EXTRACTS FROM INDIAN ELECTRICITY RULES - 1956

The Indian Electricity Rules have been framed to ensure safety, satisfactory operation of equipment and to avoid fire risk. Important extracts from these Rules are given below:

29. Construction, installation, protection, operation and maintenance of electric supply lines and apparatus. All electric supply lines and apparatus shall be of sufficient in mechanical strength and size for the work they may be required to do and shall be constructed, installed and protected in accordance with I.S.I's specifications.

30. Service lines and apparatus on consumer's premises.(1) the supplier shall ensure that all electric supply lines, wires, fittings, and apparatus belonging to him or under his control which are on a consumer's premises are in a safe condition and in all respects fit for supplying energy, and the supplier shall take due precautions to avoid danger arising on such premises from such supply lines, fittings and apparatus.

(2) Service-lines placed by the supplier on the premises of a consumer which are underground or which are accessible shall be so insulated and protected by the supplier as to be secured unde all ordinary conditions against electrical, mechanical, chemical or other injury to the insulation.

(3) The consumer shall, as far as circumstances permit, take precautions for the safe custody of the equipment on his premises belonging to the supplier.

(4) The consumer shall also ensure that the installation under his control is maintained in a safe condition.

31. Cut-out on consumer's premises - (1) The supplier shall provide a suitable cut-out in each conductor of every service line other than an earthed or earthed neutral conductor or the earthed external conductor of a concentric cable within a consumer's premises, in an

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accessible position. Such cut-out shall be contained within an adequately enclosed fire-proof receptacle.

Where more than one consumer is supplied through a common service-line, each such consumer shall be provided with an independent cut-out at the point of junction to the common service.

(2) The owner of every electric supply line other than the earthed or earthed neutral conductor of any system or the earthed external conductor of a concentric cable shall protect it by a suitable cut-out.

32. Identification of earthed and earthed neutral conductors and position of switches and cut-outs therein – Where the conductors include an earthed conductor of a two wire system or an earthed neutral conductor of a multi-wire system or a conductor which is to be connected thereto, the following conditions shall be complied with:-

(1) An indication of a permanent nature shall be provided by the owner of the earthed or earthed neutral conductor, or the conductor which is to be connected thereto to enable such conductor to be distinguished from any live conductor. Such indication shall be provided-

(a) Where the earthed or earthed neutral conductor is the property of the supplier, at or near the point of commencement of supply.

(b) Where a conductor forming part of consumer's system is to be connected to the supplier's earthed or earthed neutral conductor, at the point where such connection is to be made;

(c) In all other cases, at a point corresponding to the point of commencement of supply or at such other points as may be approved by an Inspector.

(2) No cut-out, link or switch other than a linked switch arranged to operate simultaneously on the earthed or earthed neutral conductor and live conductors shall be inserted or remain inserted in any earthed or earthed neutral conductor of a two

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(e) the rise of the trolley boom shall be so limited that if the trolley leaves the trolley-wire, it shall not foul the guard-wires ; and

(f) where a telegraph-line is liable to fall or be blow down upon an arm, stay-wire, guard hooks shall be provided to prevent such sliding.

89. Service-lines from overhead liens: - No service-line or tapping shall be taken off an over-head line except at point of support.

90. Earthing – (1) All metal support of overhead lien and metallic fittings attached thereto, shall be permanently and efficiently earthed. For this purpose a continuous earth wire shall be provided and securely fastened to each pole and connected with ordinarily at four point in every mile or 1.601 km. the spacing between the points being as nearly equidistant as possible. Alternatively, each support and metallic fitting attached thereto shall be efficiently earthed.

(2) Each stay-wire shall be similarly earthed unless an insulator has been placed in at a height not less than 10 ft. from the ground.

91. Safety and protective devices :- (1) Every overhead line (not being suspended from a dead bearer wire not being covered with insulating material and not being a trolley-wire erected over any part of a street or other public place or in any factory or mine or on any consumer's premises shall be protected with a device approved by the Inspector for rendering the line electrically harmless in case it breaks.

(2) An Inspector may by notice in writing require the owner of any such overhead lines wherever it may be erected to protect it in the manner specified in sub-rule (1)

(3) The owner of very high and extra-high voltage over head line shall make adequate arrangements to the satisfactions of the Inspector to prevent unauthorized person from ascending any of the supports of such overhead lines without the aid of a ladder or special appliances.

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92. Protection against lightning – (1) The owner of every overhead line which is so exposed as to be injury from lightning shall adopt efficient means for diverting to earth any electrical surges due to lightning.

(2) The earthing lead for any lightning arrestor shall not pass through any iron or steel pipe, but shall be taken as directly as possible from the lightning-arrestor to a separate earth electrode subject to the avoidance of bends wherever practicable.

93. Unused overhead line:- (1) Where an overhead line ceases to be used again electric supply line, the owner shall maintain it in an a safe mechanical condition in accordance with rule 76 or shall remove it.

(2) Where any overhead line ceases to be used as an electric supply-line, an Inspector may, by a notice in writing served on the owner, require him to maintain it in a safe mechanical condition or to remove it within fifteen days of the receipt of the notice.

Electrical Installation:

Important of electric power plant:

- Cheap and abundant supply of electric power is the major factor in the development of country. It is used in industrial organization, domestic purpose, defense, agricultural production etc.
- Modern life is so much dependent upon electric power that the power capital consumption of electricity is the index of the economic development, property and standard of living of a nation.
- As power system increased in size, so did the number transmission lines, transforms, switch gear, protection devices and soon and their expectation also become make complex and challenging.

Component of power system:

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An electric power system is constituted of several sub-systems broadly an eclectic power system can be divided into life following system.

i) Generation system.
ii) Transmission system.
iii) Sub-transmission system.
iv) Distribution system.
v) Protection and control system.

i) Generation system.

This system is constituted of groups of generating stations, check the connection of energy from the primary energy source in one form into electrical energy takes place in electrical generating through the process of electromagnetic energy conversion.

ii) Transmission system.

The overhead transmission network transfer electrical energy from generating stations located at various locations usually over long distances, to the distribution system from where it is distributed.

iii) Sub-transmission system.

It is the portion of the transmission system that connect the high voltage substations through step down transformers to the distribution sub-stations.

iv) Distribution system:

Distribution is the process by which energy is fed locally to various distribution sub-station in feeders those are fed from one or more main transmission substations.

A distribution substation is constituted of overhead distribution lines and underground cables and its function is to supply quality power to consumers.

v) Protection and control system:

This system is constituted of relays, switchgear, and other control devices that protect the various systems against faults and overhead and ensure efficient, reliable and economies operation of the electric power system.

Source of electrical energy:

By source of energy are meant material objects that contain energy usable quantities. In its mutually transformable forms, energy is conventionally classified into such farms as chemically, mechanical, electrical, nuclear etc.

Energy resources are classified in the following ways:

1) Based on usability of energy.

a) Primary Resources:

Resources available in nature in raw form are caused primary energy resources, e.g. fossil fuel (coal, oil and uranium, hydro-electric power plant etc.) Generally this form of energy can not be used directly.

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b) Intermediate Resources:
This is obtained from primary energy by one or more steps of transformation and is used as a source of energy.

c) Secondary Resources:
This form of energy which is finally supplied to consumer for utilization is known as secondary or usual energy e.g. electrical energy, thermal energy, chemical energy etc.

2) Based on traditional use.

a) Conventional: (fossil fuels, nuclear and hydro resources)

b) Non conventional (wind, solar)

3) Based on long term availability;

a) Non-renewable:
Resources, which are finite and do not get replenish after, their consumption are caused non-renewable, e.g. fossil fuel, uranium etc.

b) Renewable:
Resources, which are renewed by nature again and again and their supply is not affected by the rate of their consumption are caused renewable e.g. solar, wind, bio mass, ocean, geothermal, hydro etc.

4) Based on origin:

a) Fossil fuel energy.

b) Nuclear energy.

c) Hydro energy

d) Solar energy.

e) Wind energy.

f) Biomass energy.

g) Geothermal energy.

h) Tidal energy.

i) Ocean thermal energy.

j) Ocean wave energy.

5) Based on commercial application:

a) Commercial energy resources
The secondary usable energy resources form such as fossil fuel (coal, oil, natural gas), hydro or nuclear fuel etc. are essential for commercial production and are categories as commercial energy resource.

b) Non commercial energy
The energy derived from nature and used directly without planning through commercial outlet is called non-commercial resource e.g. wood, animal dung cake, crop residue etc.

Conventional and non conventional method of electric power generation:

Conventional:

- Energy resources, which have been traditionally used for many decades and were in common used around oil crises of 1973 are caused conventional energy resources e.g. fossil fuels, nuclear and hydro resources.

Non-conventional:

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- Energy resources, which are considered for longer use after the oil crises of 1973 are caused non conventional energy resources e.g. solar, wind, bio mass etc.
- Conventional source except hydro are non-renewable and would finish one day.
- Conventional sources (fossil fuel, nuclear) also caused pollution. Due to this reason it has become independent resource and developed non-conventional energy resource to reduced much dependence on conventional resources.

Advantage of conventional energy sources:

i) Cost – At present it is cheap.

ii) Security – by saving such quantity the energy availability can be ensured for a certain extra period.

iii) Convenience - It is very convenient to us.

HOUSE WIRING

As the wiring system in any electrical building is essential for use of power in any building or complex it involves all the requirements of safety, durability, cost and appearance. It is as per the requirement of different type of consumers. According to the capability and requirement of the consumer and also according to the site of use of electricity, the wiring system of different client adopted.

Following points should be kept by mind before selecting a wiring for the site:

1) Durability:
The wiring selected and the materials used in it likes wires etc. should have a long life and should not easily affected by the weather changes.

2) Safety:
Wiring should be done by a perfect electrician and there should not be any danger of leakage for shock.

3) Cost:
The system chosen should be economical to suit the owner of building and initial cost of wiring within the capacity of individual.

4) Accessibility:
In the wiring system the facility for expansion for renewal should be provided.

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5) Appearance:
Wiring appearance has its own effect. Architectural point should be kept in need.

6) Mechanical Protection:
The wiring should be protected for damaged of physical nature during its use in house and factory.

TYPES OF WIRING

Basing on above, the wiring is divided into following types in general.

1) Cleat wiring.
2) Wooden casing and capping wiring.
3) Cab tier sheathed or top rubber sheathed wiring.
4) Lead sheathed wiring.
5) Conduit wiring.

Cleat Wiring:

As per the name indicates, cleat wiring is named after the material used to hold the wiring, is known as cleat. Cleat is made of porcelain materials. The general types of cleats are of two grooved and three grooved. The cleat used is of two parts. One part is bottom and other one is top. Both bottom and top part are so grooved that they are capable of holding the wires in the groove. The cleat is placed on the wall surface in which the wires are supported. The arrangement of wiring is either vertical or horizontal. The cleats are fixed on the surface of the help of wooden plugs (popularly called as gutties) in horizontal system the distance between cleats are 60 cm and in vertical system 30 cm maximum. This wiring is generally implied for normal supply of 250V. it is so arranged that the interval between the wires is maintained 4 cm for sub and main and 2.5 cm in case of branch load and point loads. The cables / wires run inside the cleats should not be very tight to avoid damage of insulation. Also there should be no crossness. The wires and cables in this wiring system are recommended of ISI marked and may be of PVE cables, VIR cables and any other approved insulation.

This is a purely temporary type of wiring

It is popularly used for electrical installation for temporary sites where it is remove and materials easily collected for other works. The situation of

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such types are Programme Pendals, Construction Site Offices, Camp Offices, Business Camps, Exhibition and like.

Advantages:

Advantages of cleat wirings are as follows:

1) The installation and dismantling is easy and quick.
2) The type of labour required is unskilled electrician.
3) Cleat wiring can be installed on damp walls.
4) For short period.
5) Addition alteration and inspection of this type of wiring is easy.
6) It is cheap.

Disadvantages:

1) It is subjected to mechanical injury as the wires are exposed.
2) It is not good looking which is a great disadvantage.
3) Its life is shorter.
4) As the wire is exposed to atmosphere, the insulation catches dampness from the atmosphere and a common salt is formed and deposited on the surface of the wires. As a result the life of the wires degraded. The resistance of the insulation decreases in short period, so there is chance of leakage of current after passing of time.

Precautions:

1) All wooden fitting i.e. blocks, boards etc. use in this wiring system should be of well seasoned tick wood. Now a days may be of hard plastic.

2) The wires in this system can be installed near structural work, gas pipe, water pipe and similar harmful situation.

3) While passing through wall conduits are to be used and wooden busting are to be used to close the terminals of the conduit.

4) The recommended interval between cleats should not be increase. Sharp bends must be avoided. While making bends a continuous cure shall be preferred. Proper type of cleat shall be selected for number of wires for running. In no case two or more wires shall be

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placed in one slut of the cleats. Wherever necessary number of cleats be increased.

5) While erecting wires, care shall be taken to stretch the wires, so that they neither touch the wall nor between themselves.

6) When the wirings do cross each other, a bridge shall be formed to keep the wires separated from each other.

CTS wiring:

In this wiring system CTS i.e. cab tyre sheathed wires are used. Now a days PVC wires are used in place of CTS wires. The CTS wires are available in single core. two Core or three core with a circular or oval shape. The wires are fixed on the well seasoned. Wooden batten by means of clips these are of two types.

1) Batten should be made of well seasoned teak wood and be painted and varnished.
2) The size of wire should not be less than 1.50 mm^2.
3) There should not be any tension on the wires.
4) The distance between the gauties should not be more than 50 cm.
5) Do not give right angle bend to wires.
6) All the metallic parts and sockets should be earthed.
7) While crossing the wires bridges should be used.
8) Batten joint should be prepared according to requirement.

Table -1.

Showing Number of wires which can be carried over a particular size of batten.

Size of batton (Width xThickness)	Number and size of link clip required	Number of wires of size 1/1.40mm dia, single core, aluminium conductor that can be laid
13mmx13mm	1x38mm	2
19mmx13mm	1x50mm	3

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25mm x 13mm	2x38mm	4
31mm x 13mm	1x38 mm and 1x50mm	5
37mm x 13mm	3x38mm	6
44mm x 13mm	2x38mm and 1x50mm	7
50mm x 13mm	1x38mm and 2x50mm	8
56mm x 13mm	3x50mm	9
61mm x 13mm	2x38mm and 2x50mm	10
67mm x 13mm	1x38mm and 3x50mm	11
75mm x13mm	4x50mm	12

Advantages:

- This type of wiring can be done in damp place.
- It has long life.
- Its general appearance is good.
- It requires less labour and therefore is less costly.
- It requires less space.

Disadvantages:

- It cannot be done at those place where it is eposed to sun and rain.
- It cannot be done at those place where chemical fumes are present such as battery charging rooms etc.

Wooden Casing and Capping Wiring:

As the name implies the wires or cables used for wiring system are held inside the wooden casing and covered by wooden capping. The wires are not visible in this type. So, this wiring gives a very good looking.

In this type of wiring seasoned knot free tick woods are used in which the grooves free are made to accommodate the single core wires. However, as he cost of the tick woods as gone very high such types of wiring are not used in general. Even in this age it is rarely seen. As it is good

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looking, now a days it is being substituted by use of PVC casing capping where it is preferred to install on a good looking wiring.

The groove made in the casing is generally of 'U' shaped and of two parallel grooves. The grooves accommodate the PVC, VIR or other recommended ISI marked wires. The casing is placed on the surface by the help of gutties and screws. For long lines joints are made for one piece to another as shown in the figure. Bridges, Tee joints, Right angle joints are made to cross the wiring or change the direction of the wiring as per requirement.

Table-2.

Size of wood Casing and Capping

Width of Casing or Capping	mm	38	44	51	64	76	89	102
No. of groves		2	2	2	2	2	2	2
Width of grooves	mm	6	6	9	13	16	16	19
Width of dividing fillet	mm	12	12	15	18	24	35	38
Thickness of outer wall	mm	7	10	10	10	10	11	13
Thickness of casing	mm	16	16	19	19	25	32	32
Thickness of capping	mm	6	6	10	10	13	13	13
Thickness at the back under groove	mm	6	6	6	10	10	10	13
Length available	mts	From 2.5 to 3.0 metres						

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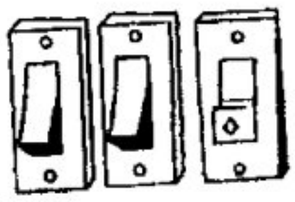
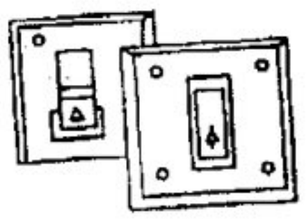
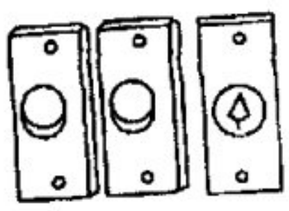


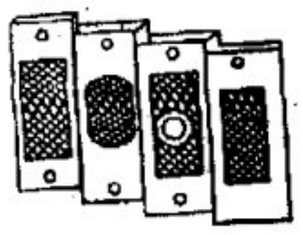
5 A. Deluxe (Mini)
1-way Switch
2- way Switch
Mark Switch
Push Switch



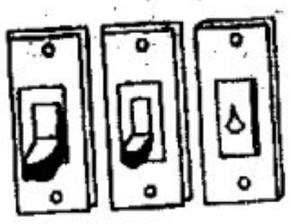
5 A. Push Switch
Cliff Push Switch
Royal Touch
Push Switch



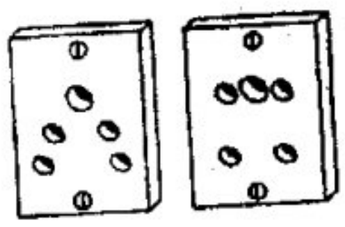
5 A. Mini Finger Touch
1-way Switch
2-way Switch
Mark Switch
Push Switch



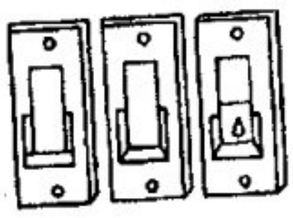
5 A. Mini Indicator La
Mini Finger Touch
Mini Deluxe/Delta
Mini Dyna
Mini Royal



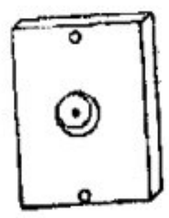
5 A. Mini Classic
1-way Switch
2-way Switch
Mark Switch
Push Switch



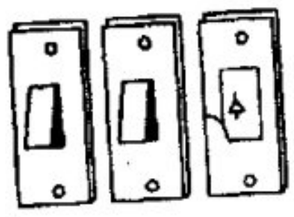
5 A. Mini Socket
2-in Socket (5 Pin)
Multi Socket
For Fuse Two 2 Pin
Top & One 3 Pin Top



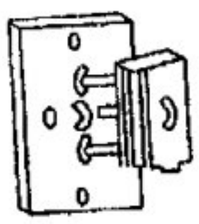
5 A. Mini President
1-way Switch
2-way Switch
Mark Switch
Push Switch



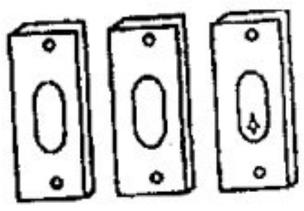
Mini T.V. Antenna S
Mini T.V. Antenna
Socket



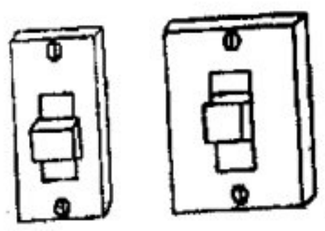
5 A. Mini Dyna
1-way Switch
2-way Switch
Push Switch



Mini Telephone Socket
Telephone Socket with T
Telephone Top Only
Telephone Socket
with Top & Box



5 A. Mini Piano
1-way Switch
2-way Switch
Push Switch



Mini Kit Kat Fuse
Kit Kat Fuse 10 A
Kit Kat Fuse 15 A

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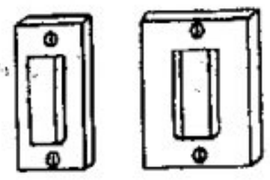
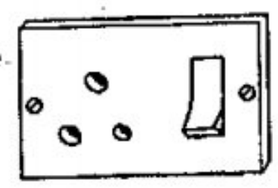
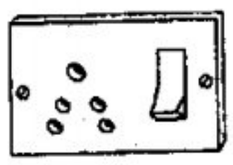


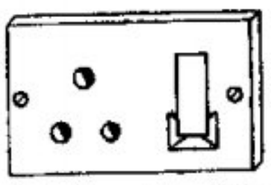
Deluxe Kit Kat Fuse
Fuse Unit 10 A
Fuse Unit 15 A
Fuse Knob Deluxe
Fuse Knob Mini



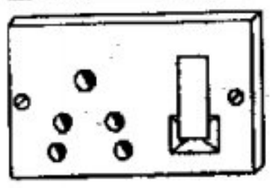
5 A. Switch Socket Combined (Deluxe) Flush
3 Pin Switch & Socket
Switch & Socket
Procelain Base
3 Pin Switch & Socket
with Box



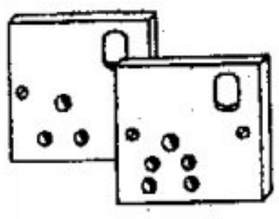
5 A. Swtich Socket Combined (Deluxe) Flush
2-in-1 Switch & Socket
2-in-1 Switch & Socket
with Box



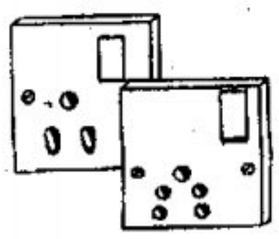
5 A. Switch Socket Combined (President/Cliff)
3 Pin Switch & Socket



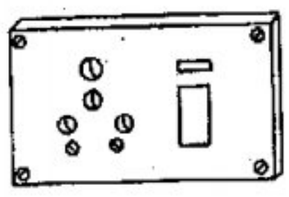
5 A. Switch Socket Combined (President/Cliff)
2-in-1 Switch & Socket



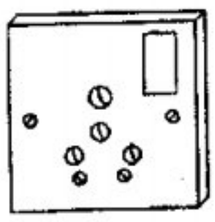
5 A. Switch Socket Combined (Finger Touch) Flush
3 Pin Switch & Socket
with Indictor
2-in-1 Switch & Socket
With Indicator



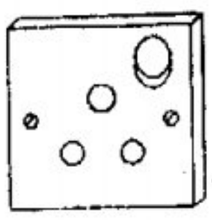
5 A. Switch Socket Combined (Dyna) Flush
3 Pin Switch & Socket
with Indicator
2-in-1switch & Socket
with Indicator



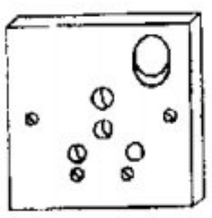
15 A. Switch Socket Combined Universal Mini Caption
5 A. & 15 A. S/S Universal
5 A. & 15 A. S/S Universal
with box
5 A. & 15 A. Universal
Switch & Socket-Ind.



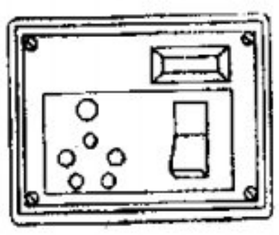
5 A and 15 A Dynaflush
15 A, Switch & Socket
Shutter & Indicator
5 A, & 15 A
Switch & Socket
Universal & Indicator



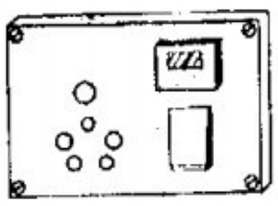
15 A, Switch Socket Combined Finger Touch
15 A, Switch & Socket
with Shutter



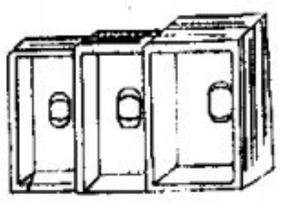
5 A, & 15 A, Switch Socket Combined Universal (Finger Touch)
5 A & 15 A
Switch & Socket
(Universal)



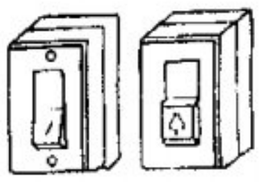
5-in-1 5 A. & 15 A
5-in-1



5-in-1 Deluxe Capton
5-in-1deluxe Capton
with Box
Heavy Duty 5 A, & 15 A
Switch & Socket
Indicator & Fuse
Surface Mounting
Box (Silver) Silver (A)
Dimensions 86 × 30 mm
Deep 25 mm



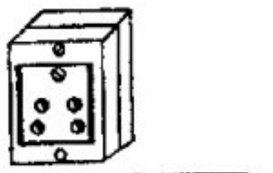
Silver (B)
Dimensions 86 × 40 mm
Deep 25 mm



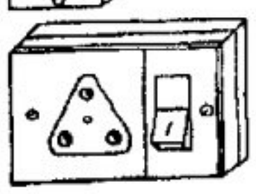
Silver (C)

Dimensions 86 × 50 mm
Deep 38 mm

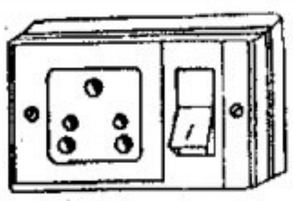
Scanned with OKEN Scanner



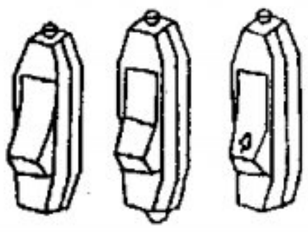
5 A. Surface Deluxe
Switch
1 Way Switch 2 Way Switch
Push Switch



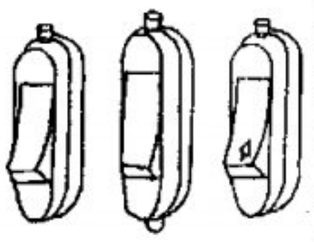
5 A. Surface Deluxe
Socket
2pin Socket
3 Pin Socket



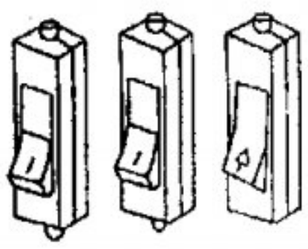
5 A. Surface Deluxe Socket
2-in-1 Socket
5 A. Surface Deluxe S.S. Comb.
3 Pin Switch & Socket
Combined



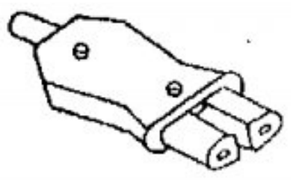
5 A. Surface Deluxe S.S. Comb.
2-in-1 Switch & Socket
Combined
Hang Cord Switches Pilot
Bed Switch-1-way
Cord Through Switch
Push Switch Hanging



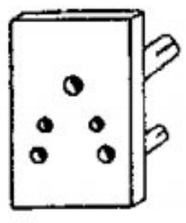
Hang Cord Switches
Deluxe
Bed Switch 1 Way
Cord Through Switch
Push Switch Hanging



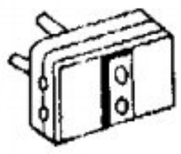
Hang Cord Switches Dyna
Bed Switch 1 Way
Cord Through Switch
Push Switch Hanging



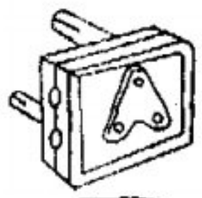
15 A. Iron Connector
Procelain Base
Iron Connector
(Delux)
Procelain Base Iron
Connector (Dyna)



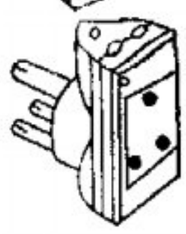
5 A. 3 Pin Multi Plug Pilot
3 Pin Multiplug



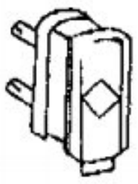
5 A. Pin Multi Plug Deluxe
3 Pin Multi Plug. 5A.



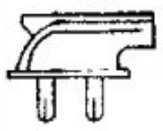
5 A. 3. Pin Multi Plug Deluxe
3 Pin Multi Plug 5A.



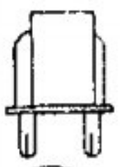
15 A. 3 Pin Multi Plug.
3 Pin Multi Plug 15A.



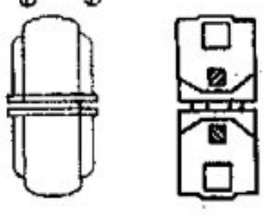
5 A. 2 Pin Plug Top Recta
2 Pin Top Recta.



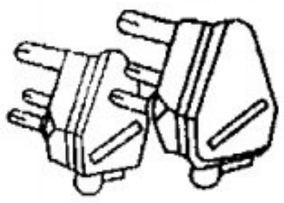
5 A. 2 Pin Plug Top
2 Pin Top Gun Type



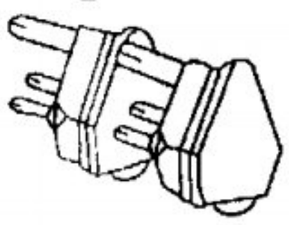
5 A. 2 Pin plug Top Pilot
2 Pin Top Pilot



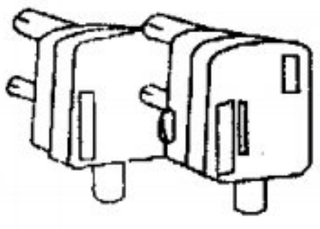
5 A. Male Female
Male Female 5A. Pilot
Male Female 5A. Dyna



3 Pin Plug Top
3 Pin Top 5A
Trangle Deluxe
3 Pin Top 15A.
Triangle Deluxe



3 Pin Plug Top
3 Pin Top 5A
Unbreakable
3 Pin Top 15A.
Unbreakable



15 A. Pin Plug Top
3 Pin Top 15A.
Square Pilot
3 Pin Top 15A.

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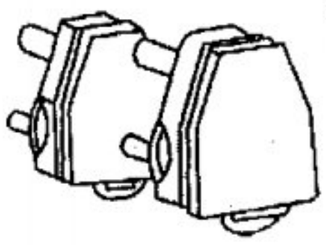
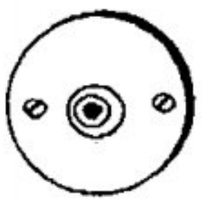
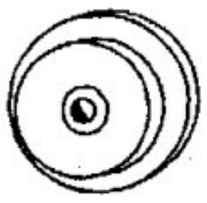


5 A. & 15 A. 3 Pin
Plug Top (Dyna)
3 Pin Top Dyna 5A
3 Pin Top Dyna 15A



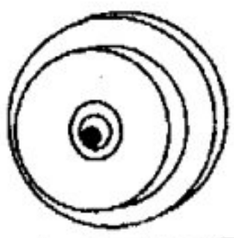
5 A. Celiling Rose (Deluxe)
Delux Flush Round



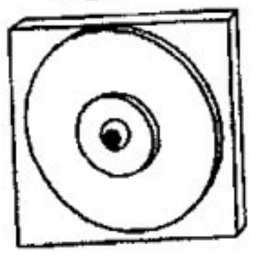
5 A. Ceiling Rose (Mini) Pilot
Mini Surface 2 Plate
Mini Surface 3 Plate

5 A. Ceiling Rose (Pilot)
Pilot Surface 2 Plate
Pilot Surface 3 Plate

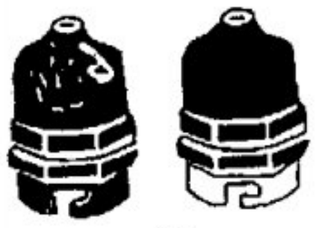
5 A. Ceiling Rose (Anarkali)
Anarkali Surface
2 Plate
Anarkali Surface
3 Plate



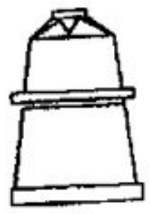
5 A. Ceiling Rose (Jumbo)
Jumbo Surface 2 Plate
Jumbo Surface 3 Plate



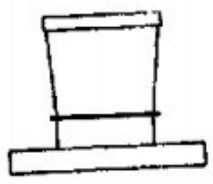
5 A. Ceiling Rose (Dyna)
Dyna Square 2 Plate



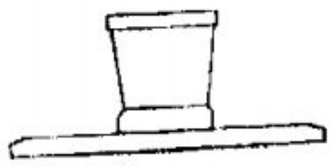
Pendent Holder Black
Pendent Holder
Black
Pendent Holder
Black O.B.R.



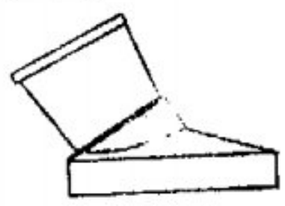
Pendent Holder Skirt
Pendent Holder Skirt
Pendent Holder
Skirt O.B.R. W/G



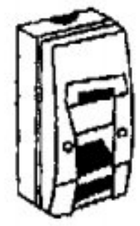
Batten Holder
Batten Holder Skirt
O.B.R. BL/IV
Batten Holder
Skirt O.B.R. W/G



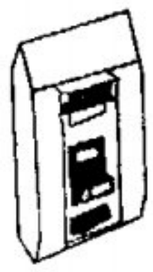
Batten Holder President
Batten Holder
President (Big)



Angle Holder
Angle Holder Skirt
O.B.R. BL\IV
Angle Holder
Skirt O.B.R. W/G

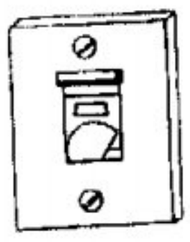


D.P. Switch (Pilot) Surface
D.P. Switch Surface
with Fuse Pilot
D.P. Switch Surface
Fuse & Indicator
Pilot

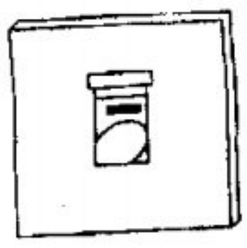


D.P. Switch (Pilot) Flush
D.P. Flush With Fuse
Pilot
D.P. Flush Fuse &
Indicator Pilot

D.P. Surface Switch W/O Fuse
D.P. Surface
Without Fuse



15 A. Switch (Silver) Flush
D.P. Silver Indicator
W/O Fuse
D.P. Mini with
Indicator & Fuse



30 A. D.P. Switch (Recta) Flush
D.P. Recta
With Indicator
30A Flush

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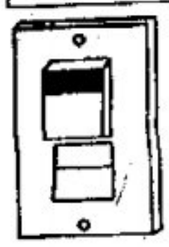
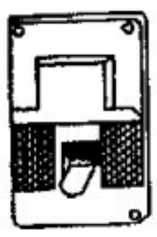
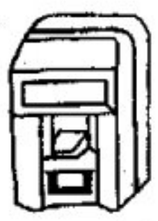
15 A. D.P. Switch (Dyna) Flush
D.P. Dyna
with Indicator
15 A. Flush



D.P. Switch (Dyna King) Flush
D.P. Dyna King
with Fuse Carrier



D.P. Switch (Classic) Flush
D.P. Classic Flush
with Fuse Carrier
Indicator, Earthing
30 A.



T.P. (Tripple Pole)
T.P. (Tripple Pole)
with Fuse
30 A.

Adaptor
Adaptor

Strip Connector
5 A. Bakelite (12 Way)
10 A. Bakelite (12 Way)
15 A. Bakelite (12 Way)

5 A. Surface Switch (Reno)
All Black
1 Way Switch Round
2 Way Switch Round

5 A. Surface Switch (Reno)
Reno 1 Way Switch
Porcelain Base Round
Reno 2 way Switch
Porcelain Base Round

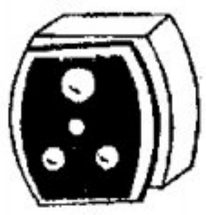
5 A. Surface Switch (Reno)
Rexa 1 Way Switch
Porcelain Base
Rexa 2 Way Switch
Porcelain Base

5 A. Surface Switch (Hexa)
Hexa 1 Way Switch
Porcelain Base
Hexa 2 Way Switch
Porcelain Base

5 A. Surface Switch (Pilot)
Pilot 1 Way Switch
Porcelain Base
Pilot 2 Way Switch
Porcelain Base

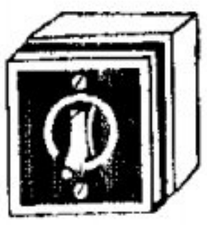
5 A. Surface 2 Pin Socket
Reno 2 Pin Socket
Round 5 A.
Reno 2 Pin Socket
Porcelain Base 5 A

5 A. Surface 3 Pin Socket (Reno)
Reno 3 Pin Socket 5 A
Reno 3 Pin Socket
Procelain Base 5 A.



5 A. Surface 3 Pin Socket (Rexa)
3 Pin Socket
Porcelain Base

5 A. Surface Socket (Pilot)
Pilot 3 Pin Socket
Porcelain Base 5 A.



15 A. Surface Switch (Pilot)
Pilot 1 Way Switch
15 A.

15 A. Switch K-2
15 A. Switch
with off-on
indication

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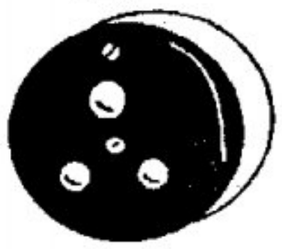
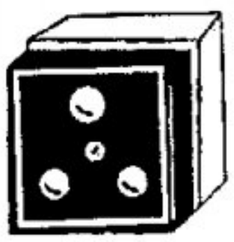
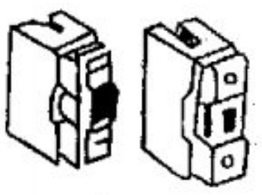
15 A. Surface Switch (Reno)
Reno Round
1-way Switch 15A



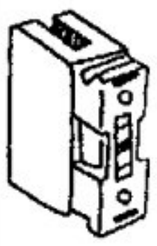
15 A. Surface Socket (Reno)
3 Pin Socket
Porcelain Base 15A.
Round



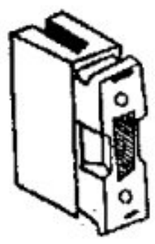
15 A. Surface Socket (Pilot)
Pilot 3 Pin Socket
Porcelain Base 15A.



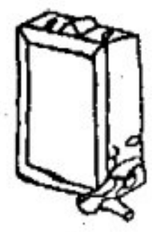
Porcelain Kit Kat Fuse
16A. 240 V Supreme
16A. 250 V Pilot



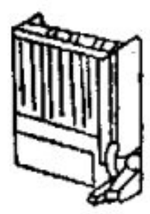
Porcelain Kit Kat Fuse (Pilot)
16A— 415V.
Or 32 A — 240 V
32 A — 415 V
Or 63 A — 240



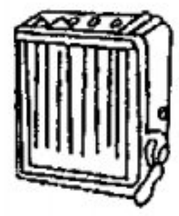
Porcelain Kit Kat Fuse
& With Indicator
16A—240 V & Indicator
16A—415 V. & Indicator
32 A—415. & Indicator



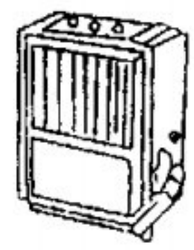
Iron Clad Switch (Silver)
D.P.
16A. — 240 V. Silver D.P.



Iron Clad Switch (Surpreme)
D.P.
16A—240 V Supreme

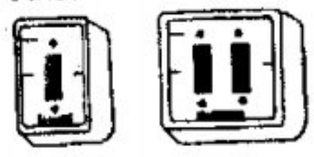


Iron Clad Switches (Pilot)
D.P.
16 A. 250 V. Pilot
32 A. — 240 V.D.P.

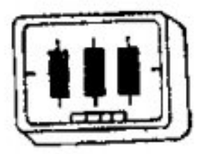


Iron Clad Switches (Pilot)
T.P.
16 A. — 415.T.P.
32 A — 415 V. T.P.
63 A. — 415 V.T.P.
100 A — 415 V.T.P.

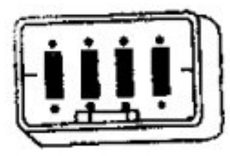
Gang Boxes are Made of Plastic and are Readymade Blocks in Which Flush Switches of Light or Power are Fixed



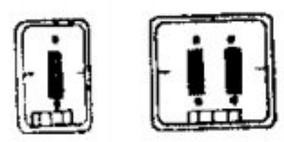
Gang Box
Surface
Ivory/Black
1 Gang Box
2 Gang Box



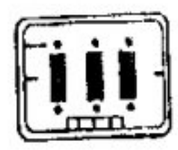
3 Gang Box



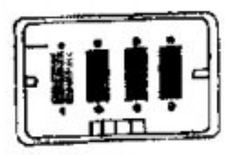
4 Gang Box Etc



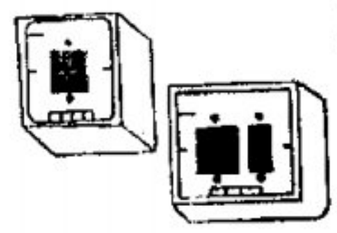
Gang Plate
1 Gang Plate
2 Gang Plate



3 Gang Plate



4 Gang Plate Etc.



Domestic Gang Box Surface
Ivory/Black
1 Gang Domestic Box
2 Gang Domestic Box

Scanned with OKEN Scanner

Pipe earthing.

List out the material used in plate earthing with sketch

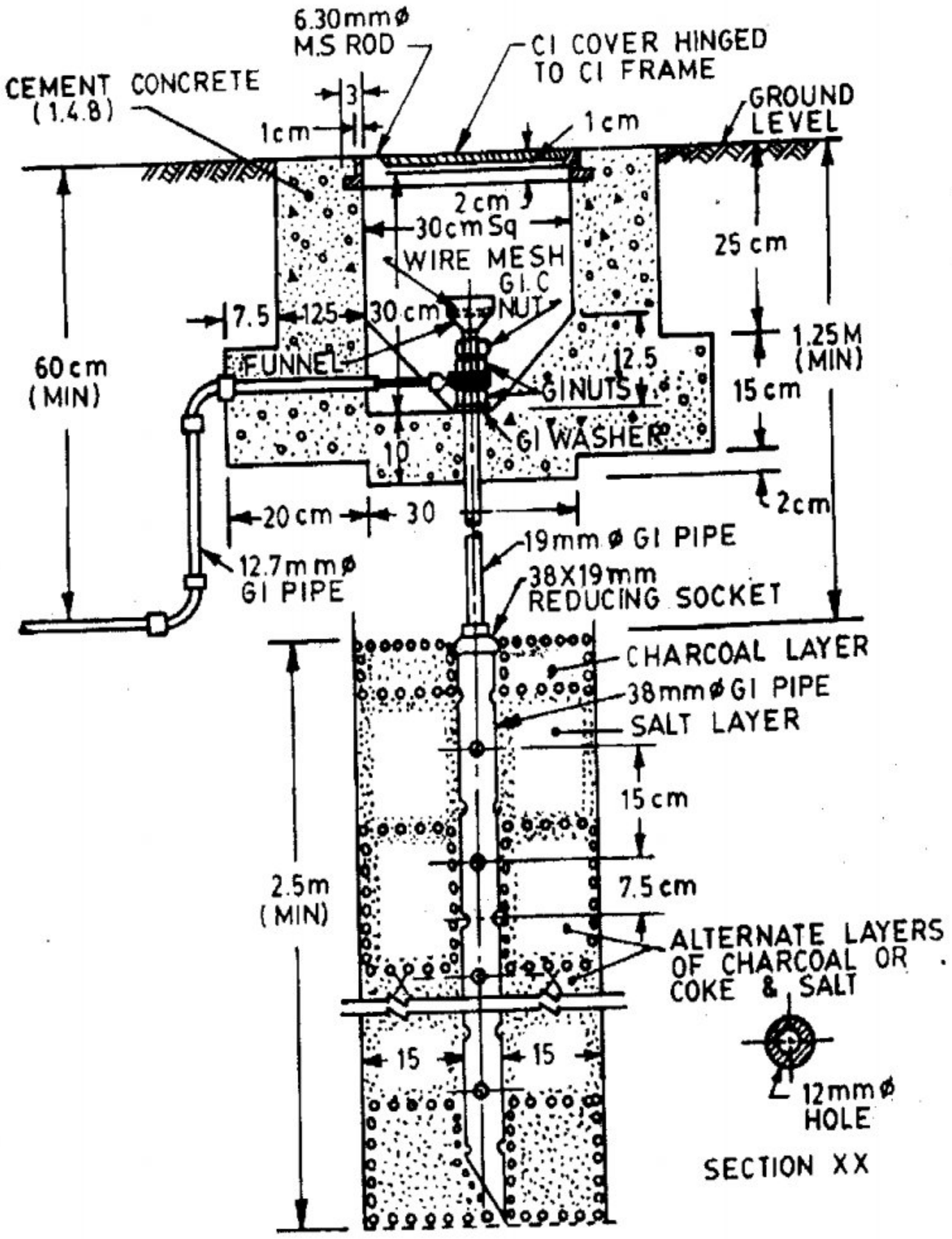


Figure 4.14: A typical illustration of pipe earthing.

Scanned with OKEN Scanner