

Installation and ventilation

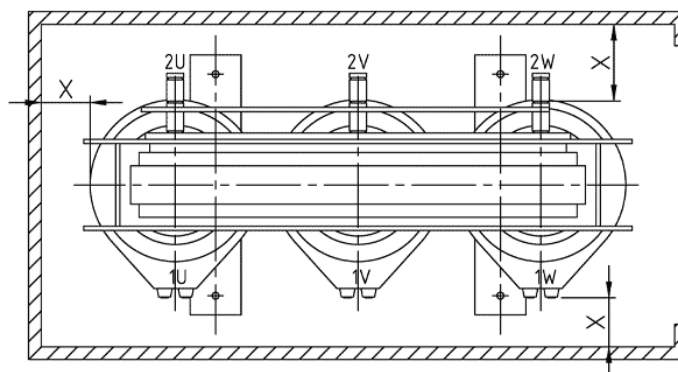
Installation of resin-encapsulated transformers in interior facilities (IP 00)

The windings of the transformer are under voltage and must not be touched during operation. They are to be protected against moisture and dirt.

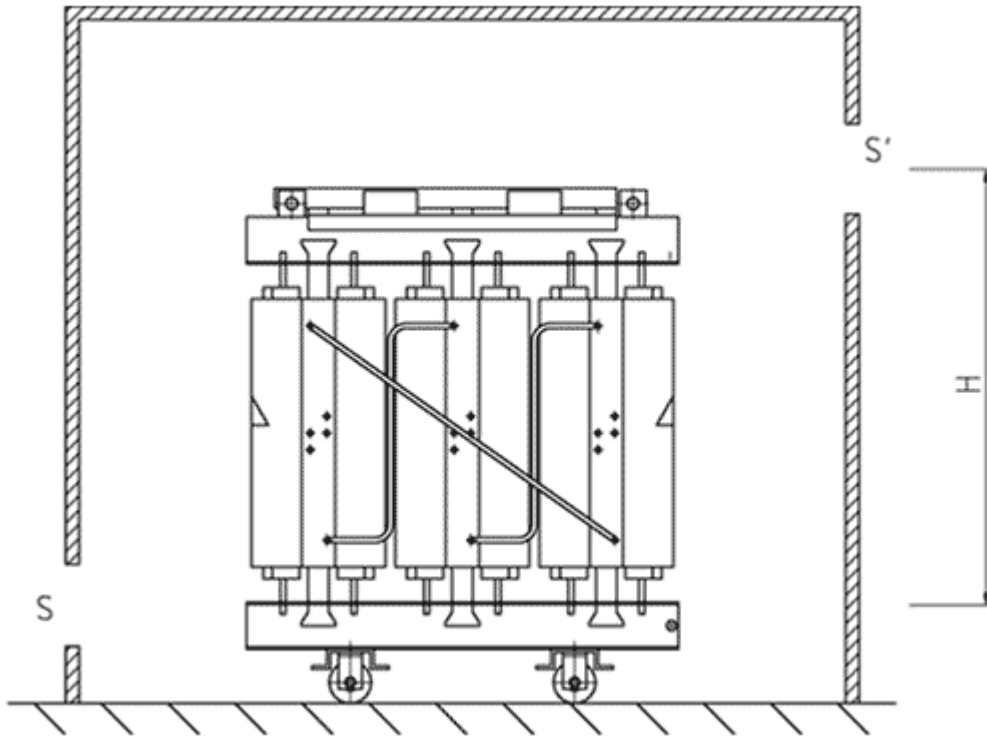
Please note the following rules when installing transformers under Degree of Protection IP 00:

- There is no protection against touching or direct contact of live components.
- Degree of Protection IP00 does not include any protection against moisture or dirt. For this reason, it must be ensured that the transformer is not in direct or indirect contact with water. Fouling, such as accumulation of dust, etc., must be avoided.
- The transformer room ventilation must ensure adequate heat removal (see "calculation of ventilation openings"). In order to assist natural convection, fresh air should flow into the lower section of the transformer room and flow out at the top on the opposite side through ventilation openings.
- The minimum distances from the solid or grid walls of the installation location can be found in the following table:

Um [kV]	LI [kV]	AC [kV]	Distance from solid wall X [mm]	Distance from grid wall X [mm]
1,1	-	3	40	-
3,6	20	10	60	160
7,2	40	20	65	165
12	60	28	90	190
17,5	75	38	115	225
24	95	50	160	260
36	145	70	270	370



Applies to an installation altitude up to 1000 m above sea level.



Calculation of ventilation openings:

P = Total of no-load and short-circuit losses in kW

S = Unobstructed area of fresh-air inlet opening in m².

S' = Unobstructed area of outgoing air opening in m².

H = Height between the two openings (middle: middle) in m.

$$S = \frac{0.18P}{\sqrt{H}} \quad S' = 1.10 \cdot S$$

Applies for an average ambient temperature of 20°C and a maximum installation altitude of 1000m above sea level.