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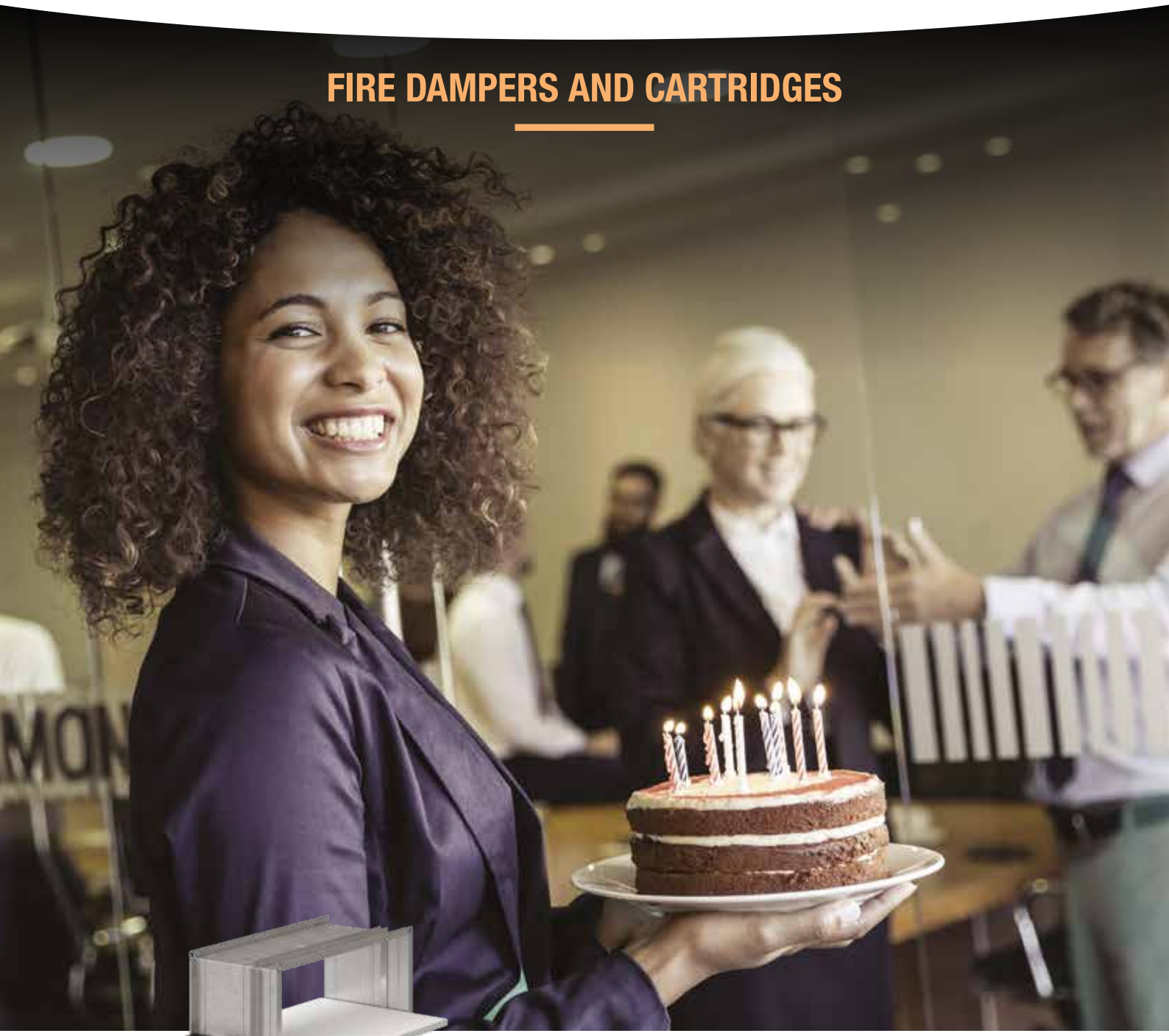
FIRE DAMPERS AND CARTRIDGES



ISONE® 2.1

THE FIRE DAMPER OFFERING SIMPLER INSTALLATION AND A SAFETY GUARANTEE FOR OCCUPANTS AND BUILDINGS.

TECHNICAL AND COMMERCIAL DOCUMENTATION

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Things are clear.
We spend over half our time in public-access buildings. A fire starts every 75 minutes in this type of building. The temperature of a fire can reach 900 °C in just a few minutes. The risk of exposure to it is high. This is why we need to slow down and compartmentalise the fire as soon as possible. So it's time to become

REVOLUTIONAIR

Blending ease of use and safety, the ISONE® 2.1 range is the result of over 30 years of expertise in fire safety. **Aldes fire dampers are simple to select, install and maintain, making the safety of people and property easier to protect.**


THE TEMPERATURE OF A FIRE
CAN REACH 900°C
IN A FEW MINUTES*

ISONE® 2.1

THE FIRE DAMPER CERTIFIED EI120S ON ALL SUPPORT CONSTRUCTIONS

*INERIS report - Ref.: INERIS-DRA-2006-46055-C70050 Fires in confined spaces.

WHY CHOOSE ISONE® 2.1 ?

Performance & Efficiency

The ISONE® 2.1 fire damper range is certified on all usual construction supports: concrete walls and slabs, plasterboard partition walls, plaster bricks, etc.
It delivers class C airtight properties as per standard EN 1751.
It complies with EN 15650 with a EI 120 S fire resistance level as per EN 13501, French standards 61.937 and NF 537.

Easy to select

For no more errors, the ISONE® 2.1 range offers a single damper suited to all installation situations. Some models have fusible links, some are motorised.

Easy to install

The ISONE® 2.1 damper is easy to install on any support. It includes a comprehensive range of installation and connection accessories.

Easy to maintain

Data are collected directly from the damper using the ALDES SecurONE application, to make maintenance easier. The auto-control model can easily be closed using a large easy-access button and reset using a large handle.

Drawing inspiration from tradespeople daily, ALDES designed ISONE® 2.1: A new range of fire damper to ensure that nobody has to compromise between simplicity and safety.

Auto-control model

Motorised model

ISONE® 2.1 Circular or Rectangular

MADE IN FRANCE

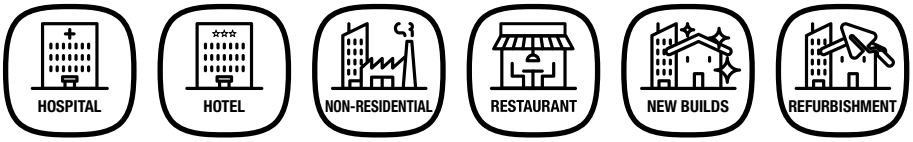
DESCRIPTION

The fire damper is used to compartmentalise the buildings to prevent fires from spreading. It can restore the fire resistance level of walls when they are penetrated by ventilation ducts.

FIELD OF APPLICATION

The ISONE® 2.1 range has been designed to suit any building or configuration:

- Commercial and non-residential buildings (hotels, care homes, hospitals, offices, dormitories),
- Industrial buildings
- New or existing buildings



ISONE® 2.1 RANGE COMPLIANCE

STANDARDS AND REGULATIONS
• CE marking compliant: EN 15650, no. 1812-CPR-1837 as per the construction products regulation 305/2011 EU. • Fire protection rating as per standard EN 13501: EI 120 S. • Class C airtight properties as per NF EN 1751. • Compliant and certified as per standards NF S61 937-1 and NF S61-937-5 "Actuated Safety Devices (DAS) - fire damper". • Compliant with standard NF 537. • EXAP EN 15882-2:2015, rules X.45 and X.46. • Certified for 150 manual cycles and 10,000 cycles with BELIMO motor.

GENERAL VIEW OF FIRE PROTECTION RATINGS FOR CIRCULAR AND RECTANGULAR RANGES

TYPE OF INSTALLATION	MATERIAL	THICKNESS	FIRE RESISTANCE (under 500 Pa)
Wall	Reinforced concrete	≥ 100 mm	EI 120 S
Wall	Aerated concrete	≥ 100 mm	EI 120 S
Wall	Type A plasterboard (60 min fire retardant)	≥ 98 mm	EI 60 S
Wall	Type A plasterboard (60 min fire retardant) with post-fitted frame	≥ 98 mm	EI 60 S
Wall	Type F plasterboard (120 min fire retardant)	≥ 98 mm	EI 120 S (with plasterboard heel)
Wall	Type A plasterboard (60 min fire retardant) Rectangular Easynstall kit	≥ 98 mm	EI 60 S
Wall	Type A plasterboard (90 min fire retardant) Rectangular Easynstall kit	≥ 98 mm	EI 90 S
Wall	Plasterboard tiles	70 mm	EI 60 S
Wall	Plasterboard tiles	100 mm	EI 90 S
Wall	Plasterboard tiles	100 mm	EI 120 S (with plasterboard heel)
Wall - offset	PROMAT duct - plasterboard (120 min fire retardant)	≥ 50 mm	EI 120 S
Slab	Reinforced concrete	≥ 150 mm	EI 120 S
Slab	Aerated concrete	≥ 150 mm	EI 120 S

ALDES PRO WEBSITE

WEBSITE FOR TRADE USERS: WWW.ALDES.COM

- Aldes information and news.
- Information on product solutions (with selection guide).
- Information on regulations and financial aid.
- List of approved installers and certified technical stations.
- Documentation, manuals, catalogues, etc.
- Document research tool.
- Aldes contacts: sales offices
- Site references.
- Product videos.
- Advice on installing and servicing products.
- Studies on indoor air quality.
- Services: training, software, commissioning.

BIM DOWNLOAD PLATFORM

BIM OBJECT LIBRARY

Access our object library free and find Aldes product objects easily in native REVIT format as well as in 2D/3D formats (DWG and DXF) that are compatible with many CAD software programs.
Aldes CAD Library, the platform that supports you in designing your BIM projects for the construction and sustainable development of buildings.
See our products on cad.aldes.com

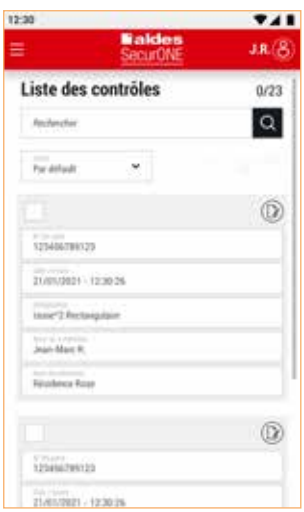
ALDES SECURONE APPLICATION

The **ALDES SecurONE** application makes damper maintenance easier. The fire safety system remains operational 24 / 7 to ensure the safety of people and property.

The **ALDES SecurONE** application serves to:

- Retrieve all information from the manufacturer's plate, such as the unique serial number, the equipment, the model, the project references entered on the purchase order.
- Add photos taken on site.
- Geolocalise the damper.
- Add personal notes about the work completed.
- Access the ISONE® 2.1 web page.
- Access the instruction manual even without an internet connection.

- Once the work is completed, a report can be send easily by e-mail, in PDF format or text format, for later use on a spreadsheet.



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FIRE PROTECTION

Photo credits: Getty Images - 2021

THE FIRE DAMPER OFFERING SIMPLER INSTALLATION AND A SAFETY GUARANTEE FOR OCCUPANTS AND BUILDINGS.

ISONE® 2.1

- A single model certified for all supports
- Wide range of dimensions to suit all needs
- Easy to maintain: data collection via Aldes SecurONE application
- 100% designed and manufactured in France

Get more information at **www.aldes.com**

PRESENTATION OF MECHANISMS

Two types of mechanisms are used on the ISONE® 2.1 damper range:

- The mechanism for the ISONE® 2.1 PM/GM auto-control damper.
- The mechanism for remote-controlled damper powered by BELIMO motor.

Mechanism for auto-control damper:

- **ISONE® 2.1 PM** mechanism (D100 to D560 mm and 200 x 100 to 800 x 600 mm).
- **ISONE® 2.1 GM** mechanism (D630 mm and L > 800 / H > 600 mm).

They function identically but offer a different aesthetic finish.

These ISONE® 2.1 mechanisms are reliable and fully scalable. They are certified for 150 manual cycles or 300 motorised cycles.

Components such as position contacts, the electromagnetic trip device, or the reset motor can easily be added to the unit even after installation. The dampers can therefore be adapted to suit operational needs.

Mechanisms installed as standard:

- Trip: manual & thermal (70°C),
- Reset: manual.

Mechanism for remote-control damper:

- BELIMO 24V AC/DC or 230V motor equipped with a 72°C thermal-electric sensor as standard and start/end position limit switches.
- BFL model: D100 mm to D560 mm, 200 x 100 to 800 x 600 mm
- BFN model: D630 mm and L>800 / H>600.

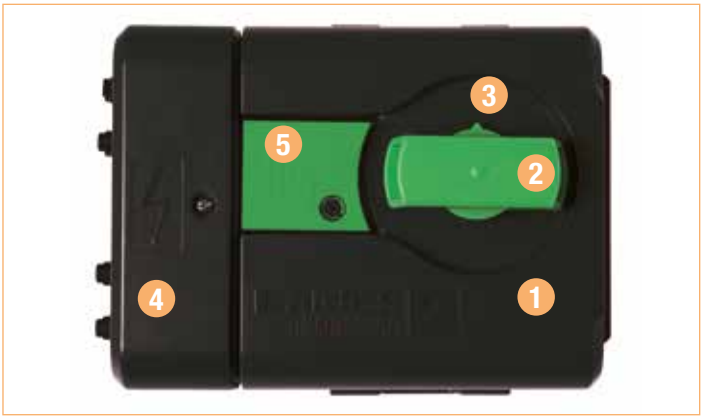
On 24V model: BELIMO BFX-24-T-ST model with a connection port for simple integration into building management system using specific modules (for MP-bus or Ringbus solutions).

They are certified for 10,000 cycles.

		Auto-control PM	Auto-control GM	BELIMO motor
TRIP OPTIONS	Thermal	Fusible link FTE 70°C		Fusible link 72°C
	Manual	Button on front	Side handle	Test button on sensor
	Electromagnetic	Current make: 24/48 V Current break: 24 or 48 V	Current make: 24/48 V Current break: 24/48 V	24V AC/DC 230V AC
RESET OPTIONS	Manual	By hand using handle Using rod max D8 mm	Using screwdriver D6 mm	Using dedicated wrench
	Motorised	EHOP min. motor	EHOP 30S motor	BELIMO BFL / BFN
SIGNALLING MODES		End position + start position limit switches (FDCU1)		End position + start position limit switches
		Double end position + start position limit switches (FDCU2)		-
OPTIONAL REMOTE UNIT		0.7 m or 3 m 10 wires for FDCU1 16 wires for FDCU2	-	-

ISONE® 2.1 PM MECHANISM

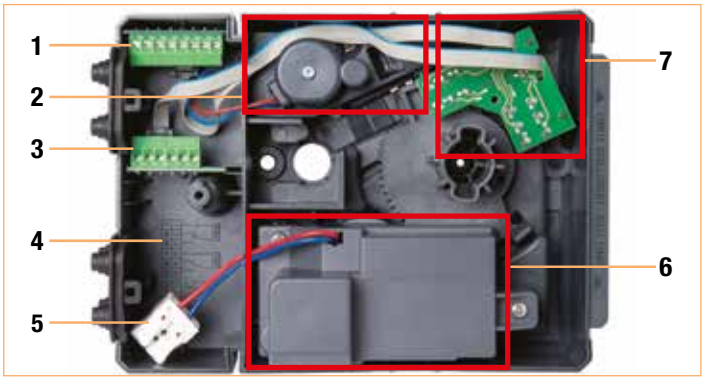
DESCRIPTION



1. Main unit with mechanism
2. Ergonomic handle indicating damper position
3. Diagram indicating damper position
4. Electrical connection box
5. Close test button and FTE 70°C sensor

PRESENTATION OF MECHANISMS

DESCRIPTION



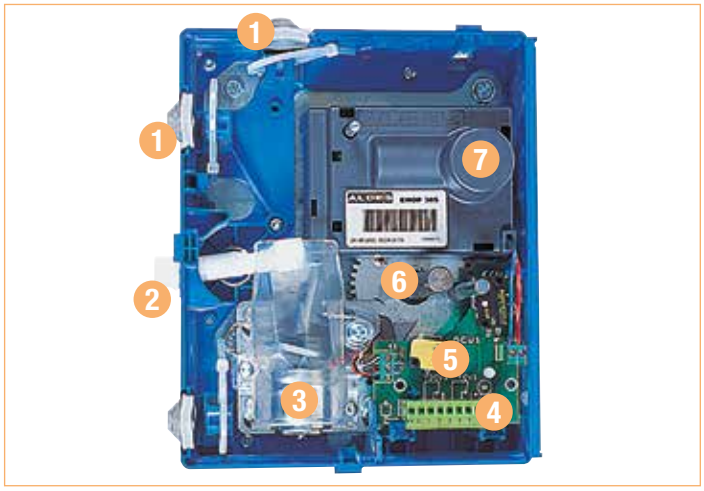
1. Detachable electric connection, 24/48V VDS current make coil and FDCU1 limit position switches
2. Electromagnetic trip device: 24/48V current make or 24V, 48V current break
3. Electrical connection FDCU2 end limit switches
4. Wiring diagram
5. Motor electric connections
6. EHOP min 24/48V reset motor
7. Limit switch board (FDCU1 or FDCU1+2)

The ergonomic nature of the ISONE® 2.1 mechanism has been designed to enable easy maintenance of the damper:

- Any equipment can be added at any time, using one or two captive screws
- Large clearly separated unit for electric connections
- Rapid reset (2 seconds) using handle: manually or with rod
- Motorised reset in under 10 seconds
- **"Remote unit"** option to make electrical connections and maintenance easier: 0.7 m or 3 m, FDCU1 or FDCU1+2 (single or double set of limit position switches)

ISONE® 2.1 GM MECHANISM

DESCRIPTION

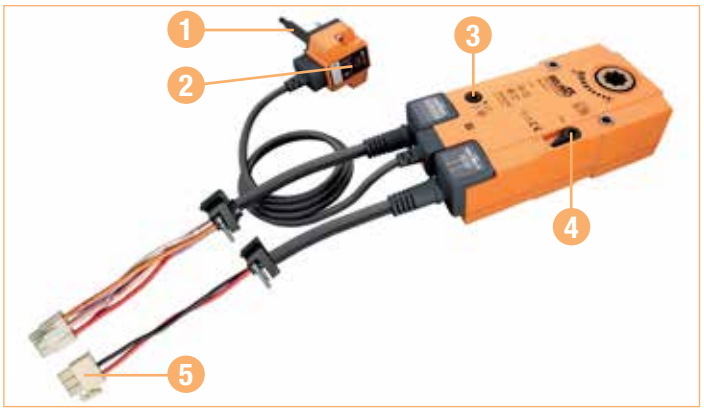


1. Cable glands sliding in unit
2. Simple and ergonomic manual trip control
3. 24/48V electromagnetic trip device
4. Detachable terminal block for easy wiring
5. End limit switches
6. Reset lever accessible without removing cover: quarter turn with a screwdriver is sufficient to open the damper blade
7. EHOP 30s reset motor

All equipment can be installed/removed at any time, operations can be carried out single-handed without tools.
With equipment that can be installed easily, the ISONE® 2.1 GM mechanism can be transformed into its most complete version in under 3 minutes.

ISONE® 2.1 BELIMO MECHANISM

The BELIMO mechanism includes the 72°C thermal-electric sensor, a set of start and end limit position switches, and a reset motor. Connections are provided for coupling with communication modules using buses. The mechanism is certified for 10,000 cycles with the ISONE® 2.1 damper.



1. 72°C thermal-electric sensor
2. Sensor test button
3. Manual reset pin
4. Locking button
5. Connections for communication modules

PRECAUTIONS

STORAGE PRIOR TO INSTALLATION

Prior to installation, the product must be stored in an enclosed area protected against water ingress and frost:

- Dampers should not be stacked higher than the original factory configuration. They should be arranged to prevent damage to mechanisms of moving parts, and to avoid deformations of the device body due to excess loads or humidity.
- Do not insert smaller products into larger ones.
- Do not leave dampers exposed to direct sunlight and heat as this will cause premature ageing of the fuse.
- Do not push or roll the product to move it.
- Do not carry the damper by the transmission rod (risk of breakage and malfunction)
- Avoid impacts and damage.

PROTECTING THE EQUIPMENT DURING INSTALLATION

- Although the fire damper, and more particularly its mechanism, is protected by a synthetic material cover, it should be protected from splashes of any kind (mortar, paint, sprayed cladding, etc.) that may affect the operation of the trip devices and signalling devices.
- The equipment should also be protected against the risk of water run-off or high condensation, both for the refractory part and the metal parts, or electromagnetic components.
- The airtight intumescent seals are primordial for the damper's fire resistance, so any mechanical actions on the refractory parts should be avoided.
- All necessary precautions should be taken to prevent premature ageing of the equipment before it is put into service on completed installations.
- Wedging and filling in order to seal devices in place correctly should not cause deformations likely to adversely affect the operation of the fire damper.
- The damper should be installed in the closed position.

EQUIPMENT INSPECTION PRIOR TO ACTIVATION OF SYSTEMS

Dampers should be maintained in mechanical standby position before the ventilation systems are effectively put into service, to avoid applying forces to the retention devices or trip devices until the normal operating conditions are satisfied.

PRESENTATION OF THE RANGE

The ISONE® 2.1 circular range offers a wide range of dimensions: from Ø100 to Ø630 mm. It has been divided into two categories to make selection easier and to meet compartmentation needs:

- ISONE® 2.1 Circular Small Model (PM): Circular tunnel body from Ø100 to Ø500 mm,
- ISONE® 2.1 Circular Large Model (GM): Rectangular body with circular extension rings from Ø560 to Ø630 mm.

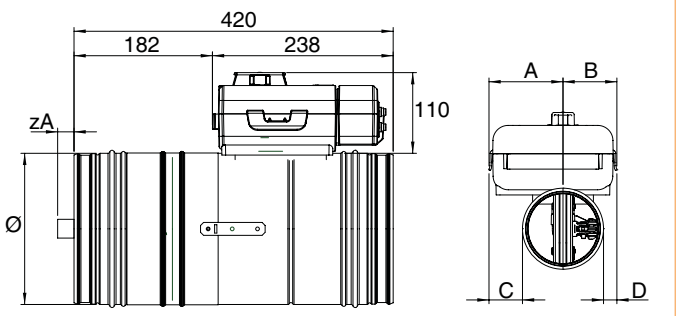
AUTO-CONTROL MODEL			MOTORISED MODEL		
	TITLE	REFERENCES		TITLE	REFERENCES
	ISONE® 2.1 EUROPE-EIS-D100	11043026		ISONE® 2.1 EUROPE-EIS-D100-M	11043145
	ISONE® 2.1 EUROPE-EIS-D125	11043028		ISONE® 2.1 EUROPE-EIS-D125-M	11043148
	ISONE® 2.1 EUROPE-EIS-D160	11043029		ISONE® 2.1 EUROPE-EIS-D160-M	11043149
	ISONE® 2.1 EUROPE-EIS-D200	11043036		ISONE® 2.1 EUROPE-EIS-D200-M	11043156
	ISONE® 2.1 EUROPE-EIS-D250	11043037		ISONE® 2.1 EUROPE-EIS-D250-M	11043157
	ISONE® 2.1 EUROPE-EIS-D315	11043092		ISONE® 2.1 EUROPE-EIS-D315-M	11043158
	ISONE® 2.1 EUROPE-EIS-D355	11043093		ISONE® 2.1 EUROPE-EIS-D355-M	11043159
	ISONE® 2.1 EUROPE-EIS-D400	11043094		ISONE® 2.1 EUROPE-EIS-D400-M	11043160
	ISONE® 2.1 EUROPE-EIS-D450	11043095		ISONE® 2.1 EUROPE-EIS-D450-M	11043166
	ISONE® 2.1 EUROPE-EIS-D500	11043097		ISONE® 2.1 EUROPE-EIS-D500-M	11043167
Rings/Extensions fitted in factory 	ISONE® 2.1 EUROPE-EIS-D560	11043098	**Rings/Extensions fitted in factory** 	ISONE® 2.1 EUROPE-EIS-D560-M	11043168
Rings/Extensions fitted in factory 	ISONE® 2.1 EUROPE-EIS-D630	11043107		ISONE® 2.1 EUROPE-EIS-D630-M	11043169

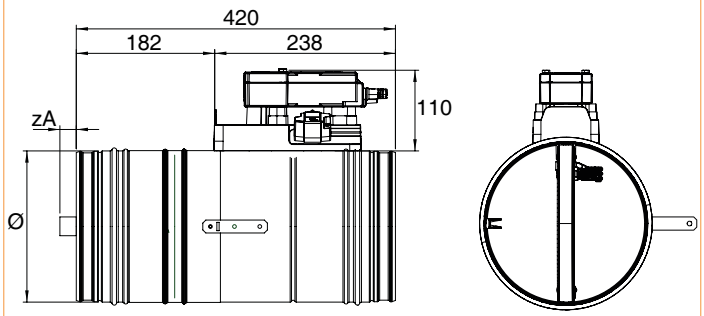
DESCRIPTION

1. Installation bracket
2. Lip seal
3. Blade with airtight seal
4. Galvanised steel body (sleeve)
5. Manufacturer's plate with details of damper
6. ISONE® 2.1 mechanism

DIMENSIONS

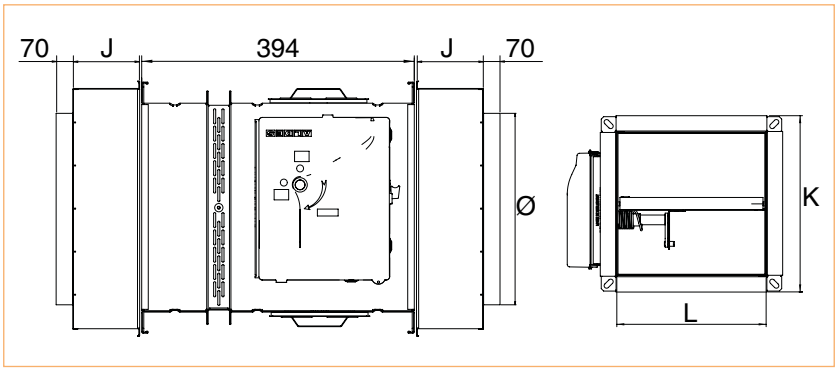
ISONE® 2.1 PM DIMENSIONS (CIRCULAR BODY): Ø100 TO Ø500 MM





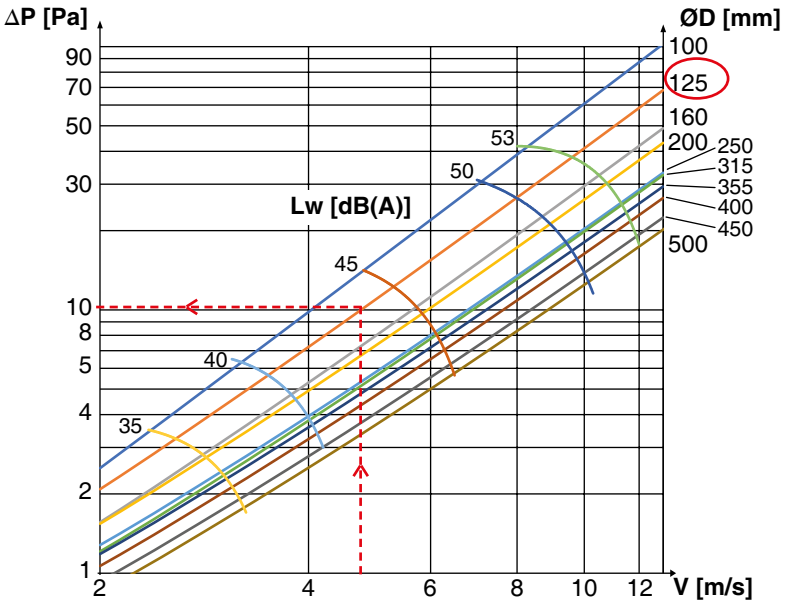
Ø (MM)	A	B	C	D	ZA	FREE SURFACE (dm²)	WEIGHT (kg)
100	97	70	45	18	-	0.5	1.8
125	97	70	32	8	-	0.9	2.1
160	97	70	15	-	-	1.6	2.7
200	97	70	-	-	-	2.6	3.5
250	97	70	-	-	-	4.2	3.6
315	127	40	-	-	22	6.9	5.6
355	127	40	-	-	42	8.7	7.6
400	127	40	-	-	64	11.2	8.4
450	127	40	-	-	89	14.4	9.1
500	127	40	-	-	114	18.0	10.3

ISONE® 2.1 GM DIMENSIONS (SQUARE BODY): Ø560 TO Ø630 MM



Ø (MM)	DIMENSIONS (mm) J	K	L	XxY RECTANGULAR DAMPER (MM)	FREE SURFACE (dm²)	WEIGHT (kg)
560	202	665	605	600	23.03	25.6
630	254	735	675	670	27.82	32.3

AIRFLOW AND ACOUSTIC DETAILS



Pressure loss: ΔP [Pa]
Nominal damper diameter: ØD [mm]
Speed: V [m/s]
Sound power: Lw [dB(A)]

Example:
Data: D = 125 mm, V = 5 m/s
Result: ΔP = 10 Pa, Lw = 44 dB(A)

INSTALLATION

CONNECTION TO AIR DUCTING

The metal sleeve of the ISONE® 2.1 circular is a male fitting and features stop rings for simple positioning of the female duct. The damper should not support any forces exerted by the ducts. The two ends of the metal sleeve (or tunnel) of feature a lip seal for airtight closure to make installation easier. The sleeve should be attached without mechanical pressure and should enable perfect alignment of the ducts with the damper. Depending on the dimensions of the damper, the mobile blade may require clearance in the duct.

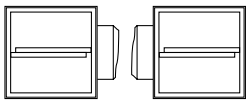
POSITIONING

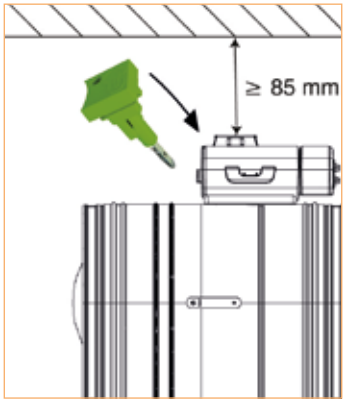
- **Mechanism positioning:**

The blade axis on circular body models may be horizontal or vertical. It must be horizontal for rectangular body models.

ISONE® 2.1 PM (D100 -> D500):

ISONE® 2.1 GM (D560 -> D630):





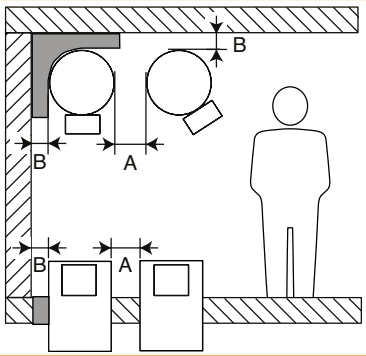
Note: the mechanism box must remain accessible after installing the damper. Ensure an inspection hatch is installed for this purpose, along with a clearance of at least 85 mm between the mechanism and the adjacent wall.

INSTALLATION

- **Minimum distance between adjacent walls (vertical / horizontal) and the dampers.**

(MM)	EI60	EI90	EI120
A	20	200	200
B	20	20	75

Note: standard EN 1366-2 imposes a minimum distance of 200 mm between dampers and 75 mm between a damper and the wall for all fire protection ratings, unless specific tests show that it is possible to reduce them. This applies to ISONE 2.1 for the EI60 and EI90 ratings.



Mineral wool 40 kg/m³ across the penetration, to replace the seal if necessary, but not mandatory if a normal seal with standard mortar / plaster can be used, depending on the specific nature of each type of partition.

INSTALLATION: SUMMARY TABLE

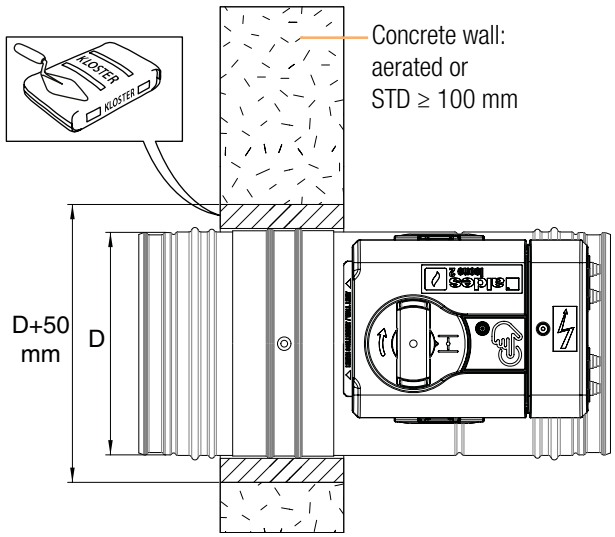
Note: When installing the GM large model, see the installation methods for the rectangular range.

TYPE OF PARTITION	CONSTRUCTION SUPPORT	THICKNESS	FIRE PROTECTION (UNDER 500 Pa)	TYPE OF INSTALLATION			DIAGRAM NO.	PAGE
				INSTALLATION BASE	TYPE OF SEAL	SPECIFIC ASPECT		
Wall	Concrete / aerated concrete (density ≥ 450 kg/m³)	≥ 100 mm	EI 120 S	Seal	Cement mortar or plaster base	-	1	20
Slab	Concrete / aerated concrete (density ≥ 600 kg/m³)	≥ 150 mm	EI 120 S	Seal			2	20
Wall	Type A plasterboard (EI60)	≥ 98 mm	EI 60 S	With mineral wool	Plaster finish	Post-fitted frame	3	20
				Conventional frame with mineral wool	Plaster finish	-	4	21
	Plasterboard (EI90)		EI 90 S	Conventional sealed frame	Plaster base mortar	Plasterboard heel thick. 12.5 mm same for support partition or Promatect MT 16 mm	5	21
	Type F plasterboard (EI120)		EI 120 S					
	BA25 plasterboard							
Wall	Plasterboard tiles (density ≥ 900 kg/m³)	70 mm	EI 60 S	Seal	Cement mortar or plaster base	-	6	22
			EI 90 S			Plasterboard heel thick. 12.5 mm same for support partition or Promatect MT 16 mm	7	22
		100 mm	EI 90 S				6	22
			EI 120 S			Plasterboard heel thick. 12.5 mm same for support partition or Promatect MT 16 mm	7	22
Wall - offset	PROMAT duct	≥ 50 mm	EI 90 S	Seal	Plaster base mortar	-	8	22
			EI 120 S			With insulation on supports		
	GEOFLAM/DESENFIRE duct	≥ 45 mm	EI 120 S		Plaster base mortar	-		

INSTALLATION

INSTALLATION: CONCRETE / AERATED CONCRETE WALLS AND SLABS

1



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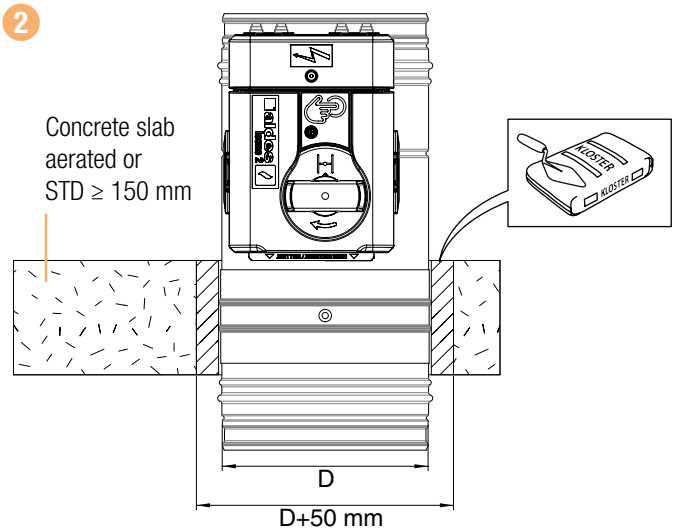
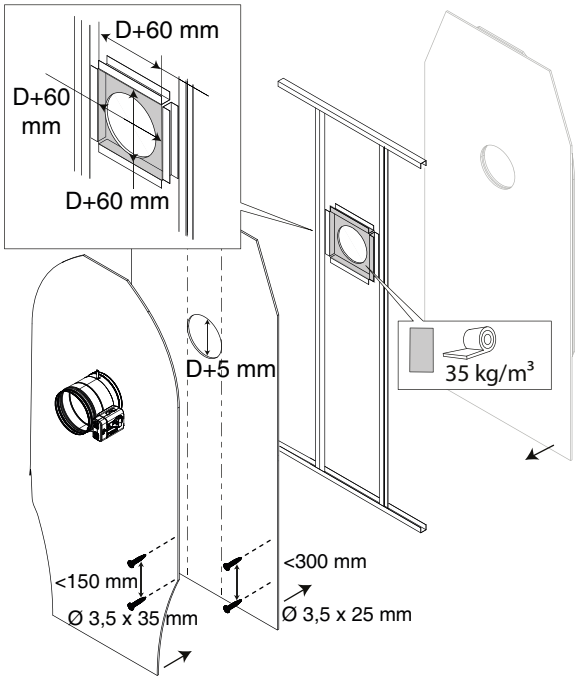
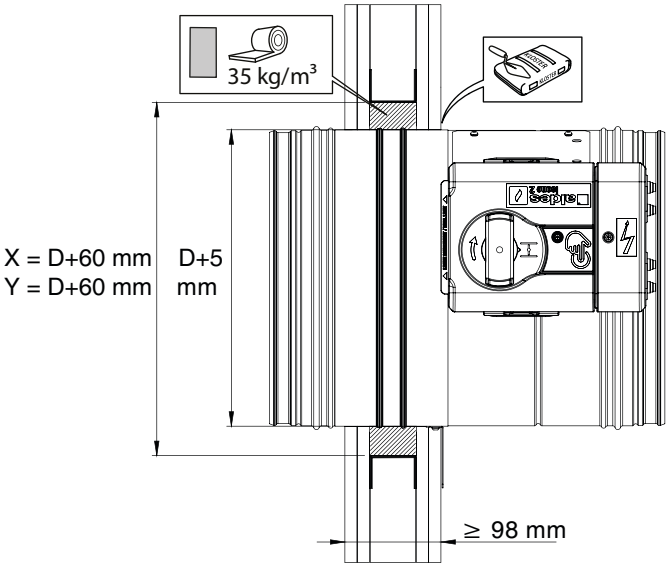


INSTALLATION: PLASTERBOARD PARTITION WALL

Note: The four rails must be screw attached on each side.

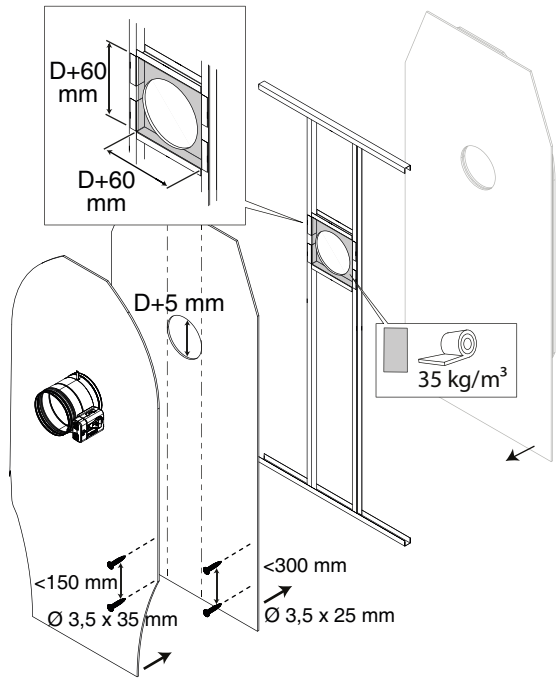
3

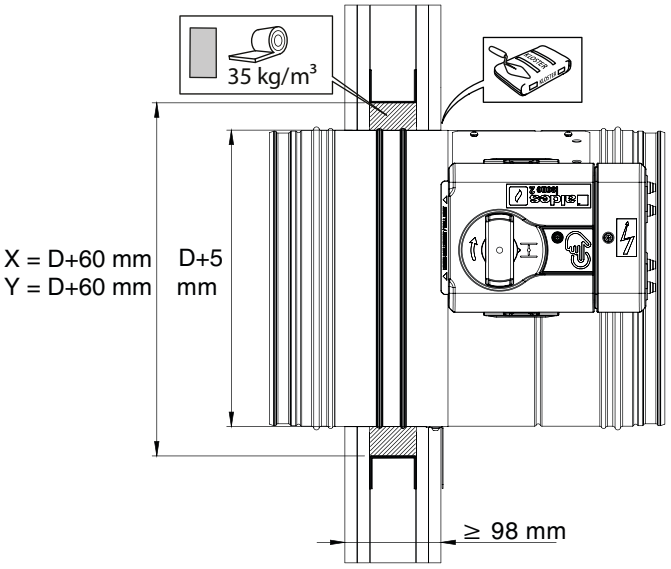




INSTALLATION: CONCRETE / AERATED CONCRETE WALLS AND SLABS

4





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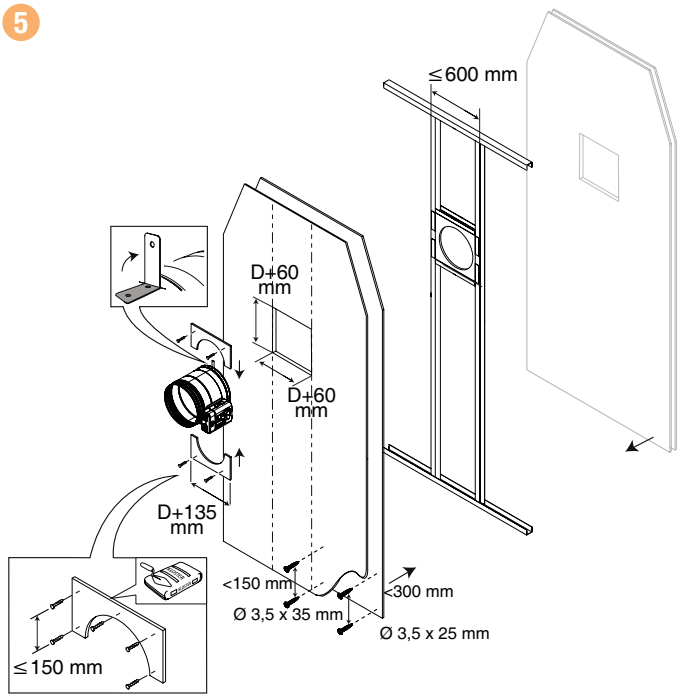
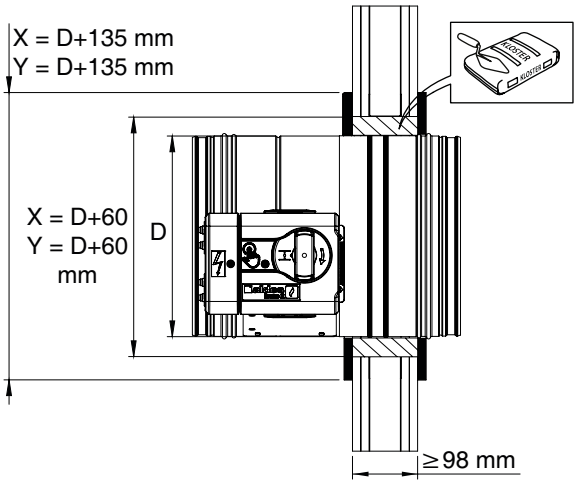
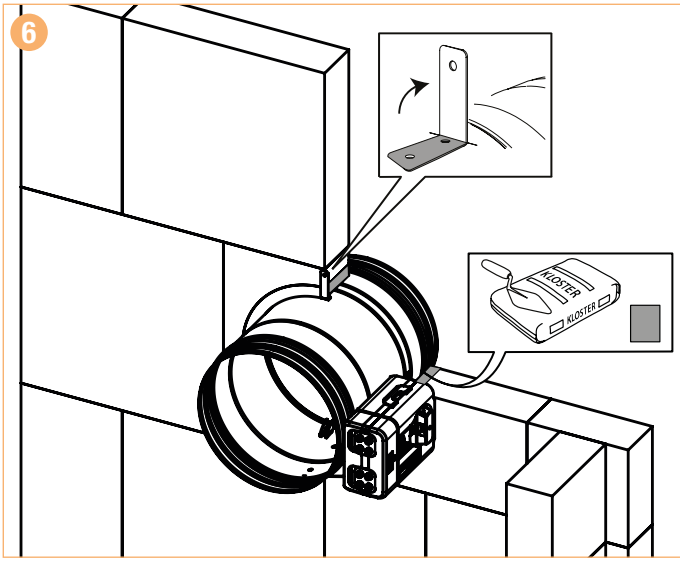


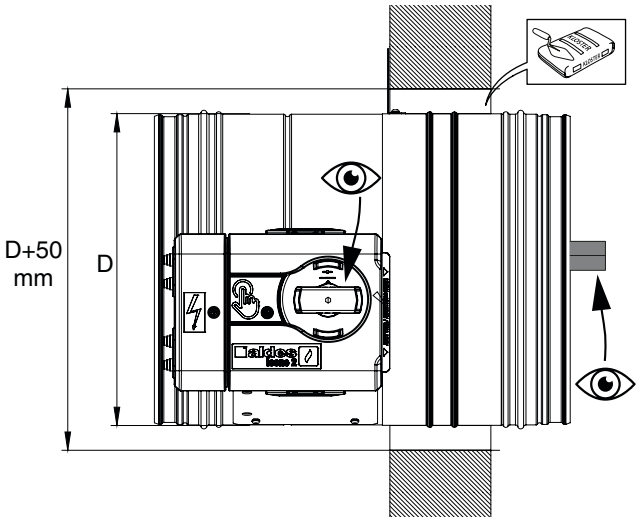


INSTALLATION

INSTALLATION: PLASTERNPARD TILE WALL

6





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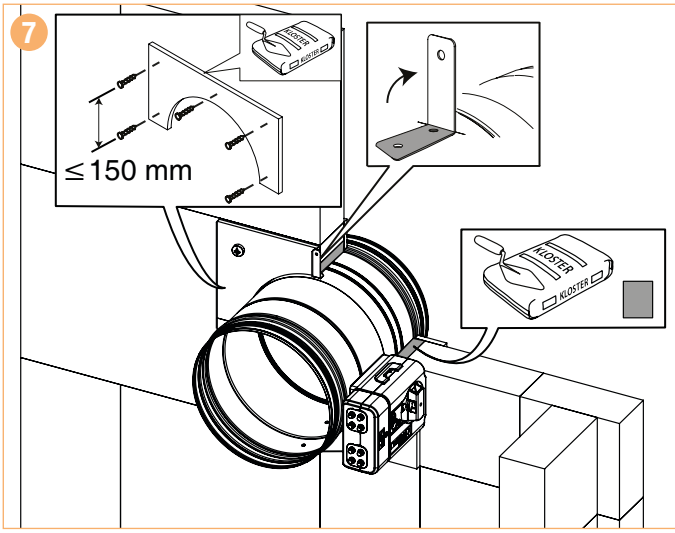

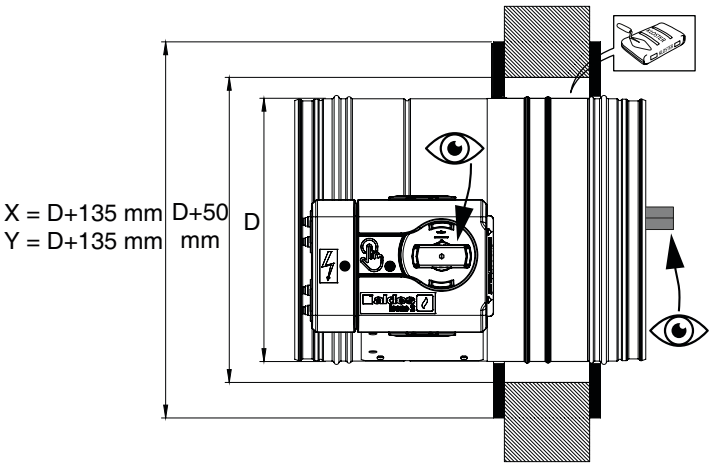

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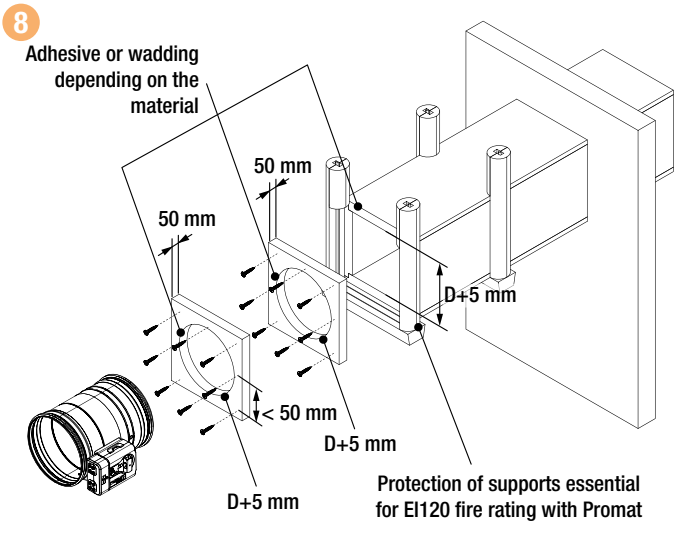


PRESENTATION OF THE RANGE

INSTALLATION: PLASTERBOARD PARTITION WALL

ISONE® 2.1 rectangular fire dampers are available in a wide range of dimensions:

- Rectangular Small **(PM)**: 200 x 100 to 800 x 600 mm inclusive
- Rectangular Large **(GM)**: L>800, H>600 mm

Dampers can be ordered in **pitches of 5 mm**.

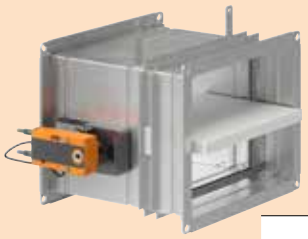
HEIGHT Y (MM)	WIDTH X (MM)
	200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500
100	
150	
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	

ISONE® 2.1 RECTANGULAR PM

ISONE® 2.1 RECTANGULAR PM-M (BELIMO BFL)

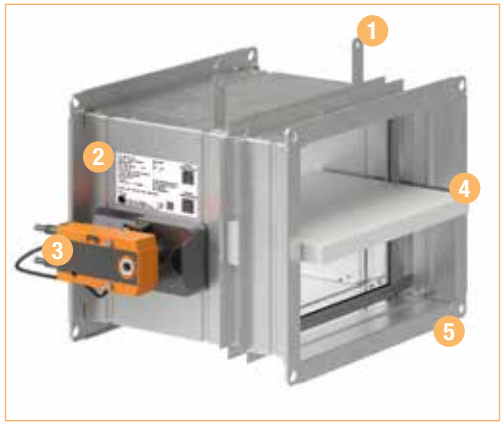
ISONE® 2.1 RECTANGULAR GM

ISONE® 2.1 RECTANGULAR GM-M (BELIMO BFN)



AUTO-CONTROL MODEL		MOTORISED MODEL	
TITLE	REFERENCE	TITLE	REFERENCE
ISONE® 2.1 EUROPE EIS RECT PM	11043456	ISONE® 2.1 EUROPE EIS RECT PM-M	11043458
ISONE® 2.1 EUROPE EIS RECT GM	11043457	ISONE® 2.1 EUROPE EIS RECT GM-M	11043459

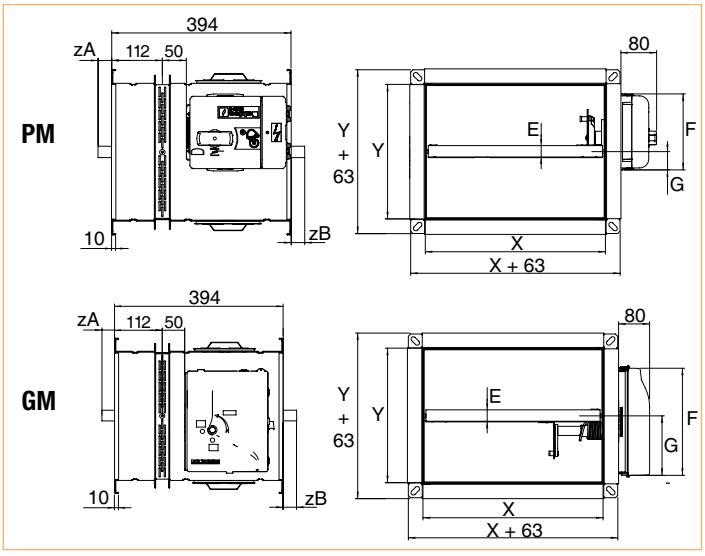
DESCRIPTION

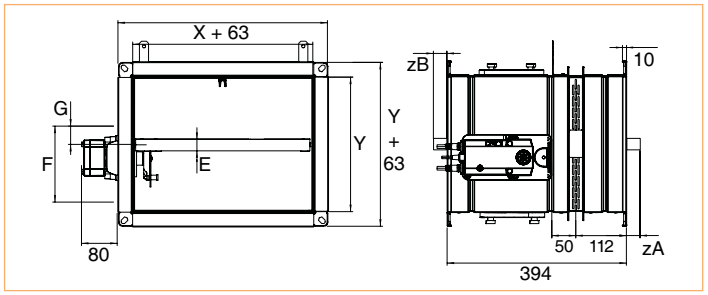


1. Installation bracket
2. Manufacturer's plate with details of damper
3. ISONE® 2.1 mechanism
4. Blade thickness 25 mm (PM model) or 50 mm (GM model)
5. Connection flange 30 mm

DIMENSIONS

DIMENSIONS (MM)





	X	Y	E	F	G	zA	zB
Rectangular damper PM	Between 200 and 800	100	25	169	71	Y/2 - 122	-
		150	25	169	71	Y/2 - 122	-
		Between 200 and 600	25	169	71	Y/2 - 122	-
Rectangular damper GM	Between 850 and 1500	Between 650 and 1000	50	242	99	Y/2 - 122	Y/2 - 292

WEIGHT (KG)

HEIGHT Y (MM)	WIDTH X (MM)												
	200	250	300	350	400	450	500	550	600	650	700	750	800
100	4.44	5	5.56	6.11	6.67	7.23	7.78	8.34	8.89	9.45	10	10.5	11.1
150	5.09	5.69	6.29	6.89	7.49	8.09	8.69	9.29	9.89	10.4	11	11.6	12.2
200	5.73	6.38	7.02	7.67	8.31	8.95	9.6	10.2	10.8	11.5	12.1	12.8	13.4
250	6.38	7.07	7.75	8.44	9.13	9.82	10.5	11.2	11.8	12.5	13.2	13.9	14.6
300	7.02	7.75	8.49	9.22	9.95	10.6	11.4	12.1	12.8	13.6	14.3	15	15.8
350	7.67	8.44	9.22	9.99	10.7	11.5	12.3	13.1	13.8	14.6	15.4	16.2	16.9
400	8.31	9.13	9.95	10.7	11.5	12.4	13.2	14	14.8	15.6	16.5	17.3	18.1
450	8.95	9.82	10.6	11.5	12.4	13.2	14.1	15	15.8	16.7	17.6	18.4	19.3
500	9.6	10.5	11.4	12.3	13.2	14.1	15	15.9	16.8	17.7	18.6	19.5	20.5
550	10.2	11.2	12.1	13.1	14	15	15.9	16.9	17.8	18.8	19.7	20.7	21.6
600	10.8	11.8	12.8	13.8	14.8	15.8	16.8	17.8	18.8	19.8	20.8	21.8	22.8
650	13.6	15.2	16.8	18.4	20	21.6	23.2	24.9	26.5	28.1	29.7	31.3	32.9
700	14.4	16.1	17.8	19.5	21.2	22.9	24.6	26.3	28	29.7	31.4	33	34.7
750	15.2	17	18.8	20.6	22.4	24.1	25.9	27.7	29.5	31.3	33	34.8	36.6
800	16.1	17.9	19.8	21.7	23.5	25.4	27.3	29.1	31	32.9	34.7	36.6	38.5
850	16.9	18.8	20.8	22.7	24.7	26.6	28.6	30.6	32.5	34.5	36.4	38.4	40.3
900	17.7	19.7	21.8	23.8	25.9	27.9	29.9	32	34	36.1	38.1	40.2	42.2
950	18.5	20.6	22.8	24.9	27	29.2	31.3	33.4	35.5	37.7	39.8	41.9	44.1
1000	19.3	21.5	23.7	26	28.2	30.4	32.6	34.8	37.1	39.3	41.5	43.7	45.9

: ISONE® 2.1 fire damper rectangular PM

WEIGHT (KG)

HEIGHT Y (MM)	WIDTH X (MM)													
	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
100	13	13.6	14.2	14.9	15.5	16.1	16.8	17.4	18	18.7	19.3	20	20.6	21.2
150	14.9	15.6	16.4	17.1	17.8	18.5	19.3	20	20.7	21.4	22.2	22.9	23.6	24.3
200	16.9	17.7	18.5	19.3	20.1	20.9	21.7	22.6	23.4	24.2	25	25.8	26.6	27.4
250	18.8	19.7	20.6	21.5	22.4	23.3	24.2	25.1	26	26.9	27.8	28.7	29.6	30.5
300	20.8	21.8	22.8	23.7	24.7	25.7	26.7	27.7	28.7	29.7	30.7	31.6	32.6	33.6
350	22.7	23.8	24.9	26	27	28.1	29.2	30.3	31.3	32.4	33.5	34.6	35.6	36.7
400	24.7	25.9	27	28.2	29.3	30.5	31.7	32.8	34	35.2	36.3	37.5	38.7	39.8
450	26.6	27.9	29.2	30.4	31.7	32.9	34.2	35.4	36.7	37.9	39.2	40.4	41.7	42.9
500	28.6	29.9	31.3	32.6	34	35.3	36.6	38	39.3	40.7	42	43.3	44.7	46,1
550	30.6	32	33.4	34.8	36.3	37.7	39.1	40.6	42	43.4	44.8	46.3	47,7	
600	32.5	34	35.5	37.1	38.6	40.1	41.6	43.1	44.6	46.2	47.7	49,2		
650	34.5	36.1	37.7	39.3	40.9	42.5	44.1	45.7	47.3	48.9	50,6			
700	36.4	38.1	39.8	41.5	43.2	44.9	46.6	48.3	50	51,7				
750	38.4	40.2	41.9	43.7	45.5	47.3	49.1	50.8	52.6					
800	40.3	42.2	44.1	45.9	47.8	49.7	51.5	53.4						
850	42.3	44.2	46.2	48.2	50.1	52.1	54							
900	44.2	46.3	48.3	50.4	52.4	54.5								
950	46.2	48.3	50.5	52.6	54.7									
1000	48.2	50.4	52.6	54.8										

FREE SURFACE (DM²)

HEIGHT Y (MM)	WIDTH X (MM)												
	200	250	300	350	400	450	500	550	600	650	700	750	800
100	0.94	1.21	1.47	1.74	2.00	2.27	2.53	2.80	3.06	3.33	3.59	3.86	4.12
150	1.83	2.35	2.86	3.38	3.89	4.41	4.92	5.44	5.95	6.47	6.98	7.50	8.01
200	2.72	3.49	4.25	5.02	5.78	6.55	7.31	8.08	8.84	9.61	10.37	11.14	11.90
250	3.61	4.63	5.64	6.66	7.67	8.69	9.70	10.72	11.73	12.75	13.76	14.78	15.79
300	4.50	5.77	7.03	8.30	9.56	10.83	12.09	13.36	14.62	15.89	17.15	18.42	19.68
350	5.39	6.91	8.42	9.94	11.45	12.97	14.48	16.00	17.51	19.03	20.54	22.06	23.57
400	6.28	8.05	9.81	11.58	13.34	15.11	16.87	18.64	20.40	22.17	23.93	25.70	27.46
450	7.17	9.19	11.20	13.22	15.23	17.25	19.26	21.28	23.29	25.31	27.32	29.34	31.35
500	8.06	10.33	12.59	14.86	17.12	19.39	21.65	23.92	26.18	28.45	30.71	32.98	35.24
550	8.95	11.47	13.98	16.50	19.01	21.53	24.04	26.56	29.07	31.59	34.10	36.62	39.13
600	9.84	12.61	15.37	18.14	20.90	23.67	26.43	29.20	31.96	34.73	37.49	40.26	43.02
650	10.29	13.18	16.07	18.96	21.85	24.74	27.63	30.52	33.41	36.30	39.19	42.08	44.97
700	11.18	14.32	17.46	20.60	23.74	26.88	30.02	33.16	36.30	39.44	42.58	45.72	48.86
750	12.07	15.46	18.85	22.24	25.63	29.02	32.41	35.80	39.19	42.58	45.97	49.36	52.75
800	12.96	16.60	20.24	23.88	27.52	31.16	34.80	38.44	42.08	45.72	49.36	53.00	56.64
850	13.85	17.74	21.63	25.52	29.41	33.30	37.19	41.08	44.97	48.86	52.75	56.64	60.53
900	14.74	18.88	23.02	27.16	31.30	35.44	39.58	43.72	47.86	52.00	56.14	60.28	64.42
950	15.63	20.02	24.41	28.80	33.19	37.58	41.97	46.36	50.75	55.14	59.53	63.92	68.31
1000	16.52	21.16	25.80	30.44	35.08	39.72	44.36	49.00	53.64	58.28	62.92	67.56	72.20

: ISONE® 2.1 fire damper rectangular PM

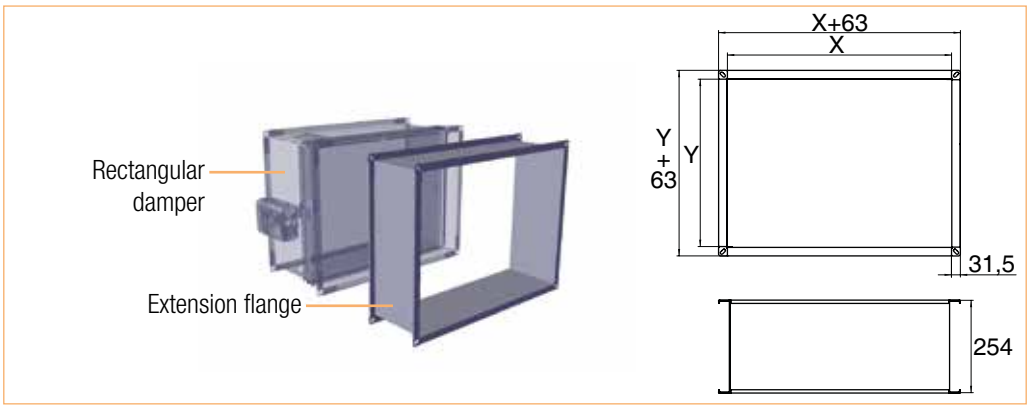
DIMENSIONS

FREE SURFACE (DM²)

HEIGHT Y (MM)	WIDTH X (MM)													
	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	10.60	11.24	11.88	12.52	13.16	13.80	14.44	15.08	15.72	16.36	17.00	17.64	18.28	18.92
250	14.74	15.63	16.52	17.41	18.30	19.19	20.08	20.97	21.86	22.75	23.64	24.53	25.42	26.31
300	18.88	20.02	21.16	22.30	23.44	24.58	25.72	26.86	28.00	29.14	30.28	31.42	32.56	33.70
350	23.02	24.41	25.80	27.19	28.58	29.97	31.36	32.75	34.14	35.53	36.92	38.31	39.70	41.09
400	27.16	28.80	30.44	32.08	33.72	35.36	37.00	38.64	40.28	41.92	43.56	45.20	46.84	48.48
450	31.30	33.19	35.08	36.97	38.86	40.75	42.64	44.53	46.42	48.31	50.20	52.09	53.98	55.87
500	35.44	37.58	39.72	41.86	44.00	46.14	48.28	50.42	52.56	54.70	56.84	58.98	61.12	63.26
550	39.58	41.97	44.36	46.75	49.14	51.53	53.92	56.31	58.70	61.09	63.48	65.87	68.26	-
600	43.72	46.36	49.00	51.64	54.28	56.92	59.56	62.20	64.84	67.48	70.12	72.76	-	-
650	47.86	50.75	53.64	56.53	59.42	62.31	65.20	68.09	70.98	73.87	76.76	-	-	-
700	52.00	55.14	58.28	61.42	64.56	67.70	70.84	73.98	77.12	80.26	-	-	-	-
750	56.14	59.53	62.92	66.31	69.70	73.09	76.48	79.87	83.26	-	-	-	-	-
800	60.28	63.92	67.56	71.20	74.84	78.48	82.12	85.76	-	-	-	-	-	-
850	64.42	68.31	72.20	76.09	79.98	83.87	87.76	-	-	-	-	-	-	-
900	68.56	72.70	76.84	80.98	85.12	89.26	-	-	-	-	-	-	-	-
950	72.70	77.09	81.48	85.87	90.26	-	-	-	-	-	-	-	-	-
1000	76.84	81.48	86.12	90.76	-	-	-	-	-	-	-	-	-	-

EXTENSION FLANGE (MM)

The extension flange extends the depth of rectangular dampers when installed in a wall or slab thicker than 150 mm.

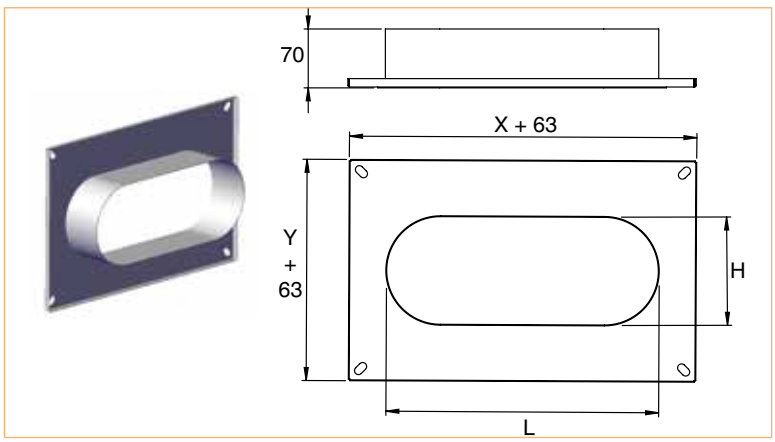


OBLONG RING

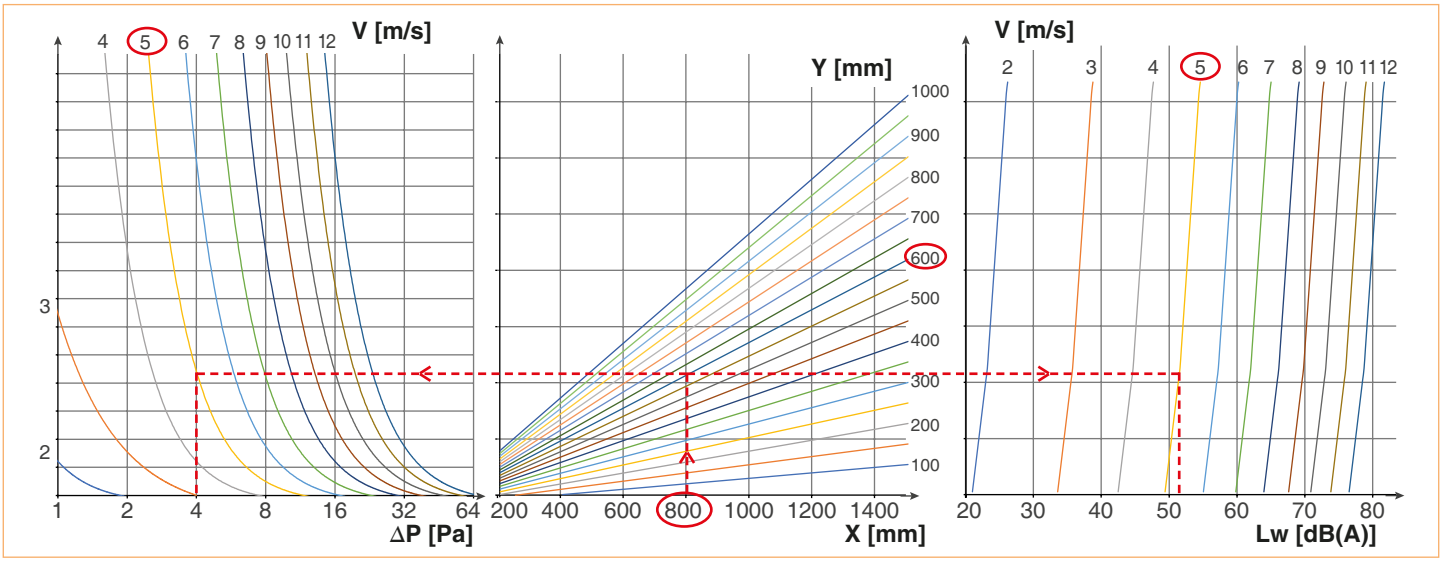
The ring is used to fit the damper on oblong ventilation ducting. For installation on mechanism side.

L x H: nominal dimension of oblong duct

X x Y: nominal dimension of damper



PRESSURE LOSSES AND SOUND POWER



Length: X [mm]
Height: Y [mm]
Speed: V [m/s]

Pressure loss: ΔP [Pa]
Sound power: Lw [dB(A)]

Example:
Data: X = 800 mm, Y = 600 mm, V = 5 m/s
Result on left table: ΔP = 4 Pa
Result on right table: Lw = 52 dB(A)

INSTALLATION

CONNECTION TO AIR DUCTING

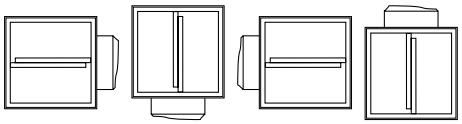
The damper should not support any forces exerted by the ducts. The sleeve should be attached without mechanical pressure and should enable perfect alignment of the ducts with the damper. Depending on the dimensions of the damper (see previous page), the mobile blade may require clearance in the duct. The air duct connection should be installed according to best practices, ensuring the best possible seal (cover the oblong holes on the sleeve edge, apply filler, etc.).

POSITIONING

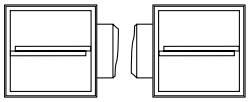
- **Mechanism positioning:**

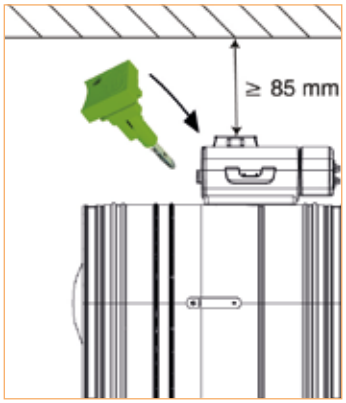
The ISONE® 2.1 damper blades may be horizontal (PM/GM models) or vertical (PM model).

ISONE® 2.1 PM:



ISONE® 2.1 GM:





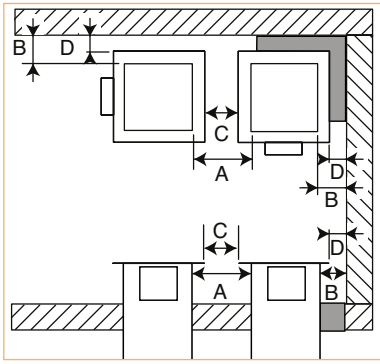
Note: the mechanism box must remain accessible after installing the damper. Ensure an inspection hatch is installed for this purpose, along with a clearance of at least 85 mm between the mechanism and the adjacent wall.

INSTALLATION

- **Minimum distance between adjacent walls (vertical / horizontal) and the dampers.**

(MM)	EI60	EI90	EI120
A	60	200	200
C	0	140	140
B	(30)	(30)	75
D	0	0	45

Note: standard EN 1366-2 imposes a minimum distance of 200 mm between dampers and 75 mm between a damper and the wall for all fire protection ratings, unless specific tests show that it is possible to reduce them. This applies to ISONE 2.1 for the EI60 and EI90 ratings.



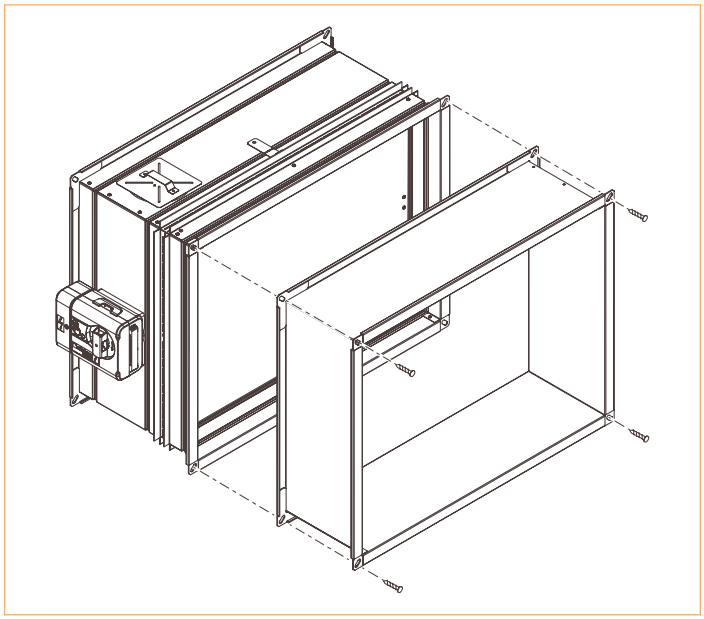
Mineral wool 40 kg/m³ across the penetration, to replace the seal if necessary, but not mandatory if a normal seal with standard mortar / plaster can be used, depending on the specific nature of each type of partition.

INSTALLING THE RINGS

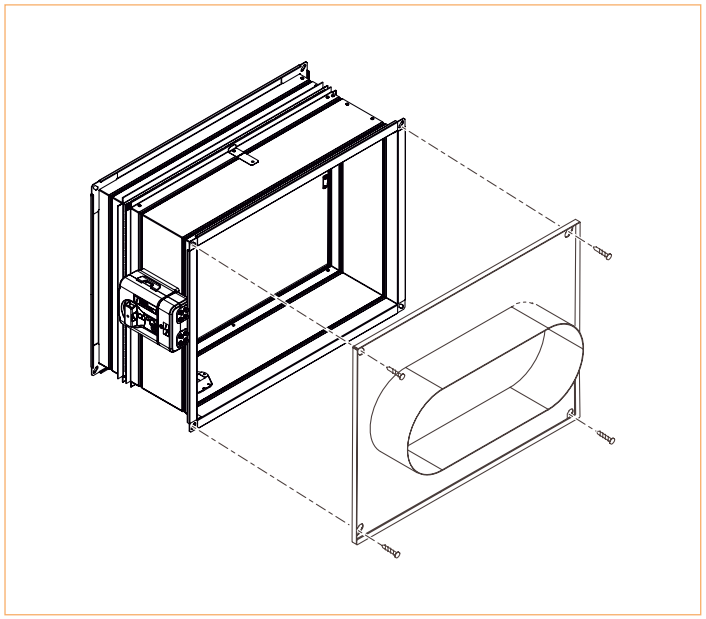
Attachment:

- 4 screws in the corners and round the contour with minimum spacing of 200 mm
- Airtight seal using foam or mastic sealant (not supplied)

Installation of extended flange



Installation of oblong ring



INSTALLATION

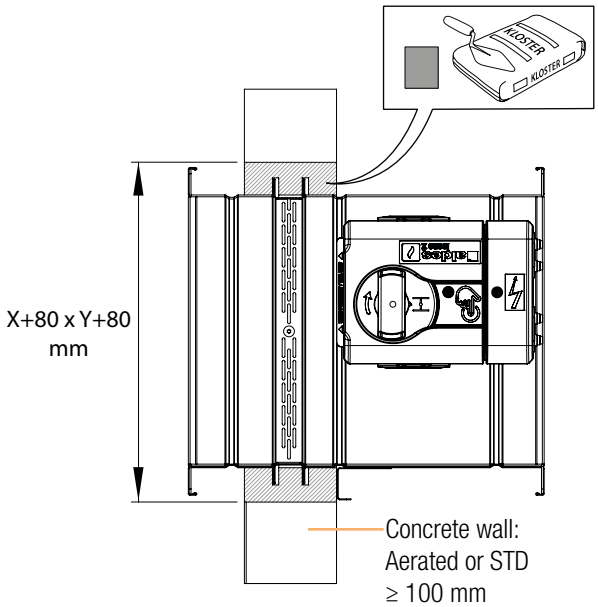
INSTALLATION: SUMMARY TABLE

TYPE OF PARTITION	CONSTRUCTION SUPPORT	THICKNESS	FIRE PROTECTION (UNDER 500 Pa)	TYPE OF INSTALLATION			DIAGRAM NO.	PAGE
				INSTALLATION BASE	TYPE OF SEAL	SPECIFIC ASPECT		
Wall	Concrete / aerated concrete (density ≥ 450 kg/m³)	≥ 100 mm	EI 120 S	Seal	Cement mortar or plaster base	-	10	30
Slab	Concrete / aerated concrete (density ≥ 600 kg/m³)	≥ 150 mm	EI 120 S	Seal			11	30
Wall	Type A plasterboard (EI60)	≥ 98 mm	EI 60 S	With mineral wool	-	Post-fitted frame	12	30
				Seal	Plaster base mortar	Post-fitted frame Easynstall kit	13	31
				With mineral wool	-		14	31
				Seal	Plaster base mortar	Plasterboard heel th. 12.5 mm same for support partition or Promatect MT 16 mm	15	32
				-	-	Easynstall kit	16	32
	EI90 plasterboard		EI 90 S	-	-	Easynstall kit	16	32
	Type F plasterboard (EI120)		EI 120 S	Seal	Plaster base mortar	Plasterboard heel th. 12.5 mm same for support partition or Promatect MT 16 mm	15	32
	BA25 plasterboard							
Wall	Plasterboard tiles (density ≥ 900 kg/m³)	70 mm	EI 60 S	Seal	Plaster base mortar	-	17	33
			EI 90 S			Plasterboard heel th. 12.5 mm type F or Promatect MT 16 mm	18	33
		100 mm	EI 90 S			-	17	33
			EI 120 S			Plasterboard heel th. 12.5 mm type F or Promatect MT 16 mm	18	33
Wall - offset	PROMAT duct	≥ 50 mm	EI 90 S	Seal	Plaster base mortar	Easynstall kit	19	34
			EI 120 S			Easynstall kit support insulation		
	GEOFLAM/DESENFIRE duct	≥ 45 mm	EI 120 S			Easynstall kit		

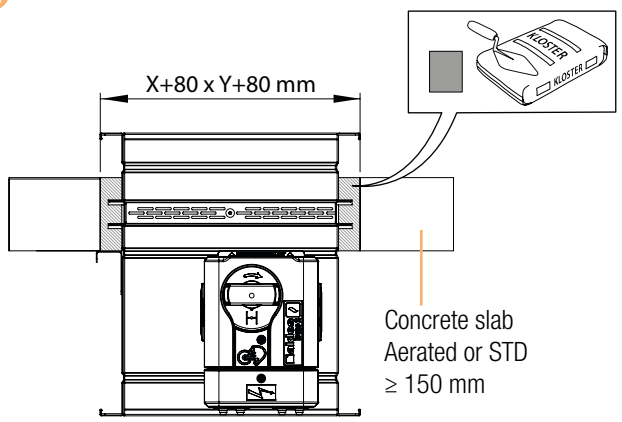
INSTALLATION

INSTALLATION: REINFORCED CONCRETE WALLS AND SLABS / AERATED CONCRETE

10



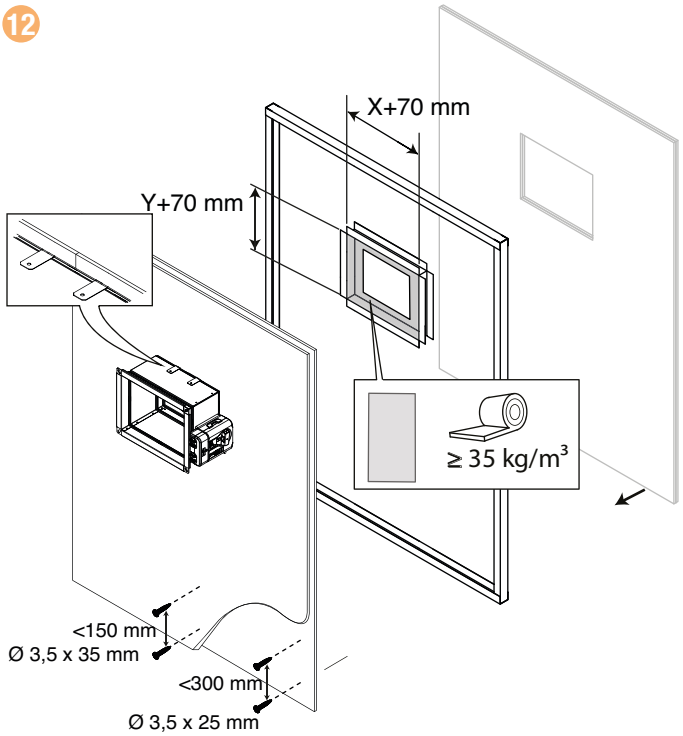
11

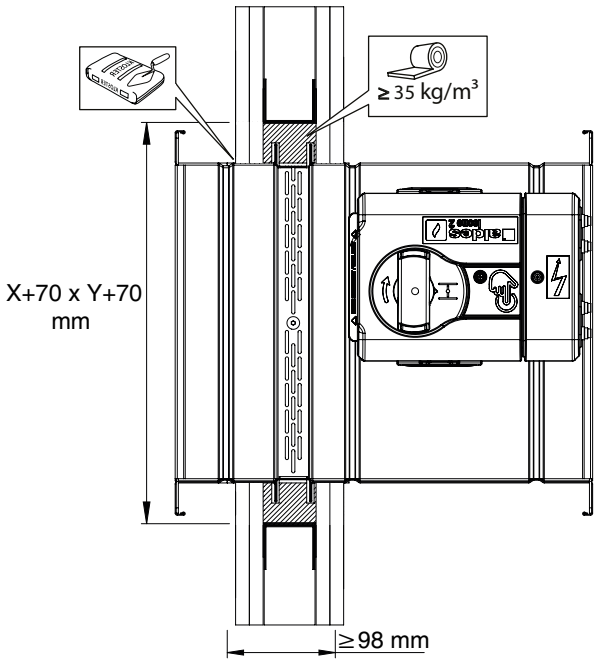


INSTALLATION: PLASTERBOARD PARTITION WALL

Note: The four rails must be screw attached on each side.

12

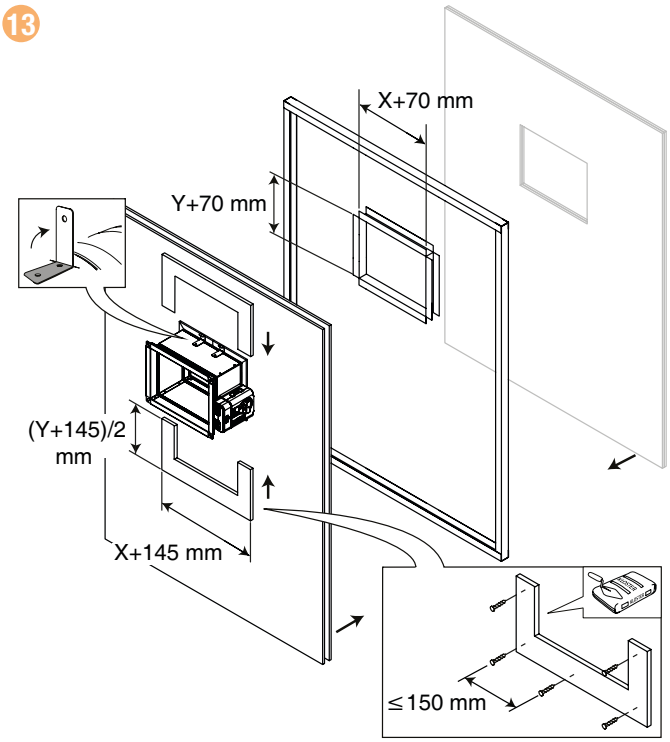


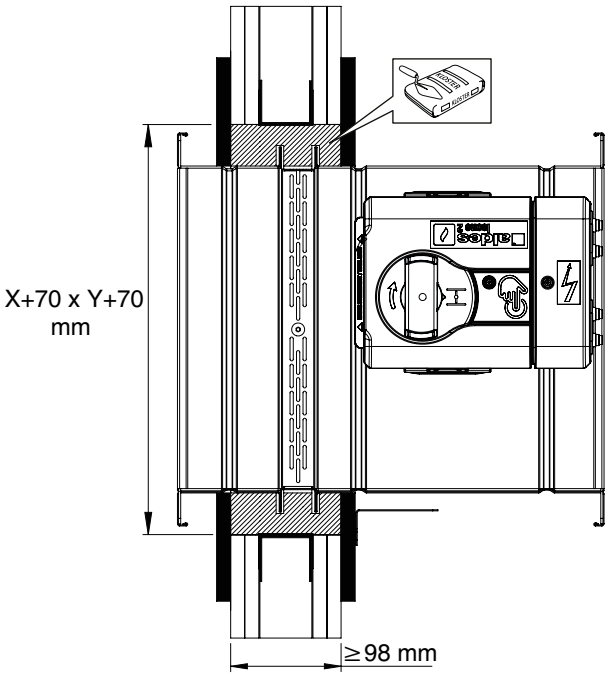


INSTALLATION: PLASTERBOARD PARTITION WALL

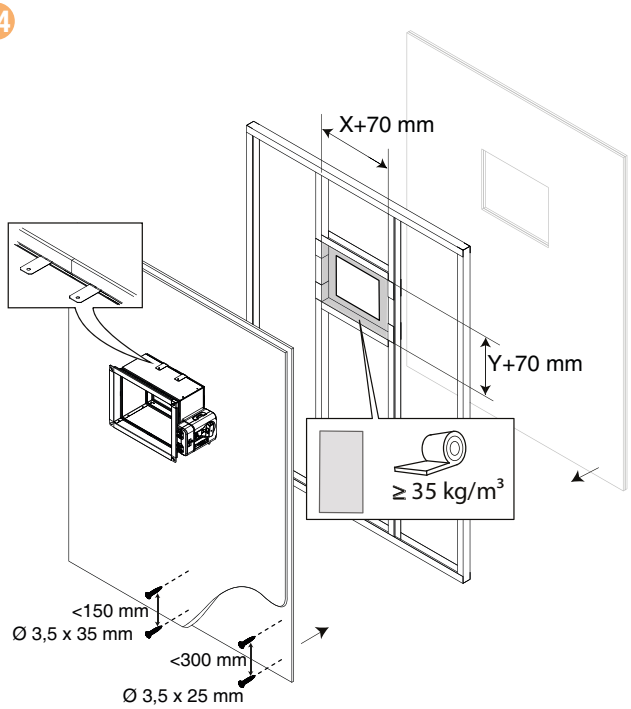
Note: The four rails must be screw attached on each side.

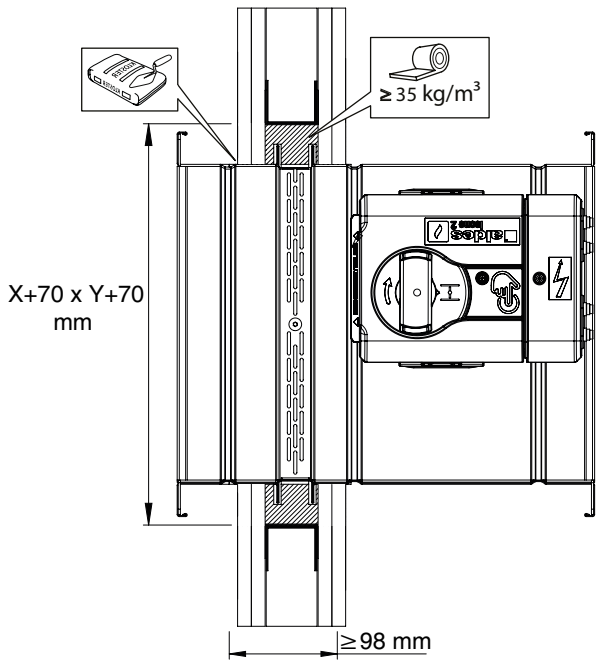
13





14

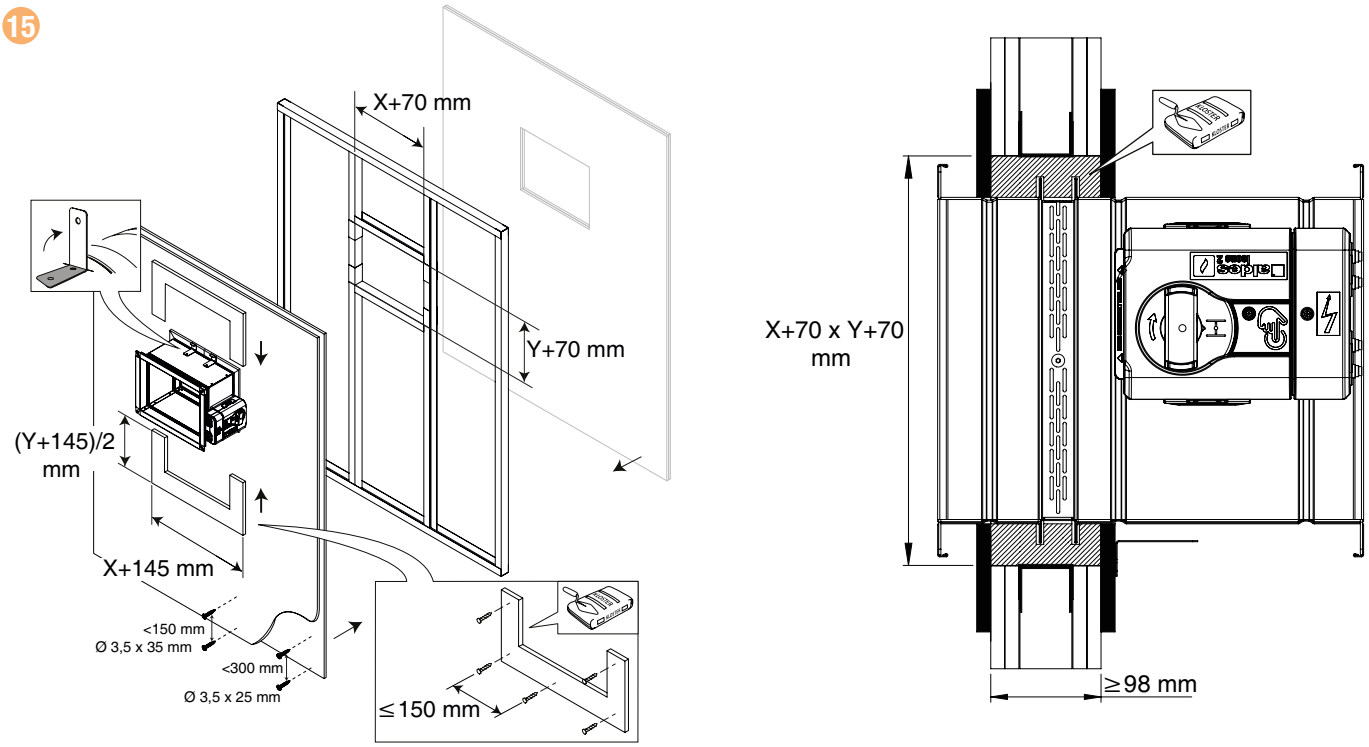




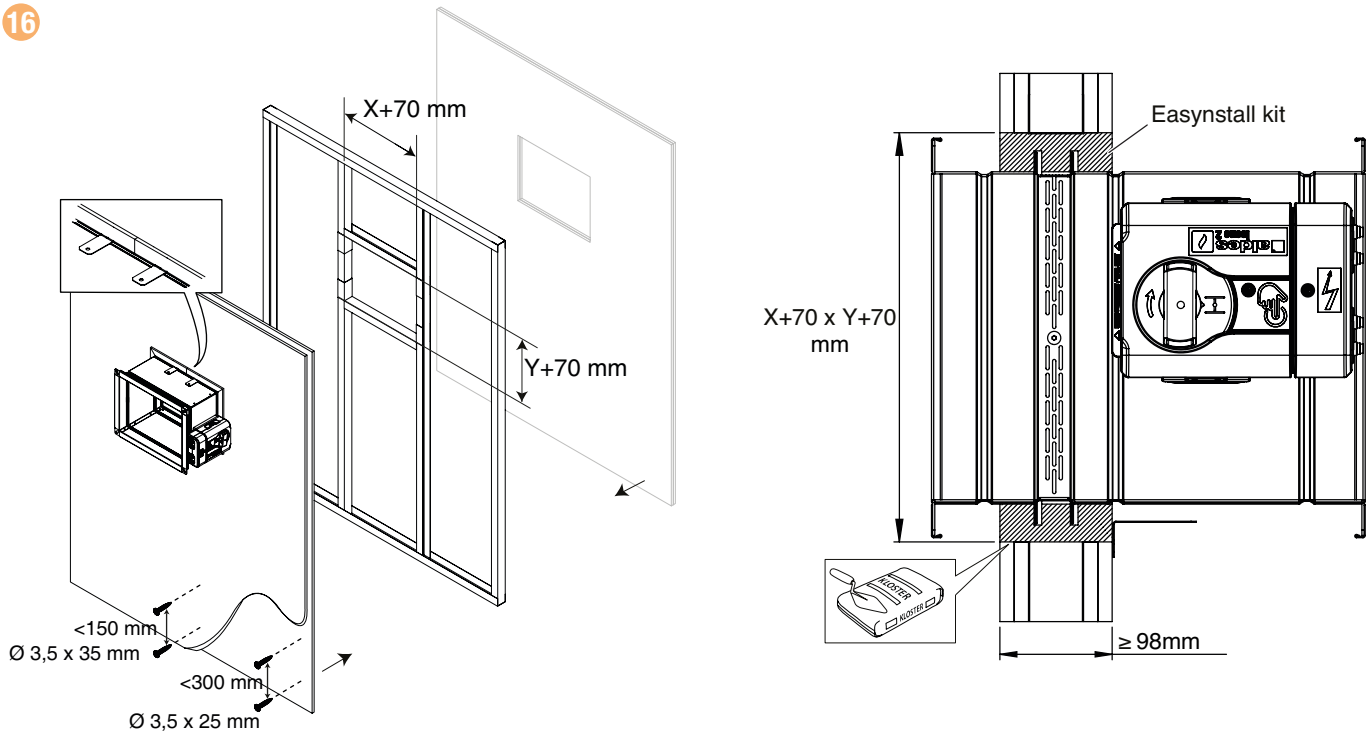
INSTALLATION

INSTALLATION: REINFORCED CONCRETE WALLS AND SLABS / AERATED CONCRETE

15

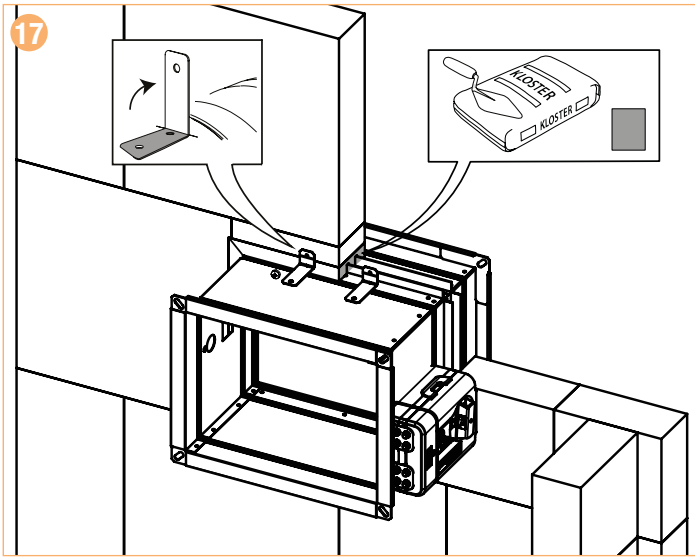


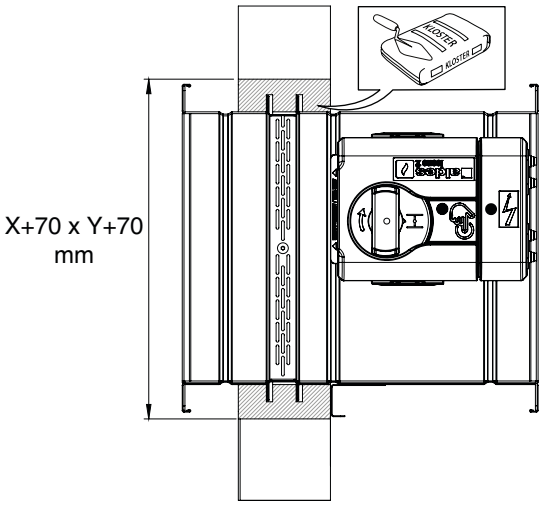
16



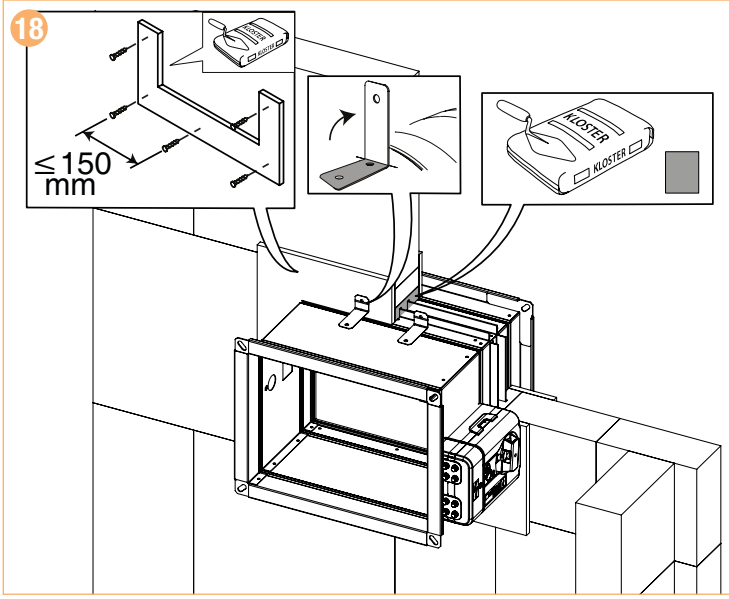
INSTALLATION: PLASTERBOARD TILE WALL

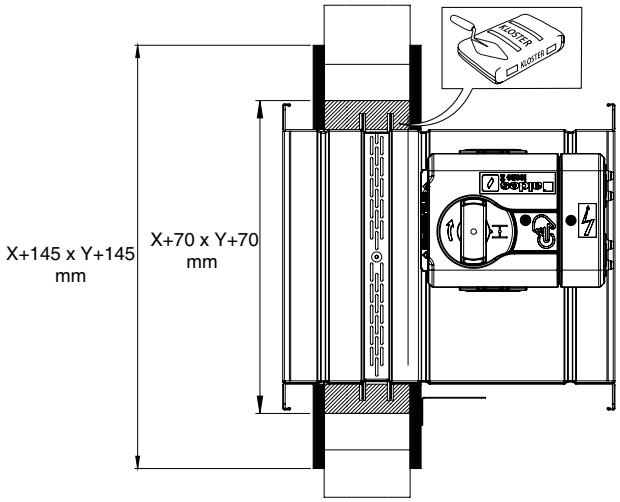
17





18

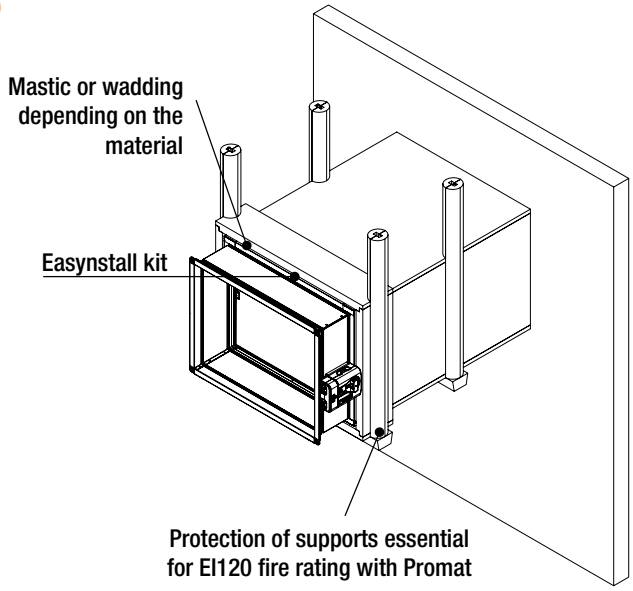


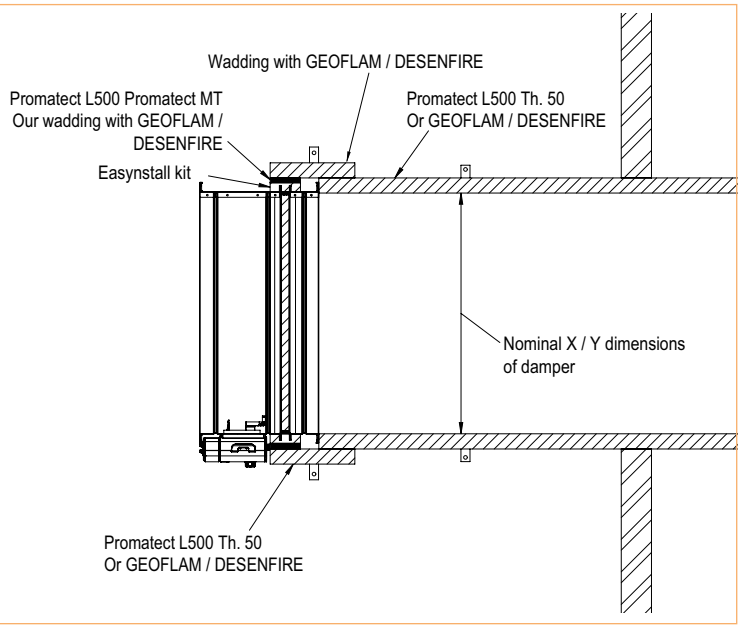


INSTALLATION

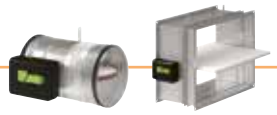
INSTALLATION: EASYNSTALL KIT

19



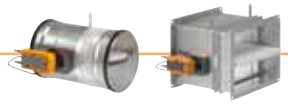


OPTIONS FOR AUTO-CONTROL MODEL



TITLE	DESCRIPTION
FDCU1 FOR FTE	FTE: 70°C thermal trip sensor, installed by default FDCU1: set of start and end limit switches FDCU1/2: double set of start and end limit switches VDS 24/48: 24/48 V electromagnetic current make trip device VM 24: 24 V electromagnetic current break trip device VM 48: 48 V electromagnetic current break trip device EHOP: reset motor; EHOP min for PM model; EHOP 30S for GM model
VDS 24/48+FDCU1	
VM24+FDCU1	
VM48+FDCU1	
VDS24/48+FDCU1+EHOP	
VM24+FDCU1+EHOP	
VM48+FDCU1+EHOP	
FDCU1/2 FOR FTE	
VDS 24/48+FDCU1/2	
VM24+FDCU1/2	
VM48+FDCU1/2	
VDS24/48+FDCU1/2+EHOP	
VM24+FDCU1/2+EHOP	
VM48+FDCU1/2+EHOP	
STAINLESS STEEL PIN	Blade rotation pin made of stainless steel to enable operation in saline environments.
REMOTE UNIT 0.7 m	Remote electrical connection box **120 x 120 x 60** mm with 0.7 m cable
REMOTE UNIT 3 m	Remote electrical connection box **120 x 120 x 60** mm with 3 m cable
EASYNSTALL KIT	On rectangular damper: Rectangular damper installation kit for easy fitting on lightweight partition wall. Required for remote installation

OPTIONS FOR MOTORISED MODEL

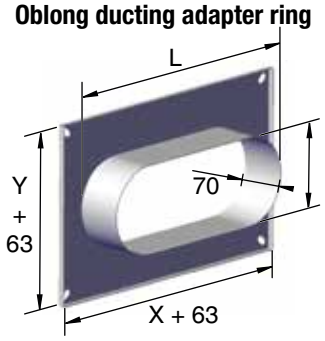
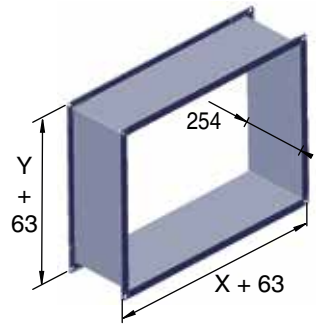
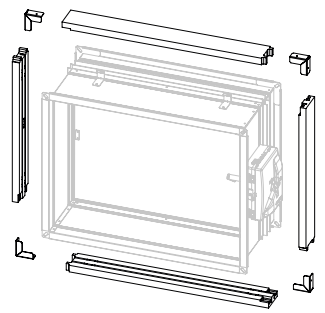


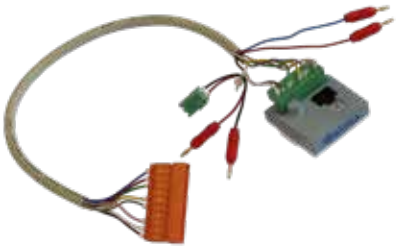
TITLE	DESCRIPTION
24V MOTOR SENSOR + LIMIT SWITCHES	BELIMO 24V AC/DC reset motor with 72°C thermal-electric sensor and start/end limit switches
230V MOTOR SENSOR + LIMIT SWITCHES	BELIMO 230V AC reset motor with 72°C thermal-electric sensor and start/end limit switches
STAINLESS STEEL PIN	Blade rotation pin made of stainless steel to enable operation in saline environments.
EASYNSTALL KIT	On rectangular damper: Damper installation kit for easy fitting on lightweight partition wall. Required for remote installation.
INSPECTION HATCH	On rectangular damper: 2 hatches on the damper body to access the blade and inspect the damper.

ACCESSORIES

OBLONG RING 360X80/400X200 FOR ISONE® 2.1 PM

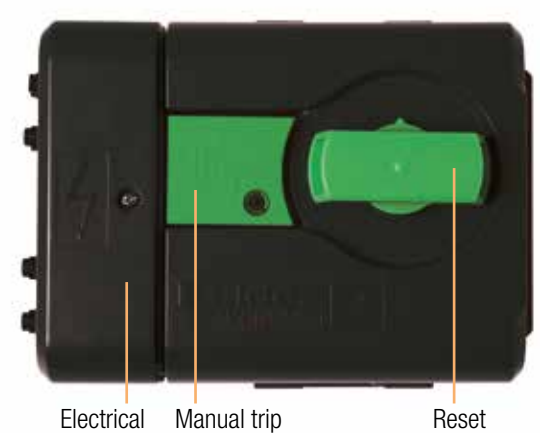
L x H dimensions of oblong product — **Nominal X x Y dimensions of rectangular damper** — **Rectangular damper model (PM or GM)**

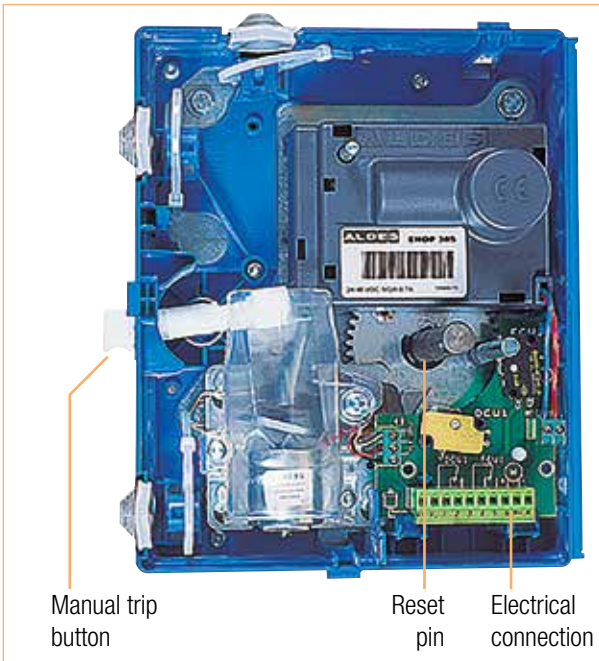
DESCRIPTION	TITLE	REFERENCE
Oblong ducting adapter ring 	OBLONG RING 360X80/400X200 FOR ISONE® 2.1 PM	11043350
	OBLONG RING 350X100/400X200 FOR ISONE® 2.1 PM	11043351
	OBLONG RING 325X130/350X200 FOR ISONE® 2.1 PM	11043353
	OBLONG RING 425X130/450X200 FOR ISONE® 2.1 PM	11043354
	OBLONG RING 410X165/450X200 FOR ISONE® 2.1 PM	11043356
	OBLONG RING 545X165/600X200 FOR ISONE® 2.1 PM	11043358
	OBLONG RING 515X215/550X250 FOR ISONE® 2.1 PM	11043360
	OBLONG RING 675X215/700X250 FOR ISONE® 2.1 PM	11043361
	OBLONG RING 880X215/950X350 FOR ISONE® 2.1 GM	11043362
	OBLONG RING 645X265/700X300 FOR ISONE® 2.1 PM	11043363
	OBLONG RING 950X320/1000X350 FOR ISONE® 2.1 GM	11043367
	RECTANGULAR EXTENSION FLANGE	11043177
	EASYNSTALL KIT	11043189
	ALDES CONTROL PACK (for Auto-control model only) NF S 61-937-compliant function controller for dampers (for ISONE® 2.1, you need the ISONE® 2.1 PM CONTROL PACK CABLE KIT Ref. 11043339)	11041695

DESCRIPTION	TITLE	REFERENCE
	ISONE® 2.1 ADAPTER CABLE KIT (for Auto-control model only) ISONE® 2.1 PM adapter kit for the control pack (not included: unit and standard cable)	11043339
	CONTROL PACK BAG KIT Protective carrying bag	11041697
	ISONE® 2.1 PM REMOTE UNIT 0.7 M FDCU1+2 Remote electrical connection box (120 x 120 x 60 mm) with 0.7 m cable for damper with double limit switch set FDCU1/2	11043396
	ISONE® 2.1 PM REMOTE UNIT 3 M FDCU1+2 Remote electrical connection box (120 x 120 x 60 mm) with 3 m cable for damper with double limit switch set FDCU1/2	11043397
	ISONE® 2.1 PM REMOTE UNIT 0.7 M FDCU1 Remote electrical connection box (120 x 120 x 60 mm) with 0.7 m cable for damper with single limit switch set FDCU1	11043324
	ISONE® 2.1 PM REMOTE UNIT 3 M (for Auto-control model only) Remote electrical connection box (120 x 120 x 60 mm) with 3 m cable for damper with single limit switch set FDCU1	11043325

ISONE® 2.1 AUTO-CONTROL MODEL

ACTIVATION:





Trip method

- Manual: Action on the front white button (PM) or side lever (GM) without removing the cover.
- Auto-control: any temperature above 70°C trips the fuse mounted on all ISONE ® 2.1models (obligation under standards NF S 61-937-5 and NF EN 1366-2).
- Remote: depending on the initial choice of type of electromagnet (24/48 V DC dual-voltage current make, 24/48 V DC current break) will cause the damper to move to its safety position.

Reset

When the damper is in safety position (closed), it is reset either:

- manually using the handle (PM) / with the pin & tool (GM), without removing the cover,
- remotely by powering the reset motor. The motor stops automatically once the maximum torque level has been reached. It is recommended that you disconnect the power supply to the motor after 30 seconds.

Signalling

The end limit switches (FCU) indicate the safety position of the damper (i.e. closed), the start limit switches (DCU) indicate the standby position (open). These switches are illustrated as inactive; use the NO terminals on the switches (1 and 3, 4, and 6) to close a signalling circuit (or light indicator lamps for example).

GENERAL:

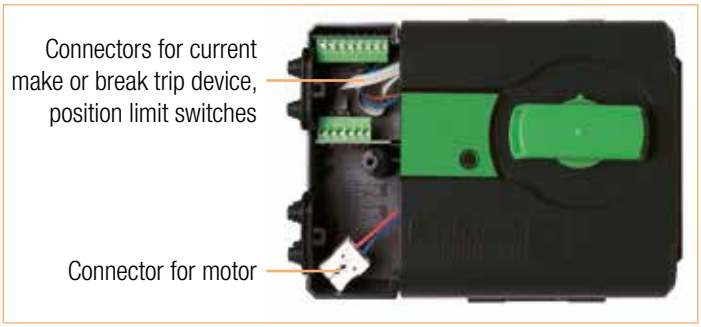
All power supplies connected to the ISONE ® 2.1 damper mechanism must be VLSV (very low safety voltage).
The control lines must comply with NF S 61-932, in particular:

Conductor cross-section greater than or equal to: • 1.5 mm^2 for single-conductor cables	• 1 mm^2 for multi-conductor cables
Cat. C2 cable as a minimum	
NO/NC inverter switches, 60V max, 0.5A max	
Electromagnetic trip device (select at time of order): • Current make: Un = 24-48V DC (-15/+20%) Pmax.=1.75W-3.5W	• Current break: Un = 24-48V DC (-15/+20%) Pmax.=1.5W
EHOP min. / EHOP 30S remote reset motor • 24-48V AC/DC (+/-10%), Imax = 0.7-0.35A	

ISONE® 2.1 PM

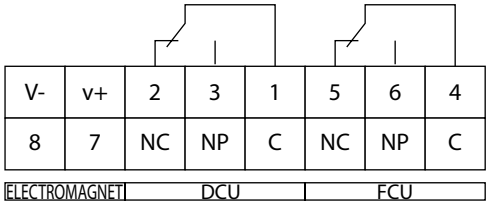
PM mechanism:

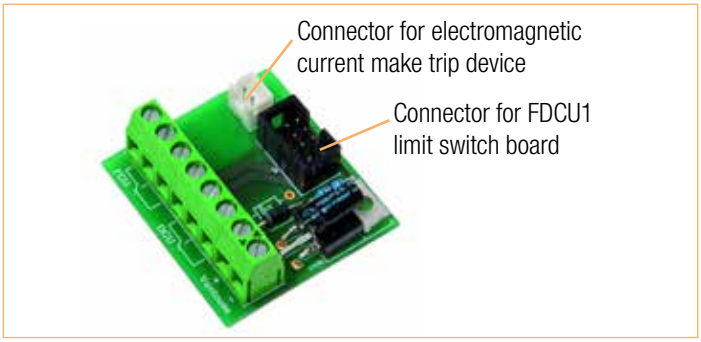
- The connector unit must be opened with a TORX T15 bit.
- The maximum torque value is 1.5 Nm.



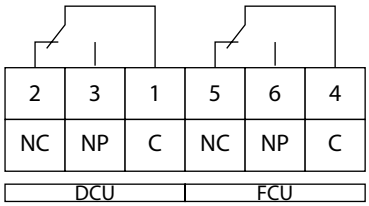
Note: The switches are illustrated at rest, inactive.

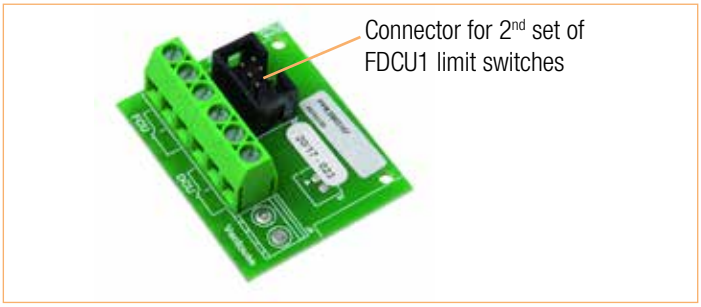
- **Remote control board for current make and FDCU1 start/end limit switches**



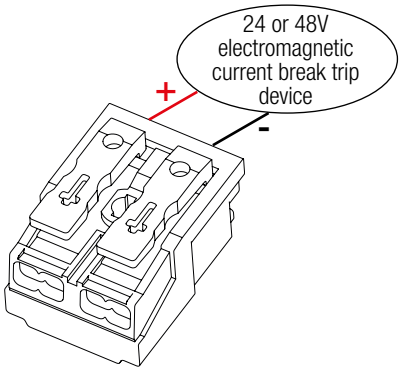


- **Switch board for start and end limit switches FDCU1 only / FDCU2 additional switches**





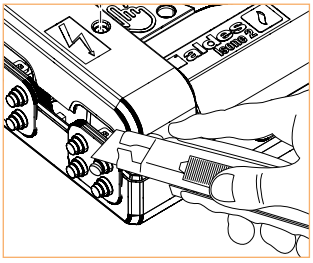
- **Current break remote control**

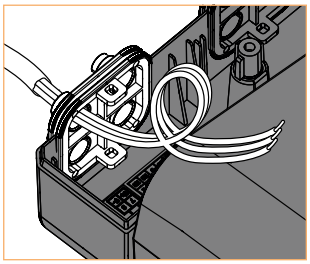


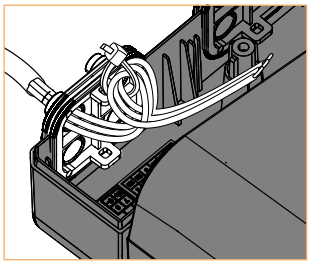
- **Motor**

No specific cabling direction

- **Cable passage: installation of traction stops**





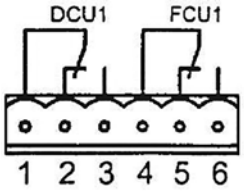


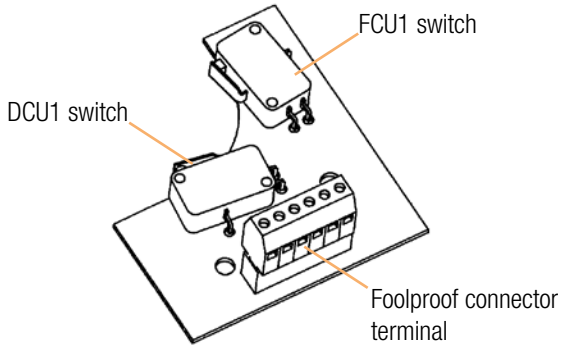
ISONE® 2.1 GM

All connections are made using detachable plugs (supplied). There are three types of connection board depending on the options chosen (see damper label). All three boards can be unclipped without tools. Boards 1 and 2 are interchangeable.

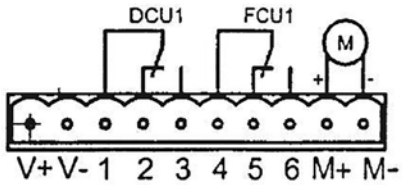
- **Board 1: FDCU1 start/end limit switches**

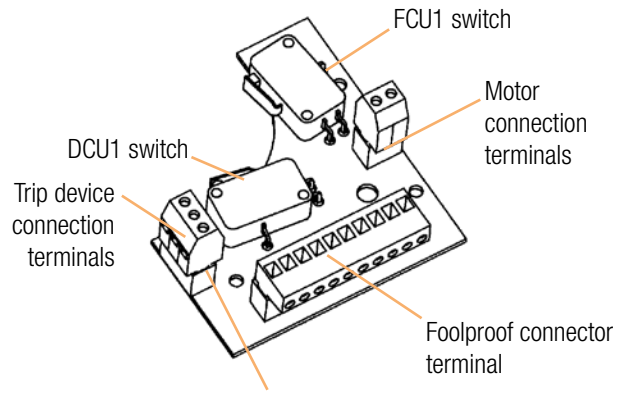
For damper with thermal trip only.



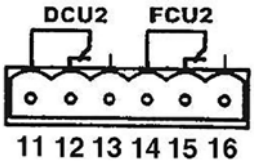


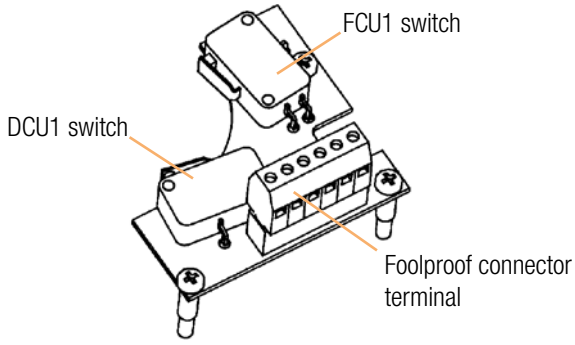
- **Board 2: board containing FCDU1 start/end limit switches, connections for electromagnetic trip device and reset motor**
  CAUTION electromagnetic trip device: The voltage is pre-configured at 48V in the factory. It can be modified using a switch (see below).





- **Board 3: second set of FDCU2 start/end limit switches**

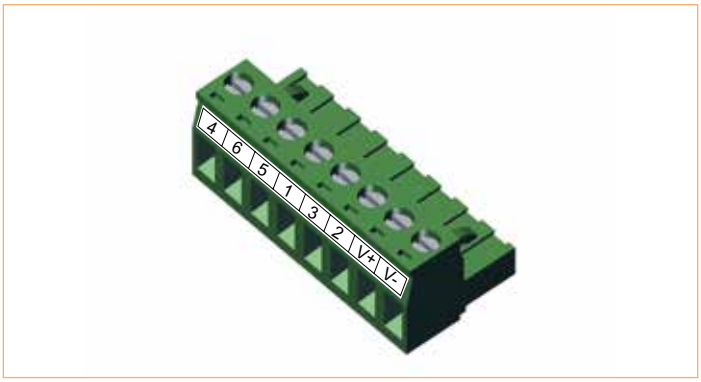




REMOTE UNIT

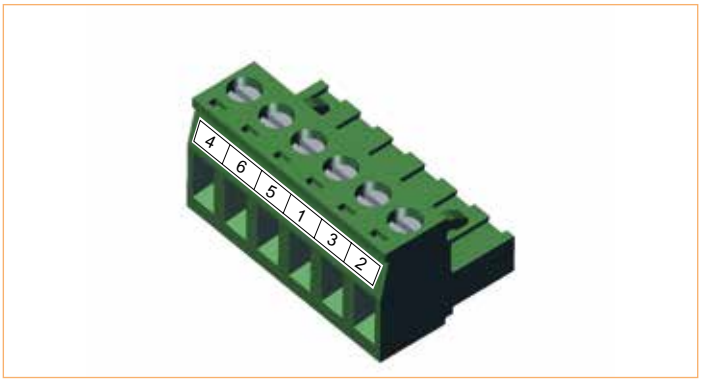
- **Electromagnetic coil + set of FDCU1 switches + reset motor**

FCU1	4	C
	6	NO
	5	NC
DCU1	1	C
	3	NO
	2	NC
24/48 V DC coil	V+	V+
	V-	V-



- **FDCU2 set of switches**

FCU1	4	C
	6	NO
	5	NC
DCU1	1	C
	3	NO
	2	NC



BELIMO MOTORS

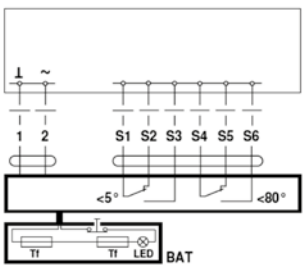
- **Trip method**
  Manual: action on the sensor test button, under the motor
  Auto-control: if the indoor or outdoor temperature exceeds 72°C
  Remote control: disconnect motor power supply

- **Reset**
  When the damper is in safety position (closed), it is reset either:
  Manually using the special key supplied with the motor
  Remotely by applying power to the motor

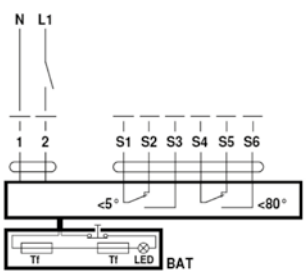
- **Signalling**
  Two switches indicate the positions of the damper blade.

For 24V motors, it is possible to use the communication and power modules for integration on an MP bus or Modbus type network.
If no module is used, cut the connectors and use the cables directly for connections.

AC/DC 24 V, open-close



AC 230 V, open-close



4 BELIMO motors	BFL (D100 to D560, 200 x 100 to 800 x 600)		BFN (D630, L>800 mm H>600 mm)	
	24V	230V	24V	230V
Rated voltage	24V AC/DC 50/60Hz	230V AC 50/60Hz	24V AC/DC 50/60Hz	230V AC 50/60Hz
Consumption during operation	2.5 W	3.5 W	4 W	5 W
Consumption during standby	0.8 W	1.1 W	1.4 W	2.1 W
Consumption for cable dimensioning	4 VA	6.5 VA	6 VA	10 VA
Reset time	<60 s			
Closure time	20 s			
Power cable	1 m, 2x0.75 mm²			
Limit switch cabling	1 m, 6x0.75 mm²			

REGULATIONS AND RECOMMENDATIONS

- Take all suitable precautions for performing work on the mechanism of a rotating mechanism that features gears and powerful springs.
- As all the elements should be powered using Very Low Safety Voltage, earthing is not necessary.
- We recommend that work be done with power off, to prevent short-circuits that may damage the device.
- The cover protecting the mechanism and electrical connections be replaced in the correct position after each time it is removed.
- Depending on the type of building, periodical test operations are required (see NF S 61-933). We recommend a minimum of at least one operation annually.

In compliance with French standard NF S 61-933:

- An inspection involving the operation of terminal controlled devices (units, dampers, shutters) to safety position must be carried out every year.
- This operation must be done by Level III personnel certified to conduct maintenance or inspections.

SPARE PARTS FOR PM

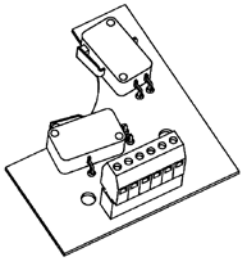
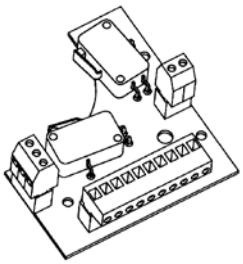
DESCRIPTION	TITLE	REFERENCE
	**FTE 70°C sensor ISONE® 2.1 PM** **70°C thermal trip sensor**	11043265
	**BAG 10 FUSES 70 ISONE® + VRFI** **Bag of 10 spare 70°C fuses**	11043401
	**FDCU1 KIT (SWITCHES ONLY) ISONE® 2.1 PM** **Single switch kit for auto-control damper: single FDCU1 switch board + connection board**	11043267
	**FDCU1 VDS CURRENT MAKE KIT ISONE® 2.1 PM** **24/48V current make electromagnetic trip device kit with FDCU1 single switch kit + connection board**	11043268
	**24/48V VDS CURRENT MAKE KIT ISONE® 2.1 PM** **24/48V current make electromagnetic trip device kit with connection board**	11043269
	**24V VM CURRENT BREAK KIT ISONE® 2.1 PM** **24V current break electromagnetic trip device kit**	11043281
	**48V VM CURRENT BREAK KIT ISONE® 2.1 PM** **48 V current break electromagnetic trip device kit**	11043293

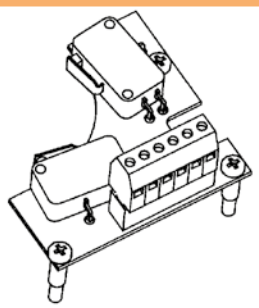
DESCRIPTION	TITLE	REFERENCE
	FDCU1+2+ VDS CURRENT MAKE KIT ISONE® 2.1 PM 24/48V current make electromagnetic trip device kit with FDCU1/2 double switch board + 2 connection boards	11043294
	24V FDCU1+2+ CURRENT BREAK KIT ISONE® 2.1 PM 24V current break electromagnetic trip device kit with FDCU1/2 double switch board + 2 connection boards	11043296
	48V FDCU1+2+ CURRENT BREAK KIT ISONE® 2.1 PM 48 V current break electromagnetic trip device kit with FDCU1/2 double switch board + 2 connection boards	11043297
	FDCU1+2 KIT (SWITCHES ONLY) ISONE® 2.1 PM Double switch kit for auto-control damper: double switch FDCU1/2 board + 2 connection boards	11043298
	EHOP MIN KIT 24/48V ISONE® 2.1 PM EHOP min. reset motor	11043300
	PLASTIC UNIT + COVERS ISONE® 2.1 PM Plastic unit and 2 covers set in kit	11043323
	REMOTE UNIT 0.7 M FDCU1+2 ISONE® 2.1 PM Remote electrical connection box with cable 0.7 m for damper with double FDCU1/2 switches	11043396
	REMOTE UNIT 3 M FDCU1+2 ISONE® 2.1 PM Remote electrical connection box with cable 3 m for damper with double FDCU1/2 switches	11043397

SPARE PARTS FOR PM

DESCRIPTION	TITLE	REFERENCE
	REMOTE UNIT 0.7 M FDCU1 ISONE® 2.1 PM Remote electrical connection box with cable 0.7 m for damper with single FDCU1 switch	11043324
	REMOTE UNIT 3 M FDCU1 ISONE® 2.1 PM Remote electrical connection box with cable 3 m for damper with single FDCU1 switch	11043325

SPARE PARTS FOR GM

DESCRIPTION	TITLE	REFERENCE
	FTE 70° KIT ISONE® 2.1 70°C thermal trip sensor	11043400
	BAG 10 FUSES 70 ISONE® 2.1 + VRFI Bag of 10 spare 70°C fuses	11043401
	FCU1 + DCU1 KIT FOR FTE Single switch kit for auto-control damper: single FDCU1 switch board	11043404
	FCU1 + DCU1 KIT FOR VENTILATION Single switch kit for auto-control damper: single FDCU1 switch board with connections for electromagnetic coil	11043406
	24/48V VDS KIT ISONE® 2.1 24/48V current make electromagnetic trip device kit	11043407
	24/48V VM KIT ISONE® 2.1 24/48V current break electromagnetic trip device kit	11043408

DESCRIPTION	TITLE	REFERENCE
	FCD2 + DCU2 KIT Kit used to add second set of limit switches	11043409
	EHOP 30S 24/48V KIT EHOP 30S reset motor	11043410
	PLASTIC UNIT + CM MANUAL CONTROL ISONE® 2.1 Plastic unit alone	11043412
	TRANSPARENT COVER ISONE® 2.1 Plastic cover alone	11043413

SPARE PARTS FOR BELIMO

DESCRIPTION	TITLE	REFERENCE
	BELIMO MOTOR BFL24T-ST 4 NM 24V / 4 Nm motor for D100 to D560, 200 x 100 to 800 x 600	11100912
	BELIMO BFL230T 4 NM CIRC+RECT PM ISONE® 230V / 4 Nm motor for D100 to D560, 200 x 100 to 800 x 600	11100913
	BELIMO BFL24T-ST 9 NM RECT GM+D630 ISONE® 2 24 V / 9 Nm motor for D630, L>800 mm H>600 mm	11100914
	BELIMO BFN 230T 9NM RECT GM+D630 ISONE® 2 230 V / 9 Nm motor for D630, L>800 mm H>600 mm	11100915

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