

DOING IT YOURSELF (DIY) TV CABLING

INFORMATION FOR CONSUMERS PURCHASING COMPONENTS FOR USE IN DIY INSTALLATIONS

Installation Requirements and Recommendations with Specifications of Components Used (CABLES, CONNECTORS, OUTLETS AND SPLITTERS)

Doing It Yourself - Things To Consider

- **Advantages & Disadvantages of DIY**

While doing it yourself might seem a good proposition from the point of view of savings in total costs involved, the degree to which this can be achieved can vary greatly depending on a number of factors.

Firstly, if the installation site from the point of view of TV reception is difficult, it is unlikely you will be able to achieve a satisfactory result, even if your installation techniques are correct.

Secondly, if your installation efforts are incorrect (poor connections due to lack of the required tools, etc) even the best components will perform unsatisfactorily.

Thirdly, the process of installation will invariably involve the use of ladders, walking on and climbing onto roofs and into ceilings, and crawling under buildings. Also the use of power tools may be required. Unless you have previous experience of the correct techniques required, and have the recommended safety equipment at hand, doing it yourself can easily lead to damage to property and serious personal injury.

So start by assessing the above factors and, if the DIY way is practical in all aspects, ensure you use the recommended components and follow the correct techniques given in this guide to ensure the best outcome for your labours.

Doing It Yourself - General

The information provided below is a guide for the selection of components such as coaxial cable, connectors, outlets and splitters. This will provide the necessary performance for both new digital and existing (analogue) TV reception.

These requirements are the minimum as specified by Australian Standard AS1367-2000 for the distribution of TV signals.

While the strength and quality of received TV channels will vary from site to site, and between channels at the same site, the selection of components in line with these recommendations ensure that signals reaching TV receivers do so with the least loss and distortion.

Minimising loss and distortion is achieved by using components which

- cause the least loss to signals passing through them
- cause the least distortion to signals by being suitable for installation on the required cable & connectors and ensuring they are correctly installed
- provide good screening from external interference

Good screening is important with all components particularly with cable.

Because of the particular susceptibility of digital TV to impulse noise, and in order to provide the most beneficial conditions for digital TV reception, quad shielded cable is recommended, especially in areas close to transmitters of any power or to other strong sources of interference.

This is also important with Outlet-to-TV and with VCR-to-TV connecting leads (flyleads).

Connectors should be the correct type to match the cable. Universal connectors are available that fit the majority of quad shielded RG6 cables.

Cable needs to be prepared using the correct stripping tools, and connectors need to be installed by being hex crimped to cable ends with the correct crimping tools.

It is not ideal to use **screw-on F type connectors, only crimp-on types.**

Using incorrect methods or tools will result in poor connections, leading to intermittent or continuous faults.

Where splitters are used, any unused ports should be terminated with a 75½ F type terminator to ensure correct matching.

When connecting cable to outlets, splitters, etc, F connectors need to be tightened appropriately using the correct size spanner, so that they cannot be undone without the aid of a tool (i.e. not finger tight) as over time vibrations will cause loosening of connections.

Similarly DO NOT over tighten connectors as immediate damage can be caused that will render some components useless.

As a rule of thumb do the connector up finger tight & then tighten further with the spanner by one half of one flat portion of the hex shaped securing nut or 30 degrees maximum.

Source of Standards

This guide is based on Australian Standards, which are obtainable from Standards Australia directly or via their web site at <http://www.standards.org.au>.

Connecting Leads (Flyleads)

- **General**

To prevent flyleads becoming the weakest link in an installation, they should be the same cable and be used with the required correct connectors as given below (see *Cable & Connectors under Component Specifications*).

- **Types**

Flyleads are usually used to connect between the wall outlet and either the TV or VCR, or the VCR and TV. Ensure that any ready-made leads are of the correct cable type and quality with the required connectors. If you require longer leads than are available ready-made, it is better to make a custom lead for the required length rather than connect two or more shorter lengths.

- **Do's & Don'ts**

Flylead cables should be of adequate length. If too short, damage could occur due to strain on connectors and sockets, both on the cable and on equipment attached to them (add at least 500 mm to a minimum required length). Likewise excessively long cables will lead to weaker signals reaching the TV and VCR (try to avoid lengths over 10m from any outlet).

Don't run flylead cabling under carpet or other loose floor coverings (mats and rugs) or across doorways, etc, as damage will occur to the cable over time. Wear marks can develop, for instance where a door rubs on the raised carpet. Loose cable can also be a trip hazard.

Installation Methods

- **Cable Do's & Don'ts**

The installation process should not cause damage. Avoid excessive strain, bending, kinks, or crushing (stepping on or placing any weight on cable) before, during or after cable is secured in its final position.

Plan the route so that in ceiling space cables do not run over beams in a manner that allows them to be stepped on or tripped over.

For electrical safety and to minimise impulse noise pick up from power cables, maintain adequate clearance (50 mm). Likewise with water (especially hot water) and gas pipes, etc.

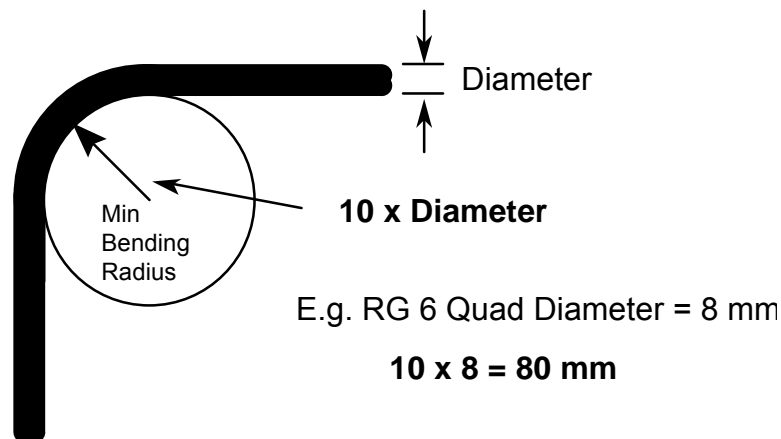
In general, and under floors in particular, cable should be fastened with nail-on clips of adequate size for the cable diameter and which provide grip, yet do not deform the cable (approximately at 500 mm intervals). Moreover, where cable ties are used, they should not be excessively tightened.

If a number of cables are drawn into a cavity they should not be tied together along their length to form a loom, as this prevents replacement of individual cables and does not avoid direct contact with power cabling.

Any holes or openings should be adequate to allow free movement of cable through them (diameter of 16 mm minimum for single cable, 20 mm for two, etc).

Do not directly embed cable in any solid material such as a concrete slab, rendering on walls, etc, without using conduit, ducting or a wall box of adequate size (for outlets when not in a cavity wall). Conduit should be a minimum of 20 mm diameter, using bends - not elbows - where large changes of direction are required.

Most importantly avoid bending cable excessively while handling and in its final position. A recommended rule is to ensure the radius of a bend is not less than ten times the diameter of the cable (minimum bending radius).



Minimum Bending Radius of Cable

Leave a cable tail of at least 150 mm at outlets & other connection points to assist with termination.

- **Connector Do's & Don'ts**

Do use the correct type of coaxial cable stripping tool for the size of cable used (RG 6).

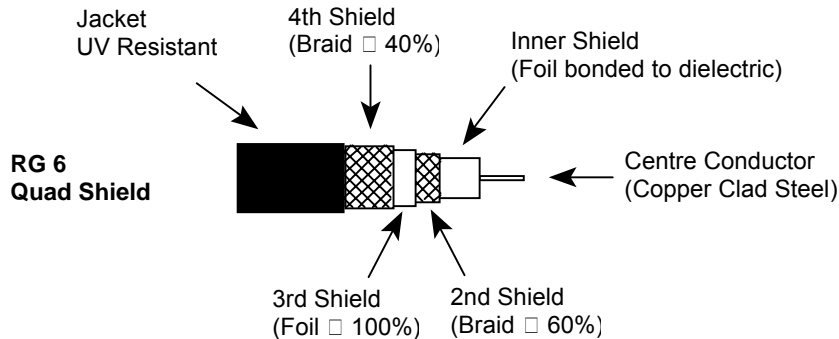
Ensure the inner conductor is clear of any dielectric material following stripping.

Do fit the F connector on the cable with the inner (white) dielectric less than flush (0.5 - 1 mm back) from the end of the inner sleeve, to prevent it from protruding. If not so fitted, a secure connection cannot be made when the connector nut is tightened.

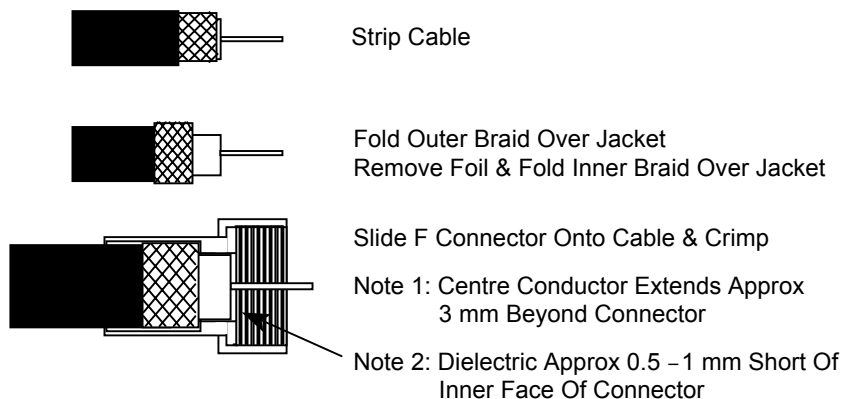
The inner conductor of the cable should protrude 3 mm beyond the connector end.

Always use a correct tool (spanner) to tighten F connectors. Do not over tighten.

CABLE CONSTRUCTION



CABLE PREPARATION – Quad Shield



- **Outlet Do's & Don'ts**

Make sure to provide space behind outlets to allow for adequate clearance for the connector & cable when the outlet plate is seated in its installed position.

This is usually not a problem when the outlet is mounted on a cavity wall, as the cable can be fed into the cavity. However when a wall box (cabling via conduit) or surface mounted bracket is required, space can be very limited.

Ensure the box or bracket has enough depth & volume to accommodate the excess cable and the connector, while maintaining the minimum bending radius as much as possible. This will require the use of a right angle (90°) F-to-F adaptor or right angle F connector.

- **Splitter Do's & Don'ts**

Don't conceal splitters within walls, cavities or any other location where they cannot be found or accessed in future.

Do mount splitters to allow for adequate clearance to ports for connecting cables.

Do terminate unused ports with 75Ω (Ohm) F type terminators.

Do check when making connections that the cable leading from the antenna is connected to the input port.

Component Specifications

- **Cable**

Type: RG 6 Quad Shield (Bonded) 75Ω (Ohm)

- **Connectors**

F Type: Connectors must be hex crimp type

PAL Type: Connectors must be hex crimp type

Attachment Method: Hex crimp of the connector body only (not with separate crimping ring in the case of F type, nor screw / braid clamp in the case of PAL type)

- **Outlets**

Type: Fully screened

Connections: F type socket on rear of outlet plate, with PAL or F type on front, depending on requirements

Optional: Can provide AC Mains Isolation

- **Splitters**

Type: All ports F type, fully screened metal construction
Optional: Can provide AC & DC power, passing from input to preferably one outlet port only

- **Flyleads**

Cable Type: RG 6 Quad Shield (Bonded) 75Ω (Ohm)
Optional for manufactured leads RG 59 Quad Shield (Bonded) 75Ω (Ohm)
Connectors: PAL or F as required (refer to connectors above)