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INSTRUCTION MANUAL FOR OBTAINING THE PROTECTION DEGREES - EXTERNAL

This document defines the modifications to the standard version of UniGear needed to obtain higher degrees of external protection. The standard version of the UniGear switchboard guarantees the following degrees of protection.

IP4X externally
IP2X internally

The degrees of protection are defined by the IEC 60 529 Standard. (Table gives the main characteristic – pic.1).

The UniGear switchboard has a IEC EN 60529 (13.4) category 2 enclosure: Enclosures without any difference in pressure in relation to the surrounding air.

Pic.1









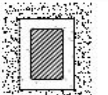
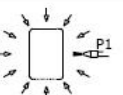

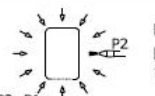


FIRST CHARACTERISTIC NUMERAL - IP X X		SECOND CHARACTERISTIC NUMERAL - IP X X	
0	NON-PROTECTED	0	NON-PROTECTED
1	 Protected against solid foreign objects of diameter 50 mm and greater.	1	 Protected against vertically falling water drops.
2	 Protected against solid foreign objects of diameter 12,5 mm and greater.	2	 Protected against vertically falling water drops when enclosure tilted up to 15°.
3	 Protected against solid foreign objects of diameter 2,5 mm and greater.	3	 Protected against spraying water at an angle up to 60°.
4	 Protected against solid foreign objects of diameter 1,0 mm and greater.	4	 Protected against splashing water from any direction.
5	 Dust-protected.	5	 Protected against water jets from any direction.
6	 Dust-tight.	6	 Protected against powerful water jets from any direction.
		7	 Protected against the effects of temporary immersion in water.
		8	 Protected against the effects of continuous immersion in water.

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Caution!

We guarantee the proper operation of our equipment only if the installation of the switchgear arrays is performed by certified installation companies with which we have a contract of service representation. The installation employees of these companies are trained regularly in our company and are able to provide perfect installation, adjustment and putting into operation including continuous servicing and/or repairs.

If you decide for another installation company than recommended by the manufacturer, it is necessary to organize the training of the installation employees in our company on contract.

External adaptation to apply increased protection of ABB switchgears

Additional modifications and adding of covers to ABB switchgears may lead to achievement of a degree of protection up to **IP53** + all lower levels. External adaptations are done after the delivery of the switchgears to the final place of operation of the equipment. In principle it includes joining of the panels, covering and fitting with additional accessories such as roofs and/or gas ducts, which are delivered separately in the attachment to the supply.

For sealing of the chinks between the added covers and the basic panel use the prescribed type of sealant. The sealed surfaces must be cleaned and degreased prior to applying the sealant.

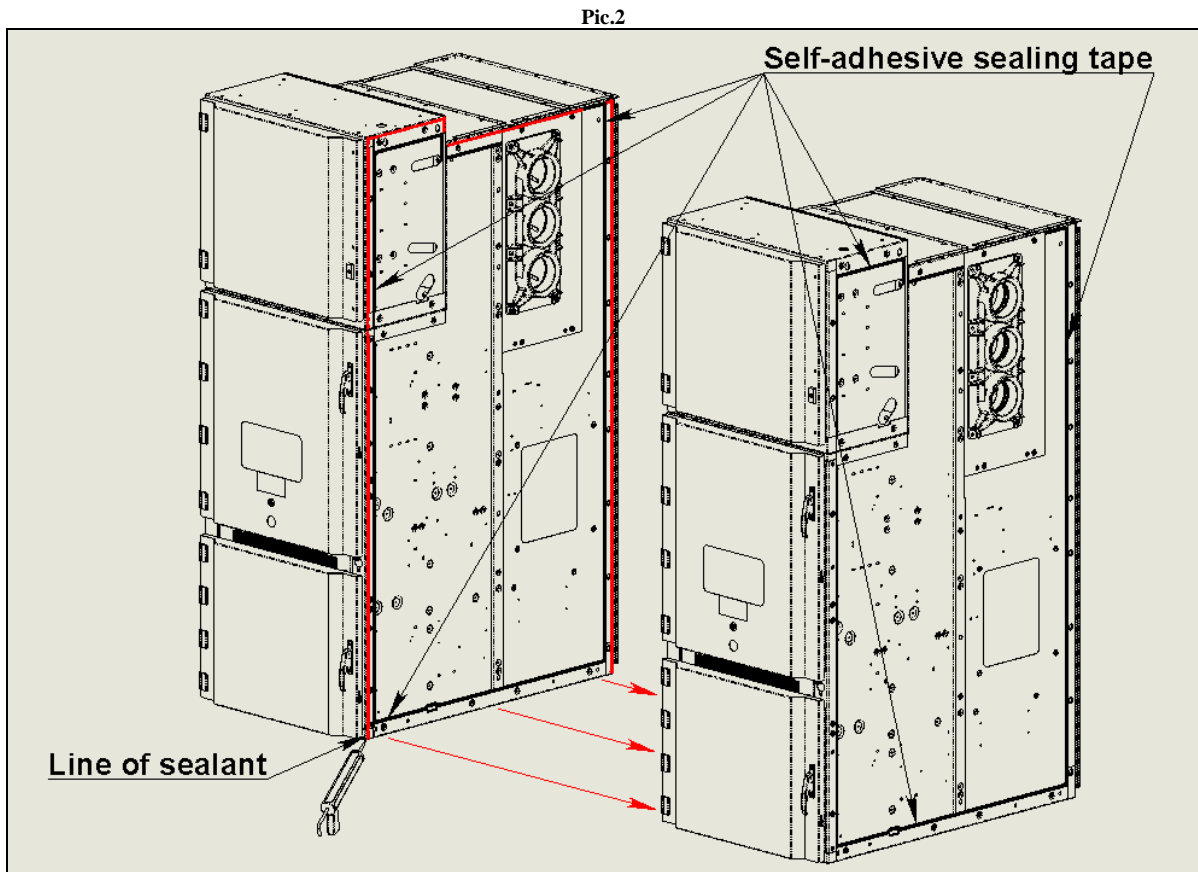
For the degreasing use degreasers based on alcohol.

For the sealing use a sealant based on neutral silicone: Soudal SILIRUB N – no. 1000079734.

External adaptation – process

1. Joining of panels:

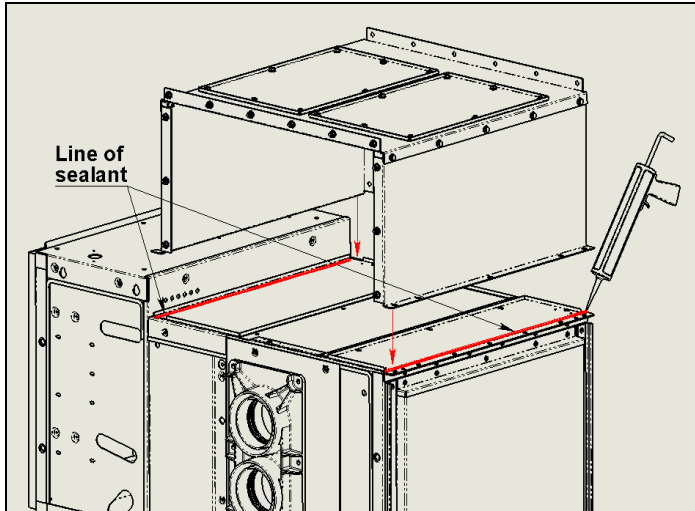
Before connecting individual panels glue the self-sticking sealing on each cabinet and apply a line of sealant around the peripheral edges (pic.2).



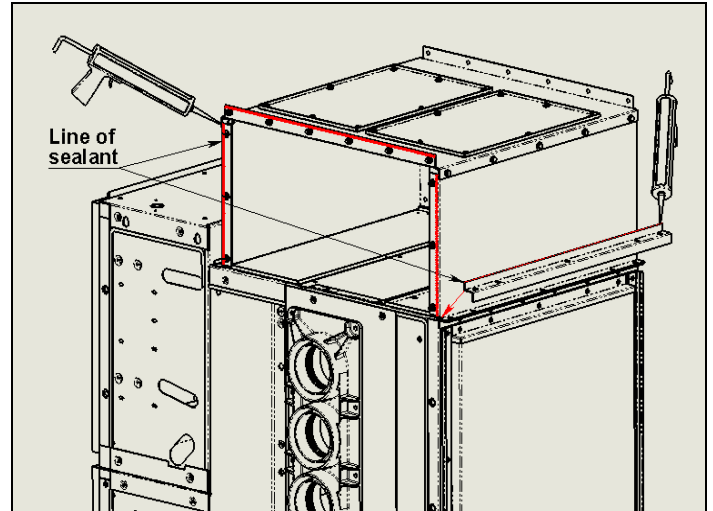
2. Installation of the gas duct:

Before the installation of the gas duct apply a line of sealant on the contact surfaces of the gas duct and of the panel. Spread sealant on the surface below the upper edge of the rear reinforcement of the gas duct. Also apply a line of sealant on the contact surfaces between the gas ducts (pic.3, 4).

Pic.3



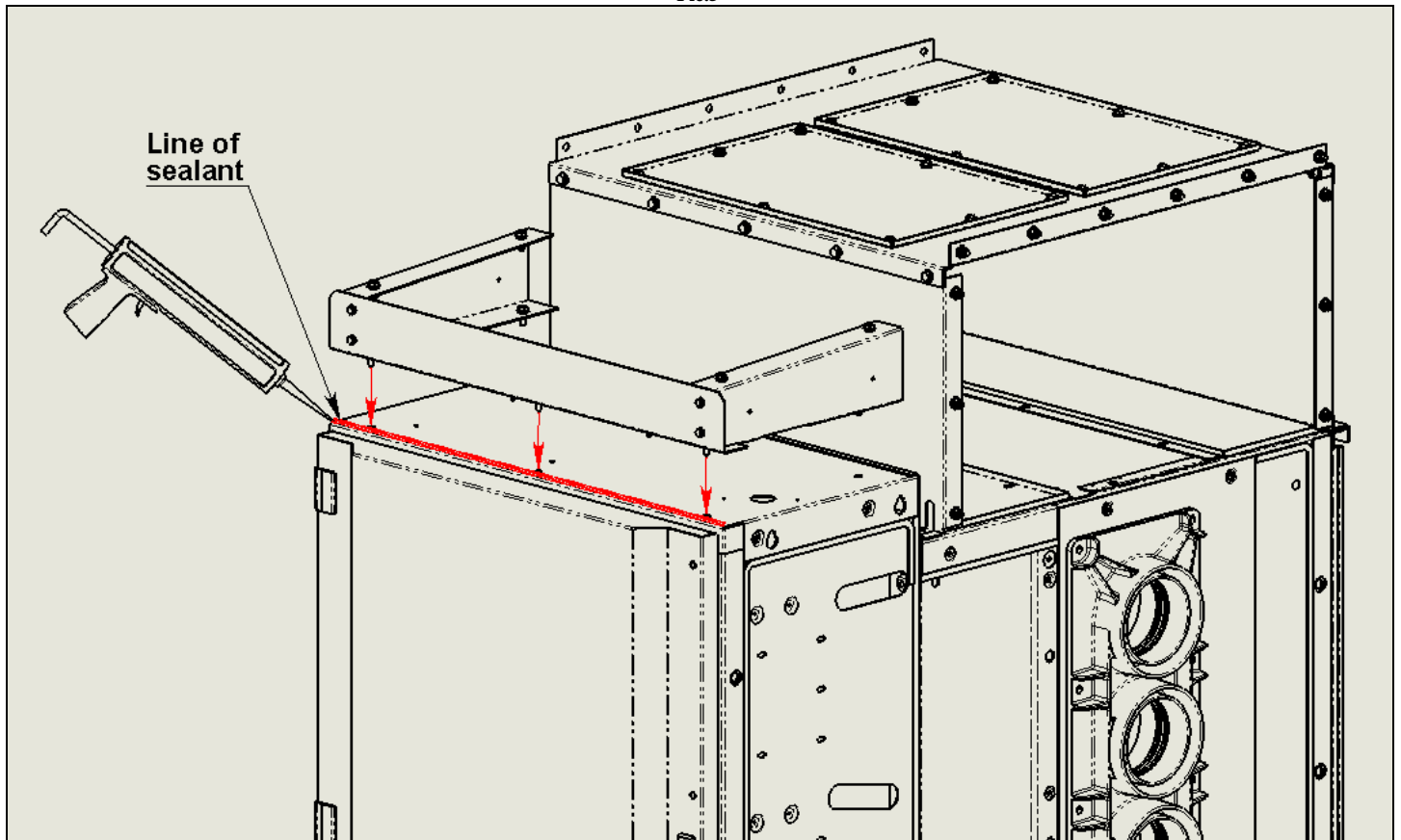
Pic.4



3. Installation of the roof frame:

Install the roof frame in the rivet nuts in the upper cover of the LV cabinet. Before the installation of the channel apply a line of sealant on the contact surface of the front edge of the frame and of the cover of the cabinet LV cabinet (pic.5).

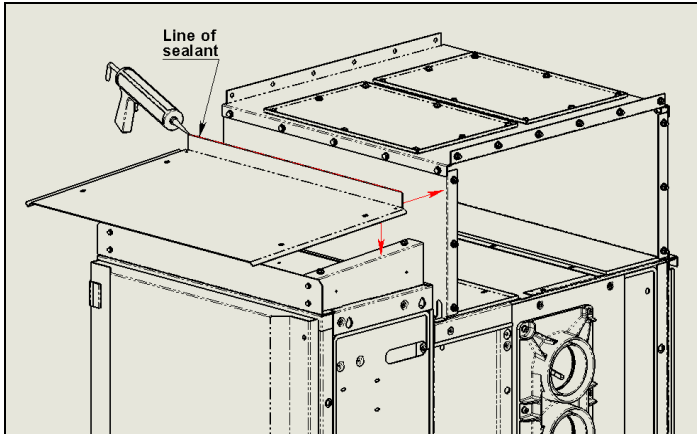
Pic.5



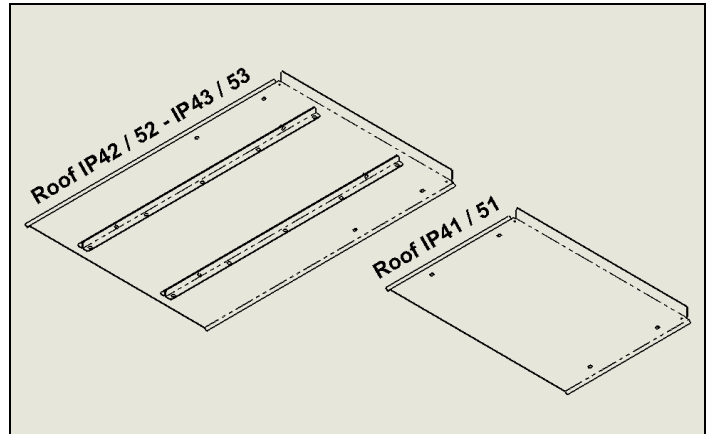
4. Installation of the roof:

First pull the roof slightly towards the frame and then push it up to stop, for the rear face to touch the gas duct. Before the installation apply sealant on the contact surfaces of the roof and of the gas duct (pic.6). In dependence on the required grade of protection, use either the short roof for IP41/51, or the long roof for IP42 /52 and IP43/53 (pic.7). In case of a row of switchgears, install the roofs from the right to the left (pic.8), so that the right edge of the roof fits in the eaves gutter of the neighbouring roof from the right (pic.9). The contact surfaces of the roofs and the eaves gutters do not need to be sealed. After the installation of the roofs cover the chinks between the roofs and the rear edge by the cover and fill the chinks with sealant (pic.10).

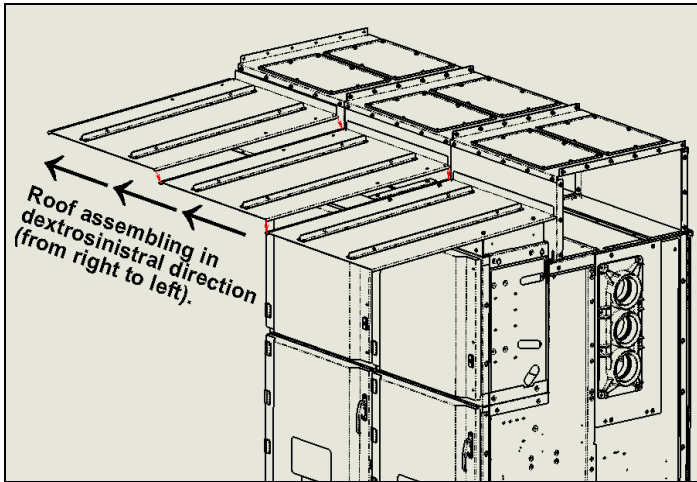
Pic.6



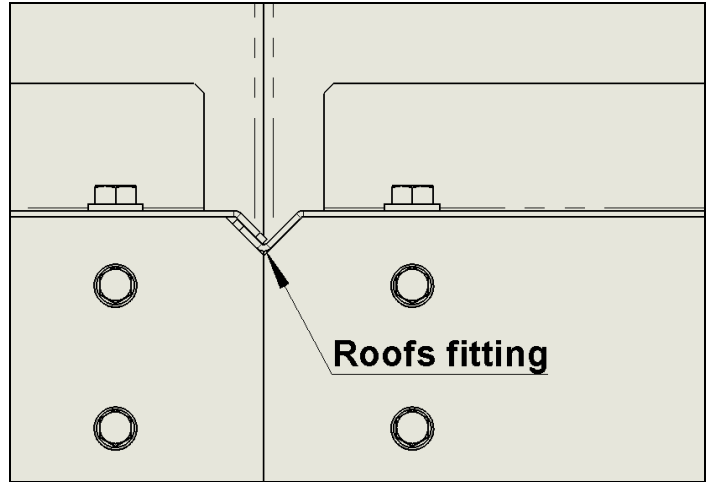
Pic.7



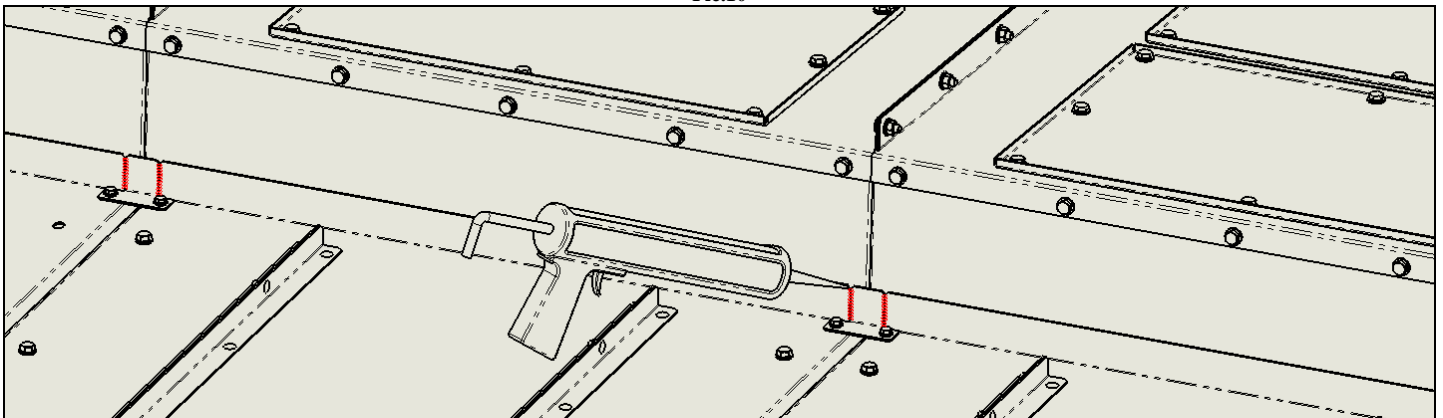
Pic.8



Pic.9



Pic.10



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Protection of switchboards against the effects of water in dependence on the stated degrees of protection, defined by the IEC EN 60 529 standard.

IP41 / IP51

4		Protected against solid foreign objects of diameter 1,0 mm and greater.	1		Protected against vertically falling water drops.
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5		Dust-protected.	1		Protected against vertically falling water drops.
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IP42 / IP52

4		Protected against solid foreign objects of diameter 1,0 mm and greater.	2		Protected against vertically falling water drops when enclosure tilted up to 15°.
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5		Dust-protected.	2		Protected against vertically falling water drops when enclosure tilted up to 15°.
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IP43 / IP53

4		Protected against solid foreign objects of diameter 1,0 mm and greater.	3		Protected against spraying water at an angle up to 60°.
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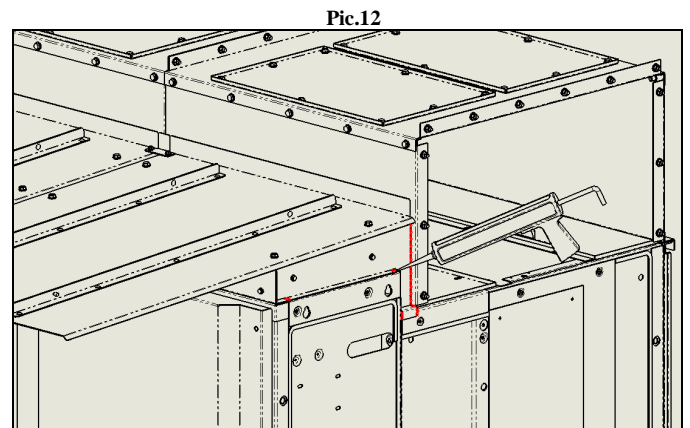
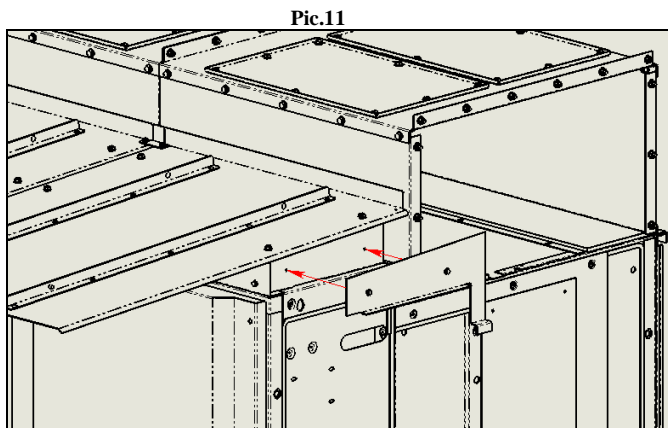
5		Dust-protected.	3		Protected against spraying water at an angle up to 60°.
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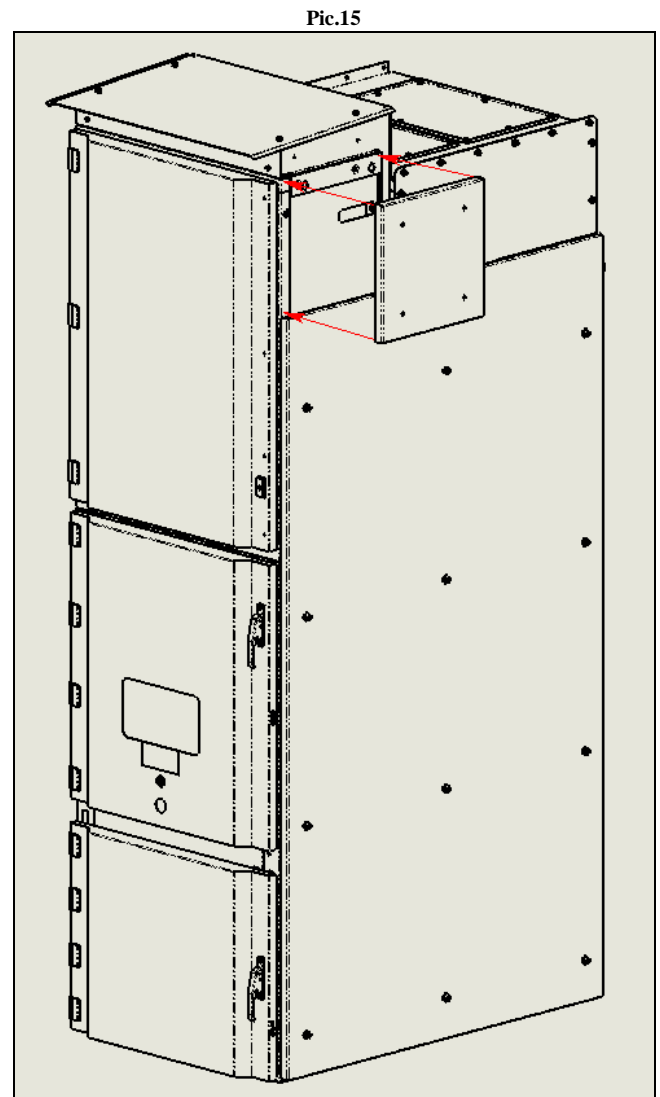
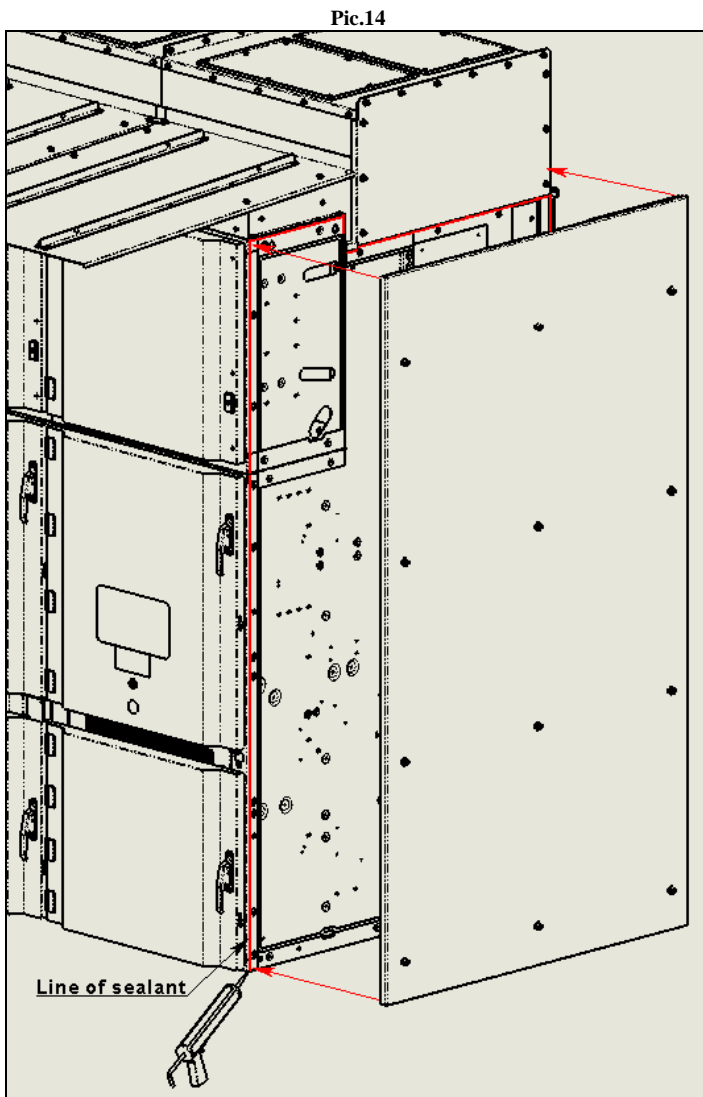
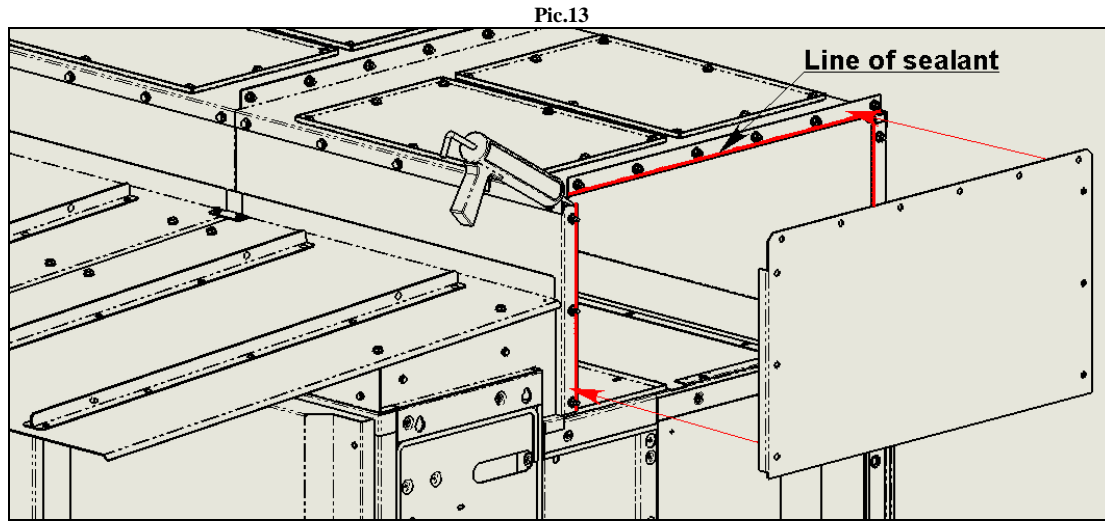
NOTE:

The gas ducts with chimneys provide protection only up to the degree IP42/IP52. For the degree IP43/IP53 it is necessary to use a gas duct with the outlet on the rear or a cover with the side outlet.

5. Installation of side covers:

The final operation of covering of the switching station for increased protection is the installation of the side covers. First install the cover of the roof frame (pic.11) and fill the chinks between the cover and the cabinet with sealant (pic.12). Then, as the second one, install the side cover of the gas duct. Before the installation apply a line of sealant on the contact surfaces of the cover and of the gas duct (pic.13). In the end mount the end cover of the panel for the increased IP (see the configuration table). The end wall of the panel is prepared before the installation similarly as at the joining of panels – see point 1 (pic.14). In case of use of a high LV compartment (1100 mm.), mount the cover of the LVC too (pic.15).



**NOTE:**

External adaptations are defined in documents: 1VL7612153R0101, 1VL7612153R0102 and 1VL7612153R0103. The used drawings are only for reference. The specific versions may vary in dependence on the parameters and width of the panel. For the specification of material use relevant configuration tables.