

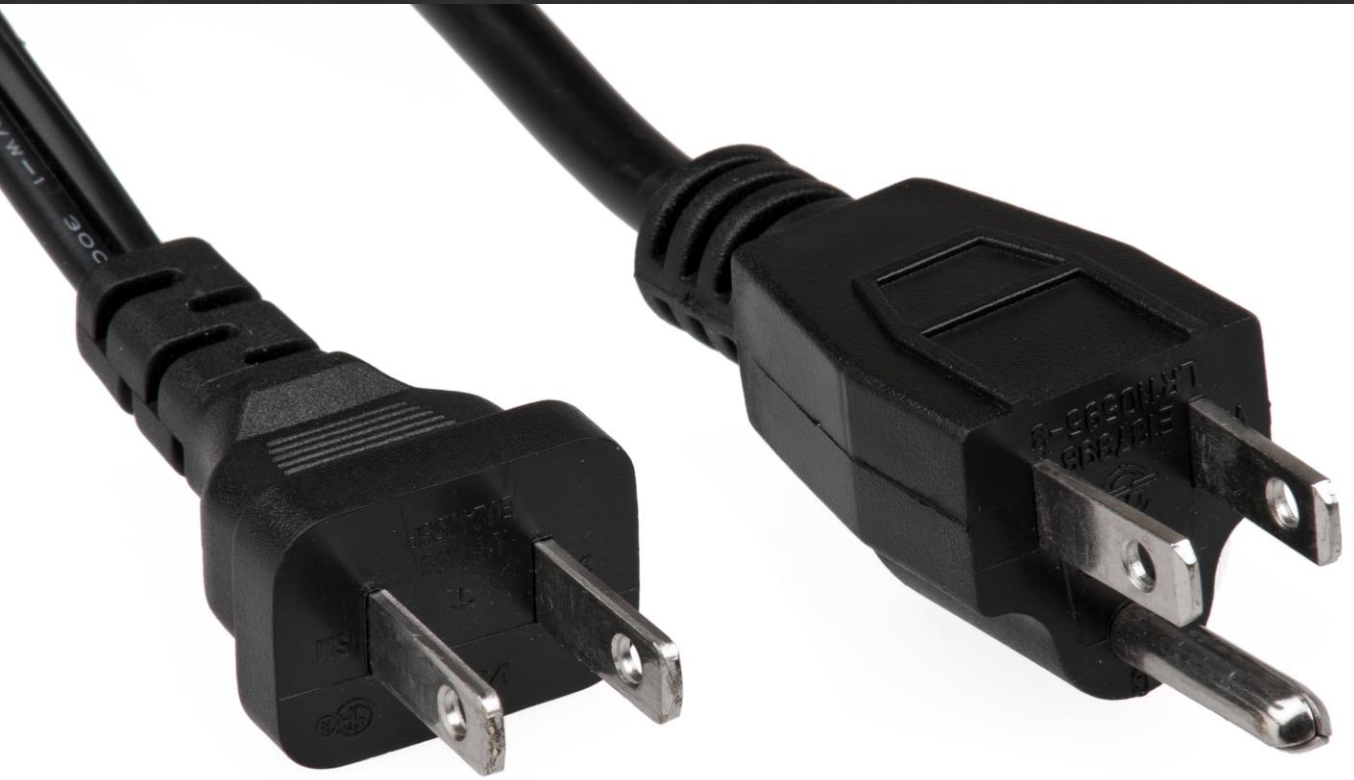


Why is the earthing pin in the socket of electrical appliances so long and thick?

An SVYM Initiative



Power plugs and sockets are devices for removably connecting an electrically-operated device like, water heater, electric grinder, washing machine, electric iron, etc. to the commercial power supply so that electric power can flow to them.



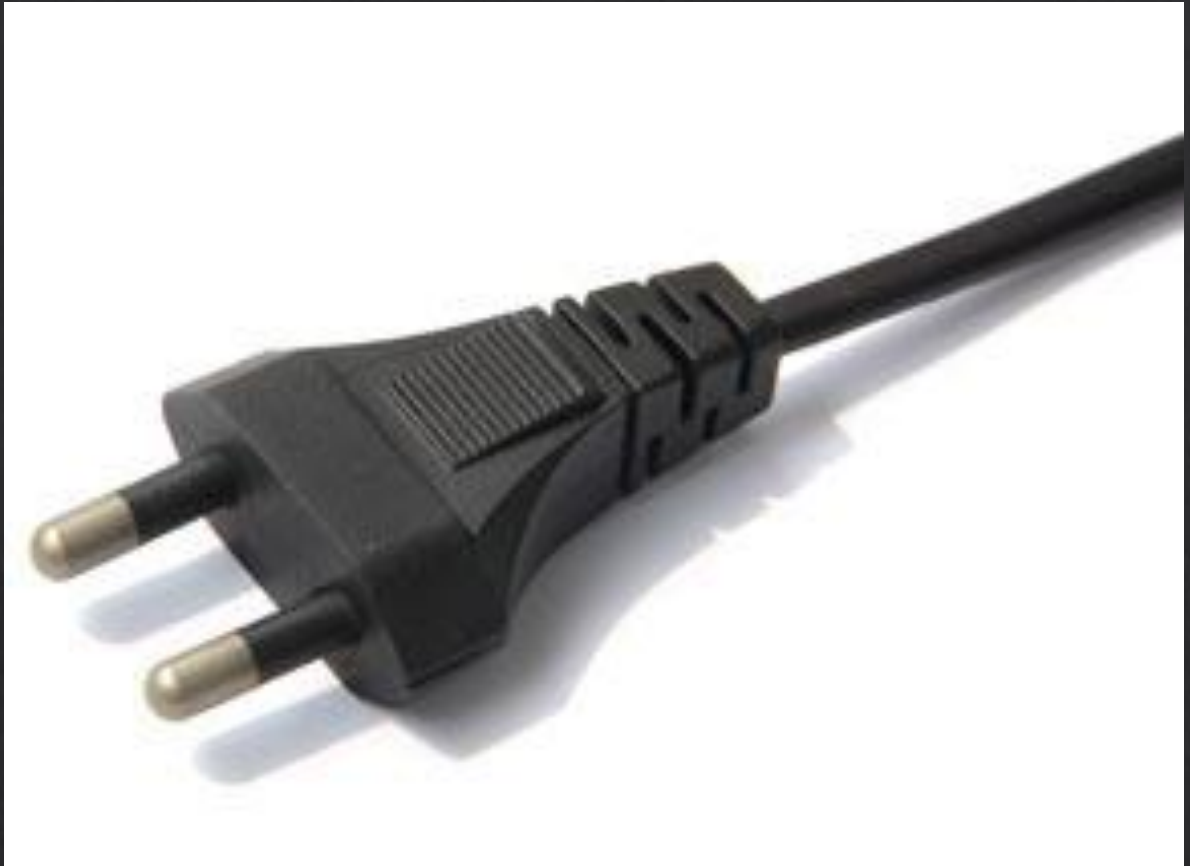
An electric plug is a male electrical connector with contact prongs to connect mechanically and electrically to slots in the matching female socket. Plugs usually have a live or hot contact (known as phase) and a neutral contact (known as neutral) which carry current during normal use. P and N are the symbols respectively used to designate the phase and neutral.



When we use heavy equipment or accessories with metal bodies, we require protection against fault or malfunction of the equipment so that we don't get electric shock or electrocuted. Hence, the third pin (known as earth) is connected to the earth.



This earth pin will be effective only when the electric supply system has proper earthing. During normal operating conditions, the earth pin does not carry any current. The other name for earthing is grounding.

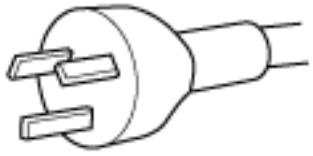


The earth contact is meant to reduce the risk of electric shock from external metal parts of the plugged-in device, and to commonise the earth plane of multiple devices used together.

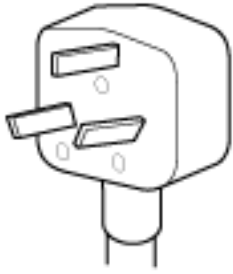
Many plugs make no distinction between the live and neutral contacts, and in some cases both current-carrying contacts may be live.



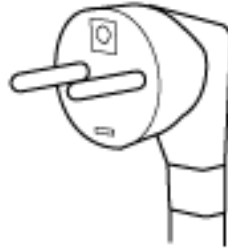
Generally, the current at the time of fault is more than 5 times the normal current. And hence the earth pin is thicker than the other two pins. The earth pin is also longer in size so that it goes in to the socket first. This means the plug is earthed before the live pin is engaged – it is a health and safety issue.



Australia
(SAA/3)



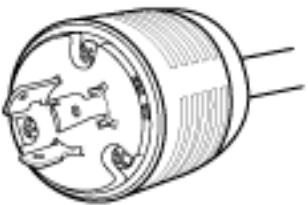
China
(PSB-10)



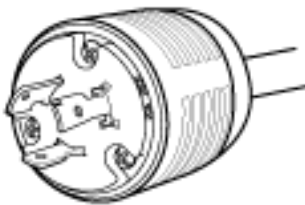
Europe
(CEE 7/7)



Italy
(CEI 23-16/VII)



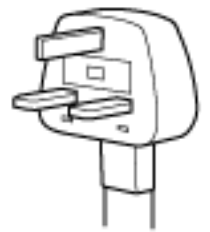
Japan
(L6-20P)



North America
(L6-20P)



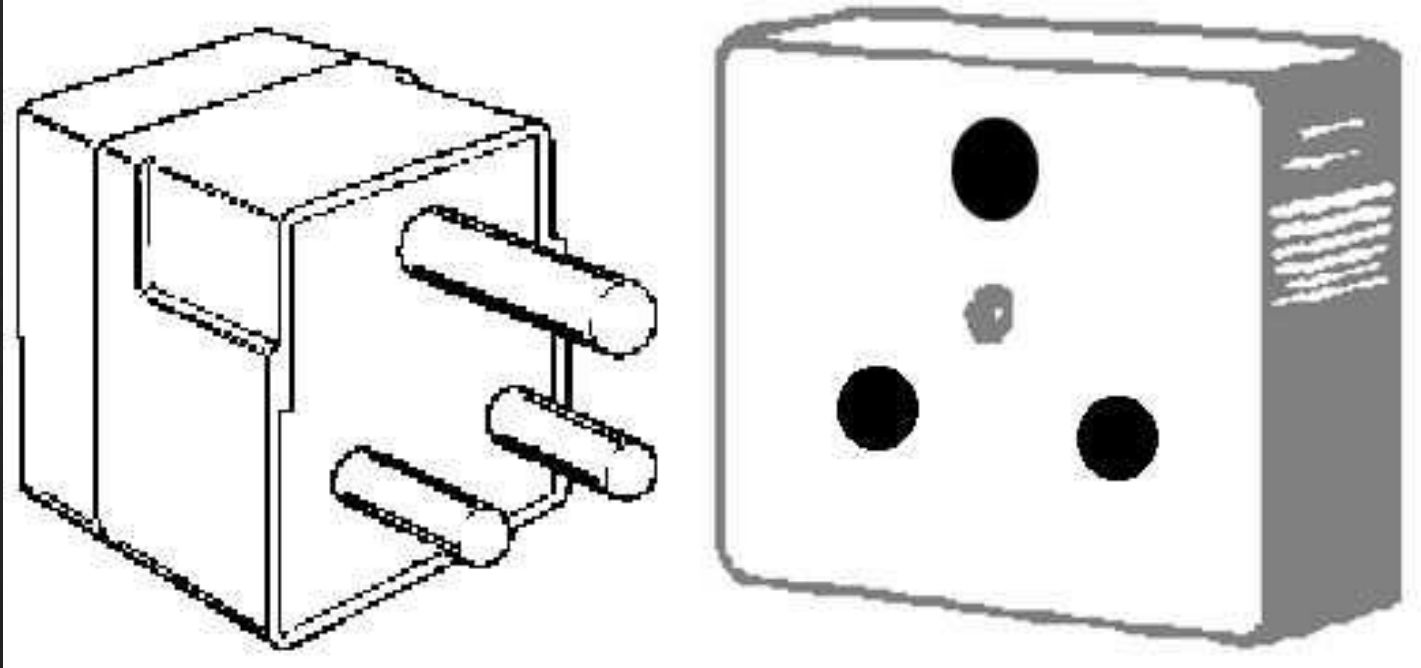
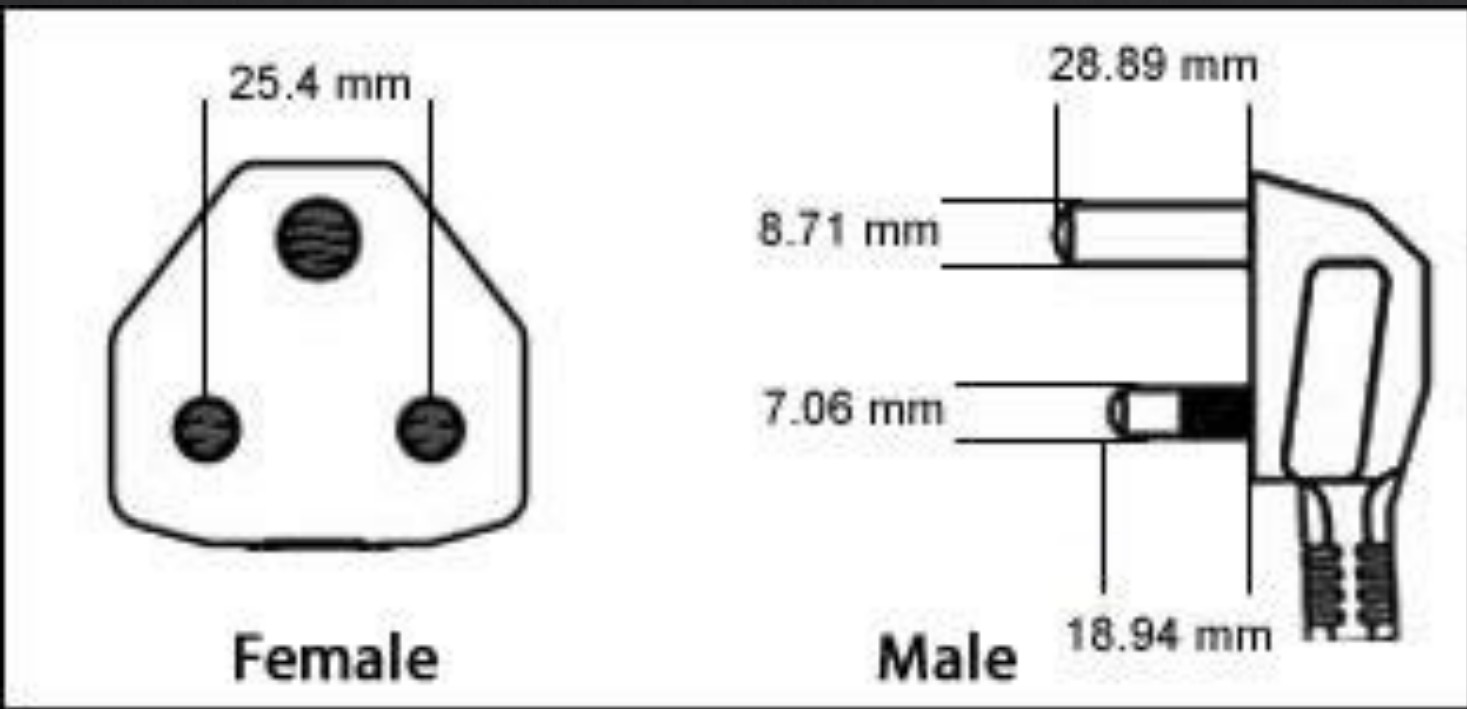
North America
NEMA
(L6-20)



UK
(BS89/13)

g003187

The earth pin is the first pin to make the connection and last to disconnect. This assures safety for the person who uses the electrical appliance. The size, the shape and the type of connectors of the plug and socket differ from country to country.



The type used in each country is set by national standards legislation. In India, we have IS:1293–1988.37 specification for the three pin plug socket. We have 5A and 15A specifications.

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