The main components used in the construction of the lamp are as follows.

The *arc tube* is made of polycrystalline alumina (PCA). This material is ceramic rather than a glass, this makes it very hard to work as it is not possible to soften it and it is hard to cut. PCA is used because it is resistant to chemical attack by hot sodium, it is stable at high temperatures and it is transparent.

Because it is not possible to work the PCA the tube is cut to length and fitted with *end caps*, Figure 3.26 shows some of the designs used for closing the ends of the discharge tube.

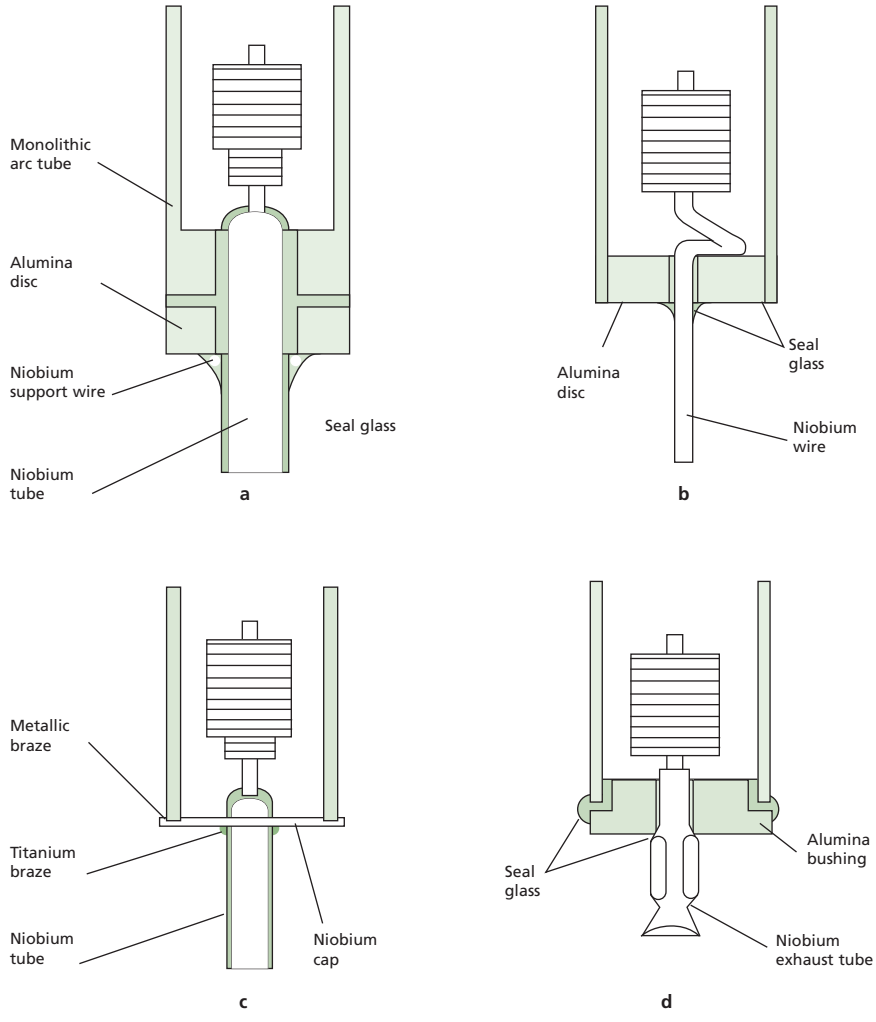

Figure 3.26 Types of arc tube seal in high pressure sodium lamps

The use of niobium metal as part of the end cap assembly is common as it expands with temperature at the same rate as the PCA tube and thus does not cause stresses in the lamp as it heats up.

The *electrodes* in the lamp are made from tungsten rods with tungsten wire wound around them, with emitter material made from oxides of metals such as barium, calcium and yttrium.