

Flanges

The increase in pressures permissible in ductile iron pipelines, and the extension in the range of uses to which they may put, have led to inclusion of four types of flange corresponding to the nominal pressure PN 10, PN 16, PN 25, PN 40 respectively.

Flanges can be cast integral with the corresponding casting or cast separately and attached by any known means, such as screwing and welding, they can also be fixed or removable. The later arrangement makes casting mounting and PN change easier. Loose flanges can be used under the same service conditions as fixed flanges.

A loose flange is comprised of a ring, in one or several parts bolted together, which bears on an end joint collar. The ring can be freely rotated around the pipe axis and can thus be positioned for the alignment for the bolt holes. The external diameter and the drilling details are the same for fixed and loose flanges.

It should be noted that the diameters of bolt holes of a various types of flanges are 1 mm larger than those envisaged for pipelines not lay in the ground. This increase makes it easier to assemble the castings, which is sometimes difficult in the case on underground pipelines.

The diameter of the holes has been fixed according to the nominal diameter of the bolts in accordance with the following rule:

- For a bolt < M20 : nominal diameter of the bolt + 3 mm;
- For a bolt > M20 : nominal diameter of the bolt + 4 mm;
- For a bolt > M20 : nominal diameter of the bolt + 6 mm.

Fittings

The greater mechanical strength of ductile iron has made it possible to improve the design of fittings and to reduce their dimensions.

This makes it easier to lay mains in congested urban areas of large towns, and results in reduction in the size of valve chambers, the dimensions of which depend mainly on the space occupied by the fittings.

Thickness

The thickness of fittings has been calculated as a function of the nominal size DN by using the formula in clause 5, with the following values for k.

$$K = 14 \text{ for tees, thus } e = 7 + 0.014 \text{ DN}$$

$$K = 12 \text{ for other fittings, thus } e = 6 + 0.012 \text{ DN}$$

Deviations on standard working length

The permissible deviations on the standard working lengths of fittings with sockets and fittings with flanges are mentioned in ISO 2531 section 6.

Tolerances on manufacturing working lengths

The standard tolerance on the manufacturing working lengths of all fittings with flanges in all nominal sizes -+ 10mm.

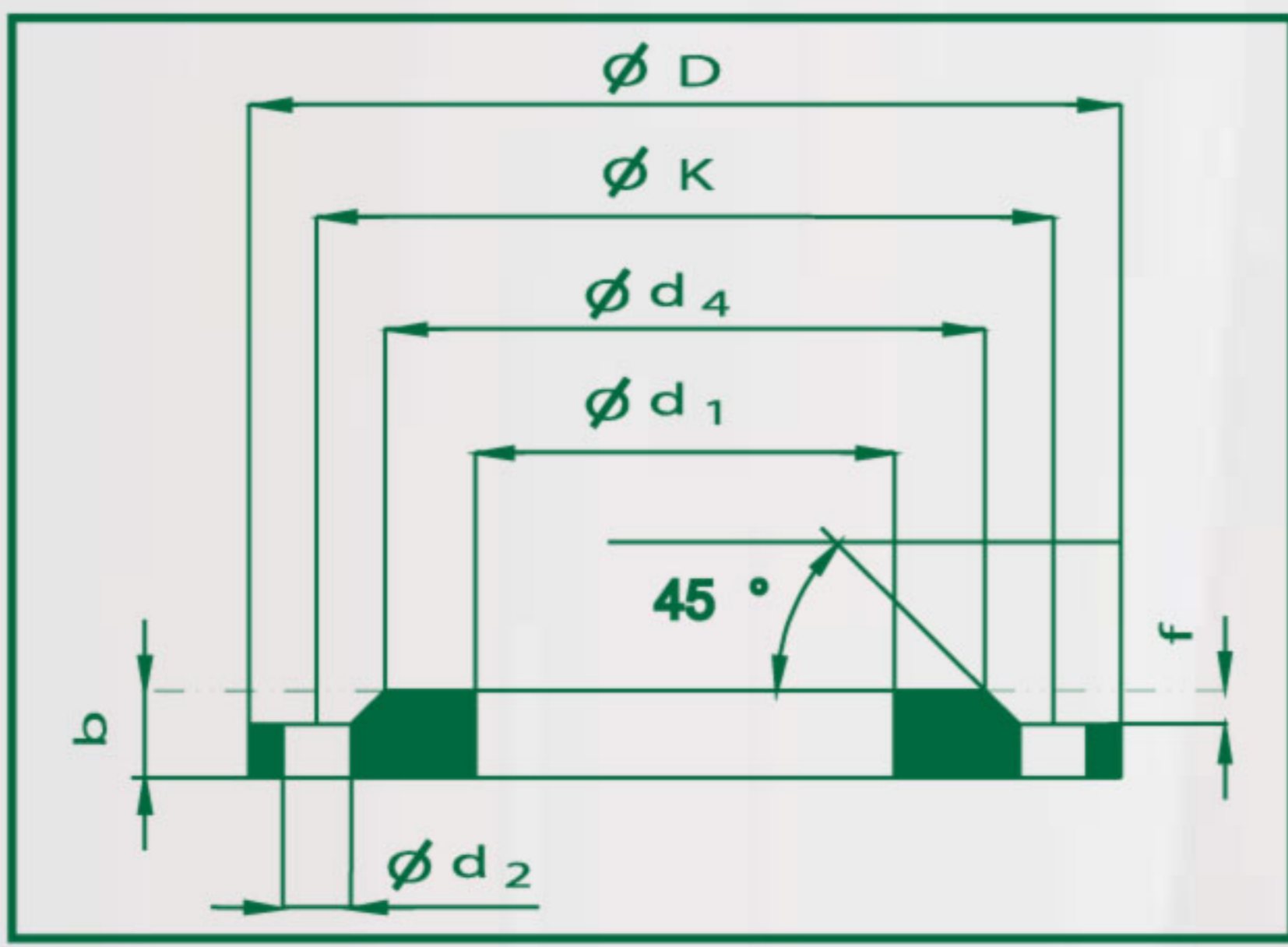
Works Leak-tightness Test

The fittings shall be submitted at the works to a leak-tightness test carried out either with air at a pressure of 1 bar or with water at the pressure give in previous table.

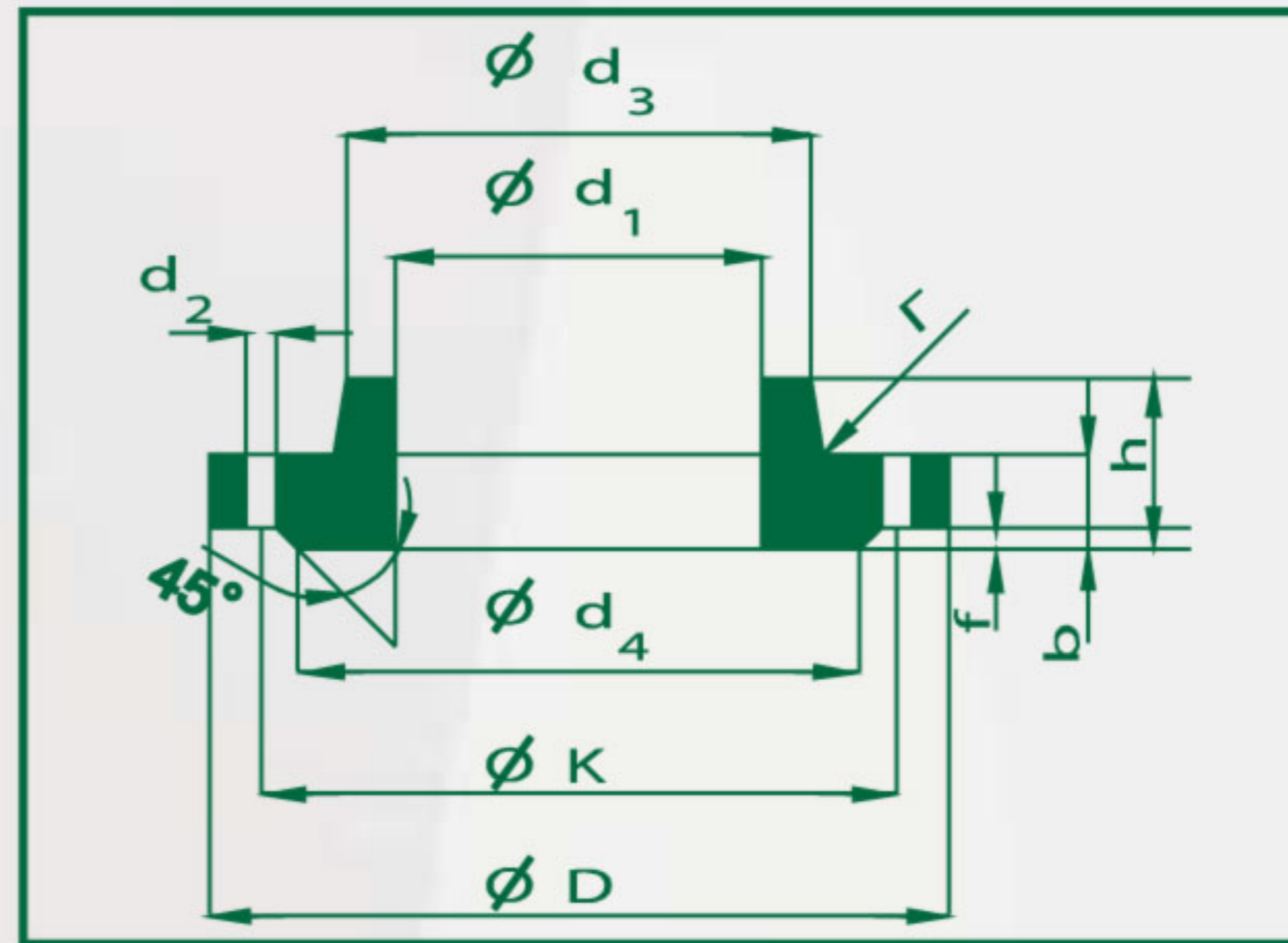
Nominal size DN	Hydrostatic leak-tightness Test pressure, bar
80 to 300	25
350 to 600	16
700 to 2000	10



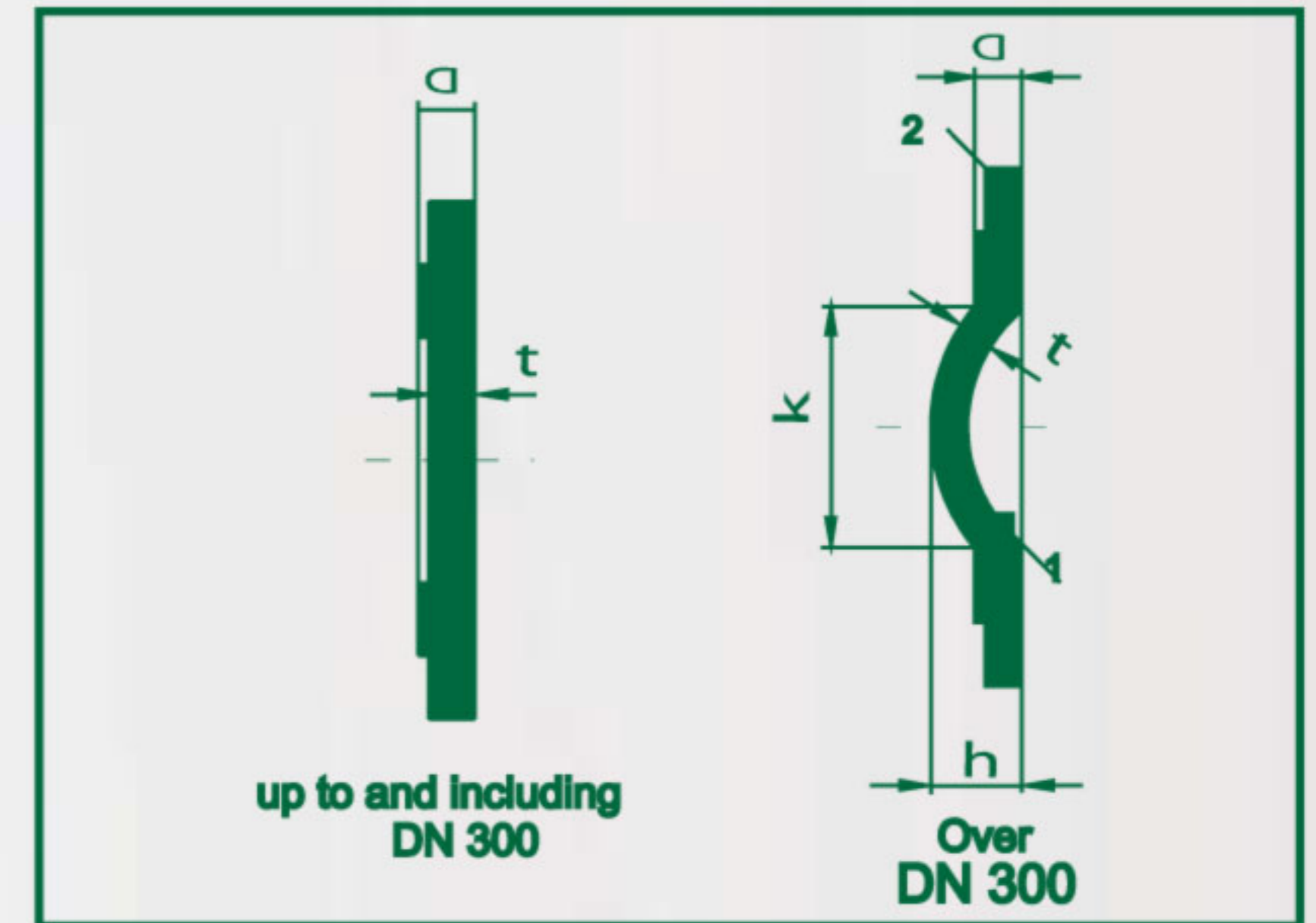
Flanges



Normal Flange



Neck Flange

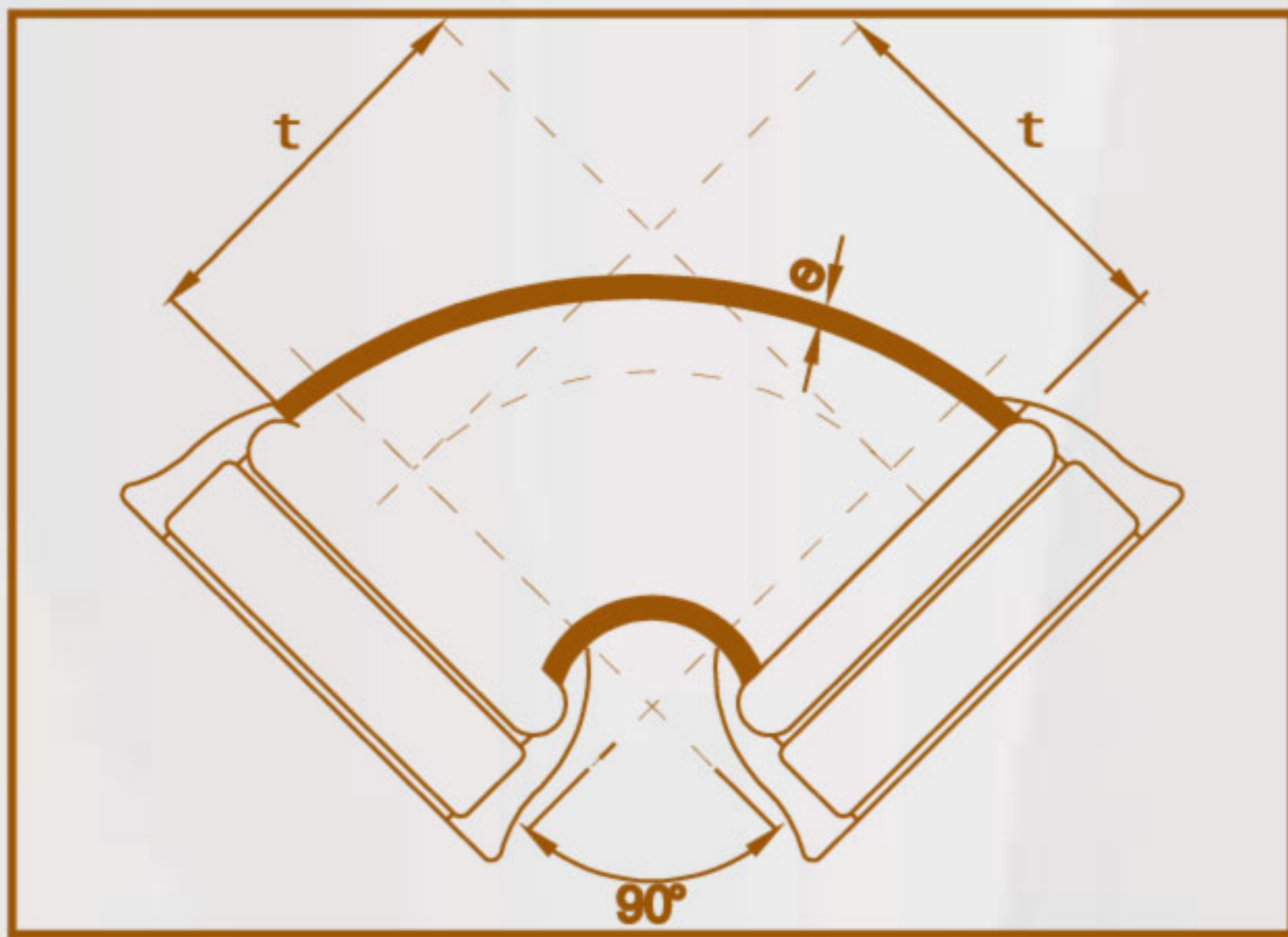


Blind Flange

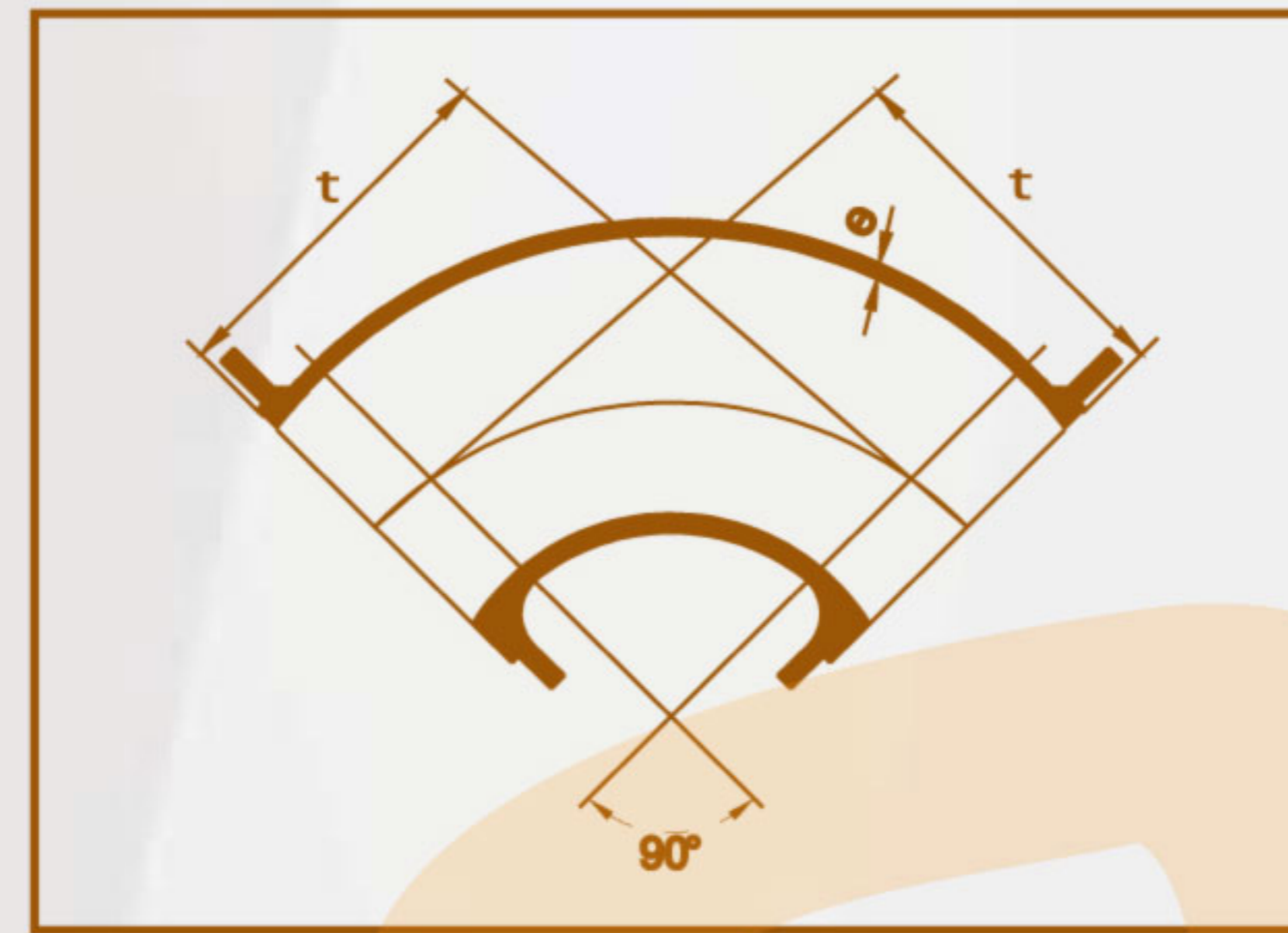
up to and including
DN 300

Over
DN 300

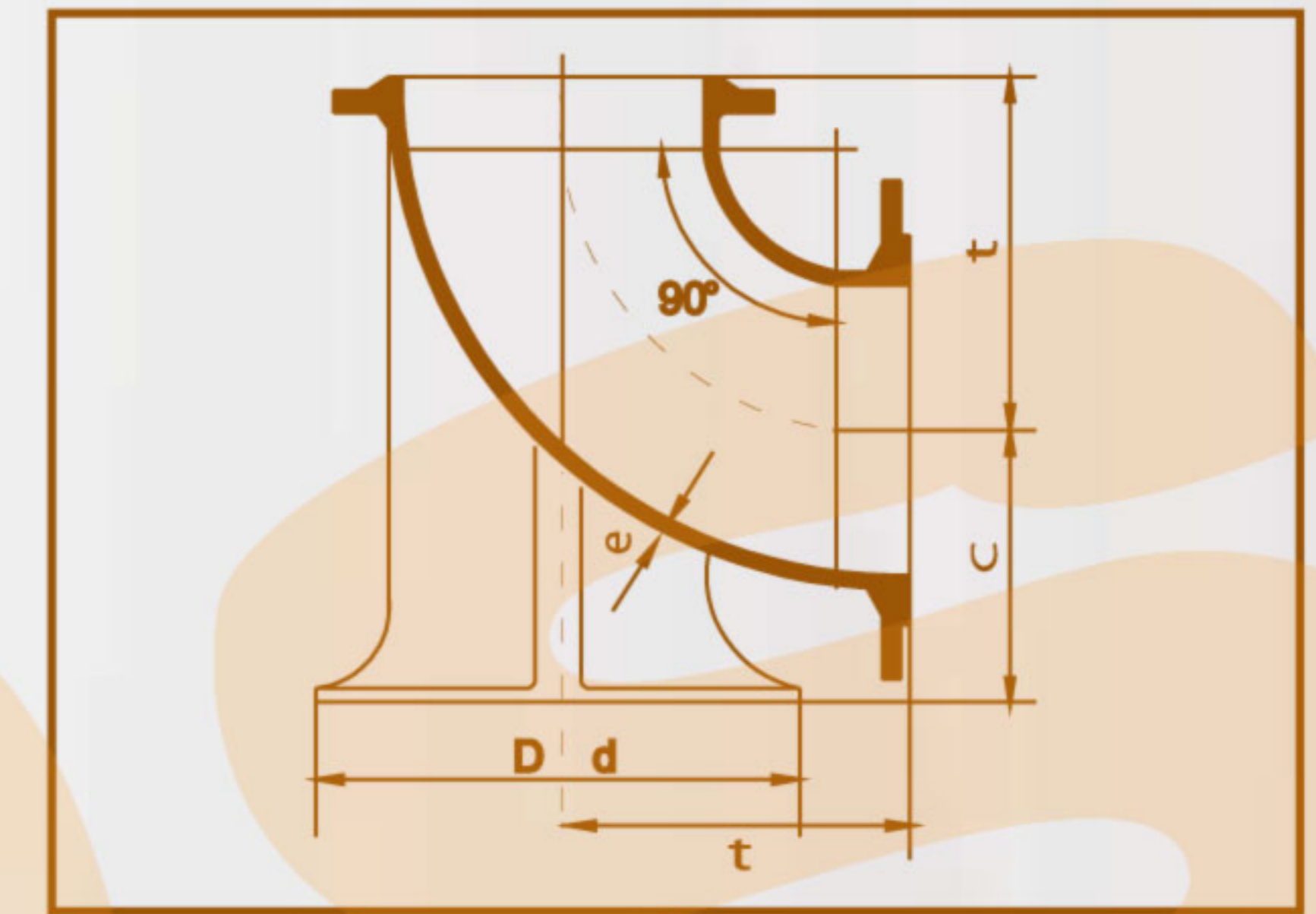
Bends



Double Socket Bend

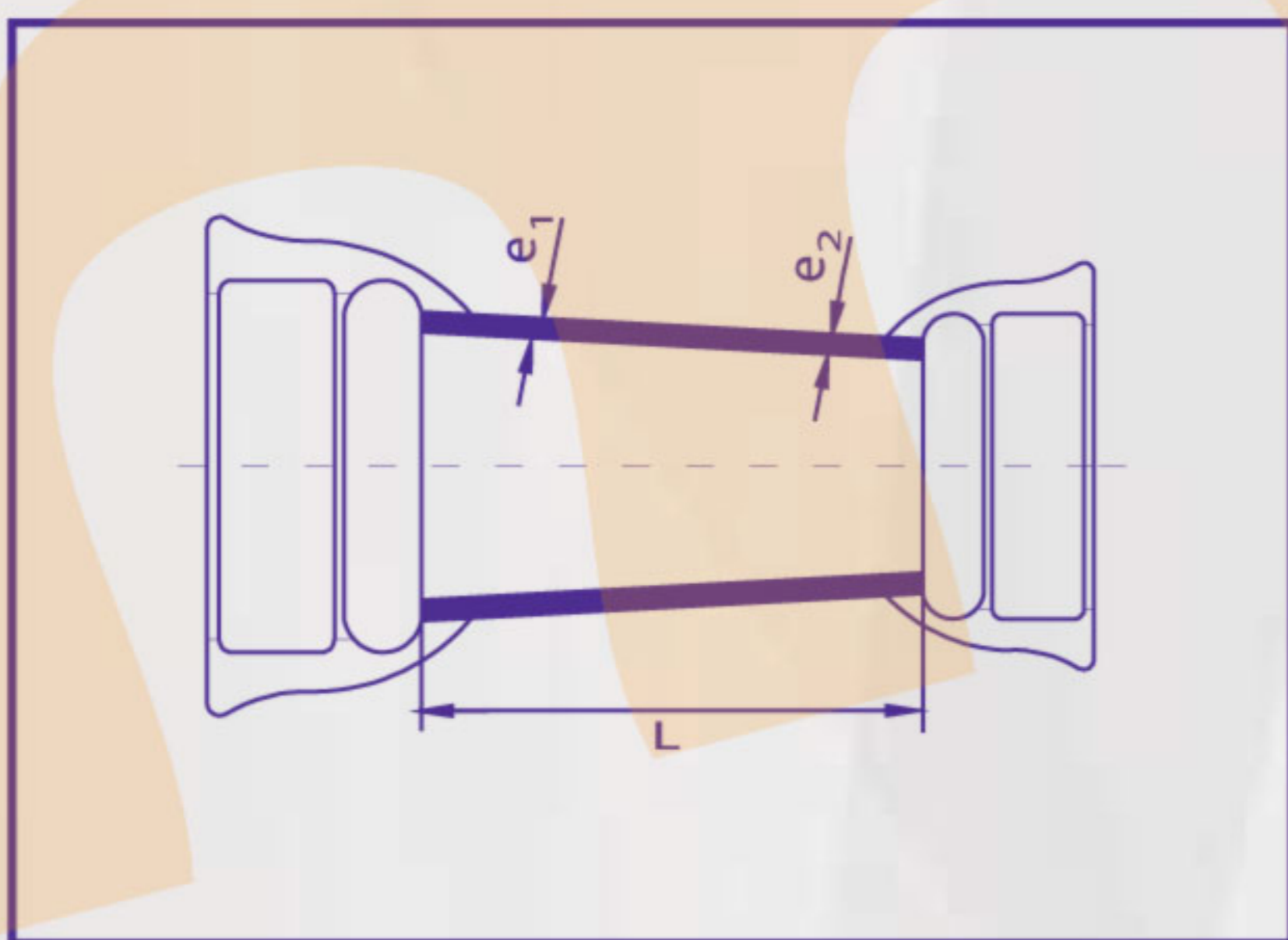


Double Flange Bend

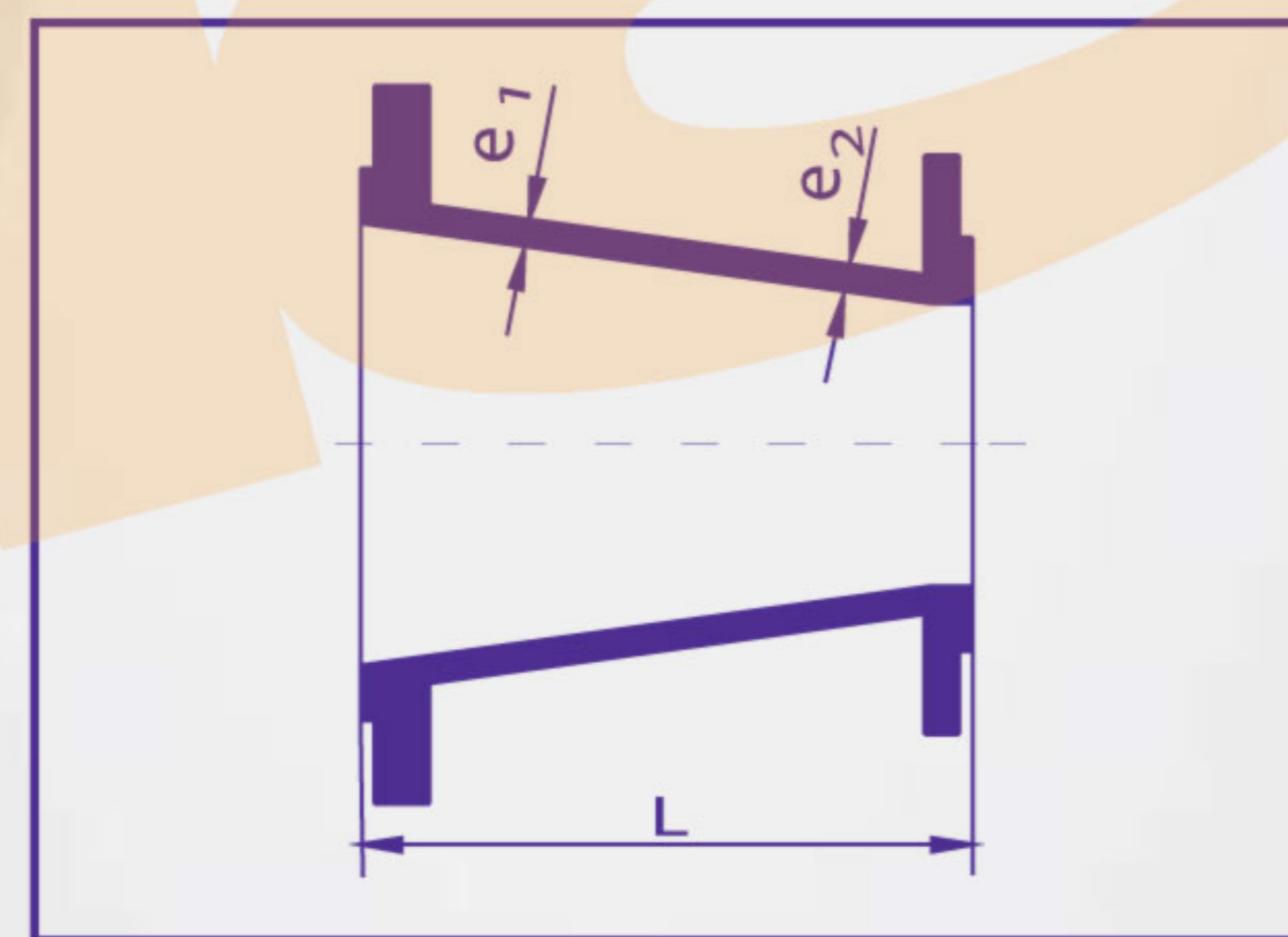


Double Flange Duck Foot Bend

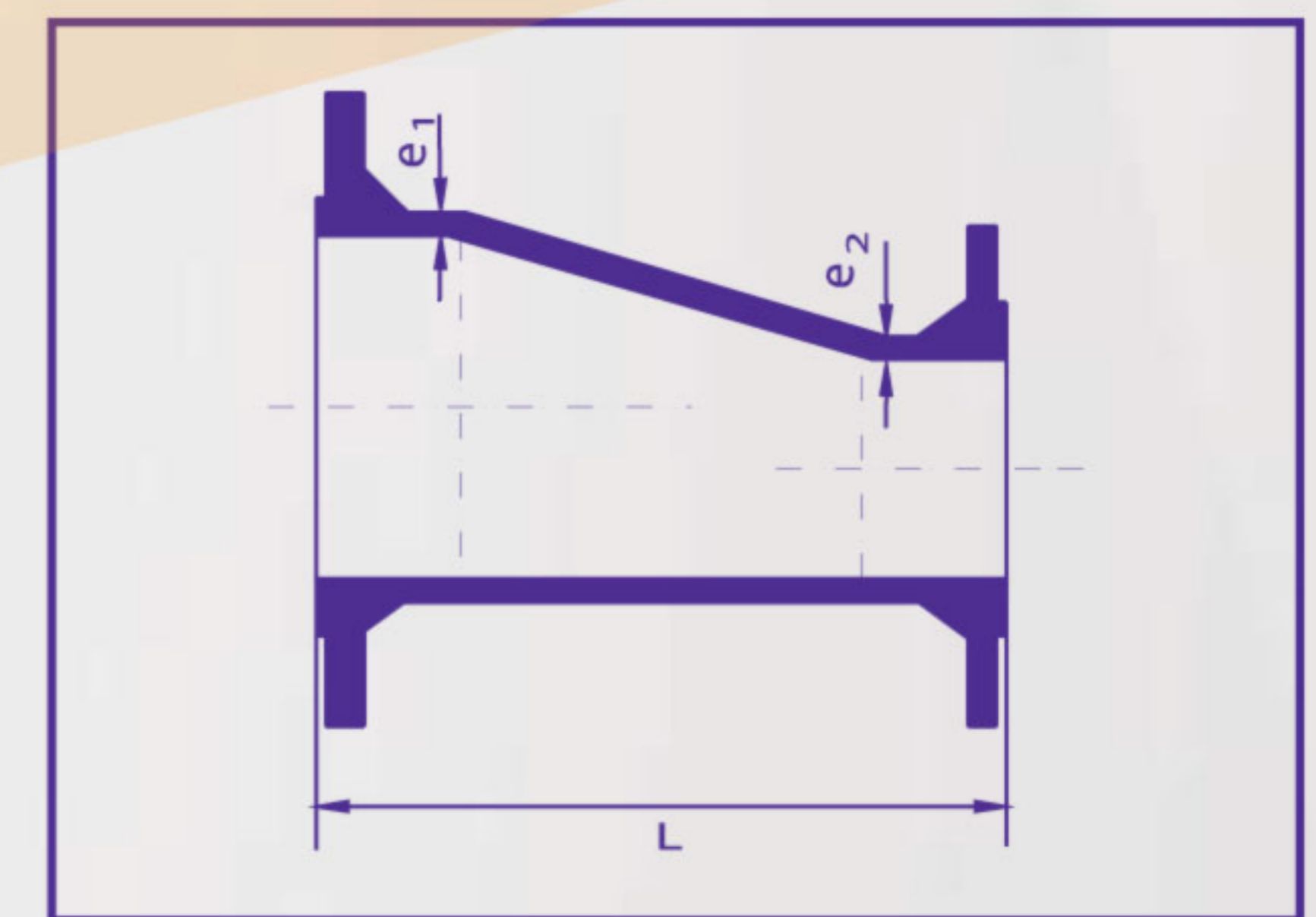
Reducers



Double Socket Reducer(Taper)

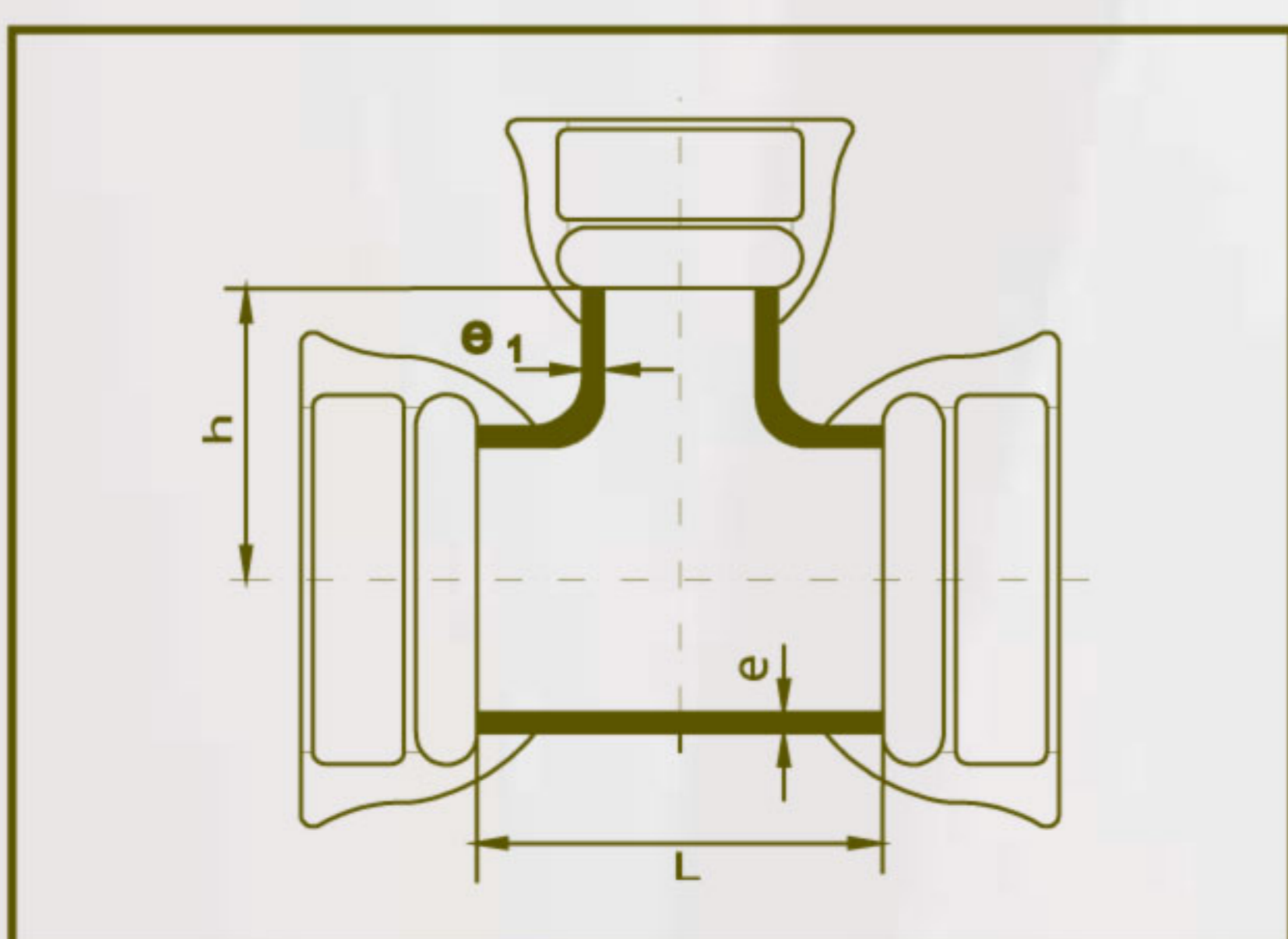


Double Flange Reducer(Taper)

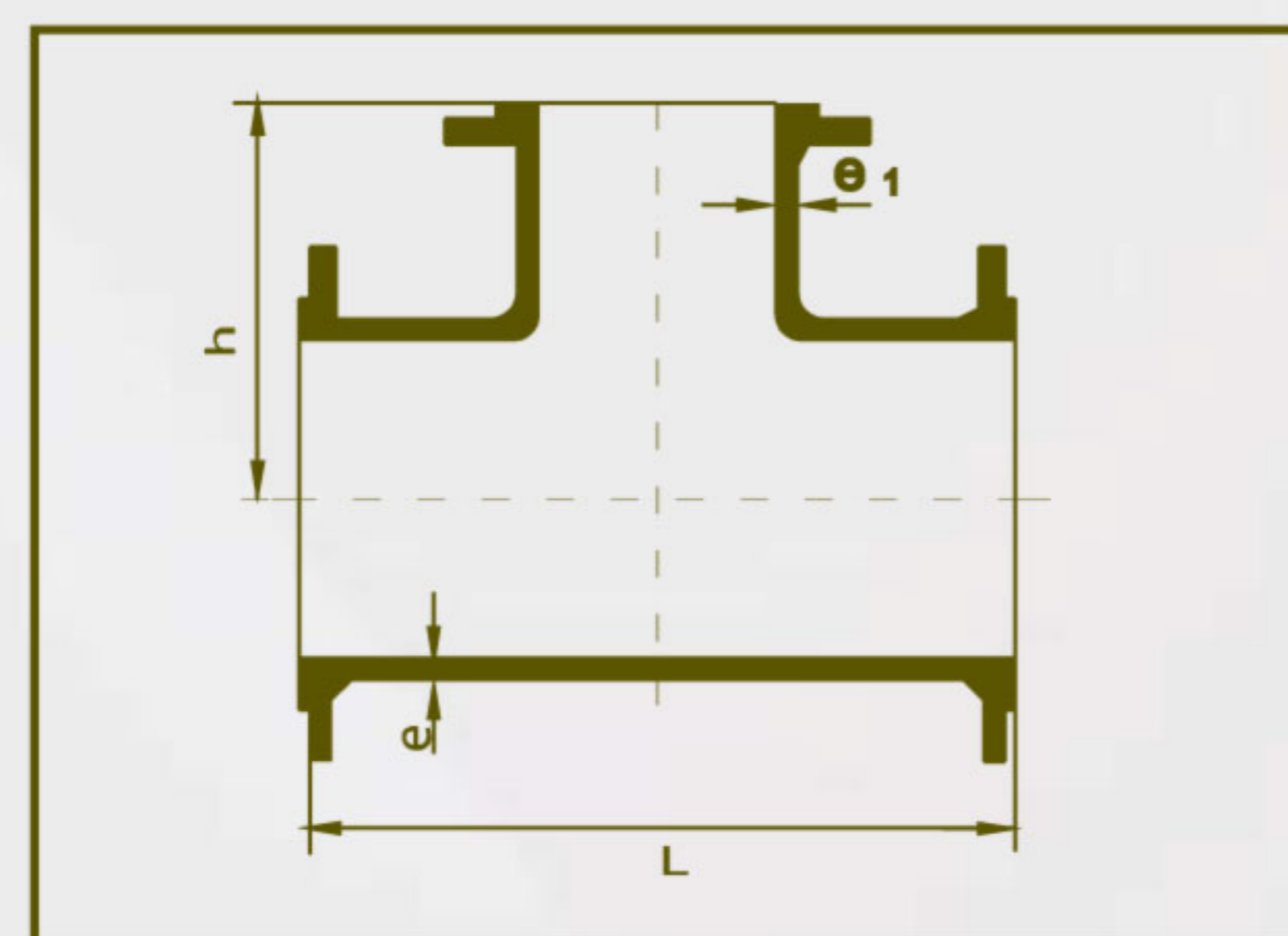


Double Flange Flat Reducer(Taper)

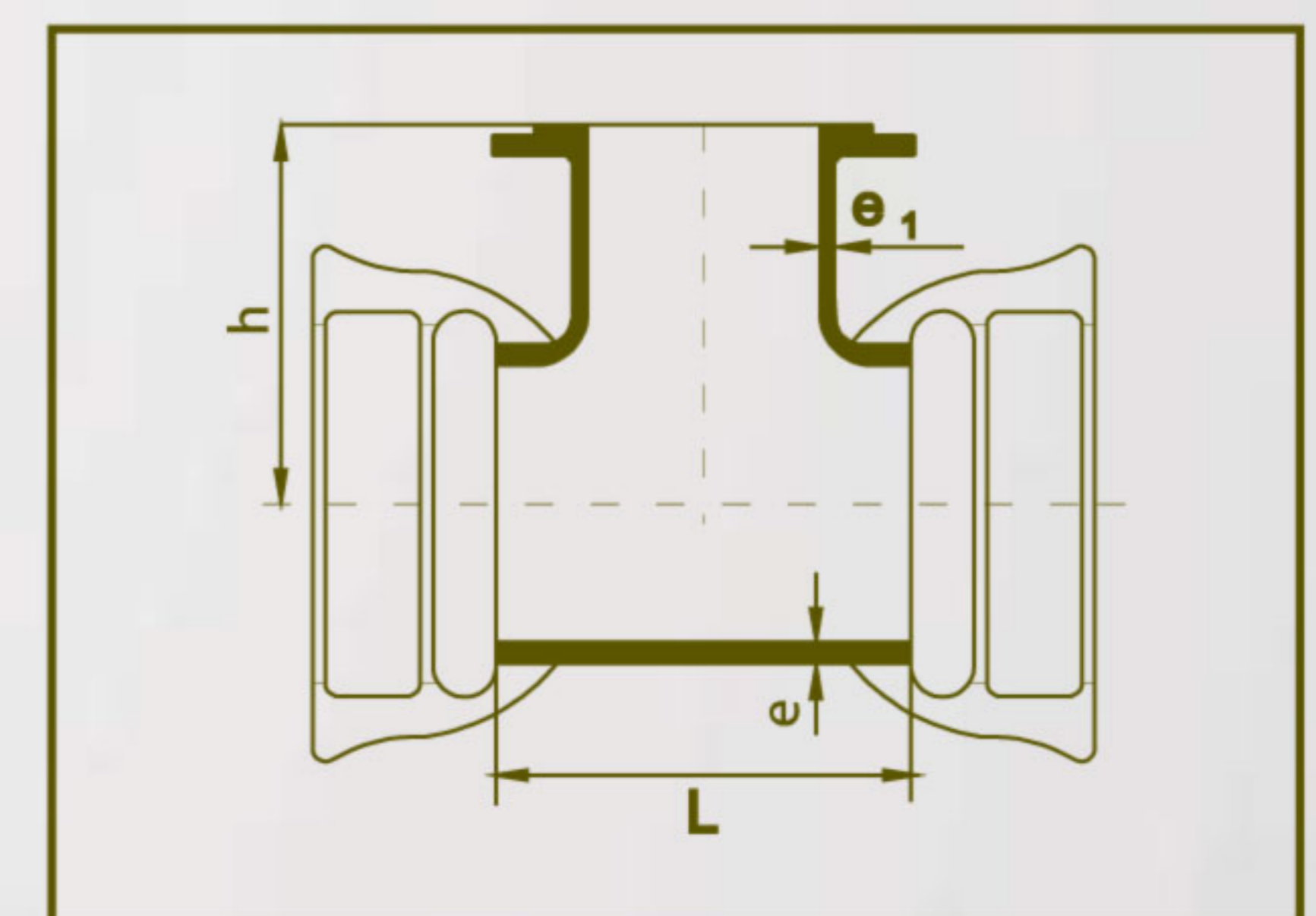
Tees



All Socket Tee

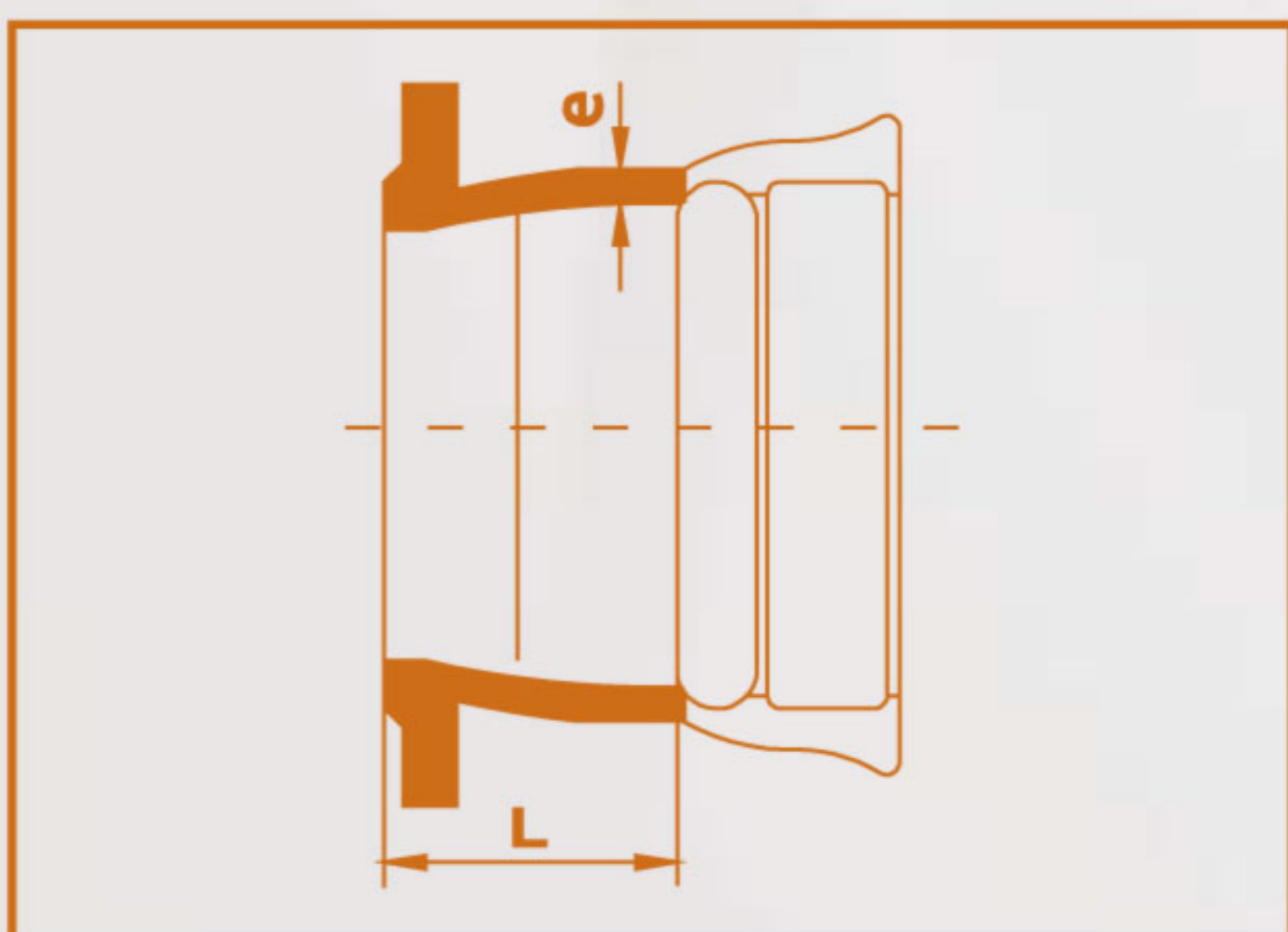


All Flange Tee

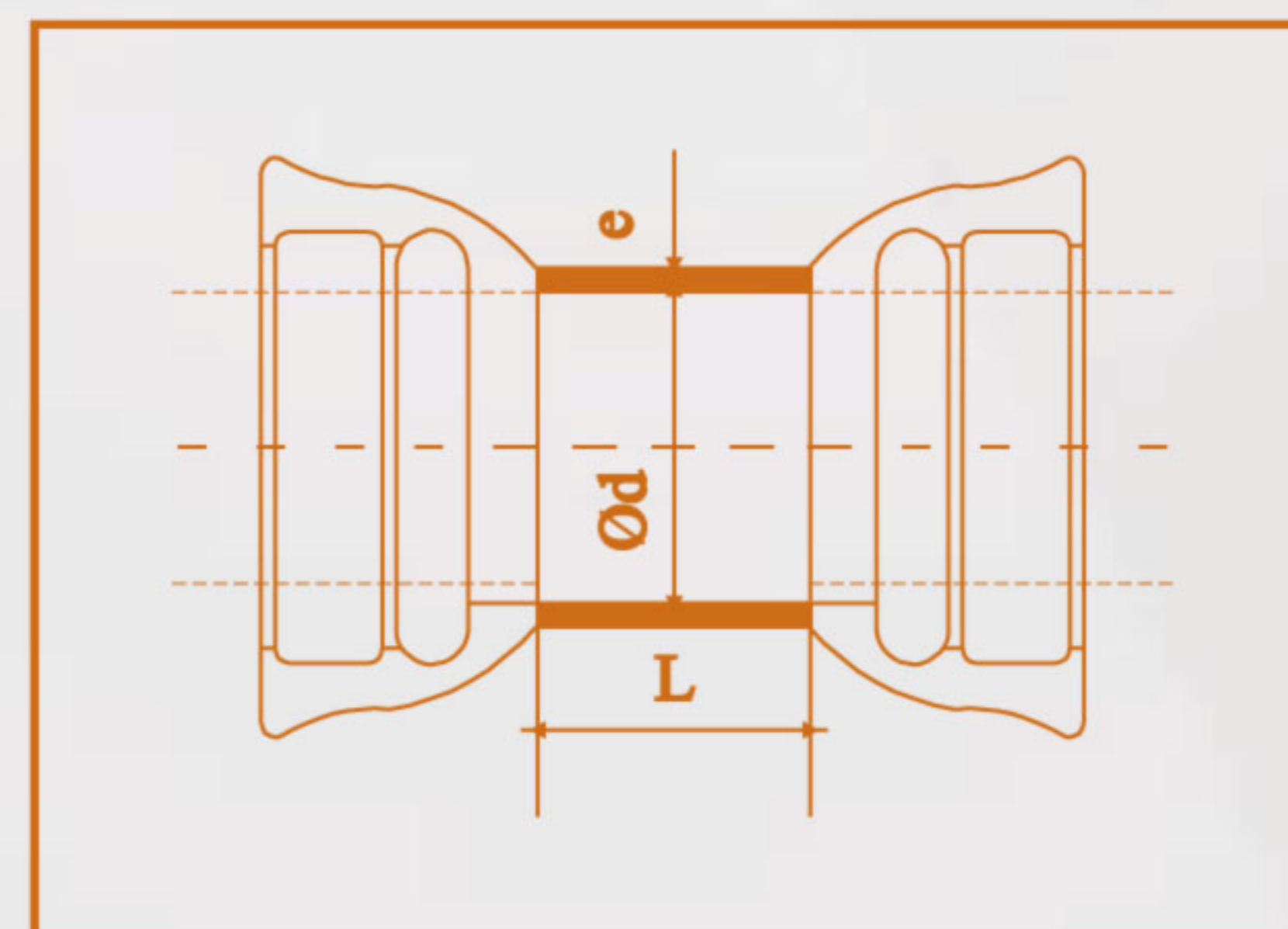


Double Socket Tee with Flange Branch

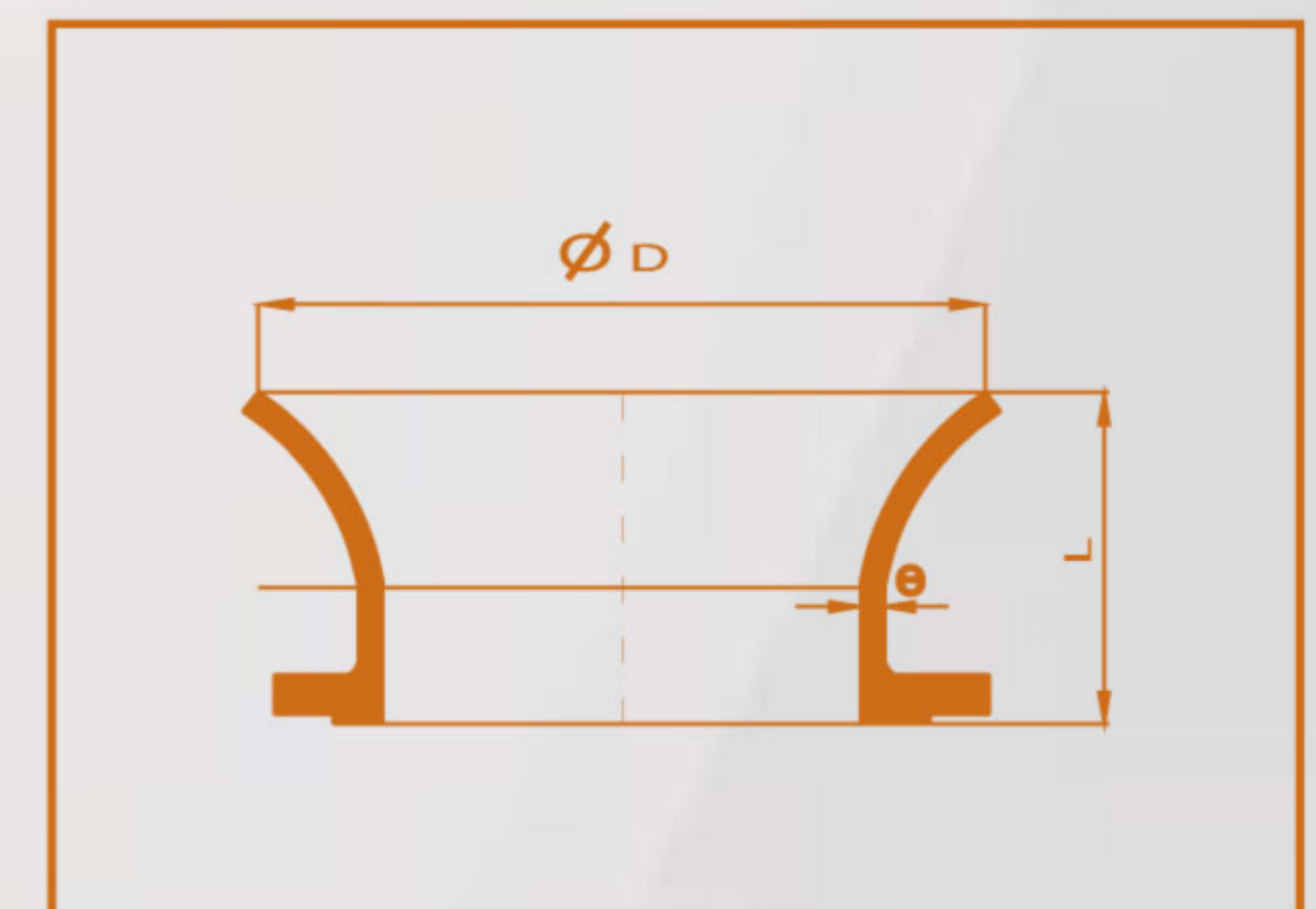
Others



Flange Socket



Collar



Flanged Bell Mouth