

## How to install a phone

With the liberalisation of the household wiring market as at October 1987, you can now install your own extensions cheaply, easily and immediately.

By installing sockets wherever you wish you can have the convenience of a phone in almost any room. As a new telephone is ready to use immediately simply by plugging it into the socket, it gives you the flexibility to move a single phone from room to room.

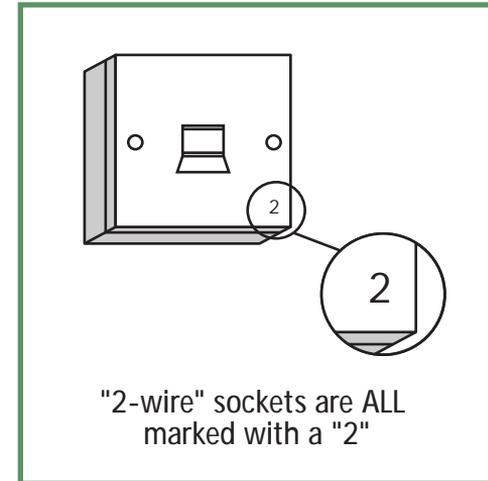
### Before you start

Check your existing installation to make sure it's the new plug-in socket.

If you don't have this type of socket you will need to replace your existing connectors. Older equipment directly connected (not plugged-in) to the wiring is not always compatible with modern equipment. Should you have such items, get Telecom or a professional installer to install your sockets or convert your whole installation to standard 2 wiring. This will simplify any future additions.

Telephone sockets and ordinary white or grey cables are not designed for use outdoors. Sockets should not be located in any place where they will be exposed to damp or condensation.

Avoid installations in bathrooms, showers, on windowsills, near sinks or damp areas in kitchens, toilets and swimming/spa pools.



## Step by step guide to installing your own 2-wire telephone socket

Please read these instructions thoroughly before you start. They will help you avoid mistakes that could lead to service problems.

### Warning

Make sure you are clear of any 230 V wiring before attempting your installation work  
ALWAYS provide at least 50 mm clearance between telephone and 230 V wiring

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## Before you start

There are two DIFFERENT wiring systems in common use. The earlier one is called "3-wire". This socket meets the new Telecom standard, which is called "2-wire".

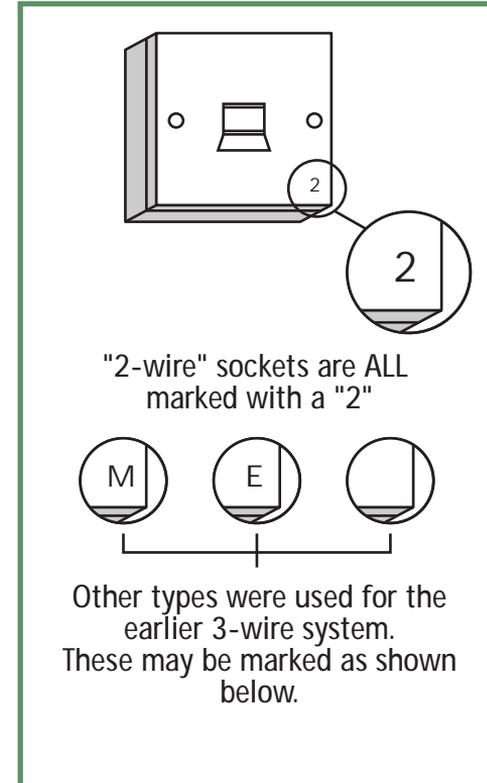
These instructions apply ONLY to the installation of 2 wire sockets. Only use a socket marked with a "2" when all the other sockets also have a 2 marked on the face.

Remember that Telecom is entitled to check out all wiring connected to its exchange lines and to charge for repairs to faulty workmanship.

Make sure you have the right type of socket.

**CAUTION:** 2-wire sockets have a protective coating on the circuit board and components. Try NOT to touch these with the fingers.

If your other sockets are 3-wire types:  
EITHER change all sockets to the "2-wire"  
OR use new sockets marked "E" and use suitable "3-wiring" instructions.



## Important notes about wiring

2-wire sockets are connected together by ONLY two wires.

One of these two wires is connected to a slot on one of the 3-way connectors. The other wire is connected to a slot on the other 3-way connector.

With one wire per slot, any socket can be connected to the line wires (which may be thicker) and to two other sockets; or to three other sockets.

Telephone sockets and ordinary white or grey cables are not designed for use outdoors.

Sockets shall not be located in any place where they will be exposed to damp or condensation.

Avoid installations in bathrooms, showers, on windowsills, near sinks or damp areas in kitchens, toilets and swimming/spa pools.

Older equipment directly connected (not plugged-in) to the wiring is not always compatible with modern equipment.

Should you have such items, get Telecom to install your sockets and make equipment changes. If you have your whole installation converted to 2-wiring, any future additions will be much simpler.

## Plan your cabling route

Decide how many sockets you want and where they are to be located.

Each socket shall be mounted at least 300mm above the floor and preferably against one side of a timber stud.

The cable to an additional socket can be connected to the nearest existing socket which has a spare slot on each of its connectors.

Cable may be run above the ceiling, under the floor and inside walls, cupboards, wardrobes etc, but not anywhere outside the building.

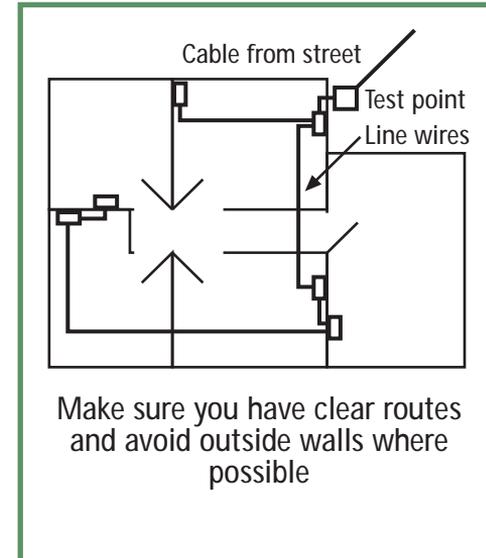
The cable **MUST NOT** be suspended across open areas under floor or above ceilings.

It should run beside timber framing to which it can be clipped. This keeps the cable off damp ground and protects it from physical damage.

Avoid running cable along the bottom plate of outside walls, as these may be prone to dampness.

Remember to provide for at least 50mm clearance from 230 V cables. Do **NOT** use the power cable holes for telephone wiring.

If you have to run cable on the surface of the walls, run it along the top of the skirting boards or on the scotia and around door and window frames, where it can be secured by clips.



## Use the right cable

For your new work, use only cable having a Telepermit label on the pack. This will contain either 4 or 6 wires.

If you are converting an existing installation to 2-wiring, the existing cables may be reused provided they are of an earlier standard type having solid (not stranded) wires. The wires may differ in colour to your new cable. This does not matter.

Ensure that the cables are not damaged and are suitably routed. Run all the cables required to the additional sockets.

## Wiring methods

It is tidier to conceal your wiring in the wall, where it does not need securing and is protected from possible damage.

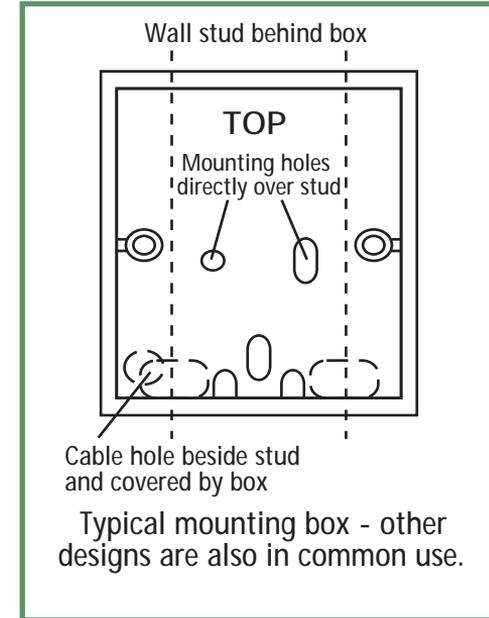
Concealed wiring should be routed through a 10-15mm hole in the wallboard directly behind your chosen socket position at the lower edge of the mounting box and hard against the timber stud on which you will mount the box.

Take care not to damage the wall surface outside the area covered by the mounting box when drilling any holes in the wall.

For surface wiring fixed to the top of the skirting, the cable may be run up the wall to the socket. A 5mm hole is drilled through the wallboard immediately above the skirting and directly below the hole at the socket position.

EITHER drop a string down from the top hole and hook it out through the lower hole with a stiff piece of wire, then tie the string to the cable and pull it up, OR

Push enough cable to reach the socket plus another 500 - 800 mm into the lower hole. Use a length of stiff wire with a hook formed on the end to pull the cable out through the upper hole.

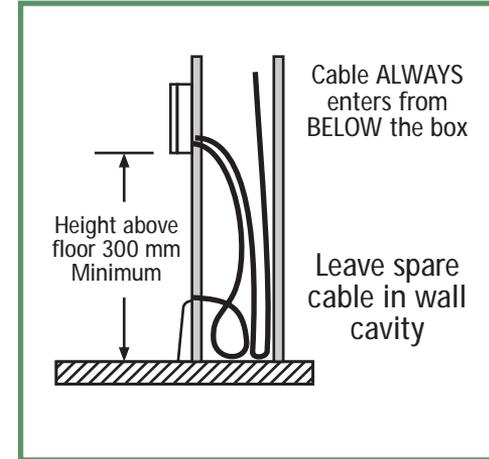


## Leave plenty of cable

Ensure that at least 500mm of new cable can be pulled out from the wall at each socket position. Once you have fitted the socket this cable is pushed back into the wall to allow for future requirements.

Cable(s) should ALWAYS enter via holes in or near the bottom of the matching surface mounting box, and generally close to one of the corners.

Some types of mounting box have knockouts at mid-level, but these should preferably NOT be used.



## Mounting boxes

Knockouts in most new boxes can be opened by drilling or cutting with a sharp knife. Older boxes may require drilling using a 5 mm drill for each surface wired cable.

For concealed wiring, larger holes can be drilled in the lower half of the back of the box to align with the hole in the wall.

After threading the cables through the holes made in the box, position it so that the mounting holes are aligned over the stud to give firm fixing and cover any cable holes made in the wall.

Some sockets are the same size as power outlets and light switches. For concealed wiring, these mount on a standard electrical single gang flush box fixed vertically to the side of a stud. For easier installation and better protection to the socket, flush boxes which mount on the wallboard between the studs of the wall are recommended. Cut the rectangular hole in the wall, pull the cable through a hole in the bottom, then fix the box in position.

Should surface wiring be necessary, these rectangular sockets may be mounted on a matching electrical surface mounting block.

Use wood screws to secure a surface box to the wall framing.

## Connecting the sockets

If a 3-wire installation is being converted to 2-wire, all the existing sockets should be removed. Disconnect each wire from the socket by gripping it with a hook or pliers immediately beside the connector and pulling the wire sharply upwards. Take care not to damage the wire installation.

Where more than one wire is connected to a slot, the top wires should be removed first.

Fold back all the wires except those removed from the connector terminals 2 and 5. The wires will connect to the replacement 2-wire socket.

If the existing cable is too short to make a good termination as in 9 - "Choosing the right wires", either new cable should be installed or the route shortened.

The sheath of each cable to be connected should be stripped back to expose about 100mm of wire. Slit the end 20 to 30mm of sheath lengthwise with a sharp knife and then, gripping the sheath and wires separately, pull them apart until sufficient wire is exposed. Cut off the stripped section of sheath.

Do NOT cut around the cable to strip off the sheath. This can damage the wires or their insulation.

## Choosing the right wires

Select from each cable the pair of wires to be used. For most earlier cables, this will be the Red wire and the White wire. Some new cable will use a Blue wire and a White wire with a Blue stripe.

If these do not exist or are too short to connect, select the Orange wire and the Black wire (which are normally used for a second line). Some new cable will use an Orange wire and a White wire with an Orange stripe for the second line.

Whatever the two wire colours to be used, it is essential that the same colours are used at each end of the same run of cable.

Separate all the selected wires from the others in the cables. Do not cut these others off but fold them back out of the way.

## Using the insertion tool

Use **ONLY** the proper inserter tool to connect the selected wire. Never use a screwdriver or anything other than the tool to connect the wires as this will cause damage.

Try inserting the tool into the empty slots before you start. It will slide easily into a slot only when held the correct way around. The moulded symbol on the face of the tool should have the wavy "tail" (depicting the wire) towards the outer side of the socket.

The tool must be turned around when it is used on the connector on the other side, so that the wire symbol still points outwards.

Take care not to damage the tool by forcing it into the slot the wrong way around.

**DO NOT STRIP THE INSULATION FROM THE WIRE** at the connector.

Check that all the wires selected for connection have undamaged colour insulation. Cut off the ends where this is damaged because the connector relies on gripping this insulation on both sides of the housing. Normally, the end 10mm of an old wire needs to be cut off before reconnection.

The white (or alternative) wires from each cable will be connected to the left side 3-way connector and the red (or alternative) wires to the right side connector, when the socket is held with the yellow tubular capacitor towards you.

Wires from the same cable should be connected to the same corresponding slot of the 3-way connector on the other side.

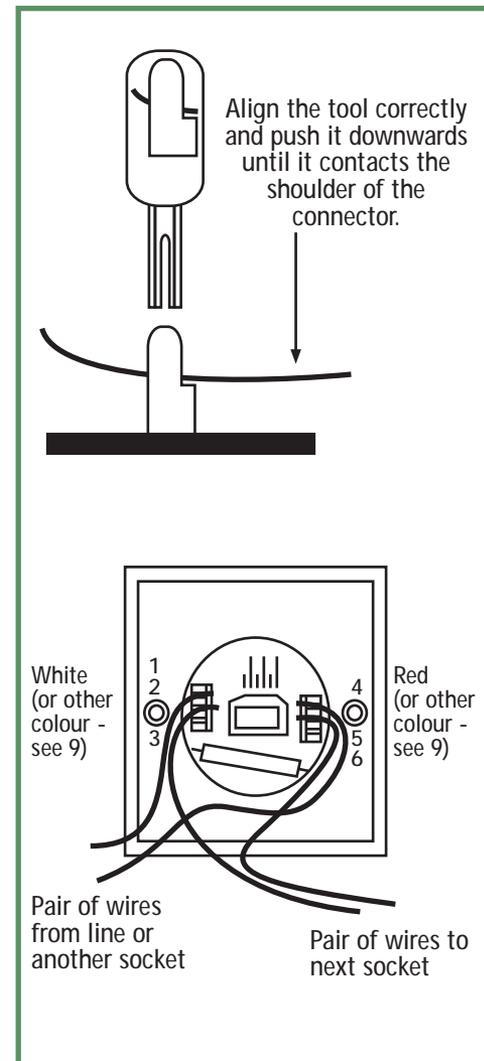
Place the socket against a firm surface, take each wire in turn, place it across the connector slot from the outside with the free end just past the edge of the connector housing towards the centre.

With the inserter tool held the correct way around, each wire can be pressed into the slot with moderate force until it stops.

Excessive free wire protruding beyond the connector housing should be cut off, taking care not to dislodge the wire from the slot.

Connect the two selected wires to any other sockets, paying particular attention to any existing wires which are being reused.

If it is necessary to remove and reconnect a wire, make sure that the insulation over full width of the connector housing is undamaged, before reconnecting.



## Securing the cable end

Having reconnected the wires, push the excess sheathed cable back into the wall.

If the mounting box has securing pegs, press the last 30 mm of the sheathed section between the pegs to secure it.

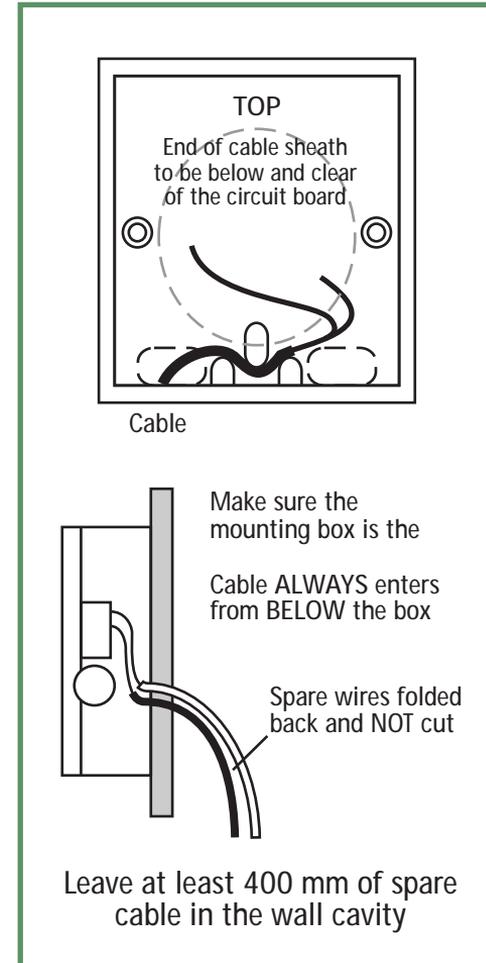
For boxes not provided with securing pegs, the end of each cable sheath should be pushed down to just enter the box.

It is important that the ends of each cable sheath remain below and cannot touch the socket circuit board when the socket is mounted on to the box.

The spare wires earlier folded back may now be neatly twisted together and pushed out through the cable entry hole.

For surface wired boxes, this is not possible and the spare wires should be neatly folded and arranged along the bottom of the box. To prevent them from touching the circuit board of the socket, the folded bundle may be tied to the cable.

At this stage the cable slack should be pulled into the nearest concealed location and the cable clipped close to where it enters the box. The remaining cable can be secured by clips or wiring staples later.



## Date Marking

The label on the inside of the faceplate of every new socket installed should now be marked with the present date.

Mark the month and the year as its last two digits, for example:  
"5/97"

The sockets may now be screwed to their mounting boxes, after threading any plastic spacers on to the screws behind the faceplate.

Make sure that the wires to the connectors are tucked inside clear of mounting pillars and the socket is the right way up.

It is important that the tubular capacitor on the circuit board is at the bottom.

Alternatively, you may prefer to test the installation before finally screwing on the sockets.

## Testing & fault finding

Plug a phone into each socket in turn and test for dial tone. If all sockets appear to work you may confirm this by asking a friend to call you. Any phone should ring on every socket.

If you don't hear dial tone at a socket and your line is working, first try inserting and withdrawing the plug several times. If this does not help, use the insertion tool to make sure each wire is firmly in place in the connector at the socket concerned and at the one from which it has been wired.

Check the colours to make sure the same pair of wires is used at both ends of the cable.

If you cannot hear dial tone at ANY socket, call your number from another line. If you hear 'busy tone' when calling your number, you have connected the two wires of the pair together at some point. Disconnect your new wiring and check for dial tone at the first socket you connected to. If this now gives dial tone, the wiring you disconnected is at fault. Make sure one wire of the pair goes to each of the two connectors on the sockets concerned.

If you hear "ringing tone", a wire may be broken or the cable may be damaged

## Clipping & Tidying

The required slack in the cable should be pulled into concealed locations close to the ends of each run.

Finally, all exposed cable should be secured with slips or wiring staples.

Cables not enclosed in a wall cavity should be secured each side of every change of direction.

Surface wiring should be clipped at intervals not exceeding 150mm. Cables run under the floor or in the ceiling may be clipped at greater distances.

Make sure the cable cannot come into contact with anything which may become wet and that it is not likely to be snagged by anyone or be damaged by any objects being moved or stored in the area.

Clip the cable to the sides of timber framing where there is any risk of persons or weights being placed on it.

If you cannot get your sockets to work correctly, Telecom's Fault service can correct the problem for you.

Remember:

You may be charged for repairs if the problem is caused by your new wiring.

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