

# Electrical risk in the assembly and maintenance of greenhouses








## Electrical hazards

Possibility of electric current flowing through the human body.



When a current flows through the human body it can have serious adverse effects:

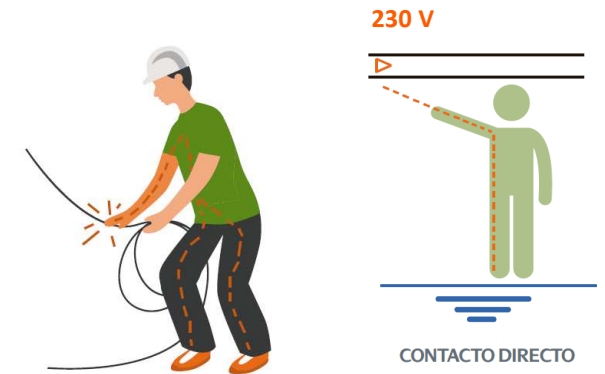
Current	Effects
> 4 A	Cardiac arrest Burns 
70 - 100 mA	Irreversible ventricular fibrillation threshold 
25 - 75 mA	Respiratory paralysis threshold 
10 - 25 mA	Muscular contraction ("can't-let-go current") 
0.5 - 1.6 mA	Very weak sensation 

## Electric shock effects

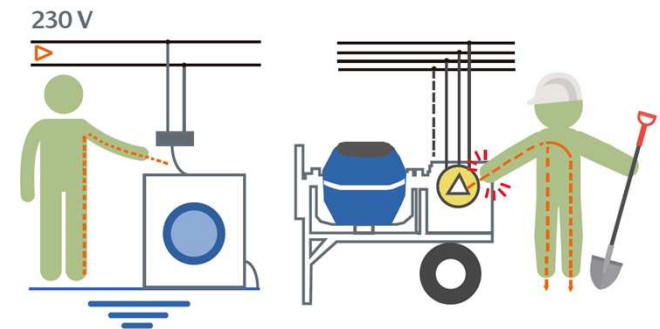
- CAN'T-LET-GO CURRENT
- VENTRICULAR FIBRILLATION
- RESPIRATORY PARALYSIS AND ASPHYXIA
- INTERNAL BURNS
- ELECTROLYSIS OF THE BLOOD
- BURNS AT HIGH FREQUENCIES

## Direct contact

Coming into contact with live elements.



## Indirect contact



## TAKE CARE!

You do not need to touch the live element to be electrocuted. Simply bringing a conductive material (ring, chain, etc.) close to the source of electricity could be sufficient for the current to pass through you.

## Safety in the Assembly and Maintenance of Scaffolding

Evaluate whether there are any elements carrying a voltage in your environment, so that you can take measures before assembling or carrying out maintenance work in the greenhouses. (Changes of orientation, location, protection barriers, works without voltage, and elevation of the electrical power line).

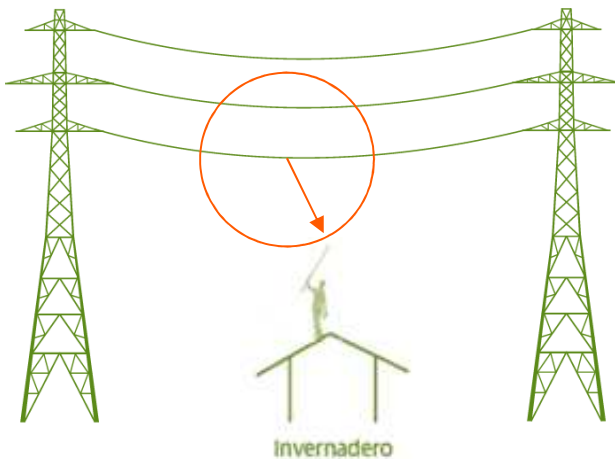
Call 900 171 171 in the event of any dangerous situation.

## Safety distances between greenhouses and power lines

Royal Decree 1955/2000 prohibits construction under these lines.

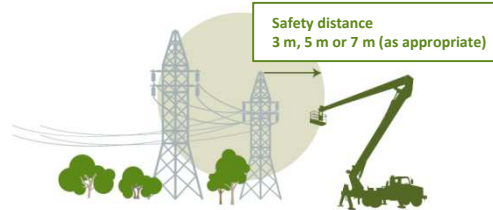
For any greenhouses that exist below a line, the safety distances should be borne in mind to avoid accidents. Within these distances it is necessary to consider the maximum radius for possible movements with tools.

3 m (less than 66 kV)  
 d: 5 m (between 66 kV and 220 kV)  
 7 m (over 220 kV)



## Safety distances

Voltage in the line	Safety distance
Less than 66 KV	3 m.
Greater than or equal to 66 KV and less than 380 KV	5 m.
Greater than or equal to 380 KV	7 m.



Safety distances should be taken into account before carrying out work in the vicinity of high voltage electrical installations:

- Find out about line voltage by calling the distributor (900 171 171)
- Extreme vigilance is required to avoid approaching electrical installations.

Ensure that machine parts, tools and other equipment are not allowed any closer to high voltage equipment than the distances shown in the attached table.

Keep in mind that water behaves as an electrical conductor in the vicinity of power lines.



- If it is not possible to guarantee these distances, or to position barriers to the installation at closer distances, contact the utility company

### Preventive measures around machines

- Install safety devices in machines used for working at height
- Place barriers in the working area to prevent getting close to the line
- Supervision by the Head of Works
- Indicate and mark the height by means of gantries to the overhead line.

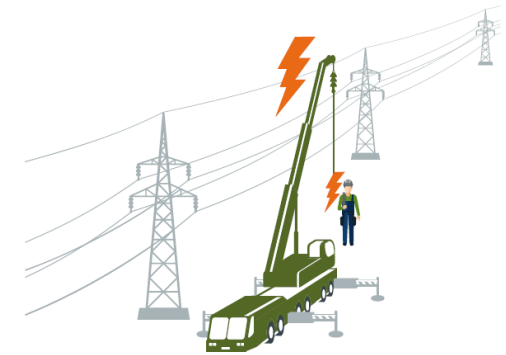
## In case of contact with vehicle

- Stay in the vehicle, driving away if possible, to break the contact.

- Instruct everyone to vacate the area until the contact is broken, or it is confirmed that the installation has been disconnected.

- If the vehicle catches fire and you have to leave it:

- Check that there are no power cables on the ground. If there are cables, jump over them with both feet together.
- Do not touch the machine and the ground at the same time, and move away taking short steps.



### If a power line falls onto the ground

- Do not touch or approach the power line

- Move away from it taking small steps or by jumping

- Keep everyone away

- Report the incident to the distribution company or by dialling 112

### PROCEDURE IN CASE OF AN ACCIDENT:

**P**rotect yourself before acting. Make sure that both you and the victim are outside the electrical contact zone.

**N**otify the distribution company or dial 112 immediately.

**A**ssist the victim, making an assessment and applying the correct resuscitation techniques.