 - GGEH	YANMAR - 3TNV76 - GGEH	YANMAR - L100N6	YANMAR - L100N6
Cylinders		3L		3L		1	
Aspiration		Natural		Natural		Natural	
Operating regime	r.p.m.	1500	1,800	1500	1,800	3.000	3.600
Cooling system		Liquid Coolant		Liquid Coolant		Air	
Fuel consumption (only the lights)	L/Hr	1,59	1,84	1,59	1,84	0,4 - 0,7	
Governor		Mechanical		Mechanical		Mechanical	
<b>ALTERNATOR</b>							
Poles	N°	4		4		2	
Type		Brushless		Brushless		Brushless	
Voltage governor		AVR (electronic)		AVR (electronic)		AVR (electronic)	
Insulation		Class H		Class H		Class H	
Bearings		1		1		1	
Coupling		SAE5-7.5"		SAE5-7.5"		SAE J609a B/6	
<b>MAST</b>							
Mast type		Hydraulic		Hydraulic		Hydraulic	
Mast sections		9		9		9	
Rotation		360° manual		360° manual		360° manual	
Double safety block		Standard		Standard		Standard	
Spotlights	N°	4 x 1000 W		4 x 1000 W		4 x 350 W	
Type of spotlights		Metal Halide		Metal Halide		LED	
Total lumens	lm	4 x 100,000 = 400,000		4 x 100,000 = 400,000		4 x 47,955 = 191,820	
Light field		33,000 m²		33,000 m²		16,000 m²	
Remaining power		2.3 kW	3.2 kW	2.3 kW	3.2 kW	3.06 kW	3.76 kW

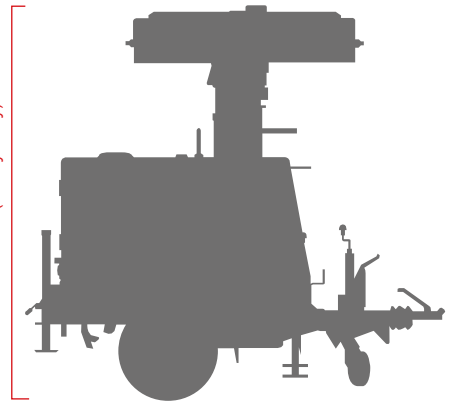


	STANDARD		HEAVY DUTY		ECO	
	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
<b>CANOPY</b>						
Soundproof hood		Standard	Standard	Standard	Standard	Standard
Auxiliary power outlets		2 x 16 Amp.	2 x 16 Amp.	2 x 16 Amp.	2 x 16 Amp.	2 x 16 Amp.
Auxiliary supply input		1 x 32 Amp.	1 x 32 Amp.	1 x 32 Amp.	1 x 32 Amp.	1 x 32 Amp.
Lifting hook		Standard	Standard	Standard	Standard	Standard
<b>CHASSIS</b>						
Chassis traction kit		Standard	Standard	Standard	Standard	Standard
Stabilisers		4	4	4	4	4
Signalling lights		Standard	Standard	Standard	Standard	Standard
Wheels		2 x 165R13	2 x 165R13	2 x 165R13	2 x 165R13	2 x 165R13
A fork carriage		Standard	Standard	Standard	Standard	Standard
<b>CONTROL PANEL</b>						
Control and protection unit		M7 manual control unit	M7 manual control unit	M7 manual control unit	M7 manual control unit	M7 manual control unit
Thermal-magnetic circuit breaker to protect the spotlights and the auxiliary outlets		Standard	Standard	Standard	Standard	Standard
Manoeuvring pushbuttons		2 (1 up, 1 down)	2 (1 up, 1 down)	2 (1 up, 1 down)	2 (1 up, 1 down)	2 (1 up, 1 down)

2033 mm MIN / 9219 mm MAX (Standard y Eco)  
2155 mm MIN / 9298 mm MAX (Heavy Duty)



2033 mm (Standard and Eco)  
2155 mm (Heavy Duty)



2425 mm (Standard and Eco)  
2457 mm (Heavy Duty)



1340 mm MIN / 2634 mm MAX  
(Standard and Eco)  
1340 mm MIN / 2654 mm MAX (Heavy Duty)



### 3.3 PACKING PLAN



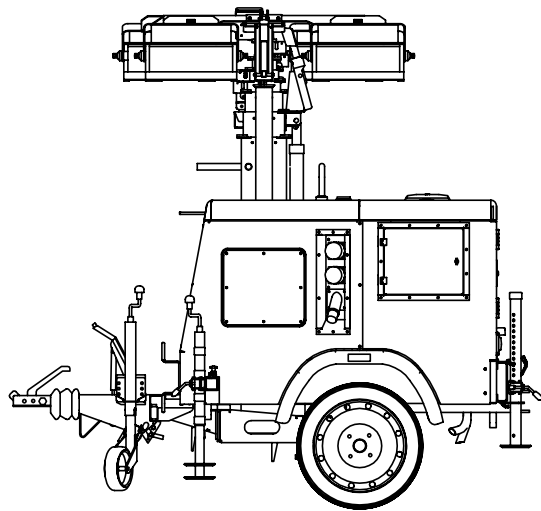
9 units per trailer



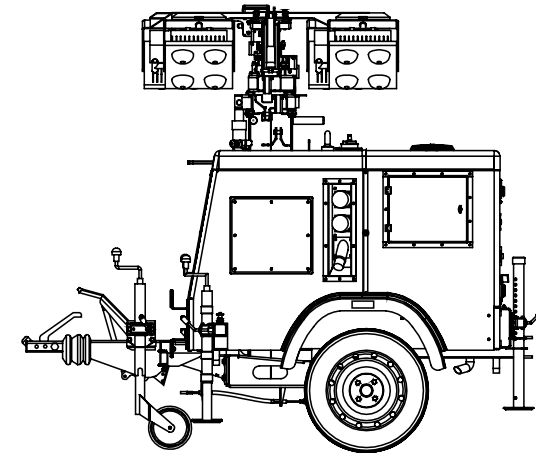
4 units per container



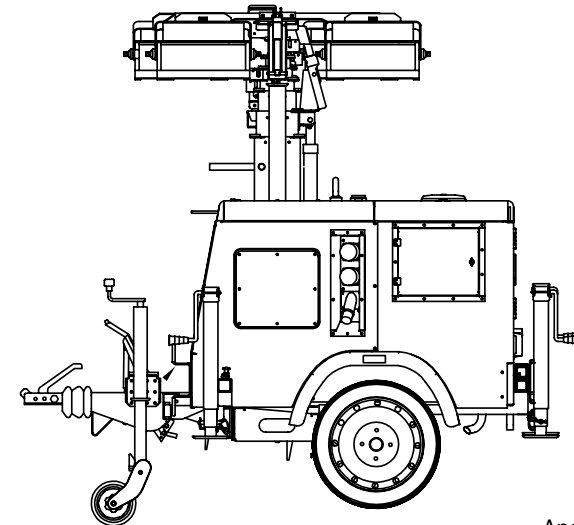
9 units per container



**Fig. 4**  
Apolo Compact Standard



**Fig. 5**  
Apolo Eco



**Fig. 6**  
Apolo Heavy Duty

## 4. COMMISSIONING

Before starting the lighting tower check its correct location on a firm and totally levelled ground, to ensure a proper operation and stability in case of a strong wind.

### NOTE

**Do not raise the mast if strong winds (more than 80km/h) or thunderstorms are expected in the area.**

### 4.1 CHECK LEVELS OF THE EQUIPMENT

Check engine oil, fuel and coolant levels as well as air filter condition (ref. engine manual).

Check the hydraulic oil level of the tower (Ref. 6 Maintenance).

### 4.2 ANCHORAGE

Once carried out these important and simple checks to ensure the proper operation of the tower and the gen-set, we will proceed to the correct anchorage of the APOLO COMPACT lighting tower. You must follow the following steps accurately:

- Turn the handle clockwise to raise the trailer hitch on the tow vehicle.
- Pull up the locking pin (A) and extend the outriggers (B) until the spring pin snaps back into place.

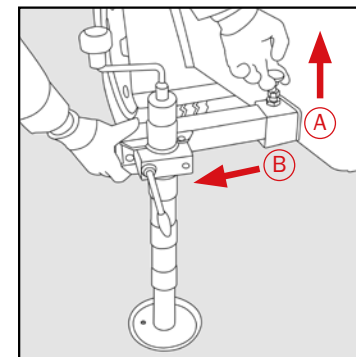


Fig. 1



- Turn the jack handle clockwise to start levelling the trailer until it is in firm contact with the ground and the trailer is as level as possible.

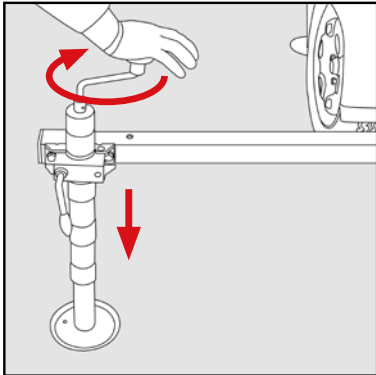


Fig. 2

- Only the legs are removed from the front, the rear legs are fixed and are easily adjusted with the corresponding pins.

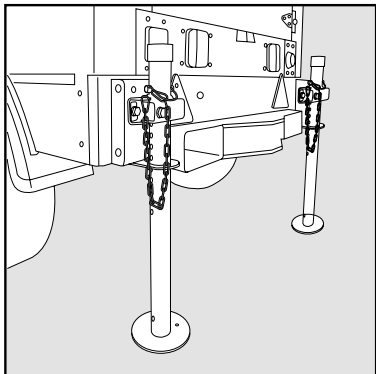


Fig. 3

- Once the 4 support legs have been adjusted and the tower is level with the help of the spirit level, lower the jockey wheel until it rests on the working surface.

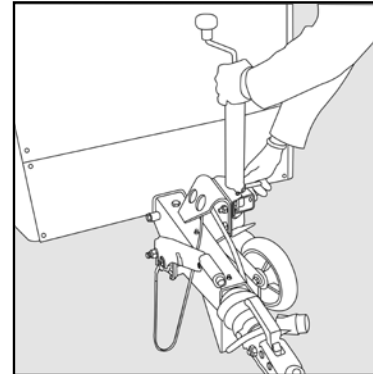


Fig. 4

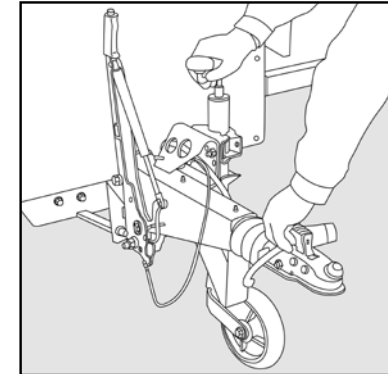


Fig. 5

#### 4.3 ADJUSTMENT OF THE SPOTLIGHTS

Before raising the tower it may be necessary to adjust the lamps.

The spotlights are already installed in the tower and can be oriented easily thanks to small levers that allow easy mobility through 180°.

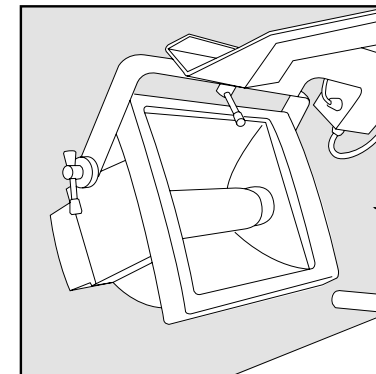


Fig. 6

#### 4.4 RAISING THE TOWER

The trailer must be levelled with the outriggers extended before raising the tower mast and must remain extended while the tower is up. Failure to level the trailer or extend the outriggers will severely reduce the stability of the unit and could allow the tower to tip and fall.

Do not start the unit if the insulation on the electrical cord is cut or worn through. Bare wires in contact with the mast or frame may energize the trailer and cause electrocution. Repair or replace cord immediately.

#### IMPORTANT

In order to proceed with the raising of the mast it is essential to first apply the handbrake. If the handbrake is not engaged, for safety reasons, the mast will not rise.

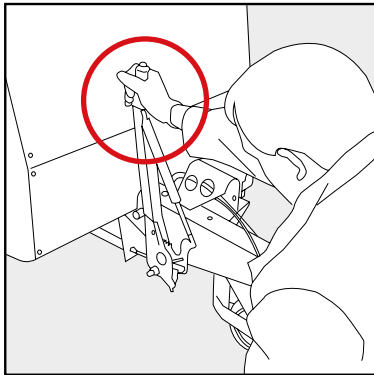


Fig. 7

- Check the mast cables for excessive wear and tear or damage. Check the electrical cord for damage.
- Make sure the area behind the unit is clear before raising the mast to the vertical position.
- Make sure the mast is in the locked position.

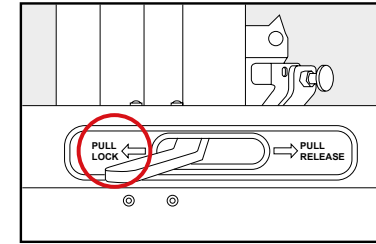


Fig. 8

- Proceed to raise the mast by pressing the up button located on the control panel.

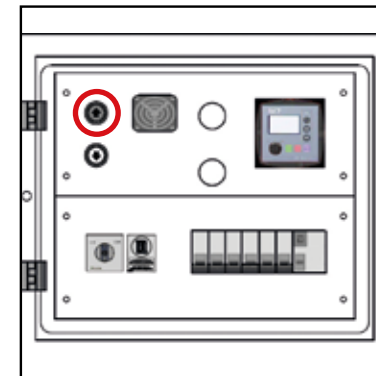


Fig. 9

- The mast has a lock which fixes the orientation of the spotlights. Whenever you want to change the orientation you must remove the lock by moving the lever to the RELEASE position, turning the mast to the desired position and then fixing the mast with the lever, putting it into the LOCK position.

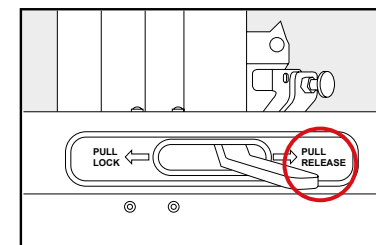


Fig. 10

- To return the spotlights to their original position, you must set the lever to the RELEASE position, turn the mast to the original position and secure it again (LOCK).
- For safety reasons, once the work is finished, it is always recommended that the mast is kept in the original locking position that was given at the factory, thus avoiding damage to the machine.

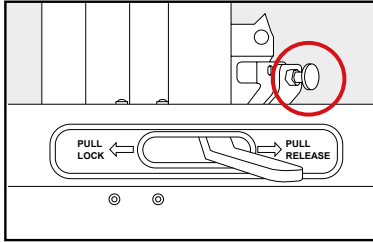


Fig.11

**IMPORTANT**

Whenever the brake is deactivated, the mast, for security reasons, will descend automatically.

**4.5 GENSET STARTING**

**VERY IMPORTANT**

Never start the gen-set with load, that is, check that all the circuit breakers are switched off.

Before starting the engine:

- Check the fuel level.
- Check the oil level.
- Check the coolant level.
- Make sure that the main circuit breaker is OFF.

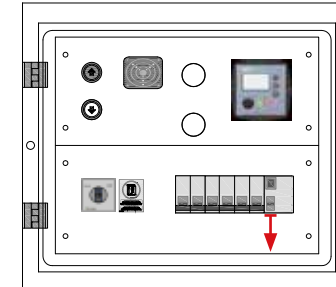


Fig.12

Once the above has been verified you can now start the gen-set.

- (A) Manual start
- (B) Free voltage contact start



Fig.13

#### 4.6 SWITCHING ON THE SPOTLIGHTS

Finally, it will only be necessary to operate the switches located on the control panel

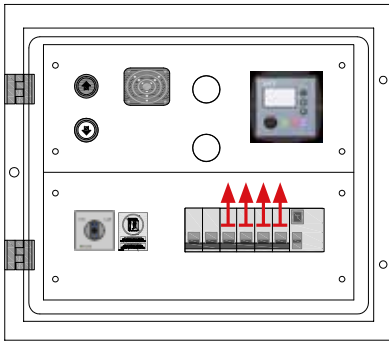


Fig.14

#### **VERY IMPORTANT**

**The spotlights must be always switched off when raising/lowing or aiming.**



## 5. OPERATIONS TO BE PERFORMED ONCE THE ACTIVITY HAS BEEN COMPLETED

### 5.1 SWITCHING OFF THE SPOTLIGHTS

Switch off the spotlights switches and stop the gen-set (see control unit manual).

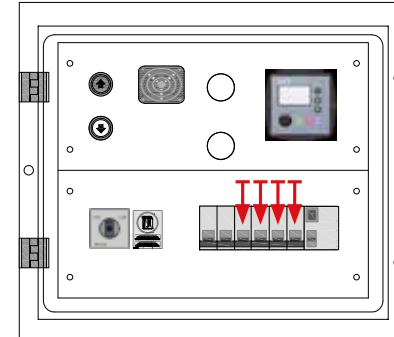


Fig.1

### 5.2 LOWERING THE MAST

We advise you to wait between 20-25 minutes before lowering the tower. Due to the high temperatures that the filaments of the spotlights reach, they are very vulnerable to the slight vibrations that inevitably occur when the mast is being lowered.

- Press the down button installed on the control panel

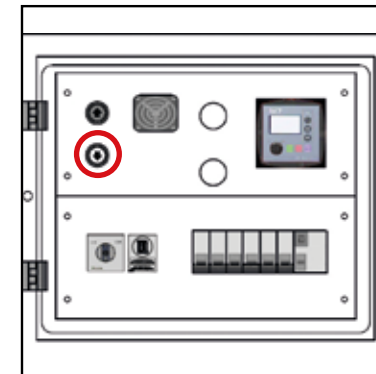


Fig.2



### 5.3 RETRACT TELESCOPIC LEGS

#### IMPORTANT

To proceed with the retraction of the telescopic legs make sure that the jockey wheel is lowered and fixed to the surface. Fig. 3 & 4.

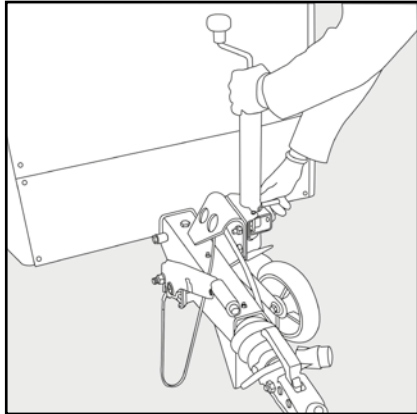


Fig. 3

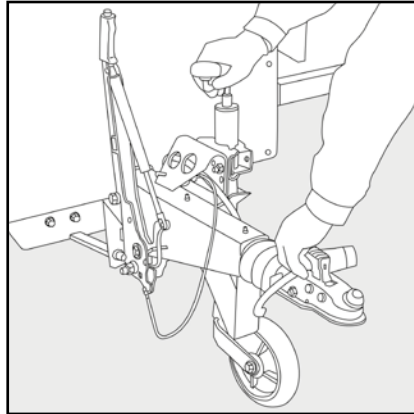


Fig. 4

Then raise, retract and stow the legs in travel position, with the locking pins facing upwards. Fig. 5 & 6.

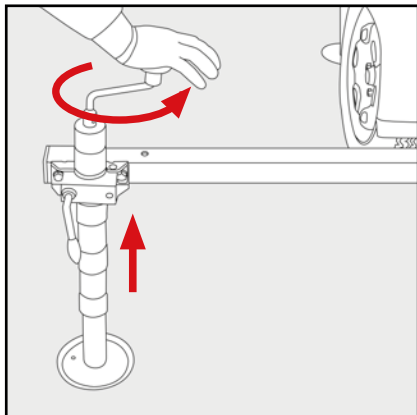


Fig. 5

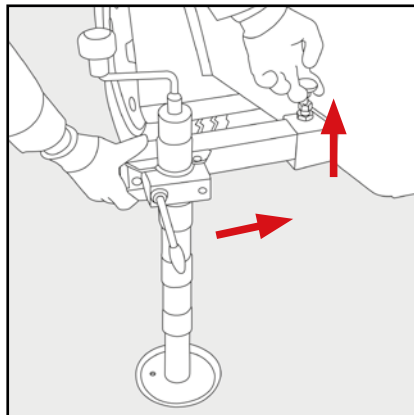


Fig. 6

### 5.4 ROAD TRAVEL

Wind the jockey wheel up for road travel.

#### NOTE

Make sure when raising the jockey wheel that it fits perfectly, this will avoid turns during the transport which could cause damage to the machine. Fig. 7 & 8. Place the hitch ball positioned with the towing vehicle.

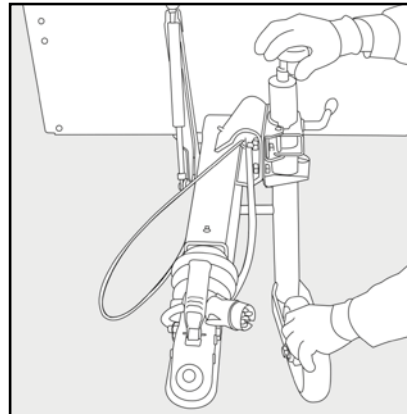


Fig. 7

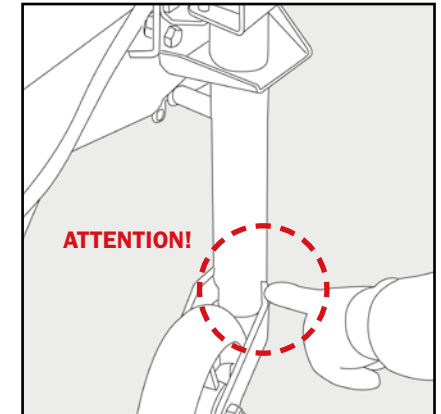


Fig. 8

Place the hitch ball positioned with the vehicle.

When you see a green mark on the safety button the anchoring will be perfect.

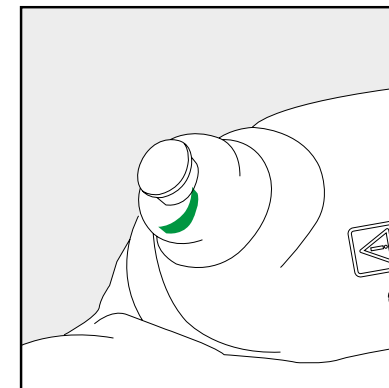


Fig. 9

## 6. MAINTENANCE

### 6.1 GENSET MAINTENANCE

General maintenance (refer to the gen-set manual)

### 6.2 LIGHTING TOWER

One might well say that thanks to the simple nature of the system and to the quality of the materials used during the manufacturing process, the tower itself does not actually require exhaustive maintenance.

Be that as it may, we should perform the following operations:

1. Regular cleaning of the machine is recommended in order to prevent any deposits of dirt that could compromise its efficiency. The frequency of this operation depends on its place of use.
2. To lubricate the pulleys use the grease recommended for low temperature and very high speed applications. It is recommended to use SKF LGLT 2 grease, a top quality lithium soap product with a 100 % synthetic base oil. If using another lubricant, this must still be characterised by a base oil viscosity of 18 mm<sup>2</sup>/s at 40°C and 4.5 mm<sup>2</sup>/s at 100°C.
3. To grease the telescopic columns, use a WD40 type lubricant spray. Apply the spray to the metal parts to facilitate the sliding of the various sections during the operations to raise and lower the tower. In case of frequent use, carry out this operation every three months.
4. Were a halogen bulb to blow, we recommend you use gloves or a cloth when replacing it.
5. Do not touch the bulbs directly with your fingers.
6. If the lighting tower is working in a damp, dusty place, it must be cleaned and dried frequently.
7. To change or check the battery, access through the right side of the lighting tower.



#### 8. Steel cables and pulley sets:

- Carry out periodic checks of the cables state, every 100 hours or once a month.
- When the steel cable decreases by 10% of the rated diameter due to corrosion or abrasion, it must be replaced immediately.
- Check the cables. If a steel cable has broken, replace it as soon as possible.
- If there is any manner of deformation (a loop, a knot or crushing), replace the cable immediately.
- Important: always use the Steel cables indicated by the manufacturer of the lighting tower (type 6x37 +1).
- Lubricate galvanized cables with oil when operating in high corrosion conditions every 300 hours or 3 months.

#### 9. Replacing the light bulbs and glasses.

The metal halide bulbs used in the column lights provide more powerful lighting than ordinary halogen bulbs, for a lower consumption, with a very high service life of approximately 8,000 hours.

Metal halide bulbs are discharge bulbs that operate using the emission of electromagnetic rays by an ionized gas plasma. The gas is ionized using an electric discharge (hence the name) through the gas itself.

Metal halide lamps are derived from high pressure sodium vapour lamps, with additives (thallium, indium, dysprosium, holmium, caesium, thulium) which improve the colour rendering of sodium lamps, giving them a very high colour temperature (4,000-5,600 K). Their chromatic performance makes them particularly useful when perfectly white light is required. They require special igniters and injectors to light and these produce pulses of start-up voltage of between 0.75 and 5 kV. During the lighting phase, it takes several minutes to reach the maximum light output.

To replace the light bulb or glass, follow the procedure below:

- Unfix the screw of the clamp (M5) with a star-shaped screwdriver and place the clamp and the glass on a safe place.
- Replace the bulb or glass.
- Place the glass on the clamp and then both of these in the body of the lamp. Check that the clamp has been set in place properly and tighten the screw.

#### Lamp specifications:

- Name: single ended halide
- Base Designation: MOG(E39)
- Bulb Designation: BT37
- Lamp Wattage (W): 1000 W
- Operating Voltage (V): 263 V
- Operating Current (Amps): 4.1 A

#### 10. Hydraulic-oil unit.

- Check the hydraulic-oil unit and hydraulic oil level every 300 hours or 3 months of work. Fill up with the same oil if necessary, always eliminating any oil leakage that may exist.
- If the hydraulic cylinder rises unevenly or intermittently, check the hydraulic oil level.
- Change of hydraulic oil every 2400 hours or 2 years of work or when it loses its properties or in the case that it is contaminated by another product.
- Each time the hydraulic oil change is performed, the filter is changed and the tank cleaned.
- In the event that the electrovalve does not work or another problem prevents the mast from descending automatically, this operation is carried out by loosening the electrovalve screw. To lower the mast it is important that the electro-valve screw is well tightened.
- Perform a revision of the hydraulic-oil unit if hydraulic oil is detected on the ground.

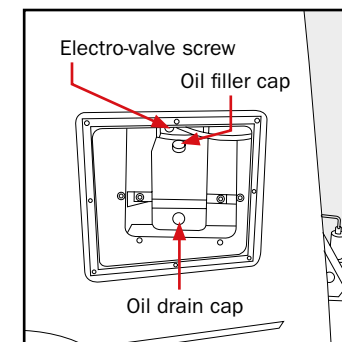


Fig. 1

#### NOTE

If in doubt, contact our technical service.



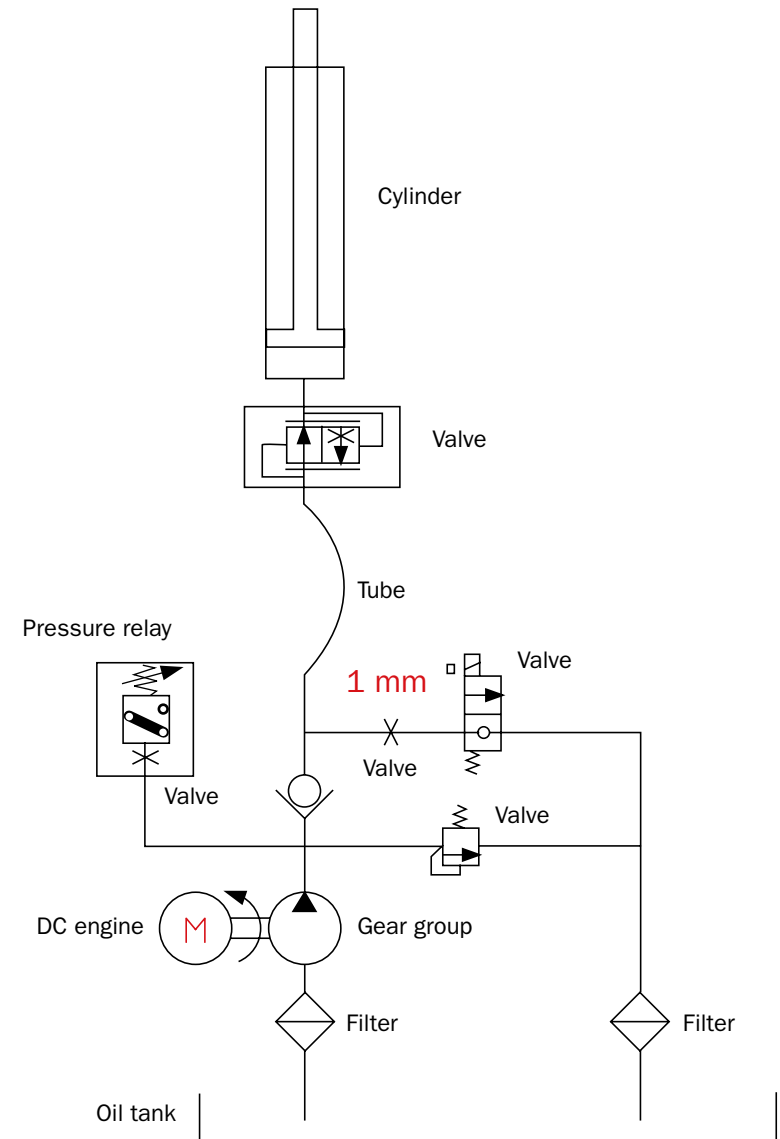
### 6.3 MOBILE EQUIPMENT

Maintenance of mobile equipment (ref. Manual of head, inertia coupling and shaft of the mobile kit)

## 7. TROUBLE SHOOTING

Due to the simplicity of the system, breakdowns are practically none. However, in the event of any failure, please contact with our after-sales service.

## 8. HYDRAULIC DIAGRAM

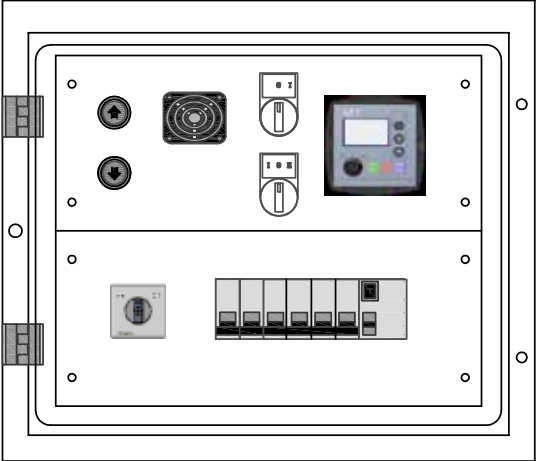


# 9. WIRING DIAGRAM

## 9.1 ELECTRICAL CONTROL DIAGRAM "M7" - 230V / 4 METAL HALIDE SPOTLIGHTS

CCAC16AB20017-R0


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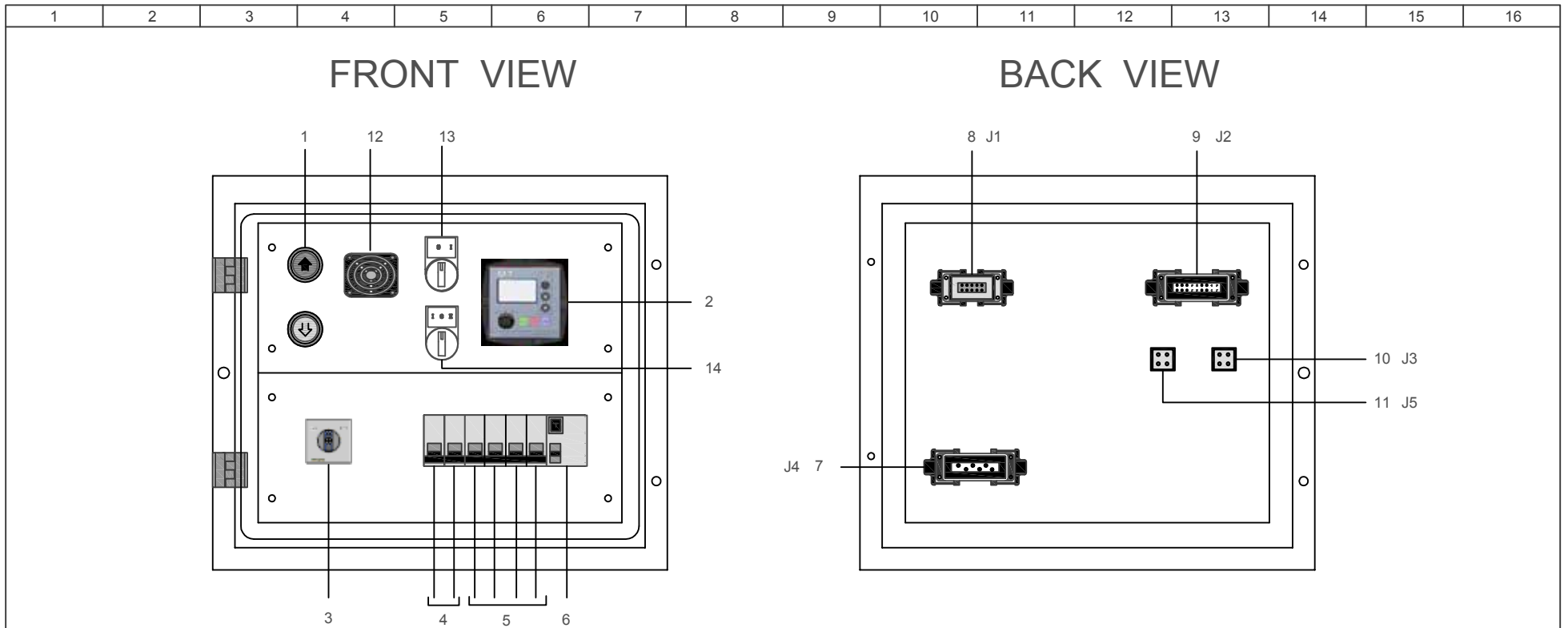


CUADRO MANUAL PARA TORRE DE ILUMINACION APOLO  
 ESQUEMA ELÉCTRICO DE CONTROL "M7"  
 Y PROTECCIÓN MAGNETOTÉRMICA  
 DE 16 A 63 AMPERIOS  
 PARA SINCRO ALTERNATOR

LIGHTING TOWER MANUAL START CONTROL PANEL APOLO  
 "M7" CONTROL AND THERMAL MAGNETIC  
 PROTECTION ELECTRIC DIAGRAM  
 FROM 16 TO 63AMPERES  
 FOR SINCRO ALTERNATOR

**\*WARNING\***  
 MAKE SURE ALL THE POWER UNITS ARE OFF  
 BEFORE START THE GENSET!!

	DATE:	05/12/16	NAME:	Zhicai Qin	SIGNATURE:	Zhicai Qin	OLD CODE:		DESCRIPTION: CUADRO MANUAL DIGITAL TIPO CAC16 ESQUEMA ELÉCTRICO DE CONTROL "M7" Y PROTECCIÓN MAGNETOTÉRMICA CON RELÉ DIFERENCIAL  MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY	<b>HIMOINSA®</b>		
	DESIGN:	05/12/16	Zhicai Qin	Zhicai Qin	NEW CODE:		<b>HIMOINSA®</b> grupos electrógenos <small>CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA</small>				Nº P.: CCAC16AB20017	1.0/09
	REVISÉD/ APPROVED:	05/12/16	Diego Molina	Diego Molina	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. No PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.		MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY	CODE:				REVISION:
MEAS.UNIT:		mm	SCALE:		S/E							



Nº	DESCRIPCIÓN - DESCRIPTION	CODIGO-CODE	Nº	DESCRIPCIÓN - DESCRIPTION	CODIGO-CODE
1	PUSH BUTTON	3000---	8	CONECTOR MALE 10 POLOS - 10 POLES MALE CONECTOR	3000---
2	KEY START CONTROL PANEL GOVERNOR ( M7R )	3036581	9	CONECTOR FEMALE 16 POLOS - 16 POLES FEMALE CONECTOR	3000---
3	2 POSITION SWITCH	3000---	10	CONECTOR FEMALE 4 POLOS - 4 POLES FEMALE CONECTOR	3000---
4	CIRCUIT BREAKER OSMC32N1P B10A FOR BASE	3000---	11	CONECTOR FEMALE 4 POLOS - 4 POLES FEMALE CONECTOR	3000---
5	CIRCUIT BREAKER OSMC32N1P B10A FOR BASE	3000---	12	HORN 12/24	2600033
*4	CIRCUIT BREAKER CSMB1B10 1P B10A FOR BASE	3000---	13	PLASTIC COVER APSAK4-10	8000580
*5	CIRCUIT BREAKER CSMB1B10 1P B10A FOR BASE	3000---	14	SELECTOR 3 POSITION THUMBED SWITCH	8008978
6	EARTHLEAKAGE RELAY ID 25A 2P 30MA	3000---			
7	CONECTOR MALE 6 POLOS - 6 POLES MALE CONECTOR	3000---			

\* OPCIÓN BAJO PEDIDO  
 \* OPTION UNDER REQUEST

	DATE:	05/12/16	NAME:	Zhical Qin	SIGNATURE:	<i>Zhical Qin</i>	OLD CODE:		DESCRIPATION: CUADRO MANUAL DIGITAL TIPO CAC16 ESQUEMA ELÉCTRICO DE CONTROL "M7" Y PROTECCIÓN MAGNETOTÉRMICA CON RELÉ DIFERENCIAL  MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY		
	DESIGN:	05/12/16	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	NEW CODE:				Nº P.: CCAC16AB20017 <span style="float: right;">2.0/9</span>
	REVISSED/ APPROVED:	05/12/16	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	NEW CODE:				CODE: REVISION: <span style="float: right;">00</span> MEAS.UNIT: mm SCALE: S/E

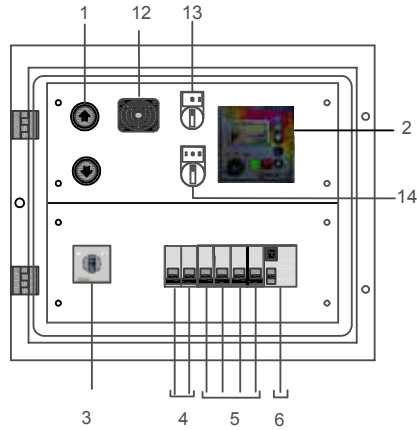
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L.  
 NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL  
 OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A  
 TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.

**HIMOINSA**  
 grupos electrógenos  
 CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA

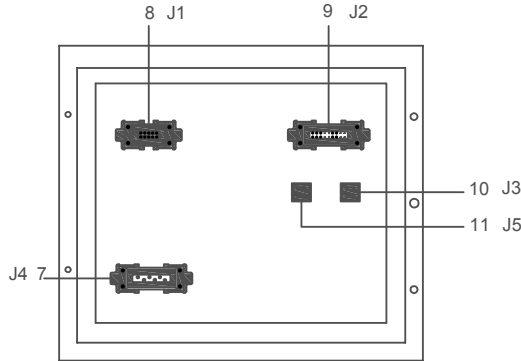


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FRONT VIEW



BACK VIEW

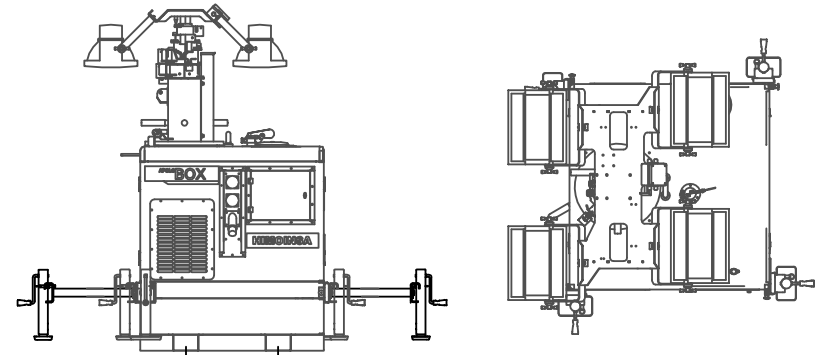
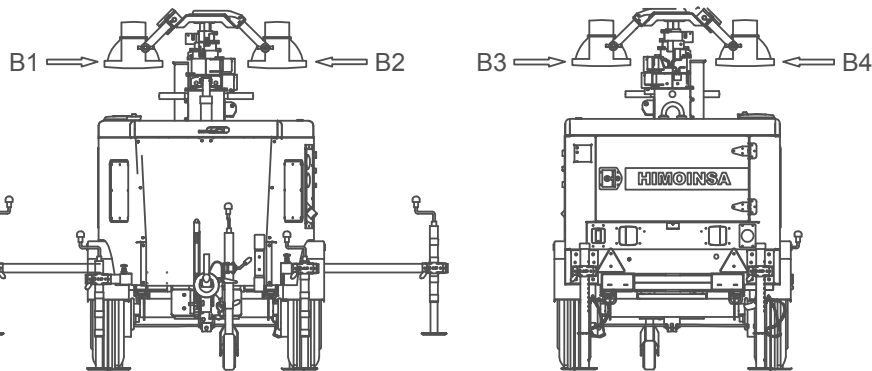


Nº	DESCRIPCIÓN - DESCRIPTION	CODIGO-CODE
1	PUSH BUTTON	8001888
2	CONTROLLER (M7)	3033055
3	2 POSITION SWITCH	8002106
4	CIRCUIT BREAKER OSMC32N1P B10A FOR BASE	8016017
5	CIRCUIT BREAKER OSMC32N1P B10A FOR LAMPS	8016017
*4	CIRCUIT BREAKER CSMB1B10 1P B10A FOR BASE	3029146
*5	CIRCUIT BREAKER CSMB1B10 1P B10A FOR LAMPS	3029146
6	EARTHLEAKAGE RELAY ID 63A 2P 30MA	3000372
7	CONNECTOR MALE 6 POLOS - 6 POLES MALE CONECTOR	8002011
8	CONNECTOR MALE 10 POLOS - 10 POLES MALE CONECTOR	8042338
9	CONECTOR FEMALE 16 POLOS - 16 POLES FEMALE CONECTOR	8042350
10	CONECTOR FEMALE 4 POLOS - 4 POLES FEMALE CONECTOR	8042334
11	CONECTOR FEMALE 4 POLOS - 4 POLES FEMALE CONECTOR	8042333
12	HORN 12/24	2600033
13	SELECTOR 2 POSITION THUMBED SWITCH	8001046
14	SELECTOR 3 POSITION THUMBED SWITCH	8008978

\* OPCIÓN BAJO PEDIDO  
\* OPTION UNDER REQUEST

NOTE:

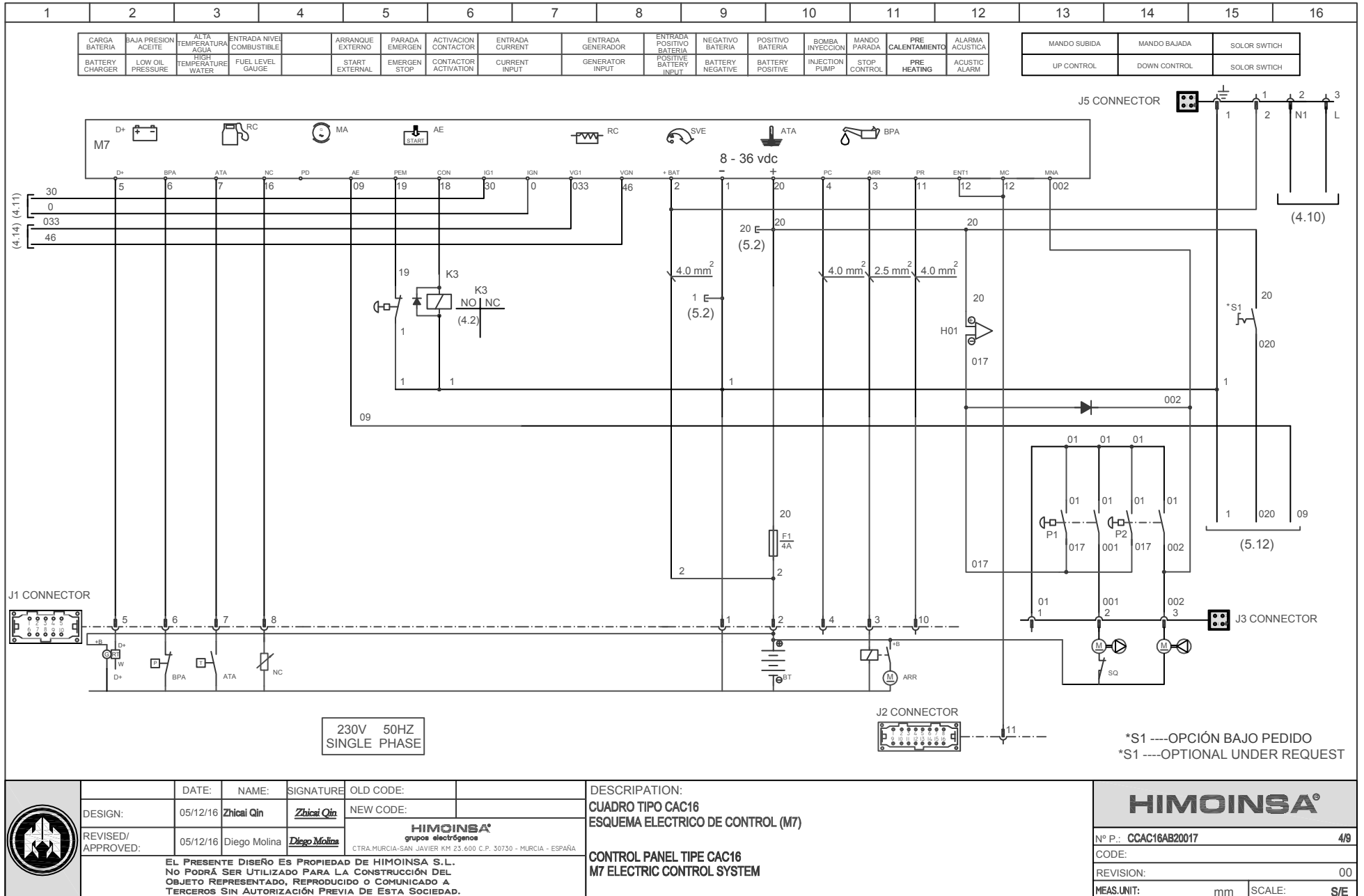
- B1 = LAMP 1
- B2 = LAMP 2
- B3 = LAMP 3
- B4 = LAMP 4



	DESIGN:	05/12/16	Zhical Qin	Zhical Qin	OLD CODE:		DESCRIPCIÓN: CUADRO MANUAL DIGITAL TIPO CAC16 ESQUEMA ELÉCTRICO DE CONTROL "M7" Y PROTECCIÓN MAGNETOTÉRMICA CON RELÉ DIFERENCIAL  MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY	<b>HIMOINSA®</b>	
	REVISADO/ APPROVED:	05/12/16	Diego Molina	Diego Molina	NEW CODE:			Nº P.: CCAC16AB20017 <span style="float: right;">3.0/9</span>	
	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.							CODE: REVISION: <span style="float: right;">00</span>	
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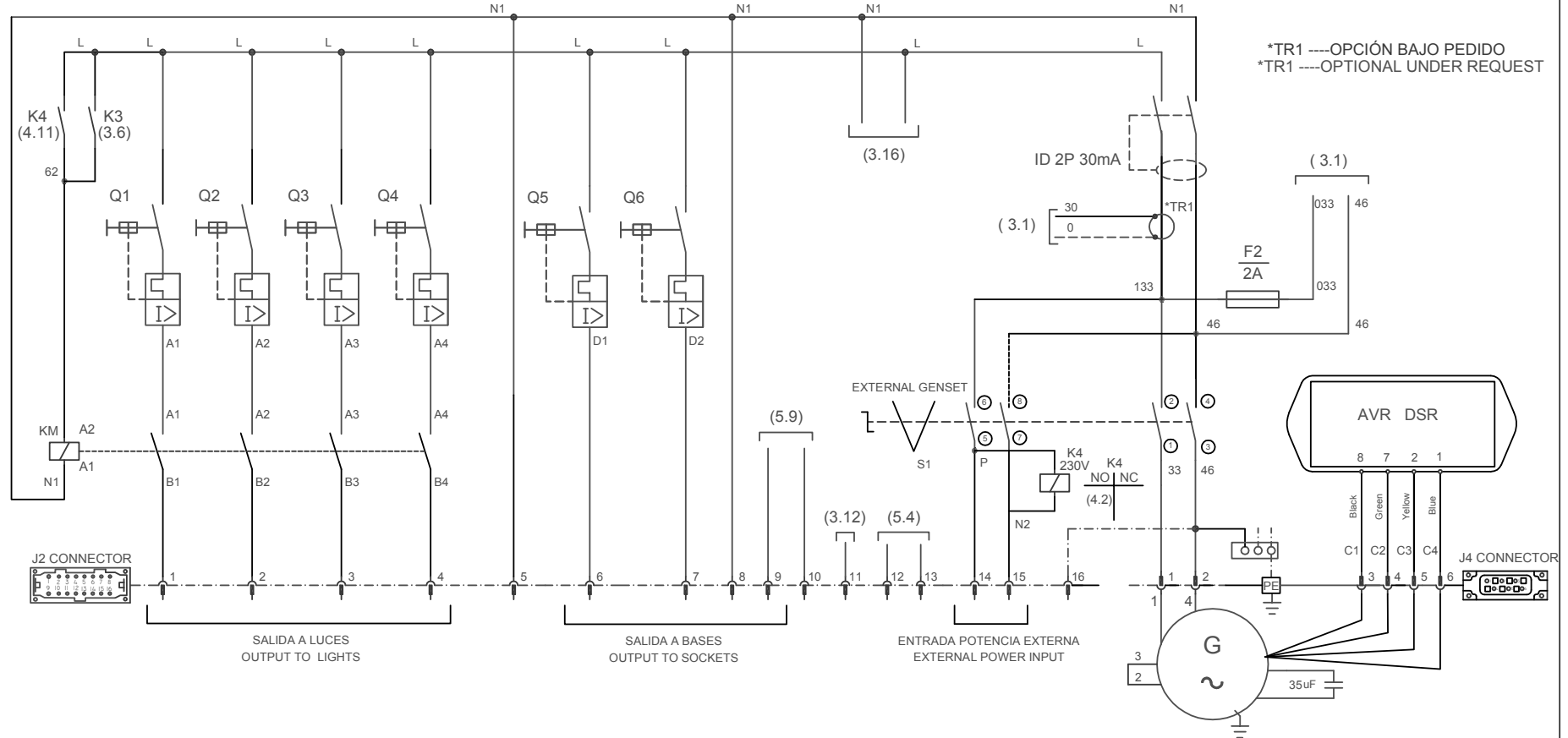
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	DESIGN:	05/12/16	Zhicai Qin	<i>Zhicai Qin</i>	NEW CODE:		<b>HIMOINSA®</b> grupos electrógenos CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA				
	REVISADO/ APPROVED:	05/12/16	Diego Molina	<i>Diego Molina</i>	<b>CONTROL PANEL TYPE CAC16</b> <b>M7 ELECTRIC CONTROL SYSTEM</b>						

EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L.  
NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL  
OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A  
TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.

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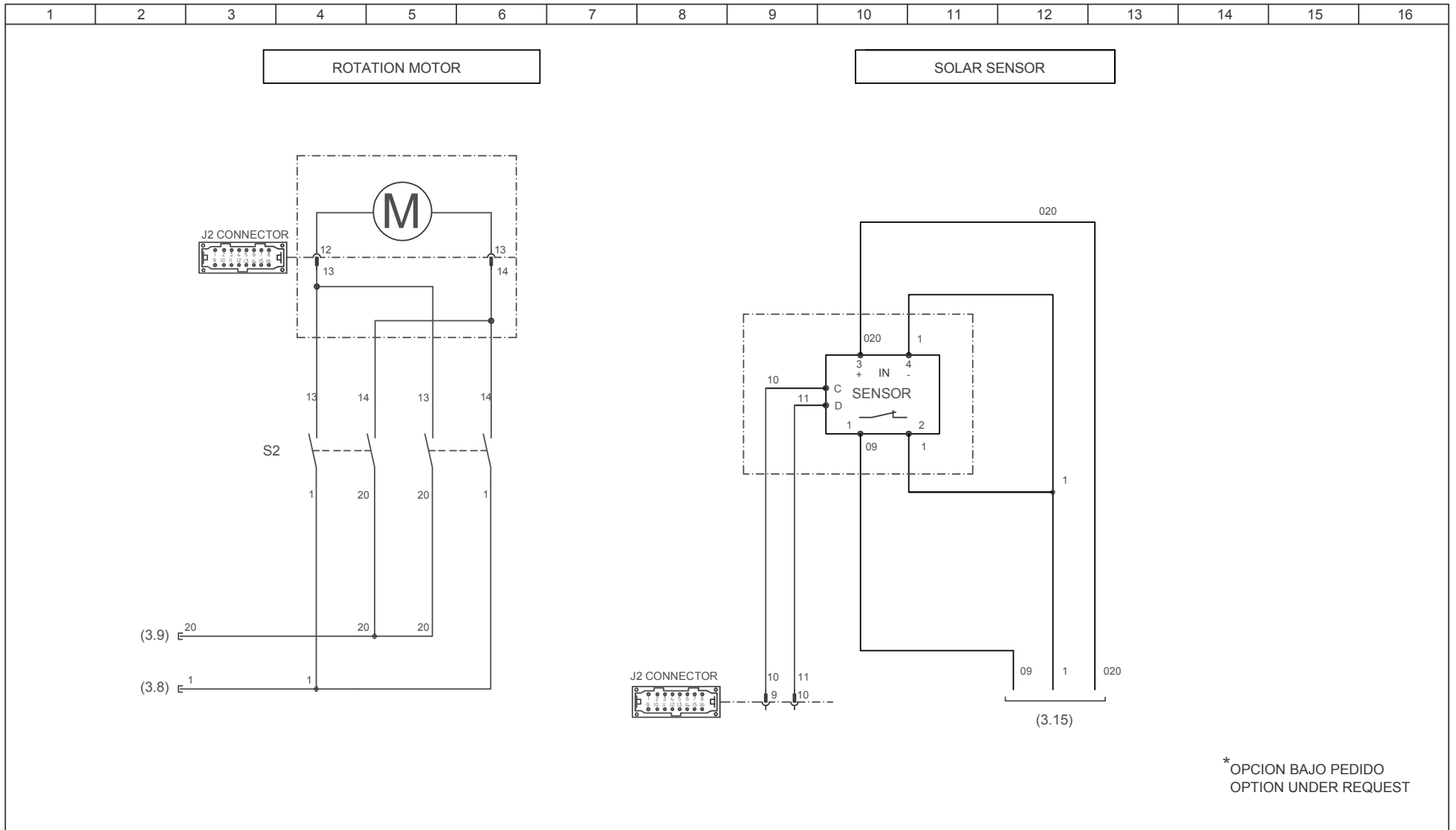
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**DIAGRAM FOR THE FOLLOWING VOLTAGES:**  
 220-230-240V MONOFÁSICO  
 SINGLE PHASE

ESQUEMA DE FUERZA		PROTECCIÓN DIFERENCIAL
LAMPARAS	BASES	
PART OF POWER (EXTERNAL)		DIFFERENTIAL PROTECTION
LAMPS	SOCKETS	



\*TR1 ----OPCIÓN BAJO PEDIDO  
 \*TR1 ----OPTIONAL UNDER REQUEST

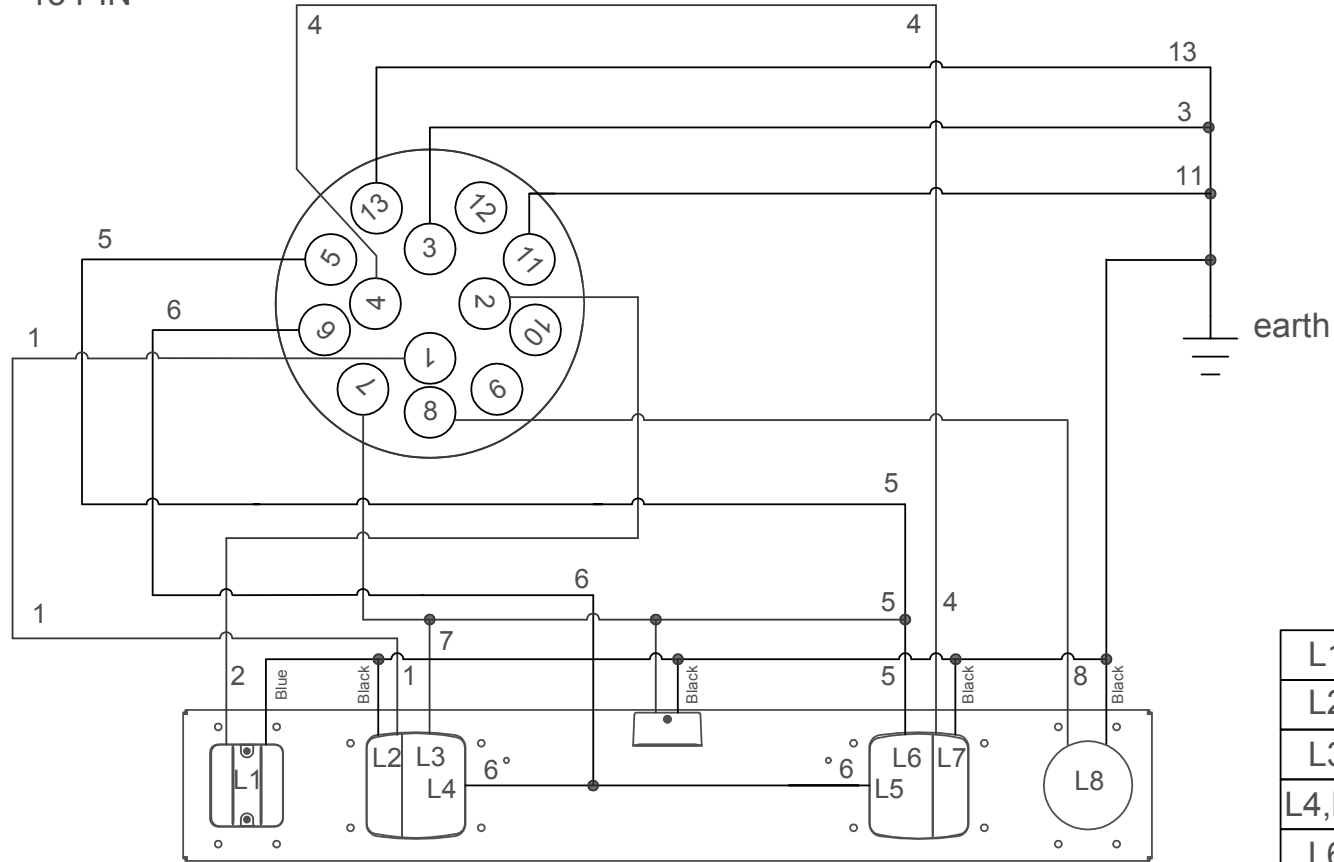
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	DESIGN:	05/12/16	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	NEW CODE:		HIMOINSA® grupos electrógenos CTRA. MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA	ELECTRIC DIAGRAM POWER CIRCUIT
	REVISOR/APPROVED:	05/12/16	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>				
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.										Nº P.: CCAC16AB20017 5/9 CODE: REVISION: 00 MEAS.UNIT: mm SCALE: S/E



	DATE:	NAME:	SIGNATURE	OLD CODE:	DESCRIPTION: <b>ESQUEMA ELÉCTRICO DE POTENCIA</b>  <b>ELECTRIC DIAGRAM OF SOLAR SENSOR AND PROGRAME TIMER</b>		
	DESIGN:	05/12/16	Zhical Qin	<i>Zhical Qin</i>			NEW CODE:
	REVISED/ APPROVED:	05/12/16	Diego Molina	<i>Diego Molina</i>			HIMOINSA® grupos electrógenos <small>CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA</small>
	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.						
Nº P.:		CCAC16AB20017		6/9		CODE:	
REVISION:				00		MEAS.UNIT: mm SCALE: S/E	



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13 PIN

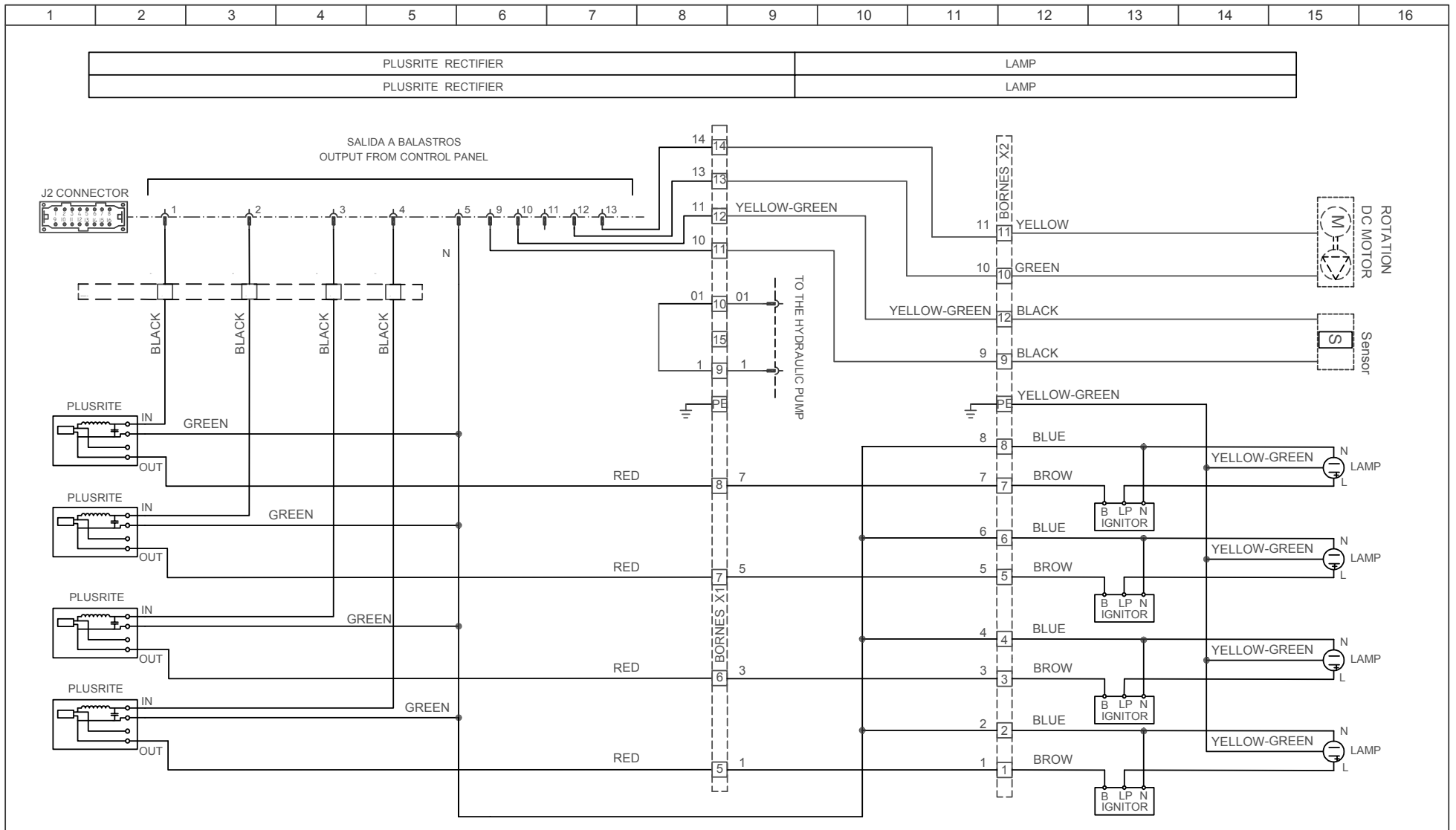



\* OPCION BAJO PEDIDO  
OPTION UNDER REQUEST

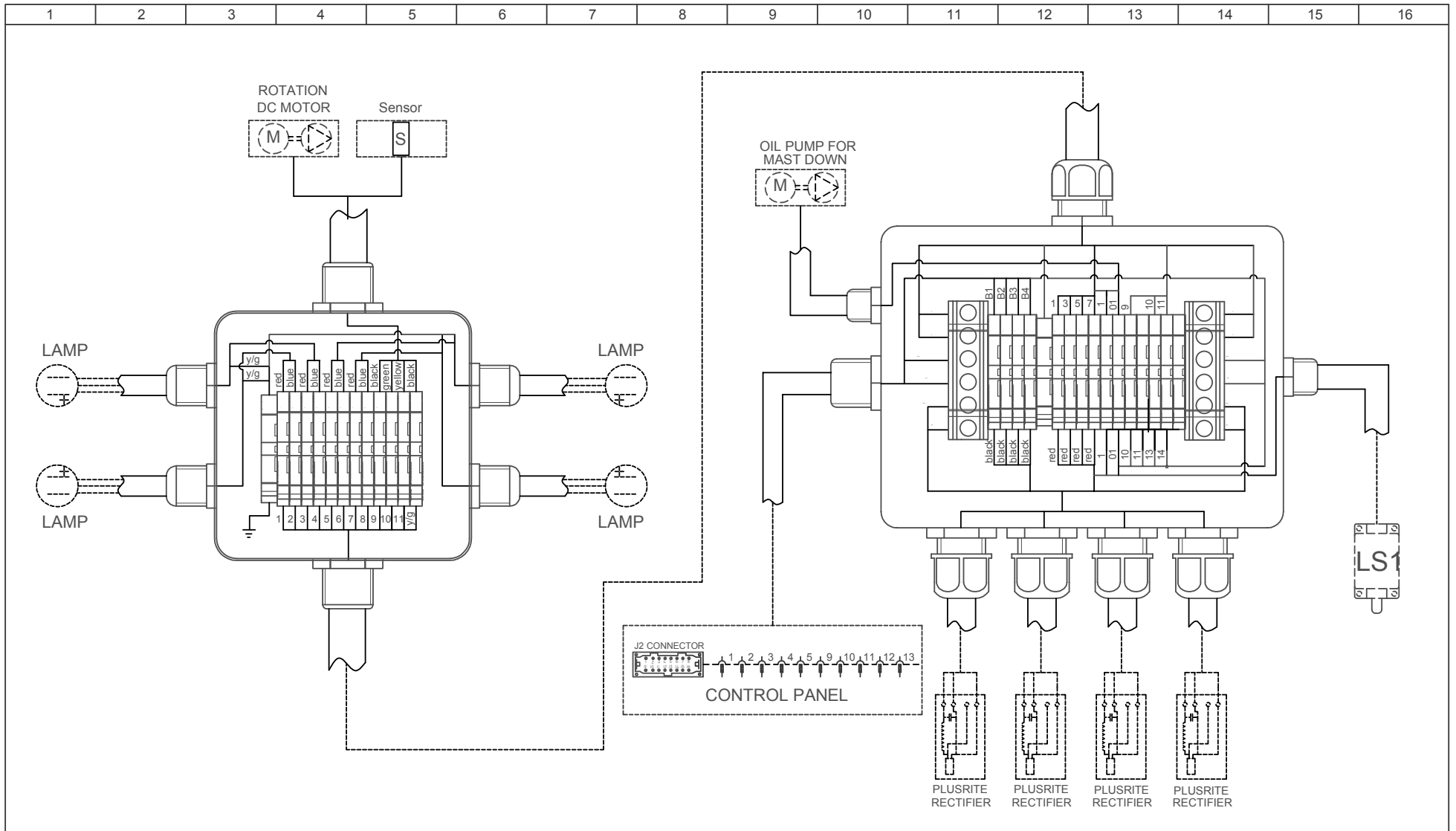
L1	Fog light
L2	Left-hand indicator
L3	Left-hand side and tail light
L4,L5	Stop light
L6	Right-hand side and tail light
L7	Ritht-hand indicator
L8	Reversing light

	DESIGN:	5/12/2016	Zhikai Qin	Zhikai Qin	OLD CODE:		DESCRIPCIÓN: ESQUEMA ELÉCTRICO DE TAILLIGHT  ELECTRIC DIAGRAM OF TAILLIGHT	
	REVISADO/ APPROVED:	5/12/2016	Diego Molina	Diego Molina	NEW CODE:			
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.								T-16 069 101 100





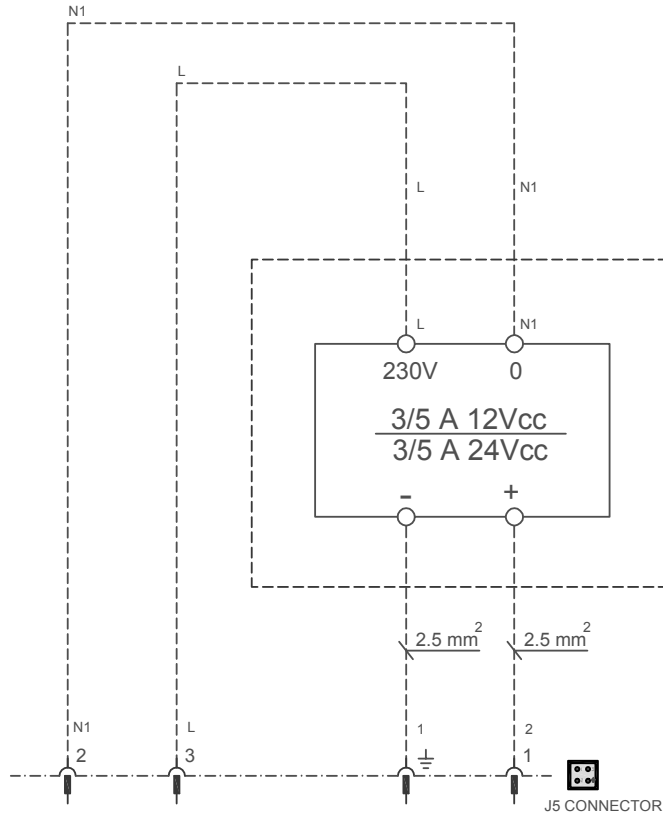
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	DESIGN:	05/12/16	REVISOR:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	NEW CODE:			
	HIMOINSA® grupos electrógenos CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA									
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.										



	DESIGN:	05/12/16	Zhical Qin	<i>Zhical Qin</i>	OLD CODE:		DESCRIPTION: <b>ESQUEMA ELÉCTRICO DE WIRING HARNESS</b>  ELECTRIC DIAGRAM OF WIRING HARNESS	<b>HIMOINSA®</b>	
	REVISIED/ APPROVED:	05/12/16	Diego Molina	<i>Diego Molina</i>	NEW CODE:				Nº P.: CCAC16AB20017 <span style="float: right;">9/9</span> CODE: REVISION: <span style="float: right;">00</span> MEAS.UNIT: mm SCALE: S/E
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ENTRADA ALIMENTACIÓN 230V	CARGA BATERÍA AUTOMÁTICA
SUPPLY 230V INPUT	AUTOMATIC BATTERY CHARGER



\* OPCION BAJO PEDIDO  
OPTION UNDER REQUEST

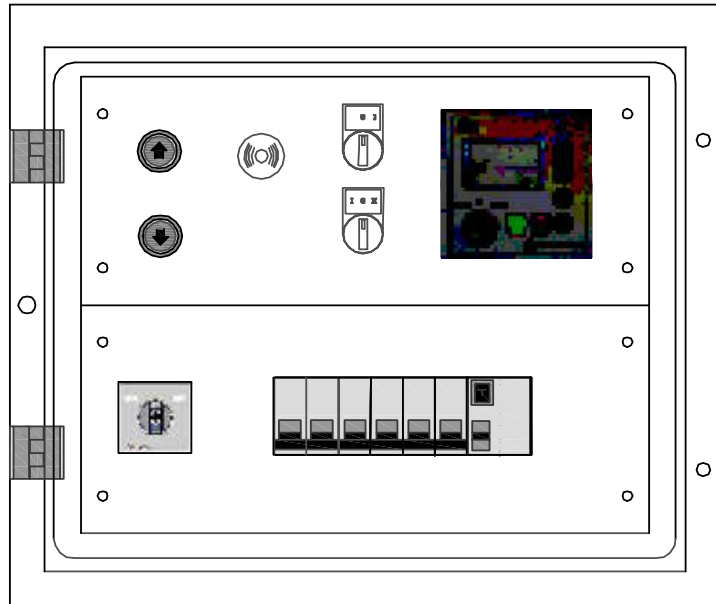
	DESIGN:	05/12/16	Zhical Qin	Zhical Qin	NEW CODE:		DESCRIPTION:	ESQUEMA ELÉCTRICO DE WIRING HARNESS		
	REVISSED/ APPROVED:	05/12/16	Diego Molina	Diego Molina	<b>HIMOINSA</b> grupos electrógenos <small>CTRA. MURCIA-SAN JAVIER KM 23,600 C.P. 30730 - MURCIA - ESPAÑA</small>		ELECTRIC DIAGRAM OF WIRING HARNESS		N° P.: CCAC16AB20017 ANEXA	
	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.									



9.2 ELECTRICAL CONTROL DIAGRAM "M7" - 230V / 4 LED SPOTLIGHTS (OPTIONAL)

CCAC16AB20019-R0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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CUADRO MANUAL PARA TORRE DE ILUMINACION  
 ESQUEMA ELÉCTRICO DE CONTROL "M7"  
 Y PROTECCIÓN MAGNETOTÉRMICA  
 DE 16 A 63 AMPERIOS

LIGHTING TOWER MANUAL START CONTROL PANEL  
 "M7" CONTROL AND THERMAL MAGNETIC  
 PROTECTION ELECTRIC DIAGRAM  
 FROM 16 TO 63AMPERES

**\*WARNING\***

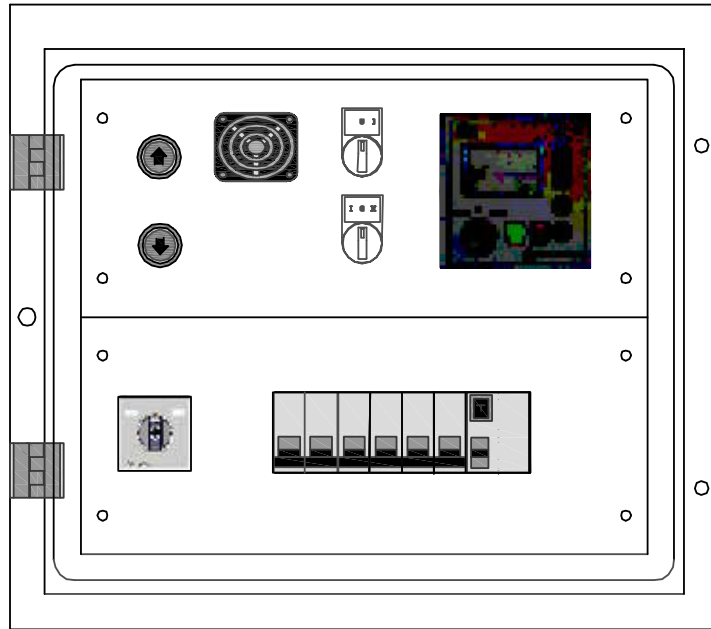
MAKE SURE ALL THE POWER UNITS ARE OFF  
 BEFORE START THE GENSET!!

	DESIGN:	28/04/17	Zhical Qin	<i>Zhical Qin</i>	OLD CODE:		DESCRIPCIÓN: CUADRO MANUAL DIGITAL TIPO CAC16 ESQUEMA ELÉCTRICO DE CONTROL "M7" Y PROTECCIÓN MAGNETOTÉRMICA CON RELÉ DIFERENCIAL  MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY	<b>HIMOINSA®</b>	
	REVISADO/ APPROVED:	28/04/17	Diego Molina	<i>Diego Molina</i>	NEW CODE:			Nº P.: <b>CCAC16AB20019</b> <span style="float: right;">1.1/9</span>	
	<b>HIMOINSA®</b> grupos electrógenos CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA							CODE: REVISION: <span style="float: right;">00</span>	
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. No PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.								MEAS.UNIT: mm SCALE: <b>S/E</b>	





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CUADRO MANUAL PARA TORRE DE ILUMINACION  
 ESQUEMA ELÉCTRICO DE CONTROL "M7"  
 Y PROTECCIÓN MAGNETOTÉRMICA  
 DE 16 A 63 AMPERIOS

LIGHTING TOWER MANUAL START CONTROL PANEL  
 "M7" CONTROL AND THERMAL MAGNETIC  
 PROTECTION ELECTRIC DIAGRAM  
 FROM 16 TO 63AMPERES

**\*WARNING\***

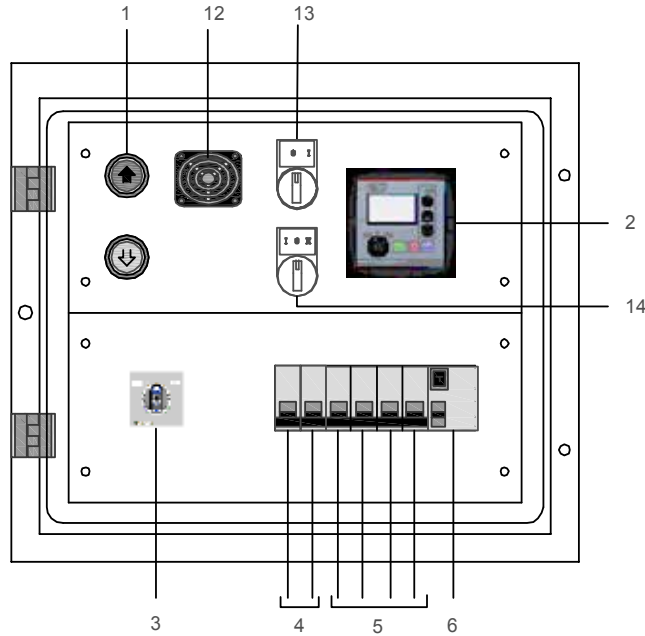
**MAKE SURE ALL THE POWER UNITS ARE OFF  
 BEFORE START THE GENSET!!**

	DATE:	28/04/17	NAME:	Zhicai Qin	SIGNATURE:	<i>Zhicai Qin</i>	OLD CODE:		DESCRIPTION:	CUADRO MANUAL DIGITAL TIPO CAC16 ESQUEMA ELÉCTRICO DE CONTROL "M7" Y PROTECCIÓN MAGNETOTÉRMICA CON RELÉ DIFERENCIAL	
	DESIGN:	28/04/17	REVISÉD/ APPROVED:	28/04/17	Diego Molina	<i>Diego Molina</i>	NEW CODE:		MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY		
	<b>HIMOINSA</b> grupos electrógenos <small>CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30750 - MURCIA - ESPAÑA</small>							Nº P.: CCAC16AB20019 <span style="float: right;">1.0/9</span>			
	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.							CODE: <span style="float: right;">00</span> REVISION: <span style="float: right;">00</span> MEAS.UNIT: mm SCALE: S/E			

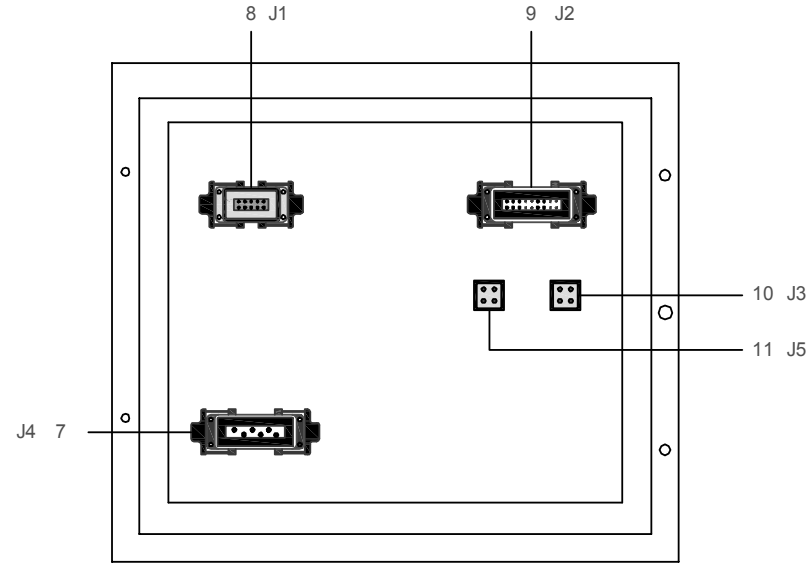


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### FRONT VIEW



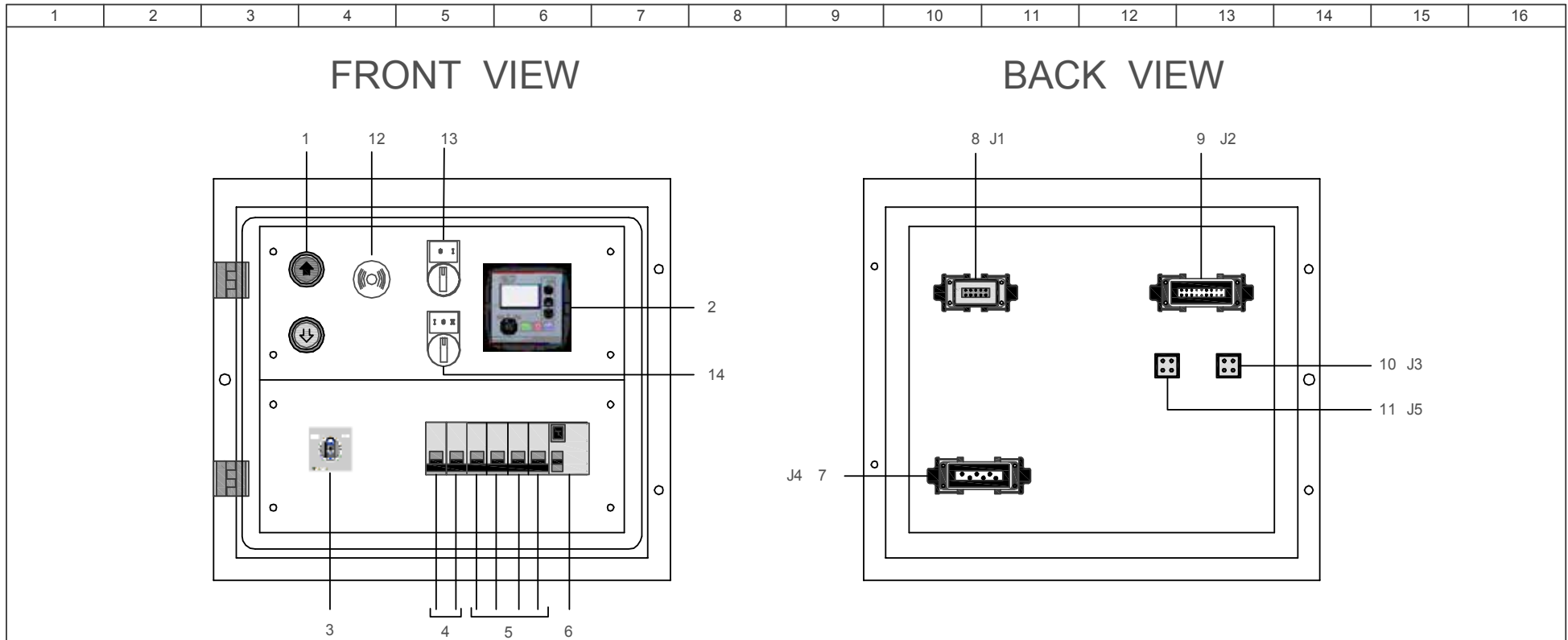
### BACK VIEW



Nº	DESCRIPCIÓN - DESCRIPTION	CODIGO-CODE	Nº	DESCRIPCIÓN - DESCRIPTION	CODIGO-CODE
1	PUSH BUTTON	3000---	8	CONECTOR MALE 10 POLOS - 10 POLES MALE CONECTOR	3000---
2	KEY START CONTROL PANEL GOVERNOR ( M7R )	3036581	9	CONECTOR FEMALE 16 POLOS - 16 POLES FEMALE CONECTOR	3000---
3	2 PSOSITION SWITCH	3000---	10	CONECTOR FEMALE 4 POLOS - 4 POLES FEMALE CONECTOR	3000---
4	CIRCUIT BREAKER OSMC32N1P B10A FOR BASE	3000---	11	CONECTOR FEMALE 4 POLOS - 4 POLES FEMALE CONECTOR	3000---
5	CIRCUIT BREAKER OSMC32N1P B2A FOR LEDS	3000---	12	HORN 12/24	2600033
*4	CIRCUIT BREAKER CSMB1B10 1P B10A FOR BASE	3000---	13	PLASTIC COVER APSAK4-10	8000580
*5	CIRCUIT BREAKER CSMB1B2 1P B2A FOR LEDS	8000---	14	SELECTOR 3 POSITION THUMBED SWITCH	8008978
6	EARTHLEAKAGE RELAY ID 25A 2P 30MA	3000---			
7	CONECTOR MALE 6 POLOS - 6 POLES MALE CONECTOR	3000---			

\* OPCION BAJO PEDIDO  
 \* OPTION UNDER REQUEST

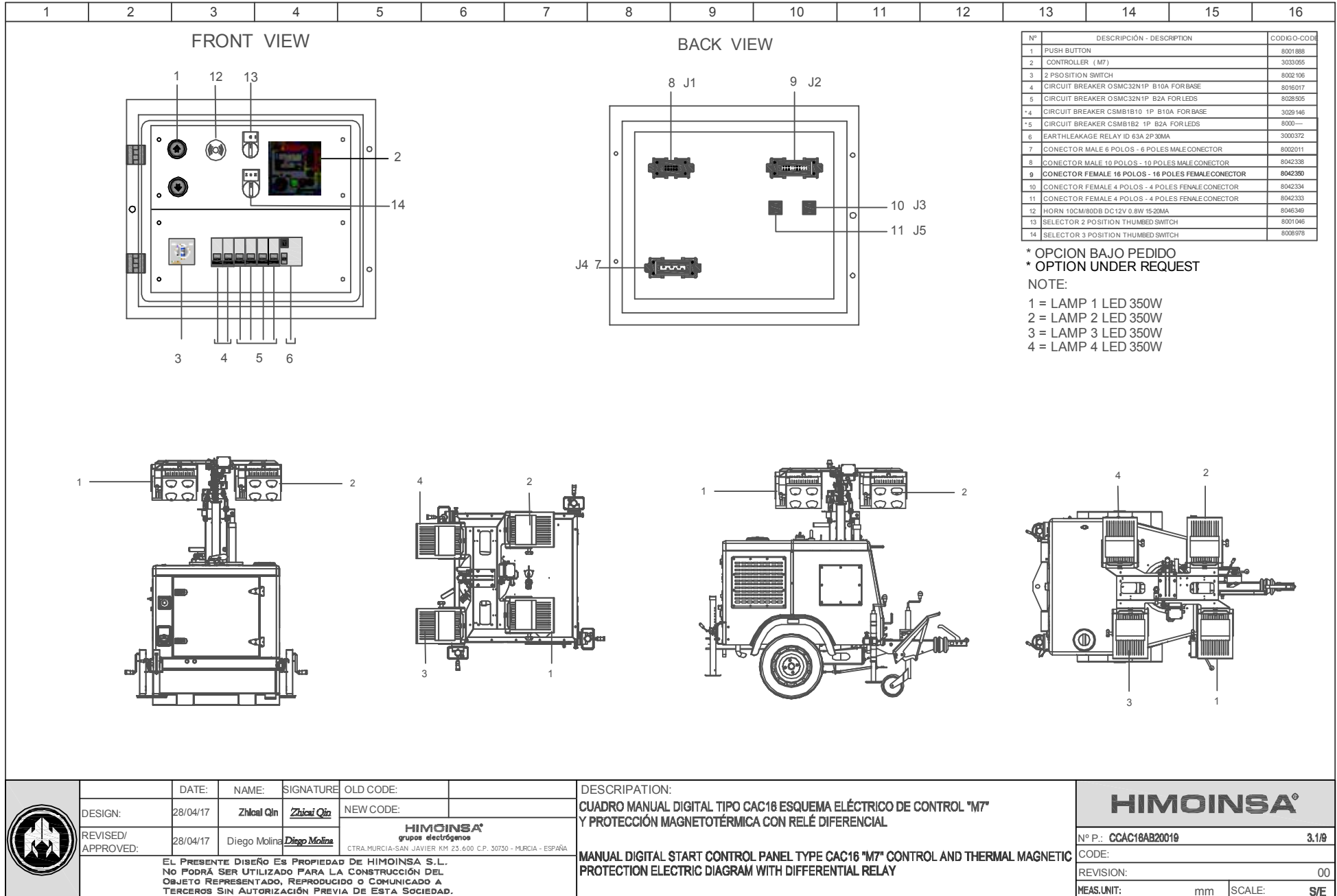
	DATE: 28/04/17 NAME: Zhicai Qin SIGNATURE: <i>Zhicai Qin</i> OLD CODE: NEW CODE:	DESCRIPCIÓN: <b>CUADRO MANUAL DIGITAL TIPO CAC16 ESQUEMA ELÉCTRICO DE CONTROL "M7" Y PROTECCIÓN MAGNETOTÉRMICA CON RELÉ DIFERENCIAL</b>  MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY		
	REVISADO/ APPROVED: 28/04/17 DIEGO MOLINA <i>Diego Molina</i> HIMOINSA® grupos electrógenos CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30750 - MURCIA - ESPAÑA			Nº P.: CCAC16AB20019 CODE: 2.0/9 REVISION: 00 MEAS.UNIT: mm SCALE: S/E
	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.			



Nº	DESCRIPCIÓN - DESCRIPTION	CODIGO-CODE	Nº	DESCRIPCIÓN - DESCRIPTION	CODIGO-CODE
1	PUSH BUTTON	3000---	8	CONECTOR MALE 10 POLOS - 10 POLES MALE CONECTOR	3000---
2	KEY START CONTROL PANEL GOVERNOR (M7R)	3036581	9	CONECTOR FEMALE 16 POLOS - 16 POLES FEMALE CONECTOR	3000---
3	2 PSOSITION SWITCH	3000---	10	CONECTOR FEMALE 4 POLOS - 4 POLES FEMALE CONECTOR	3000---
4	CIRCUIT BREAKER OSMC32N1P B10A FOR BASE	3000---	11	CONECTOR FEMALE 4 POLOS - 4 POLES FEMALE CONECTOR	3000---
5	CIRCUIT BREAKER OSMC32N1P B2A FORLEDS	3000---	12	HORN 10CM/80DB DC12V 0.8W 15-20MA	8046349
* 4	CIRCUIT BREAKER CSMB1B10 1P B 10A FOR BASE	3000---	13	PLASTIC COVER APSAK4-10	8000580
* 5	CIRCUIT BREAKER CSMB1B2 1P B2A FORLEDS	8000---	14	SELECTOR 3 POSITION THUMBED SWITCH	8008978
6	EARTHLEAKAGE RELAY ID 25A 2P 30MA	3000---			
7	CONECTOR MALE 6 POLOS - 6 POLES MALE CONECTOR	3000---			

\* OPCION BAJO PEDIDO  
 \* OPTION UNDER REQUEST

	DATE: 28/04/17 NAME: Zhicai Qin SIGNATURE: <i>Zhicai Qin</i> OLD CODE:	DESCRIPTION: <b>CUADRO MANUAL DIGITAL TIPO CAC16 ESQUEMA ELÉCTRICO DE CONTROL "M7" Y PROTECCIÓN MAGNETOTÉRMICA CON RELÉ DIFERENCIAL</b>  <b>MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY</b>		
	NEW CODE:  <b>HIMOINSA</b> grupos electrógenos <small>CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30750 - MURCIA - ESPAÑA</small>			Nº P.: <b>CCAC16AB20019</b> <span style="float:right">2.1/9</span> CODE:
	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.			REVISION: <span style="float:right">00</span> MEAS.UNIT: mm SCALE: S/E



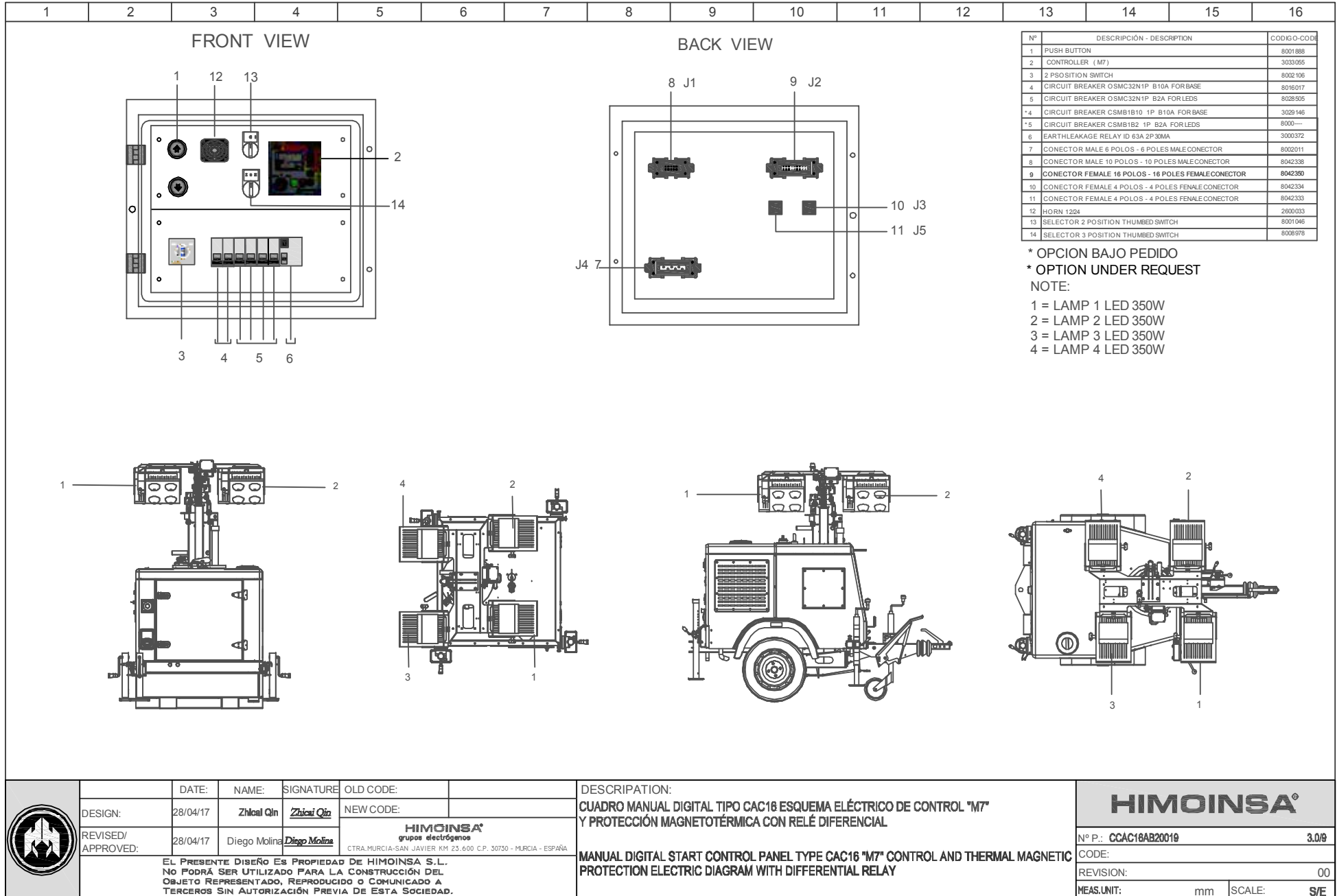
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	DESIGN:	28/04/17	Zhicol Qin	Zhicol Qin		NEW CODE:
	REVISÉD/ APPROVED:	28/04/17	Diego Molina	Diego Molina		

HIMOINSA®  
grupos electrógenos

CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA

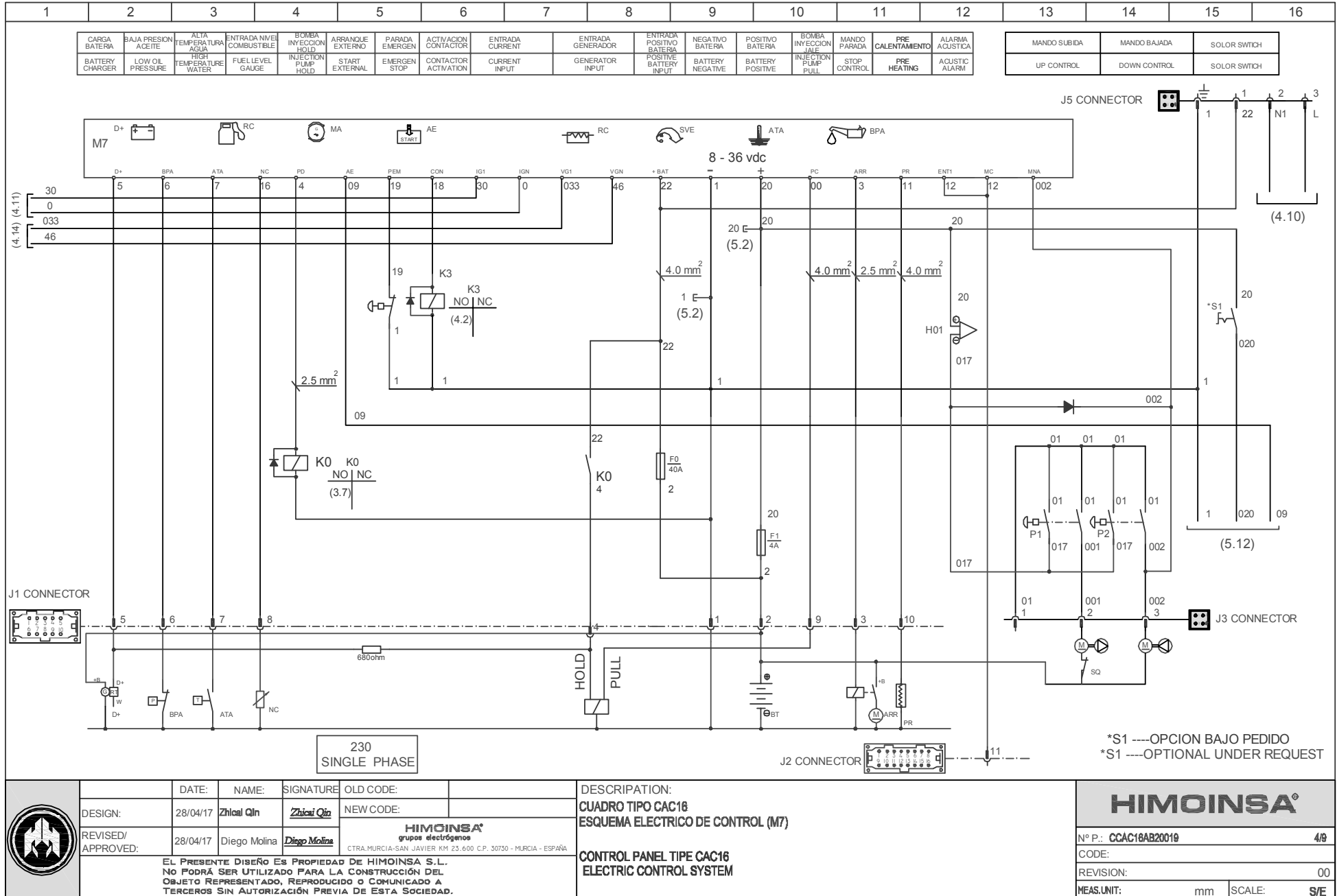
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		CODE:	00
		REVISION:	00
		MEAS.UNIT:	SCALE: S/E





	DATE:	28/04/17	NAME:	Zhicai Qin	SIGNATURE:	<i>Zhicai Qin</i>	OLD CODE:		DESCRIPCIÓN: <b>CUADRO MANUAL DIGITAL TIPO CAC16 ESQUEMA ELÉCTRICO DE CONTROL "M7" Y PROTECCIÓN MAGNETOTÉRMICA CON RELÉ DIFERENCIAL</b>  MANUAL DIGITAL START CONTROL PANEL TYPE CAC16 "M7" CONTROL AND THERMAL MAGNETIC PROTECTION ELECTRIC DIAGRAM WITH DIFFERENTIAL RELAY	
	DESIGN:	28/04/17	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	NEW CODE:			
	REVISÉD/ APPROVED:	28/04/17	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	NEW CODE:			
<b>HIMOINSA</b> grupos electrógenos <small>CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA</small>									Nº P.: <b>CCAC16AB20019</b> <span style="float: right;">3.0/9</span>	
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.									CODE: REVISION: <span style="float: right;">00</span> MEAS.UNIT: mm SCALE: S/E	

CCAC16AB20019-R0



DESIGN:	DATE:	NAME:	SIGNATURE:	OLD CODE:	DESCRIPTION:
REVISED:	28/04/17	Zhicai Qin	Zhicai Qin	NEW CODE:	CUADRO TIPO CAC16 ESQUEMA ELECTRICO DE CONTROL (M7)
APPROVED:	28/04/17	Diego Molina	Diego Molina	<b>HIMOINSA</b> grupos electrógenos CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA	
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.					

<b>HIMOINSA</b> <sup>®</sup>	
Nº P.:	CCAC16AB20019
CODE:	4/9
REVISION:	00
MEAS.UNIT:	mm
SCALE:	S/E

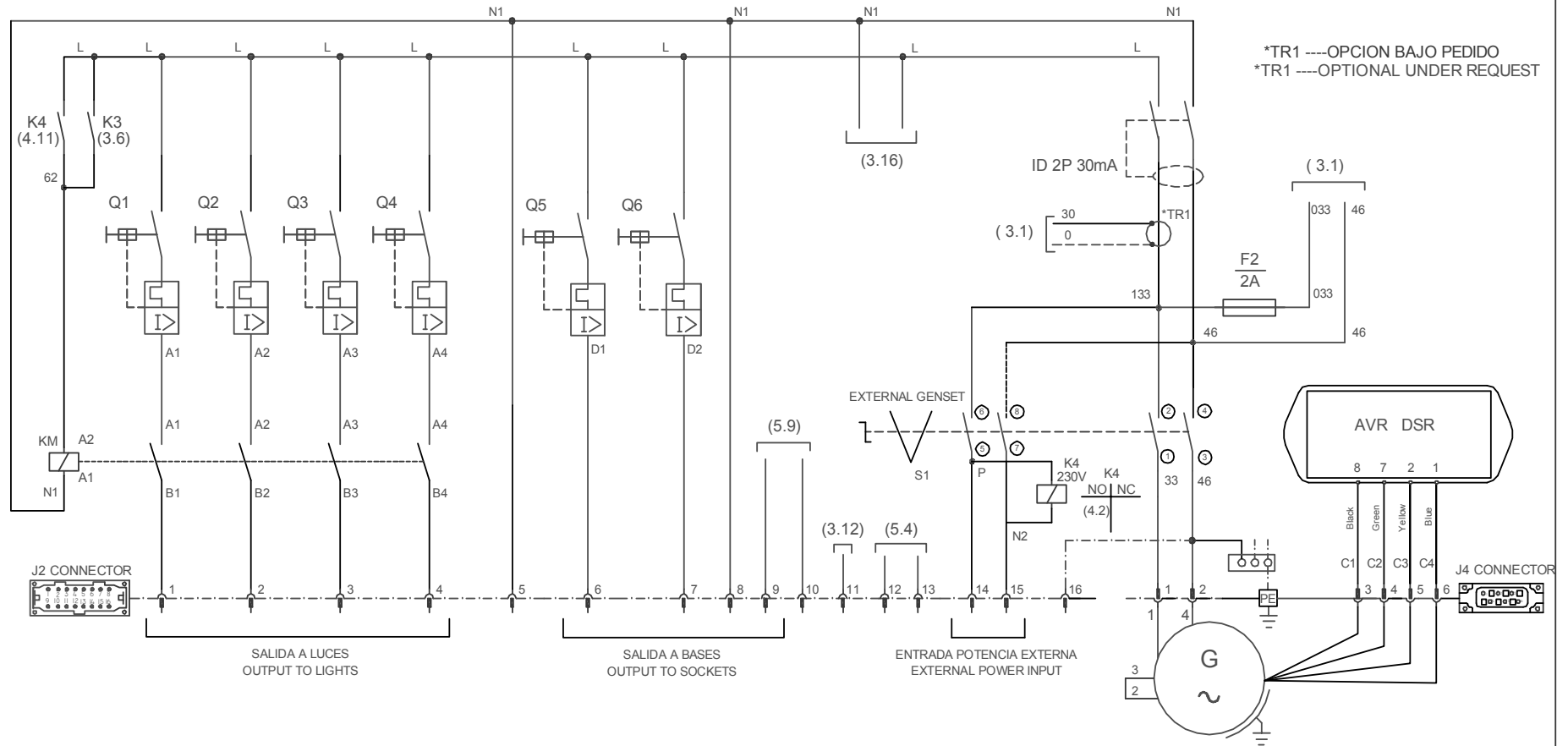


CCAC16AB20019-R0

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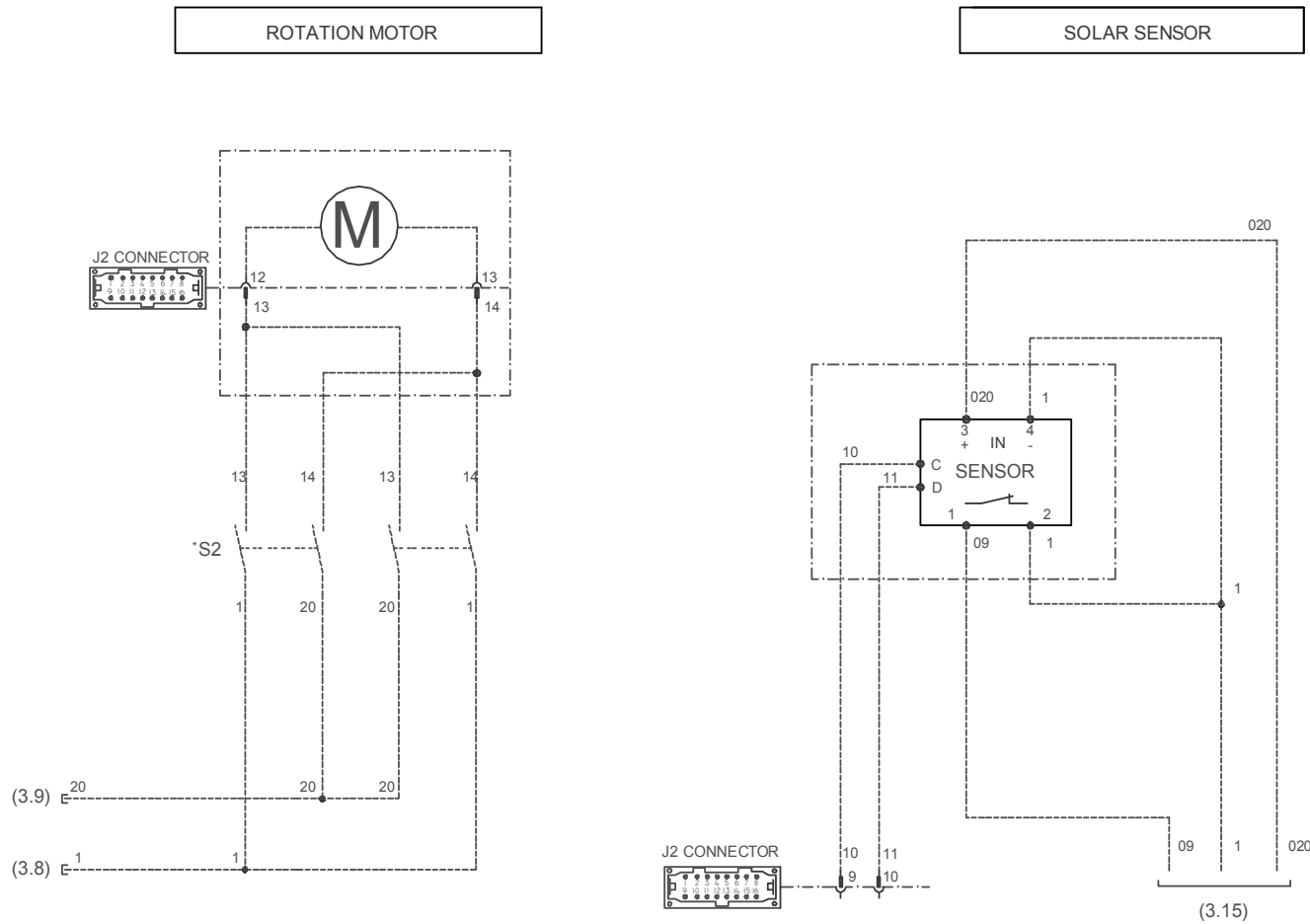
**ESQUEMA CORRESPONDIENTE A LAS TENSIONES DE:**  
**DIAGRAM FOR THE FOLLOWING VOLTAGES:**  
 220-230-240V MONOFÁSICO  
 SINGLE PHASE

ESQUEMA DE FUERZA		PROTECCIÓN DIFERENCIAL
LAMPARAS	BASES	DIFFERENTIAL PROTECTION
PART OF POWER (EXTERNAL)		
LAMPS	SOCKETS	



	DATE:	28/04/17	NAME:	Zhical Qin	SIGNATURE:	<i>Zhical Qin</i>	OLD CODE:		DESCRIPTION:	ESQUEMA ELÉCTRICO DE POTENCIA				
	DESIGN:	28/04/17	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	NEW CODE:		ELECTRIC DIAGRAM POWER CIRCUIT	Nº P.:		CCAC16AB20019	5/9	
	REVISÉD/	28/04/17	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	HIMOINSA® grupos electrógenos <small>CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA</small>			CODE:				
	APPROVED:	28/04/17	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.			REVISION:			00	
											MEAS.UNIT:	mm	SCALE:	S/E

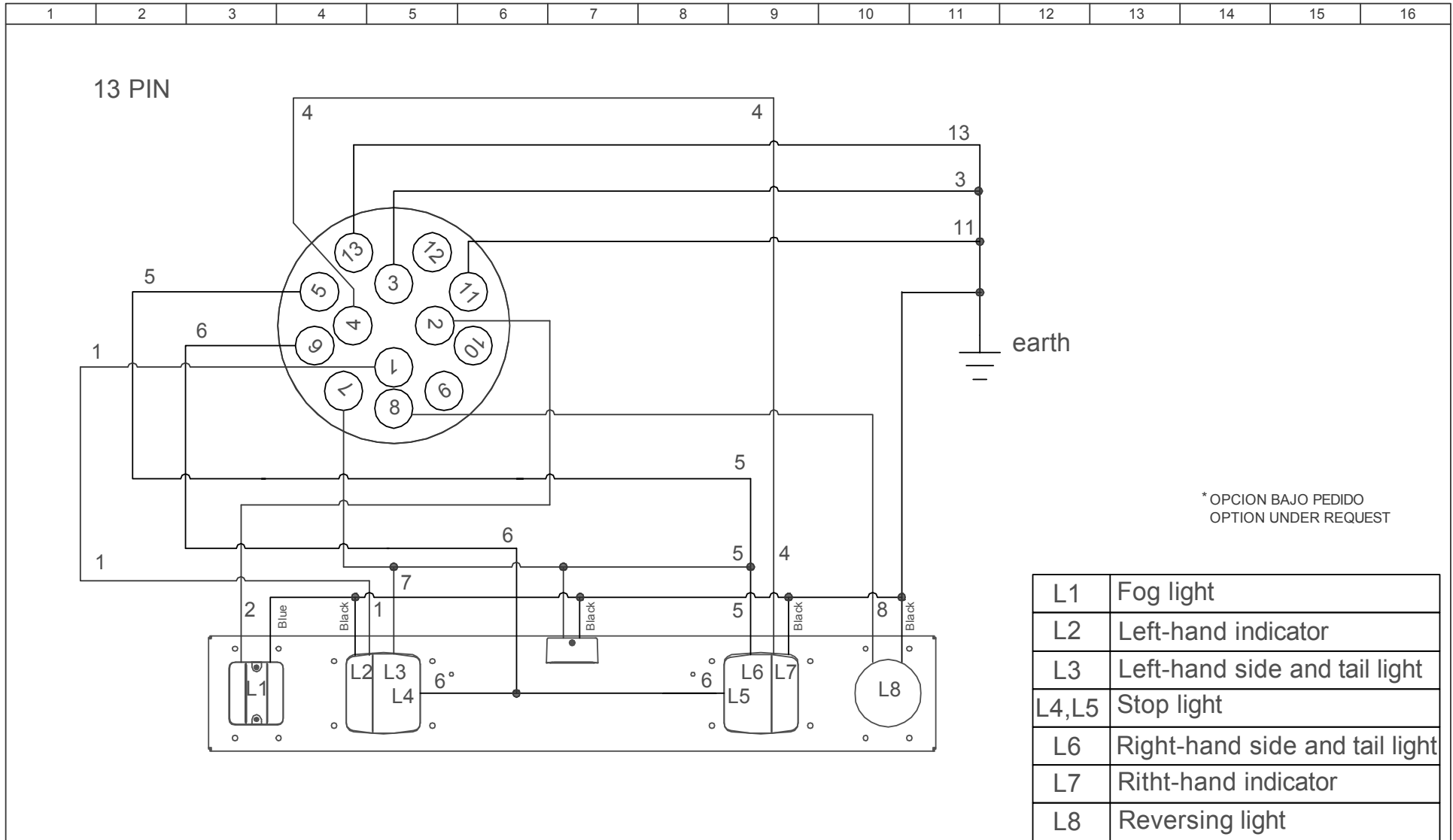
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\* OPCION BAJO PEDIDO  
OPTION UNDER REQUEST

	DATE:	28/04/17	NAME:	Zhical Qin	SIGNATURE:	<i>Zhical Qin</i>	OLD CODE:		DESCRIPATION:	ESQUEMA ELÉCTRICO DE POTENCIA	<b>HIMOINSA®</b>			
	DESIGN:	28/04/17	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	NEW CODE:		DESCRIPTION:	ELECTRIC DIAGRAM OF SOLAR SENSOR AND PROGRAME TIMER		Nº P.: CCAC16AB20019		
	REVISIED/ APPROVED:	28/04/17	NAME:	Diego Molina	SIGNATURE:	<i>Diego Molina</i>	<b>HIMOINSA®</b> grupos electrógenos <small>CTRA. MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA</small>			CODE:		8/8		
	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.									REVISION:	00			
											MEAS.UNIT:	mm	SCALE:	S/E

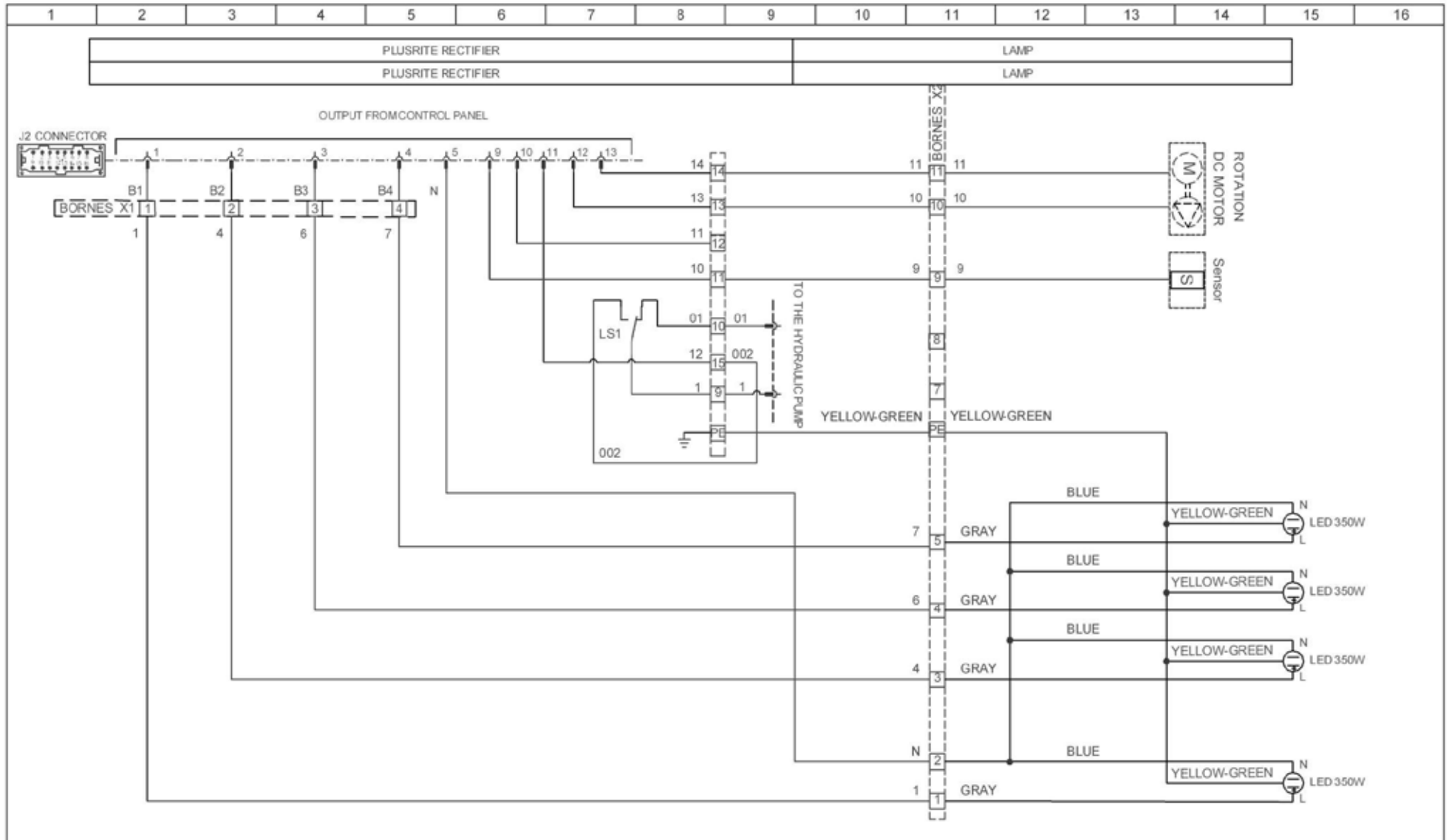




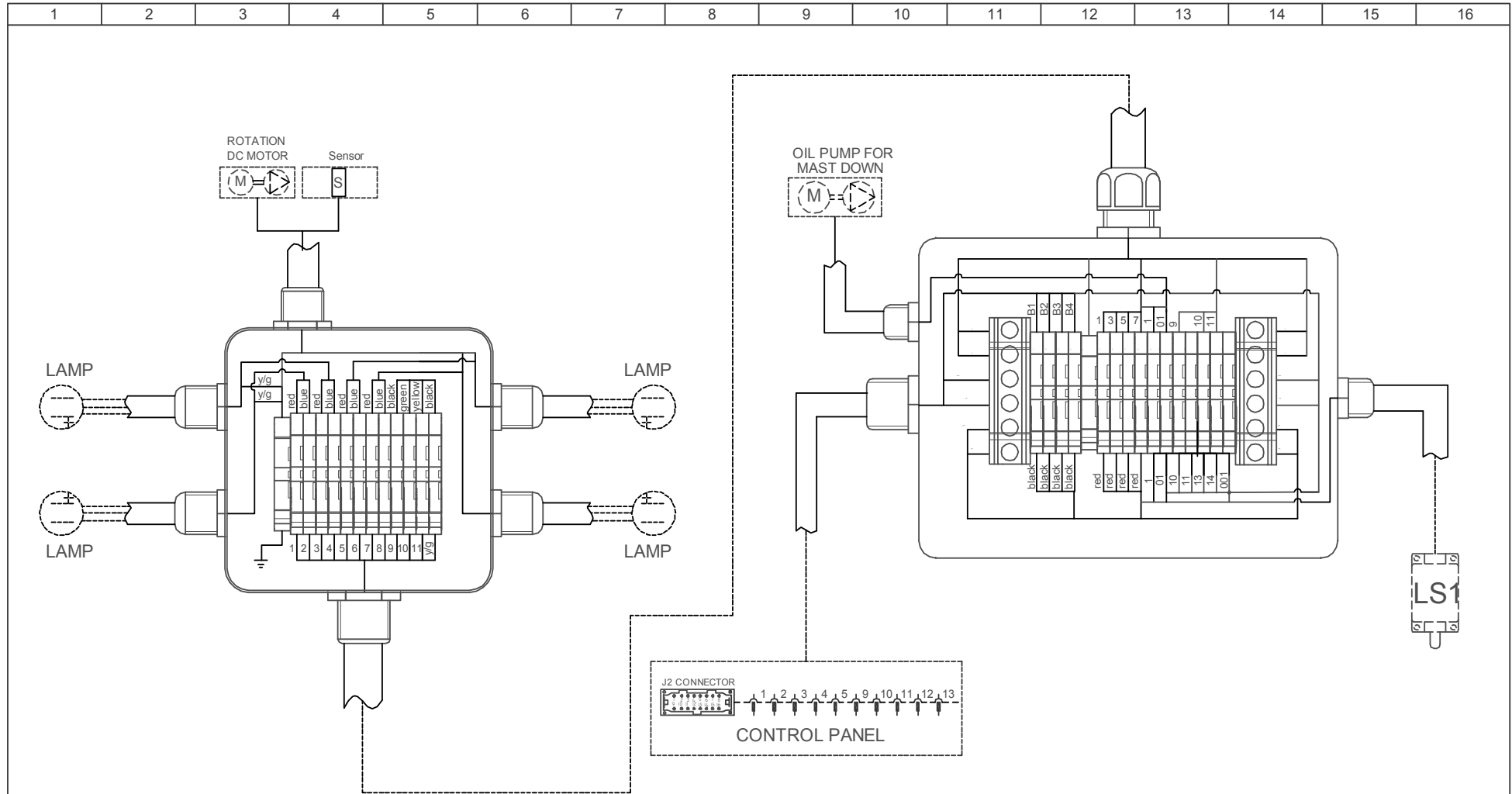
\* OPCION BAJO PEDIDO  
OPTION UNDER REQUEST


	DATE: 28/04/17 NAME: Zhicai Qin SIGNATURE: <i>Zhicai Qin</i> OLD CODE:	DESIGN:	DESCRIPTION: <b>ESQUEMA ELÉCTRICO DE TAILLIGHT</b>  ELECTRIC DIAGRAM OF TAILLIGHT	<b>HIMOINSA®</b> Nº P.: CCAC16AB20019-R0 7/9 CODE: REVISION: 00 MEAS.UNIT: mm SCALE: S/E	
	NEW CODE: <b>HIMOINSA®</b> grupos electrógenos CTRA.MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA	REVISADO/ APPROVED: 28/04/17 Diego Molina <i>Diego Molina</i>			EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.
	www.himoinsa.com				





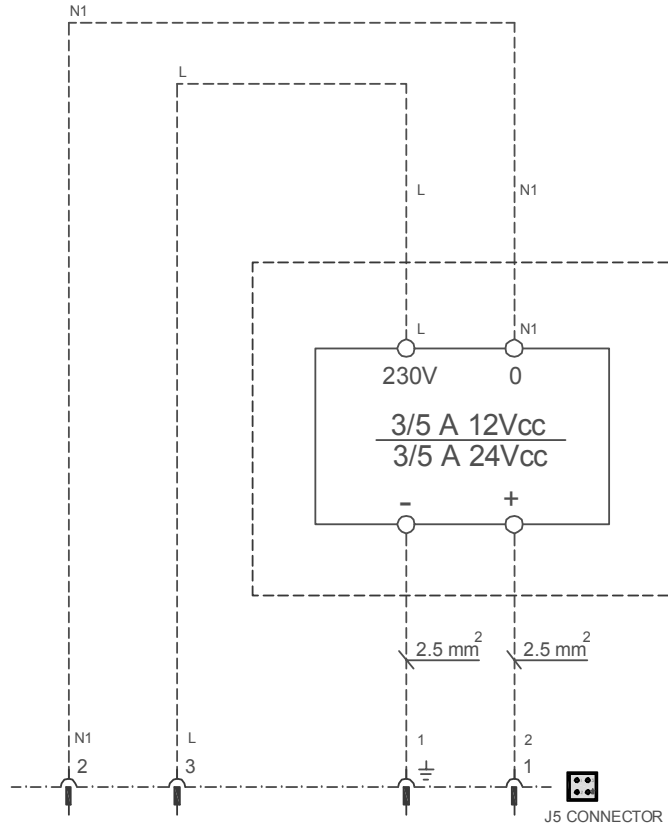
	DATE:	28/04/17	NAME:	Zhical Qin	SIGNATURE:	<i>Zhical Qin</i>	OLD CODE:		DESCRIPCIÓN: ESQUEMA ELÉCTRICO DE POTENCIA  ELECTRIC DIAGRAM OF LAMP	<b>HIMOINSA®</b> grupo electrogénesis CTRA. PURCJA-SAN JAVIER KM 23,500 CP. 30730 - PURCJA - ESPAÑA	Nº P.: CCAC16AB20019 8/9 CODE: REVISION: 00 MEAS. INT.: mm SCALE: S/E
	DESIGN:	28/04/17	Zhical Qin	<i>Zhical Qin</i>	NEW CODE:						
	REVISED/ APPROVED:	28/04/17	Diego Molina	<i>Diego Molina</i>							
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL CUERPO REPRESENTADO, REIMPRESIÓN O COMERCIO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.											



	DESIGN:	28/04/17	Zhicai Qin	Zhicai Qin	OLD CODE:		DESCRIPCIÓN: <b>ESQUEMA ELÉCTRICO DE WIRING HARNESS</b>  ELECTRIC DIAGRAM OF WIRING HARNESS	<b>HIMOINSA®</b>		
	REVISADO/ APPROVED:	28/04/17	Diego Molina	Diego Molina	NEW CODE:					Nº P.: <b>CCAC16AB20019</b> <span style="float: right;">9/9</span> CODE: REVISION: <span style="float: right;">00</span> MEAS.UNIT: mm SCALE: S/E
	EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.									

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ENTRADA ALIMENTACIÓN 230V	CARGA BATERÍA AUTOMÁTICA
SUPPLY 230V INPUT	AUTOMATIC BATTERY CHARGER



\* OPCION BAJO PEDIDO  
OPTION UNDER REQUEST

	DATE:	NAME:	SIGNATURE:	OLD CODE:	DESCRIPATION: <b>ESQUEMA ELÉCTRICO DE WIRING HARNESS</b>  ELECTRIC DIAGRAM OF WIRING HARNESS		
	DESIGN:	28/04/17	Zhical Qin	Zhical Qin			NEW CODE:
	REVISIED/ APPROVED:	28/04/17	Diego Molina	Diego Molina			
HIMOINSA <sup>®</sup> grupos electrógenos CTRA. MURCIA-SAN JAVIER KM 23.600 C.P. 30730 - MURCIA - ESPAÑA						N° P.: CCAC16AB20019 ANEXA CODE: REVISION: 00 MEAS.UNIT: mm SCALE: S/E	
EL PRESENTE DISEÑO ES PROPIEDAD DE HIMOINSA S.L. NO PODRÁ SER UTILIZADO PARA LA CONSTRUCCIÓN DEL OBJETO REPRESENTADO, REPRODUCIDO O COMUNICADO A TERCEROS SIN AUTORIZACIÓN PREVIA DE ESTA SOCIEDAD.							

## 10. WARRANTY CONDITIONS

### 10.1 LIMITED WARRANTY PERIODS

#### **PROFESSIONAL USE (commercial) (whichever is first)**

4,000 working hours

24 months from the date of the sale

30 months after leaving the factory

#### **RESIDENTIAL USE (private) (whichever is first)**

1,000 working hours

24 months from the date of the sale

30 months after leaving the factory

The coverage of this warranty is ONLY applicable to the end user of the equipment recognized by HimoinSA. In the case of generator sets, it is only applicable to those generator sets that operate together with a manual or automated control panel manufactured and/or installed by HIMOINSA.

### 10.2 COMPANY RESPONSIBILITIES

- In those countries where HIMOINSA has an authorized technical assistance network (information available at [www.himoinSA.com](http://www.himoinSA.com)) the warranty consists of the replacement or repair of the damaged parts once it has been ascertained that the damage is due to defective material at origin or during the manufacturing or the assembly process. The warranty therefore covers both the replaced parts as well as the manpower used during normal working hours. The customer shall be charged with shipping costs to the premises of the authorized distributor, where the repairs shall be carried out.
- The warranty for the rest of the world consists of free supply on premises San Javier (Murcia, Spain), of the non-usable parts due to defective material at origin, manufacturing or/and assembly. If the



equipment is sent to our premises, all necessary repair tasks will be carried out free of charge.

- In this case, the shipping costs, both sending and return, will be chargeable to the customer.
- The warranty will only be given after the technical study of the defective parts. Any part sent or service carried out before the acceptance of the warranty will be billed. All replaced parts have to be returned to Himoinsa and will become of its property.
- In case of defects in the engine or the alternator, HIMOINSA informs that the assistance covered by the warranty will be provided by the official technical services of the manufacturer of the alternator or the engine, who will determine the scope of the warranty.
- The defect shall appear during the normal use of the product and within the warranty period. The company will supply the necessary spare parts for the repair as soon as possible but shall not be deemed responsible for any losses for not having the equipment during this period.
- All claims made based on this warranty, must be processed through your authorized seller or area distributor, who will process the claim and the scope of the warranty.
- This warranty does not cover failures or defects that are the consequence of normal use or wear, inappropriate use (including overload and overvoltage), negligence, accidental damages, non-authorized modifications; lack of maintenance or inappropriate maintenance or connections, (inappropriate storage, transportation or installation); any kind of use of the equipment over and above the capacity and limits established by the manufacturer or under conditions that differ from those recommended; failures caused after another failure or defect had or should have been detected; damage to batteries, lamps and fuses; damages due to the use of parts not supplied or manufactured by the manufacturer. The Warranty also does not cover the rental costs of substitution equipments during repair period nor connection costs and/or connection works of the product with other equipments of the customer.
- The repaired or replaced parts have a (6) six-month warranty, this will not modify the warranty of the other elements.
- Equipment or components not manufactured by the company. The company will provide a warranty equal to the one supplier, and limited

to the responsibility offered by the company for its equipment.

- All claims to do with the fuel injection system or parts of it, will be referred by HIMOINSA to the manufacturer of the injection system, or to its authorized agent. The manufacturer or authorized agent's report ON THE FAILURE will be binding for both parties: Himoinsa and purchaser.

### 10.3 USER RESPONSIBILITIES

The user is responsible for:

- Installing and operating the product in accordance with the operation and instruction manual provided, and in its case with the assistance of qualified technical personnel and in accordance with the current regulations.
- Carrying out a proper maintenance of the equipment (including the use of appropriate fuel, oil, antifreeze, and lubricant), as well as to replace of the parts and components due to the normal use of the equipment.
- Returning the warranty register form properly filled in within 10 days after the commissioning of the product, or a month after the date of the sale, whichever is first.
- Sending written notification to the company or to the authorized technical assistance service in his or her country, of the failures of the material and the justification thereof, within seven days after the failure were to appear and in any case before the expiration of the warranty. Otherwise, the purchaser may lose his or her warranty rights.
- If the repair of the defect requires the participation of other equipment not manufactured by HIMOINSA, the purchaser will be solely responsible for the resultant work and costs. Furthermore, he or she must also provide full access to the products that were manufactured by HIMOINSA S.L.
- Accepting the technical report about the existence or non-existence of defects in the material or the assembly.
- The manpower costs, except for those stated in the section "COMPANY RESPONSIBILITIES", including those ones derived from the assembly and disassembly of the equipment.
- The costs and risks from transportation or shipping of the equipment, and any other costs associated with the replacement of the components.



- Any cost that may exceed the purchasing price of the product.
- Any other cost, including transport and trips, accommodation, taxes and fees, communication expenses, extra hours among others; except for those stated in section "Company responsibilities".
- Payment of the total price of the machine, spare parts and related services related with the product under warranty.
- The attendance of sales or technical personnel at commissioning or performance demonstrations of the equipment will not mean that this warranty may be extended to the installation or the assembly. Performance is expressly excluded from this warranty. Nor does it imply acceptance or understanding of the correct technical installation, assembly or connection of the machine, carried out by the purchaser or by a third party unrelated to Himoinsa, nor of the dimensioning of the purchased equipment with regard to the real power supply needs of the purchaser.

The present warranty will not be applicable to the following cases:

- When the documentation (warranty, purchasing invoice, maintenance and use manual) may have been altered in any way or may be illegible.
- If the model and serial number of the generating set have been altered, erased, removed or are illegible.

HIMOINSA shall not be deemed contractually or extra contractually responsible for any material or immaterial, direct nor indirect damages; consecutive or non-consecutive to the damage on the material covered by the warranty, such as operating losses, expenses and costs due to not having the product, neither for damages to third parties or to other equipment or products.

This Warranty does not limit any other rights that as a consumer, the purchaser may have according to the current legislation. This warranty replaces any other express or implied warranty, including, without limitation any merchantability warranty of the equipment or its suitability for a particular purpose. All claims not covered by the above stipulations will not be accepted by the company.

HIMOINSA informs the user that he or she is obliged to follow the Maintenance and Use Manual and to keep it together with the rest of the technical documentation of the equipment in observance with safety in the workplace regulations. And also that they are advised to install specific protections that prevent overvoltage and overload from the main electrical line, and to protect the equipment by seeking the advice of an authorized installer.





#### **FACTORIES**

SPAIN • FRANCE • INDIA • CHINA • USA • BRAZIL • ARGENTINA

#### **SUBSIDIARIES**

PORTUGAL | SINGAPORE | POLAND | UAE | PANAMÁ | GERMANY  
ARGENTINA | ANGOLA | UK | DOMINICAN REP. | SOUTH AFRICA

#### **HEADQUARTERS**

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Fax: +34 968 19 12 17 | Fax - Exports: +34 968 33 43 03

#### **[www.himoinsa.com](http://www.himoinsa.com)**

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