INTERCITY EXPRESS

by Andrew Jefferies

WHEN designing this toy I decided to include two different aspects of play. Not only does it give pleasure as a simple ride-on train but it also provides a skittle game which children can use long after they have outgrown the ride-on aspect, and in doing so will help in teaching them skills of co-ordination.

Sides of train

From 18mm ply, cut two pieces 790 by 210mm for the sides. Cut the shape as shown in the drawing and cut out also the windows and doorways. On one side cut a hole 140 by 140mm which will be for the abacus. On each side of this bore five equally spaced holes 3mm in diameter to a depth of 10mm one side and 20mm the other. Cut five pieces of 3mm wire each 160mm long, and thread five 20mm wooden beads onto each wire. Position and glue wires into place after the train is painted.

The floor

Now from 8mm ply cut one piece 790 by 155mm for the floor of the train. Mark the position for the steering handle so that the centre is 610mm from one end, as shown in the drawing. Cut out a circle 25mm in diameter. From 8mm ply cut one piece 550 by 155mm for the false floor. Mark 11 circles of 50mm diameter again as shown. Position the false floor on top of the train floor and mark the centres of the holes. (Remember enough room has to be left at the rear of the train for the back exit.) Remove the false floor and drill 10mm diameter holes to a depth of 4mm in each of the marked spots except the two nearest the front of the train. From 10mm dowel cut nine pieces 17mm long and glue into position in the drilled holes. Cut out the circles in the false floor and glue it onto the train floor.

Rear of train

From 8mm ply, cut one piece 149 by 55mm for the rear of the train. Cut an arch for the rear exit as shown in the drawing. Again using 8mm ply cut one further arch 5mm higher and wider than the previous one so that when stuck together they give the exit depth.

The roof

Cut one piece 650 by 155mm for the roof, and a piece cut off 460mm long for the lift-up lid. On the smaller piece mark the position of the hole for the steering handle as shown, then cut out a circle 25mm diameter.

Front of train

Now with 18mm ply, cut one piece 155 by 30mm for the train's nose,. and another piece 155 by 50mm for the piece above the window on the front of the train.

Again using 18mm ply, cut one piece 155 by 70mm for the front fender. This will need to be trimmed to shape in the same way as the piece above the window when the body is assembled.

Assemble all the pieces except the train lid and glue them together. Rub down to achieve the correct shape paying attention to the curved edges. When dry, cut a piece of piano hinge 155mm long and use it to attach the lid to the train body.

Hinged front

18mm ply is again used here, and for this cut one piece 155 by 75mm. Cut a piece of piano hinge 155mm long and use it to attach the front to the nose. Cut a piece approximately 155 by 60mm and shape and glue this in position to support the hinged front (see drawing).

Driver's doors

These are made from the same material and are cut to size accordingly. Cut two pieces 117 by 57mm and cut out the windows 47mm square as shown. Cut two pieces of piano hinge 117mm long, and attach the doors to the body. Trim and rub down until the doors fit snugly in place.

Seats

Using wooden offcuts, cut two pieces 40mm square and 20mm thick, and two pieces 50mm square by 5mm thick and two pieces 50 by 25mm by 5mm thick. Glue together as shown. When these are dry, bore a hole in the centre 25mm in diameter to a depth of 15mm, and glue the backs to the base of the seats.

Driver and guard

From 25mm dowel cut two pieces 45mm long. Bore a hole 5mm diameter to a depth of 10mm in one end of each piece (this will be for the head), rub the top end of each so that it is smooth and round. Now from 5mm dowel cut two pieces 30mm long and glue into the drilled holes.

Into two 25mm wooden balls, bore holes 5mm in diameter to a depth of 10mm. Glue in position for the heads. For the hats, cut two pieces 15mm long from 25mm dowel, and from 4mm ply cut two pieces 30 by 25mm. Glue onto the hats to make the brims and sand down to shape. You will need to trim the top of the head to allow the hat to sit properly. When all is ready glue in position.

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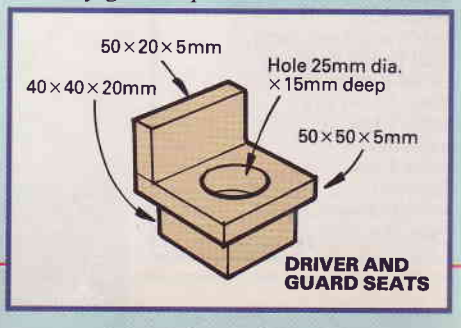


This InterCity 125 toy caters for various different aspects of play as a ride-on toy with a built-in counting frame, plus a skittles game made from the passengers who are housed inside the train.

Rear end with additional arch

Roof with lift-up lid hung on piano hinge

Handles angled back at 20°

Rear Buffers

Driver and guard seats

Control panel

Hinged front

Rear bogie

False floor glued to main floor

Abacus on one side only

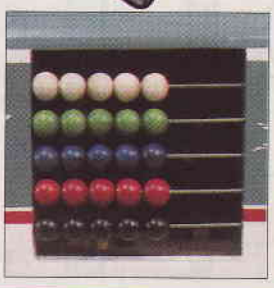
Front steering bogie

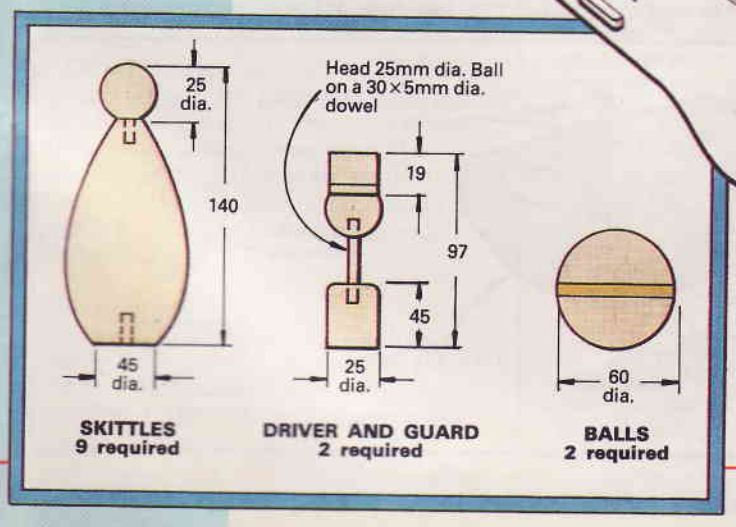
Doors hung on piano hinge

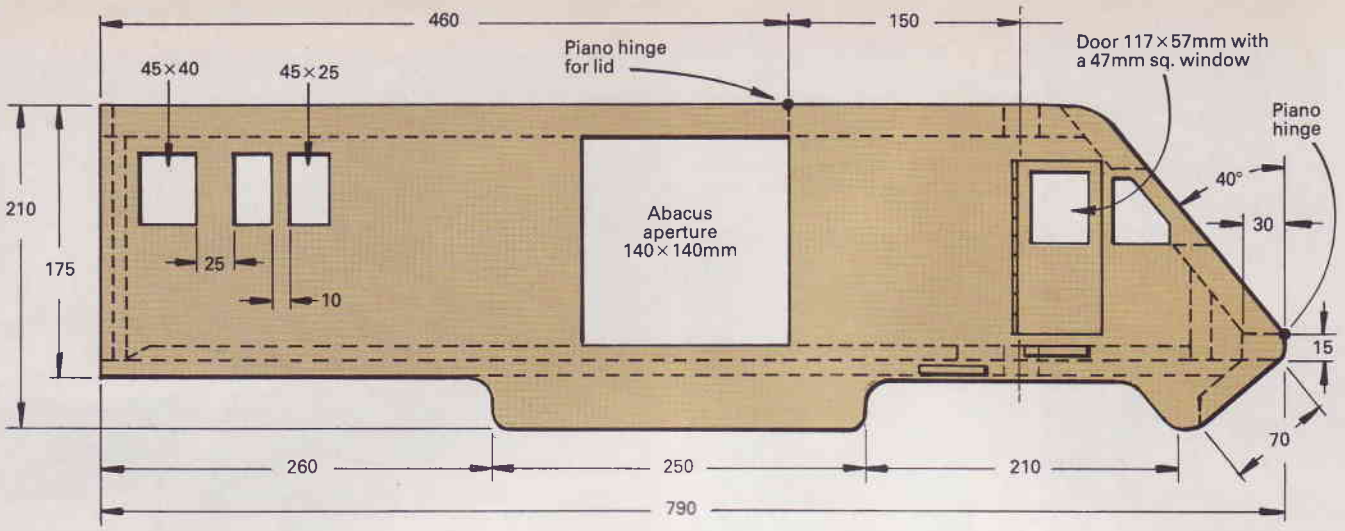
Steps glued and pinned on

Front buffers

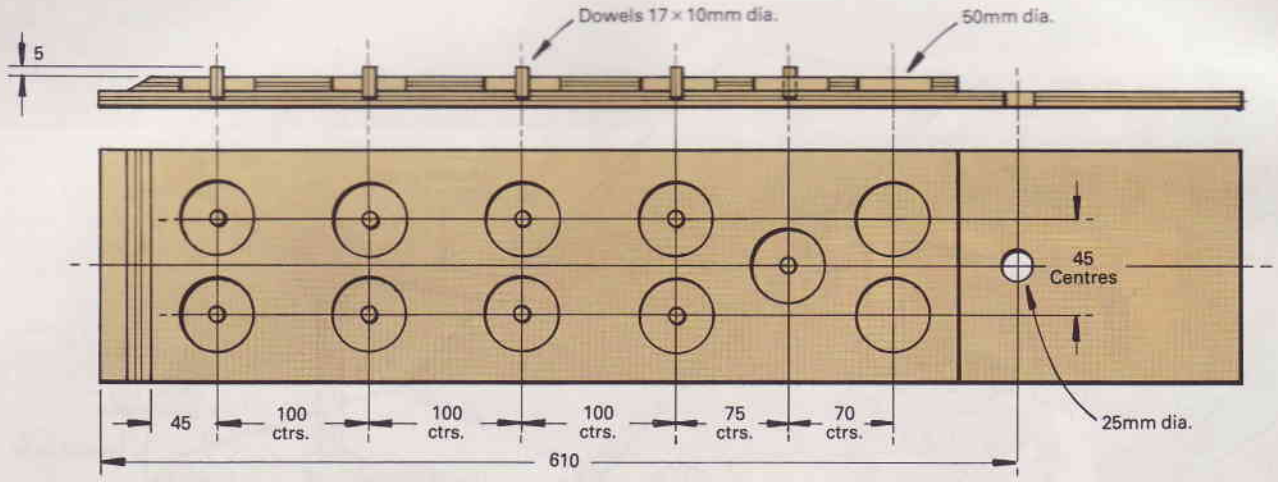
Suspension units fixed each side of front and rear bogies







L.H. side 18mm thick showing position of nose, floors and end etc. with dotted lines



FALSE AND MAIN FLOORS (8mm thick)

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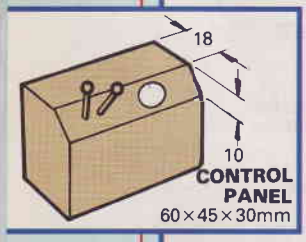
The control panel

From an offcut of mahogany, cut one piece 60 by 30 by 45mm and shape as shown in the drawing. From offcuts of dowel, cut pieces for the instruments and levers and glue them into position as required.



CONTROL PANEL
60×45×30mm

STEERING COLUMN

Handle

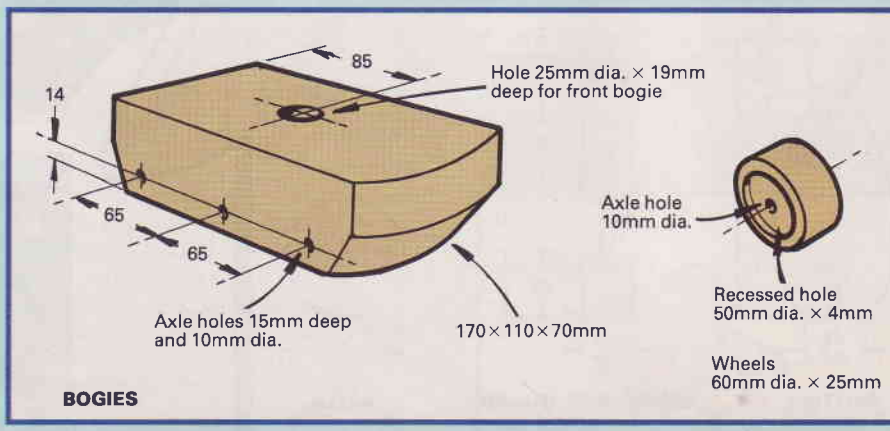
From 25mm dowel, cut two pieces 130mm long. Bore a 25mm diameter hole to a depth of 30mm in a 60mm wooden ball. Bore a further two holes equidistant for the handle grips 25mm diameter to a depth of 20mm as shown. Glue in position. Bore holes 25mm in diameter to a depth of 20mm in two 35mm balls and glue these on the ends of the handle grips.

Front wheel housing

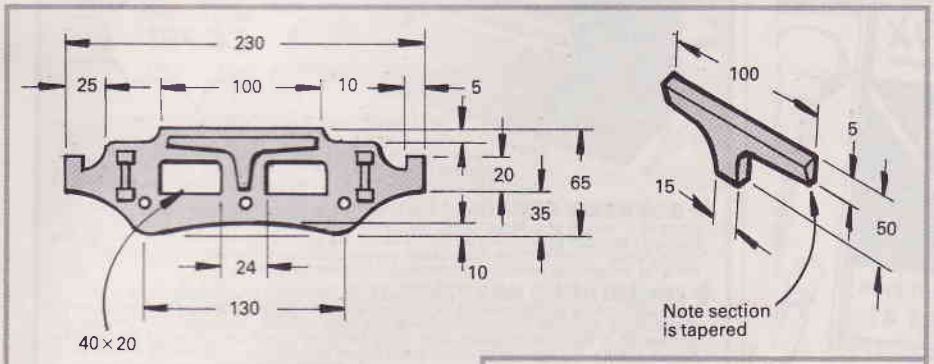
Cut two pieces of mahogany 170 by 110 by 70mm. On one piece mark the centre position and bore a hole 25mm diameter to a depth of 19mm for the front steering bogie, and from 25mm dowel cut a piece 380mm long and glue into position. Turn both pieces onto their sides and bore three holes 10mm diameter to a depth of 15mm. These should be 65mm apart 14mm from the bottom edge.

Repeat this on the other sides so that there are three holes on each side of both pieces.

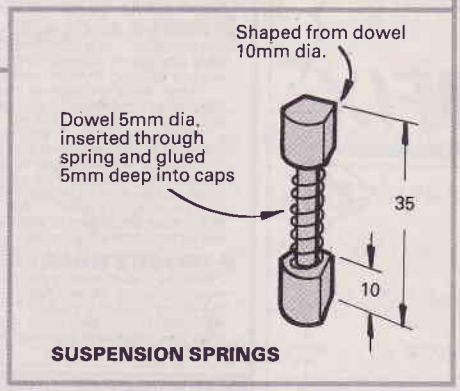
Then from 10mm dowel cut 12 pieces 48mm long. Glue these into position for the axles. Drill a small hole in the centre of one end of each axle for the false suspension unit.



BOGIES



FALSE SUSPENSION UNITS (4mm thick)



SUSPENSION SPRINGS

The wheels

Turn 12 rounds 60mm diameter beech 25mm thick for the train wheels. Make an indent 5mm from the outside edge of the wheels approximtely 4mm deep. Drill a hole in the centre 10mm in diameter. Fit the wheels onto the axles so that they will move around freely (candle wax can be used as a lubricant).

False suspension units

From 4mm ply, cut out four large shapes, and from 8mm ply cut out four of the smaller shapes as shown in diagram. The smaller shapes need to be sanded so that they are thicker at the top. Glue the smaller ones onto the larger shapes. Place against the axles and mark the position of these, and drill a small hole to line up with the holes already in the axles.

Suspension springs

From 10mm dowel, cut eight pieces 10mm long for spring caps. Shape these as shown in the drawing and bore a hole in one end of all the pieces 5mm diameter to a depth of 5mm. From 5mm dowel, cut eight pieces 25mm long. Thread the dowel pieces through suitable springs. Glue caps onto each end of the dowel making sure all rounded ends face the same direction. Glue in position onto the false suspension units.

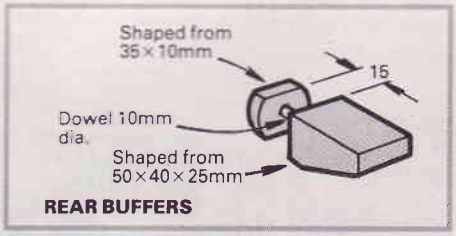
Glue the assembled rear bogie into position. Insert the front bogie through the holes in the floor and roof using the 25mm diameter wooden collar screwed into the dowel above the train floor to keep the steering column in position. Glue the handle grips onto the column.

Front buffers

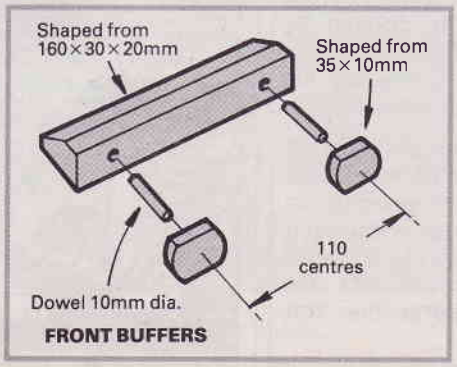
From a wood offcut, cut one piece 160 by 30 by 20mm. Shape the buffer nose as shown. Bore 10mm holes to a depth of 10mm, 25mm from each end, 10mm from the lower edge.

Rear buffers

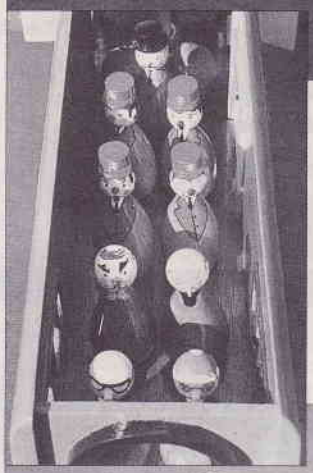
From another wood offcut, cut two pieces 50 by 40 by 25mm, and shape up as shown. Bore a hole 10mm diameter to a depth of 10mm. From 10mm dowel cut four pieces 30mm long. Glue these into position. From offcuts cut four rounds 35mm diameter and 10mm thick. Bore a hole 10mm diameter to a depth of 5mm in the centre of each round. It is advisable to leave these rounds off until painting is completed. Glue the buffers onto the train body so that they protrude at the front and rear of the train.



REAR BUFFERS



FRONT BUFFERS



The brightly painted skittles are located inside the train on dowels which fit within the bases. There are also recesses for keeping the balls housed safely out of the way.

Skittle balls

These are 60mm diameter and can be turned or bought at craft shops.

Skittles

These can be any shape as long as they are no more than 140mm high and 45mm diameter at the base.

Finishing

For authenticity steps to the doors could be added. Rub down and paint in the colours of your choice. After painting, glue the buffer rounds into place.

Do remember to use non-toxic glue and paint throughout assembly and finishing.