

CLASSIFICATION OF FIRE RESISTANCE ACCORDING TO EN 13501-2: 2016

| | |
|--------------------|--|
| Classification no. | 2020-Efectis-R001930[Rev.2] |
| Sponsor | Metaalwarenfabriek Metacon B.V. Zuidbaan 450 2841 MD MOORDRECHT THE NETHERLANDS |
| Product name | RGS EW120 |
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| Project number | ENL-20-000917 |
| Issue | 3 |
| Date of issue | May 2021 |
| Number of pages | 13 |

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1. INTRODUCTION

This classification report defines the resistance to fire classification assigned to a steel rolling shutter type RGS EW120 in accordance with the procedures given in EN 13501-2:2016.

1.1 NORMATIVE REFERENCES

| European standard | Part |
|-------------------------|---|
| EN 1363-1:2012 | Fire resistance tests – Part 1: General requirements |
| EN 1634-1:2014+ A1:2018 | Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for door and shutter assemblies |
| EN 13501-2:2016 | Fire classification of construction product and building elements – Part 2: Classification using data from fire resistance tests |
| EN 15269-1:2019 | Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware - Part 1: General requirements |
| EN 15269-10:2011 | Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies including their elements of building hardware - Part 10: Fire resistance of steel rolling shutter assemblies |
| EN 15725:2010+ C1:2012 | Extended application reports on the fire performance of construction products and building elements |
| EN 1191:2012 | Resistance to repeated opening and closing |
| EN 16034:2014 | Pedestrian door sets, industrial, commercial, garage doors and openable windows – Product standard, performance characteristics – Fire resisting and/or smoke control characteristics |

1.2 REVISION INFORMATION

This is a revised version of this report. This version supersedes all previous versions of this reports that are hereby withdrawn. Details on the changes can be found in the tables below.

Table 1.1: Revision information

| Issue | Date of issue | Report no. |
|-----------------|-----------------|-----------------------------|
| First issue | October of 2020 | 2020-Efectis-R001930 |
| First revision | October of 2020 | 2020-Efectis-R001930[Rev.1] |
| Second revision | May of 2021 | 2020-Efectis-R001930[Rev.2] |

1.2.1 First revision detailed information

Table 1.2: First revision information

| | |
|---------------------|--|
| Chapter of revision | § 4.2 and § 4.4 |
| Reason of revision | The text in tables § 4.2 and § 4.4 have been made more detailed. The table in § 4.4 has been replaced for the correct version. |

1.2.2 Second revision detailed information

Table 1.3: Second revision information

| | |
|--------------------------|---|
| Chapter of revision | § 4.4 and addition § 1.4 |
| Reason of revision | Unclear table in § 4.4, in connection with notation on CE-certificate. Addition about gap analysis. |
| Consequences of revision | Table in § 4.4 has been replaced by two tables with clearer notation. Mentioned test report can be used as a basis for classification according to the standard EN 13501-2:2016 |

1.3 ACCREDITATION

Due to Dutch regulations, classification based on the Exap report 2020-Efectis-R001959 cannot be part of the accredited section of this document. Based on common practise agreed by the group of Notified Bodies EXAP reports and following classification will be judged based on 2 criteria:

- 1) Is the EXAP performed by a laboratory that performed at least one of the supported tests
- 2) Is the laboratory who performed the EXAP accredited for the respective test standard.

For this report Efectis Netherlands fulfills both requirements mentioned above.

1.4 GAP-ANALYSES

To be able to use the test report, 2013-Efectis-R0536a[Rev.2], as a basis for a classification according to EN 13501-2:2016, it is necessary to do a gap analysis to investigate whether the results of the test performed according to the standard EN 1634-1:2014 are still valid for use according to the currently applicable standard EN 1634-1:2014+A1:2018 as required by EN 13501-2:2016.

Efectis has made a comparison between the two EN 1634-1 standards and examined the test report. Efectis concluded that the results of the test according to the EN 1634-1:2014 standard are still valid according to the standard EN 1634-1:2014+A1:2018. Therefore, the test report can be used as a basis for classification according to the standard EN 13501-2:2016.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, RGS EW120 (Rolling Gate Steel), is defined as a rolling shutter assembly.

The rolling shutter assembly has been tested mounted on a standard low rigid supporting construction at the exposed and non-exposed side.

2.2 DESCRIPTION

The element, RGS EW120, is fully described in the test reports in support of classification listed in 3.1.

2.3 TEST SPECIMEN

The test specimen was a steel rolling shutter assembly from Metaalwarenfabriek Metacon B.V. type RGS EW120.

3. TEST REPORTS / EXTENDED APPLICATION REPORTS AND TEST RESULTS IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS

| Name of laboratory | Name of sponsor | Report ref. no | Test standard |
|----------------------|---------------------------------|------------------------------|------------------------|
| Efectis Nederland BV | Metaalwarenfabriek Metacon B.V. | 2013-Efectis-R0536a [Rev.2] | EN 1634-1:2014* |
| Efectis Nederland BV | Metaalwarenfabriek Metacon B.V. | 2020-Efectis-R001721 | EN 1634-1:2014+A1:2018 |
| Efectis Nederland BV | Metaalwarenfabriek Metacon B.V. | 2018-Efectis-R000670 [Rev.1] | EN 1191:2012 |

* See § 1.4 for the connection with the current standard EN 1634-1:2014+A1:2018

3.2 EXTENDED APPLICATION REPORTS

| Name of laboratory | Name of sponsor | Report No. | Standard |
|----------------------|---------------------------------|----------------------|------------------|
| Efectis Nederland BV | Metaalwarenfabriek Metacon B.V. | 2020-Efectis-R001959 | EN 15269-10:2011 |

3.3 TEST RESULTS RESISTANCE TO FIRE

3.3.1 2013536 - 2013-Efectis-R0536a[Rev.2] – Non-exposed side

| Time of reaching a criterion measured from start test in accordance with EN 1634-1 | | |
|--|-------------|---|
| Criterion | Time (min.) | Result |
| Integrity (E) | | |
| -Cotton pad | 135 | Not determined |
| -Gap gauge Ø 6 mm | 135 | Not determined |
| -Gap gauge Ø 25 mm | 135 | Not determined |
| -Sustained flaming > 10 seconds | 135 | Failure |
| Heat Radiation (W) | 135 | No failure, max. 17 kW/m ² at 135 min. |
| The heating was terminated after 135 minutes after consulting the client. | | |

3.3.2 2013536 - 2013-Efectis-R0536a[Rev.2] – Exposed side

| Time of reaching a criterion measured from start test in accordance with EN 1634-1 | | |
|---|--------------------------|---|
| Criterion | Time (min.) | Result |
| Integrity (E) - Cotton pad - Gap gauge Ø 6 mm - Gap gauge Ø 25 mm - Sustained flaming > 10 seconds | 133 133 133 133 | Not determined Not determined Not determined Failure |
| Heat Radiation (W) | 133 | No failure, max. 15 kW/m ² at 133 min. |
| The heating was terminated after 133 minutes after consulting the client. | | |

3.3.3 20000601 - 2020-Efectis-R001721 - Exposed side

| Time of reaching a criterion measured from start test in accordance with EN 1634-1 | | |
|---|-------------------|---|
| Criterion | Time [min] | Result |
| Integrity (E) - Cotton pad - Gap gauge Ø 6 mm - Gap gauge Ø 25 mm - Sustained flaming > 10 seconds | 189 | Not determined No failure Failure No Failure |
| Heat Radiation (W) | 139 | Failure, max. 18.6 kW/m ² at 263 min. |
| The heating was terminated after 264 minutes after consulting the client. | | |

3.4 TEST RESULTS RESISTANCE TO REPEATED OPENING AND CLOSING

3.4.1 2018-EFFECTIS-R000670[Rev.1]

| | |
|-------------------------------|-------------------------------|
| Name of laboratory | Efectis Nederland B.V. |
| Number of the cycles | 51757 |
| Travel distance of the cycles | 5620 mm |
| Classification | C2 |

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with Clause 7 of EN 13501-2.

4.2 CLASSIFICATION

4.2.1 Fire resistance

The element, RGS EW120 is classified according to combinations of performance parameters and classes as described in Clause 6.7 of EN 13501-2.

FIRE RESISTANCE CLASSIFICATION:

E120-C2* and EW120-C2*

**Mounted on the exposed and non-exposed side
of a standard low rigid supporting construction**

* C2 including ability to release according to EN 16034, see reports mentioned in § 3.1.

4.3 FIELD OF APPLICATION

4.3.1 Field of direct application

4.3.1.1 General

The field of direct application defines the allowable changes to the test specimen following a successful fire resistance test. These variations can be applied automatically without the need for the sponsor to seek additional evaluation, calculation or approval.

NOTE When extended product size requirements are envisaged, the dimensions of certain components within the test specimen can be less than those intended to be used at full size in order to maximize the extrapolation of the test results by modelling the interaction between components at the same scale.

Where referred to annex B or annex C in this paragraph, the annexes in EN 1634-1 are meant.

4.3.1.2 Materials and construction

4.3.1.2.1 General

Unless otherwise stated in the following text, the materials and construction of the door set shall be the same as that tested. The number of leaves and the mode of operation (e.g. sliding, single action or double action) shall not be changed.

4.3.1.2.2 Specific restrictions on materials and construction

4.3.1.2.2.1 Metal construction

The type of metal shall not be changed from that tested.

4.3.1.2.3 Decorative finishes

4.3.1.2.3.1 Paint

Where the paint finish is not expected to contribute to the fire resistance of the door, alternative paints are acceptable and may be added to door leaves or frames for which unfinished test specimens were tested. Where the paint finish contributes to the fire resistance of the door (e.g. intumescent paints) then no change shall be permitted.

4.3.1.2.4 Fixings

The number of fixings per unit length used to attach door sets to supporting constructions may be increased but shall not be decreased and the distance between fixings may be reduced but shall not be increased.

4.3.1.2.5 Building hardware

NOTE 2 Interchange of building hardware is not covered by the field of direct application.

4.3.1.3 Permissible size variations

4.3.1.3.1 General

Door sets of sizes different from those of tested specimens are permitted within certain limitations, but the variations are dependent on product type and the length of time that the performance criteria are fulfilled.

The increase and decrease of dimensions permitted by the field of direct application are applicable to the overall size.

4.3.1.3.2 Test periods

The amount of variation of size permitted is dependent on whether the classification time was just reached (Category 'A') or whether an extended time (Category 'B') in accordance with the values shown in Table 1 were fulfilled before the test was concluded.

For category 'B':

Table 4.1: Category B overrun requirements for E120 and EW120

| Classification time (min) | All performance criteria fulfilled for at least minutes |
|----------------------------------|--|
| 15 | 18 |
| 20 | 24 |
| 30 | 36 |
| 45 | 52 |
| 60 | 68 |
| 90 | 100 |
| 120 | 132 |

4.3.1.3.3 Size variation related to product type

4.3.1.3.3.1 General

The rules to cover increase or decrease of size without additional considerations are applicable only to six main product groups:

No increases in size are permitted for door sets which are required to satisfy radiation control levels unless the insulation criteria are also satisfied. This is because any increase in size will increase the radiation received at a fixed distance away from the door. There are calculation methods which can be used to determine acceptable size increases for such doors; however, these are beyond the scope of direct application. Size decreases are permitted for both doors

which satisfy radiation control levels and those which satisfy insulation criteria and radiation control levels.

Permissible variations for each product group are detailed in Annex B of EN 1634-1 which also contains some examples relating to hinged/pivoted door sets.

4.3.1.3.3.2 Rolling shutter door sets

Rules for the direct field of application for rolling shutters are not applicable to water cooled rolling shutters. For size variations, see Annex B.

For insulated rolling shutters the material thickness shall not be varied beyond the tolerances on thickness accepted by the metal industry.

The material thickness of side guides and barrel carrying end plates may be increased by up to 50% but it shall not be reduced beyond acceptable metal industry tolerances.

The clearance between the end of the shutter laths and the inside faces of the guides shall be increased in proportion to the increase in width of the laths (see Figure 33 EN 1634-1). The tightness between the shutter curtain and the vertical guides and the overlap between the guides and the wall shall not be reduced for size decreases but shall be increased at least proportionally for the increase in width.

| Permitted size variations for overrun time 'B' for the door leaf for classification EW120 | | | | |
|--|------|--------------------------------|------|---------------------------------|
| <i>Tested dimensions</i> | | <i>Permitted size increase</i> | | <i>Permitted size reduction</i> |
| Width (mm) | 3600 | Width 10% (mm) | 3960 | Unlimited |
| Height (mm) | 2810 | Height 30% (mm) | 3653 | Unlimited |

4.3.1.4 Asymmetrical assemblies

4.3.1.4.1 General

EN 1363-1 states that for separating elements required to be fire resisting from both sides, two test specimens shall be tested (one from each direction) unless the element is fully symmetrical, i.e. the construction of the door set is identical on both sides of the centre line when viewed in plan (from above). However, in some cases it is possible to develop rules whereby the fire resistance of an asymmetrical door assembly tested in one direction can apply when the fire exposure is from the other direction. The possibility to develop such rules increases if the consideration is limited to certain types of door assembly and on the criteria being applicable (e.g. integrity only doors). The following rules represent the minimum level of common agreement which shall be followed. The rationale behind the rules is given in Annex C of EN 1634-1.

4.3.1.4.2 Specific rules

The rules governing the applicability of tests carried out in one direction to other directions are given in Table 7.7 and are based on the following premises:

- that each of the door leaves are themselves of symmetrical construction with the exception of the edges (e.g. lock/leading edge and hinge edge or double rebated doors)
- that any restraining/supporting elements of building hardware has been included in a test to EN 1634-1 when exposed in both directions so that they will retain their function when exposed to the heat of the test
- that there is no change in the number of leaves or the mode of operation (e.g. sliding, swinging, single action or double action)

The table below lists the type of door assembly for which rules can be generated and gives the direction in which it should be tested to cover the opposite direction. The separate columns for the integrity and insulation criteria reflect the different ability to make rules for integrity only doors as opposed to those which satisfy both criteria. A 'Yes' means that it is possible to identify

the direction of test which covers the opposite direction. A 'No' indicates that it is not possible to identify the direction which will cover the opposite direction.

| Type of door set | Direction to be tested to cover opposite direction | Integrity | Insulation | Radiation |
|------------------|--|-----------|------------|-----------|
| Rolling shutter | Barrel and supporting components fixed on the face of the supporting wall on the fire side | Yes | No | No |

4.3.1.5 Supporting constructions

4.3.1.5.1 General

The fire resistance of a door assembly tested in one form of standard supporting construction may or may not apply when it is mounted in other types of construction. Generally, the rigid and flexible types are not interchangeable and rules governing the direct application within each group are given in 7.5.2. The rationale behind the rules is given in Annex C of EN 1634-1.

4.3.1.5.2 Rigid standard supporting constructions (high or low density)

The fire resistance of a door set tested in a high- or low-density rigid standard supporting construction as specified in EN 1634-1 can be applied to a door set mounted in the same manner in a wall provided the density and the thickness of the wall are equal to or greater than that in which the door set was tested.

4.4 EXTENDED APPLICATION

The stress in the various loadbearing components including fixings of the tested rolling shutter assembly has been calculated using the methodology as stated in the EXAP standard EN 15269-10:2011. Based on this approach it is concluded that the rolling shutter assembly type RGS EW120, as tested and described in Efectis Nederland test and Exap report mentioned in § 3.1 and § 3.2, will have a classification of:

FIRE RESISTANCE CLASSIFICATION OF:

E120-C2

Mounted on the exposed and non-exposed side of a standard low rigid supporting construction: maximum dimensions 9680 mm and 9650 mm (width and height from floor level to centre line of barrel)

**FIRE RESISTANCE CLASSIFICATION OF:
 EW120-C2**

Mounted on the exposed and non-exposed side of a standard low rigid supporting construction:

- Maximum dimensions 9680 mm and 3250 mm
- Maximum dimensions 9000 mm and 3270 mm
- Maximum dimensions 8000 mm and 3295 mm
- Maximum dimensions 7000 mm and 3330 mm
- Maximum dimensions 6000 mm and 3410 mm
- Maximum dimensions 5500 mm and 3470 mm
- Maximum dimensions 5000 mm and 3560 mm
- Maximum dimensions 4500 mm and 3700 mm
- Maximum dimensions 4250 mm and 3805 mm
- Maximum dimensions 4000 mm and 3945 mm
- Maximum dimensions 3495 mm and 4450 mm
- Maximum dimensions 3250 mm and 4950 mm
- Maximum dimensions 3000 mm and 6100 mm
- Maximum dimensions 3815 mm and 9650 mm

(width and height from floor level to centre line of barrel)

| Radiation overview upscaled system | | | | | | | | | | | | | | Measured radiation level | | | | |
|------------------------------------|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--------------------------|----------|-------------|-------------|---------------------|
| EW 120 | W_t_upscaled | 9680 | 5000 | 4000 | 3500 | 3300 | 3000 | 2500 | 2320 | | | | | | | | 14.75 | 0.8 mm steel |
| | H_t_upscaled | 2310 | 2480 | 2675 | 2875 | 3000 | 3300 | 4850 | 9200 | | | | | | | | 3340 x 2810 | standard insulation |
| | | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | | | | | | | | | |
| EW 120 | W_t_upscaled | 9680 | 9000 | 8000 | 7000 | 6000 | 5500 | 5000 | 4500 | 4250 | 4000 | 3495 | 3250 | 3000 | 2815 | | 13.7 | 1.0 mm steel |
| | H_t_upscaled | 2800 | 2820 | 2845 | 2880 | 2960 | 3020 | 3110 | 3250 | 3355 | 3495 | 4000 | 4500 | 5650 | 9200 | 3340 x 2810 | | extra insulation |
| | | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | Fulfills | | | |

H_t_up-scaled: 9200 = aperture height. Height from floor level to centre line of barrel
 = 9200 + 450 mm = 9650

5. LIMITATIONS

This classification document does not represent type approval or certification of the product.



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APPENDIX: FIGURES

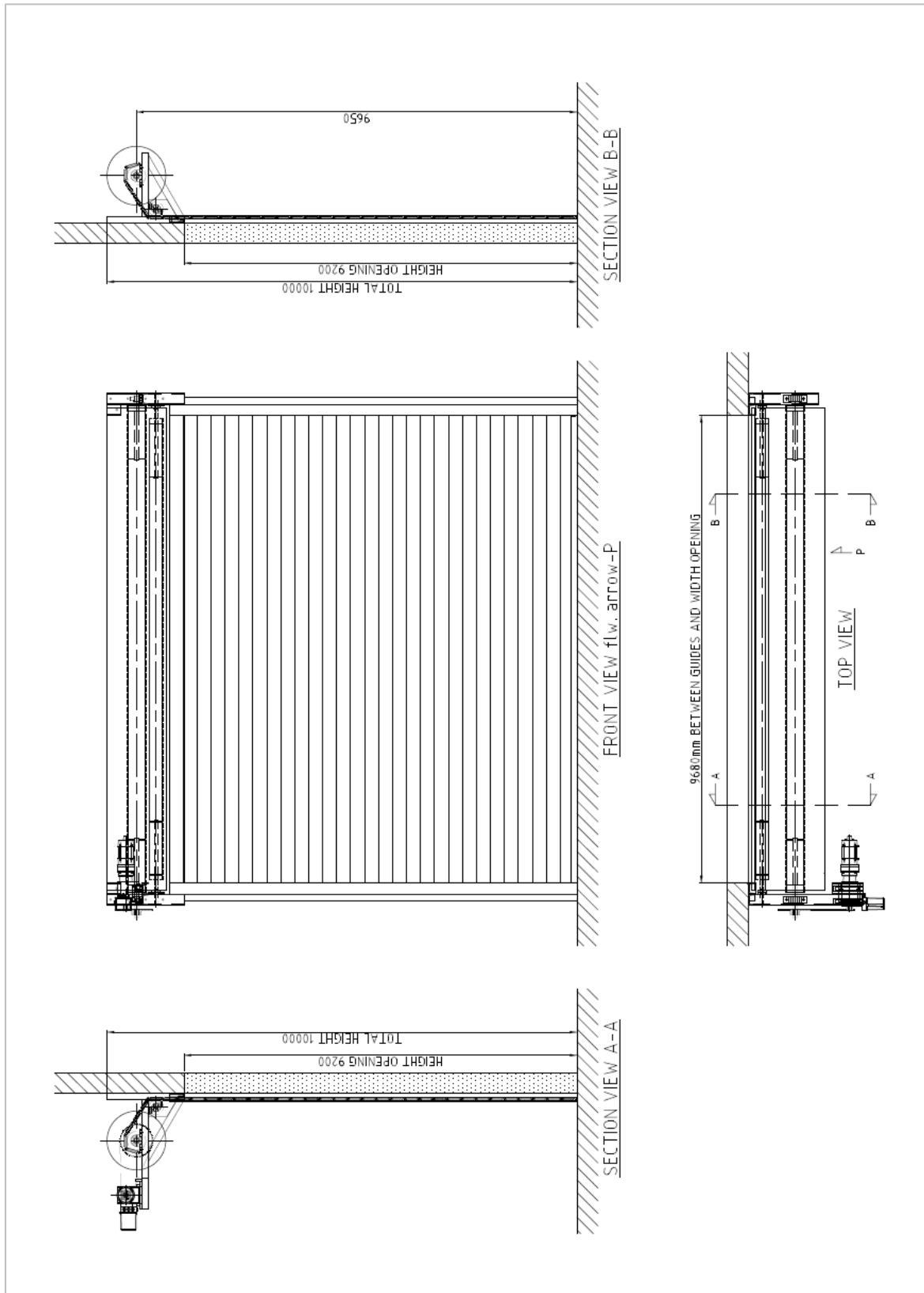


Figure 1 Overview upscaled maximum dimensions