

# THE LECTROS S·Y·S·T·E·M

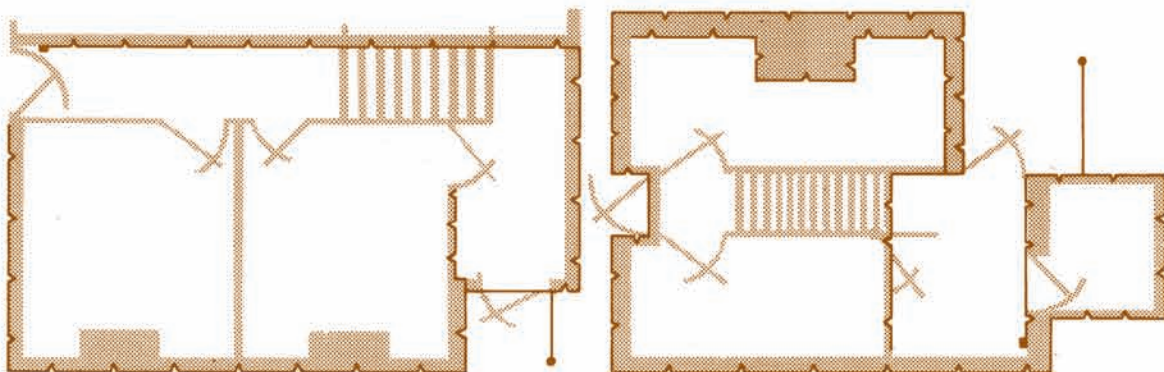
## ELECTRO OSMOTIC DAMP PROOFING INSTALLATION INSTRUCTIONS

TO ENSURE A SATISFACTORY INSTALLATION PLEASE READ THESE INSTRUCTION BEFORE STARTING THE JOB.

The Lectros system works by 'injecting' a very small electrical charge into the structure to be protected against rising damp.

There are only three basic parts to the system:

1. The platinized titanium anodes which are supplied connected onto plain titanium wire.
2. The power unit which plugs into a standard 13 amp socket. (The power consumption of the Lectros system is very small, using a similar amount of electricity as a door bell transformer.)
3. A copper coated earthing rod, about 1.2 metres (4ft) long, which is driven into the ground at a lower level than the anodes and some distance from them. The drawings show typical house layouts, one of brick, the other of stone, fitted with the Lectros system. Holes are drilled into walls on the inside, outside or, on thicker walls, both sides. Anodes are formed (as shown overleaf) inserted into the holes and backfilled with cement. An angle grinder, disc cutter or bolster chisel may be required to cut a channel for the titanium wire.



## 1 BEFORE STARTING

Before starting it is advisable to survey the property noting the following points:

The difference, if any, between internal floor levels and external ground levels.

Are any internal floor levels lower than external ground levels or are any internal floor levels at differing levels to each other?

Are the internal floors solid or suspended, i.e. wood?

What is the construction of the walls to be treated against rising damp? Are they solid brick, rubble infilled, stone, rat trap etc., or a mixture of several types of construction?

What is the thickness of the walls?

Where is the best position for the earth rod and power unit?

Work out the easiest route for the anodes, noting any intervening partition

walls. These will probably require drilling to pass the anodes into another section of the property.

Limitations – A maximum of 100 anodes per power unit is permissible. Single installations exceeding this figure must be as far as practicable divided equally into two or more parts, each part being treated as individual systems.

The earth rods must be physically separated as far as practicable to reduce interaction.

To ensure correct operating characteristics we do not recommend the installation of less than 10 anodes.

### PREPARATORY WORK

Remove timber skirting boards etc.

Rake out mortar joints and expose brick or stone work to provide a suitable key.

## 2 SYSTEM CONTENTS & EQUIPMENT

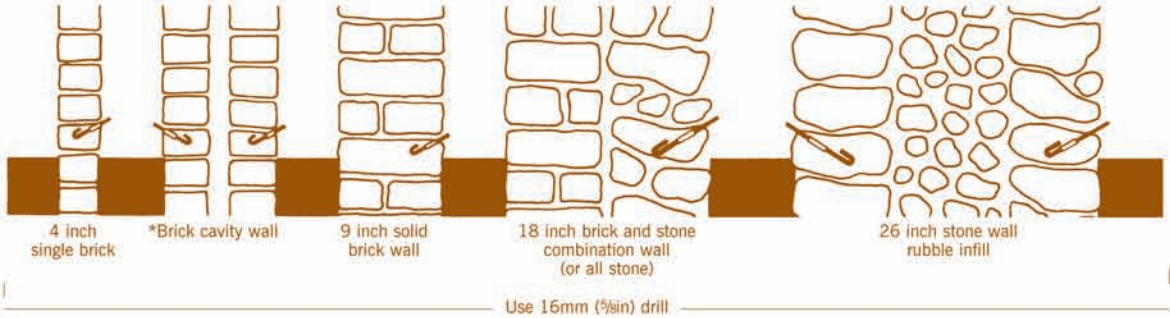
### THE SYSTEM

Anodes, Power unit/s, Plain titanium wire, Earth rod, Crimping tool, Misc P.V.C. sleeving and Earth wire,

TOOLS REQUIRED Hammer, Chisel/Angle grinder, Power Drill with 16mm or 20mm bit, Small plastic watering can, Washing-up liquid bottle, Tubing, Pointing trowel, Sand and cement, miscellaneous small tools.

## 3 WALL TYPES AND ANODE POSITIONS

The diagram below shows various wall types and anode positions. Choose which installation is closest to your own.



\* Cavity walls are considered ideal constructions for outer walls. However, they can suffer from serious faults, and should be inspected before rising damp is diagnosed.

1. Check to see whether the cavity has become blocked by removing a brick at the end of the wall and looking along the cavity.

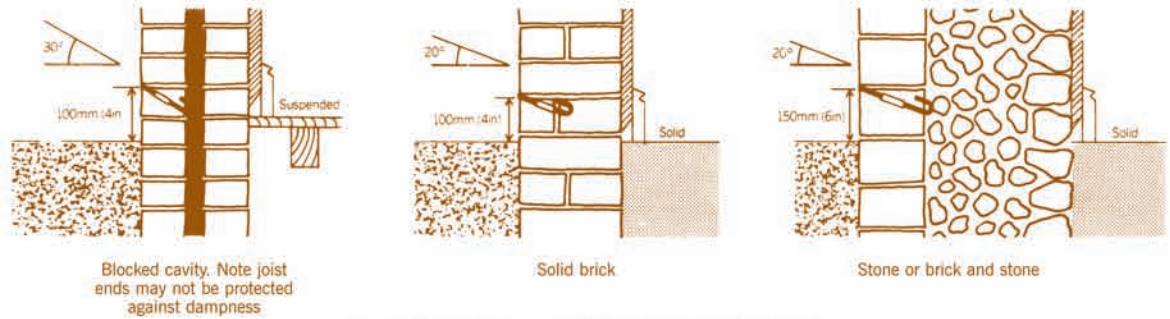
2. Check for leaking gutters and downpipes which may be discharging water into the cavity.

3. Has dampness appeared after cavity insulation has been applied?

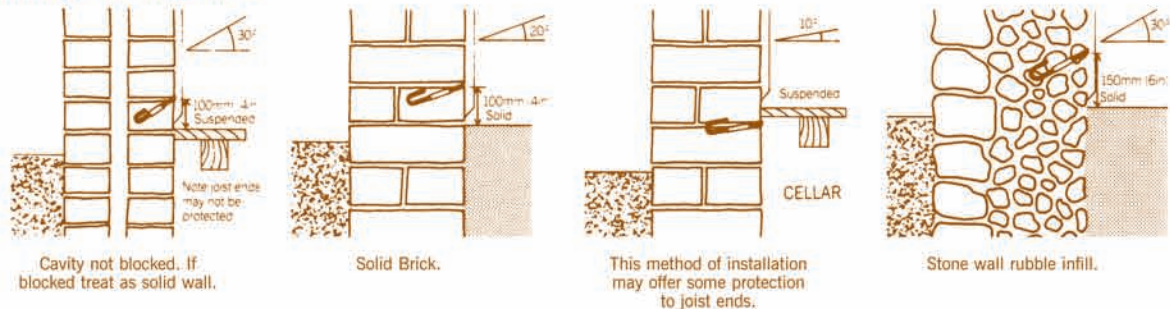
If rising damp is diagnosed and the cavity is blocked and cannot be cleared, the wall may be considered as a solid wall and treated accordingly.

If the cavity is clear and only the inner leaf of the wall shows rising damp, the wall may be treated from the inner leaf side only.

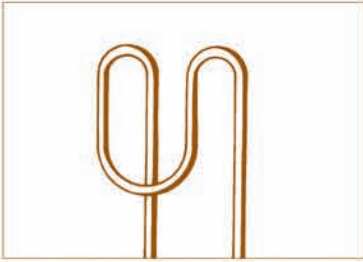
### OUTSIDE INSTALLATION



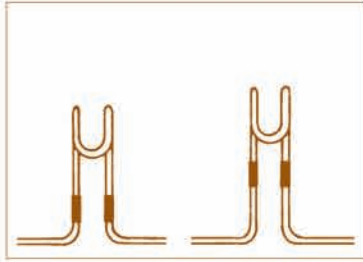
### INSIDE INSTALLATION



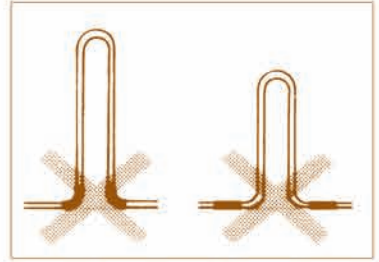
## 4 FORMING THE ANODES



Form the anodes one at a time as needed by placing the two markers side by side and bending as shown.

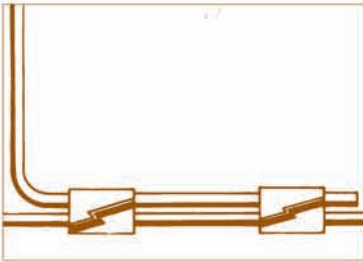


The 'hook' should be formed to hold the anode in position. Pliers may be used for this purpose, but do not apply excessive force.

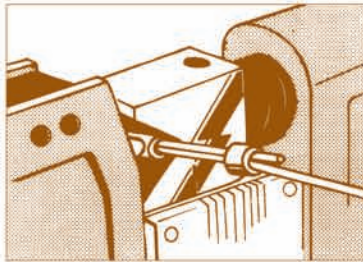


Incorrect. The anodes markers **MUST** form part of the length of the anode and be inserted into the wall.

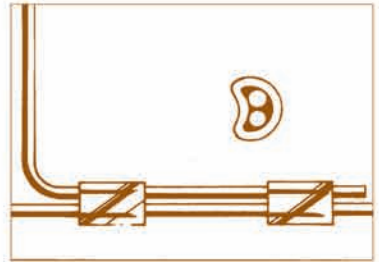
## 5 JOINING THE TITANIUM WIRE



Place about six titanium connectors onto the wire for future use. To join to the wire, position two connectors about 50mm (2in) apart.



Then place the titanium connectors and wires into the crimping tool jaws. Press the handles of the crimping tool together and release.



The connectors and wires should be curved and flattened by the action of the crimping tool.

Note: frequent checking of the gap in the jaws of the crimping tool should be made. (Refer to the instructions supplied with the tool).

## 6 INSTALLING THE SYSTEM

Partially unwind a coil of anode wire. Note the coil should be unwound by treating it as a 'wheel' which rotates on a spindle, do not pull the coil apart as this will result in a tangle of anodes. Before shaping the first anode, place about six titanium crimp connectors and, if required, a length of 4mm diameter P.V.C. sleeving onto the wire. The connectors will then be available for joining purposes and the sleeving for insulation.

The positioning of the anodes, although not critical, is dependant upon the thickness of the wall. They should be inserted to a depth of not less than one-third the thickness of the wall.

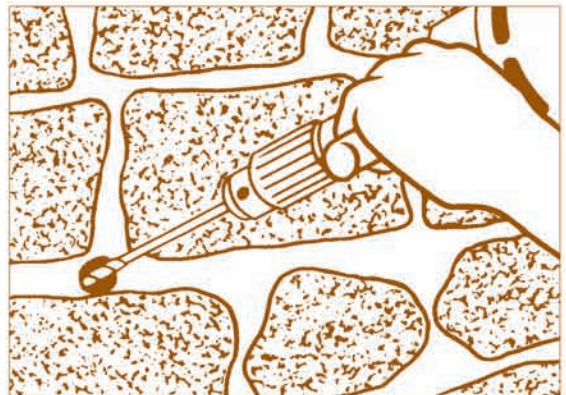
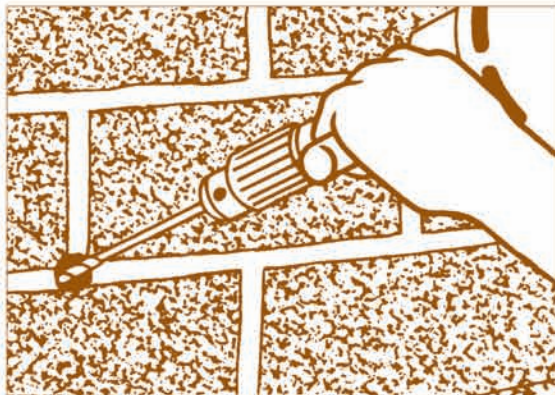
Always use extra anodes where required. Do not skimp on anodes and expect the system to protect large areas of wall with a single anode.

Note: The titanium wire may be held in position by using insulated electrical cable clips. Do not use

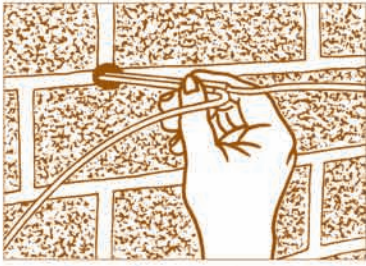
uninsulated clips, nails or screws.

If an anode occurs at an awkward point shorten the distance between anodes by the preferred method of drilling an 'anode' hole and pushing the excess titanium wire into it or alternatively forming a loop of wire on the wall.

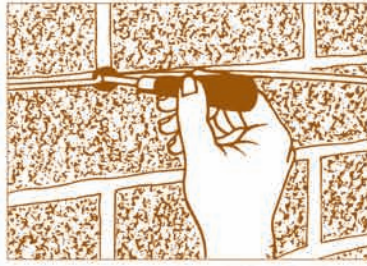
Note: extra anodes can always be joined onto the wire at any point to increase coverage, i.e. into 'damp corners' which may fall between two anodes.



Holes must be drilled to the correct angle and to take the correct length anode. Brick and stone is prepared in the same manner. When drilling interior walls, remove skirting boards and expose brickwork or stone.



Form and lift the first anode, then run the wire along the wall pushing the connectors and sleeving along the wire, using them where necessary



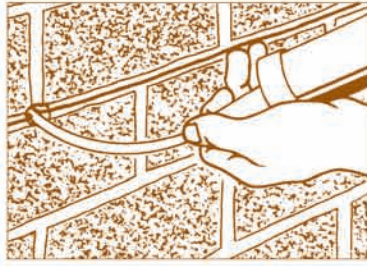
Push the anode into the back of the hole with a screwdriver.



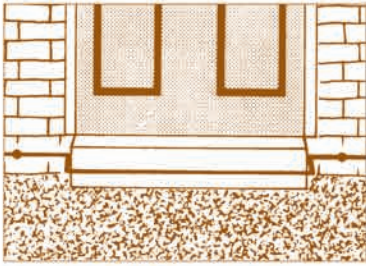
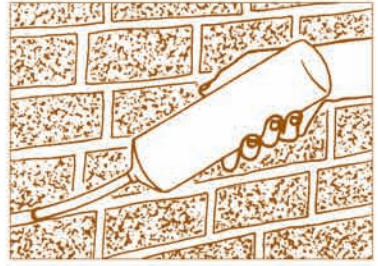
Pull the wire taut. Mark the wall where the second anode is to be fitted, from the second anode, drill the second hole, and fit the anode. Continue this procedure.



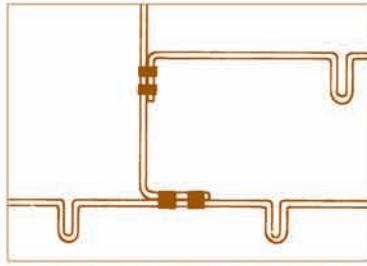
Wet the holes thoroughly using a watering can – this helps the cement mix to flow more freely.



Backfilling: Mix some cement and water to the thickness of single cream. Use only 'lump free' cement. Place in plastic bottle or mastic gun. Pump a little of the cement mix into each anode hole, but do not try to fill the hole in one operation. Proceed in this manner putting a little of the mixture into each anode hole. Return to the first anode and top the holes up.



Doorways and Other Openings: Use plain titanium wire to bridge these areas. Note: although in theory the anode wire can be used for this purpose the anode itself *must* be insulated with sleeving or electrical insulating tape and must be protected from accidental exposure.



Spurs: The titanium anode wire may be joined at any point for installing the system into other walls. There is no need to form a continuous loop as the system works by passing electrical power between the anodes and the earth rod.

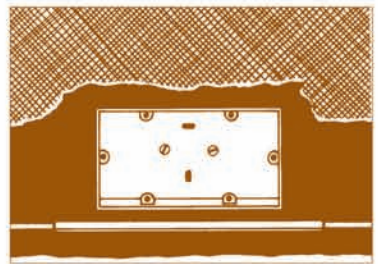
## 7 INSULATING THE TITANIUM WIRES



The titanium wire should be considered as alive wire and must NOT come into contact with any other metal such as central heating pipes, electrical boxes, wiring etc. the warning labels issued by Lectros must be prominently displayed to warn other contractors.



Plastic sleeving or electrical insulating tape is placed around the titanium wire to isolate it from a copper central heating pipe.



Isolation of the titanium wire in close proximity to a metal electrical box.

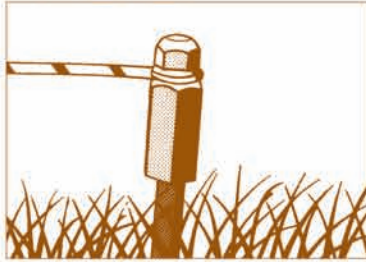
**It is important that you notify your client in writing, that all metal objects should be isolated/insulated from the wall, in the vicinity of the Lectros system.**

## 8 INSTALLING THE EARTH ROD

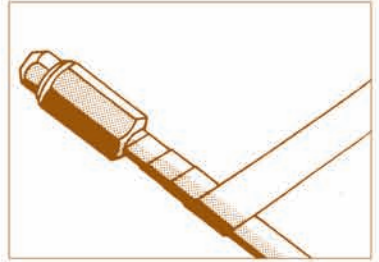
Any standard copper coated earthing rod, about 1.2m (4ft) long, may be used.



The earth rod **MUST** be placed at least 2m (6ft) from the nearest anode. Put the earth rod into the earth at a point which is lower than the lowest installed anode (under suspended floors and in cellars are usually suitable areas). The earth rod **MUST NOT** be placed in close proximity to any existing earthing system such as an Electricity Board earth rod, metal, gas or waterpipes.



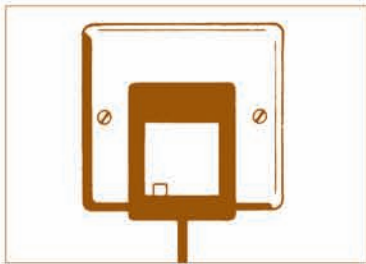
The type of insulated cable used to connect the earth rod to the power unit is not critical. A general purpose type such as 2491 x 2.5mm may be used. Due care should be taken to protect the cable from damage by either placing it in a protective conduit or by covering with a layer of concrete.



Effective lowering of the earth rod may be achieved by placing 1m (3ft) of sleeving or P.V.C. tape over the upper portion of the earth rod. Before fitting, make a hole in the ground equivalent in length to the insulated area, to prevent stripping the insulation.

Any metal objects passing through a wall such as central heating pipes, must be isolated/insulated.

## 9 CONNECTING THE POWER UNIT



This unit plugs directly into a standard 13amp socket, which should be reasonably close to the Lectros system's earthing rod and titanium wire. An ideal place will probably be an electrical meter cupboard. Under correct operation a green L.E.D. indicator located in the area of the label will light up.



The black plug fitted to the power unit's output lead fits into a similar plug connecting the Lectros system.

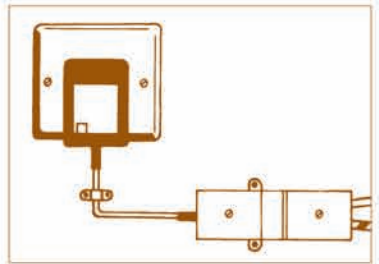
Carefully pull apart the black connectors supplied with the power unit. Fix connector with two side lugs in a convenient position for terminating the Lectros system. This **MUST** be within 2 metres of the power unit. Avoid positioning the connector in a damp area and guard against the possibility of it being plastered over. The connector is not waterproof and must be fitted in a sheltered position.

Remove the centre screw and ease off the cover. Remove two internal clamp screws and clamp. Three terminals will be seen marked:

N E L

Connections of the Lectros system are made to terminals L and N only. Under no circumstances should a permanent connection be made to the centre position.

**EARTH WIRE** Use a single or multistrand P.V.C. copper wire of some 1.5mm diameter. We recommend the colour Green or Green/Yellow.  
**TITANIUM WIRE** For identification purposes and



give extra protection this **MUST** be covered with P.V.C. sleeving in the area of the connector. We recommend the use of 2.5mm diameter P.V.C. sleeving, colour orange or red. Such material is available from several sources including Lectros.  
**TERMINAL L** Connect Titanium Wire.  
**TERMINAL N** Connect Earth Wire.  
**TERMINAL E** DO NOT CONNECT

Refit the cable clamp. Both the earth wire and the titanium wire should now be firmly held by the terminal screws and clamp.

Plug in both the power unit and the black connector. The green light on the power unit should illuminate. If at this stage the light does not come on, refer to the fault location guide. The Lectros system is designed for continuous operation and power must be maintained at all times. However, occasional breaks in electrical supply can be tolerated but must not exceed two months in duration followed by a long period of continuous operation to re-establish operating characteristics.

Make sure the power unit is protected from accidental switch off and theft.

## 10 FAULT LOCATION GUIDE

The power unit must be plugged into a 13 amp socket and white connector plugged into the Lectros system.  
**IF THE GREEN INDICATOR DOES NOT LIGHT** proceed as follows:

1. Make sure the 13amp socket you are using is functional and if fitted with a switch – switch on.

2. Unplug the black connector and re-connect into the **YELLOW** test connector supplied, free of charge by Lectros. If no green light results, the power unit is probably faulty and a replacement unit should be tried.

3. If the green light comes on remove the yellow test connector and re-connect the power unit to the Lectros system.

4. Check the connection of the titanium and earth wire into the white connector. If this proves sound, take a short length of bare wire and short it across terminals L & N in the white connector. If the green light does not come on, the fault is probably in the white connector which should be replaced.

5. The most common fault is a poor or non-

existent earth. To prove this, remove the earth wire from the white connector and connect the N terminal to some convenient length of copper central heating piping or property's electrical earth. If the green light comes on,

the system's earth rod is either situated in a very dry area or the earth feed wire is broken. On the completion of this test, the temporary earth wire **MUST** be removed, and the system re-connected normally.

6. If, after connecting a temporary earth, the green light still remains off a break must have occurred in the titanium feed wire or you have an extremely dry property.

## 11 RE-PLASTERING

### GENERAL

Rising damp will contaminate a property with mineral salts (nitrates, sulphates, etc) which will concentrate in plasterwork due to the effect of evaporation. Most of these salts will be hygroscopic, so attracting moisture; this will be evident at times of high humidity

Removal of old plaster will eliminate the majority of these salts. However, some will remain in the structure. Care must be taken to minimise the effect of these residual salts.

### PREPARATORY WORK

1. Remove timber skirting boards, architraves, disconnect radiators etc.
2. Remove old plaster to at least 300mm (12ins) above contaminated area.
3. Rake out mortar joints and expose brick or stonework to provide a suitable key.

### RE-PLASTERING

1. To avoid salt re-contamination of the new plaster we recommend the application of 3:1 by volume clean washed sharp sand and portland cement. The addition of a proprietary salt repellent mixed strictly in accordance with the manufacturer's specification is recommended. Render this mix onto the wall to give an overall thickness of 12mm (1/2in) making sure it is worked well into the old mortar joints.

When sufficiently dry, scratch the surface to facilitate bonding, and before it sets apply a further coat of 12mm (1/2in) thick of 5:1 by volume clean washed sand and portland cement. The work should be completed with a coat of thistle, sirapite, or similar plaster. Do not over-trowel this final coat.

2. To ensure correct mixing ratios and quality control the use of Wykamol 'renovating' type plasters incorporating a salt neutraliser may be considered. Such plasters must be applied in accordance with manufacturer's specifications.

## 12 ISOLATING THE SYSTEM (VERY IMPORTANT INFORMATION)

Great care must be taken when installing the system to avoid contact with any metal fixtures and fittings. If any metal object is attached to a wall or runs through a wall, these objects must be isolated/insulated to avoid certain corrosion. All contractors must make their clients aware of these inherent problems to avoid possible damage.

### IMPORTANT

A gap of 35mm (1 1/2ins) **MUST** be left between new plasterwork and the floor level. Do not replaster in frosty conditions. Use only clean washed sand. Treat skirtings and architraves with a timber preservative on the rear side (wall side) before fixing. Do not allow skirtings, architraves etc. to come into contact with solid floors.

### REDECORATION

Walls must be allowed to dry out naturally; this process may take some considerable time. Avoid heavy re-decoration for a period of at least six months and preferably one year after re-plastering. Do not apply wallpaper and in particular vinyl or washable paper. Do not apply decorative plasters such as artex etc. Water based emulsions may be used so allowing the walls to breathe. Humidity levels must be kept as low as possible and through flow ventilation introduced to minimise condensation.

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### PATENTED SYSTEM

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