

The following gives full instructions to construct a general purpose assistive device using 110mm underground drainage pipes. The design is suitable for most Boccia players.

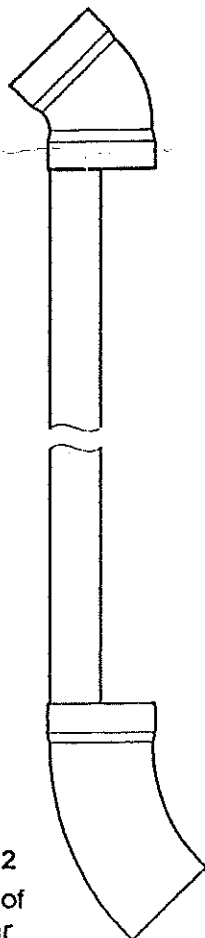
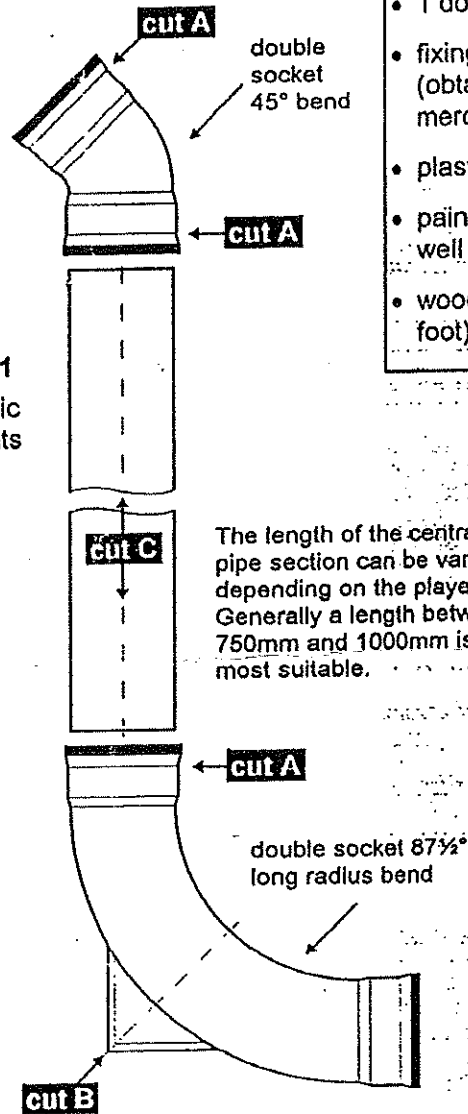
Remove the plastic flanges from the sockets at the top and bottom and cut through the pipe at the points marked [cut A] to remove the end section of each socket (diagram 1).

Cut through double socket bottom section pipe at 45° as indicated [cut B] and cut off the remaining plastic triangular stubs.

Cut the middle pipe section to the required length and carefully cut the pipe in half lengthways [cut C].

- Items required**
- 1 length of 110mm pipe about 1m long (these usually come in 3m lengths)
  - 1 double socket 87½° long radius bend
  - 1 double socket 45° bend
  - fixing solvent cement (obtainable from builders merchants)
  - plastic filler (car bumper filler)
  - paint (car aerosol sprays work well and don't require a primer)
  - wood off-cuts (for the ramp foot)

**Diagram 1**  
Ramp basic components



**Diagram 2**  
Side view of ramp after assembly

Roughen the ends of the pipe and the inside of each socket with sandpaper and apply fixing solvent cement to glue the middle section to the sockets. Do one end at a time and clamp the socket to the half pipe with G clamps until set.

When gluing the ends, ensure that you have them exactly lined up with each other. You may find it helpful to draw a straight line along the back of the central section to ensure both ends are lined up. After assembly the assistive device should look like diagram 2.

cut D

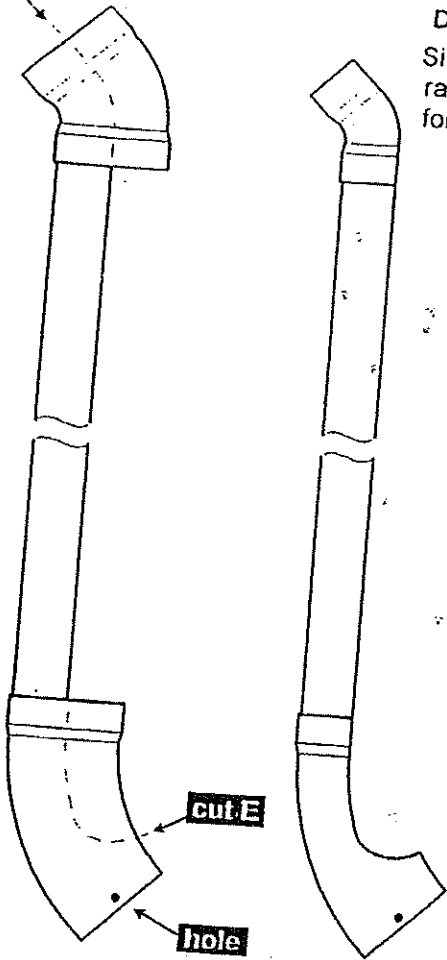


Diagram 4  
Side view of ramp ready for painting

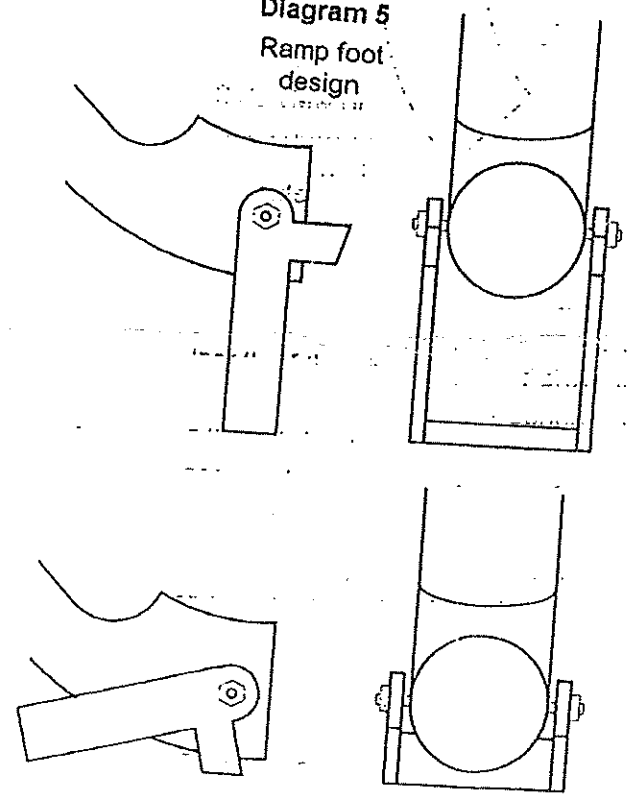
Diagram 3  
Side view of ramp showing positioning of cuts

At the top end of the ramp the short radius 45° bend needs to be cut in half lengthways to form a semi-circular pipe section [cut D]. At the bottom end the socket also needs to be cut to form the semi-circular pipe the same as the central section [cut E] but do not cut all the way through. Bring the cut round to the top of the socket so that the final 50mm of the ramp stays as a complete pipe as indicated.

Now drill two small holes, one on either side, approx. 4mm Ø at the point indicated. These should be approximately 10mm from the end of the ramp. These will hold the bottom foot in position.

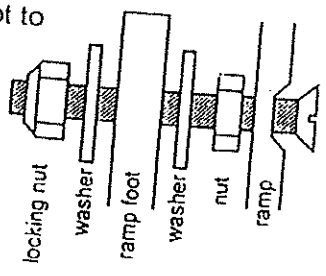
Round off any sharp corners and smooth all the cut sides. Apply plastic filler to the internal sides of the joints to ensure that the internal surface of the ramp is smooth. When dry, sand the filler to form a smooth surface. Lightly sand the whole of the ramp to provide a key for a coat of paint. All that remains is to paint the ramp and construct a ramp foot.

Diagram 5  
Ramp foot design



The ramp foot (diagram 5) is an essential component of the ramp facilitating the player's ability to vary the length of the shot as well as providing stability for the ramp to ensure it remains upright. There are many different designs which fulfil the same function. The design shown is constructed of wood and joined to the ramp using two small countersunk bolts which protrude out from the ramp. The hole in the ramp is countersunk on the inside to ensure there is no obstruction for the ball (diagram 6).

Diagram 6  
Attachment of ramp foot to ramp



This basic ramp design can be varied to construct a variety of different ramps depending on the player. Designs using other drainage pipe components can also be tried. There are no right or wrong designs or measurements, providing the ramp works for the player. The top socket of the ramp can be omitted, but is useful for players who don't physically hold the ball as the ball can be placed on the ramp and then pushed down. The materials listed are enough to construct two ramps, one with a top section and the other without.