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CLASSIFICATION REPORT

Laboratoire agréé Efectis par le Ministère de l'Intérieur

CLASSIFICATION REPORT n° EFR-20-004121 B - Revision 1

According to standard EN 13501-3+A1:2012

Delivered the	March 17th 2021
Laboratory assessment	EFR-20-004121 B - Revision 1
Regarding	A range of rectangular fire dampers mounted into walls or floors. ▪ Reference: ISONE 2 Rectangular ▪ Internal section: from 200 x 100 mm to 1000 x 1000 mm or 1500 x 500 mm ▪ Fire direction: mechanism inside or outside fire area ▪ Nominal pressure:- 500 Pa
Sponsor	ALDES AERAULIQUE 20 Boulevard Joliot Curie 69694 Vénissieux Cedex FRANCE

This classification report cancels and replaces the classification report EFR-20-004121 B.

LIST OF REVISIONS

Revision index	Date	Modification	Author
0	22/01/2021	Document creation	ABR
1	17/03/2021	- Addition of a PVC tape on intumescent seal on the casing - Addition of electrical devices on the mechanism - Validation of different supporting constructions - Validation of damper accessories	ABR

1. SUBJECT OF THE CLASSIFICATION REPORT

This classification report defines the classification assigned to a range of « ISONE 2 » fire dampers in accordance with the procedures set out in the standard EN 13501: 2012 "Fire classification of construction products and building elements – Part 3: Classification using data from fire resistance tests, on products and elements used in building service installations: fire resisting ducts and fire dampers".

2. TEST LABORATORY

EFECTIS France
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Notified body : 1812

3. REFERENCE AND ORIGIN OF THE STUDIED SPECIMENS

Reference:	ISONE 2 Rectangular
Origin:	ALDES AERAULIQUE 20 Boulevard Joliot Curie 69694 Vénissieux Cedex FRANCE

4. REFERENCE DOCUMENTS

The document is based on the following reference documents:

- EFR-20-004121 B - Revision 1 APL
- EFR-19-J-000182 D
- EFR-19-J-000182 E
- EFR-19-J-005163 B - Revision 2
- EFR-20-J-001592 B
- EFR-19-T2-000182 G
- EFR-20-004121 A - Revision 1 APL

5. DESCRIPTION OF THE STUDIED SPECIMENS

5.1. Type of function

The « ISONE 2 » fire damper is defined as a "fire damper". Its function is to resist fire as regards fire integrity, thermal insulation and leakage flow rates.

5.2. General

The subject of this document is a range of rectangular fire dampers with reference « ISONE 2 » and internal section from 200 x 100 mm to 1000 x 1000 mm or 1500 x 500 mm. The dampers are mounted (sealed) into supporting constructions with different orientations (wall and floor).

The damper has the following characteristics:

- Internal section: from 200 x 100 mm to 1000 x 1000 mm or 1500 x 500 mm
- Fire direction: mechanism inside or outside fire area
- Nominal pressure: - 500 Pa

The damper is constituted as follows:

- A casing
- A mobile blade
- A mechanism

5.3. Detailed description of the specimens

5.3.1. Casing

The damper casing is composed of two half sleeves in galvanized steel with thickness 1 mm. The length of the casing is 396 mm ± 5 mm and the internal dimensions are X x Y mm.
An adhesive EPDM seal and section 23 x 4 mm is placed between the two half sleeves. And these two parts are assembled together by two lines of 6 steel rivets Ø 4.8 mm.

At each end, the casing is fitted with a flange with the overall dimensions (X+63) x (Y+63) mm. At each corner, the flange is crimped using a steel bracket.

On each side of the blade, the casing is bent all around to make a fold with a height of 18 mm ± 2 mm. These folds are separated of 31 mm ± 2 mm.

Between the folds, there are holes used as thermal dissipators (punching). The thermal dissipator row is placed at the level of the blade. It is constituted by three lines of holes with dimensions 22 x 3 mm, a space of 3 mm is respected between consecutive holes (except in specific areas like fixations). The holes are staggered, a space of 3 mm is respected between consecutive lines.
For the dampers with internal dimensions X > 800 mm x Y > 600 mm, two thermal dissipators are added on each side of the blade position (after each fold). Each thermal dissipators is constituted by two lines of holes with dimensions 23 x 2 mm, a space of 2 mm is respected between consecutive holes (except in specific areas like fixations).

Inside the casing, at the level of the blade thermal dissipator, a graphite self-adhesive intumescent seal and dimensions 25 x 2 mm is placed.

A 65 mm wide self-adhesive PVC tape is placed on the intumescent seal.
A 85 mm wide self-adhesive aluminum tape is placed on the PVC tape.

A self-adhesive silicone double lip seal is glued on aluminum tape in front of the blade. The seal has a thickness of 0.6 ± 0.2 mm and a width of 19 ± 1 mm.

The end stop are used to stop the blade's rotation. These end stop are plastic or galvanized steel parts.
For the dampers with internal dimensions X ≤ 800 mm x Y ≤ 600 mm, only one end stop is fixed by a steel rivet Ø 4.8 mm on the casing.
For the dampers with internal dimensions X > 800 mm x Y > 600 mm, an end stop is fixed on each sides of the blade by a steel rivet Ø 4.8 mm on the casing.

Two galvanized steel fixing brackets are fixed with a Ø 4.8 steel rivet on the casing (outside).

5.3.2. Blade

The damper's blade is created by one or two boards of calcium silicate boards. The two layers are assembled together by steel rivets Ø 4.8 mm and washers, to create a single blade sub-assembly. The clearance between the blade and the casing is 6 ± 1 mm.

Damper's section	Blade's thickness
X ≤ 800 mm x Y ≤ 600 mm	25 mm
X > 800 mm x Y > 600 mm	2 x 25 mm

The axis of the blade is placed at 282 mm ± 5 mm from the end of the casing on the mechanism side.

On two opposite ends of the blade, two blade rotation supports, made of galvanized steel with thickness 2 mm, are fixed with two steel rivets Ø 4.8 mm, in order to ensure the rotation inside the casing. A M5 hexagonal socket is crimped on each blade rotation support.
The rotational shafts are two M5 shoulder screws through the casing inside the plastic bearings.

For the dampers with internal dimensions X ≤ 800 mm x Y ≤ 600 mm, the blade rotation support is L-shaped support.

For the dampers with internal dimensions X > 800 mm x Y > 600 mm, the blade rotation support is U-shaped support.

5.3.3. Mechanism

Two types of mechanism may be installed:
- Dampers with internal dimensions X ≤ 800 mm x Y ≤ 600 mm: ISONE 2 PM
- Dampers with internal dimensions X > 800 mm x Y > 600 mm: ISONE 2 GM

5.3.3.1. ISONE 2 PM

5.3.3.1.1. Mechanism plate

A polyamide mechanism plate with thickness 3 mm and dimensions 220 x 160 x 57 mm is fixed by two Ø 6 screws into the crimped sockets onto the casing.

A polyethylene foam (ALDES) with dimensions 120 x 80 mm and thickness 12 mm is placed between the mechanism and the casing.

5.3.3.1.2. Mechanism's shaft

A polyamide shaft of dimensions Ø 24 mm crosses the mechanism plate and the casing. A stainless-steel spring coil around the mechanism's shaft located within the mechanism is used to force the blade to its safety position (close).

For the dampers with Y < 200 mm: A polyamide clevis is fixed to the blade. A polyamide connecting rod with a rotation axis is assembled with the clevis.
A polyamide arm is fixed to the mechanism's shaft. This arm is assembled to the rotation axis of the connecting rod.

For the dampers with Y ≥ 200 mm: A galvanized steel L-shaped plate with thickness 2 mm is fixed to the blade. This part have an oblong hole of dimensions Ø 10.5 x 67.5 mm.
A polyamide arm is fixed to the mechanism's shaft. A roller with dimensions Ø 10 mm is fixed to the previous arm and inserted inside the oblong hole of L-shaped plate.

5.3.3.1.3. Locking device

The locking device consists of a spring and a locking arm. In the opening position, the mechanism's shaft is locked by the locking arm.

The blade could be closed using a thermal triggering device, with reference Model B (ELSIE). This fuse is an alloy with a melting point of 70 (-5/+30) °C. It is fixed to one side on the axis of the steel thermal triggering device and on the other side to a spring.
The thermal triggering device is positioned in plastic support of ABS and fixed by a screw on the mechanism cover.

5.3.3.1.4. Mechanism's cover

The mechanism's cover in ABS with overall dimensions 155 x 160 x 40 mm is fixed by clips to the mechanism plate. The manual reset handle in ABS is positioned in the mechanism's shaft and through the mechanism cover.

An electrical cover is added near the mechanism's cover with two cable grommets.

5.3.3.1.5. Electrical devices

The mechanism could be equipped:
- A remote electromagnetic trigger device
- An EHOP MINI reference remote reset actuator
- Open/closed position indicators
- Connecting devices for electrical connection to fire safety

These electrical devices are fixed with screws inside the mechanism box.

5.3.3.2. ISONE 2 GM

5.3.3.2.1. Mechanism plate

A galvanized steel L-shaped support plate with thickness 3 mm and dimensions 220 x 180 x 45 mm is fixed on the casing using four Ø 6 mm screws.

A galvanized steel L-shaped plate with thickness 3 mm is fixed to the blade using two Ø 4.8 mm bolts. The dimensions of the base plate are 116.5 x 35 x 68 mm, this part had an oblong hole of dimensions Ø 10.5 x 80 mm.

A polyethylene foam (ALDES) with dimensions 120 x 130 mm and thickness 12 mm is placed between the mechanism and the casing.

5.3.3.2.2. Mechanism's shaft

The blade is moved using a mechanism's shaft composed of:
- A steel arm with dimensions 100 x 20 x 5 mm;
- A roller with dimensions Ø 10 mm rotated around a steel axis with dimensions Ø 8 mm crimped to the steel arm;
- A steel axis with dimensions Ø 20 x Ø 14 x 190 mm crossing the casing and crimped to the steel arm.

The roller is lodged in the oblong hole of the blade plate.
The mechanism's shaft rotates inside a bearing crimped to the mechanism plate.

A sprocket composed of one thickness of 4 mm steel is fixed by circlips to the mechanism's shaft, opposite side of the steel arm. A steel contactor with dimensions Ø 9.5 mm and a steel ring with dimensions Ø 10 are crimped to the sprocket.

A steel pin with dimensions Ø 16 x 15 mm is crimped to the mechanism plate and used as end stop for open and closed positions.

The end of the steel axis Ø 20 mm is fitted with a hole Ø 7 mm to enable manual blade opening.

5.3.3.2.3. Locking device

The blade could be closed using a thermal triggering device, with reference Model B (ELSIE). This fuse is an alloy with a melting point of 70 (-5/+30) °C. It is fixed to one side on the axis of the steel thermal triggering device and on the other side to a spring.
The thermal triggering device is screwed by a screw Ø 3 mm to the mechanism plate using the fuse cap. A polyolefin foam seal (TECNO SPUMA) is added and compressed when the thermal triggering device is screwed to the mechanism plate.
The blowing of the fuse freed the spring's force, permitting the closure of the blade through the action of the shaft on the damper's triggering system.

5.3.3.2.4. Mechanism's box

A base in ABS plastic is fixed by screws Ø 3 mm to the mechanism's plate and a cover in ABS plastic is fixed by clips to the base.
The overall dimensions of the mechanism's box are 235 x 190 x 105 mm.

5.3.3.2.5. Electrical devices

The mechanism could be equipped:
- A remote electromagnetic trigger device
- An EHOP reference remote reset actuator
- Open/closed position indicators
- Connecting devices for electrical connection to fire safety

These electrical devices are clipped inside the mechanism box.

6. INSTALLATION OF THE TEST SPECIMENS

The classification obtained for a standard installation in the different supporting constructions and their respective sealing remains valid for a minimal spacing:
- of 200 mm between fire dampers installed in separate ducts;
- of 75 mm between the fire damper and a construction element (wall or floor).

6.1. Installation in aerated concrete or concrete floor

The dampers can be installed in a concrete floor (solid or aerated blocks) with the characteristics below:
- Thickness ≥ 150 mm
- Density ≥ 600 kg/m^3

The damper is positioned in an opening of dimensions (X + 80) x (Y + 80) mm. And it is sealed with aerated concrete adhesive mortar or standard mortar plaster.

6.2. Installation in aerated concrete or concrete wall

The dampers can be installed in a concrete wall (solid or aerated blocks) with the characteristics below:
- Thickness ≥ 100 mm
- Density ≥ 450 kg/m^3

The damper is positioned in an opening of dimensions (X + 80) x (Y + 80) mm. And it is sealed with aerated concrete adhesive mortar or standard mortar plaster.

6.3. Installation in gypsum blocks wall

The dampers can be installed in a gypsum blocks wall with the characteristics below:

- Thickness ≥ 70 mm
- Density ≥ 900 kg/m^3

The damper is positioned in an opening of dimensions (X + 70) x (Y + 70) mm.

6.3.1. Solution n°1

The damper is sealed with aerated concrete adhesive mortar or standard mortar plaster.

6.3.2. Solution n°2

The damper is sealed with aerated concrete adhesive mortar or standard mortar plaster.

Two extra boards (or one board with a rectangular opening) is added on each side of the wall. Around the dampers, two U-shaped BA13 type F plasterboards is fixed by screws Ø 3.5 mm with a maximal spacing of 150 mm. The extra boards represent a square of external dimensions (X + 145) x (Y + 145) mm with a rectangular opening of dimensions (X + 5) x (Y + 5) mm.

The extra boards can be also replaced by a 15.5 mm thick calcium silicate boards.

6.4. Installation in plasterboards partition

The dampers can be installed in a plasterboards partition wall constituted by:

- A frame realized by steel studs and rails 98/48;
- A cavity isolated by mineral wool of thickness 45 mm and minimal density 35 kg/m^3;
- Two facings of plasterboards BA13 Type A or F or one facing of plasterboards BA25 Type A or F on each side.

The first layer of boards is fixed to the steel frame by screws Ø 3.5 x 25 mm with a maximal spacing of 300 mm. The second layer of boards is fixed to the header joist by screws Ø 3.5 x 35 mm with a maximal spacing of 150 mm.
If plasterboards BA25 are used, then only screws Ø 3.5 x 35 mm with a maximal spacing of 150 mm must be used.
Every board junctions and screw heads are treated by a joint filler reference bonded to a joint tape.

The mineral wool inside the partition can be removed.

A header joist for passage of the fire damper is made using M48 rails and M48 studs. The header joist is made of with:

- A vertical stud placed on each side of the fire damper at (X + 70) mm;
- A horizontal rail cut, bent, slide and install perpendicular to the studs at the top and bottom and separated by (Y + 70) mm.

These elements are fixed together using screws Ø 3.5 mm.

6.4.1. Solution n°1

The damper is positioned in a rectangular opening of dimensions (X + 70) x (Y + 70) mm, made in the plasterboards in front the header joist.

Two extra boards (or one board with a rectangular opening) is added on each side of the wall. Around the dampers, two U-shaped BA13 plasterboards is fixed by screws Ø 3.5 mm with a maximal spacing of 150 mm. The extra boards represent a square of external dimensions (X + 145) x (Y + 145) mm with a rectangular opening of dimensions (X + 5) x (Y + 5) mm.
The boards used for the extra boards are the same as those used for the partition wall. Or it can be replaced by a 15.5 mm thick calcium silicate boards.

The header joist described in § 6.4 can be replaced with only four rails of (X + 70) or (Y + 70) mm long placed inside the partition to form a rectangular of dimensions (X + 70) x (Y + 70) mm.
In this case, the four rails are placed inside the partition through the rectangular opening of dimensions (X + 5) x (Y + 5) mm made in the plasterboards. These rails are fixed by screws Ø 3.5 mm through the plasterboards facing.

The gap between the damper and the header joist is filled with mineral wool or standard plaster or aerated concrete mortar.

6.4.2. Solution n°2

The damper is positioned in a rectangular opening of dimensions (X + 70) x (Y + 70) mm, made in the plasterboards in front the header joist.

Two extra boards (or one board with a rectangular opening) is added on each side of the wall. Around the dampers, two U-shaped BA13 type F plasterboards is fixed by screws Ø 3.5 mm with a maximal spacing of 150 mm. The extra boards represent a square of external dimensions (X + 145) x (Y + 145) mm with a rectangular opening of dimensions (X + 5) x (Y + 5) mm.
The boards used for the extra boards are the same as those used for the partition wall. Or it can be replaced by a 15.5 mm thick calcium silicate boards.

The gap between the damper and the header joist is filled with standard plaster or aerated concrete mortar.

6.4.3. Solution n°3

The damper with the easynstall kit (see § 7.1) is inserted in a rectangular opening of dimensions (X + 70) x (Y + 70) mm, made in the plasterboards in front the header joist.

6.4.4. Solution n°4

The damper is positioned in the header joist of dimensions (X + 70) x (Y + 70) mm before the partition is finished. The plasterboards are fixed after damper installation and create a rectangular opening of dimensions (X + 5) x (Y + 5) mm.

The header joist described in § 6.4 can be replaced with only four rails of (X + 70) or (Y + 70) mm long. In this case, the four rails are placed inside the partition. These rails are fixed by screws Ø 3.5 mm through the plasterboards facing.

The gap between the damper and the header joist is filled with mineral wool.

7. ACCESSORIES

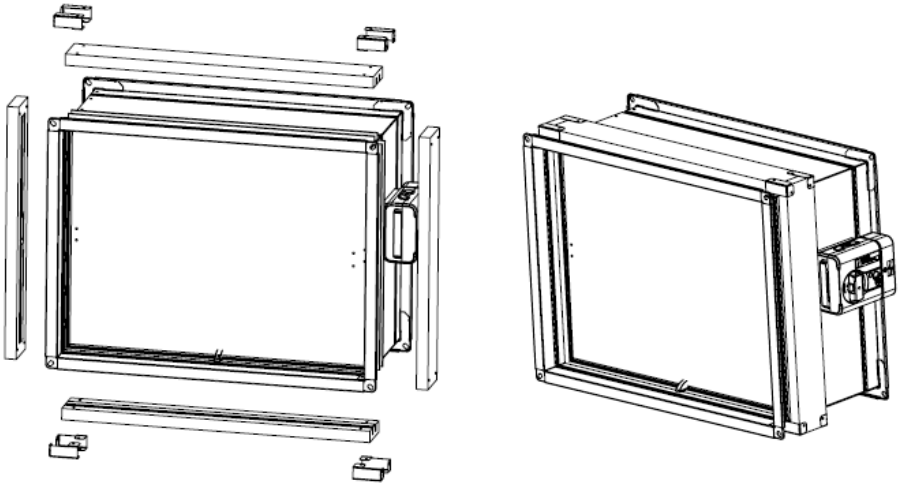
7.1. Easynstall kit

The dampers can be installed with an easynstall kit.

The easynstall kit is made of:

- A frame made of four layers of calcium silicate boards with thickness 30 mm (total width of 100 mm) and density of 640 kg/m^3.
- A graphite intumescent seal with section 20 x 2 mm.
- Eight galvanized steel angle brackets with dimensions 33 mm x 27 mm and thickness 1 mm.

The seal is centered and stapled inside the frame. The frame is placed around the damper casing and centered with the axis of rotation of the blade. The brackets is positioned on each angle allow the fastening of the boards between them with Ø 4.8 mm steel rivets.



7.2. Rectangular extension

The dampers can be installed with a rectangular extension.

The extension made of two galvanized steel L-shaped plate with thickness 1 mm can be added on each side of the damper. These extensions are assembled together by Ø 4.8 mm steel rivets. An adhesive EPDM seal with section 10 x 5 mm is added between the extensions.

On each side, the extension has a flange to fix it on the damper and on the duct with Ø 8 mm bolts. At each corner, the flange is crimped using a steel bracket.

7.3. Circular connection

To connect the damper on a circular duct, a circular connection can be fixed on each side of the damper. The circular connection diameter are described in the table below.

Damper's section	Circular connection diameter
X = 600 mm x Y = 600 mm	Ø 560 mm
X = 670 mm x Y = 670 mm	Ø 630 mm
X = 750 mm x Y = 750 mm	Ø 710 mm
X = 840 mm x Y = 840 mm	Ø 800 mm
X = 940 mm x Y = 940 mm	Ø 900 mm

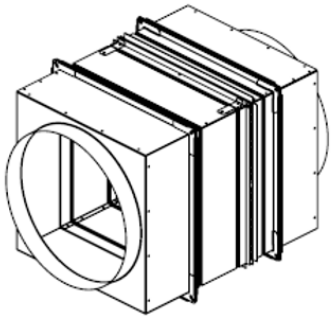
The circular connection is made with a circular part in galvanized steel with thickness 1 mm and a plate flange in galvanized steel with thickness 1 or 1.5 mm. These two parts are assembled together by crimping.

In order to open the blade, two galvanized steel L-shaped plate with thickness 1 mm is added on each side of the damper. These extensions are assembled together by Ø 4.8 mm steel rivets. An adhesive EPDM seal with section 10 x 5 mm is added between the extensions.

On one side, the extension has a flange to fix it on damper with four Ø 8 mm bolts.
On the other side, the extension is fixed on the circular connection with Ø 4.8 mm steel rivets.

An adhesive EPDM seal with section 10 x 5 mm is added between:

- the flange of the extension and the damper;
- the extension and the circular connection.



8. COMPLIANCE WITH THE STANDARD EN 15650

8.1. Operational reliability

In accordance with paragraph 4.3.1 a) of standard NF EN 15650: 2010, the results are given in the reference reports.

Operational reliability: 50 cycles - compliant.

8.2. Durability of operational reliability

In accordance with paragraph 4.3.3.2 and appendix C of standard EN 15650: 2010, the results are given in the SA 21 00 02 RevA (CNPP) reference report:

- 300 cycles with ISONE 2 PM mechanism: **compliant**
- 300 cycles with ISONE 2 GM mechanism: **compliant**

8.3. Response time and load capacity of the thermal trigger

In accordance with paragraphs C.2.2 / C.2.3 / C2.5.2.1 / C.2.5.2.2 of appendix C of standard ISO 21925-1: 2018, the results are given in the ST 13 00 20 C (CNPP) reference report:

- Load capacity of the thermal trigger: **compliant**
- Response time of the thermal trigger: **compliant**

9. FIRE RESISTANCE CLASSIFICATIONS

9.1. Classification reference

This classification procedure is conducted in accordance with section 7.2.3 of the standard EN 13501- 3.

9.2. Classifications

The elements are classified in accordance with the following combinations of performance parameters and classes.

The dimensional range covered by the performances stated below is from 200 x 100 mm to 1000 x 1000 mm for a nominal pressure of - 500 Pa.

Fire direction: mechanism inside or outside fire area.

No other classification is authorized.

9.2.1. Dampers into aerated concrete or concrete floor with thickness ≥ 150 mm and density ≥ 600 kg/m³

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**120**		**-**	**-**	**ho**	**-**	**i**	↔	**o**	**-**	**S**

9.2.2. Dampers into aerated concrete or concrete wall with thickness ≥ 100 mm and density ≥ 450 kg/m³

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**120**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

9.2.3. Dampers into gypsum blocks wall with thickness ≥ 70 mm and density ≥ 900 kg/m³

9.2.3.1. Solution n°1:

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**60**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

9.2.3.2. Solution n°2 – Extraboards:

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**90**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

9.2.4. Dampers into gypsum blocks wall with thickness ≥ 100 mm and density ≥ 900 kg/m³

9.2.4.1. Solution n°1:

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**90**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

9.2.4.2. Solution n°2 – Extraboards:

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**120**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

9.2.5. Dampers into plasterboards partition

9.2.5.1. Solution n°1 – Type A plasterboards:

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**60**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

9.2.5.2. Solution n°2 – Type F plasterboards:

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**120**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

9.2.5.3. Solution n°3 – Type A plasterboards and Easynstall kit:

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**90**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

9.2.5.4. Solution n°4 – Type A plasterboards:

E	I		t		ve	-	ho	-	i	↔	o	-	S
E	**I**		**60**		**ve**	**-**	**-**	**-**	**i**	↔	**o**	**-**	**S**

The above performances of the elements are valid for heating as described in section 5.1.1 of the European standard EN 1363-1.

10. CONDITIONS OF VALIDITY OF FIRE RESISTANCE CLASSIFICATIONS

10.1. To the manufacture and implentation

The specimen must conform to the detailed description in the reference laboratory assessment, which may be requested from its owner, without obligation to transfer the document in the event of a dispute over the item covered by this classification report.

The assembly of the specimen must comply with the paragraph 6. of this classification report.

10.2. Fire direction

See classifications above.

10.3. Field of validity

No dimensional modification may be applied to the dimensions expressed above and no modification to the constitution of the element may be made without the prior issue of a classification extension by the Laboratory.

11. FIELD OF DIRECT APPLICATION OF THE TEST RESULTS

11.1. General points

The requirements related to the scope of application of all the fire dampers tested in accordance with EN 1366-2 apply, as well as the following items.

11.2. Dimensions of the fire damper

In accordance with section 13.1 of the standard EN 1366-2, the classifications indicated in section 8.2 of this classification report are valid for all fire dampers of the same type (including all the side reports), provided the maximum flow cross-section dimensions do not exceed 1000 x 1000 mm or 1500 x 500 mm and that the minimum flow cross-section dimensions are not less than 200 x 100 mm.

11.3. Separation between fire dampers and between fire dampers and construction elements

In accordance with section 13.6 of the standard EN 1366-2, the fire classifications indicated in section 8.2 of this classification report apply, in practice, with a minimum spacing:

a) of 200 mm between fire dampers installed in separate ducts;
b) of 75 mm between the fire damper and a construction element (wall or floor).

11.4. Supporting constructions

In accordance with paragraph 13.7 of the standard EN 1366-2, a test obtained for a fire damper mounted in or on the face of a standard supporting is applicable to a supporting construction of the same type with a fire resistance equal to or greater than that of the standard supporting construction used in the tests (thicker, denser, more layers of board, as appropriate).

The classifications indicated in section 8.2 of this classification report apply to fire dampers installed:

- Into an aerated concrete or concrete floor with the characteristics: thickness ≥ 150 mm and density ≥ 600 kg/m^3
- Into an aerated concrete or concrete wall with the characteristics: thickness ≥ 100 mm and density ≥ 450 kg/m^3
- Into a gypsum blocks wall with the characteristics: thickness ≥ 70 mm and density ≥ 900 kg/m^3
- Into a plasterboards partition as described in § 6.4 and thickness ≥ 98 mm

Test results obtained with dampers installed in aerated concrete are applicable to rigid constructions made from hollow blocks, provided that the holes are filled/closed before the addition of the final penetration seal.

Test results obtained with dampers installed in insulated flexible vertical supporting constructions may be applied to applications where the same vertical supporting construction is uninsulated – aperture framing shall be used using the same materials as used in the test partition construction, using the same number of boards as was tested.

No modifications may be applied to the dimensions expressed above and no modifications may be made to the structure of the element without the prior issue of a classification extension by the laboratory.

Les Avenières Veyrins-Thuellin, the March 17th 2021

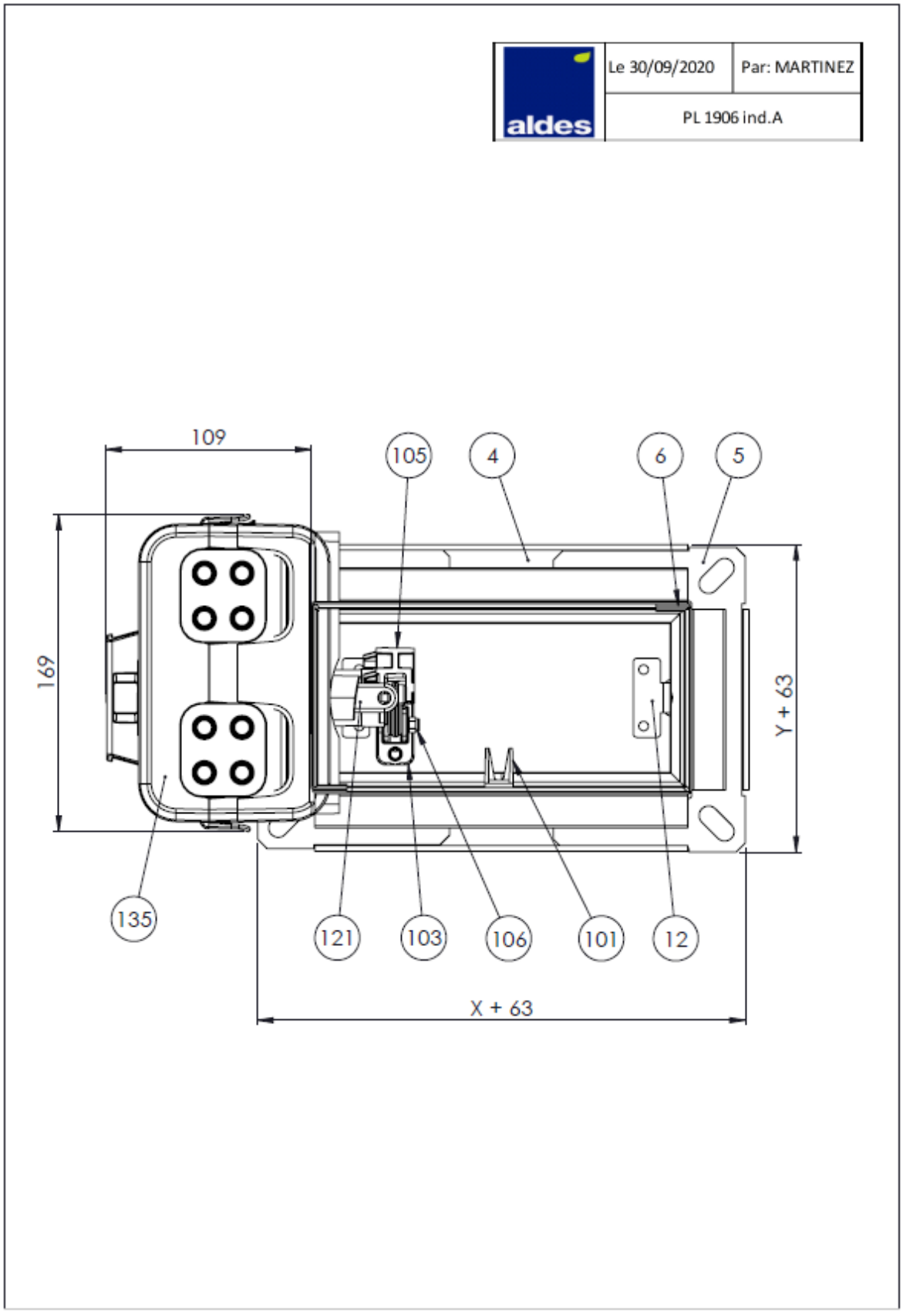
X Amélie BRUNON

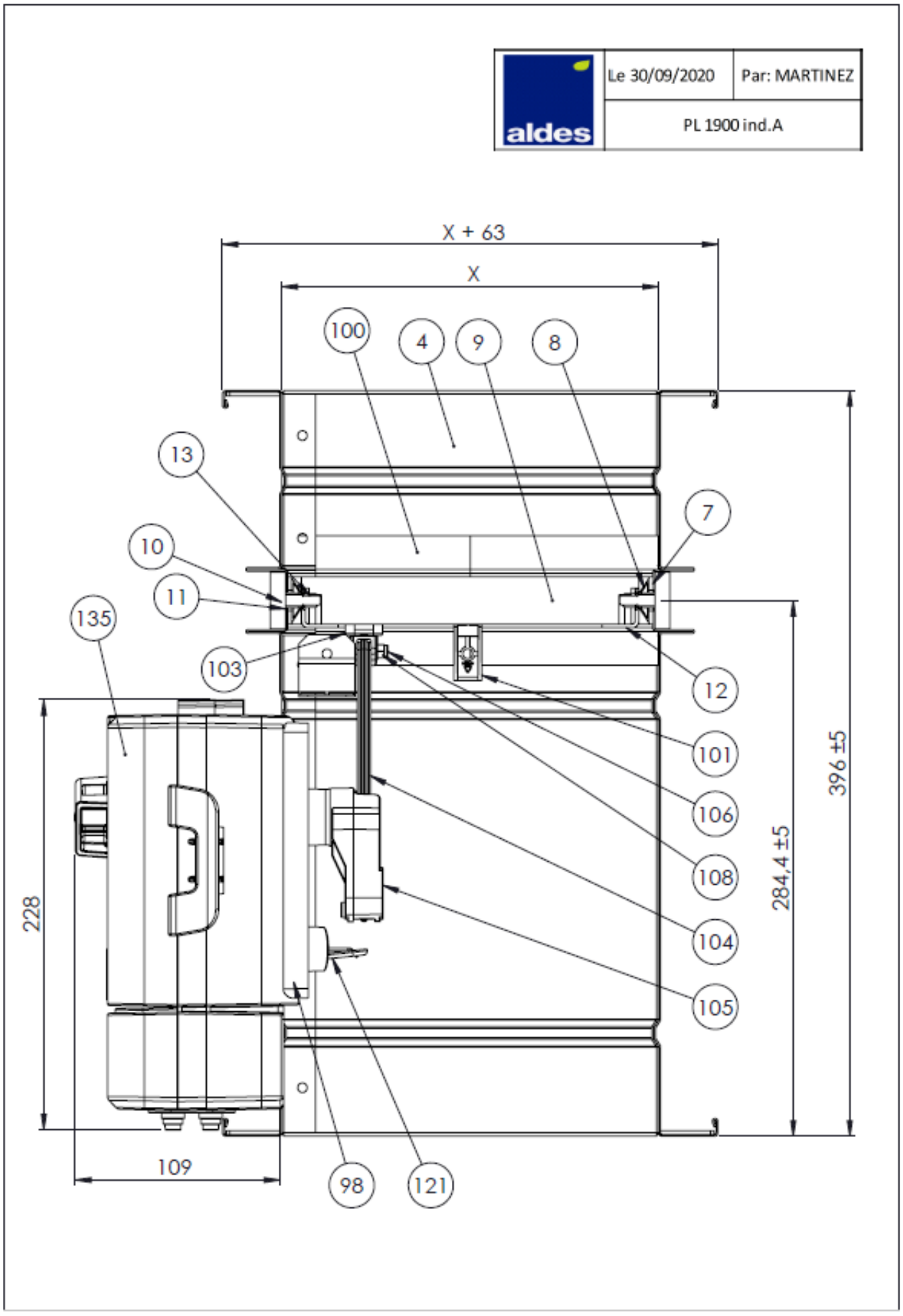
Chargé d'Affaires
Signé par : Amélie Brunon

X Romain STOUVENOT

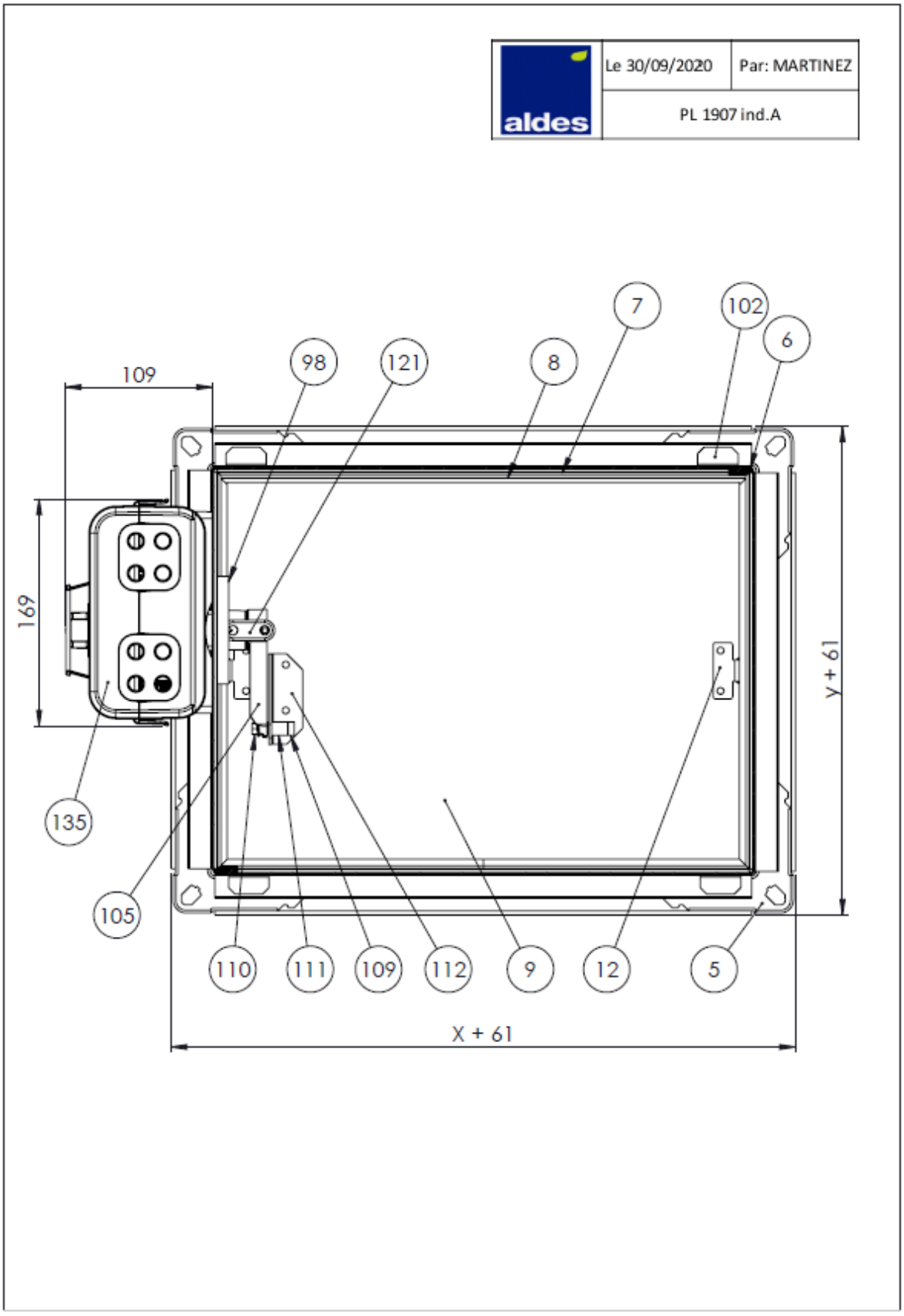
Superviseur
Signé par : Romain STOUVENOT

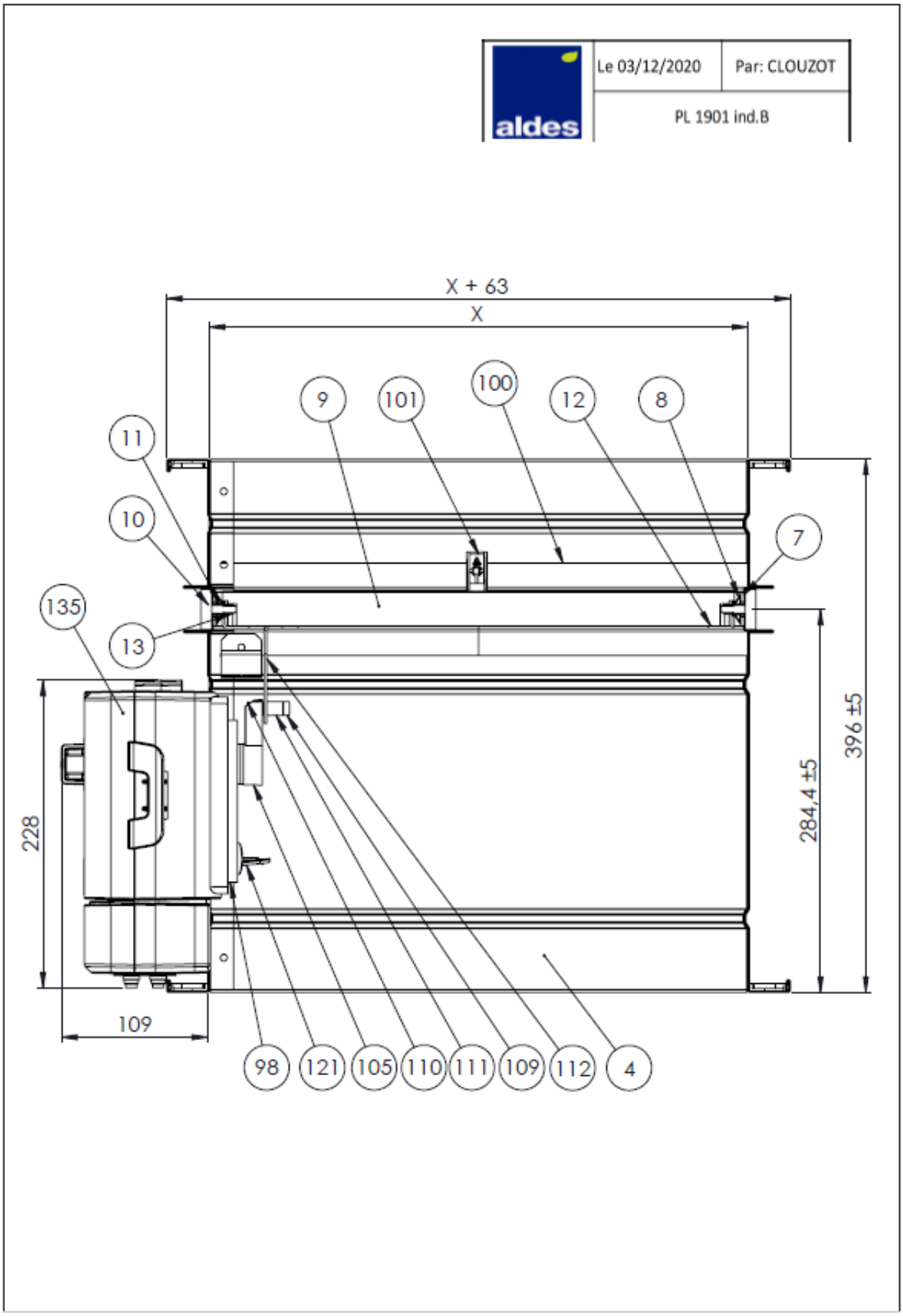
APPENDIX n°1: Damper with Y < 200 mm



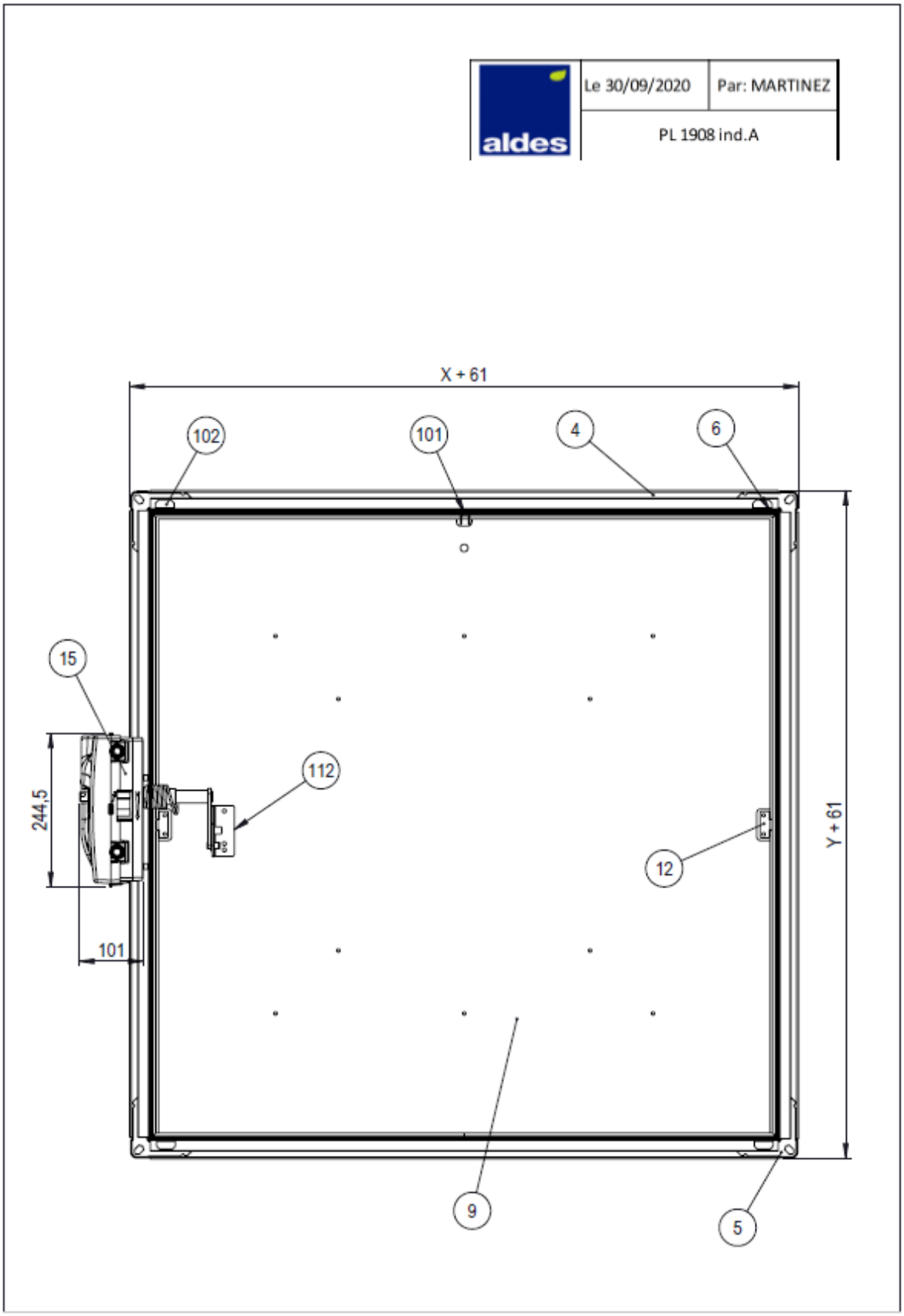


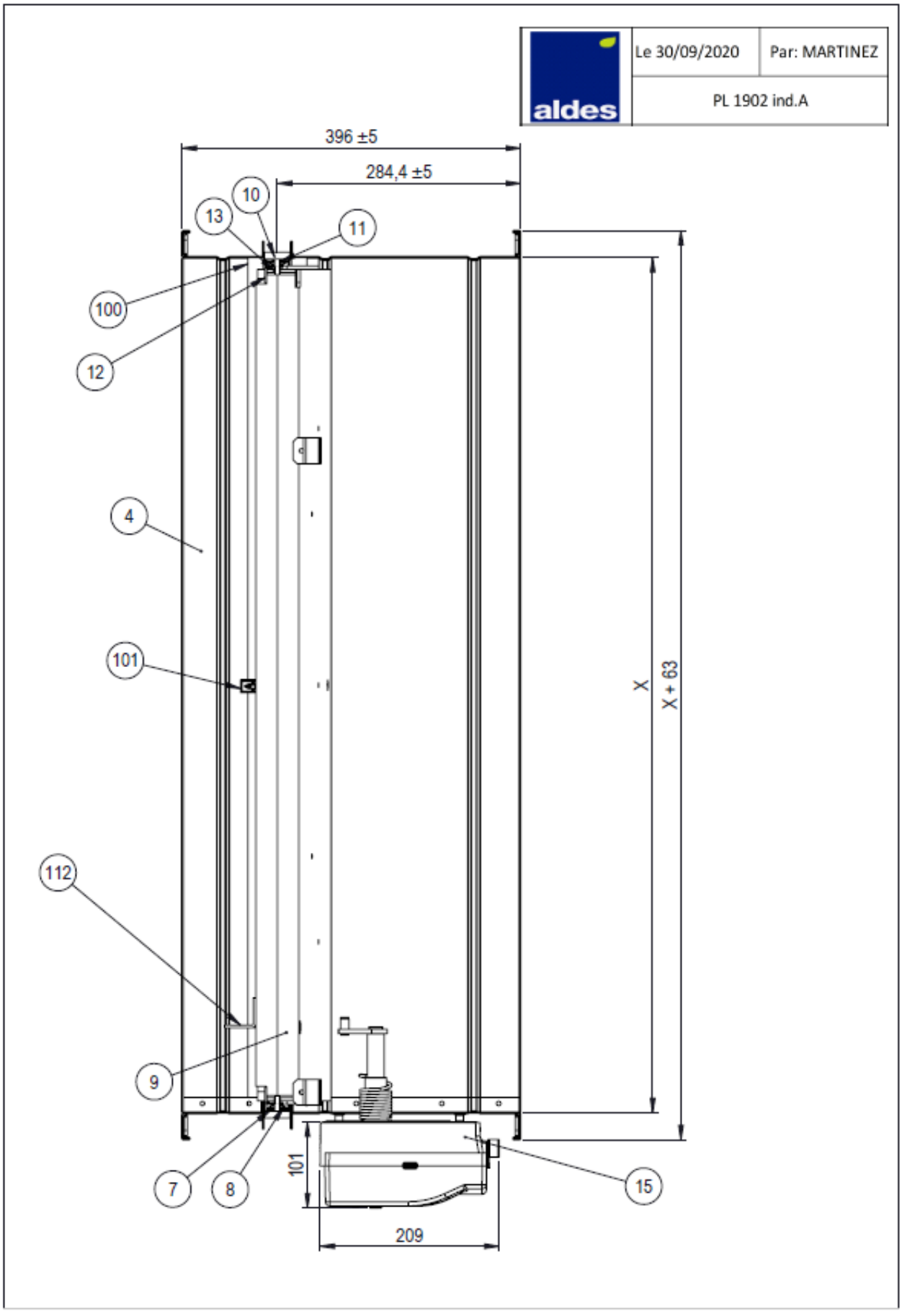
APPENDIX n°2: Damper with Y > 200 mm and X ≤ 800 mm x Y ≤ 600 mm





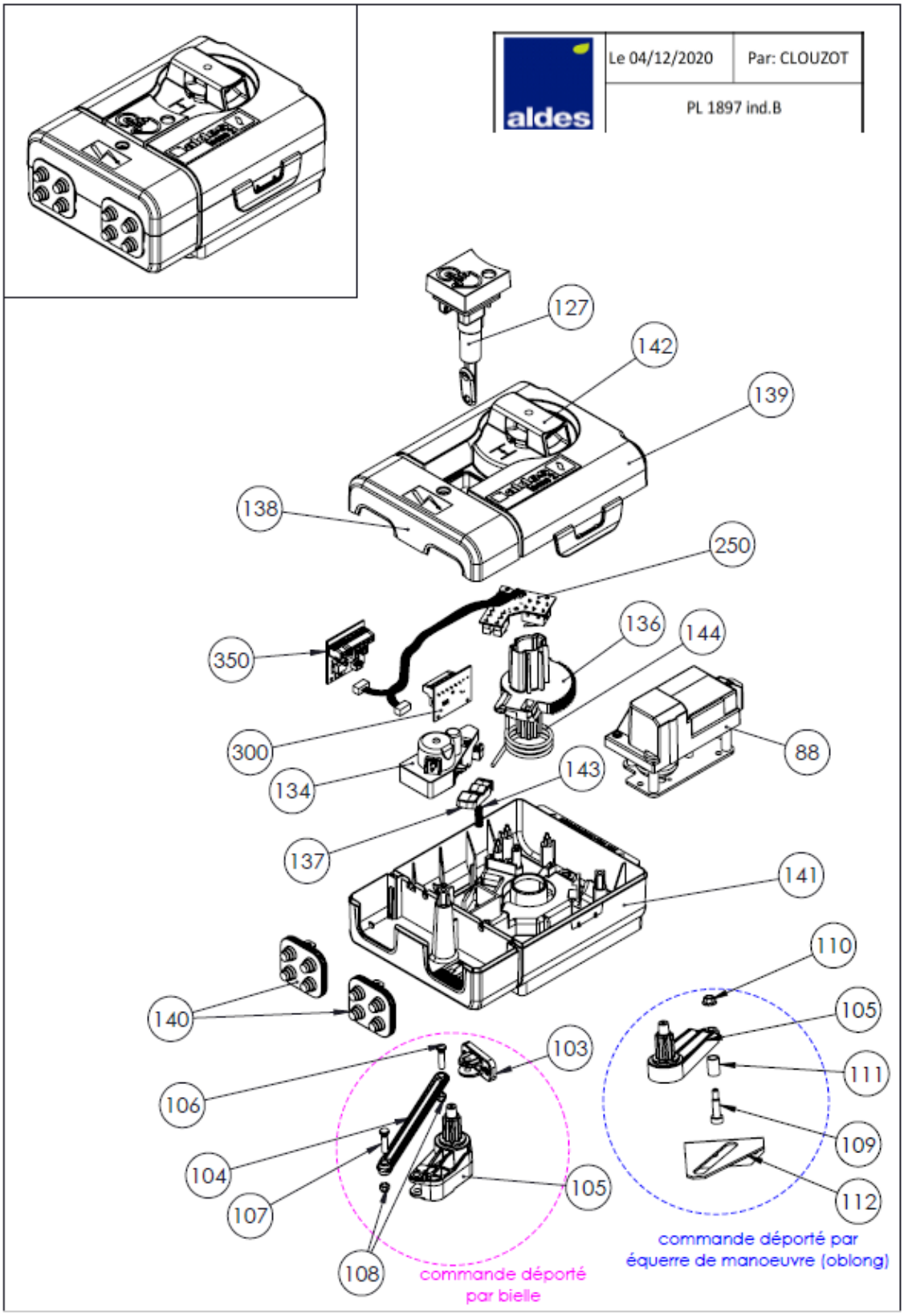
APPENDIX n°3: Damper with X > 800 mm x Y > 600 mm

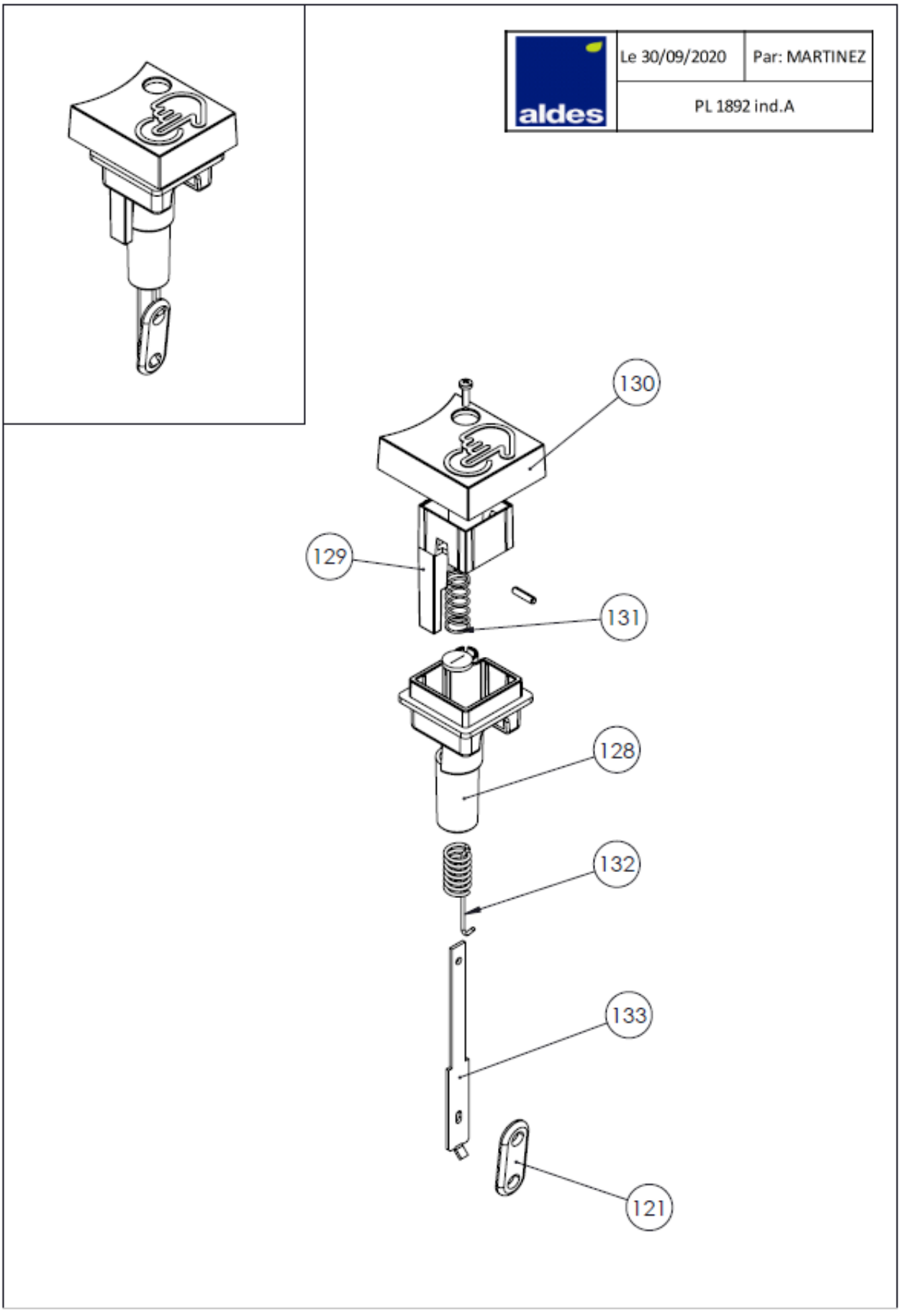



aldes
Le 30/09/2020
Par: MARTINEZ
PL 1902 ind.A
396 ±5
284,4 ±5
10
13
11
100
12
4
101
112
9
7
8
101
209
15
X
X + 63

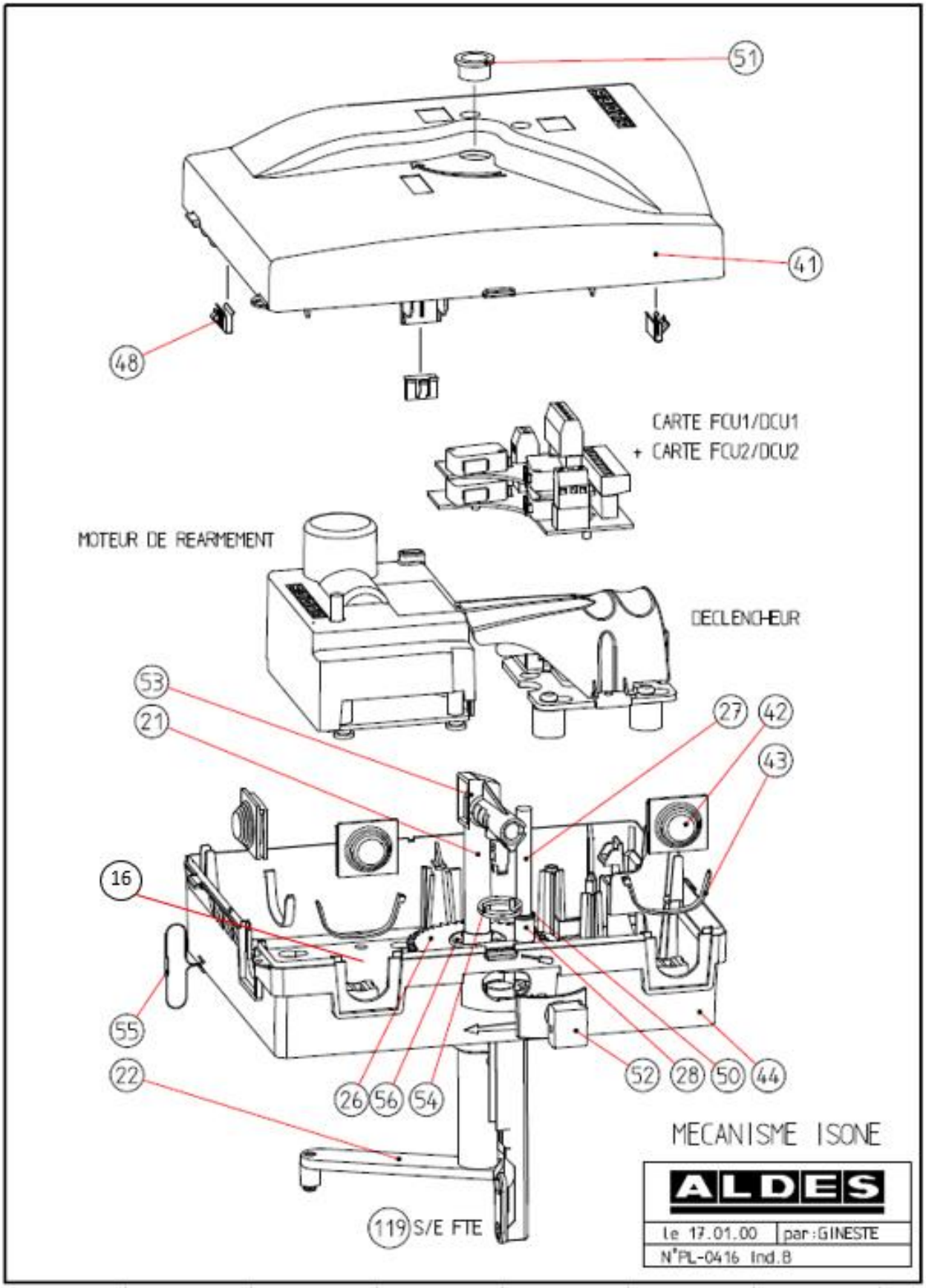
APPENDIX n°4: Mechanism

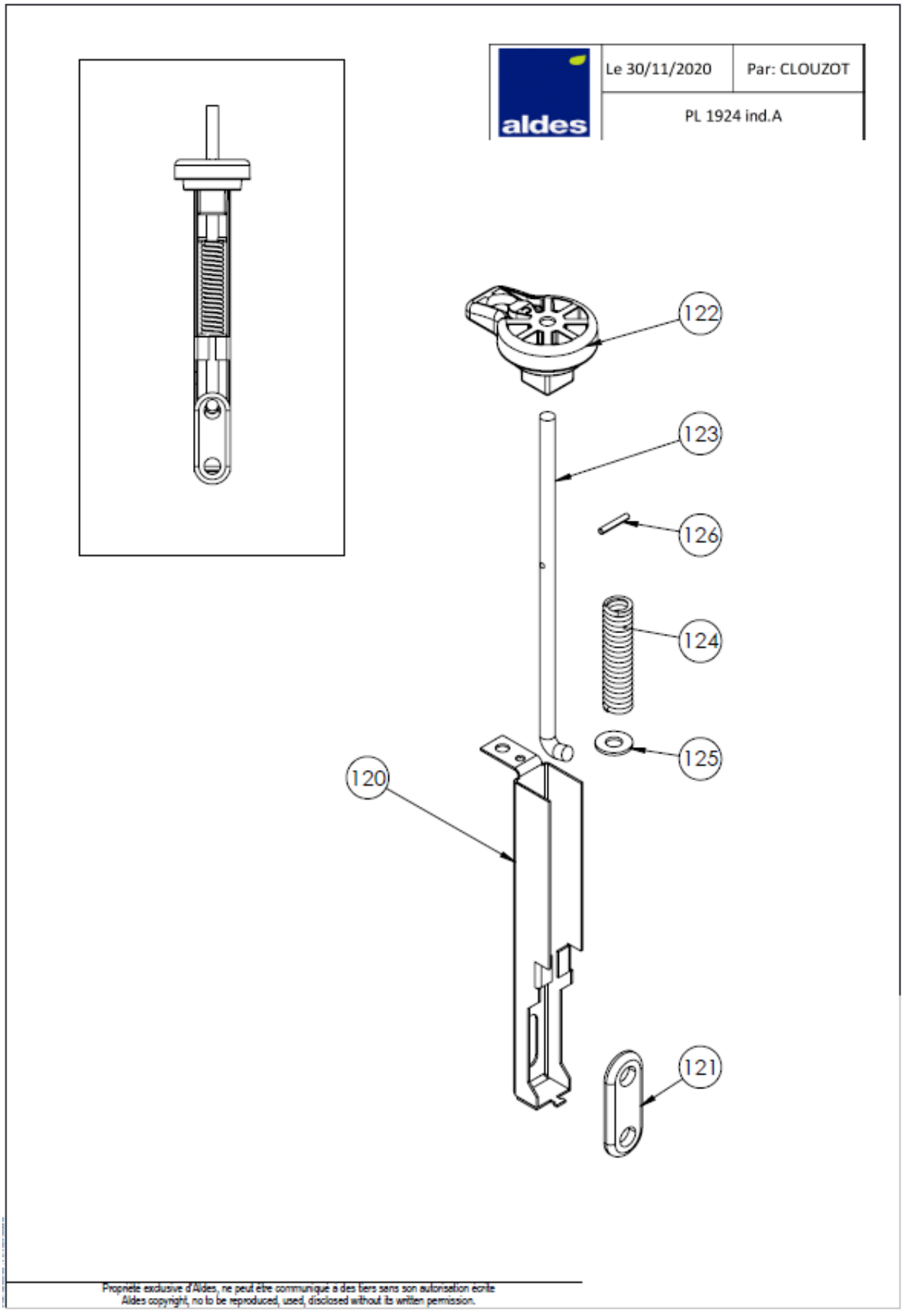
ISONE 2 PM :





ISONE 2 GM :




aldes
Le 30/11/2020
Par: CLOUZOT
PL 1924 ind.A
122
123
126
124
125
120
121
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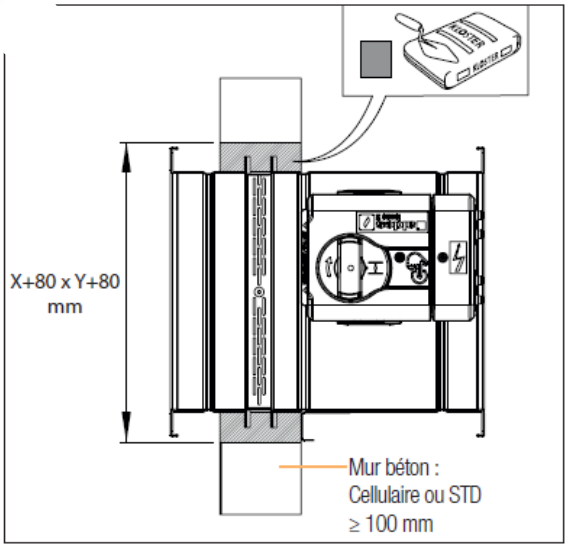
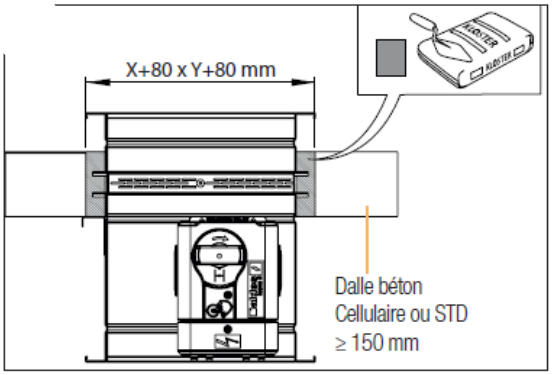
APPENDIX: Supporting constructions

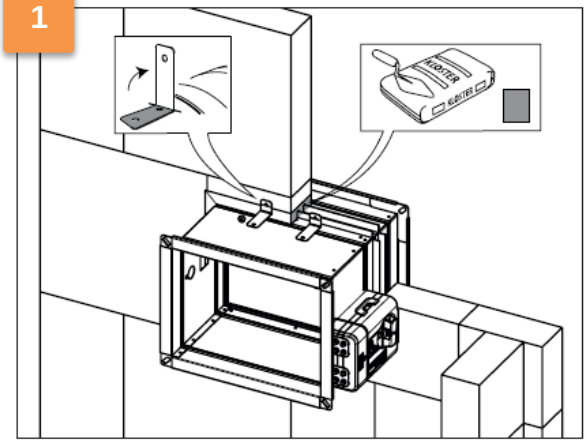
MISE EN ŒUVRE : MUR ET DALLE BETON ARME / BETON CELLULAIRE

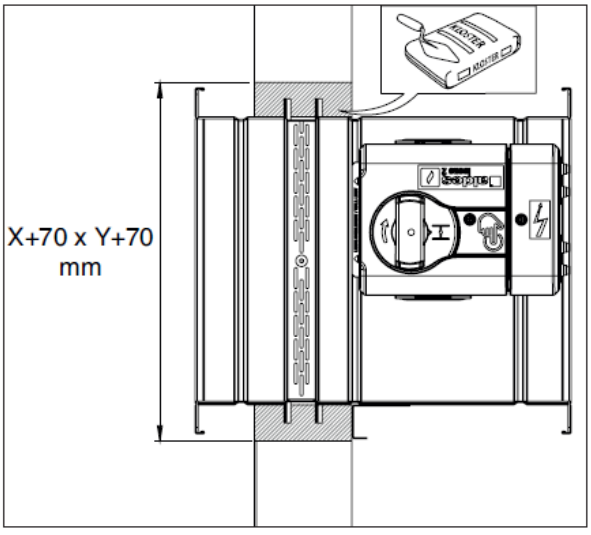




MISE EN ŒUVRE : PAROI CARREAUX DE PLÂTRE

1





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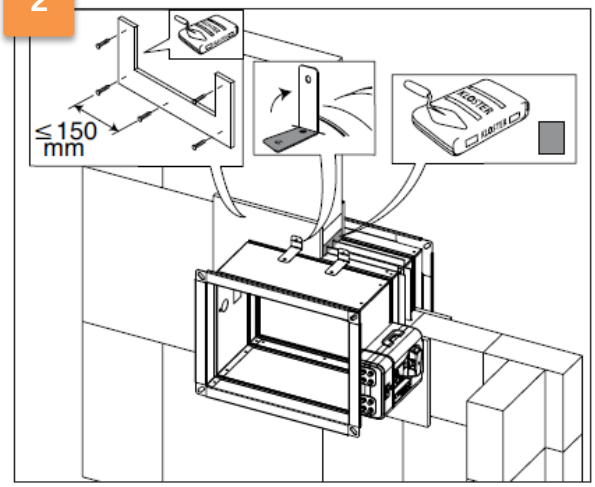
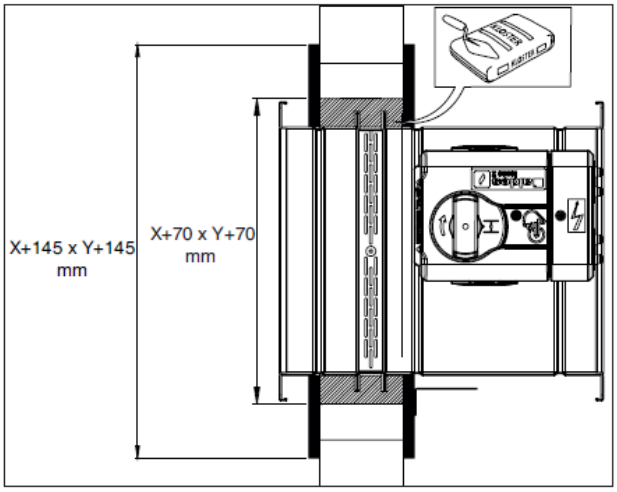
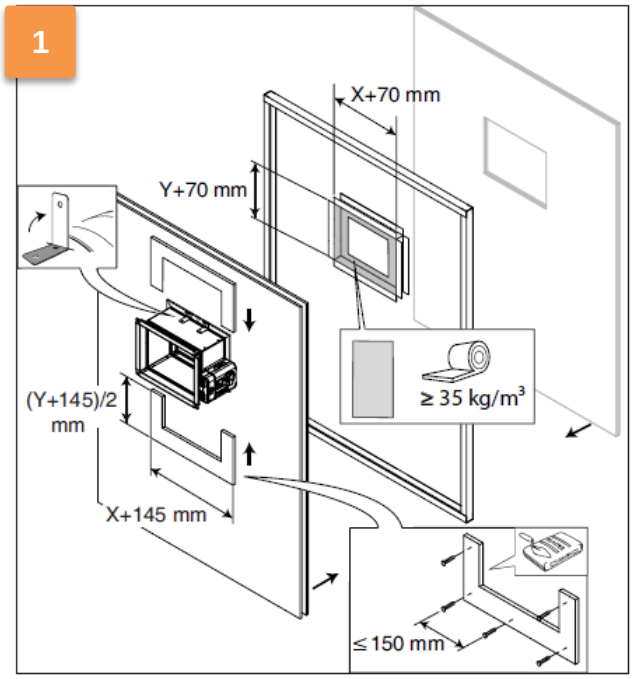
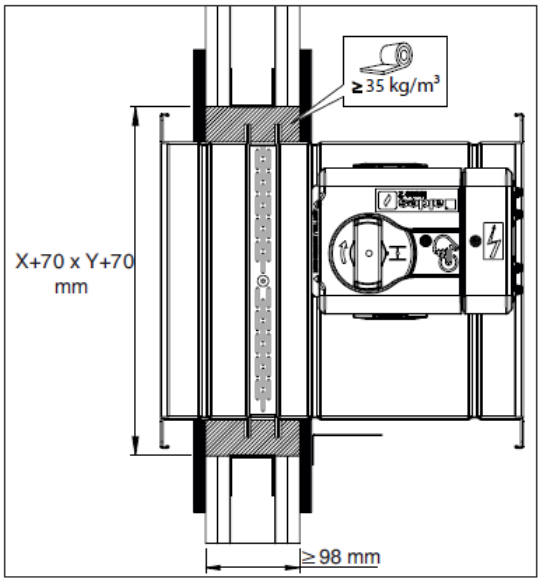




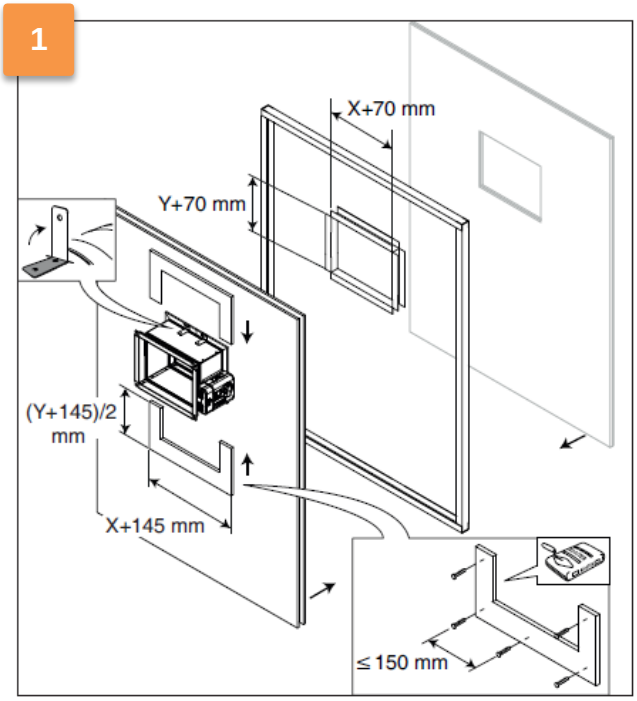
MISE EN ŒUVRE : PAROI PLAQUES DE PLÂTRE

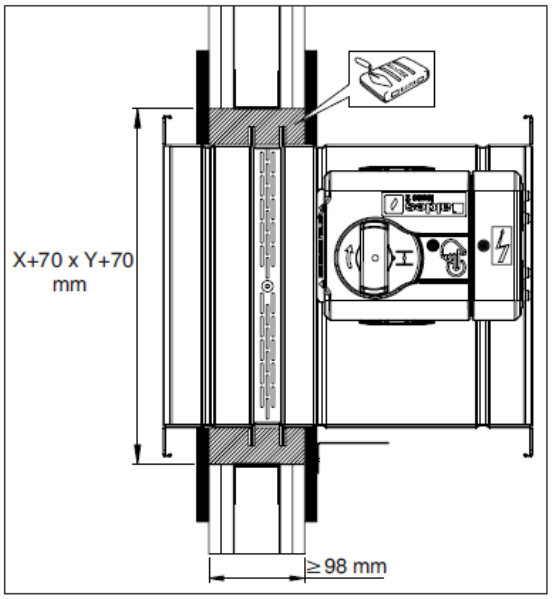
1



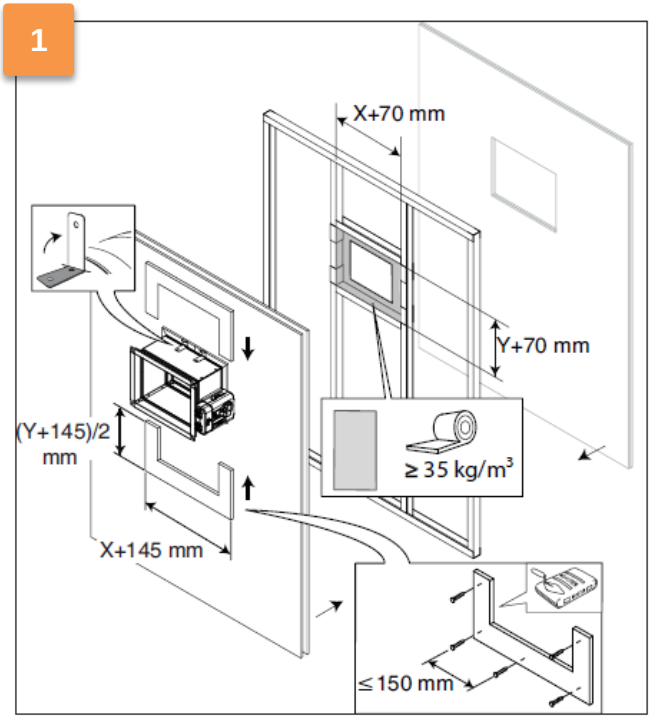


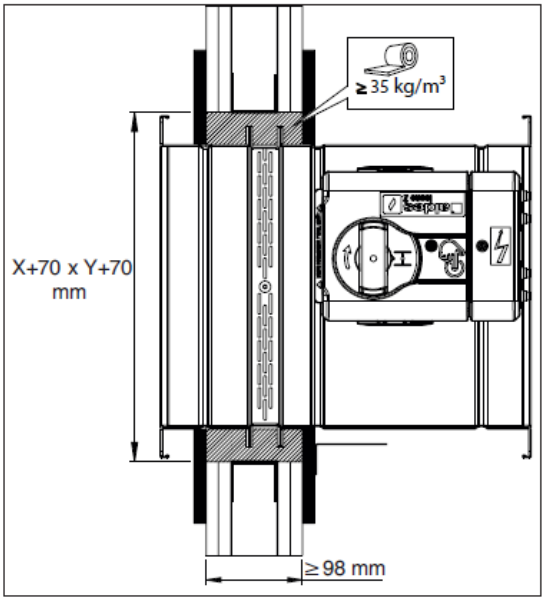
1





1





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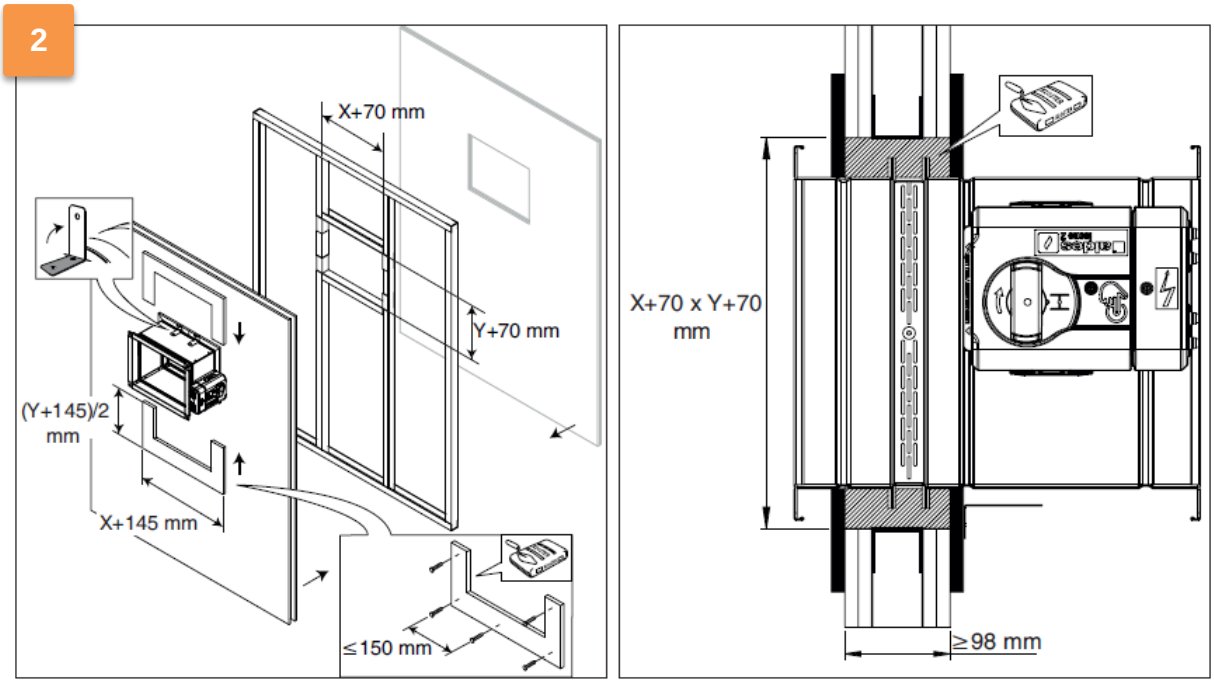
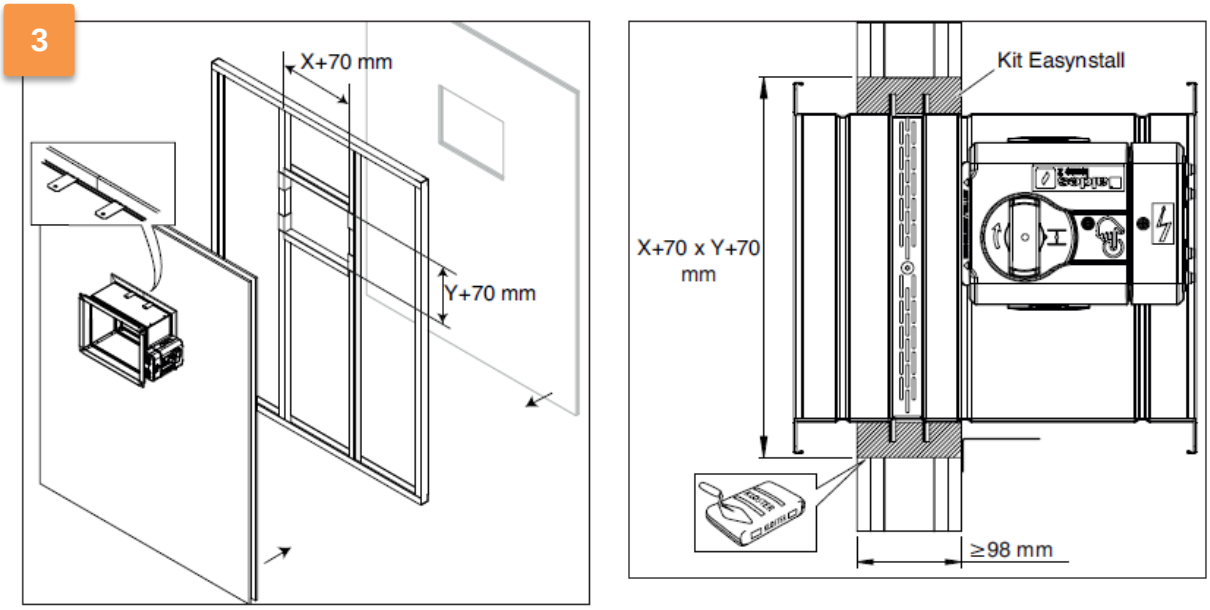

X+70 mm
Y+70 mm
(Y+145)/2 mm
X+145 mm
≤150 mm
X+70 x Y+70 mm
≥98 mm

3


X+70 mm
Y+70 mm
Kit Easynstall
X+70 x Y+70 mm
≥98 mm

4