CR2

Circular fire damper for large diameters

CE 0749

Rf-Technologies nv • Lange Ambachtstraat 40 • 9860 Oosterzele • Belgium • Tel +32 9 362 31 71 • Fax +32 9 362 33 07 • info@rft.be

www.rft.be

C1-EN-M 06/2021

Table of content

Table of content

Explanation of the abbreviations and pictograms

Wn = nominal width
Hn = nominal height
Dn = nominal diameter
E = integrity
I = thermal insulation
S = smoke leakage
Pa = pascal
ve = vertical wall penetration
ho = horizontal floor penetration
o -> i = meets the criteria from the outside (o) to the inside (i)
i <-> o = fire side not important
V AC = Volt alternating current
V DC = Volt direct current

E.TELE = power supply magnet
E.ALIM = power supply motor
V = volt
W = watt
Auto = automatic
Tele = remote controlled
Pnom = nominal capacity
Pmax = maximum capacity
GKB (type A) / GKF (type F): "GKB" stands for standard plasterboards (type A according to EN 520) while "GKF" plasterboards offer a higher fire resistance for a similar plate thickness (type F according to EN 520)
Cal-Sil = calcium silicate
OP = option (delivered with the product)
KIT = kit (delivered separately for repair or upgrade)
PG = connection flange to the duct

Sn = free air passage
ζ [-] = pressure loss coefficient
Q = airflow
ΔP = static pressure drop
v = air speed in the duct
Lwa = A-weighted sound power level
Lw oct = sound power level per octave midband
dB(A) = A-weighted decibel value
ΔL = correction factor

	large dimensions		air tightness in accordance with EN 1751: class B (class C in option)
	suitable for built-in installation		minimal distance allowed
	sealing with fire resistant stone wool boards allowed, also for asymmetric opening		

DECLARATION OF PERFORMANCE

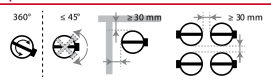
CE_DoP_Rf-t_C1_EN ■ I-06/2021

1. Unique identification code of the product-type:	**CR2**
2. Intended use/es:	Circular fire damper to be used in conjunction with partitions to maintain fire compartments in heating, ventilating and air conditioning installations.
3. Manufacturer:	Rf-Technologies NV, Lange Ambachtstraat 40, B-9860 Oosterzele
4. System/s of AVCP:	System 1
5. Harmonised standard / European Assessment Document; notified body / European Technical Assessment, Technical Assessment Body, notified body; certificate of constancy of performance:	EN 15650:2010, BCCA with identification number 0749; BCCA-0749-CPR-BC1-606-0464-15650.01-2517
6. Declared performance according to EN 15650:2010	(Fire resistance according to EN 1366-2 and classifications according to EN 13501-3)

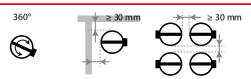
Essential characteristics					Performance
Range	**Wall type**	**Wall**	**Sealing**	**Installation**	**Classification**
Ø 200-630 mm	Rigid wall	Aerated concrete ≥ 100 mm	Mortar / Gypsum	1	EI 120 (v_e i ↔ o) S - (500 Pa)
			Stone wool + coating ≥ 140 kg/m³	1	EI 90 (v_e i ↔ o) S - (300 Pa)
			Stone wool Mulcol Multimastic SP + coating	1	EI 60 (v_e i ↔ o) S - (300 Pa)
	Rigid floor	Aerated concrete ≥ 150 mm	Mortar	2	EI 120 (h_o i ↔ o) S - (500 Pa)
			Stone wool + coating ≥ 140 kg/m³	2	EI 120 (h_o i ↔ o) S - (300 Pa)
	Flexible wall	Metal studs gypsum plasterboard Type A (EN 520) ≥ 100 mm	Stone wool ≥ 40 kg/m³ + cover plates	1	EI 60 (v_e i ↔ o) S - (500 Pa)
			Gypsum	1	EI 60 (v_e i ↔ o) S - (500 Pa)
			Stone wool + coating ≥ 140 kg/m³	1	EI 60 (v_e i ↔ o) S - (300 Pa)
		Metal studs gypsum plasterboard Type F (EN 520) ≥ 100 mm	Stone wool ≥ 40 kg/m³ + cover plates	1	EI 90 (v_e i ↔ o) S - (300 Pa)
			Gypsum	1	EI 120 (v_e i ↔ o) S - (500 Pa)
			Mortar	1	EI 90 (v_e i ↔ o) S - (300 Pa)
			Stone wool Mulcol Multimastic SP + coating	1	EI 60 (v_e i ↔ o) S - (300 Pa)
			Stone wool + coating ≥ 140 kg/m³	1	EI 90 (v_e i ↔ o) S - (300 Pa)
		Paroc System Panel Sandwich panel type Paroc AST S ≥ 100 mm	Hilti CFS-CT B 1S	3	EI 120 (v_e i ↔ o) S - (300 Pa)
		Gypsum blocks ≥ 70 mm	Block glue	1	EI 120 (v_e i ↔ o) S - (500 Pa)

Harmonised standard EN 15650:2010

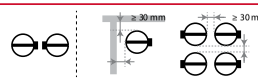
1 Type of installation: built-in, 0-360°. Minimal distances authorised with axis till 45°.



2 Type of installation: built-in, 0-360°. Minimal distances authorised.



3 Type of installation: built-in, 0/180° (CR)



Nominal activation conditions/sensitivity:	Pass
Response delay (response time): closure time	Pass
Operational reliability: cycling	CFTH - 50 cycles; MANO - 300 cycles; B(L)F(T) - 10000 cycles; BFL(T) - 10000 cycles; BFN(T) - 10000 cycles; ONE - 10000 cycles; ONE-X - 10000 cycles; UNIQ - 10000 cycles
Durability of response delay:	Pass
Durability of operational reliability:	Pass
Protection against corrosion according to EN 60068-2-52:	Pass
Damper casing leakage according to EN 1751:	≥ class B

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:
Mathieu Steenland, Technical Manager

Oosterzele, 06/2021

Product presentation CR2

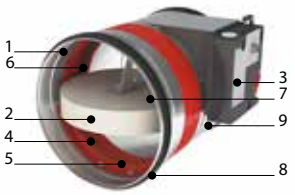
Circular fire damper available in the largest dimensions (up to a diameter of 630 mm) with a fire resistance up to 120 minutes. Its refractory tunnel is made of galvanised steel and its blade consists of asbestos-free panels, which are resistant to humidity.

Fire dampers are installed where air ducts penetrate fire-resistant compartment walls. Their role is to restore the fire resistance grade of the penetrated wall and to prevent smoke propagation. Fire dampers are distinguished by their degree of fire resistance, by their aeraulic properties as well as by their installation ease. Rf-Technologies' fire dampers are all CE marked. They can be equipped with various types of mechanisms depending on the specific needs linked to the project or to the local regulations.

☑ large dimensions

- suitable for built-in installation
- minimal distance allowed
- suitable for rigid wall, rigid floor and light wall (metal stud gypsum plasterboard wall, gypsum blocks)
- sealing with fire resistant stone wool boards allowed, also for asymmetric opening
- air tightness in accordance with EN 1751: class B (class C in option)
- tested according to EN 1366-2 up to 500 Pa
- operating mechanism outside the wall
- maintenance-free
- for indoor use
- operating temperature: max. 50°C

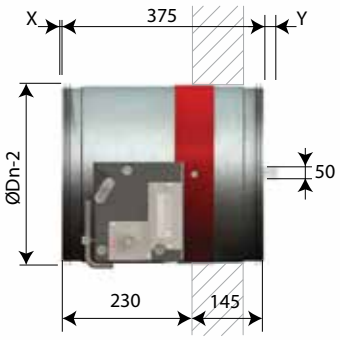
1. casing in galvanised steel
2. damper blade
3. operating mechanism
4. sealing cold smoke
5. blade bumper
6. intumescent strip
7. fusible link
8. rubber sealing ring
9. product identification



Range and dimensions CR2

ØDn [mm]	200	250	315	355	400	450	500	560	630

Exceeding blade: X = on the mechanism side, Y = on the wall side



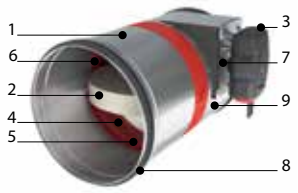
ØDn [mm]	315	355	400	450	500	560	630
x	-	-	-	-	-	15	50
y	24	44	66	91	116	146	181

Range and dimensions CR2-L500

Variant CR2-L500

CR2 damper with a tunnel casing extension at the wall side to facilitate the connection to the duct when the supporting construction is thicker than 100 mm.

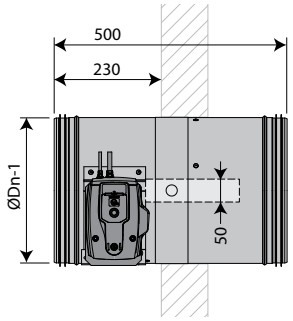
1. casing in galvanised steel
2. damper blade
3. operating mechanism
4. sealing cold smoke
5. blade bumper
6. intumescent strip
7. fusible link
8. rubber sealing ring
9. product identification



Range and dimensions CR2-L500

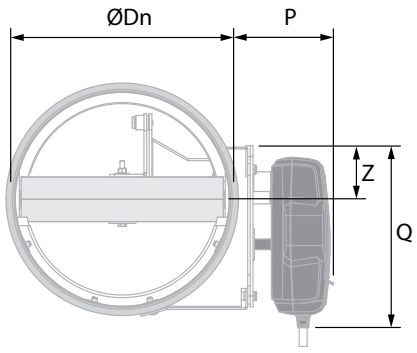
ØDn [mm]	200	250	315	355	400	450	500	560	630

Exceeding blade: X = on the mechanism side, Y = on the wall side



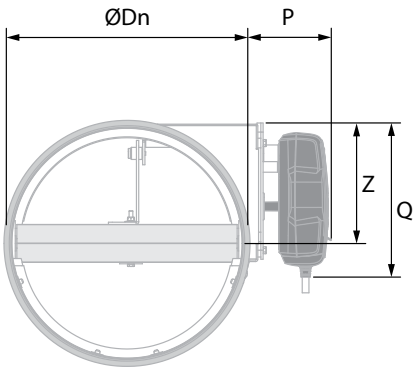
ØDn [mm]	560	630
x	15	50
y	21	56

ØDn < 315 mm



	CFTH	ONE (X)	BFL(T)
P	81	105	101
Q	182	199	110
Z	58	60	80

ØDn ≥ 315 mm



	CFTH	ONE (X)	BFL(T)	BFN(T)
P	85	105	104	104
Q	182	199	110	110
Z	156	157	179	179

Evolution - kits

	KITS ONE T 24 FDCB	Spring return actuator ONE 24V (with fusible link T) + bipolar beginning- and end-of-range switch
	KITS ONE T 24 FDCU	Spring return actuator ONE 24V (with fusible link T) + unipolar beginning- and end-of-range switch
	KITS ONE T 230 FDCU	Spring return actuator ONE 230V (with fusible link T) + unipolar beginning- and end-of-range switch
	KITS ONE T 230 FDCB	Spring return actuator ONE 230V (with fusible link T) + bipolar beginning- and end-of-range switch
	KIT ONE-X 24	Spring return actuator ONE-X 24V (with fusible link T)
	KIT ONE-X 230	Spring return actuator ONE-X 230V (with fusible link T)
	KITS CFTH	Automatic unlocking mechanism CFTH with FCU and without FTH 72
	KITS BFL24	Spring return actuator BFL 24V
	KITS BFL230	Spring return actuator BFL 230V

Evolution - kits

	KITS BFL24-ST	Spring return actuator BFL 24V with plug (ST)
	KITS BFLT24	Spring return actuator BFL 24V with thermo-electric fuse (T)
	KITS BFLT230	Spring return actuator BFL 230V with thermo-electric fuse (T)
	KITS BFLT24-ST	Spring return actuator BFL 24V with thermo-electric fuse (T) and plug (ST)
	KITS BFN24	Spring return actuator BFN 24V
	KITS BFN24	Spring return actuator BFN 24V (BFN kits must be used instead of BFL kits for fire dampers produced before 1/7/2015)
	KITS BFN230	Spring return actuator BFN 230V
	KITS BFN24-ST	Spring return actuator BFN 24V with plug (ST)
	KITS BFNT24	Spring return actuator BFN 24V with thermo-electric fuse (T)

	KITS BFNT230	Spring return actuator BFN 230V with thermo-electric fuse (T)
	KITS BFNT24-ST	Spring return actuator BFN 24V with thermo-electric fuse (T) and plug (ST)
	KITS BF24	Spring return actuator BF 24V (BF kits must be used instead of BFN kits for fire dampers produced before 1/7/2015)
	KITS FDC CFTH	1 limit switch (FCU/DCU/FCB/DCB)
	KITS SN2 BFL/BFN	Auxiliary limit switch 'open/closed'
	KITS FTH72	Fusible link FTH 72°C (for CFTH)
	KITS ZBAT 72	Black spare part for thermo-electric fuse for BFLT/BFNT
	FUS72 ONE	Fusible link 72°C
	MECT	Testbox for mechanisms 24/48 V (magnet, motor, beginning and end of range switches)

Options - at the time of order

	**EPP CR2**	Kit with 4 cover plates (gypsum plasterboard 12.5 mm) for CR2 in light wall.
	**INSPECAM**	Sturdy digital endoscope for the internal inspection of fire dampers through an optional inspection opening. The endoscope features a 1 meter long probe with a diameter of 8,2 mm equipped with a dimmable LED, a removable 4x zoom, a colour LCD monitor 3.5". Photographic capture 3MP and video capture 720P.

Options - at the time of order

	**UL**	Inspection opening to visually determine the state and the position of the damper, by using an endoscope.
	**EN1751_C**	Air-tightness class C (note: for CU2 H > 600 or W > 800 / for CR2 Ø > 315).
	**ONE-X CN**	Connectors for the bus cables and the power cable.

Storage and handling

As this product is a safety element, it should be stored and handled with care.

Avoid:

- any kind of impact or damage
- contact with water
- deformation of the casing

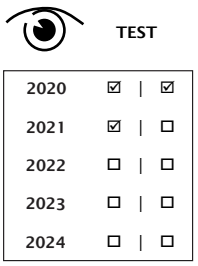
It is recommended:

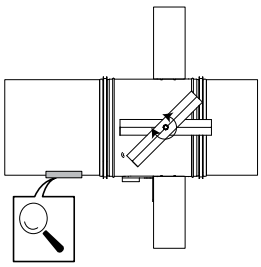
- to unload in a dry area
- not to flip or roll the product to move it
- not to use the damper as a scaffold, working table, etc.
- not to store smaller dampers inside larger ones

Installation

General points

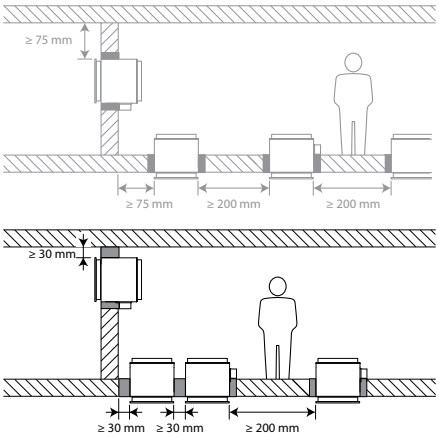
- The installation must comply with the installation manual and the classification report.
- Axis orientation: see the declaration of performance.
- Avoid obstruction of adjoining ducts.
- Product installation: always with closed damper blade.
- Verify if the blade can move freely.
- Please observe safety distances with respect to other construction elements. The operating mechanism must also remain accessible: allow for a clearance of 200 mm around the housing.
- The air tightness class will be maintained if the damper is installed according to the installation manual.
- Rf-t fire dampers are always tested in standardised constructions according to EN 1366-2. The achieved results are valid for similar supporting constructions with a fire resistance, thickness and density equal or superior to the supporting construction used during the test.
- The damper must remain accessible for inspection and maintenance.
- Schedule at least 2 visual checks each year.





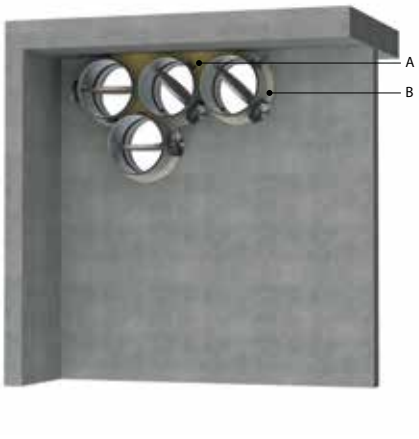
Installation at a minimal distance from another damper or from an adjacent supporting construction

1



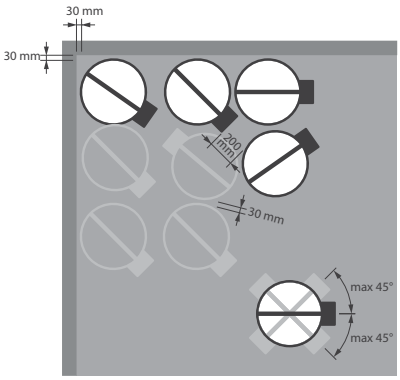
1. Principle
According to the European test standard, a fire damper must be installed at a minimum distance of 75 mm from an adjacent wall and 200 mm from another damper, unless the solution was tested at a shorter distance.
This range of Rf-t fire dampers has been successfully tested and can be installed in a vertical or horizontal supporting construction, at a distance below the minimum set by the standard.
For circular dampers, the minimal distance is set to 30 mm.

2



2. Certified solution
For the Rf-t fire dampers, the solution consists of the following elements: A: Universal sealing for minimal distance; B: Sealing compliant with existing classifications (Declaration of Performance).
A. Sealing of the opening at the side with minimal distances between damper and wall/ceiling or another fire damper: rigid stone wool panels (150 kg/m^3) are applied to a depth of min. 400 mm, of which 150 mm on the mechanism side of the wall. On the non-mechanism side of the wall, the stone wool panels must be at least flush with the wall.
The surface of this sealing is set between the axes (centres) of the dampers.
B. Sealing of the rest of the opening according to the existing classifications for the fire damper (Declaration of Performance).
This also applies to circular dampers that are mounted at a minimum distance from one another (30 to 200 mm) but at a distance greater than 75 mm from a wall/ceiling.
Detailed information for each wall/sealing combination can be found in the respective installation methods.

3



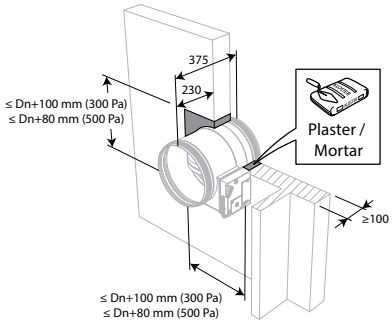
3. Restrictions
The orientation of the blade axis should be horizontal or oriented at a maximum of 45°.
A maximum of 3 circular dampers can be installed at a minimum distance from one another, both vertically and horizontally (with a maximum cluster of 4 dampers).
Note: when sealing the opening with panels of fire resistant stone wool, the maximum number of dampers also depends on the maximum “blank seal” allowed for the selected sealing material. Please refer to the manufacturer’s instructions for this information.

Installation in a rigid wall

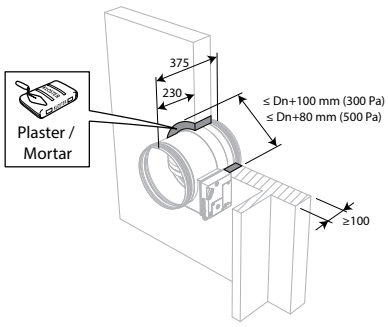
The product was tested and approved in:

Range	Wall type		Sealing	Classification
Ø 200-630 mm	Rigid wall	Aerated concrete ≥ 100 mm	Mortar / Gypsum	EI 120 (v_e i ↔ o) S - (500 Pa)
Ø 200-630 mm	Rigid wall	Aerated concrete ≥ 100 mm	Mortar / Gypsum	EI 90 (v_e i ↔ o) S - (300 Pa)

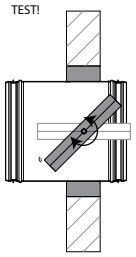
1



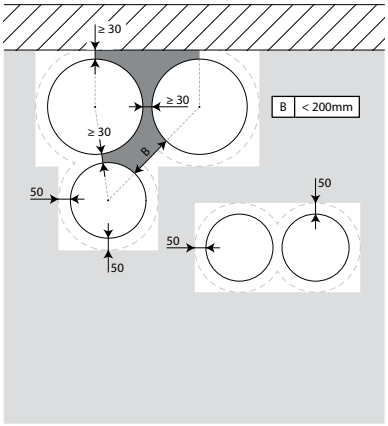
2



3

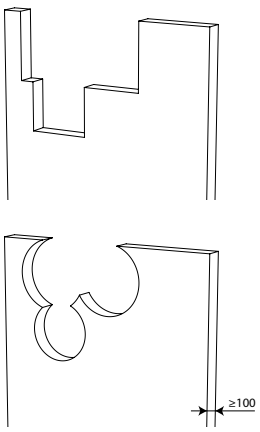


4



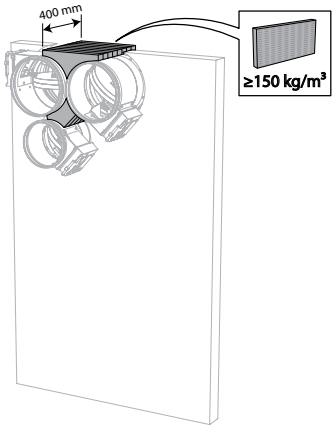
4. The dampers can be installed at a minimum distance (≥ 30 mm) from an adjacent wall or from another damper.

5



5. Make the necessary openings (≤ Dn + 100 mm) / (≤ Dn + 80 mm) in the wall.

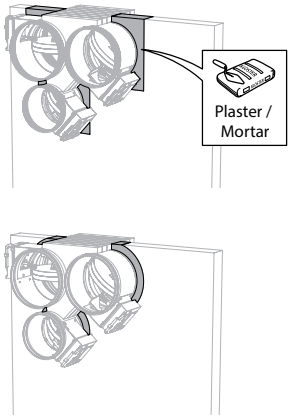
6



6. Mount the dampers in the opening.
Apply rigid stone wool panels (≥ 150 kg/m³) to a depth of 400 mm (150 mm on the mechanism side of the wall) to seal the opening at the side with minimal distances.
The surface of this sealing is set between the axes (centres) of the dampers.

⚠ Caution: the opening is sealed according to the existing classification (see next point) when:
- 2 fire dampers are installed at a minimum distance from one another but at a normal distance (≥ 75 mm) from the wall or floor/ceiling.
- One single (no cluster) fire damper is located at a minimum distance (≤ 75 mm) from a wall or floor/ceiling.

7



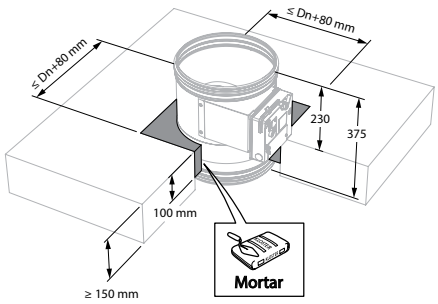
7. Seal the rest of the opening with standard mortar or gypsum.

Installation in rigid floor

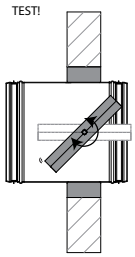
The product was tested and approved in:

Range	Wall type		Sealing	Classification
Ø 200-630 mm	Rigid floor	Aerated concrete ≥ 150 mm	Mortar	EI 120 (h_o i ↔ o) S - (500 Pa)

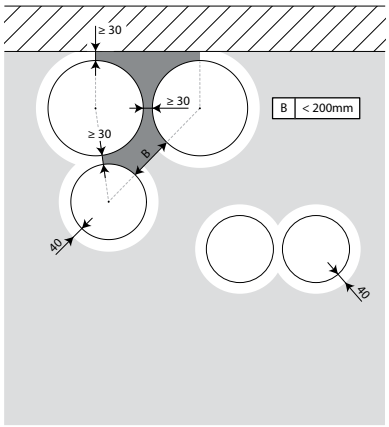
1



2

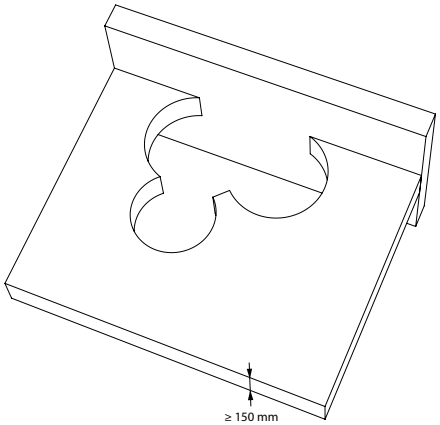


3



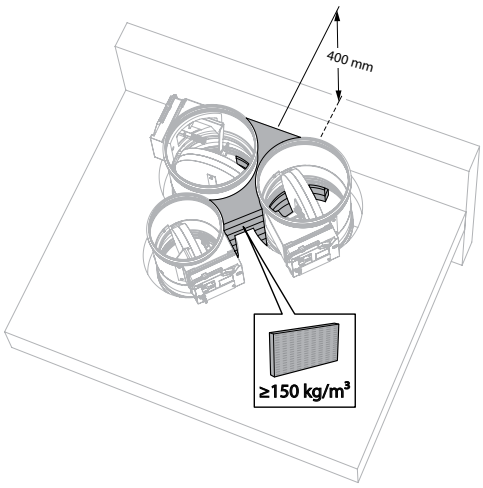
3. The dampers can be installed at a minimum distance (≥ 30 mm) from an adjacent wall or from another damper.

4



4. Make the necessary openings (≤ Dn + 80 mm) in the floor.

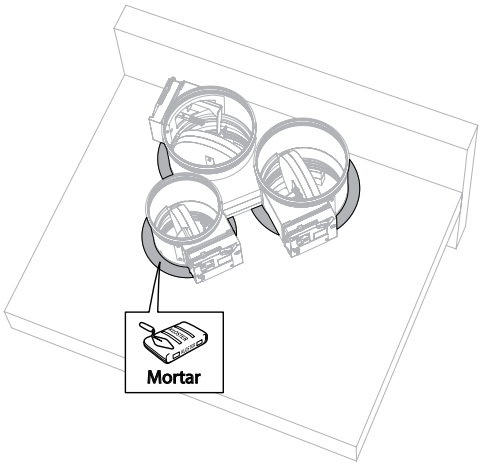
5



5. Mount the dampers in the opening.
Apply rigid stone wool panels (≥ 150 kg/m^3) to a depth of 400 mm (150 mm on the mechanism side of the wall) to seal the opening at the side with minimal distances.
The surface of this sealing is set between the axes (centres) of the dampers.

⚠ Caution: the opening is sealed according to the existing classification (see next point) when:
- 2 fire dampers are installed at a minimum distance from one another but at a normal distance (≥ 75 mm) from the wall or floor/ceiling.
- One single (no cluster) fire damper is located at a minimum distance (≤ 75 mm) from a wall or floor/ceiling.

6



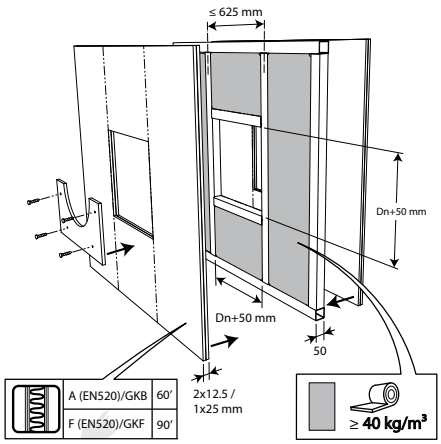
6. Seal the rest of the opening with standard mortar.

Installation in flexible wall (metal stud gypsum plasterboard wall)

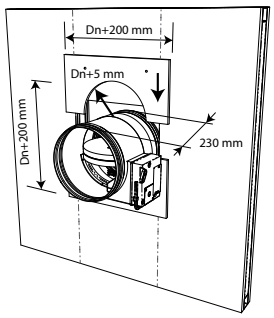
The product was tested and approved in:

Range	Wall type		Sealing	Classification
Ø 200-630 mm	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100 mm	Stone wool ≥ 40 kg/m³ + cover plates	EI 90 (v_e i ↔ o) S - (300 Pa)
Ø 200-630 mm	Flexible wall	Metal studs gypsum plasterboard Type A (EN 520) ≥ 100 mm	Stone wool ≥ 40 kg/m³ + cover plates	EI 60 (v_e i ↔ o) S - (500 Pa)

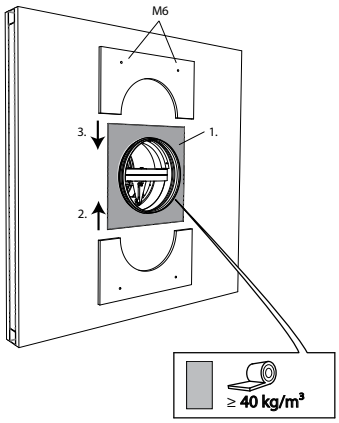
1



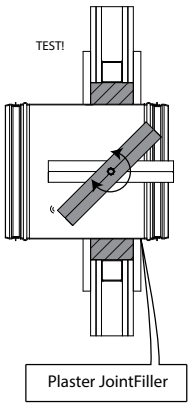
2



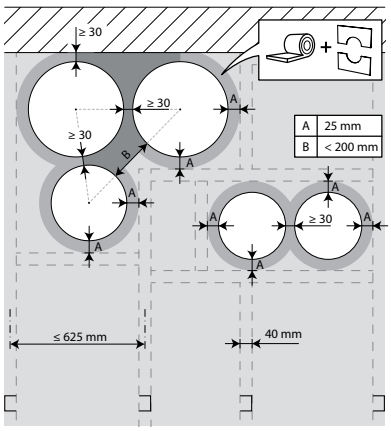
3



4

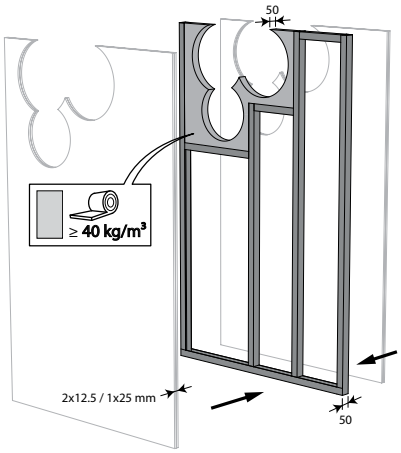


5



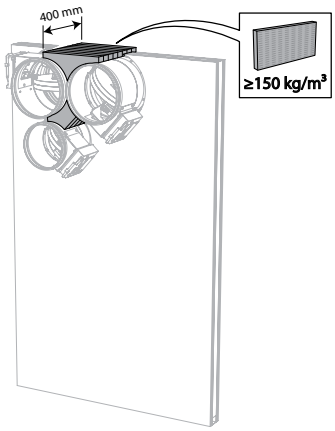
5. The dampers can be installed at a minimum distance (≥ 30 mm) from an adjacent wall or from another damper.

6



6. Build the drywall and foresee horizontal and vertical studs around the opening.
In the opening around the dampers (Dn + 50 mm), the void between the gypsum boards is filled with stone wool with a minimum density of 40 kg/m³.

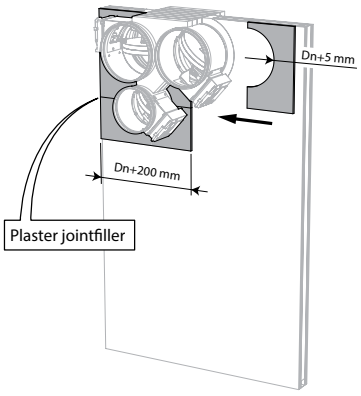
7



7. Mount the dampers in the opening.
Apply rigid stone wool panels (≥ 150 kg/m^3) to a depth of 400 mm (150 mm on the mechanism side of the wall) to seal the opening at the side with minimal distances.

⚠ Caution: the opening is sealed according to the existing classification (see next point) when:
- 2 fire dampers are installed at a minimum distance from one another but at a normal distance (≥ 75 mm) from the wall or floor/ceiling.
- One single (no cluster) fire damper is located at a minimum distance (≤ 75 mm) from a wall or floor/ceiling.

8



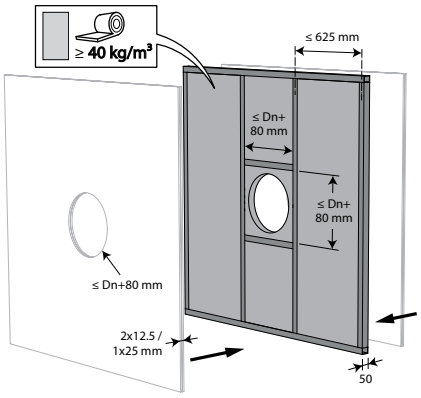
8. Apply cover plates (gypsum plasterboards) to finish the surface at both sides.
Seal off the space between the plasterboards with jointfiller.

Installation in flexible wall (metal stud gypsum plasterboard wall), sealing with gypsum

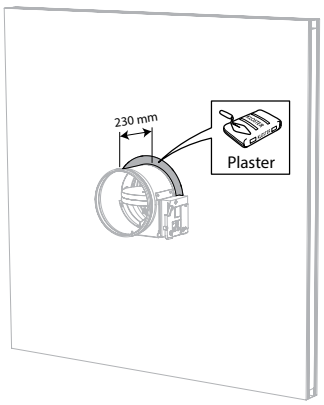
The product was tested and approved in:

Range	Wall type		Sealing	Classification
Ø 200-630 mm	Flexible wall	Metal studs gypsum plasterboard Type A (EN 520) ≥ 100 mm	Gypsum	EI 60 (v_e i ↔ o) S - (500 Pa)
Ø 200-630 mm	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100 mm	Gypsum	EI 120 (v_e i ↔ o) S - (500 Pa)

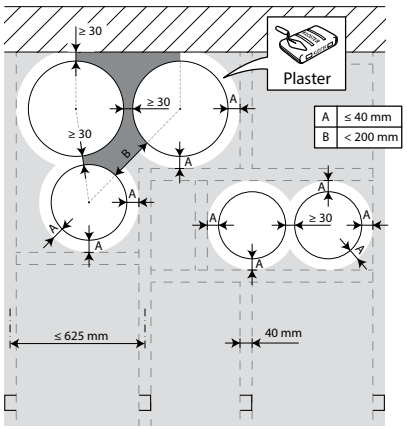
1



2

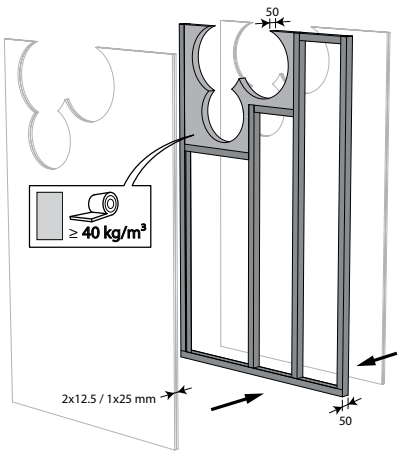


3



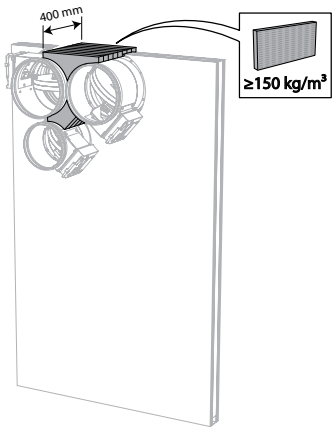
3. The dampers can be installed at a minimum distance (≥ 30 mm) from an adjacent wall or from another damper.

4



4. Build the drywall and foresee horizontal and vertical studs around the opening.
In the opening around the dampers, the void between the gypsum boards is partially filled (up to Dn + 80 mm) with stone wool with a minimum density of 40 kg/m³.

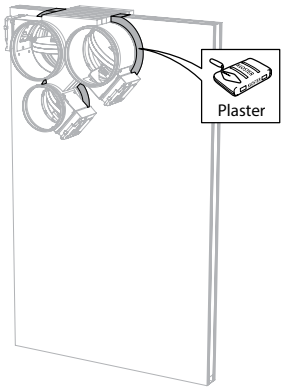
5



5. Mount the dampers in the opening.
Apply rigid stone wool panels (≥ 150 kg/m^3) to a depth of 400 mm (150 mm on the mechanism side of the wall) to seal the opening at the side with minimal distances.
The surface of this sealing is set between the axes (centres) of the dampers.

⚠ Caution: the opening is sealed according to the existing classification (see next point) when:
- 2 fire dampers are installed at a minimum distance from one another but at a normal distance (≥ 75 mm) from the wall or floor/ceiling.
- One single (no cluster) fire damper is located at a minimum distance (≤ 75 mm) from a wall or floor/ceiling.

6



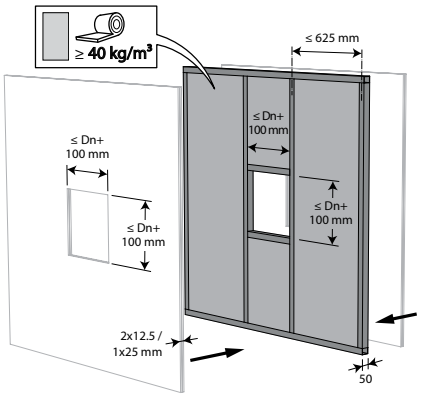
6. Seal the rest of the opening with standard gypsum across the entire wall thickness.

Installation in flexible wall (metal stud gypsum plasterboard wall), sealing with mortar

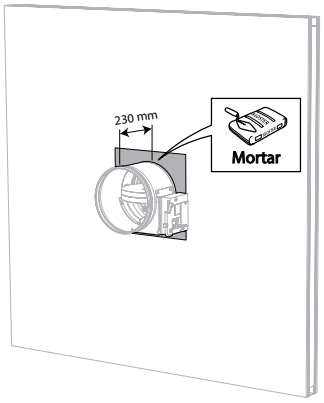
The product was tested and approved in:

Range	Wall type		Sealing	Classification
Ø 200-630 mm	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100 mm	Mortar	EI 90 (v_e i ↔ o) S - (300 Pa)

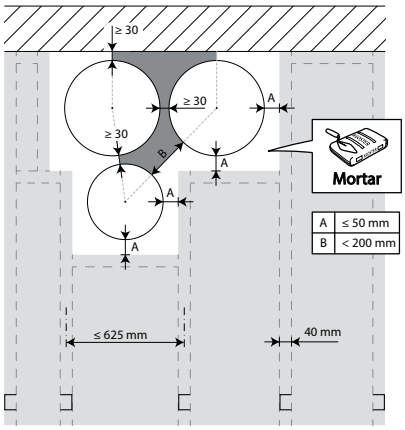
1



2

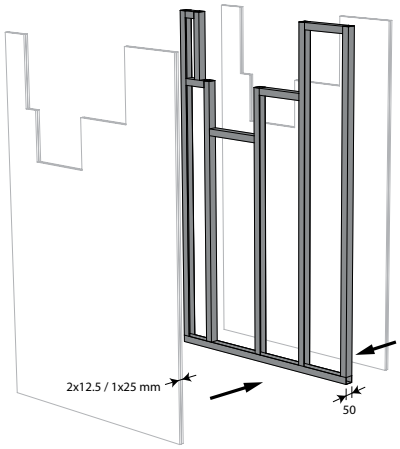


3



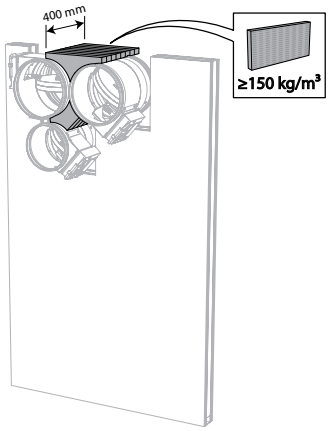
3. The dampers can be installed at a minimum distance (≥ 30 mm) from an adjacent wall or from another damper.

4



4. Build the drywall and foresee horizontal and vertical studs around the opening.

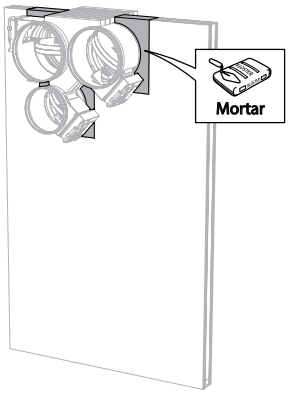
5



5. Mount the dampers in the opening.
Apply rigid stone wool panels (≥ 150 kg/m^3) to a depth of 400 mm (150 mm on the mechanism side of the wall) to seal the opening at the side with minimal distances.
The surface of this sealing is set between the axes (centres) of the dampers.

⚠ Caution: the opening is sealed according to the existing classification (see next point) when:
- 2 fire dampers are installed at a minimum distance from one another but at a normal distance (≥ 75 mm) from the wall or floor/ceiling.
- One single (no cluster) fire damper is located at a minimum distance (≤ 75 mm) from a wall or floor/ceiling.

6



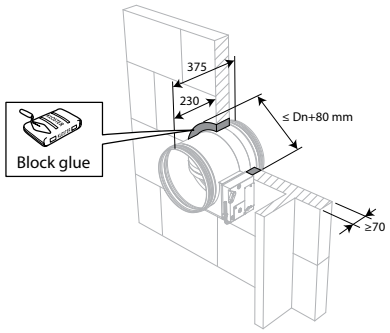
6. Seal the rest of the opening with standard mortar across the entire wall thickness.

Installation in gypsum block wall

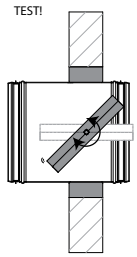
The product was tested and approved in:

Range	Wall type		Sealing	Classification
Ø 200-630 mm	Flexible wall	Gypsum blocks ≥ 70 mm	Block glue	EI 120 (v_e i ↔ o) S - (500 Pa)

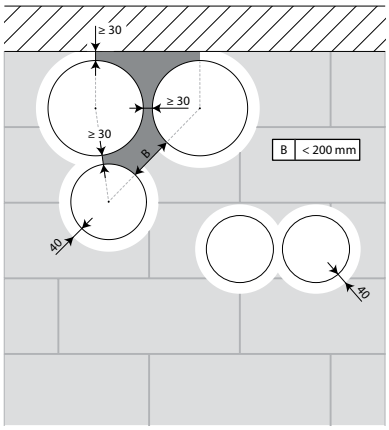
1



2

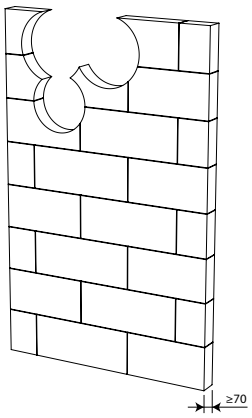


3



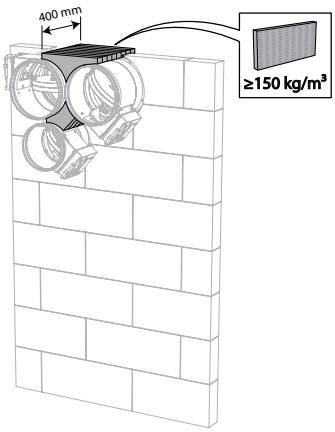
3. The dampers can be installed at a minimum distance from an adjacent wall or from another damper.

4



4. Make the necessary openings (≤ Dn + 80 mm) in the wall.

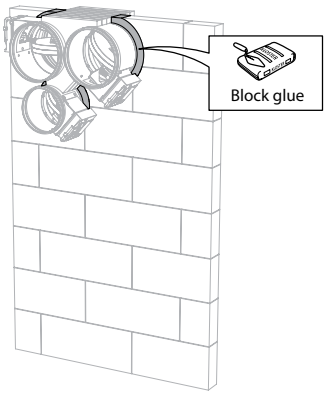
5



5. Mount the dampers in the opening.
Apply rigid stone wool panels (≥ 150 kg/m^3) to a depth of 400 mm (150 mm on the mechanism side of the wall) to seal the opening at the side with minimal distances.
The surface of this sealing is set between the axes (centres) of the dampers.

⚠ Caution: the opening is sealed according to the existing classification (see next point) when:
- 2 fire dampers are installed at a minimum distance from one another but at a normal distance (≥ 75 mm) from the wall or floor/ceiling.
- One single (no cluster) fire damper is located at a minimum distance (≤ 75 mm) from a wall or floor/ceiling.

6



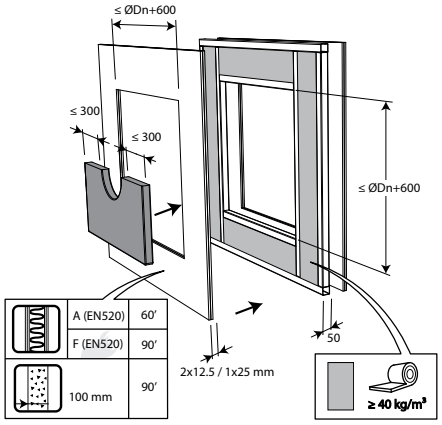
6. Seal the rest of the opening with block glue across the entire wall thickness.

Installation in flexible and rigid wall, sealing with rigid rock wool boards with coating

The product was tested and approved in:

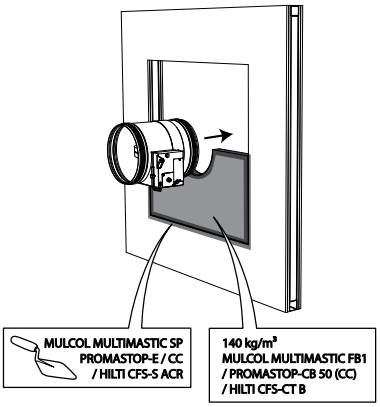
Range	Wall type		Sealing	Classification
Ø 200-630 mm	Rigid wall	Aerated concrete ≥ 100 mm	Stone wool + coating ≥ 140 kg/m³	EI 90 (v_e i ↔ o) S - (300 Pa)
Ø 200-630 mm	Flexible wall	Metal studs gypsum plasterboard Type A (EN 520) ≥ 100 mm	Stone wool + coating ≥ 140 kg/m³	EI 60 (v_e i ↔ o) S - (300 Pa)
Ø 200-630 mm	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100 mm	Stone wool + coating ≥ 140 kg/m³	EI 90 (v_e i ↔ o) S - (300 Pa)
Ø 200-630 mm	Rigid wall	Aerated concrete ≥ 100 mm	Stone wool Mulcol Multimastic SP + coating	EI 60 (v_e i ↔ o) S - (300 Pa)
Ø 200-630 mm	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100 mm	Stone wool Mulcol Multimastic SP + coating	EI 60 (v_e i ↔ o) S - (300 Pa)

1

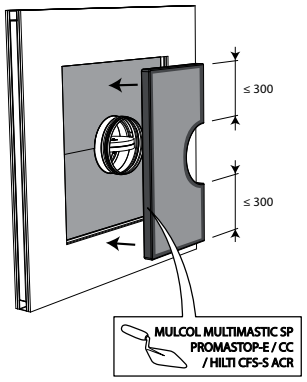


1. The opening around the damper is sealed with 2 layers of 50 mm-thick mineral wool panels with fire resistant coating on one side (type PROMASTOP-CB 50 / PROMASTOP-CB/CC 50 / HILTI CFS-CT B / Mulcol Multimastic FB1).

2

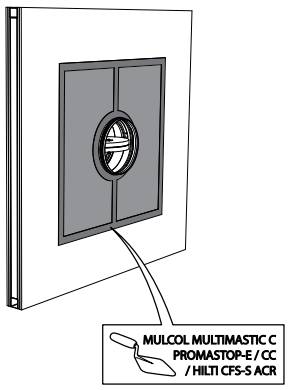


3

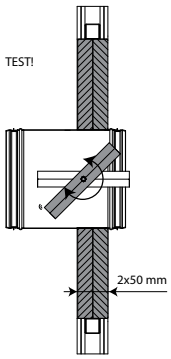


3. The joints on these 2 layers must be installed staggered and covered all around the edge with coating (type PROMASTOP-E / PROMASTOP-CC / HILTI CFS-S-ACR / Mulcol Multimastic SP).

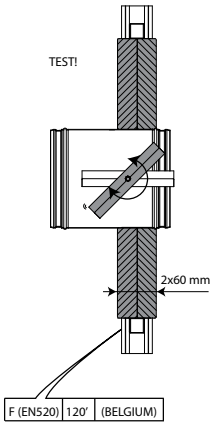
4



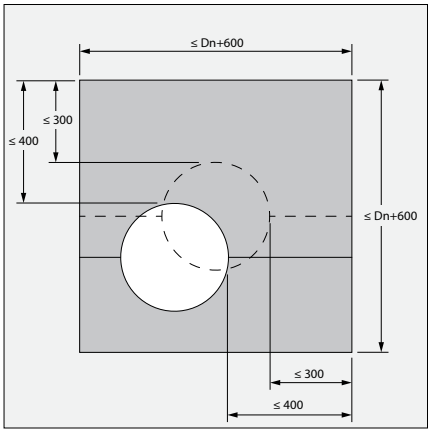
5



6

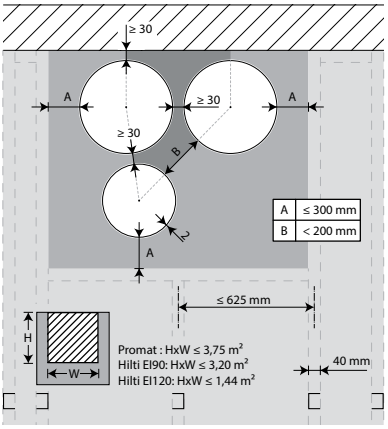


7



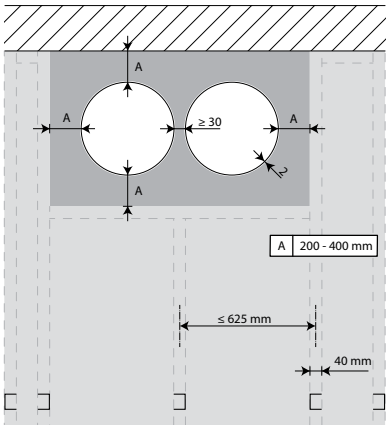
7. The damper does not need to be centered in the opening (with max dimensions fire damper + 600 mm). The maximal distance between the damper and the edge of the opening is 400 mm.

8

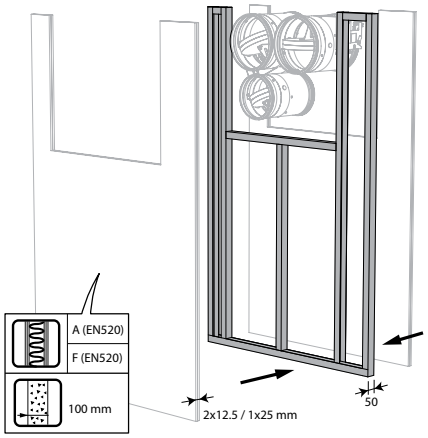


8. The dampers can be installed at a minimum distance (≥ 30 mm) from an adjacent wall or from another damper.

9

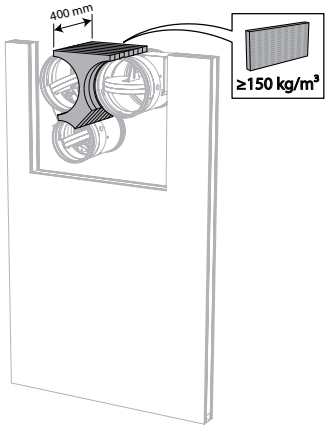


10



10. Build the drywall and foresee horizontal and vertical studs around the opening.
Mount the dampers in the opening.

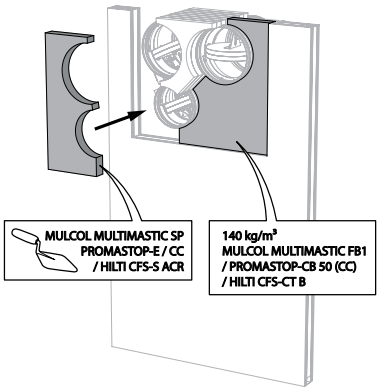
11



11. Apply rigid stone wool panels (≥ 150 kg/m³) to a depth of 400 mm (150 mm on the mechanism side of the wall) to seal the opening at the side with minimal distances.

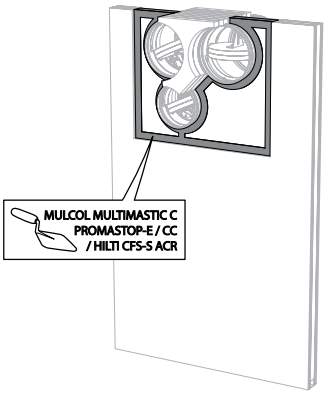
⚠ Caution: the opening is sealed according to the existing classification (see next point) when:
- 2 fire dampers are installed at a minimum distance from one another but at a normal distance (≥ 75 mm) from the wall or floor/ceiling.
- One single (no cluster) fire damper is located at a minimum distance (≤ 75 mm) from a wall or floor/ceiling.

12



12. Seal the rest of the opening with 2 layers of 50 mm-thick coated rigid mineral wool panels (see above).

13

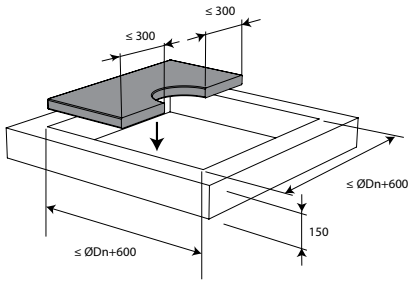


Installation in rigid floor, sealing with rigid rock wool boards with coating

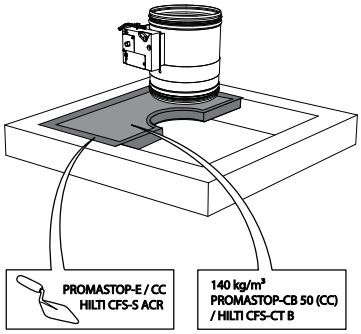
The product was tested and approved in:

Range	Wall type		Sealing	Classification
Ø 200-630 mm	Rigid floor	Aerated concrete ≥ 150 mm	Stone wool + coating ≥ 140 kg/m³	EI 120 (h_o i ↔ o) S - (300 Pa)

1

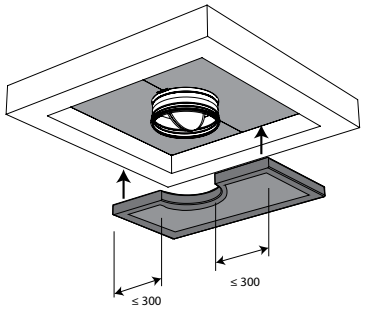


2

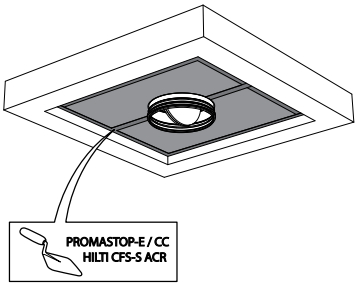


1. The opening around the damper is sealed with 2 layers of 50 mm-thick mineral wool panels with fire resistant coating on one side (type PROMASTOP-CB 50 / PROMASTOP-CB/CC 50 / HILTI CFS-CT B).

3

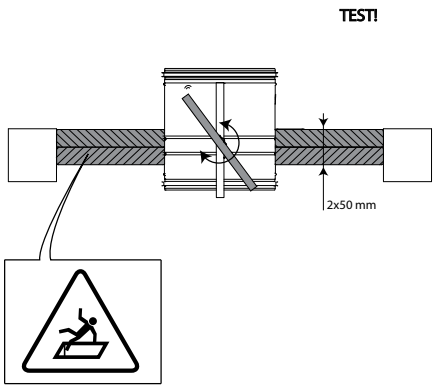


4

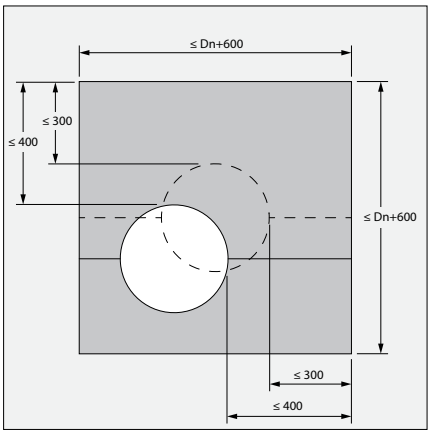


3. The joints on these 2 layers must be installed staggered and covered all around the edge with coating (type PROMASTOP-E / PROMASTOP-CC / HILTI CFS-S-ACR).

5

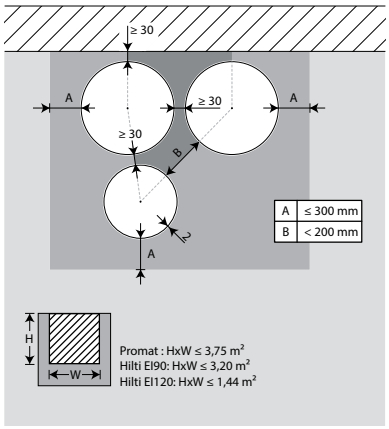


6



6. The damper does not need to be centered in the opening (with max dimensions fire damper + 600 mm). The maximal distance between the damper and the edge of the opening is 400 mm.

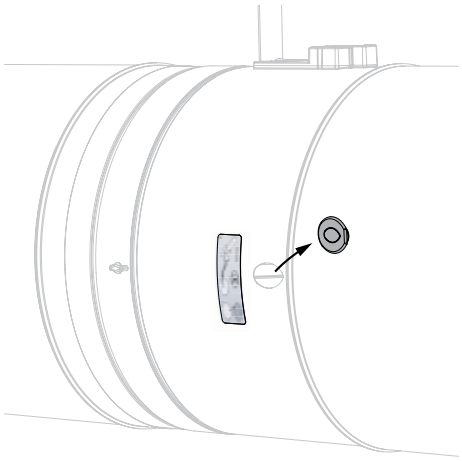
7



7. The dampers can be installed at a minimum distance (≥ 30 mm) from an adjacent wall or from another damper. For details, please refer to 'Installation in flexible and rigid wall, sealing with rigid rock wool boards with coating'

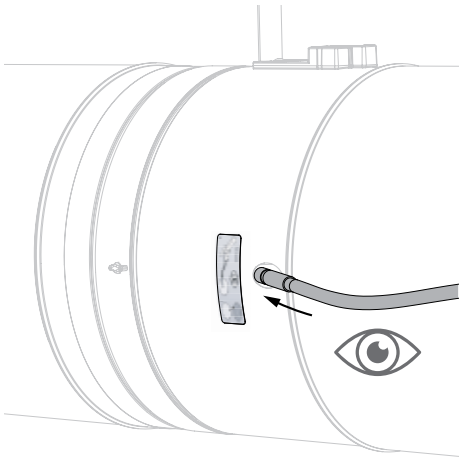
Inspection of the damper

1



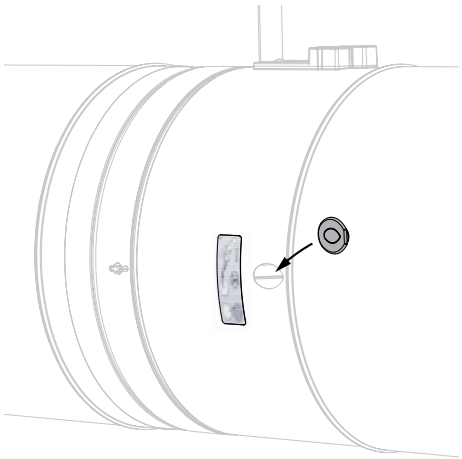
1. Remove the air-tight plug from the damper.

2



2. Insert the camera of the endoscope (for example Inspecam Rf-t) through the opening and inspect the inside of the damper.

3



3. After inspection, replace the air-tight plug thoroughly on the damper opening. The position is crucial in order to maintain the air-tightness of the fire damper.

Maintenance

- No specific maintenance required.
- Schedule at least 2 visual checks each year.
- Remove dust and all other particles before use.
- Follow local maintenance regulations (i.e. BS9999 Annex V; NF S 61-933) and EN13306.
- Read the maintenance instructions on our website:
  https://www.rft.be/assets//PIM/DOCUMENTS/BROCHURE%20KITS/BRO_K139_MAINTENANCE_C.pdf
- Use the damper at up to 95% humidity, non-condensing.
- The fire damper can be cleaned with a dry or slightly damp cloth. It is forbidden to use abrasive cleaners or mechanical cleaning techniques (brush).

Operation and mechanisms

CFTH Mechanism with fusible link

The unlocking mechanism CFTH automatically unlatches the damper blade when the temperature in the duct rises above 72°C. The damper can also be unlocked and reset manually.

1. unlocking button
2. resetting handle
3. cable entrance

Options - at the time of order

FCU	Limit switch 'closed'
FDCU	Unipolar limit switch 'open/closed'
FDCB	Bipolar auxiliary limit switch 'open/closed'

Unlocking

- **manual unlocking**: use the unlocking button (1).
- **automatic unlocking**: when the fusible link melts at 72° C.
- **remote unlocking**: n/a

Resetting

- **manual resetting**: use the enclosed Hex key and turn clockwise(2).
- **motorised resetting**: n/a

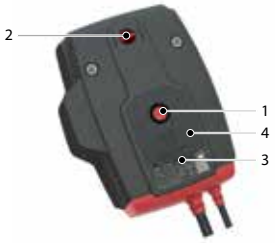
Caution:

⚠ The mechanism may never be tested on its own, without being attached to the damper. Such a test might damage the mechanism or the operator might be injured.

Operation and mechanisms

ONE Spring return actuator for remote control

The spring-return actuator ONE is designed to easily operate Rf-t fire dampers of all sizes, automatically or remotely. Five models are available, 24 or 230 volt, with FDCU or FDCB position switches; and 24 volt with plug (ST).



1. unlocking button
2. blade position indicator
3. LED
4. battery compartment to reset motor
5. plug (ST)

Unlocking

- **manual unlocking**: shortly press the unlocking button (1) once.
- **automatic unlocking**: the fusible link reacts as soon as the temperature in the duct reaches 72°C.
- **remote unlocking**: by interrupting the power supply.

Resetting

- **manual resetting**: open the battery compartment (4) and press a 9V battery against the contact springs. Hold this position until the LED (3) emits a continuous light. Check whether the indicator (2) shows that the damper blade is in the open position. Remove the battery, the LED fades away. Close the battery compartment.
- **motorised resetting**: switch off the power supply for at least 5 sec. Power the actuator (respect the prescribed voltage) for at least 75 sec. The resetting stops automatically when the end of range is reached (damper open).

Caution:

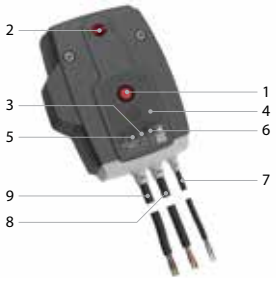
- ⚠ If the LED (3) flickers fast (3x/sec.), the battery is discharged: use a new battery.
- ⚠ If the LED (3) flickers slowly (1x/sec), the resetting is in progress.
- ⚠ If the LED (3) is continuously on, the resetting is complete and the motor is powered.
- ⚠ If the actuator detects voltage on the power cable, a brief contact of the battery is enough to start the resetting process.
- ⚠ The power supply of this actuator cannot be individually replaced. If the cable is damaged, the whole unit must be discarded and replaced.
- ⚠ The housing of the mechanism contains a temperature sensor. When the temperature in the housing exceeds 72°C, the mechanism unlocks. The LED flashes twice per second. When the temperature drops below 72°C, the mechanism can only be reset in a motorised manner after a manual reset (with a battery).
- ⚠ The end of range switches need 1 second after operation to adopt a stable position.
- ⚠ Make sure the thermal trigger device is present in the actuator. The actuator might not function properly if this is not the case.

	prod. < 1/7/2015				prod. ≥ 1/7/2015			
	CR60(1s) CR120	CU-LT CU-LT-1s	CR2≤400 CU2≤1200	CR2>400 CU2>1200	CR60(1s) CR120(1s)	CU-LT CU-LT-1s	CR2≤400 CU2≤1200	CR2>400 CU2>1200
Kit ONE	●	●	●		●	●	●	●

ONE-X Spring return actuator with integrated communication module.

The ONE-X is a spring return actuator with integrated communication module designed to simply operate Rf-t fire dampers of all sizes, automatically or remotely. The ONE-X is available in two versions: 24 V and 230 V.

1. unlocking button
2. blade position indicator
3. LED red: status
4. battery compartment
5. LED blue: communication
6. LED orange: error message
7. supply
8. bus cable



Options - at the time of order

ONE-X CN	Connectors for the bus cables and the power cable.

Unlocking

- **manual unlocking**: shortly press the unlocking button (1) once.
- **automatic unlocking**: the fusible link reacts as soon as the temperature in the duct reaches 72°C.
- **remote unlocking**: via ZENiX controller

Resetting

- **manual resetting**: Open the battery compartment (4) and press a 9V battery against the contact springs. Hold this position until the red LED (3) emits a continuous light. Control whether the indicator (2) indicates that the damper blade is open. Remove the battery. Close the battery compartment.
- **motorised resetting**: via ZENiX controller. By applying voltage during first use.

Caution:

- ⚠ If the ONE-X detects voltage on the power cable, a brief contact of the battery is enough to start the resetting process, provided the ZENiX controller has sent the damper to open position or the ONE-X is being operated for the first time.
- ⚠ The power supply of this actuator cannot be individually replaced. If the cable is damaged, the whole unit must be discarded and replaced.
- ⚠ The housing of the mechanism contains a temperature sensor. When the temperature in the housing exceeds 72°C, the mechanism unlocks. The LED flashes twice per second. When the temperature drops below 72°C, the mechanism can only be reset in a motorised manner after a manual reset (with a battery).
- ⚠ The end of range switches need 1 second after operation to adopt a stable position.

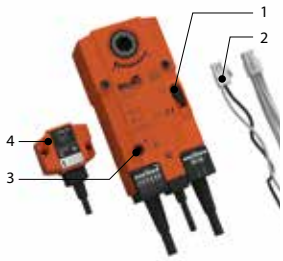
Safety regulations:

- ⚠ Do not use the ONE-X for any application other than the specified applications, in particular not in aircraft or other airborne vehicles.
- ⚠ The company that purchases and/or installs the ONE-X is fully responsible for the correct operation of the entire system. Only authorised specialists may perform the installation. All rules and regulations, including statutory regulations, must be observed during installation.
- ⚠ This device contains electrical or electronic components and must not be disposed of as household waste. All locally applicable regulations and requirements must be strictly observed.

BFL(T) Remotely controlled spring return actuator

The spring return actuator BFL(T) is specially designed to remotely control fire dampers. The BFL(T) model is intended for fire dampers with smaller dimensions (ø ≤ 400 mm or W+H ≤ 1200 mm/1400 mm for CU-LT, CU-LT-1s).

1. locking button
2. plug (ST)
3. access for manual resetting
4. thermo-electric tripping device (T)



Options - at the time of order

SN2 BFL/BFN	Auxiliary limit switch 'open/closed'

Unlocking

- **manual unlocking**: place the locking button on "unlock". (In case of BFLT: the damper can alternatively be unlocked by pushing the "test" button on the thermo-electric fuse)
- **automatic unlocking**: the thermo-electric fuse reacts as soon as the temperature reaches 72°C (type BFLT).
- **remote unlocking**: by interrupting the power supply.

Caution:

⚠ The thermo-electric fuse will not move the damper into its safety position (when the temperature reaches 72°C) if the motor is not powered.

Resetting

- **manual resetting**: turn the enclosed handle anti-clockwise. To block the motor, place the locking button on "lock"
- **motorised resetting**: switch off the power supply for at least 10 seconds. Supply the actuator (respect the prescribed voltage) for at least 75 seconds. The resetting stops automatically when the end of range is reached (damper open) - it takes about 60 seconds to reset the damper - or when the power supply is interrupted.

Caution:

⚠ Do not use a drill or powered screwdriver.

⚠ Stop as soon as the motor is completely rearmed (end of range).

	prod. < 1/7/2015				prod. ≥ 1/7/2015			
	CR60(1s) CR120	CU-LT CU-LT-1s	CR2≤400 CU2≤1200	CR2>400 CU2>1200	CR60(1s) CR120 (1s)	CU-LT CU-LT-1s	CR2≤400 CU2≤1200	CR2>400 CU2>1200
Kit BFL					●	●	●	
Kit BFN	●	●	●					●
Kit BF				●				

BFN(T) Remotely controlled spring return actuator

The spring return actuator BFN(T) is specially designed to remotely control fire dampers. The BFN(T) model is intended for fire dampers with large dimensions (ø > 400 mm (CR2) or W+H > 1200 mm (CU2, CU2-15, CU4)).

1. locking button
2. plug (ST)
3. access for manual resetting
4. thermo-electric tripping device (T)

Options - at the time of order

SN2 BFL/BFN	Auxiliary limit switch 'open/closed'

Unlocking

- **manual unlocking**: place the locking button on "unlock". (In case of BFNT: the damper can alternatively be unlocked by pushing the "test" button on the thermo-electric fuse)
- **automatic unlocking**: the thermo-electric fuse reacts as soon as the temperature reaches 72°C (type BFNT).
- **remote unlocking**: by interrupting the power supply.

Caution:

⚠ The thermo-electric fuse will not move the damper into its safety position (when the temperature reaches 72°C) if the motor is not powered.

Resetting

- **manual resetting**: turn the enclosed handle anti-clockwise. To block the motor, place the locking button on "lock"
- **motorised resetting**: switch off the power supply for at least 10 seconds. Supply the actuator (respect the prescribed voltage) for at least 75 seconds. The resetting stops automatically when the end of range is reached (damper open) - it takes about 60 seconds to reset the damper - or when the power supply is interrupted.

Caution:

⚠ Do not use a drill or powered screwdriver.
⚠ Stop as soon as the motor is completely rearmed (end of range).

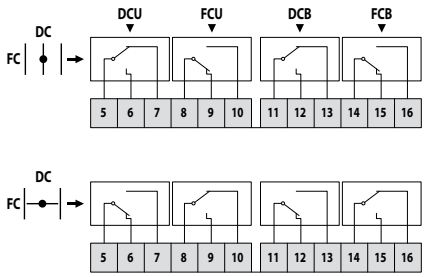
Caution:

⚠ The mechanism may never be tested on its own, without being attached to the damper. Such a test might damage the mechanism or the operator might be injured.

	prod. < 1/7/2015				prod. ≥ 1/7/2015			
	CR60(1s) CR120	CU-LT CU-LT-1s	CR2≤400 CU2≤1200	CR2>400 CU2>1200	CR60(1s) CR120 (1s)	CU-LT CU-LT-1s	CR2≤400 CU2≤1200	CR2>400 CU2>1200
Kit BFL					●	●	●	
Kit BFN	●	●	●					●
Kit BF				●				

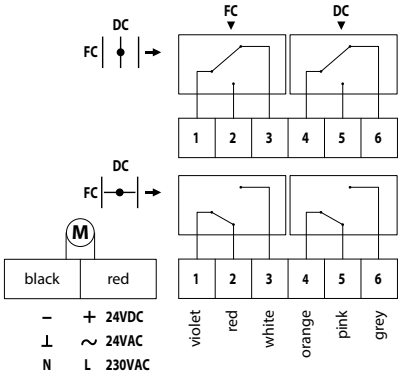
Electrical connection

CFTH



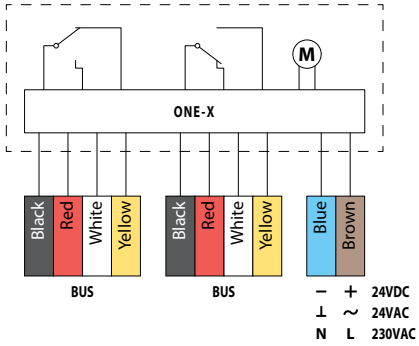
DC : Switch open position fire damper
FC : Switch closed position fire damper

ONE



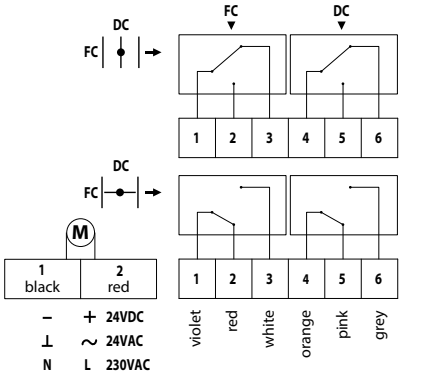
DC : Switch open position fire damper
FC : Switch closed position fire damper

ONE-X



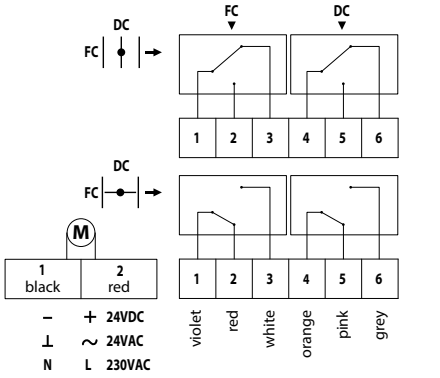
MEC	Nominal voltage motor	Nominal voltage magnet	Power consumption (stand-by)	Power consumption (operating)	Standard switches
CFTH	N/A	N/A	N/A	N/A	1mA...6A, DC 5V...AC 250V
ONE T 24 FDCU	24 V AC/DC (-10/+20%)	N/A	0,28W	4,2W	1mA...1A 60V
ONE T 230 FDCU	230 V AC (-15/+15%)	N/A	0,57W	4,2W	1mA...1A 60V
ONE T 24 FDCU ST	24 V AC/DC (-10/+20%)	N/A	0,28W	4,2W	1mA...1A 60V
ONE T 24 FDCB	24 V AC/DC (-10/+20%)	N/A	0,28W	4,2W	1mA...1A 60V
ONE T 230 FDCB	230 V AC (-15/+15%)	N/A	0,57W	4,2W	1mA...1A 60V
ONE-X 24	24 V AC/DC (-10/+20%)	N/A	0,28W	4,2W	
ONE-X 230	230 V AC (-15/+15%)	N/A	0,57W	4,2W	
BFL24	24 V AC/DC	N/A	0,7W	2,5W	1mA...3A, AC 250V
BFL230	230 V AC	N/A	1,1W	3,5W	1mA...3A, AC 250V
BFL24-ST	24 V AC/DC	N/A	0,7W	2,5W	1mA...3A, AC 250V
BFLT24	24 V AC/DC	N/A	0,8W	2,5W	1mA...3A, AC 250V
BFLT230	230 V AC	N/A	1,4W	4W	1mA...3A, AC 250V
BFLT24-ST	24 V AC/DC	N/A	0,8W	2,5W	1mA...3A, AC 250V
BFN24	24 V AC/DC	N/A	1W	4W	1mA...3A, AC 250V
BFN230	230 V AC	N/A	1,5W	5W	1mA...3A, AC 250V
BFN24-ST	24 V AC/DC	N/A	1W	4W	1mA...3A, AC 250V
BFNT24	24 V AC/DC	N/A	1,1W	4W	1mA...3A, AC 250V
BFNT230	230 V AC	N/A	1,8W	5,5W	1mA...3A, AC 250V
BFNT24-ST	24 V AC/DC	N/A	1,1W	4W	1mA...3A, AC 250V

BFL(T)



DC : Switch open position fire damper
FC : Switch closed position fire damper

BFN(T)



DC : Switch open position fire damper
FC : Switch closed position fire damper

MEC	Resetting time motor	Running time spring	Noise level motor	Noise level spring	Cable supply / control	Cable auxiliary switch	Protection class
CFTH	N/A	1 s	N/A	N/A			IP 42
ONE T 24 FDCU	< 75 s (cabled) / <85 s (battery)	< 30 s	< 64 dB (A)	< 67 dB (A)	1 m, 2 x 0.75 mm²	1 m, 6 x 0.75 mm²	IP 54
ONE T 230 FDCU	< 75 s (cabled) / <85 s (battery)	< 30 s	< 64 dB (A)	< 67 dB (A)	1 m, 2 x 0.75 mm²	1 m, 6 x 0.75 mm²	IP 54
ONE T 24 FDCU ST	< 75 s (cabled) / <85 s (battery)	< 30 s	< 64 dB (A)	< 67 dB (A)	1 m, 2 x 0.75 mm²	1 m, 6 x 0.75 mm²	IP 54
ONE T 24 FDCB	< 75 s (cabled) / <85 s (battery)	< 30 s	< 64 dB (A)	< 67 dB (A)	1 m, 2 x 0.75 mm²	(2x) 1 m, 6 x 0,75 mm²	IP 54
ONE T 230 FDCB	< 75 s (cabled) / <85 s (battery)	< 30 s	< 64 dB (A)	< 67 dB (A)	1 m, 2 x 0.75 mm²	(2x) 1 m, 6 x 0,75 mm²	IP 54
ONE-X 24	< 75 s (cabled) / <85 s (battery)	< 30 s	< 64 dB (A)	< 67 dB (A)			IP 54
ONE-X 230	< 75 s (cabled) / <85 s (battery)	< 30 s	< 64 dB (A)	< 67 dB (A)			IP 54
BFL24	< 60 s	20 s	< 43 dB (A)	< 62 dB (A)	1 m, 2 x 0.34 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFL230	< 60 s	20 s	< 43 dB (A)	< 62 dB (A)	1 m, 2 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFL24-ST	< 60 s	20 s	< 43 dB (A)	< 62 dB (A)	1 m, 2 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFLT24	< 60 s	20 s	< 43 dB (A)	< 62 dB (A)	1 m, 2 x 0.34 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFLT230	< 60 s	20 s	< 43 dB (A)	< 62 dB (A)	1 m, 2 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFLT24-ST	< 60 s	20 s	< 43 dB (A)	< 62 dB (A)	1 m, 2 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFN24	< 60 s	20 s	≤ 55 dB (A)	ca. 70 dB (A)	1 m, 2 x 0.34 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFN230	< 60 s	20 s	≤ 55 dB (A)	ca. 70 dB (A)	1 m, 2 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFN24-ST	< 60 s	20 s	≤ 55 dB (A)	ca. 70 dB (A)	1 m, 2 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFNT24	< 60 s	20 s	≤ 55 dB (A)	ca. 70 dB (A)	1 m, 2 x 0.34 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFNT230	< 60 s	20 s	≤ 55 dB (A)	ca. 70 dB (A)	1 m, 2 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54
BFNT24-ST	< 60 s	20 s	≤ 55 dB (A)	ca. 70 dB (A)	1 m, 2 x 0.75 mm² (halogen-free)	1 m, 6 x 0.75 mm² (halogen-free)	IP 54

Weights

Weights

CR2 + CFTH

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	6,9	8,0	11,0	13,0	16,0	18,0	21,0	24,0	28,0	

CR2 + ONE T / ONE-X

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	7,7	8,8	11,8	13,8	16,8	18,8	21,8	24,8	28,8	

CR2 + BFL

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	7,0	8,1	11,1	13,1	16,1	-	-	-	-	

CR2 + BFLT

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	7,1	8,2	11,2	13,2	16,2	-	-	-	-	

CR2 + BFN

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	-	-	-	-	-	18,4	21,4	24,4	28,4	

CR2 + BFNT

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	-	-	-	-	-	18,5	21,5	24,5	28,5	

CR2-L500 + CFTH

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	8,1	9,5	13,0	15,3	18,6	21,5	25,0	28,5	33,1	

CR2-L500 + ONE T / ONE-X

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	8,9	10,3	13,8	16,1	19,4	22,3	25,8	29,3	33,9	

CR2-L500 + BFL

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	8,2	9,6	13,0	15,3	18,7	-	-	-	-	

CR2-L500 + BFLT

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	8,3	9,7	13,1	15,4	18,8	-	-	-	-	

CR2-L500 + BFN

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	-	-	-	-	-	21,9	25,3	28,8	33,5	

CR2-L500 + BFNT

ØDn [mm]	200	250	315	355	400	450	500	560	630	
kg	-	-	-	-	-	22,0	25,4	28,9	33,6	

Selection graphs

$$\Delta p\ [Pa] = \zeta * v^2 * 0{,}6$$

ØDn [mm]	200	250	315	355	400	450	500	560	630	
ζ [-]	7,42	3,96	2,17	1,62	1,21	0,92	0,72	0,56	0,43	

Example

Data
Dn = 315 mm, v = 4 m/s

Calculation
$\Delta p = 2.17 * (4\ m/s)^2 * 0.6 = 20.83\ Pa$

CR2 - CR2-L500 - A-weighted sound power level in the duct

ØDn [mm]	200	250	315	355	400	450	500	560	630	
Sn [m^2]	0,0129	0,0253	0,0472	0,0640	0,0859	0,1139	0,1459	0,1895	0,2474	
Sn [%]	41,54	51,89	60,94	64,99	68,67	71,94	74,60	77,19	79,62	
Q [m^3/h]	319,00	553,00	968,00	1.288,00	1.711,00	2.261,00	2.898,00	3.781,00	4.983,00	**45 dB**
Δp [Pa]	35,37	23,27	15,51	12,68	10,41	8,60	7,28	6,09	5,39	
Q [m^3/h]	227,00	394,00	689,00	917,00	1.218,00	1.610,00	2.063,00	2.692,00	3.547,00	**40 dB**
Δp [Pa]	17,92	11,80	7,86	6,43	5,28	4,36	3,69	3,09	2,73	
Q [m^3/h]	162,00	280,00	490,00	653,00	867,00	1.146,00	1.468,00	1.916,00	2.525,00	**35 dB**
Δp [Pa]	9,08	5,98	3,98	3,26	2,67	2,21	1,87	1,56	1,39	
Q [m^3/h]	115,00	200,00	349,00	465,00	617,00	816,00	1.045,00	1.364,00	1.798,00	**30 dB**
Δp [Pa]	4,60	3,03	2,02	1,65	1,36	1,12	0,95	0,79	0,70	
Q [m^3/h]	82,00	142,00	249,00	331,00	439,00	581,00	744,00	971,00	1.280,00	**25 dB**
Δp [Pa]	2,33	1,54	1,02	0,84	0,69	0,57	0,48	0,40	0,36	

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level for the respective dimension.

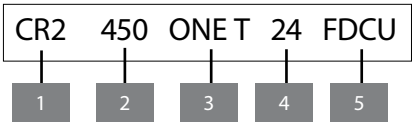
Correction factor ΔL

To obtain the sound power level for the octave midband: LW oct = ΔL + Lwa

[Hz]	63	125	250	500	1000	2000	4000	8000
2 - 4 m/s	22	6	3	-14	-22	-25	-23	-17
6 - 8 m/s	19	9	1	-5	-10	-13	-20	-16
10 - 12 m/s	13	5	0	-4	-7	-10	-20	-19

Approvals and certificates

Sample order



1. product
2. diameter
3. mechanism type
4. option: type voltage
5. option: uni/bipolar switches

Approvals and certificates

All our dampers are submitted to a number of tests by official test institutes. Reports of these tests form the basis for the approvals of our dampers.

CE 0749 — BCCA-0749-CPR-BC1-606-0464-15650.01-2517

NF 537 CLAPETS RÉSISTANT AU FEU VOLETS RÉSISTANT AU FEU — 18.14

SP Certifiering — SC0647-15

26814

The NF-label guarantees: conformity with the standard NF S 61-937 Parts 1 and 5: “Systèmes de Sécurité Incendie Dispositifs Actionnés de Sécurité”; conformity with the national decree of March 22, 2004, changed on 14 March 2011 for the classification of fire resistance; the values of the characteristics mentioned in this document. Organisme Certificateur: AFNOR Certification, 11 Rue Francis de Pressensé, F93571 La Plaine Saint-Denis Cedex; Website: http://www.afnor.org http://www.marque-nf.com; Phone: +33 (0)1.41.62.80.00, Fax: +33 (0)1.49.17.90.00, Email: certification@afnor.org