

Metal Clad Switchgear

DNF7

Instructions
Civil Engineering Guide



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1 Schneider Electric at your service

Schneider Electric request the carefully reading of the following instructions in order to familiarize yourself with the product in this document before trying to install, operation, put into service or conduct the maintenance on it.

Our products are fully quality controlled and tested at the factory in accordance with the standards and regulations currently in force.

The correct functioning and lifespan of the product depend on respecting the installation, commissioning and exploitation instructions found in this manual. Not respecting these instructions is likely to invalidate any guarantee.

Local safety requirements which are in accordance with these instructions, especially those regarding the safety of product operators and other site workers, must be observed.

Schneider Electric declines any responsibility for the following points:

- the non respect of the recommendations in this manual which make reference to the international regulations in force.
- the non respect of the instructions by the suppliers of cables and connection accessories during installation and fitting operations,
- possible aggressive climatic conditions (humidity, pollution, etc.) acting in the immediate environment of the materials that are neither suitably adapted nor protected for these effects.

1.1 Particular instructions for operations and interventions

This user manual does not list the locking-out procedures that must be applied. The interventions described are carried out on de-energized equipment (in the course of being installed) or locked out (non operational).

Whilst commissioning and operating the product all general safety instructions for electrical applications (protective gloves, insulating stool, etc.) must be respected, this in addition to the standard operating instructions.

All operations must be completed once started.

The durations (for completing the operations mentioned) given in the maintenance tables are purely an indication and depend on on-site conditions.

1.2 Protection equipments

Only qualified and accredited people can operate on our products. They must be equipped with all the correct protective equipment required for the task being performed.

A qualified person is one who has the skills and knowledge related to the construction, installation and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Except when it is imposed, the wearing of the gloves has been voluntarily limited in this manual so as to have clear visuals of the hands and operations described.

1.3 Symbols of information



Code for a product recommended and marketed by Schneider Electric



Tightening torque value
Example: 21 Nm



Mark corresponding to a key

1.4 Symbols and important safety informations

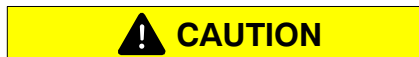
The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.



WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.



CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.



NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

1.5 Contacts

Group Schneider Electric service centers are there for:

- Engineering and technical assistance
- Commissioning
- Training
- Preventive and corrective maintenance
- Spare parts
- Adaptation work

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2.1 Use of this User Manual

This User Manual describes the works or arrangements necessary for the installation of a HVA switchboard of the DNF7 type.

2.2 Definition of the substations

Amongst substations that are prefabricated or built outdoors, walk-in substations can reach, or even exceed 3.5 m in height. They allow operating personnel to penetrate into the substation and work in them sheltered from bad weather.

The indoor substations with "prefabricated metal-clad bays" are installed in areas that the User reserves in one of the buildings in the factory, or in a building specially built for this purpose for the case of transformer substations for HVA distribution networks.

2.3 Access to the substation

Substation access must remain free at all times and under any circumstances. It is therefore generally installed on the side of the road.

Passages must be designed to permit easy maintenance for all of the substation's elements (circuit breaker, transformer, etc.).

2.4 Other technical notice to be consulted

- AMTNoT194-02 DNF7 Operation Manual

3 General rules for the installation of DNF7 switchboards

3.1 Reminder concerning normal installation and service conditions (in accordance with IEC62271-1)

* Permissible ambient temperature

The ambient air temperature should be comprised between - 15°C and + 40°C.

The mean measured value for a 24 hour period must not exceed 35°C.

* Installation altitude

HV equipment is defined in accordance with European Standards and can be used up to an altitude of 1,000 m.

Beyond this, account must be taken of the decrease in dielectric withstand.

For these specific cases, contact the Schneider Electric Sales Department.

* Atmospheric pollution

The ambient air must not contain any dust particles, fumes or smoke, corrosive or flammable gases, vapours or salts.

* Permissible atmospheric humidity level

The average atmospheric relative humidity level measured over a 24-hour period must not exceed 95%.

The average water vapour pressure over a period of 24 hours must not exceed 22 mbar.

The average atmospheric relative humidity value measured over a period of one month must not exceed 90 %.

The average water vapour pressure over a period of one month must not exceed 18 mbar.

Condensation may appear in case of any sharp variation in temperature, due to excessive ventilation, a high atmospheric humidity level or the presence of hot air. This condensation can be avoided by an appropriate lay-out of the room or of the building (suitably adapted ventilation, air driers, heating etc.).

Whenever the humidity level is higher than 90 %, we recommend that you take appropriate corrective measures. For any assistance or advice, contact the Schneider Electric After-Sales department.

NOTICE

Please consult Schneider Electric for any installation conditions which differ from the standard.

3.2 Substation installation requirements

The substation must be sheltered from flooding and any infiltrations of water. No ducts of any kind must pass through the substation's immediate environment without special protection (sheaths or ducts). Water, snow, or animal salts must not be able to penetrate.

Also prevent any penetration by small animals such as rodents, snakes, lizards, etc. especially in tropical areas.

The room must be equipped with standardised high level and low level ventilation.

Cable troughs and ducts must be blocked up to avoid:

- any draughts of air below the Functional Units,
- any rise in humidity or pollution coming from below ground.

Before installing the switchgear cubicles make sure that the switchgear room is checked according to the switchgear documentation:

- . Trench for high voltage and low voltage cables
- . The load-bearing capacity of the fastening areas must correspond to the weight of the switchgear (perform stress analysis of the building).

3.3 Installation of the switchboard

The positioning of the switchboard is paramount for:

- minimum spaces at the front (walk-in corridor for manoeuvring), at the rear and on each side of the switchboard. Certain passages must be sufficient for free movement and execution of operation and maintenance manoeuvres,
- leave the room's access door free,
- Take all measures to prevent all incidence of climatic conditions (humidity, pollution, etc.).

Respect the imposed distances (see following chapter).

Do not place the switchboard below any ventilation grilles, air vents, or air conditioning grilles or in the immediate proximity of glass tile panels in direct contact with the outside.

The switchboard must not be exposed to any solar radiation. A direct exposure can lead to excessive overheating of the low voltage racks.

CAUTION

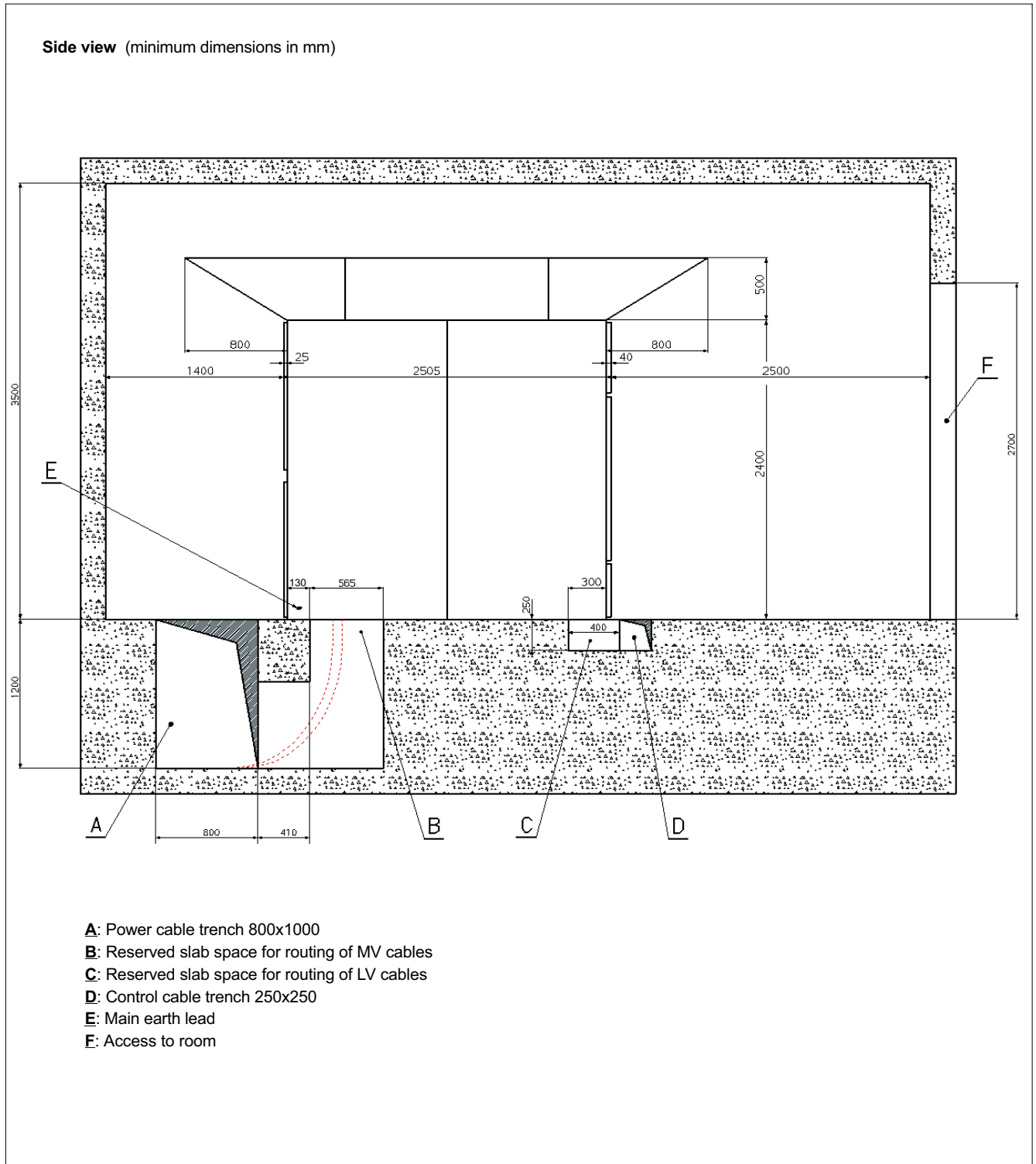
For the correct installation of cubicles: it is advised to comply with a tolerance of ± 1 mm/m and a max gap of ± 6 mm on the length of the switchboard.

4 Installation of a DNF7 switchboard

4.1 Civil engineering with duct

Recommendations:

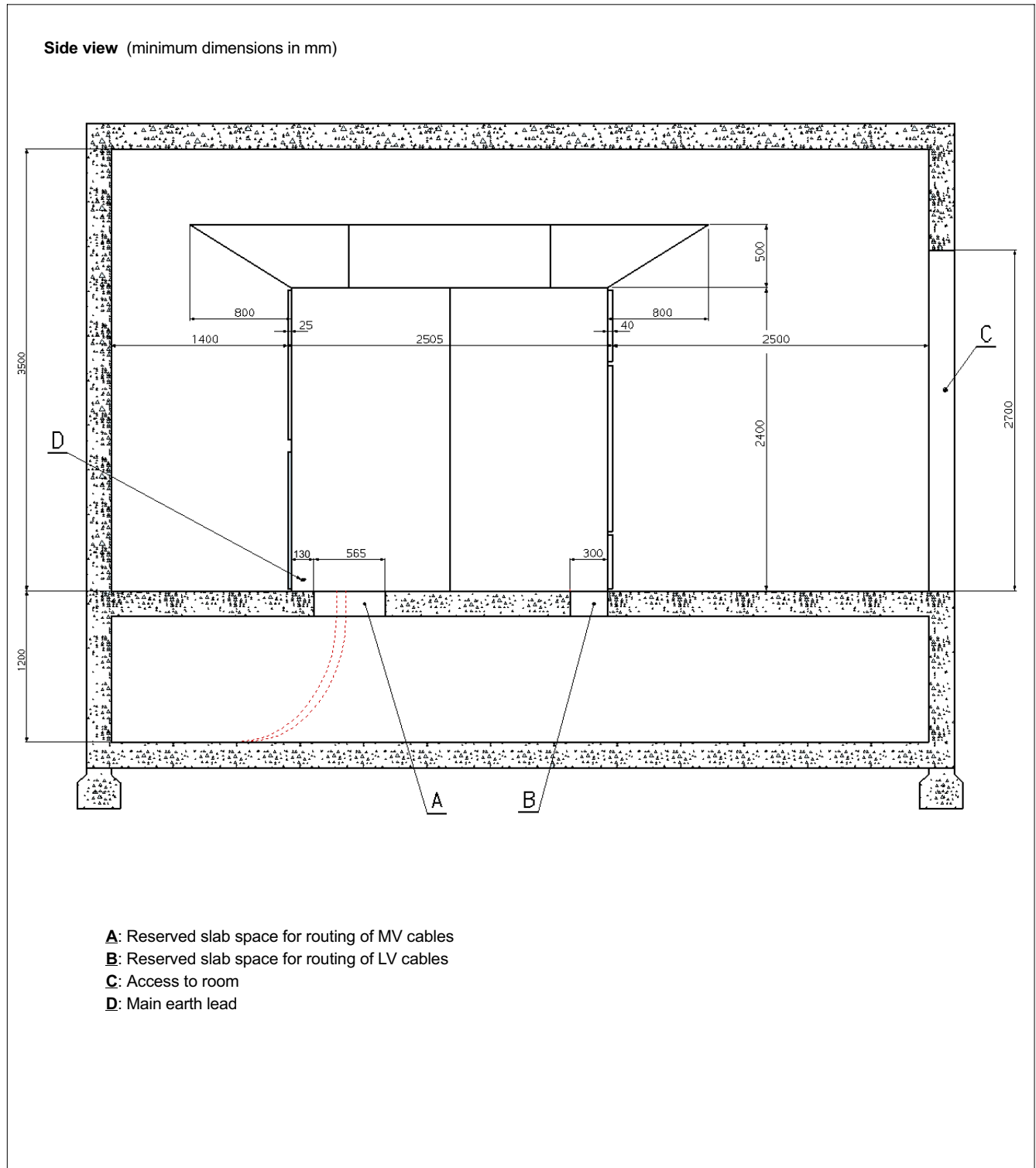
The depth of the maintenance space can be reduced, it must respect the bending radius of the cables used.



4.2 Civil engineering with maintenance space

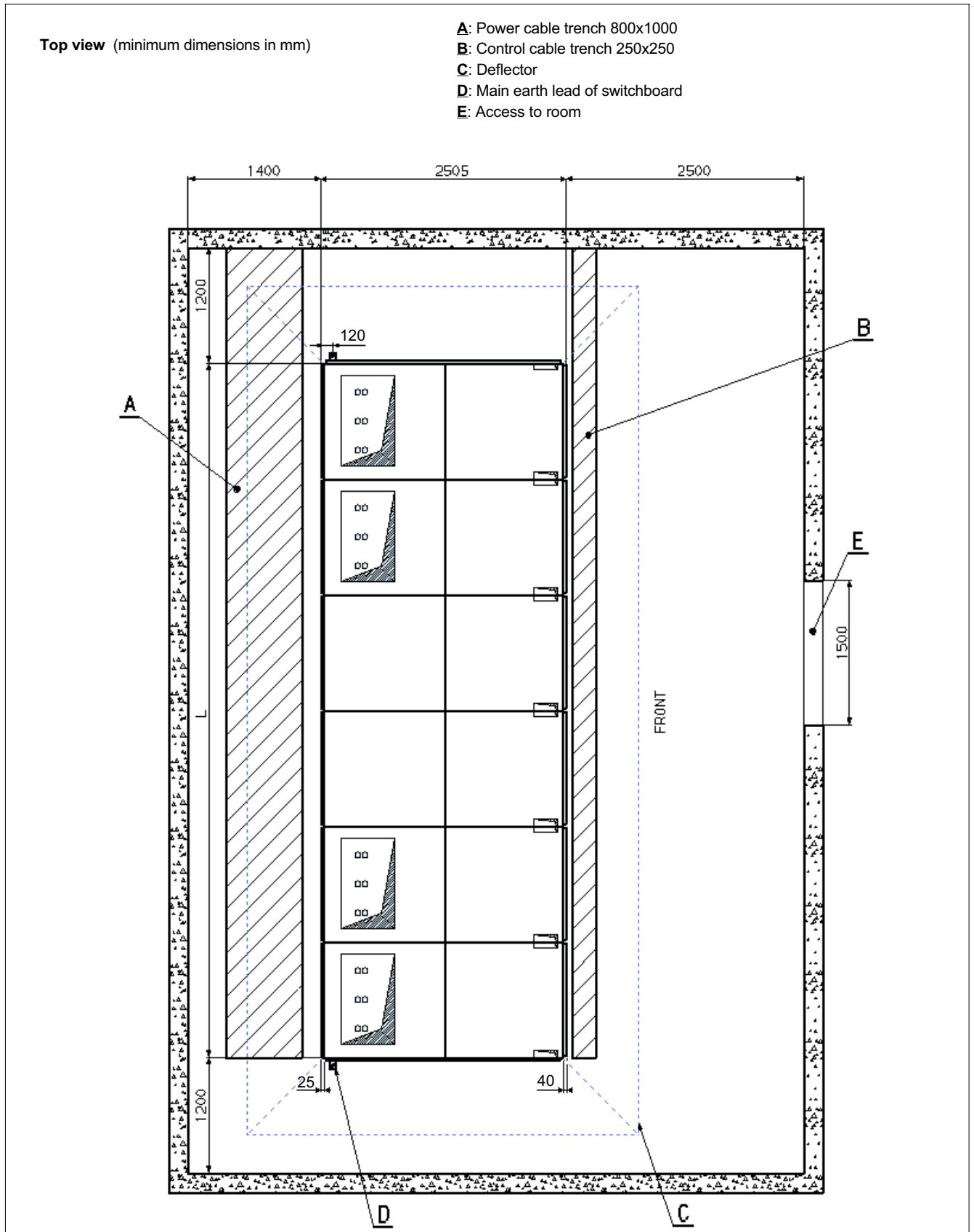
Recommendations:

The depth of the maintenance space can be reduced, it must respect the bending radius of the cables used.

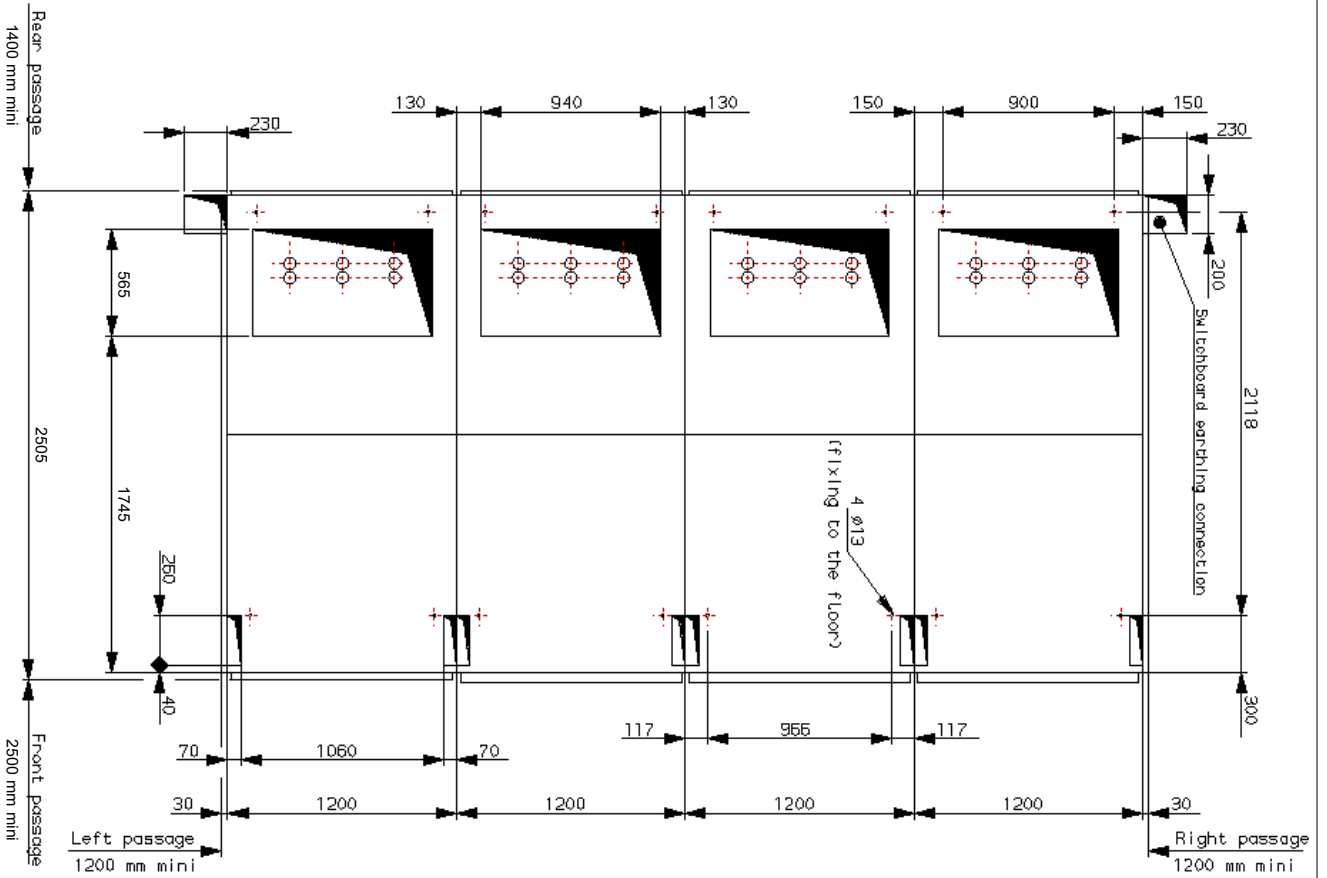


4.3 Space to be left around a switchboard

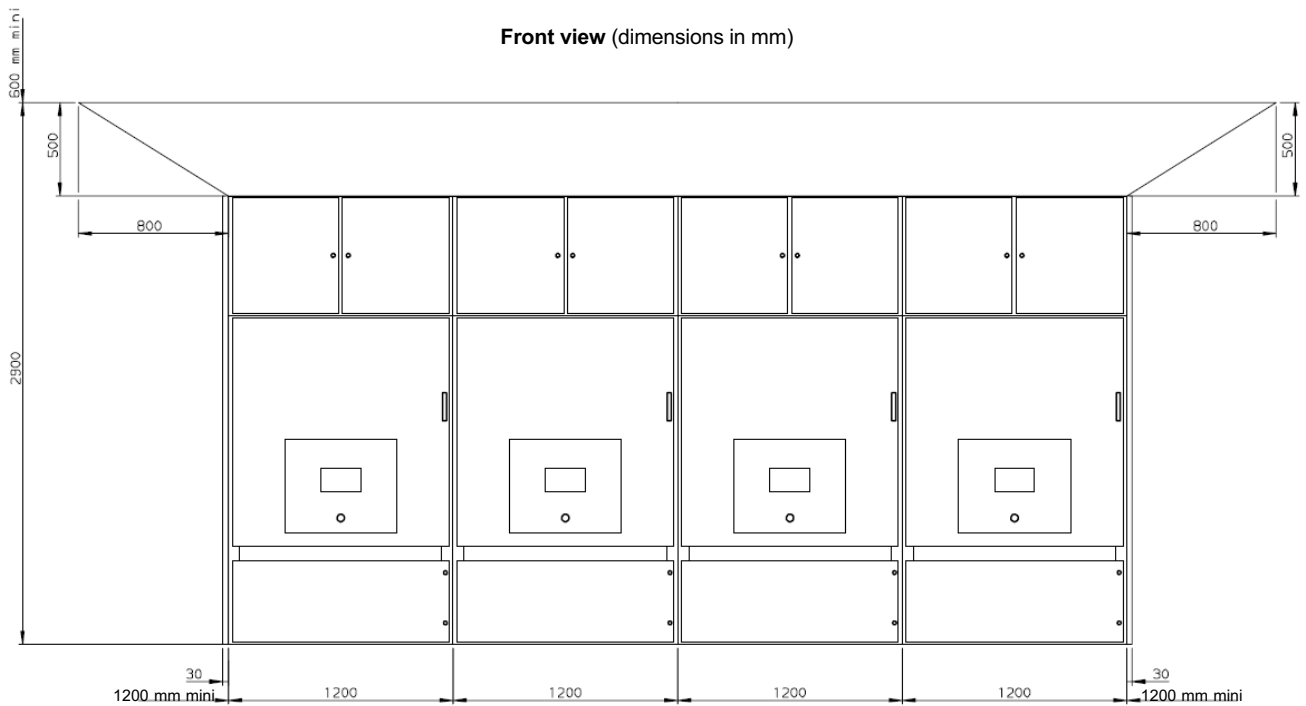
The L dimension is a function of the functional units making up the switchboard.



Top view (dimensions in mm)



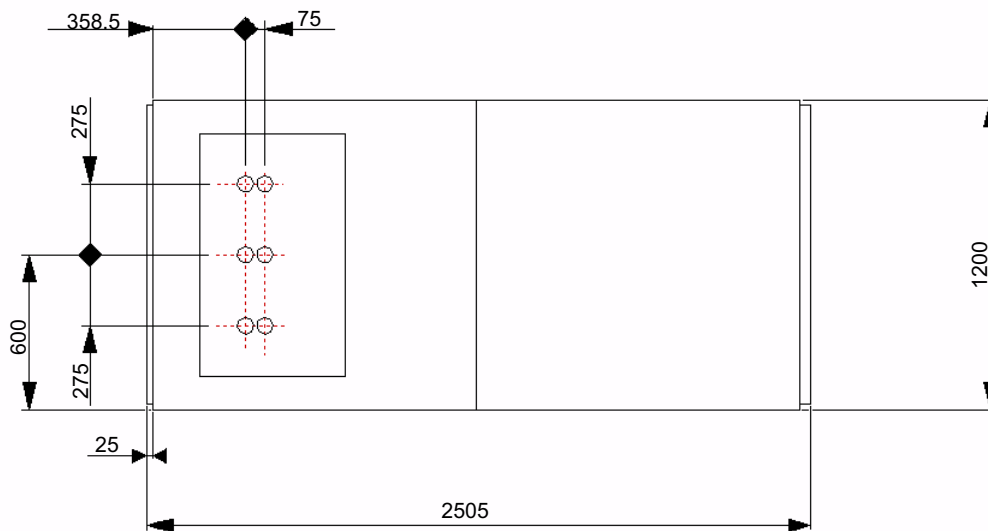
Front view (dimensions in mm)



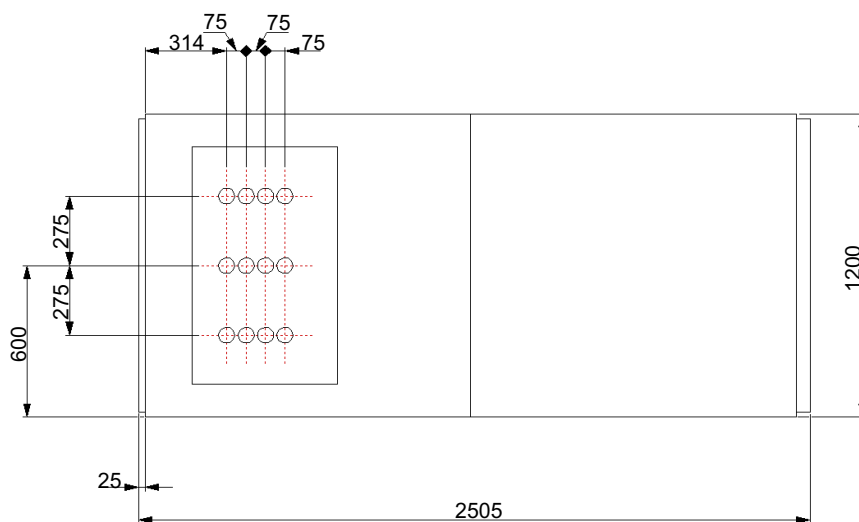
4.4 Position of MV cables

Maximum external cable Ø:
Single-pole Ø 62 mm

1 or 2 cables/phases



3 or 4 cables/phases



5 Installation of the functional units

5.1 Installation of the functional units

For a switchboard composed of 1 to 8 functional units, it is recommended to begin installation of the equipment on the side opposite the access to the premises.

For a switchboard with more than 8 units, begin the installation of the equipment by the middle of the switchboard.

5.2 Fitting each of the functional units in place

Suitable gloves must be worn during installation work.

The switching panel's incoming feeders must be arranged according to the schematic diagram.

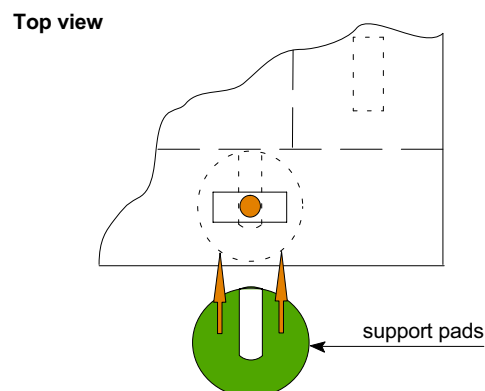
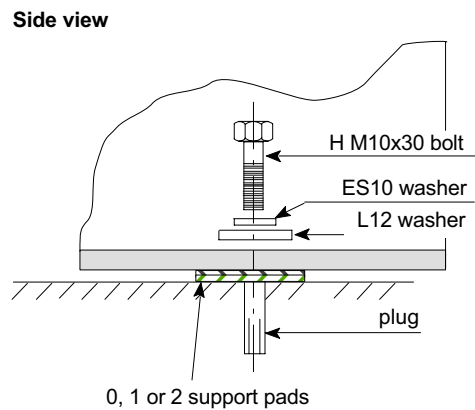
Each incoming feeder must be routed exactly perpendicular to the floor. Align the fronts.

Align further switchgear panels conducting the same verifications.

Anchor panels to the ground by four point fastening:

- 2 in the lower cross beams on the front (hex. Bolt M10x30 + plug),
- 2 in the lower cross beams on the rear (hex. Bolt M10x30 + plug).

5.3 Fixing to the floor



A large rectangular area filled with a fine grid pattern, intended for the user to write their notes.

If you have any comments on the use of this document or on the use of the equipment and services that are described in it, please send us your remarks, suggestions and wishes to:

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