A.16.11 Influence of a crossbar on the blast orifice position.

<As shown by the tests, a crossbar increases the width of the jet. This would allow a higher position of the orifice. However, an increase in blastpipe pressure should be taken into account.

Strahl used data from 15 locomotives to show that his formulae confirmed good practice. Two of the locomotives could do with an improved front end. The G8 type D goods locomotive was an example of which newly built locomotives received a front end in accordance with Strahl's suggestions.>

A.16.12 Final remarks

<Strahl claims to have proven that the tapered chimney is better than the parallel one. The orifice area can be made larger in relation to the grate if the chimney taper is increased or the lower the resistance to fire stimulation is. The values of coefficients have been established. Also the vacuum for an effort of 400 kg coal/hr has been calculated. From this it could be concluded that the resistance and the vacuum of a superheated locomotive were smaller than for a saturated one. This should be attributed to the lower resistance of the flues. However, chimneys and orifices of superheated locomotives seem to be notably narrow!

The resistance coefficient κ appears to be between 37 and 66. The largest, most economical, orifice for λ = 0.81, as an example, would then be between $\frac{0.03 \cdot 10^4}{0.9\sqrt{37}}$ or about 55 and $\frac{0.03 \cdot 10^4}{0.9\sqrt{66}}$ or 41 cm^2 for 1 m^2 of grate area. The first value is 34% larger than the second!
From this should follow that a single average number for κ should not be used, as Zeuner had done for the comparable coefficient μ. The precision of the method depends on the correct determination of the resistances. Solving that problem was Strahl's goal.

The methods would need one addition. It has been stated that the chimney would need to be of a certain length in order not to have a too sudden transition from vacuum to atmospheric pressure.

"….This length should have a certain ratio to diameter that can only be exceeded. Zeuner concluded that the chimney length did not have a significant effect on the fire stimulation of the exhaust system. This is contrary to the results of tests carried out by Goss in America. These showed a better vacuum the longer the chimney was. This could be clear for a tapered chimney, but why this should also be the case for a long cylindrical chimney is not easily realised. This question would need clarification. However, it is of lesser importance as reality has shown that chimneys are not made too short in comparison to their diameter. This is experience to cling on to…."