

# Conductor loading

The name plate value of current, also given in the designation of the GOH bushing, is a reference current and not the permissible current for the bushing. The permissible current is very much dependent upon the temperature conditions around the bushing. Knowing the temperature of the surrounding transformer oil and the ambient temperature of the air side of the bushing, one can calculate the permissible current by using the diagram in Fig. 7. This diagram is verified by thermal tests which are in accordance with IEC 137.

$t_1$  Highest temperature (hot spot) allowed on the bushing. In normal service this should not exceed 105 °C.

$t_{A1}$  Ambient temperature on air side of the bushing. This depends greatly on whether the bushing is enclosed or not, and if enclosed, on how the enclosure is designed.

$t_0$  Temperature of the oil around the bushing. With forced cooling  $t_0$  is often relatively low compared to the maximum allowed temperature given in transformer standards.

$t_{A2}$  Mean daily ambient temperature around the transformer.

$\Delta t$  Top oil temperature rise for the transformer.

## Example:

$$I = 11 \text{ kA}$$

$$t_{A2} = 30 \text{ °C}$$

$$\Delta t = 55 \text{ K}$$

$$t_0 = t_{A2} + \Delta t$$

$$t_0 = 30 + 55 = 85 \text{ °C}$$

$$t_{A1} = 45 \text{ °C}$$

$$t_1 = 105 \text{ °C}$$

$$t_1 - t_0 = 105 - 85 = 20 \text{ K}$$

$$t_1 - t_{A1} = 105 - 45 = 60 \text{ K}$$

The permissible current is obtained from the diagram.

For GOH 170/10      9.3 kA

For GOH 170/16      15.2 kA

For GOH 170/25      23.0 kA

GOH 170/16 will in this case be chosen.

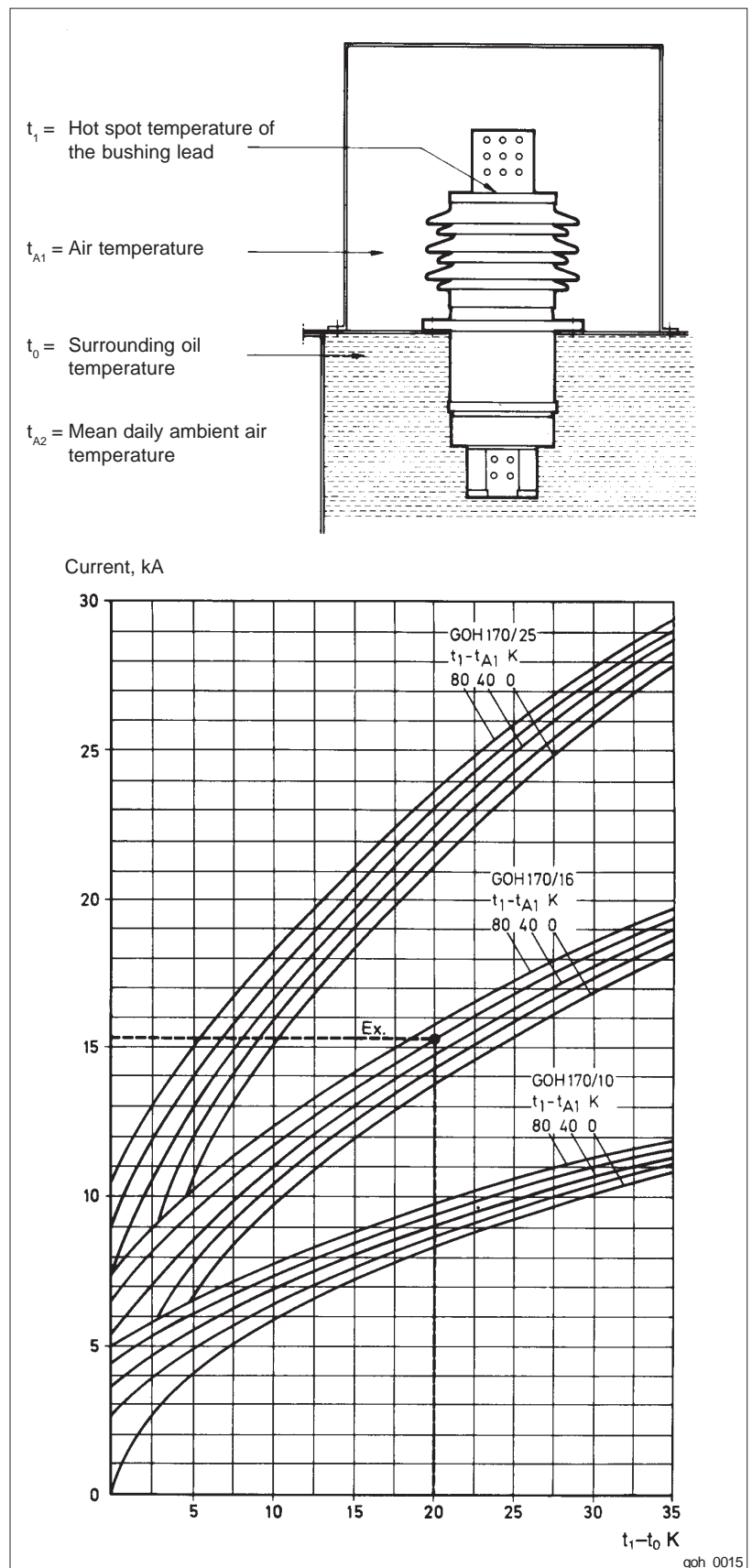


Fig. 7. Current capacity