COMMOTION
HOUSE
ASSEMBLY INSTRUCTIONS

Thank you for purchasing the Control Model House.
It is designed to present a problem solving situation to
pupils who are just beginning Control Technology.

General Information:

The House model comes with all the electrical parts and is ready for
assembly. The shapes are pre-cut from the Corriflute and only need to be
gently pushed out from the backing. All of the electrical components are pre
wired and have colour coded banana plugs attached to the end of the leads;
the colours complement the Commotion Control Box.

To construct the House you will need:

A cutting Knife
A safety rule
A cutting board
Some sticky tape
A Pair of Pliers

Packaging

Unpack the Corriflute from the packaging. Save the unwanted Corriflute as it may be of use for other projects. If you intend to build the House and leave it assembled, we suggest that you use the packaging pieces as a base board. To do this simply fix the completed model into place using either sticky tape or a glue gun.

1) Before you begin .
Lay out the House and the windows (Clear Corriflute) onto a clear and uncluttered table.
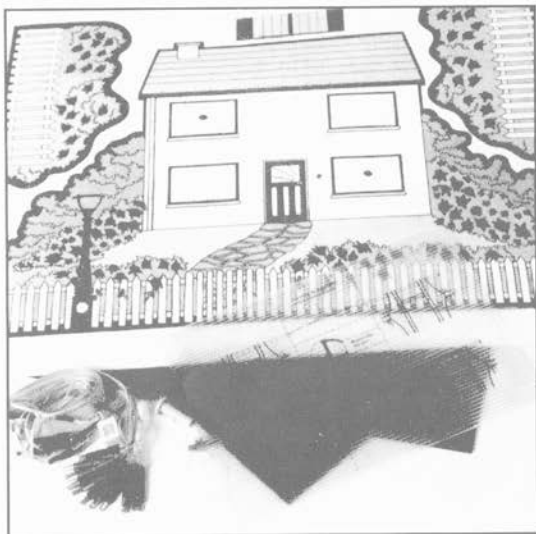

Lay out the house onto a clear uncluttered surface.

2) Carefully push out the House design from its backing.

Lay the house face down with the plain white side facing upwards. Carefully press out the four windows so that they sit vertically. Press out the door, so that it hinges, and then carefully remove the slip of Corriflute from around the door. Using a cutting knife cut out the strips of Corriflute where the base pieces fit. Press out the street light so that it points vertically (at 90 to the model).

N.B. Due to the springiness of Corriflute it will tend to want to spring back to the flat shape it was packaged in, however part of this initial process is just to make sure that the Corriflute is properly disconnected from its surround. Later on you will see that there are other pieces which are designed to hold the model in the required shape.
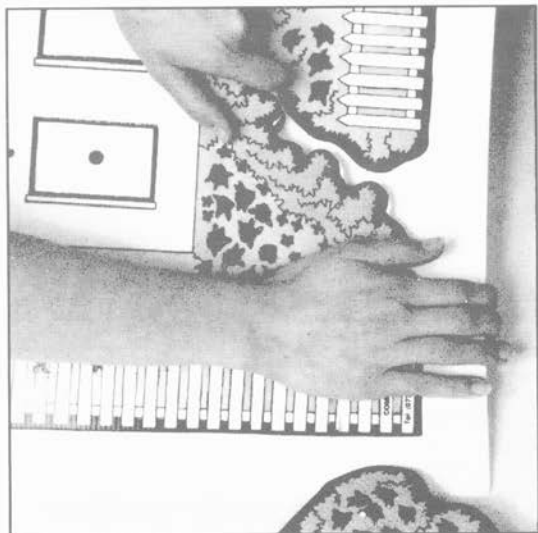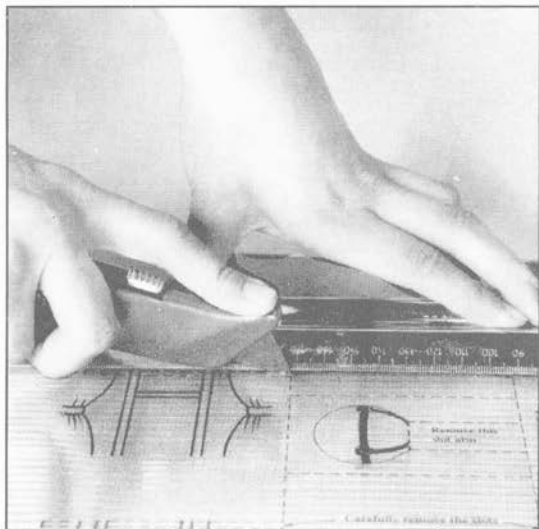

Carefully press out the component pieces.

Identify the 8 separate pieces:
The House   2 x Stand pieces   2 x 2 Windows (Clear Corriflute)
1 x Porch cover piece   1 x Street light lens (Clear Corriflute)

3) Cutting out the Windows (Clear Corriflute).

You will require a cutting knife for these pieces.

Select the Window pieces. You will notice that there are two slots printed on them. These need to be removed using a sharp cutting knife. (For safety, when using cutting knives we recommend a non slip cutting mat and safety rule). The slots you have removed are to be used when connecting the windows into place at a later stage, see instruction number 4.

Cutting out the clear Corriflute.

4) Fitting the Clear Windows.

Select a piece of clear Corriflute with two window design patterns on it, (you should have already cut slots into this piece). There are two window pieces one is left sided and the other is right sided. Select the right sided one first, (if, when fitted it is not correct use the other one instead). If correct, the curtains will line up with the window holes.

With the House model laying plain side up carefully lift the two window squares(these have a hole in where the light will fit, see instruction number 15) and slot the clear Corriflute into place. This will hold the two window flaps in a vertical position. Add tape to the edges of the clear Corriflute to secure it in place. Repeat for the other side.

Fitting the windows.

5) Street light lens (Clear Corriflute).

You will require a cutting knife for this piece. Cut out the shaded area marked. The street light which is left is then fitted into place. Fitting the Street Light Lens This piece will have already been cut (See instruction 4) Lift the street light piece up vertically and slide the lens piece into place. Secure the clear Corriflute into place using sticky tape.
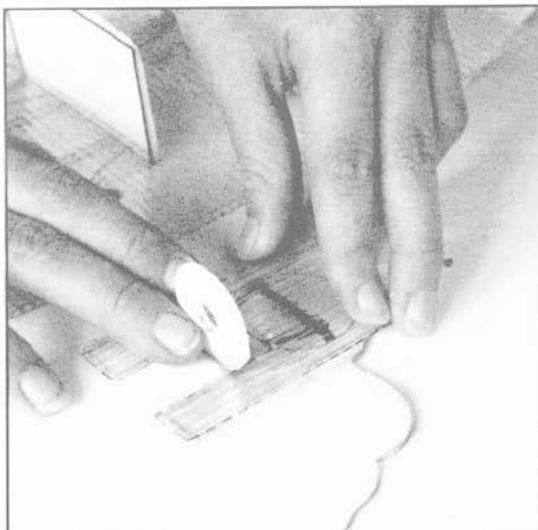
Fitting the Street Light Lens.

6) Fitting the porch cover.

Carefully fold the porch cover so that it fits to the shape of the holes in the face of the house above the front door. Slot the tabs through the holes. No tape is required in order to secure the porch cover into place.
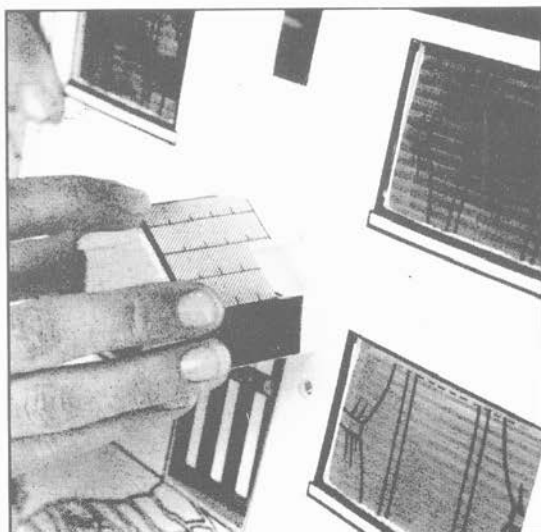
Fitting the porch cover.

7) Fitting the door knob.

Find the small studs in the accessory pack. There are two pieces, one push piece fits inside the other. The inner piece should be fitted from the front. By pressing the two pieces together, through the hole in the door they will click together permanently.
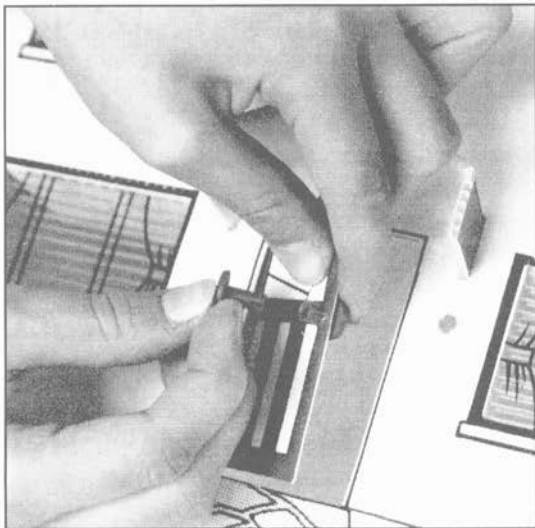
Fitting the Electrical components:
All of the electrical fittings are connected to a ribbon cable. There are:

5 High Intensity Light Bulbs
1 Magnetic Proximity Switch and Activator
1 Buzzer
1 Light Dependent Resistor
1 Push Switch

Fitting the door knob.

All of the electrical components are designed to be used with the Commotion Control Box or Command Centre and hence they are fitted with colour coded Banana plugs. The inputs are coded Green and Black and the Outputs Red and Black. The house can quite easily be made to work using a battery. No damage will result in the output components being connected to up to 6 volts of direct current provided by batteries or a power supply. However, the input components should not be connected in this way.

Prior to fitting the electrical components to the House model, you should take each component in turn, and carefully strip back the ribbon cable, so that it has a length of free movement between itself and other components.
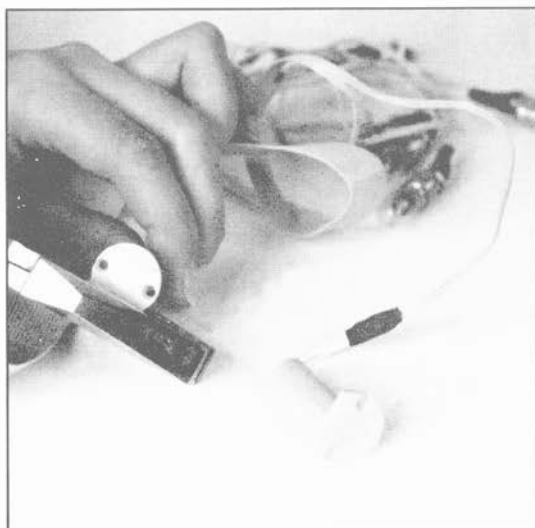
8) Modifying the Proximity Switch.

The proximity switch consists of two parts. Both parts are small, plastic cased and look a little like miniature

Modifying the Proximity Switch

mushrooms. (Find them and hold them, it will help you to visualise how they work).

They work in the following way. Inside the half which has wires connected is a very sensitive switch. In the other plastic mushroom (not physically connected) is a magnet. When they are placed facing each other; no more than 1cm apart. The magnet causes the switch to open. When the two are separated the switch closes. In this way the proximity switch can be used to tell if its other half is within a 1 cm proximity.

The magnet part of the switch is fixed to the back of the door and the wired piece is fixed into the door porch (through the hole in the tab see instruction 12). The plastic cases of both pieces of the proximity switch are round and so there is a requirement to slightly modify their shape in order for them to be fitted into position.

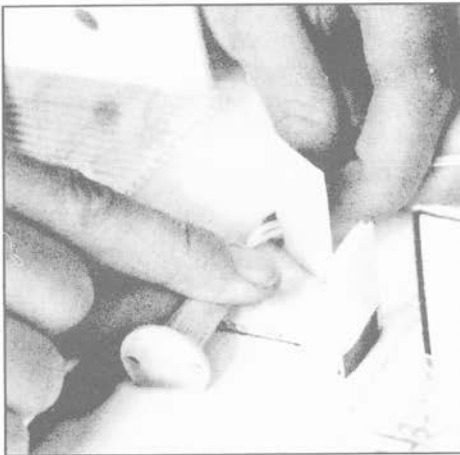### Modifying the shape of the Proximity Switch.

You will see that there are two grooves on the faces of the pieces. These are there to enable that piece to be broken off using a pair of pliers. Carefully grip the tab to be removed with the pliers (lining the end of the pliers up with the groove on the switch). Bend the pliers away from the component and the tab will break away. Do this to both pieces to enable the switch to lay flush against the surface to which it is to be connected.

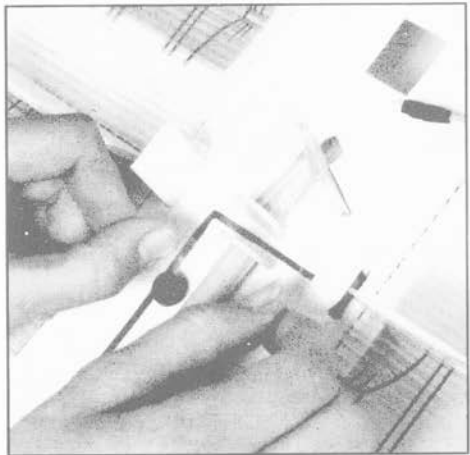### 9) Fixing the Proximity Switch.

Cut a line through the rear tag of the porch to enable the wire of the proximity switch to be threaded into place, prior to sliding the switch up into position. The porch piece is designed to hold the proximity switch in place, but having cut the porch tab it is advisable to repair the cut using a piece of sticky tape.
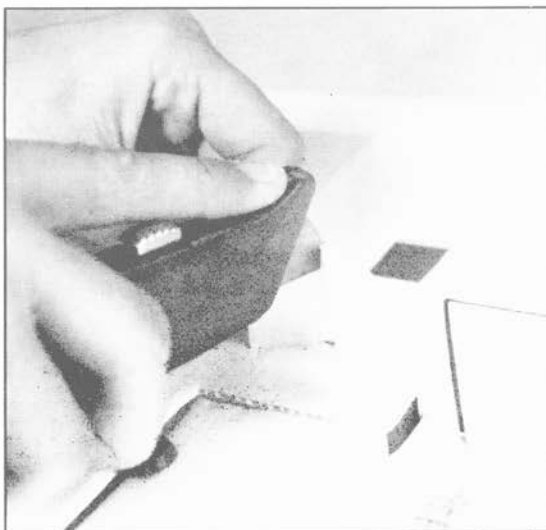
Cut the rear tab of the porch and thread through the Proximity Switch wire.
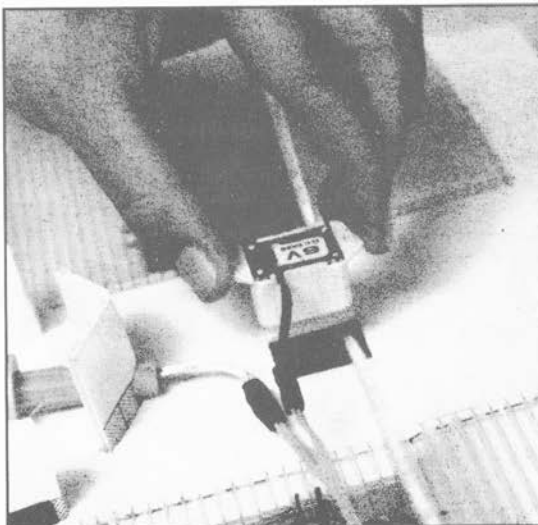
Fixing the Proximity Switch.

Fixing the magnet to the back of the door.

10 / 11) Fixing the Proximity Switch in place.

Fix the magnetic half of the switch (no wires) to the rear of the door. It should be placed in the centre of the top face of the door, no more than 1mm from the top edge. (The mushroom shape of the proximity switch faces towards the mushroom shape of the magnet)

12) Fitting the Buzzer.

Identify the buzzer. It is a small plastic cased plastic block with a metal base. Slide it into place from the back of the house, through the hole provided. The buzzer has been positioned to appear to look like a conventional house alarm. It should be held in position using sticky tape.

Fitting the buzzer.

13) Fitting the door bell.

Find the small push switch. Unscrew the little hexagonal nut from the bezel of the switch. Push the bezel through the hole, next to the front door and screw the nut back into place, from the front of the house.
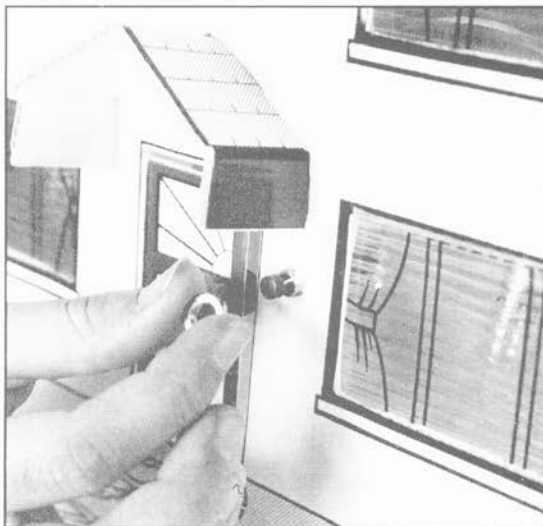

Fitting the door bell.

14) Ftting the Light Dependant Resistor.

Identify the LDR. It has a blue case and the front face has a clear lens, through which it is possible to see a yellow snake like shape. The outer diameter will exactly fit the hole which can be found in the base of the street lamp.

When used with the Commotion Control Interface, the light dependant resistor detects light levels and can respond to changes. These can be programmed to switch on and switch off the lights etc.
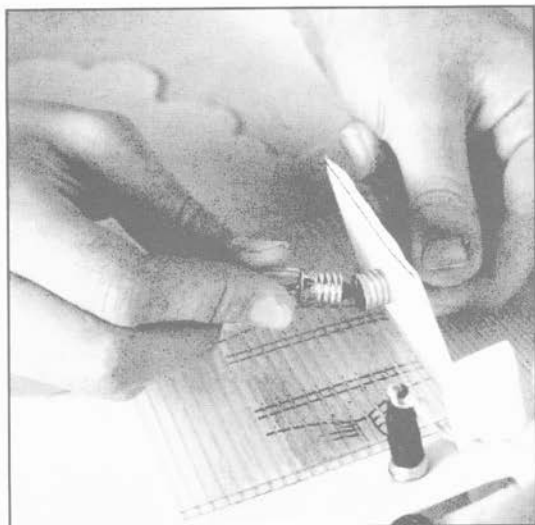
Light detecting automatic Street lights in the real world use LDR's as the means by which light levels are detected, so it is appropriate that this component is used here in this control model.
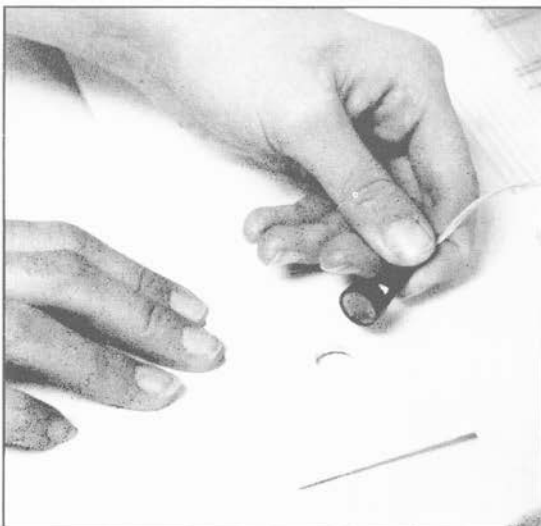
Fitting the Light Dependant Resistor.

15) Fitting the light bulbs to the windows and street light.

If you have followed these instructions this far you should now notice that there are now just five light bulbs with holders left on the ribbon cable and five vertical tabs standing up at the rear of the model. Each of these tabs has a central hole punched in them. These holes provide the fixing points for the light bulb holders. The holes in these tabs are a tight fit for the bulb holders. To fit them into place unscrew the bulb and press and screw firmly into place. Once secured the bulbs can be screwed into place in these holders.

Fitting the light bulbs

16) Fixing the Support Stand.

The slots in the stand are larger than is required in order for them to be angled outwards. This presents the illusion that the fence continues out from the model. The house is not particularly sturdy in this state and requires a little more work if you require it to be more stable.
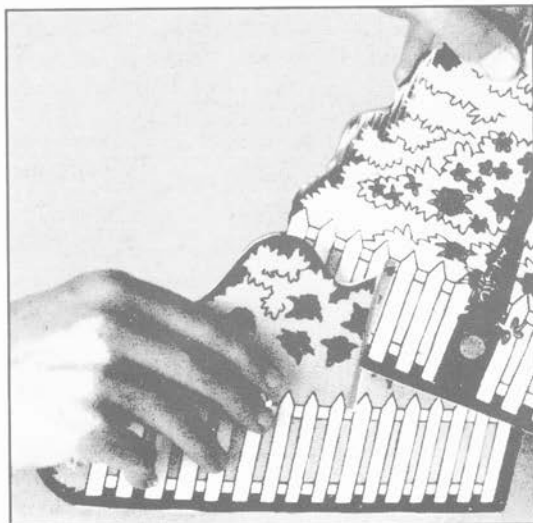
The first thing you can do to improve the stability of the model is to fix sticky tape to the stand pieces. If you are keeping the model in one place it can be fixed to the table surface using sticky tape. You may also consider using the spare packaging as a base board. Fitting the model to it using a glue gun or sticky tape will add to the overall stability and life expectancy of the model.

Fixing the support stand.

17) Tidying up the Cables:

The ribbon cable at the back of the model may look a mess, but with a little time and thought it can be tidied up using sticky tape to route the cable around and away from the windows and door. By tidying the wire the general look of the model will be improved and its life will be extended.

Problem Solving with the Control House Model

Potentially the house can be used with any control interface which provides an output of 6 Volts, however the model is tuned to the correct power output voltage and current of the Commotion Control Interface and the Command Centre.

Using the control model house, an interface and suitable software such as Commander, Comtrol or CoCo, there are number of problems or tasks which you can set for the pupils. Here are some situations which pupils can solve:

a) When the Jones's are away they want burglars to think they are at home. Can you think of a way that might make it seem; to a night visitor, that the Jones's are at home ?

b) At night, Mr. Smith (who always tries to save electricity) leaves a room and switches the light off behind him. He watches the nine-a-clock news, goes into the kitchen, nips upstairs to switch the electric blanket on, checks the other bedroom to make sure his children are safely tucked in bed, sounds the alarm (to check it is working properly) on his way down the stairs before returning back to the television in the front room.
Can you write a program to indicate the path Mr. Smith takes on his regular nightly walk ?

c) Mrs. Patel's family heirlooms need to be protected against theft. Can you write a program which will sound an alarm if the door is opened by an unwanted intruder ?

d) At night the street light comes on and in the morning it goes off. Can you make this happen ?

Other control models from Commotion are: A Clown, A set of Traffic Lights and a Buggy.

HAVE FUN !!

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