Motorpact IEC

Installation instructions

46032-700-07D

Retain for future use.

Schneider Electric

Contents

Dimensions and weights 5
FVNR 5
FVR/FVS/2S1W/2S2W/Star Delta 5
RVSS soft start section 5
RVAT 6
DDS 6
Incoming sections 7
Approximate weights 7

Switchboard with gas discharge tunnel 9
Recommendations 9
Ceiling clearance for installing an anti-arcing tunnel or IPX-1 9
Installation above the switchboard 9
Installation 9
Wall mounting 9
Middle of room mounting 9

Space to be provided around switchboard 11
Civil engineering with maintenance space 11
Recommendations 11
FVNR 11
Incoming section 11
Civil engineering with duct space 12
Recommendations 12
FVNR 12
Space to be provided around a switchboard 13

Position of MV cables 15
FVNR (375, 500, and 750), FVR bidirectional, FVS, DDS, 2S1W, 2S2W, and Star Delta—2 cables per phase 15
Maximum external cable 15
FVNR (375, 500, and 750), FVR bidirectional, FVS, DDS, 2S1W, 2S2W, and Star Delta—1 cable per phase 15
Maximum external cable 15
FVNR (375, 500, and 750), FVR bidirectional, FVS, DDS, 2S1W, 2S2W, and Star Delta—dual triplex 15
Maximum external cable 15
FVNR (375, 500, and 750), FVR bidirectional, FVS, DDS, 2S1W, 2S2W, and Star Delta—single triplex 15
Maximum external cable 15
Incoming section (500)– 6 cables per phase 16
Maximum external cable 16
Incoming section (500)– 3 cables per phase 16
Maximum external cable 16
Incoming section (500)–dual triplex 17
Maximum external cable 17
Incoming section (500)–single triplex 17
Maximum external cable 17
Incoming section (750)–6 cables per phase 18
Maximum external cable 18
Incoming section (750)–3 cables per phase 18
Maximum external cable 18
Incoming section (750)–dual triplex 19
Maximum external cable 19
Incoming section (750)–single triplex 19
Maximum external cable 19

Content

Floor finishing and section mounting 21
Floor finishing 21
Surface conditioning 21
Quality of flooring 21
Section mounting 21
Summary of different mounting methods 21

Base layout—mounting 23
FVNR, RVSS, DDS, RVAT, and incoming section base layouts–standard and earthquake 23
FVNR (375, 750), FVR bidirectional, FVS, 2S1W, 2S2W, Star Delta, and DDS base layout–standard mounting . . . 23
Reserved space over all civil engineering 23
FVNR (375, 750), FVR bidirectional, FVS, 2S1W, 2S2W, Star Delta, and DDS base layout–earthquake mounting 24
Reserved space over all civil engineering 24
RVSS soft start section (750) base layout–standard mounting 25
Reserved space over all civil engineering 25
RVAT (1125) base layout–standard mounting 26
Reserved space over all civil engineering 26
RVAT (1125) base layout–earthquake mounting 27
Reserved space over all civil engineering 27
RVAT (1500) base layout–standard mounting 28
Reserved space over all civil engineering 28
RVAT (1500) base layout–earthquake mounting 29
Reserved space over all civil engineering 29
Incoming section (500) base layout–standard mounting . 30
Reserved space over all civil engineering 30
Incoming section (500) base layout–earthquake mounting 31
Reserved space over all civil engineering 31
Incoming section (750) base layout–standard mounting . 32
Reserved space over all civil engineering 32
Incoming section (750) base layout–earthquake mounting 33
Reserved space over all civil engineering 33

Base layout—other installation methods 35
Other methods of installation 35
RVSS soft start section (750) base layout–alternate mounting 35
Incoming section (500) base layout–alternate mounting . 36
Incoming section (750) base layout–alternate mounting . 37
RVAT (1125) base layout–alternate mounting 38
RVAT (1500) base layout–alternate mounting 39
RVSS soft start section (750) base layout–alternate mounting 40

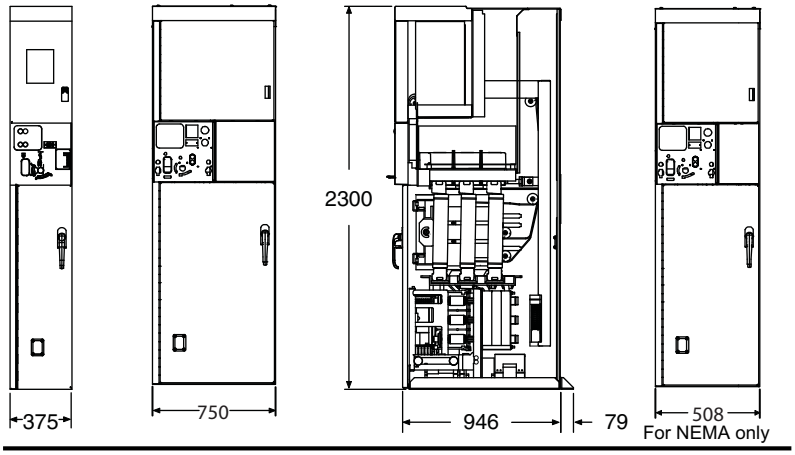
Dimensions and weights

This section includes dimensions/weights for the following equipment:

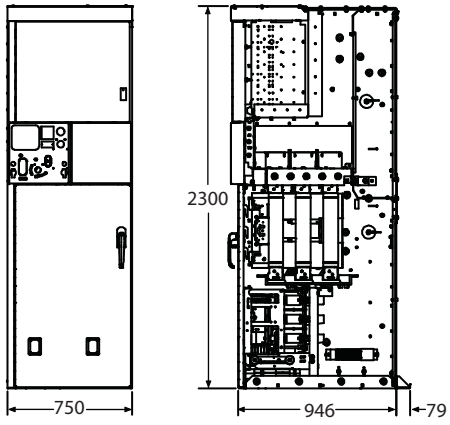
- Full voltage non reversing (FVNR)
- Full voltage reversing (FVR) bidirectional
- FVS (dual voltage transfer starter)
- 2-Speed, 1-Winding (2S1W)
- 2-Speed, 2-Winding (2S2W)
- Star Delta
- Reduced voltage soft starter (RVSS) soft start section
- Dual disconnect section (DDS)
- Reduced voltage autotransformer (RVAT)
- Incoming sections

(All dimensions in mm)

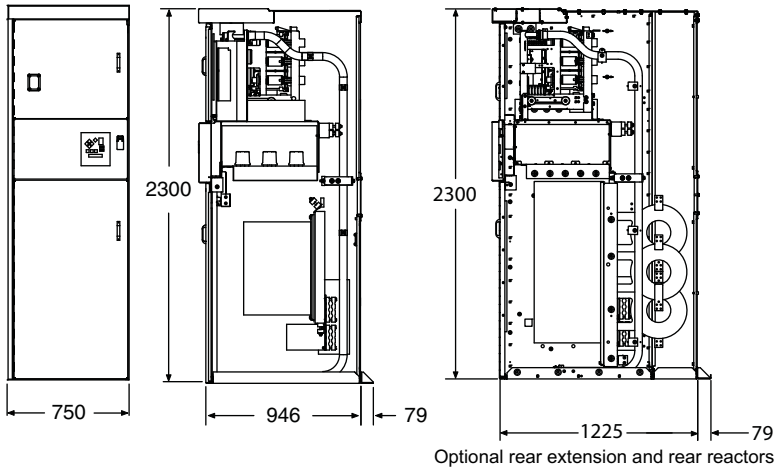
FVNR



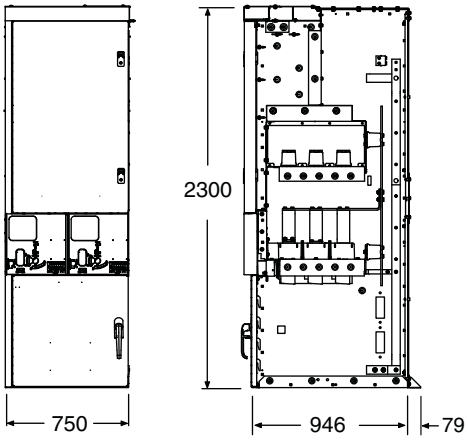
FVR/FVS/2S1W/2S2W/Star Delta



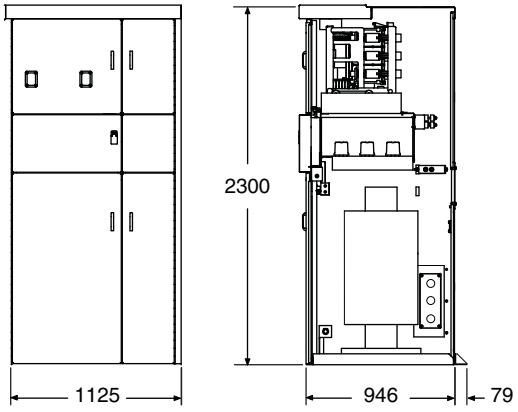
RVSS soft start section

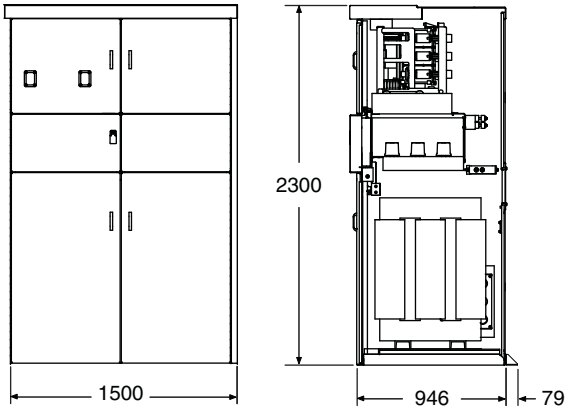


DDS

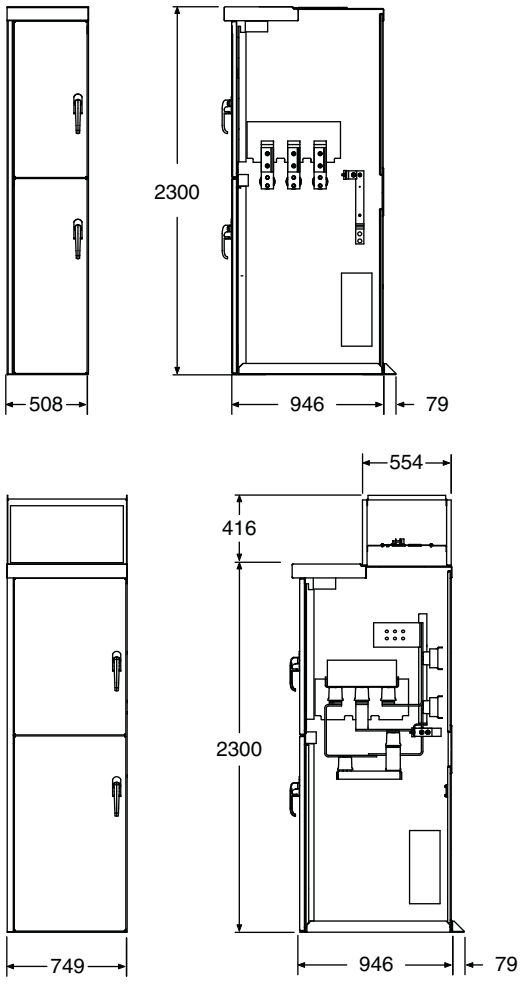


RVAT





Incoming sections



Approximate weights

Motor Starter Type	Section Width (mm)	Approximate Weight (kg)
FVNR	375	472
	500▪	549▪
	750	653.2
FVR, FVS, 2S1W, 2S2W, and Star Delta	750	673.2
RVSS soft start section	750	622
RVSS soft start section with extension and rear reactors	750	690
DDS	750	425
RVAT*	1125	728
	1500	885
Incoming section	500	350
	750	900

▪ 500 mm (549 kg) FVNR for NEMA only
* Autotransformer weight to be added

Recommendations

Ceiling clearance for installing an anti-arcing tunnel or IPX-1

If H > 4 m: installation of tunnel not necessary for internal arc withstand. H must be 2.80 m or over for a standard tunnel to be installed.

The connection between the gas discharge tunnel and the outside will be studied case by case. As far as possible, make this connection at the end of the switchboard.

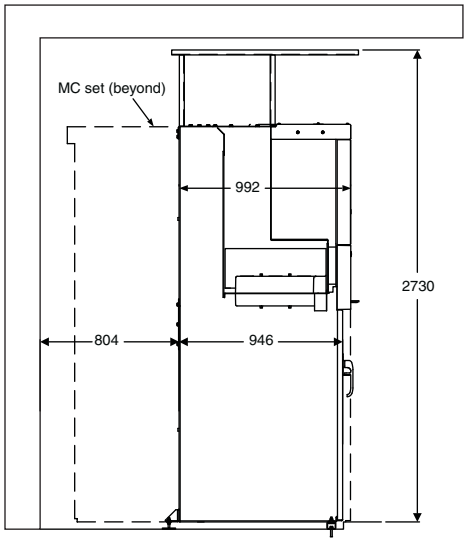
Installation above the switchboard

All installation of equipment, such as lamps or light fittings, is prohibited to avoid stepping on the switchboard cover plates.

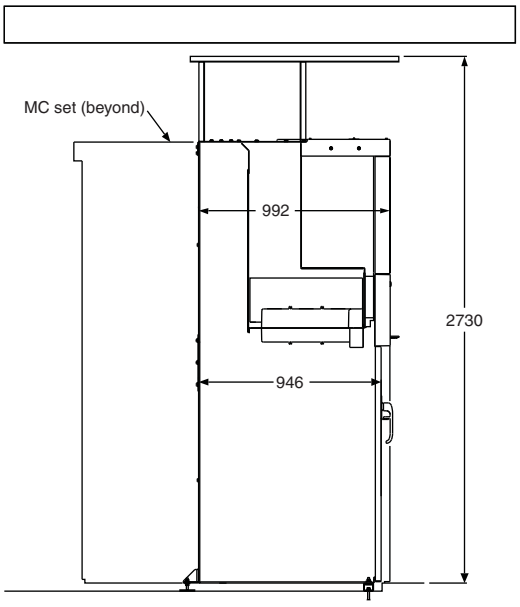
Installation

Wall mounting

Note: To use the standard tunnel, the wall surface must be able to support brackets.



Middle of room mounting



Civil engineering with maintenance space

Recommendations

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

The bending radius of the cable must be compliant with the minimum bending requirements of the cable manufacturer.

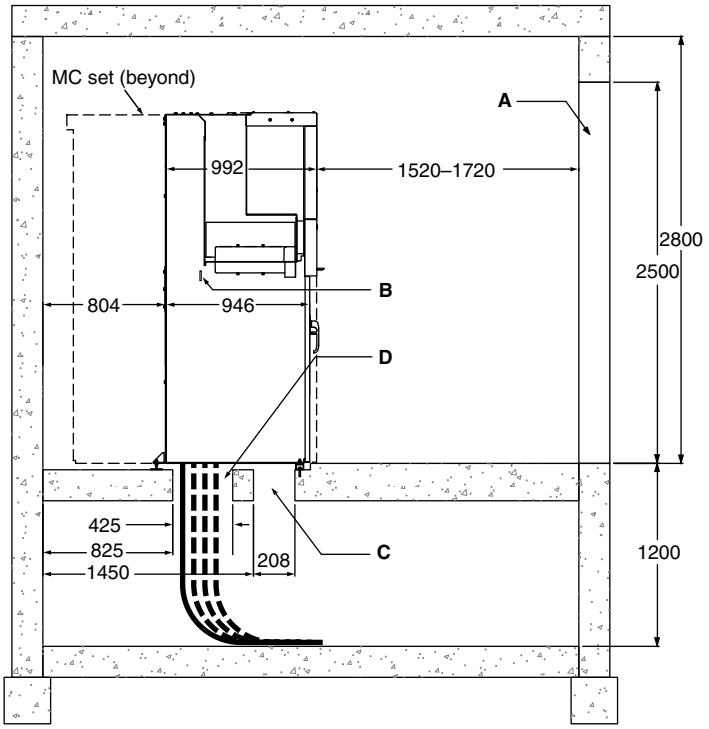
FVNR

A: Access to room

B: Main earth lead

C: Reserved slab space, if necessary, for routing of LV cables

D: Reserved slab space for routing of MV cables

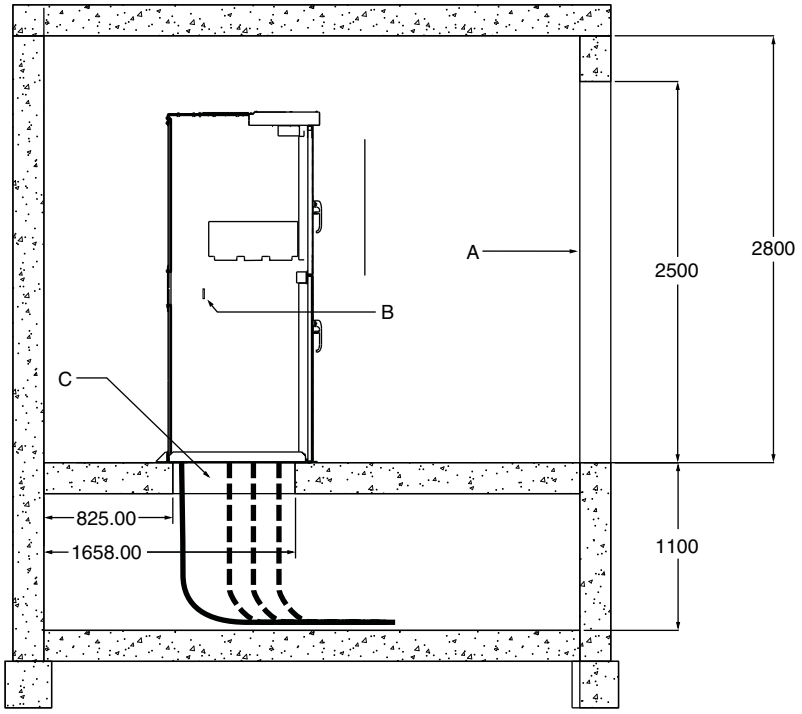


Incoming section

A: Access to room

B: Main earth lead

C: Reserved slab space for routing of MV cables



Civil engineering with duct space

FVNR

A: Access to room

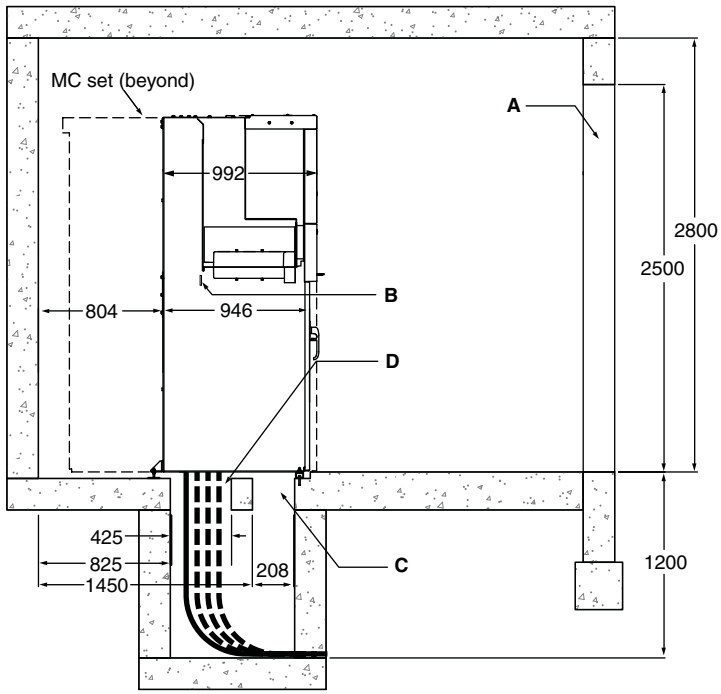
B: Main earth lead

C: Reserved slab space, if necessary, for routing of LV cables

D: Reserved slab space for routing of MV cables

Recommendations

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



Space to be provided around a switchboard

(*): minimum dimension (in mm)

A. This dimension must be equal to:

- 545 mm* for operation (extraction and positioning of moving parts)
- 1745 mm* for the extraction of one functional unit without displacing the other. (1925 mm* for functional units with a depth of 1725 mm)

B. This dimension must be equal to:

- 800 mm* for the 900 mm wide functional unit at the end of the switchboard
- 500 mm* for all other functional units

C. This dimension must be equal to:

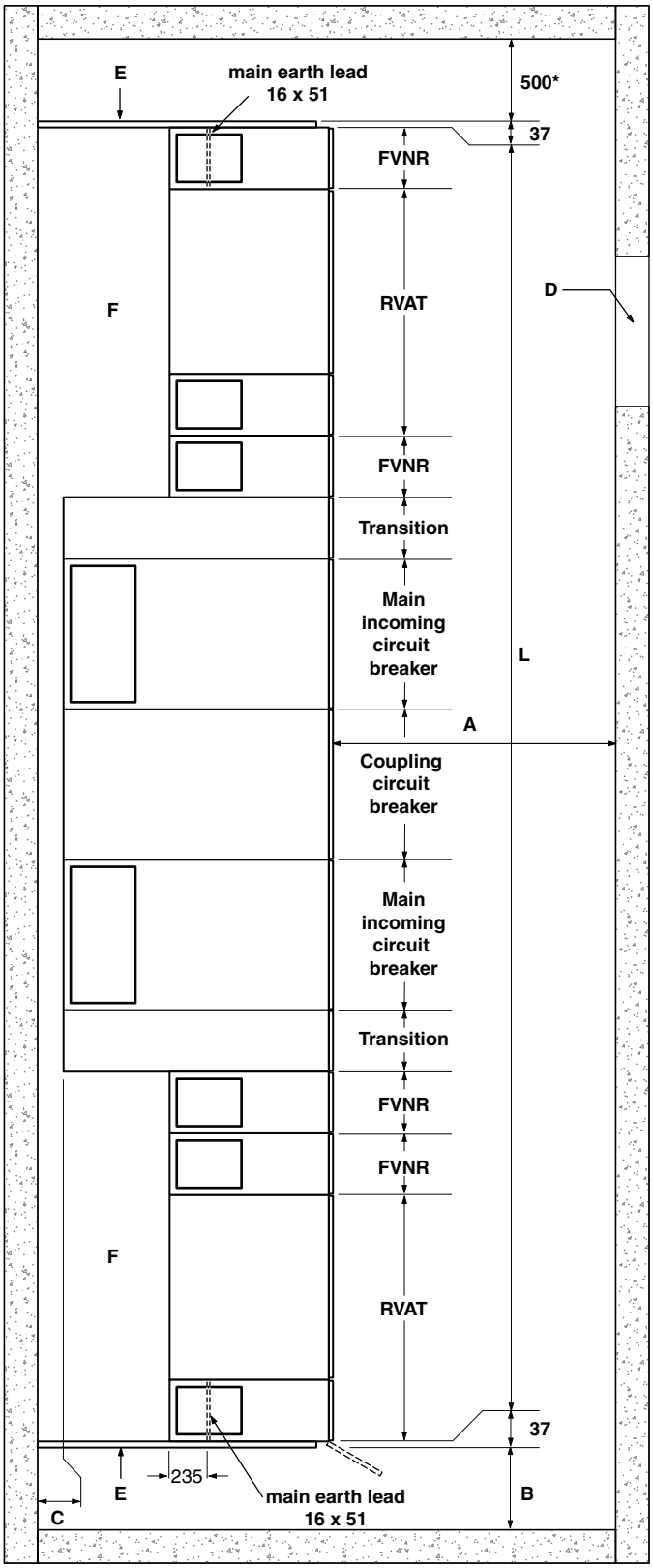
- 200 mm* for a 1500 mm deep functional unit with internal arcing withstand on three sides
- 50 mm* for a 1700 mm deep section with internal arcing withstand on three sides

D. Access to the room

E. Side end sheets

F. Access required for installation of earthquake resistant hardware

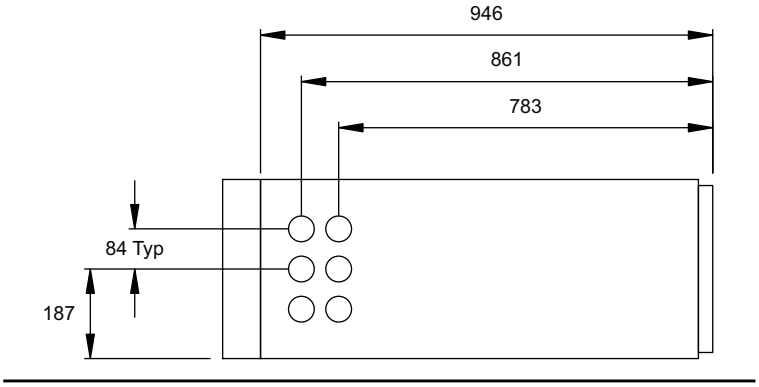
L. This dimension will differ, depending on the width of the cubicles selected.



FVNR (375, 500, and 750), FVR bidirectional, FVS, DDS, 2S1W, 2S2W, and Star Delta—2 cables per phase

Maximum external cable ∅

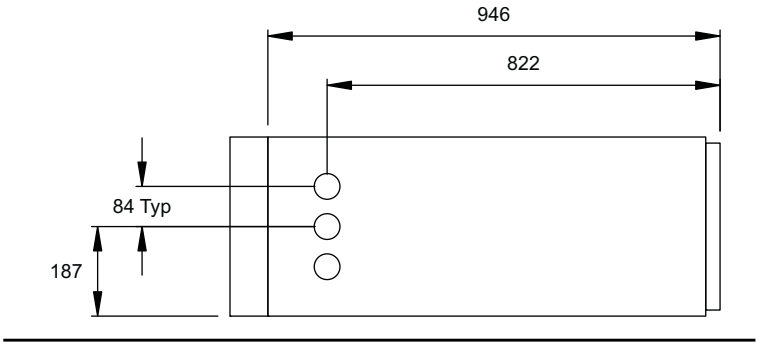
- Single–conductor ∅ 70 mm



FVNR (375, 500, and 750), FVR bidirectional, FVS, DDS, 2S1W, 2S2W, and Star Delta—1 cable per phase

Maximum external cable ∅

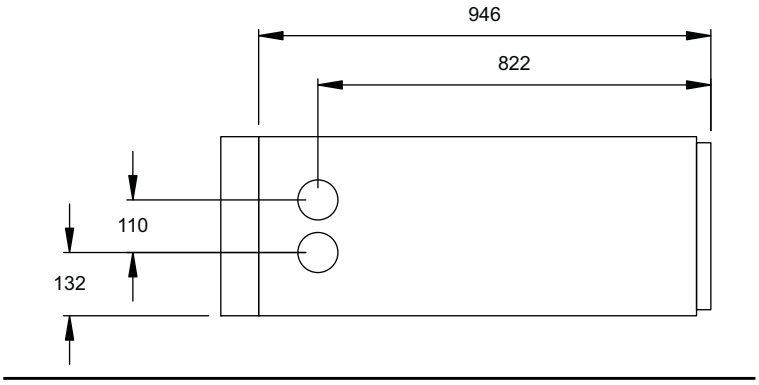
- Single–conductor ∅ 70 mm



FVNR (375, 500, and 750), FVR bidirectional, FVS, DDS, 2S1W, 2S2W, and Star Delta—dual triplex

Maximum external cable ∅

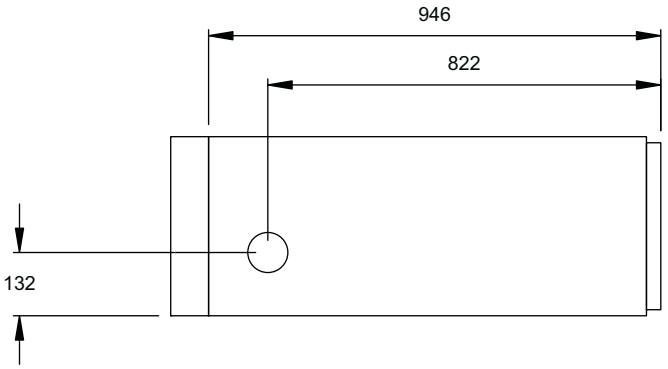
- Three–conductor ∅ 90 mm



FVNR (375, 500, and 750), FVR bidirectional, FVS, DDS, 2S1W, 2S2W, and Star Delta—single triplex

Maximum external cable ∅

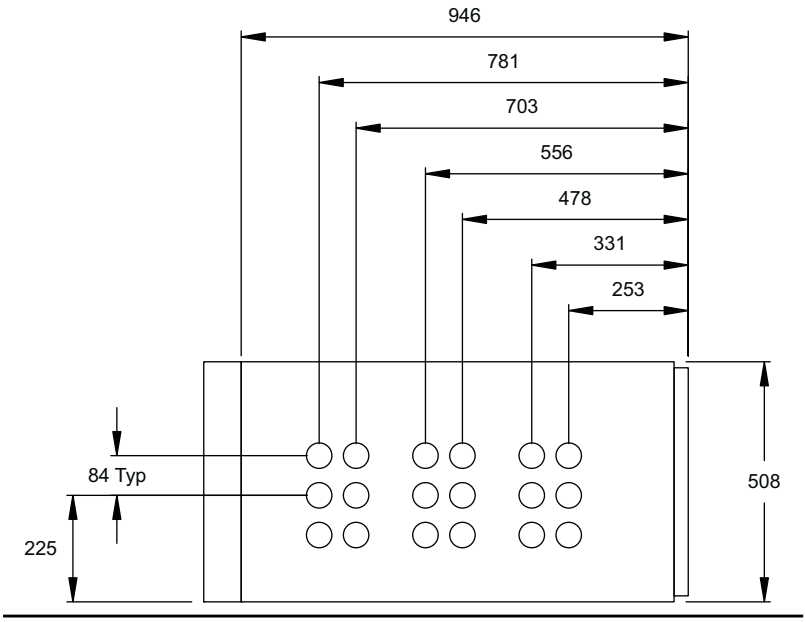
- Three–conductor ∅ 90 mm



Incoming section (500)– 6 cables per phase

Maximum external cable ∅

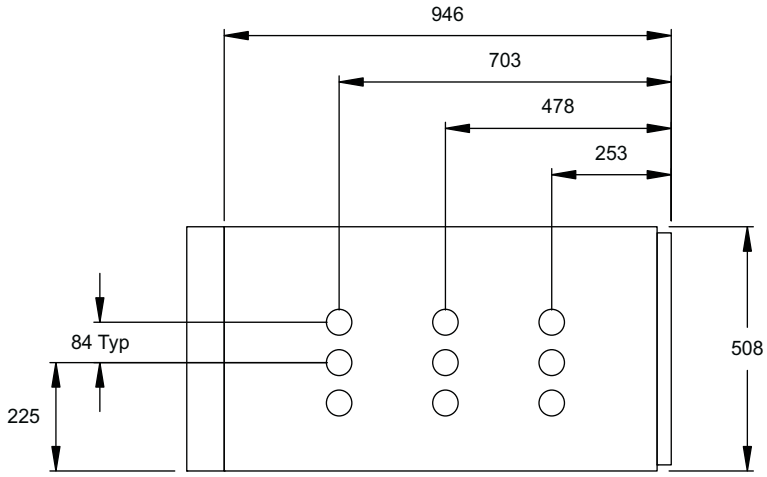
- Single–conductor ∅ 70 mm



Incoming section (500)– 3 cables per phase

Maximum external cable ∅

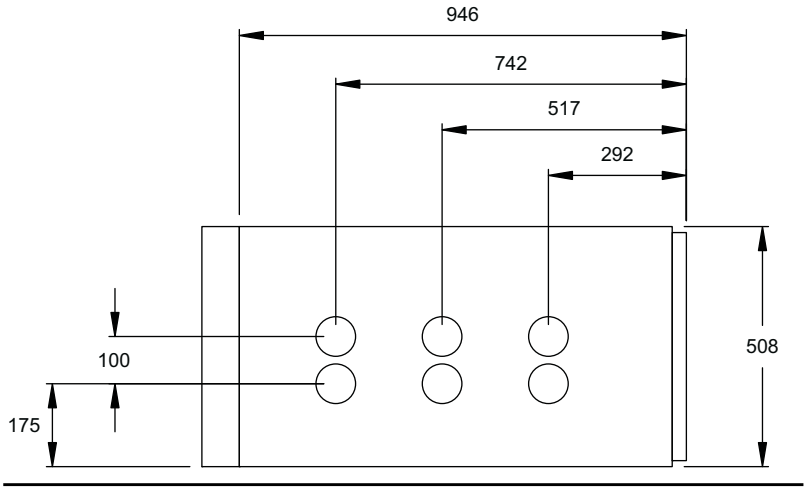
- Single–conductor ∅ 70 mm



Incoming section (500)– dual triplex

Maximum external cable ∅

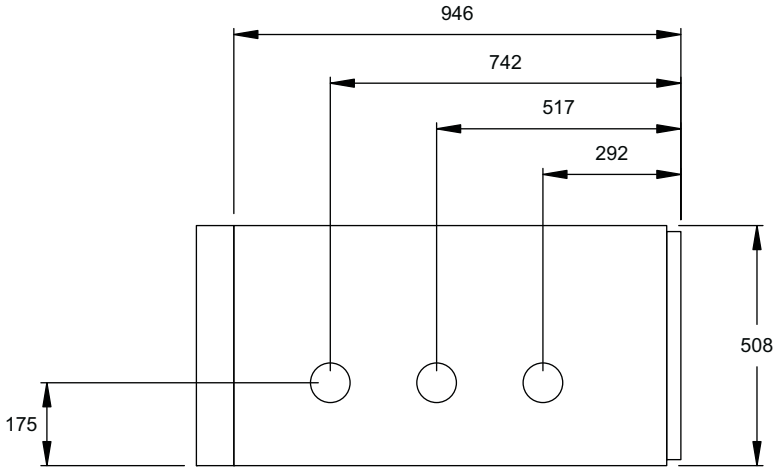
- Three–conductor ∅ 90 mm



Incoming section (500)– single triplex

Maximum external cable ∅

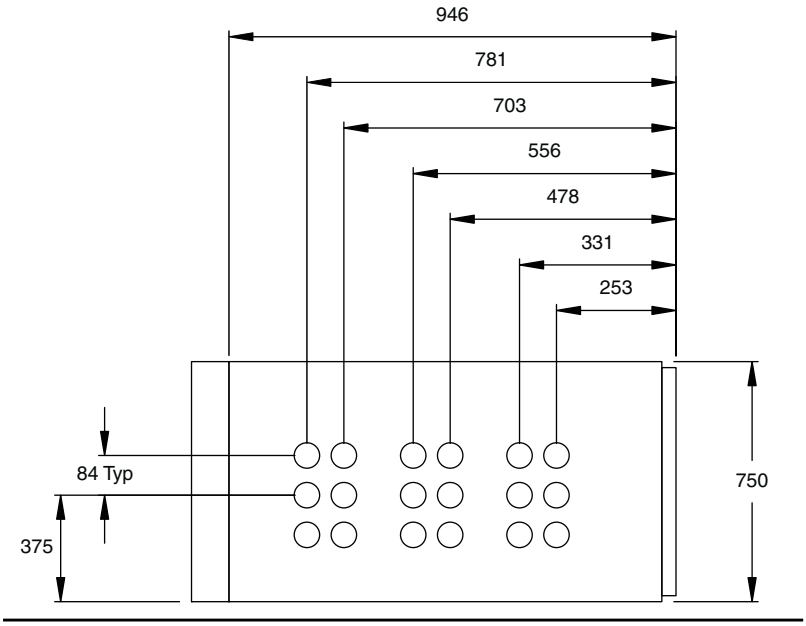
- Three–conductor ∅ 90 mm



Incoming section (750)– 6 cables per phase

Maximum external cable ∅

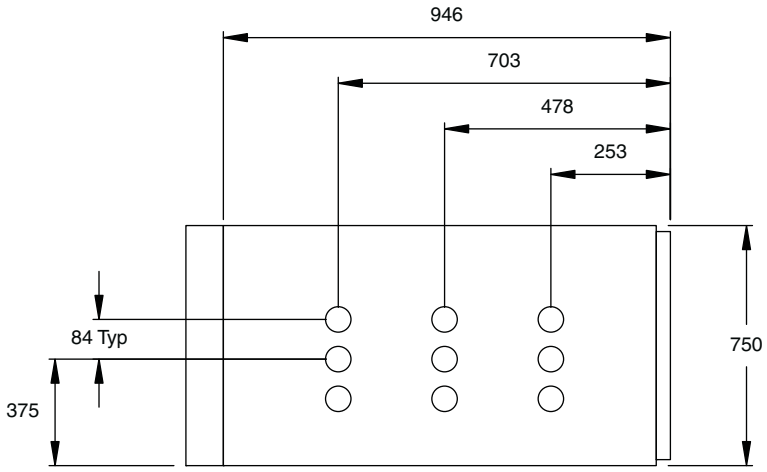
- Single–conductor ∅ 70 mm



Incoming section (750)– 3 cables per phase

Maximum external cable ∅

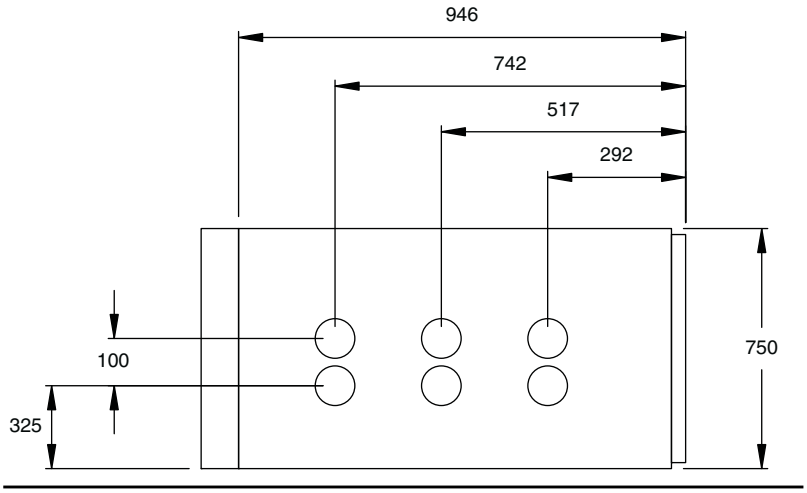
- Single–conductor ∅ 70 mm



Incoming section (750)– dual triplex

Maximum external cable ⌀

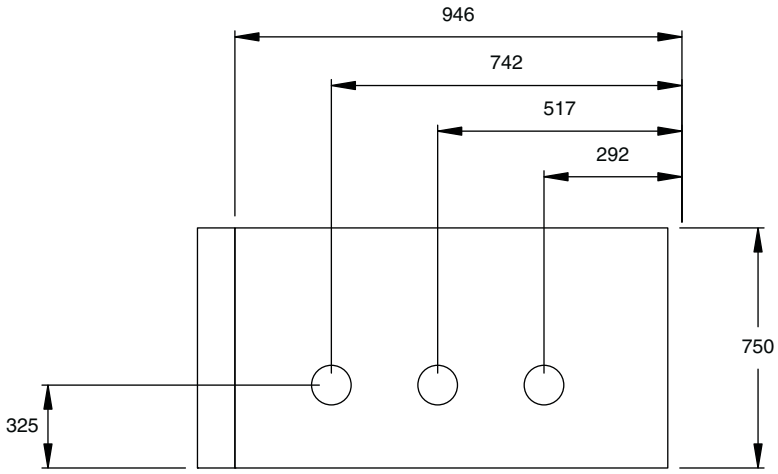
- Three–conductor ⌀ 90 mm



Incoming section (750)– single triplex

Maximum external cable ⌀

- Three–conductor ⌀ 90 mm



Floor finishing

Surface conditioning

The floor's surface evenness must allow for a 2 m rule to be placed on it in any direction and on all sides so that there are no deflections greater than 5 mm.

Quality of flooring

To roll extraction tool for moving parts (ERT, OESD, etc.) without damaging the floor, it must meet the following criteria:

- compressive strength ≥ 33 MPa

Section mounting

For standard or earthquake-resistant civil engineering, see installation manual 46032-700-08_.

Must have rear access for earthquake-resistant hardware.

For civil engineering structure built with a false floor or beams, consult our technical department.

Summary of different mounting methods

A: Front rail, supply on switchboard installation

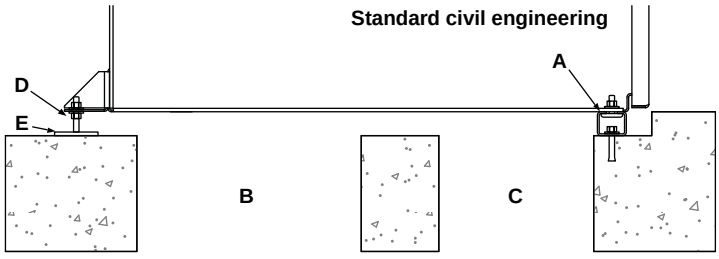
B: MV functional unit cable opening

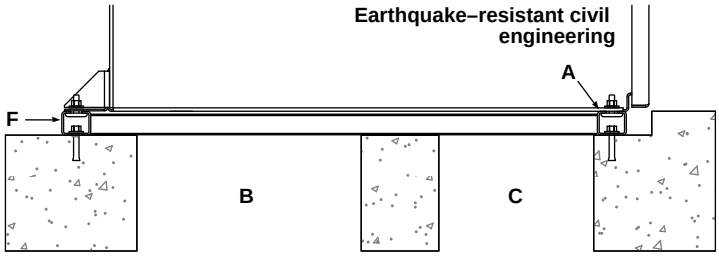
C: LV cable opening

D: Horizontal adjustment with the rear actuators

E: Rear rail

F: Rear rail, supply on switchboard installation





FVNR, RVSS, DDS, RVAT, and incoming section base layouts–standard and earthquake

FVNR (375, 500, and 750), FVR bidirectional, FVS, 2S1W, 2S2W, Star Delta, and DDS base layout–standard mounting

Reserved space over all civil engineering

A: Front rail

B: MV cable opening

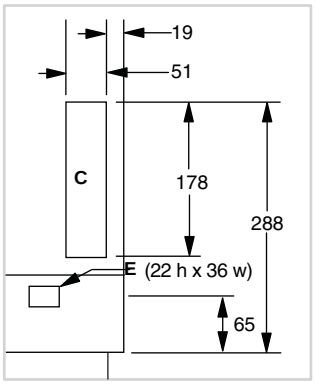
C: LV cable opening

D: Rear supporting plate

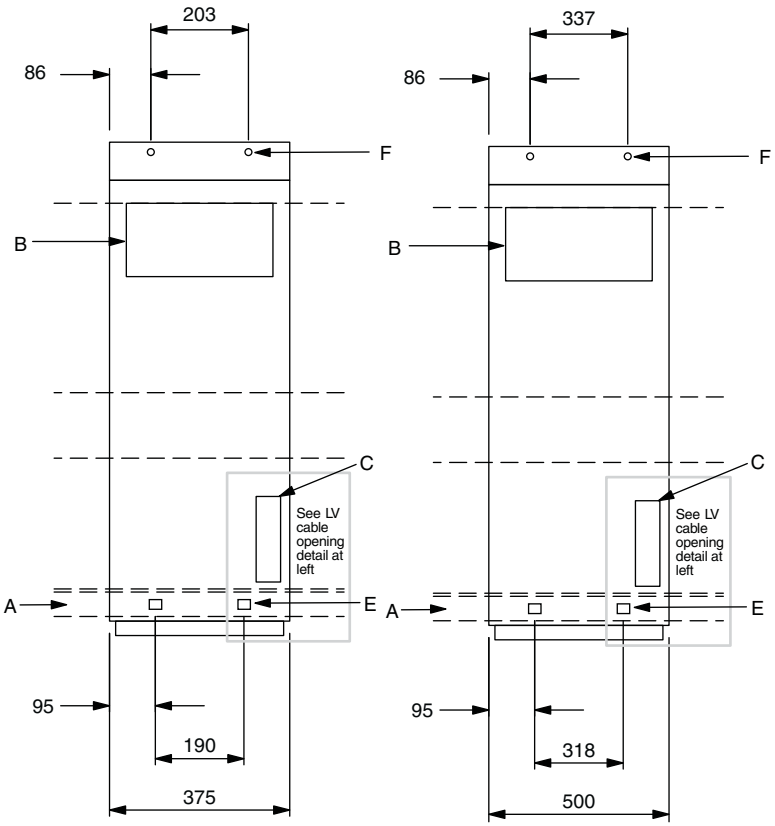
E: Positioning of front anchors

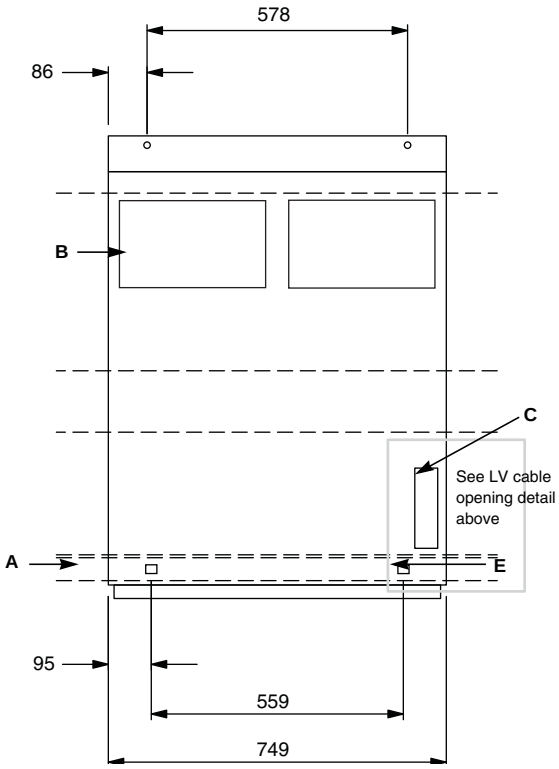
F: Positioning of rear anchors

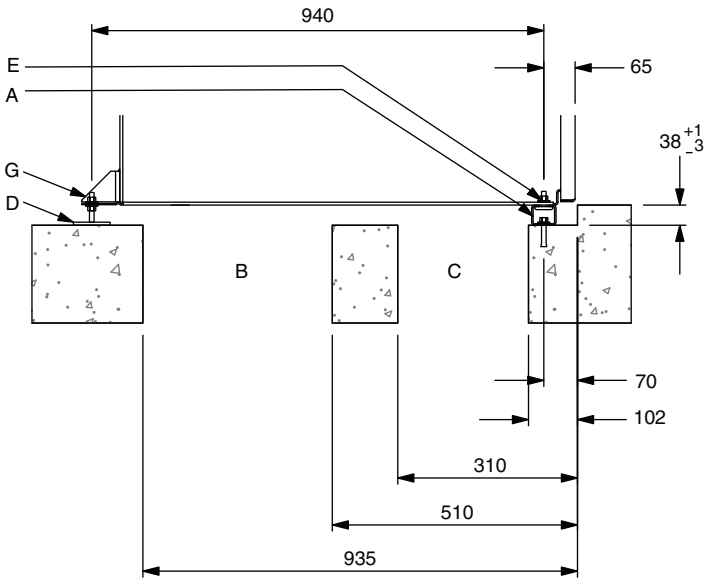
G: Positioning of rear actuator



LV cable opening detail







FVNR (375, 500, and 750), FVR bidirectional, FVS, 2S1W, 2S2W, Star Delta, and DDS base layout–earthquake mounting

Reserved space over all civil engineering

A: Front rail

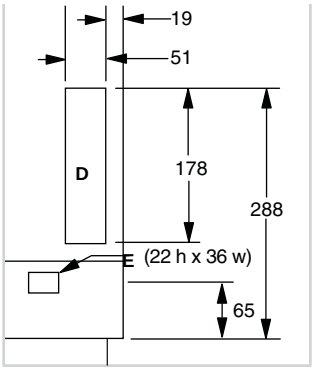
B: Rear rail

C: MV cable opening

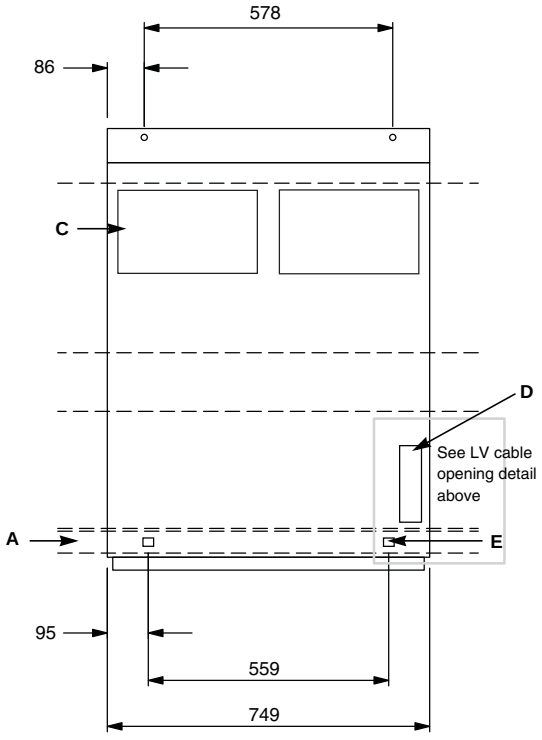
D: LV cable opening

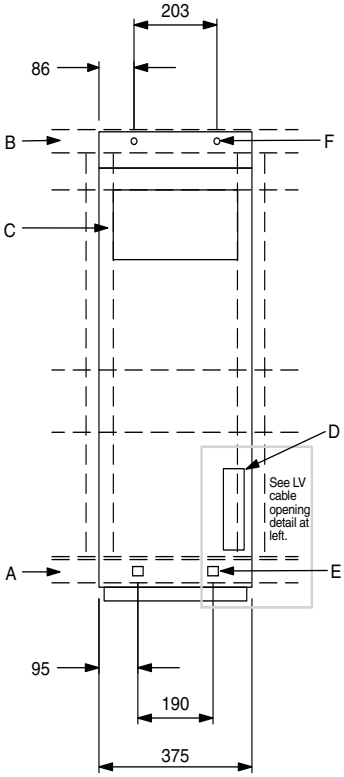
E: Positioning of front anchors

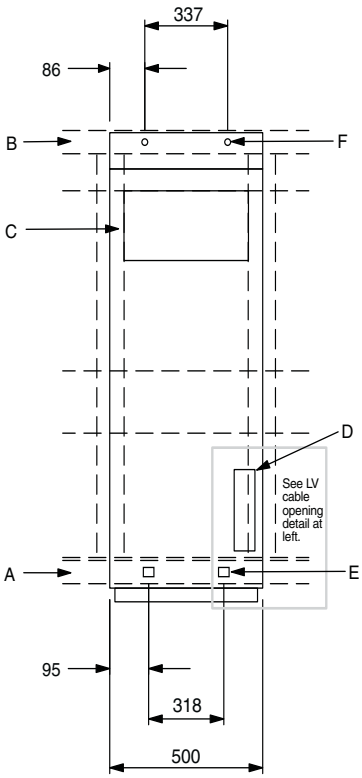
F: Positioning of rear anchors

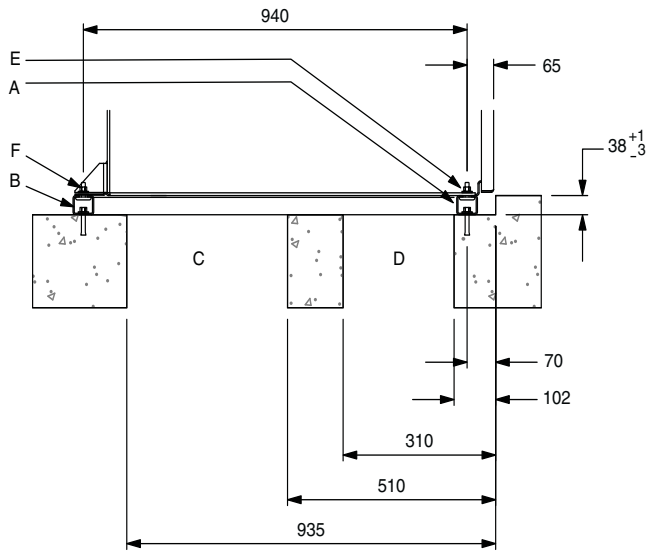


LV cable opening detail









RVSS soft start section (750) base layout–standard mounting

Reserved space over all civil engineering

A: Front rail

B: MV cable opening

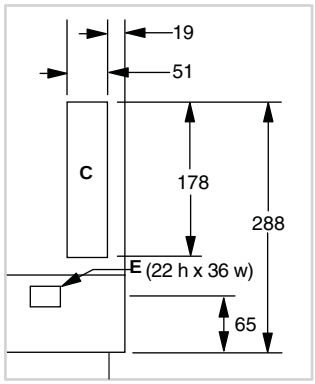
C: LV cable opening

D: Rear supporting plate

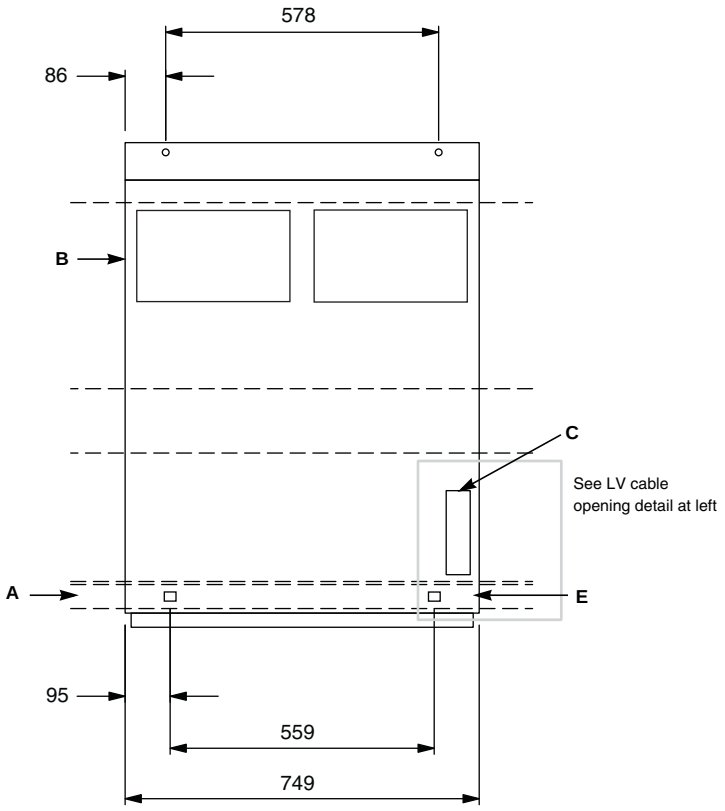
E: Positioning of front anchors

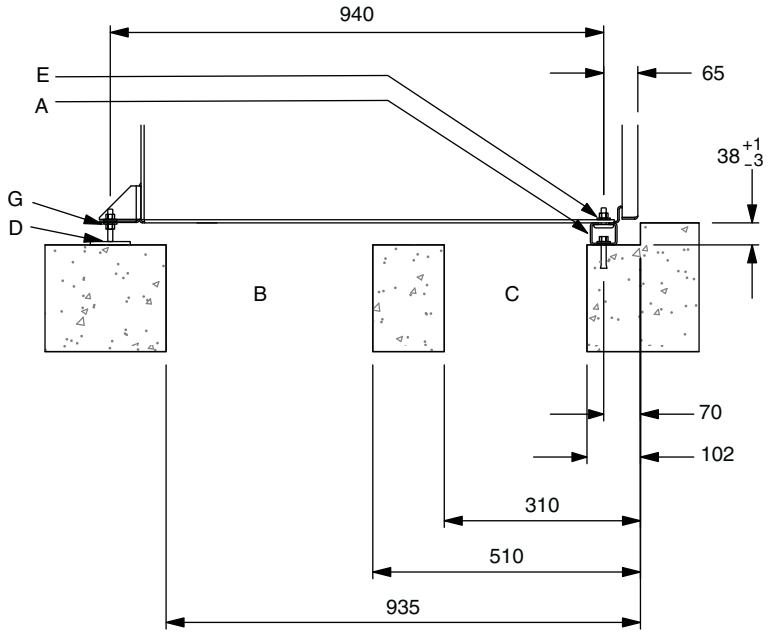
F: Positioning of rear anchors

G: Positioning of rear actuator



LV cable opening detail

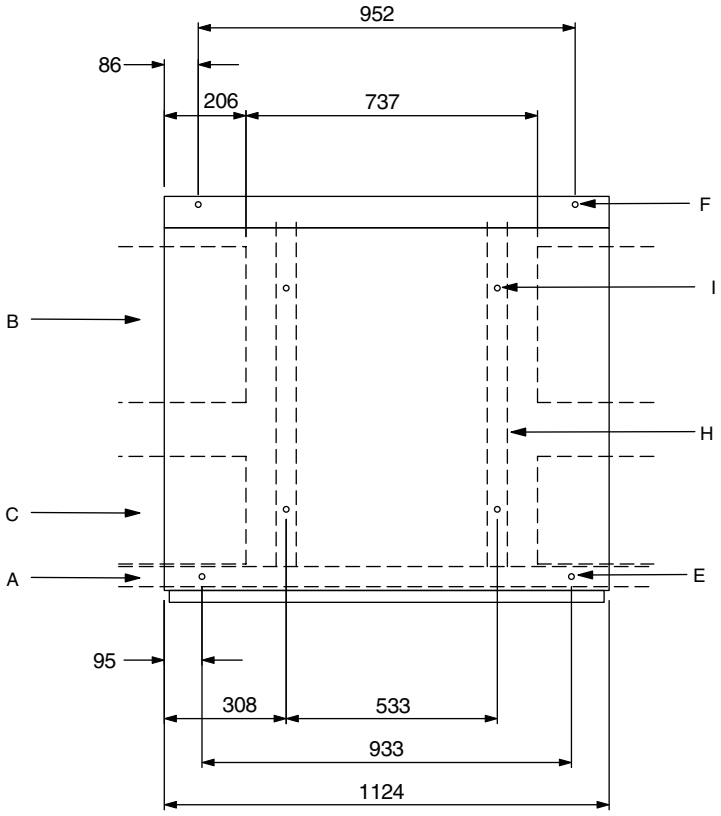


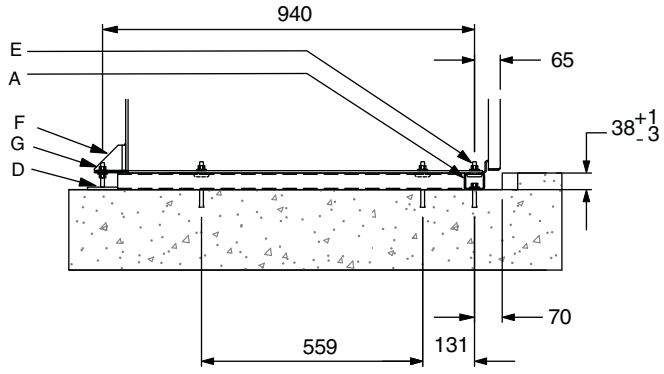


RVAT (1125) base layout– standard mounting

Reserved space over all civil engineering

- **A:** Front rail
- **B:** MV cable opening
- **C:** LV cable opening
- **D:** Rear supporting plate
- **E:** Positioning of front anchors
- **F:** Positioning of rear anchors
- **G:** Positioning of rear actuator
- **H:** Transformer rails (2 places)
- **I:** Positioning of transformer anchors





RVAT (1125) base layout– earthquake mounting

Reserved space over all civil engineering

A: Front rail

B: Rear rail

C: MV cable opening

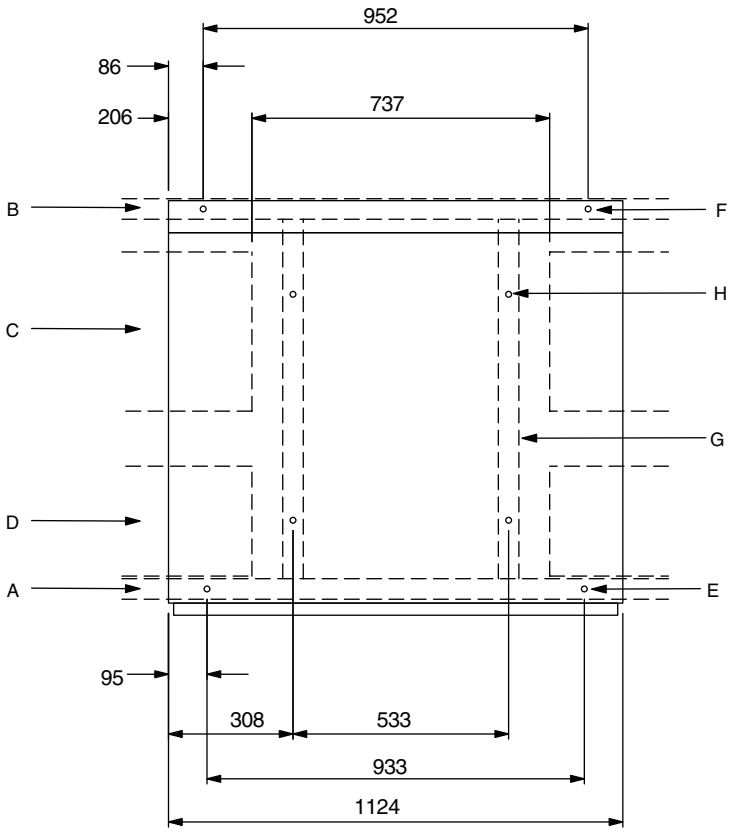
D: LV cable opening

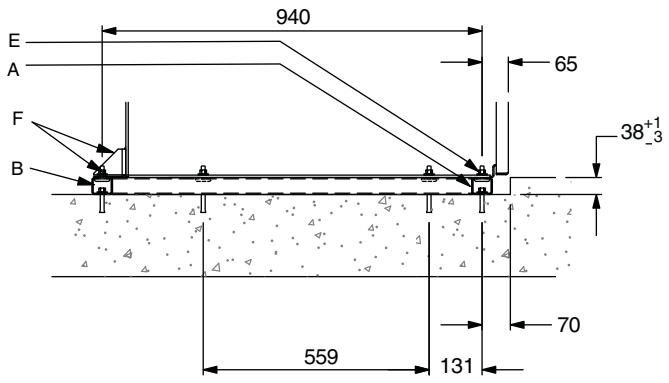
E: Positioning of front anchors

F: Positioning of rear anchors

G: Transformer rails (2 places)

H: Positioning of transformer anchors

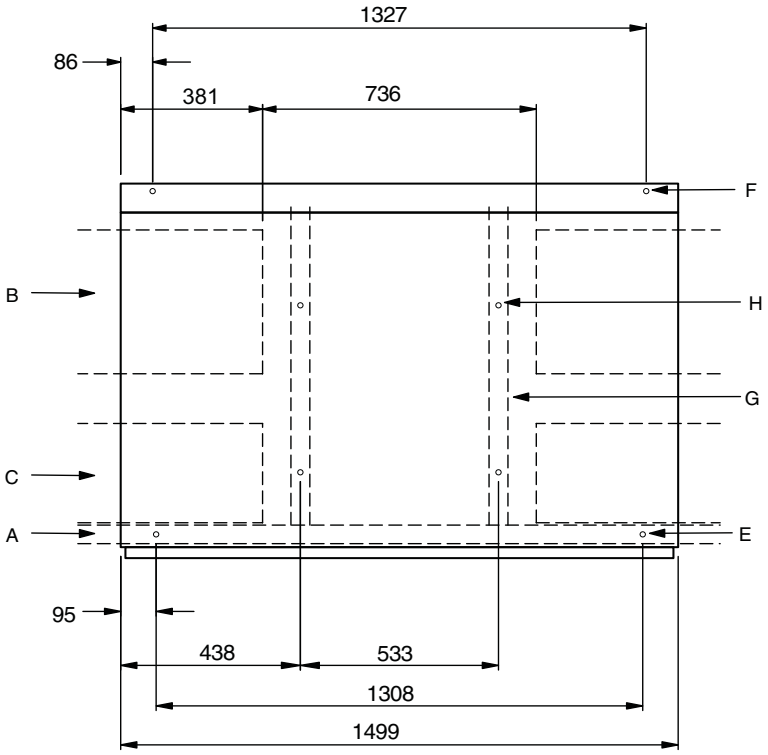


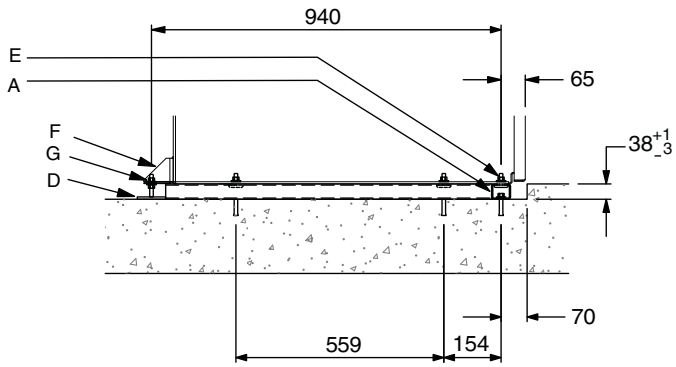


RVAT (1500) base layout– standard mounting

Reserved space over all civil engineering

A: Front rail
B: MV cable opening
C: LV cable opening
D: Rear supporting plate
E: Positioning of front anchors
F: Positioning of rear anchors
G: Positioning of rear actuator
H: Transformer rails (2 places)
I: Positioning of transformer anchors





RVAT (1500) base layout– earthquake mounting

Reserved space over all civil engineering

A: Front rail

B: Rear rail

C: MV cable opening

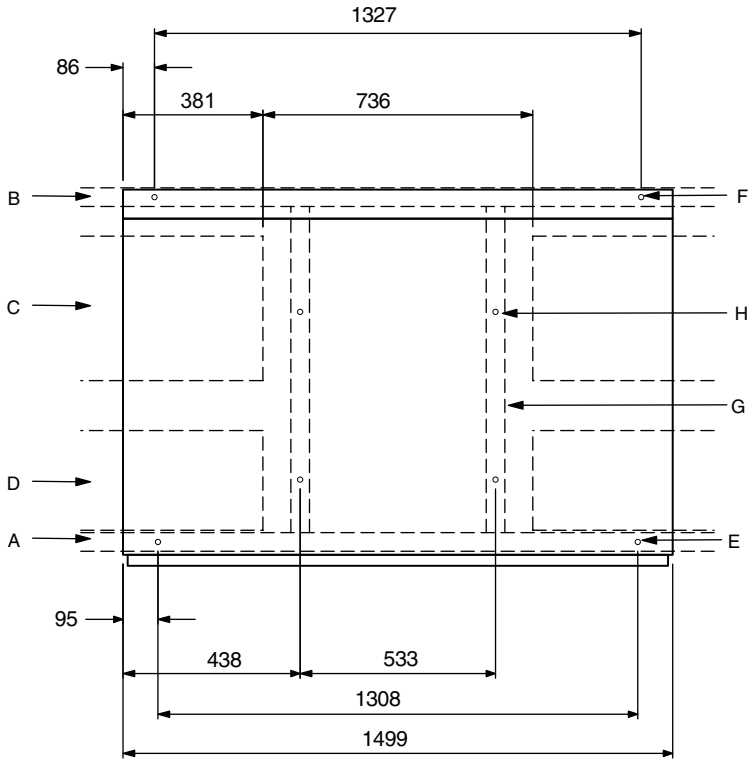
D: LV cable opening

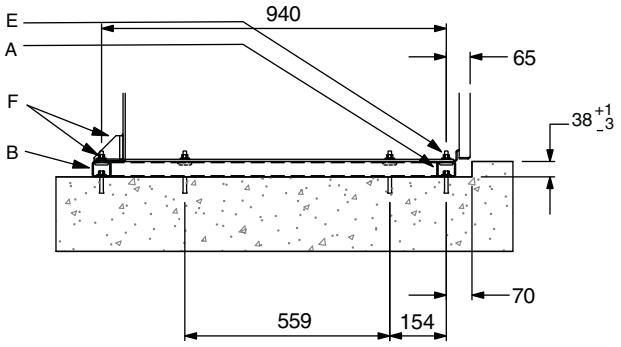
E: Positioning of front anchors

F: Positioning of rear anchors

G: Transformer rails (2 places)

H: Positioning of transformer anchors





Incoming section (500) base layout–standard mounting

Reserved space over all civil engineering

A: Front rail

B: MV cable opening

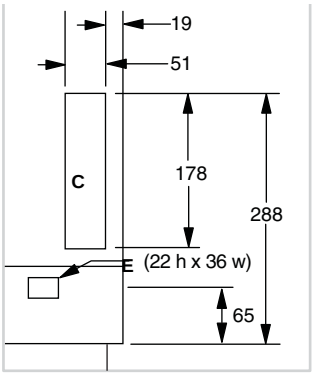
C: LV cable opening

D: Rear supporting plate

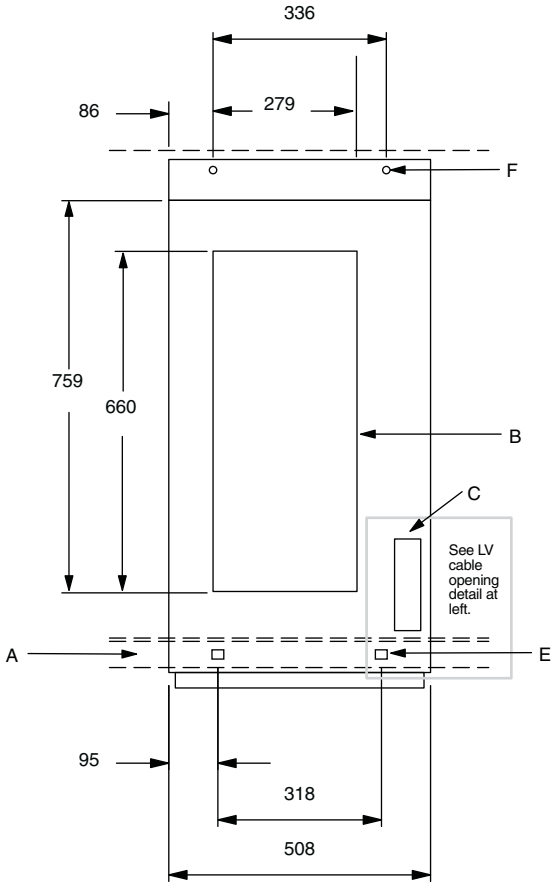
E: Positioning of front anchors

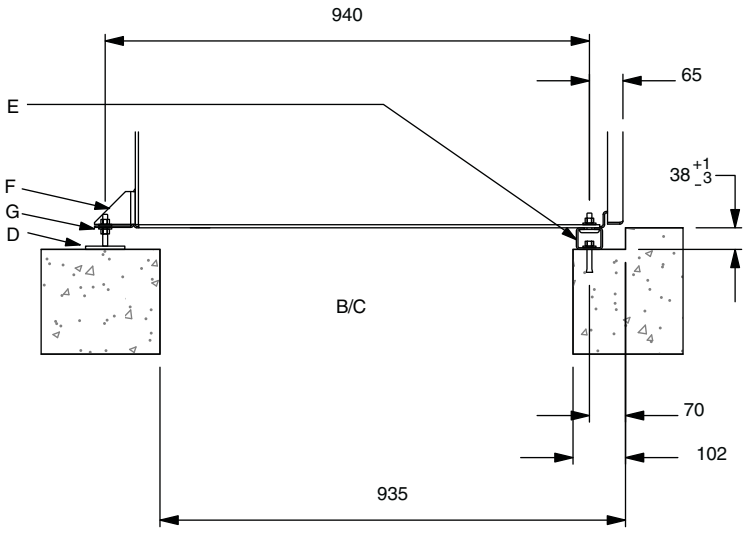
F: Positioning of rear anchors

G: Positioning of rear actuator



LV cable opening detail





Incoming section (500) base layout–earthquake mounting

Reserved space over all civil engineering

A: Front rail

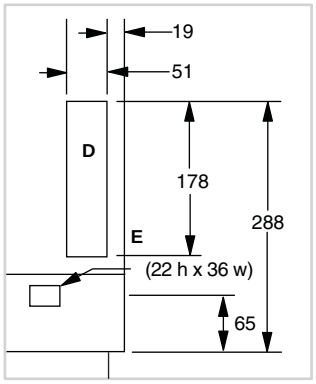
B: Rear rail

C: MV cable opening

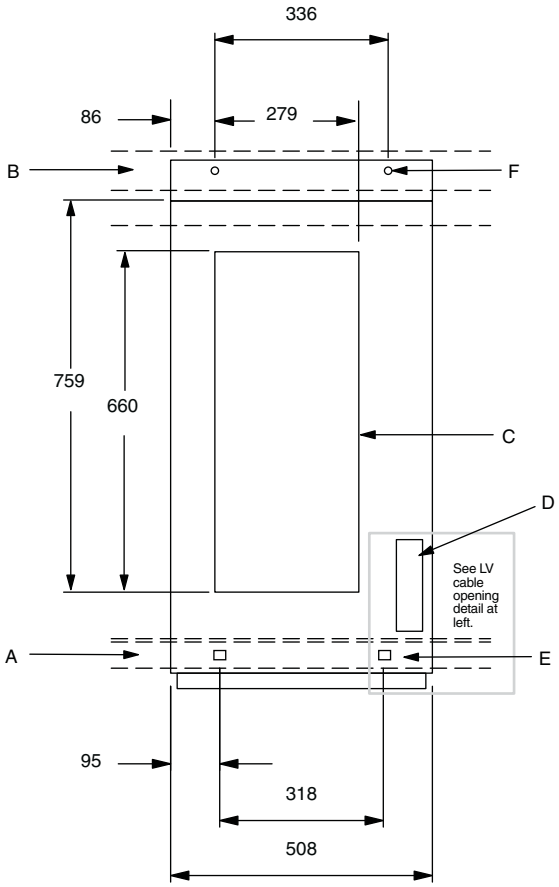
D: LV cable opening

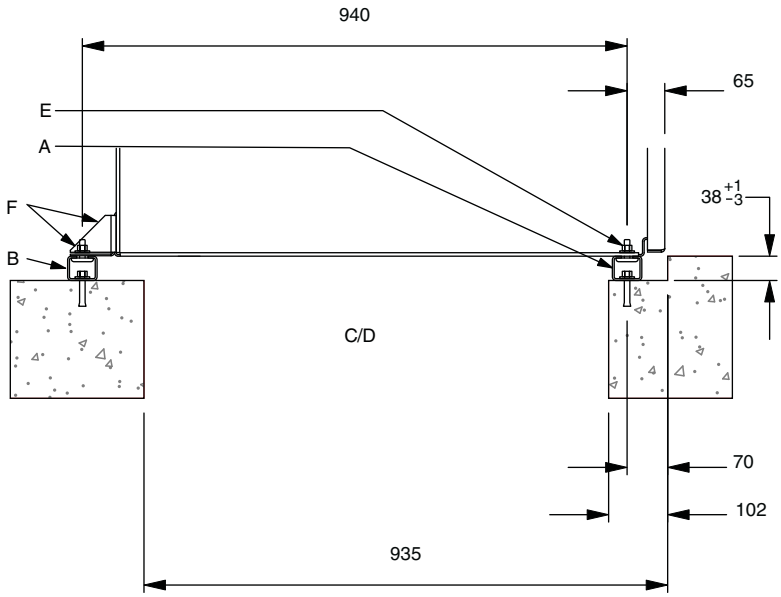
E: Positioning of front anchors

F: Positioning of rear anchors



LV cable opening detail





Incoming section (750) base layout–standard mounting

Reserved space over all civil engineering

A: Front rail

B: MV cable opening

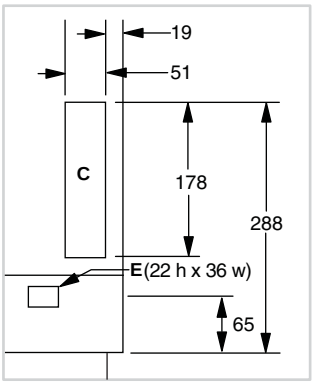
C: LV cable opening

D: Rear supporting plate

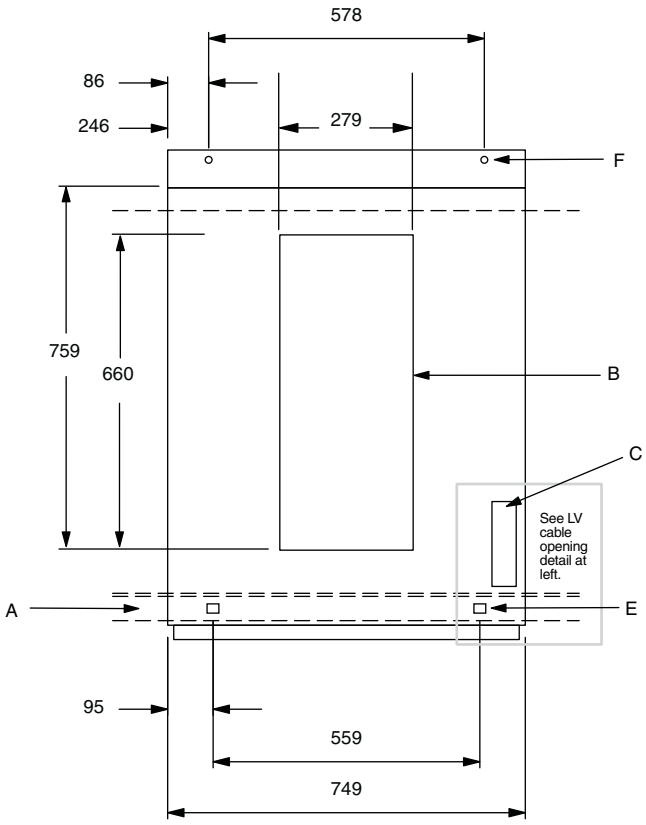
E: Positioning of front anchors

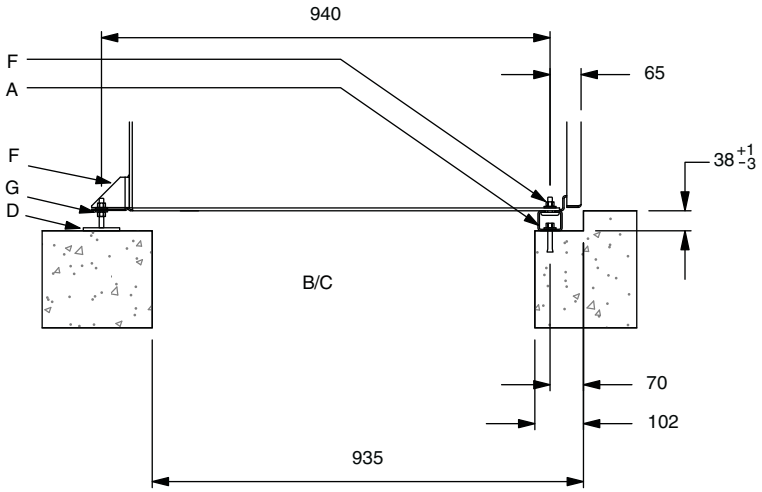
F: Positioning of rear anchors

G: Positioning of rear actuator



LV cable opening detail





Incoming section (750) base layout–earthquake mounting

Reserved space over all civil engineering

A: Front rail

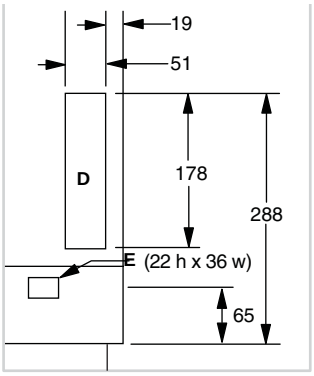
B: Rear rail

C: MV cable opening

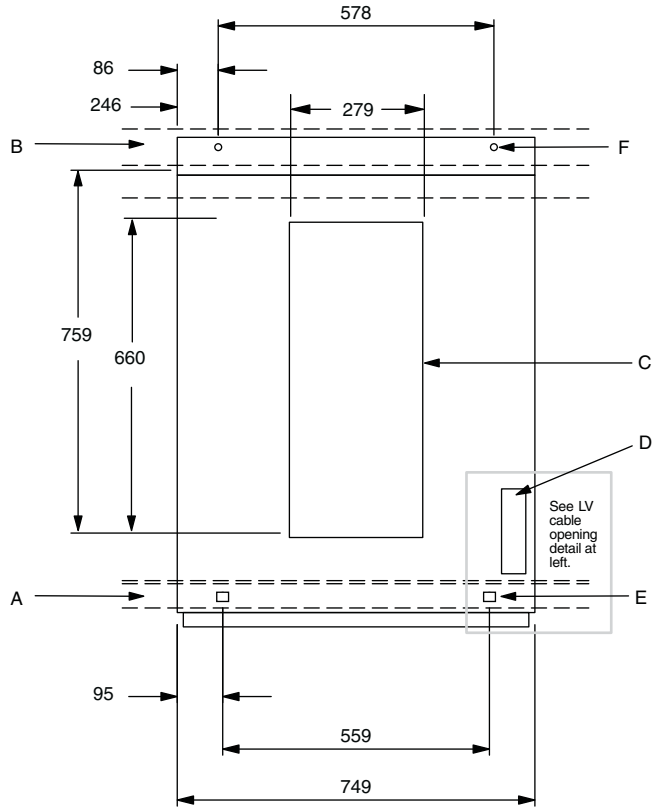
D: LV cable opening

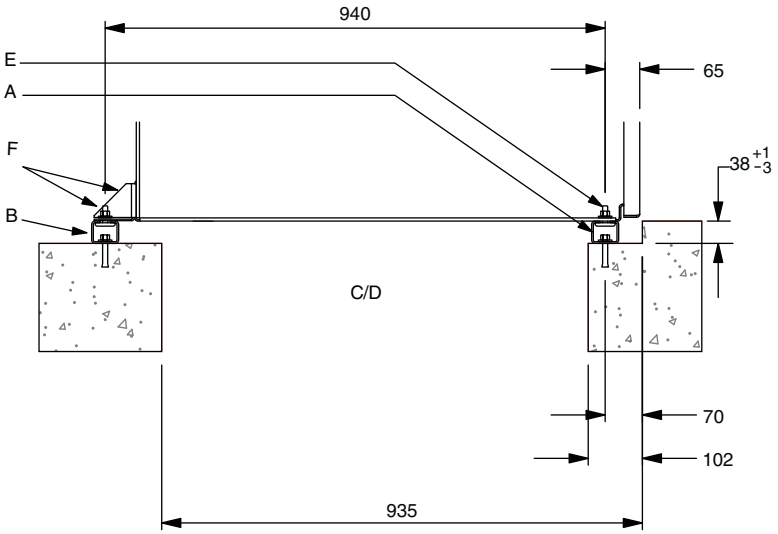
E: Positioning of front anchors

F: Positioning of rear anchors



LV cable opening detail





Other methods of installation

Bottom cable installation with conduit.

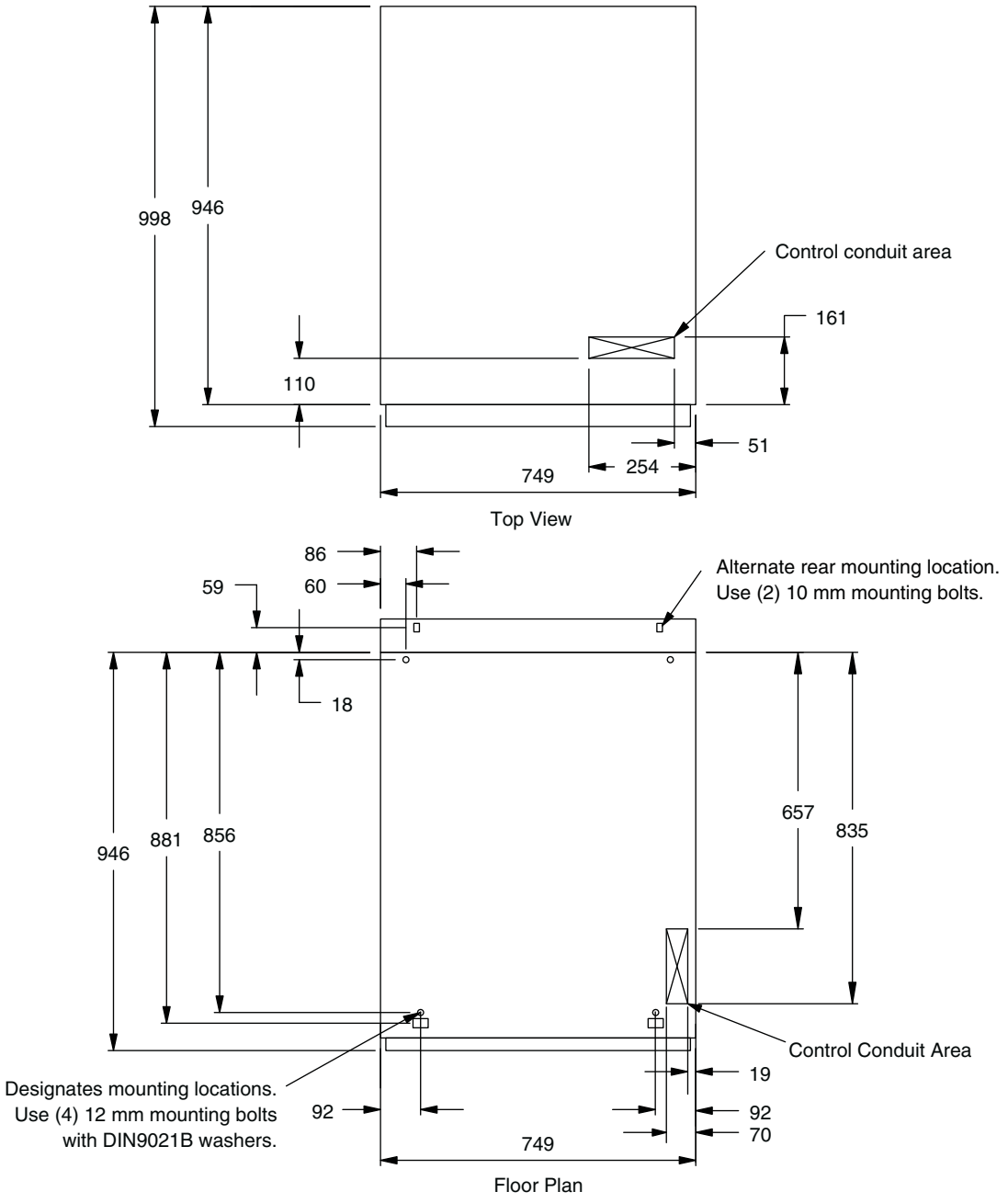
Top cable entry installation:

- Direct on line (FVNR)
- Reduced voltage sutotransformer (RVAT)
- Reduced voltage soft starter (RVSS) soft start section
- Incoming line section

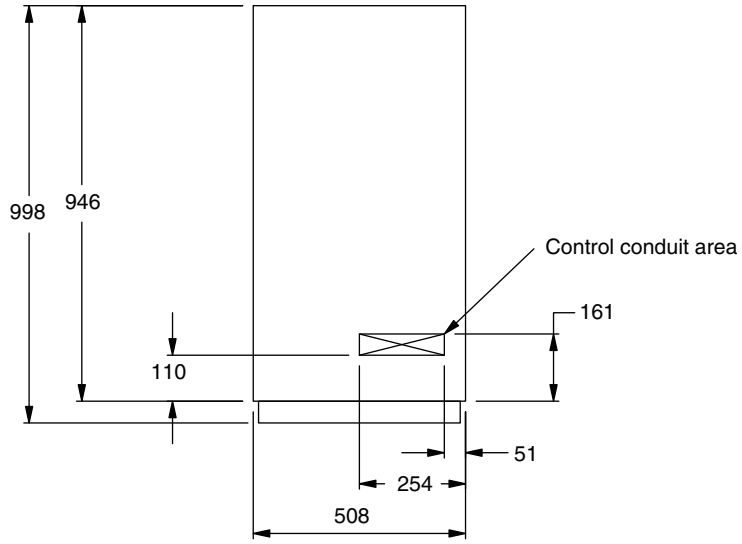
Preparing the site

Ensure that the floor is level within 2 mm per 305 mm, or a maximum of 6 mm within the area of the contactor line-up.

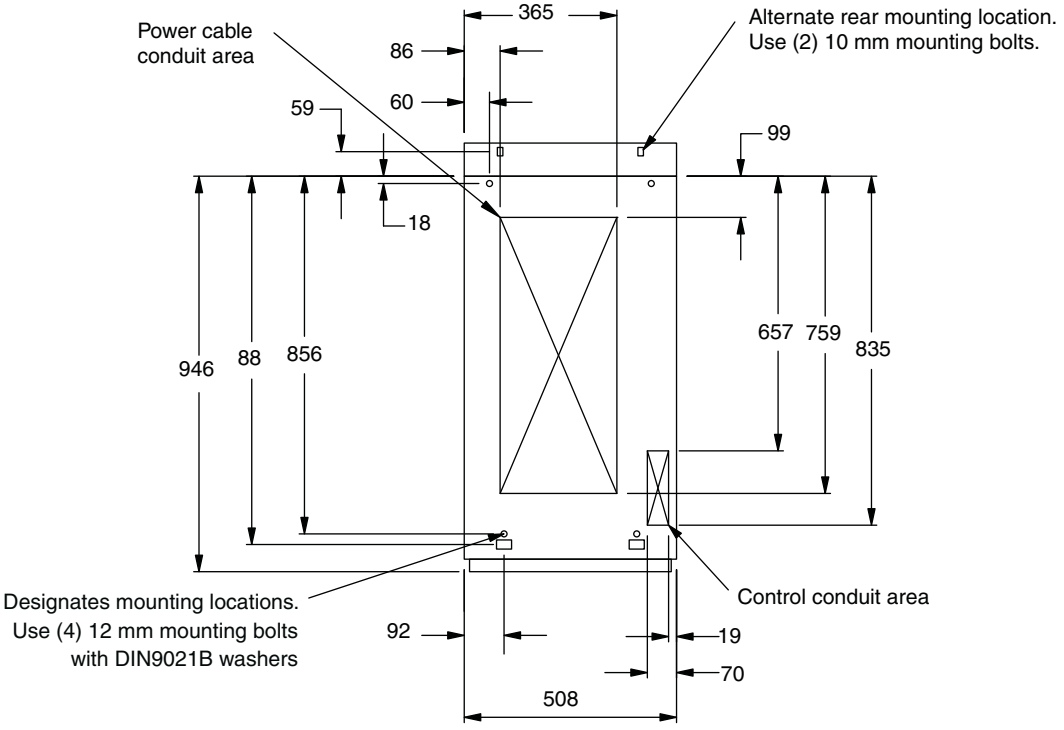
RVSS soft start section (750) base layout–alternate mounting



Incoming section (500) base layout–alternate mounting

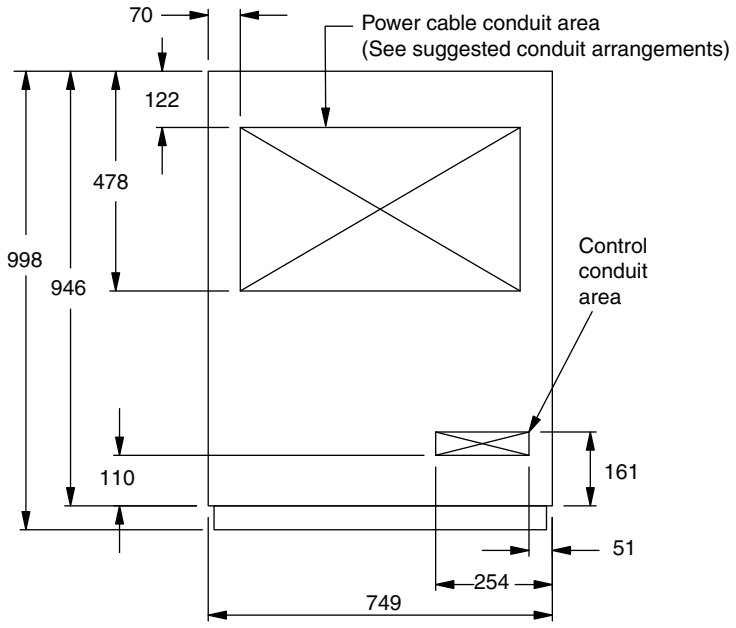


Top View

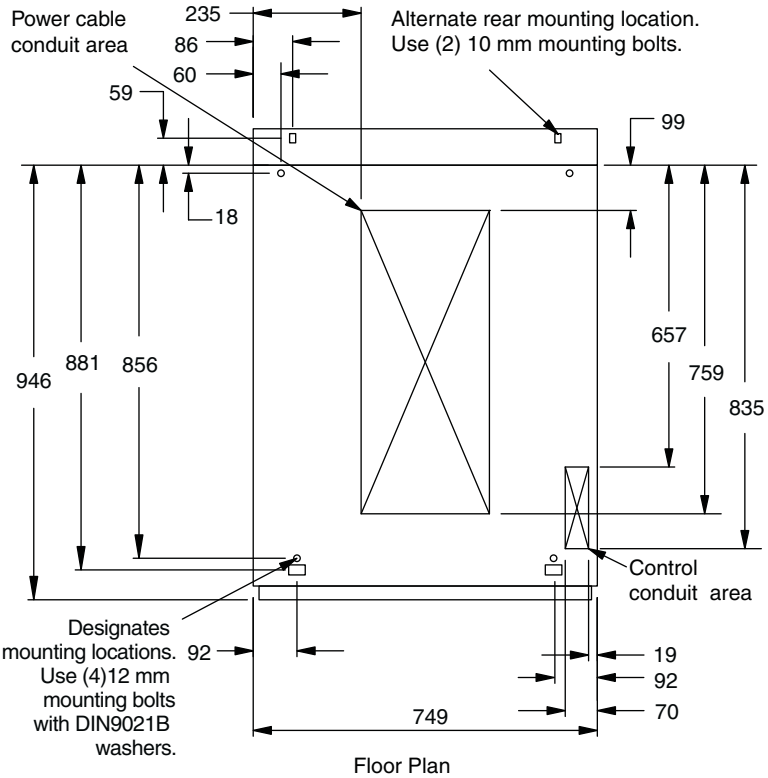


Floor Plan

Incoming section (750) base layout–alternate mounting

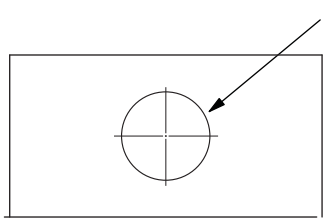


Top View

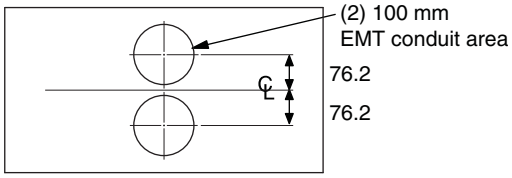


Floor Plan

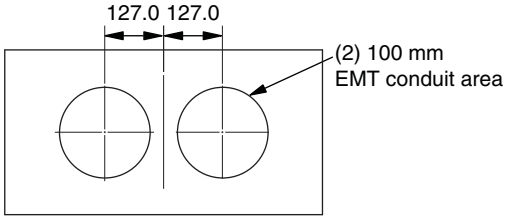
Suggested top entry conduit arrangements



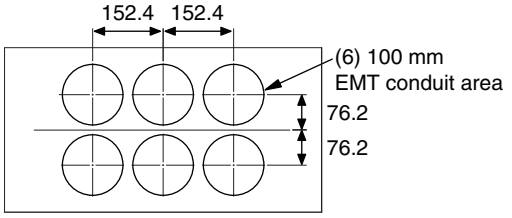
A. (2) 400 mm^2 per phase
(3) 240 mm^2 per phase
(5) 185 mm^2 per phase
(6) 120 mm^2 per phase



B. (2) 400 mm^2 per phase
(3) 240 mm^2 perphase
(4) 185 mm^2 per phase
(4) 120 mm^2 per phase



C. (4) 750 mm^2 per phase
(4) 400 mm^2 perphase
(6) 240 mm^2 per phase
(6) 120 mm^2 per phase

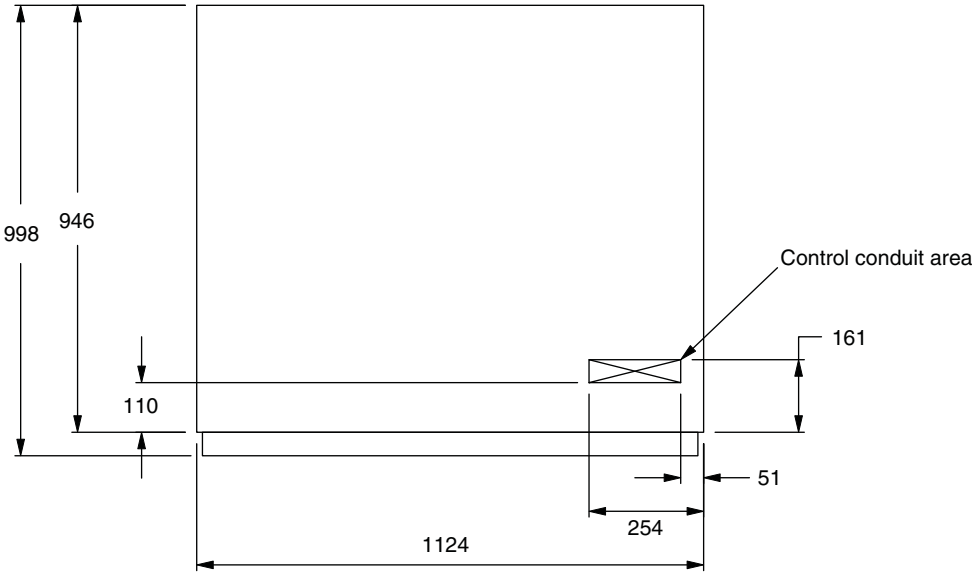


D. (6) 400 mm^2 per phase

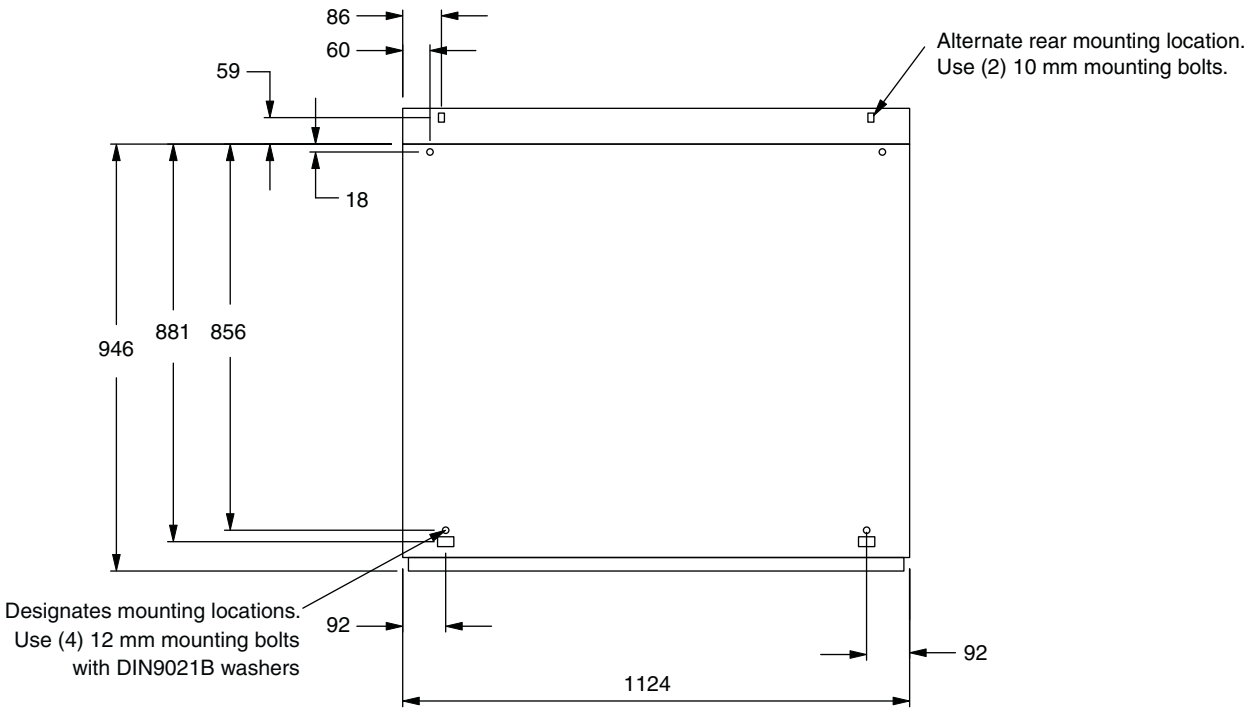
Notes:

1. For top entry, if cable is led from cable tray, all cables sizes will require a 432 mm pullbox.
2. Due to the minimum required cable bending space, when cable is fed from conduit, a 432 mm pullbox is required for all cables above 120 mm^2.
3. Current transformers may be used with conduit plans “A” and “B” or cables fed from cable trays only.

RVAT (1125) base layout–alternate mounting

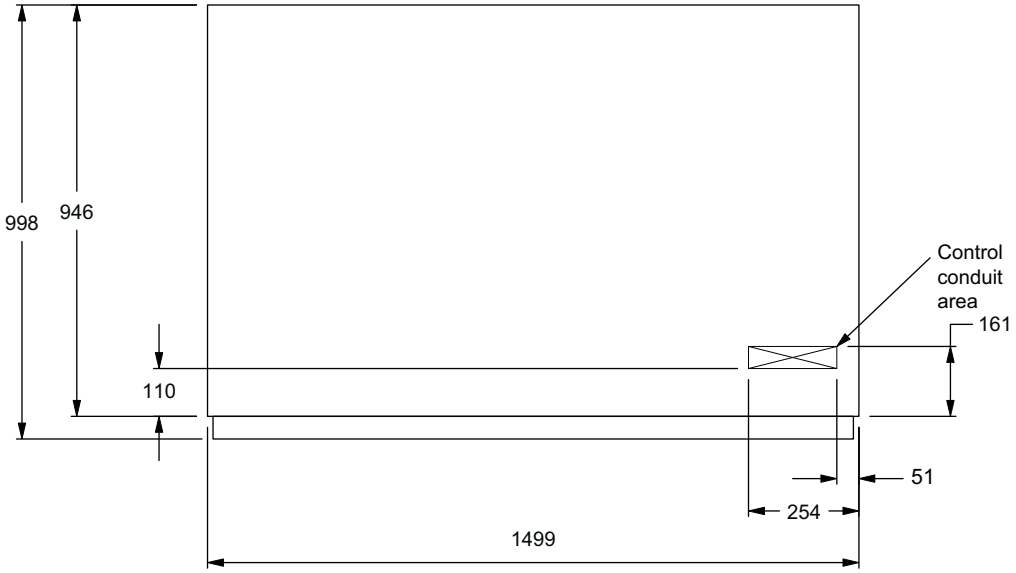


Top View

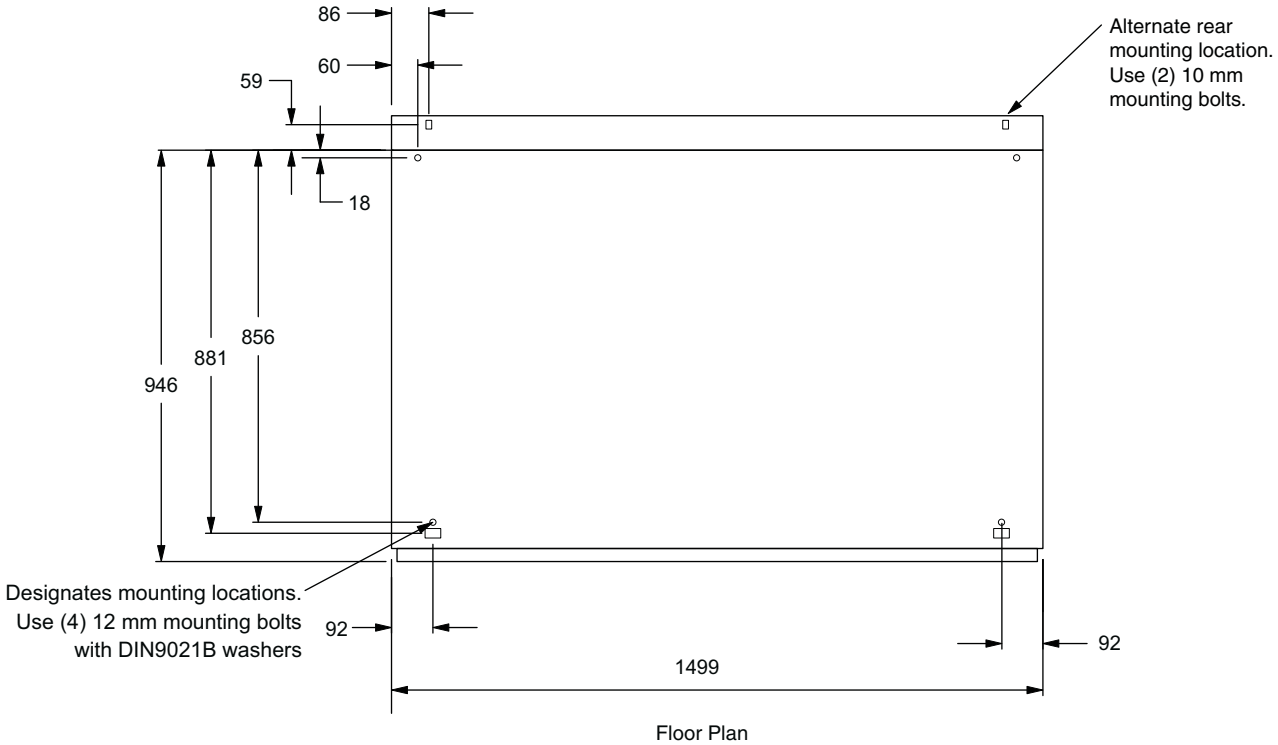


Floor Plan

RVAT (1500) base layout– alternate mounting

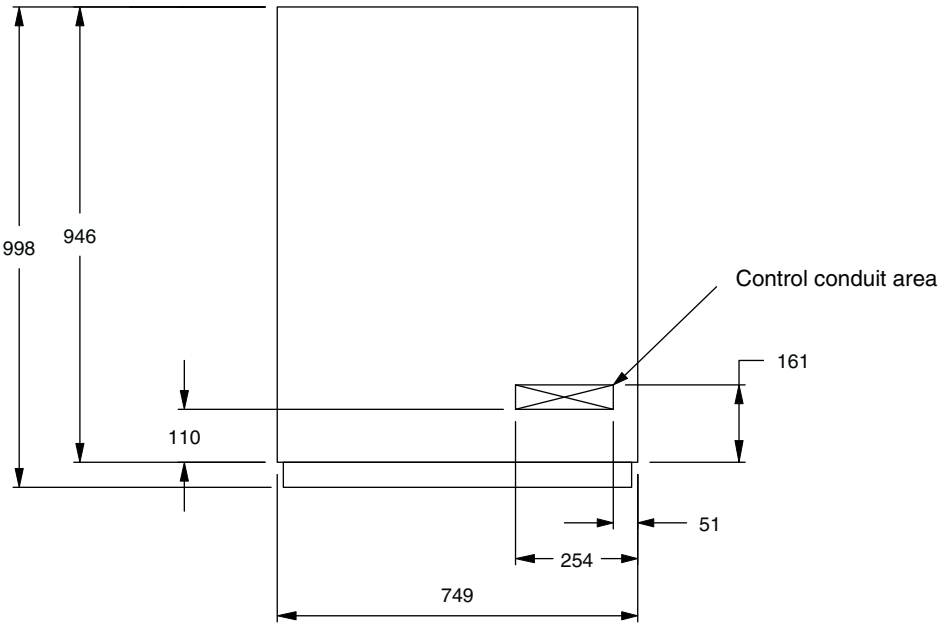


Top View

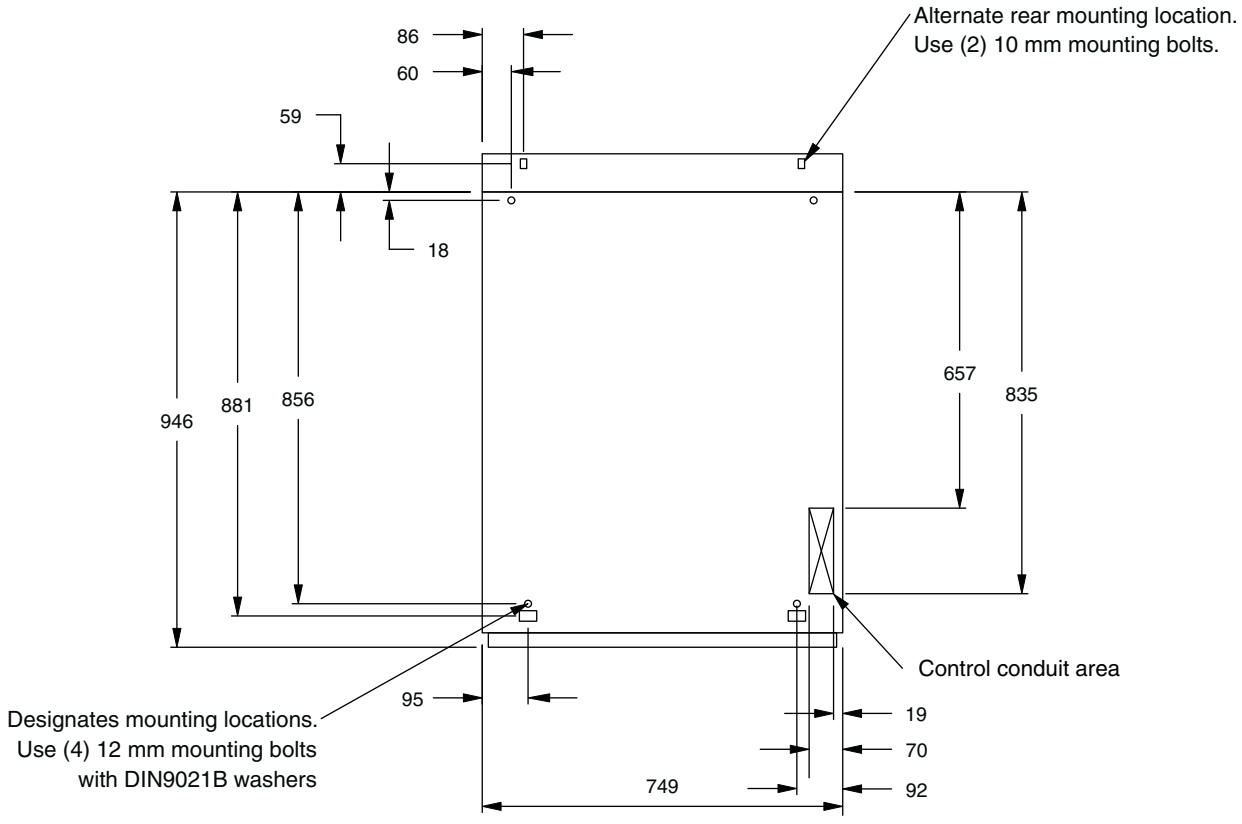


Floor Plan

RVSS soft start section (750) base layout–alternate mounting



Top View



Floor Plan

The Schneider group service centers are at your service for:

-engineering and technical assistance,
-commissioning,
-training,
-preventive and corrective maintenance,
-adaptation, and
-spare parts.

Contact your sales representative who will put you in touch with your nearest Schneider group service center or call us on 33 (0)4 76 57 60 60 (Grenoble, France).

Schneider Electric Industries SAS

35, rue Joseph Monier
CS 30323
F - 92506 Rueil Malmaison Cedex (France)
Tél. : +33 (0)1 41 29 70 00
RCS Nanterre 954 503 439
Capital social 896 313 776 €
www.schneider-electric.com

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.

This document has been printed on ecological paper.

46032-700-07D © 2004–2011 Schneider Electric All rights reserved.

46032-700-07D

10/2011