

CR120

Optimized circular fire damper up to 120'

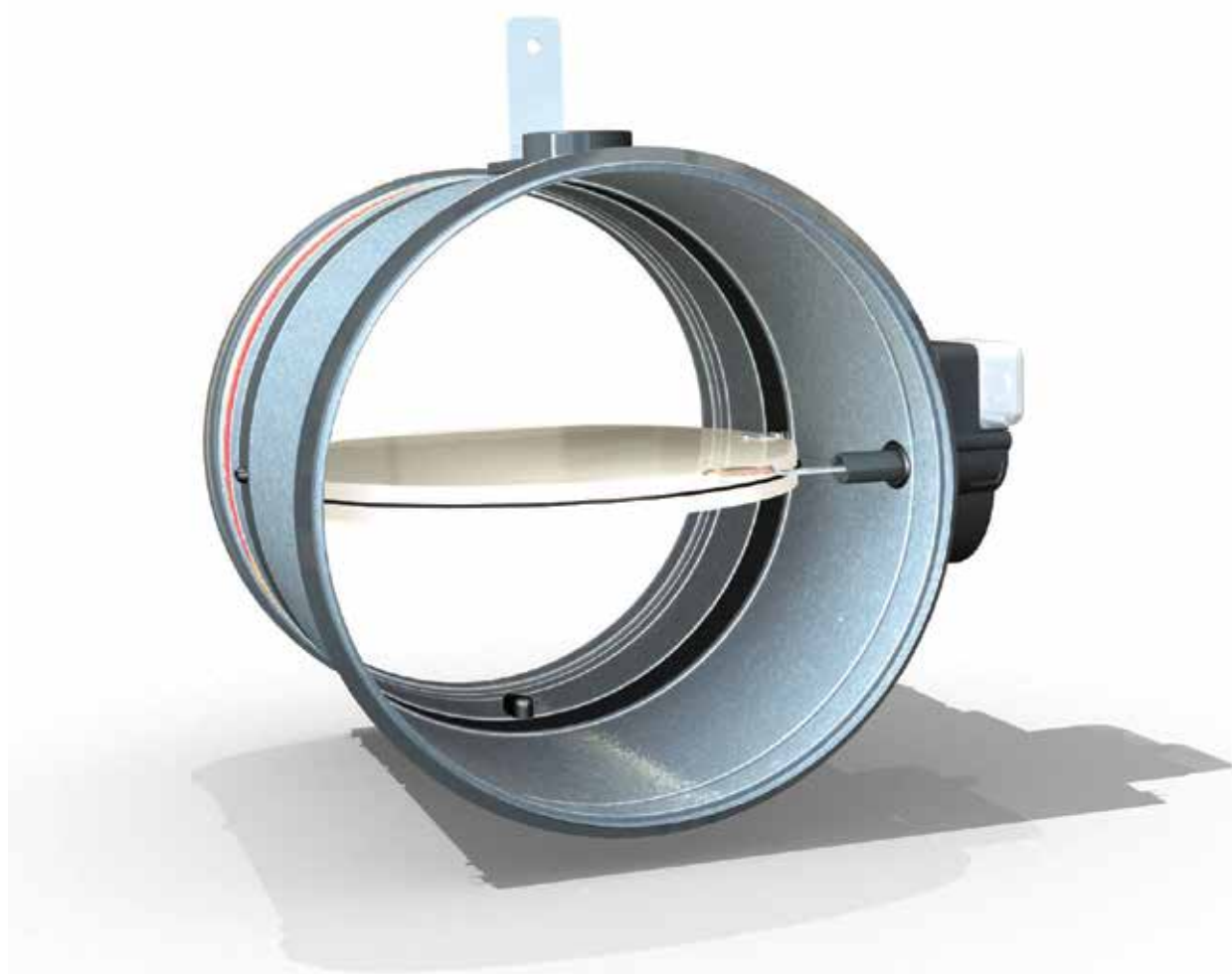









Table of content

Declaration of performance	3
Product presentation CR120	4
Range and dimensions CR120	4
Evolution - kits	5
Options - at the time of order	7
Storage and handling	8
Installation	8
Operation and mechanisms	19
Electrical connection	22
Weights	24
Selection graphs	24
Example	25
Selection data	25
Correction factor ΔL	26
Sample order	26
Approvals and certificates	26

Explanation of the abbreviations and pictograms

Wn = nominal width	V DC = Volt direct current	KIT = kit (delivered separately for repair or upgrade)
Hn = nominal height	E.ALIM = power supply magnet	PG = connection flange to the duct
Dn = nominal diameter	E.TELE = power supply motor	Sn = free air passage
E = integrity	V = volt	$\zeta [-]$ = pressure loss coefficient
I = thermal insulation	W = watt	Q = air flow
S = smoke leakage	Auto = automatic	ΔP = static pressure drop
Pa = pascal	Tele = remote controlled	v = air speed in the duct
ve = vertical wall penetration	Pnom = nominal capacity	Lwa = A-weighted sound power level
ho = horizontal floor penetration	Pmax = maximum capacity	Lw oct = sound power level per octave midband
o -> i = meets the criteria from the outside (o) to the inside (i)	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)	dB(A)a = A-weighted decibel value
i <-> o = fire side not important	Cal-Sil = calcium silicate	ΔL = correction factor
V AC = Volt alternating current	OP = option (delivered with the product)	

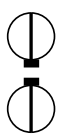
	higher net building volume		optimal acoustic performance
	optimal free air passage and minimal pressure loss		air-tightness class C according to EN1751
	suitable for built-in installation		suitable for installation remote from the wall
	sealing with fire resistant stone wool boards allowed, also for asymmetric opening		

DECLARATION OF PERFORMANCE

CE_DoP_Rf-t_G11_EN D-02/2015

1. Unique identification code of the product-type:	Circular fire damper
2. Identification of the construction product:	CR120
3. Intended use(s) of the construction product:	Circular fire damper to be used in conjunction with partitions to maintain fire compartments in heating, ventilating and air conditioning installations.
4. Name and contact address of the manufacturer:	RF-Technologies NV, Lange Ambachtstraat 40, B-9860 Oosterzele
5. System of assessment and verification of constancy of performance of the construction product:	System 1
6. In case of the declaration of performance concerning a construction product covered by a harmonised standard:	Notified factory production control certification body BCCA with identification number 0749 performed the determination of the product type on the basis of type testing (including sampling), the initial inspection of the manufacturing plant and of factory production control and continuous surveillance, assessment and evaluation of factory production control under system 1 and issued the certificate of constancy of performance BCT-606-0464-15650:02-2517
7. 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 100-315 mm	Rigid wall	Reinforced concrete ≥ 110mm	Mortar	1	EI 120 (V _{e,i} ↔ S) S - (500 Pa)
		Aerated concrete ≥ 100mm	Mortar	1	EI 90 (V _{e,i} ↔ S) S - (500 Pa)
			Mineral wool + coating ≥ 150 kg/m³ + endothermic coated casing	1	EI 120 (V _{e,i} ↔ S) S - (300 Pa)
			Galvanised duct + PROMASTOP®-CB 2x50mm	2	EI 90 (V _{e,i} ↔ S) S - (300 Pa)
	Rigid floor		Galvanised duct + GEOFLAM® F 45mm + mortar	2	EI 120 (V _{e,i} ↔ S) S - (500 Pa)
			Mortar	1	EI 120 (V _{e,i} ↔ S) S - (500 Pa)
		Reinforced concrete ≥ 150mm	Mortar	1	EI 90 (V _{e,i} ↔ S) S - (500 Pa)
		Aerated concrete ≥ 100mm	Mortar	1	EI 120 (V _{e,i} ↔ S) S - (300 Pa)
	Flexible wall	Metal studs gypsum plasterboard Type A (EN 520) ≥ 100mm	Mineral wool + coating ≥ 150 kg/m³ + endothermic coated casing	1	EI 60 (V _{e,i} ↔ S) S - (300 Pa)
			Mineral wool + coating ≥ 150 kg/m³ + endothermic coated casing	1	EI 120 (V _{e,i} ↔ S) S - (300 Pa)
Ø 100-250 mm	Rigid wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100mm	Galvanised duct + PROMASTOP®-CB 2x50mm	2	EI 90 (V _{e,i} ↔ S) S - (300 Pa)
			Mortar	1	EI 120 (V _{e,i} ↔ S) S - (500 Pa)
	Flexible wall	Aerated concrete ≥ 100mm	Mineral wool ≥ 40 kg/m³ + cover plates	1	EI 60 (V _{e,i} ↔ S) S - (500 Pa)
			Mineral wool ≥ 40 kg/m³ + cover plates	1	EI 60 (V _{e,i} ↔ S) S - (500 Pa)

1	Type of installation: built-in, 0-360°	2	Type of installation: remote from the wall, 0/180°
			
Nominal activation conditions/sensitivity:			
Response delay (response time); closure time			
Operational reliability: cycling			
Durability of response delay:			
Protection against corrosion according to EN 60068-2-52:			
Damper casing leakage according to EN 1751:			
8. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 7. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.			

Signed for and on behalf of the manufacturer by:
Barbara Willems, Technical Manager

 Oosterzele, 02/2015



Product presentation CR120

Product presentation CR120

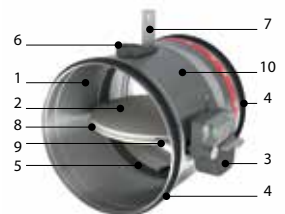
Optimized circular fire damper with a fire resistance up to 120 minutes. A minimal pressure loss is guaranteed thanks to the thin blade, the fusible link aligned with the blade, and the transmission located outside the tunnel. The damper is available in small diameters (starting from 100 mm). Its galvanized steel tunnel contributes to the light weight of the damper.

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 aerodynamic 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.

- ✓ easy to install
- ✓ optimal free air passage and minimal pressure loss
- ✓ optimal acoustic performance
- ✓ higher net building volume
- ✓ air-tightness class C according to EN1751
- suitable for built-in installation
- suitable for installation remote from the wall
- suitable for rigid wall, rigid floor and light wall (metal stud gypsum plasterboard wall)
- sealing with fire resistant stone wool boards allowed, also for asymmetric opening
- 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

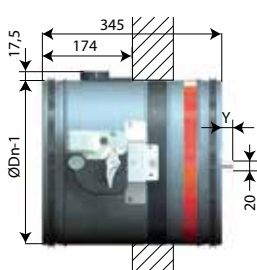


1. casing in galvanised steel
2. damper blade
3. operating mechanism
4. rubber sealing ring
5. intumescent strip
6. base plate for thermo-electrical fuse
7. positioning plate
8. sealing ring for damper blade
9. fusible link
10. product identification



Range and dimensions CR120

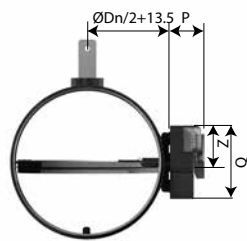
Exceeding damper blade: 20 mm for Ø 315 mm



ØDn (mm)	315
x	-
y	20





ØDn (mm)	100	125	150	160	180	200	250	300	315
----------	-----	-----	-----	-----	-----	-----	-----	-----	-----











CR120 + MFUS









	MFUS	MMAG	BFL(T)
P	70	109	60
Q	123	173	80
Z	62	112	40

Evolution - kits

	KITS MFUS	Automatic unlocking mechanism with fusible link
	KITS MMAG	Upgradeable automatically unlocking mechanism
	KITS BFL24	Spring return actuator BFL 24V
	KITS BFL24-ST	Spring return actuator BFL 24V with plug (ST)
	KITS BFLT24	Spring return actuator BFL 24V with thermo-electric fuse (T)
	KITS BFLT24-ST	Spring return actuator BFL 24V with thermo-electric fuse (T) and plug (ST)

	KITS BFL230	Spring return actuator BFL 230V
	KITS BFLT230	Spring return actuator BFL 230V with thermo-electric fuse (T)
	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 VD MMAG FDCU	Natural magnet 24/48 V DC + FDCU
	KITS VM MMAG FDCU	Electromagnet 24/48 V DC + FDCU
	KITS FDCU MFUS(P)	Unipolar beginning and end of range switch
	KITS FDCU MMAG	Unipolar beginning and end of range switch
	KITS FDCB MMAG	Bipolar beginning and end of range switch
	KITS SN2 BFL/BFN	Bipolar beginning and end of range switch
	KITS ME MMAG	Resetting motor ME 24V/48V (DC)

	KITS ZBAT 72	Black spare part for thermo-electric fuse for BFLT/BFNT
	KITS FUS 72 MFUS(P)	Fusible link 72°C
	KITS FUS72 MMAG	Fusible link 72°C
	MECT	Testbox for mechanisms (magnet, motor, beginning and end of range switches)
	EPP CR60/120	Kit with 4 cover plates (gypsum plasterboard 12.5 mm) for CR60, CR120 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.

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

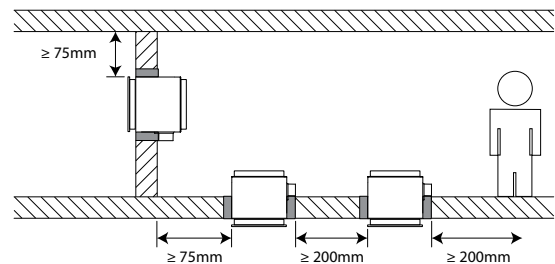
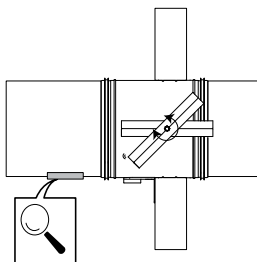
Installation

General points

- The installation must comply with the classification report and the installation manual delivered with the product.
- 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 air tightness class will be maintained if the damper is installed according to the installation manual.
- Rf-t fire dampers are always tested in standardized 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 two running checks each year.

 TEST

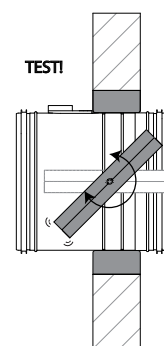
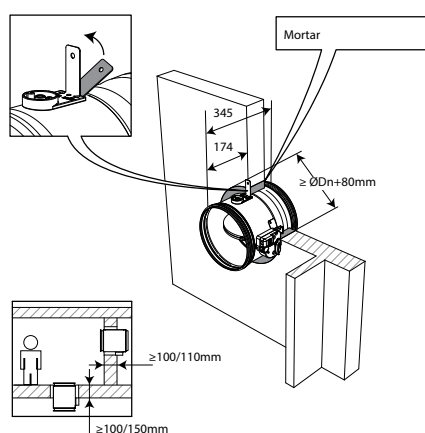
2015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2016	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2017	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2018	<input type="checkbox"/>	<input type="checkbox"/>
2019	<input type="checkbox"/>	<input type="checkbox"/>



Installation in rigid wall and floor

The product was tested and approved in:

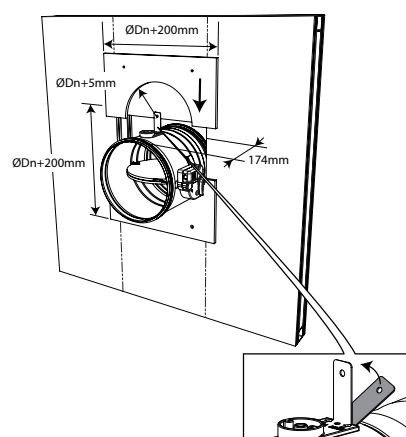
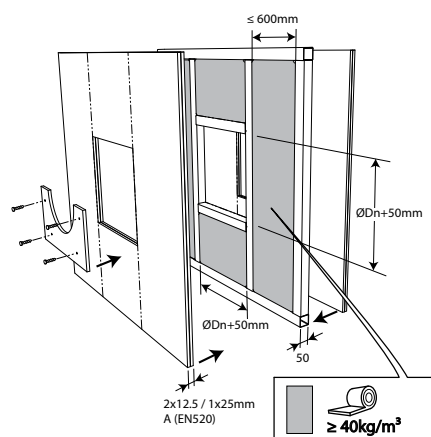
Range	Wall type	Sealing	Classification
Ø 100-315 mm	Rigid wall	Reinforced concrete ≥ 110mm	Mortar
Ø 100-315 mm	Rigid wall	Aerated concrete ≥ 100mm	Mortar
Ø 100-315 mm	Rigid floor	Reinforced concrete ≥ 150mm	Mortar
Ø 100-315 mm	Rigid floor	Aerated concrete ≥ 100mm	Mortar
Ø 100-250 mm	Rigid wall	Aerated concrete ≥ 100mm	Mortar

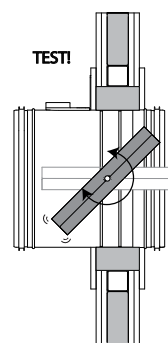
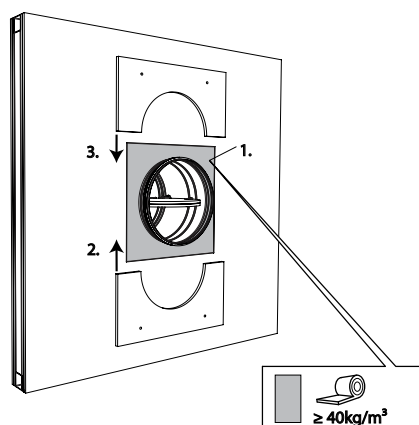


Installation in flexible wall - metal stud gypsum plasterboard wall

The product was tested and approved in:

Range	Wall type	Sealing	Classification
Ø 100-250 mm	Flexible wall	Metal studs gypsum plasterboard Type A (EN 520) ≥ 100mm	Stone wool ≥ 40 kg/m ³ + cover plates

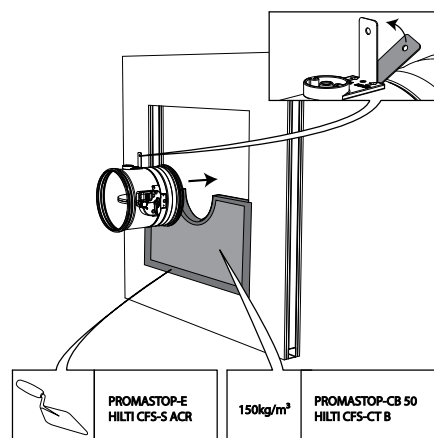
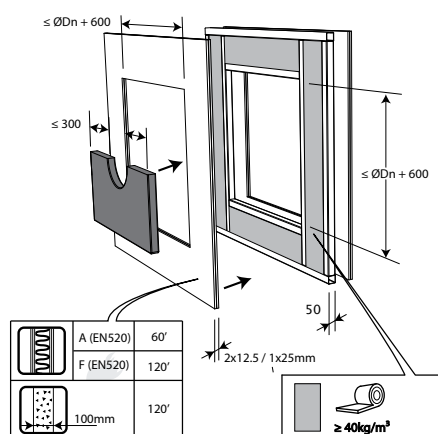




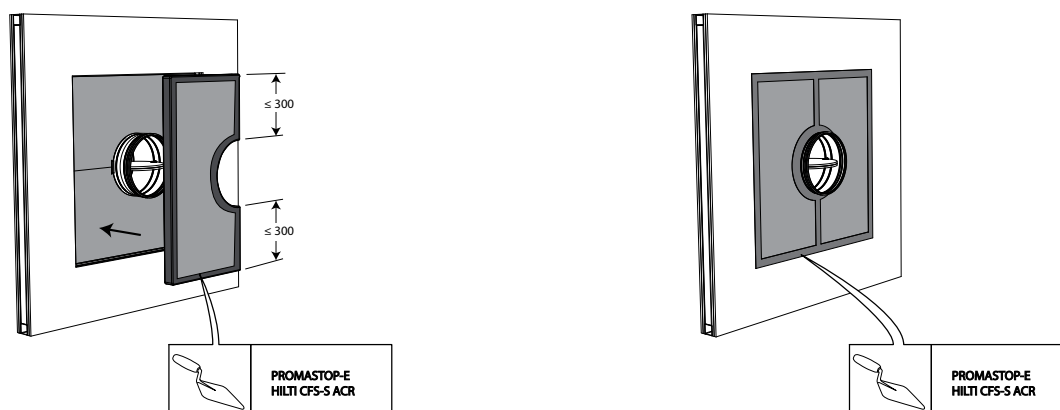
Installation in flexible and rigid wall, sealing with rigid rock wool boards with coating

The product was tested and approved in:

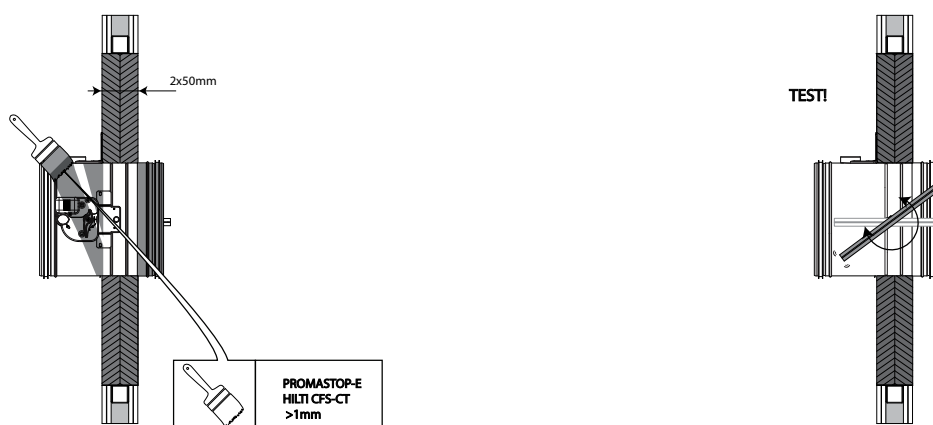
Range	Wall type		Sealing	Classification
Ø 100-315 mm	Rigid wall	Aerated concrete ≥ 100mm	Stone wool + coating ≥ 150 kg/m³ + endothermic coated casing	El 120 (v _e i ↔ o) S - (300 Pa)
Ø 100-315 mm	Flexible wall	Metal studs gypsum plasterboard Type A (EN 520) ≥ 100mm	Stone wool + coating ≥ 150 kg/m³ + endothermic coated casing	El 60 (v _e i ↔ o) S - (300 Pa)
Ø 100-315 mm	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100mm	Stone wool + coating ≥ 150 kg/m³ + endothermic coated casing	El 120 (v _e i ↔ o) S - (300 Pa)



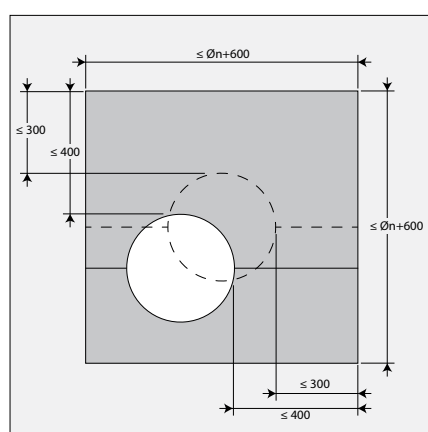
The opening around the damper is sealed with 2 layers of 50 mm-thick mineral wool panels with fire resistant coating on one side (type PROMASTOP-CB 50 or HILTI CFS-CT B).



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



The casing of the fire damper is coated with a layer (>1 mm) of endothermic coating (type PROMASTOP-E or HILTI CFS-CT).

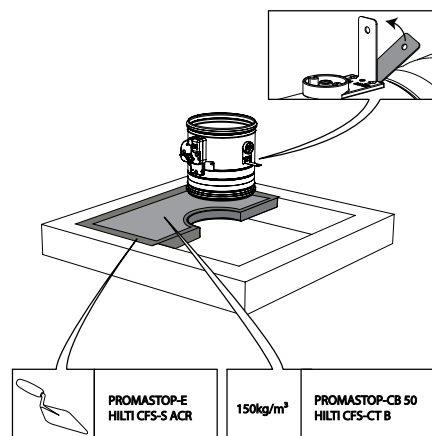
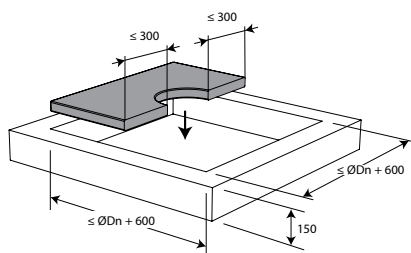


The damper does not need to be centered in the opening (with max dimensions fire damper + 600 mm). The maximal distance between the damper and the edge of the opening is 400 mm.

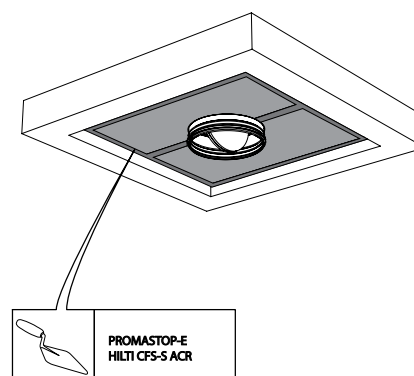
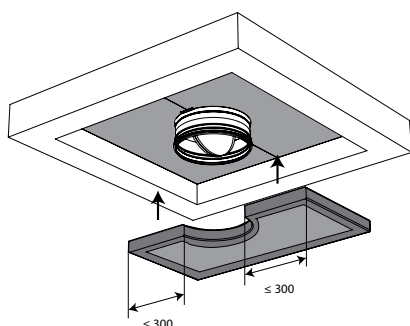
Installation in rigid floor, sealing with rigid rock wool boards with coating

The product was tested and approved in:

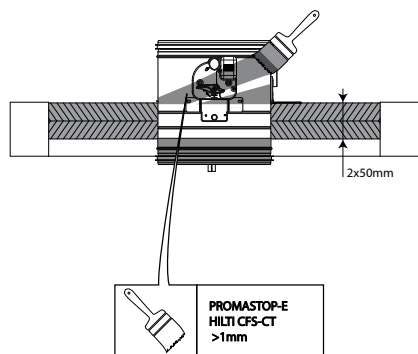
Range	Wall type	Sealing	Classification
Ø 100-315 mm	Rigid floor	Aerated concrete ≥ 150mm	Stone wool + coating ≥ 150 kg/m³ + endothermic coated casing
			El 120 (h _o i ↔ o) S - (300 Pa)



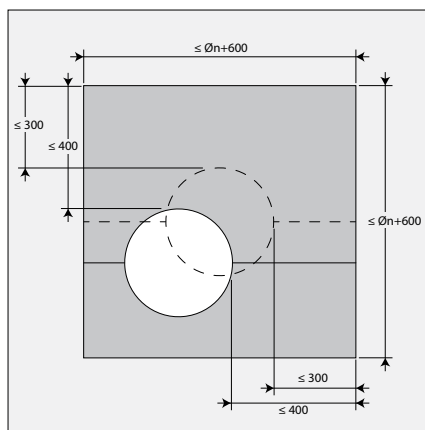
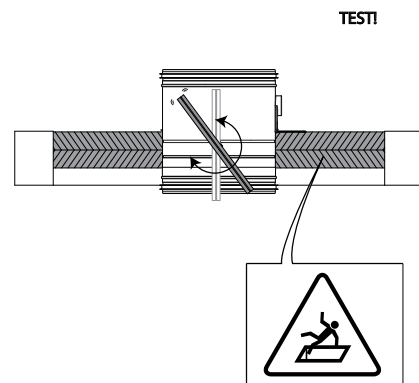
The opening around the damper is sealed with 2 layers of 50 mm-thick mineral wool panels with fire resistant coating on one side (type PROMASTOP-CB 50 or HILTI CFS-CT B).



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



The casing of the fire damper is coated with a layer (>1 mm) of endothermic coating (type PROMASTOP-E or HILTI CFS-CT).

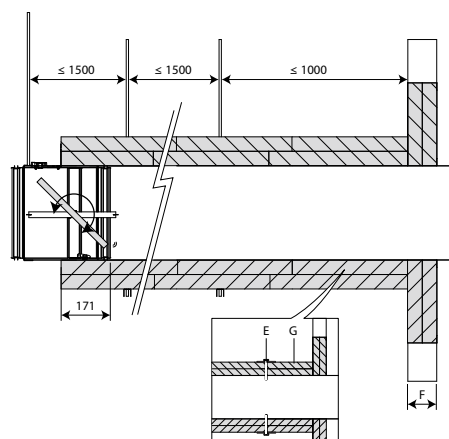


The damper does not need to be centered in the opening (with max dimensions fire damper + 600 mm). The maximal distance between the damper and the edge of the opening is 400 mm.

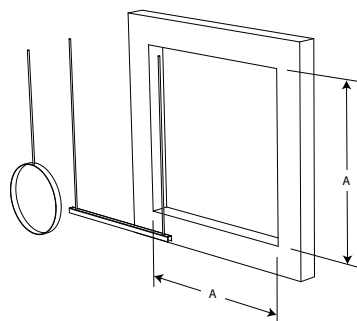
Installation remote from the wall, sealing and insulation with rigid rock wool boards with coating

The product was tested and approved in:

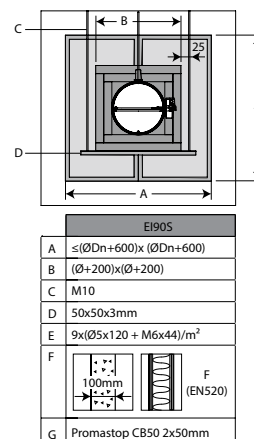
Range	Wall type	Sealing	Classification
Ø 100-315 mm	Rigid wall	Aerated concrete ≥ 100mm	Galvanised duct + PROMASTOP®-CB 2x50mm
Ø 100-315 mm	Flexible wall	Metal studs gypsum plasterboard Type F (EN 520) ≥ 100mm	Galvanised duct + PROMASTOP®-CB 2x50mm



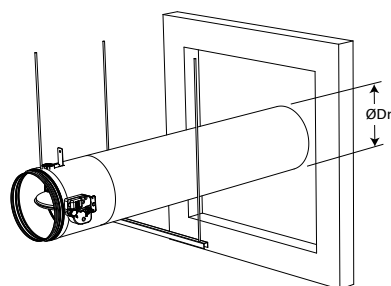
1.



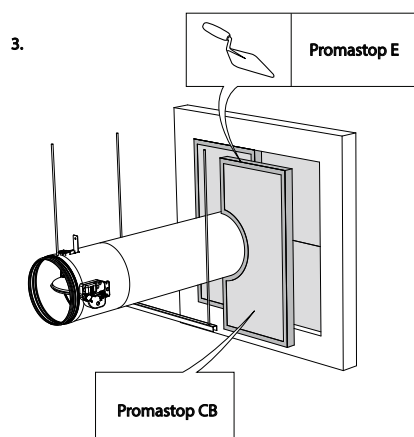
1. An opening with maximal dimensions "A" is made in the wall. For a light partition wall, follow the wall assembly under "Installation in flexible or rigid wall - Sealing with fire resistant rigid panels of stone wool".



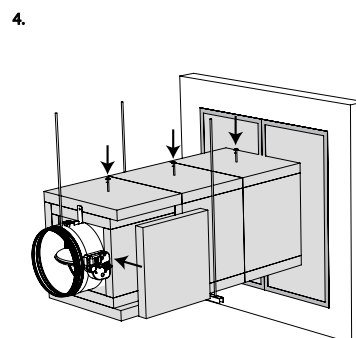
2.



2. The fire damper is mounted remote from the wall at the end of a metal duct. The fire damper is supported by a clamping ring of the same diameter as the damper, held in place by threaded rods "C". The duct is supported every 1500 mm. The suspensions consist of threaded rods "C" and U-shaped steel profiles "D". A free space of maximum 25 mm is left between the threaded rods and the vertical walls of the stone wool casing "B".



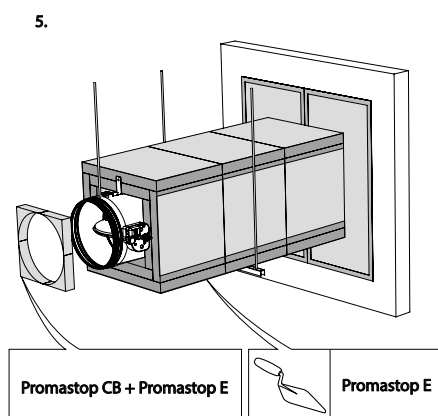
3. The opening around the duct is sealed with stone wool plates type Promastop CB ("G"). The edges are sealed and maintained in place with PROMASTOP E coating.



4. The duct is covered over its entire length with stone wool plates "G". To adhere to the duct, the plates are completely coated on one side with PROMASTOP E and affixed to the duct with steel screws and washers "E".

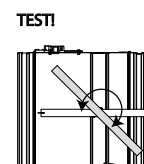
The damper casing is covered with stone wool plates "G" for 171 mm. A free space should be left around the mechanism to guarantee access.

The joints between the plates, between the wall and the plates as well as the screws and washers are filled with coating PROMASTOP E.



5. An additional stone wool panel type "G", coated with PROMASTOP E, is applied in the opening between the tunnel of the damper blade and the stone wool panels.

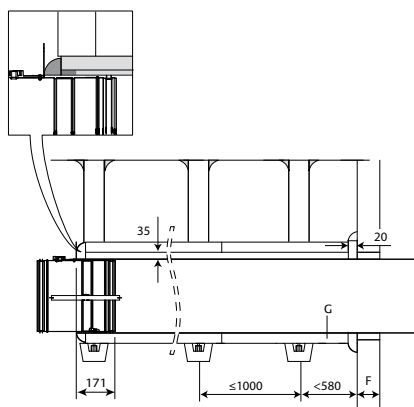
6.



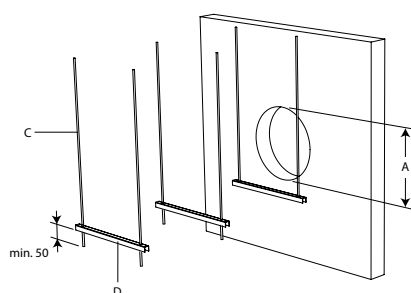
Installation remote from the wall + GEOFLAM

The product was tested and approved in:

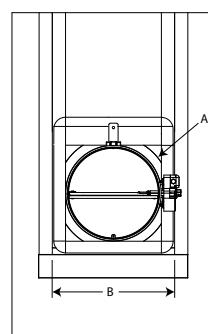
Range	Wall type	Sealing	Classification
Ø 100-315 mm	Rigid wall	Aerated concrete ≥ 100mm Galvanised duct + GEOFLAM® F 45mm + mortar	EI 120 (v _e i ↔ o) S - (500 Pa)



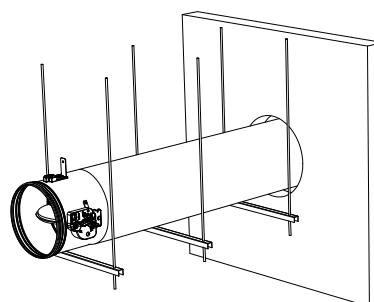
1.




1. An opening with maximal dimensions "A" is made in the wall.

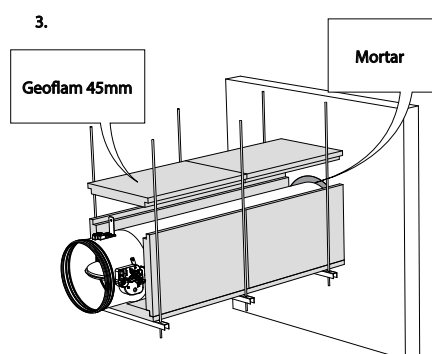


2.

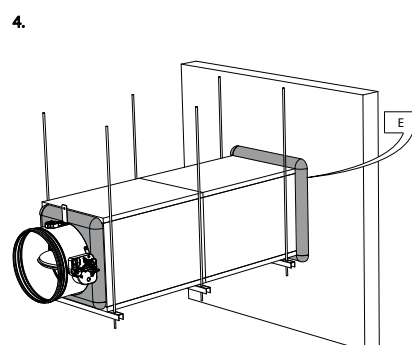


EI120S	
A	≥ ØDn+80
B	
C	M8
D	25x25x2mm
E	Glue, fibrous plaster
F	
G	Geoflam F 45 mm

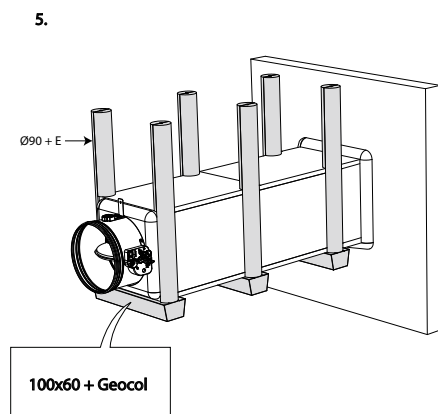
2. The fire damper is mounted remote from the wall at the end of a metal duct. The duct is supported every 1000 mm. The suspensions consist of threaded rods "C" and U-shaped steel profiles "D". A free space of maximum 25 mm is left between the threaded rods and the vertical walls of the casing "B".



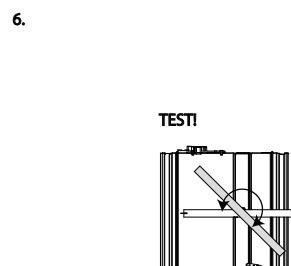
3. The opening around the duct is sealed with standard mortar. The duct is covered with 45 mm thick GEOFLAM F plates "G". The plates adhere to each other with glue and fibrous plaster "E". The damper casing is also covered on a length of 171 mm.



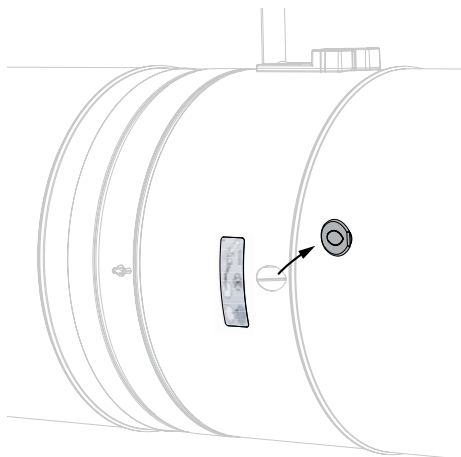
4. The GEOFLAM F plates stop at a distance of 20 mm from the wall. The free space is filled with fibrous plaster. The same filling is applied to seal off the connection between the GEOFLAM F plates and the damper casing.



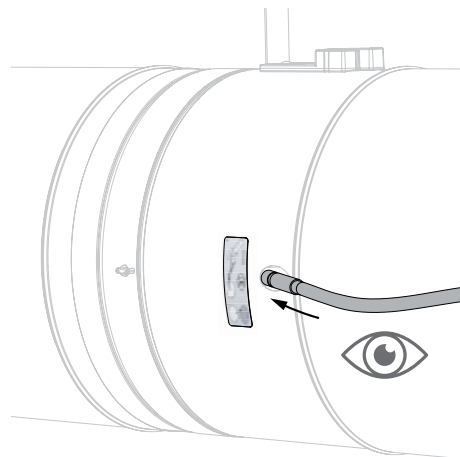
5. The threaded rods are covered with U-shaped plates of GEOFLAM (Ø 90 mm) and affixed with glue and fibrous plaster. The profiles are covered with U-shaped shells GEOFLAM 100 x 60 mm, which are affixed to the underside of the shaft with GEOCOL (GEOSTAFF) cement plaster.



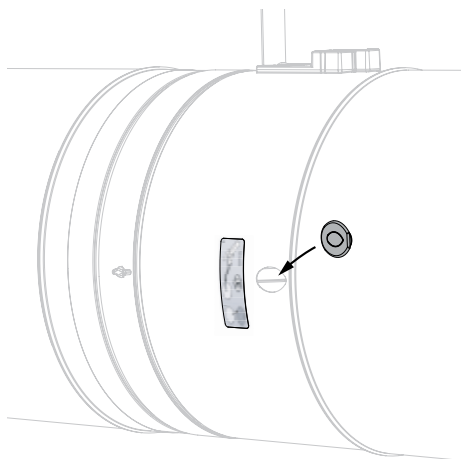
Inspection of the damper



Remove the air-tight plug from the damper.



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



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 two running checks each year.
- Remove dust and all other particles before start-up.
- Follow the local maintenance regulations (i.e. BS9999 Annex V; NF S 61-933) and EN13306.

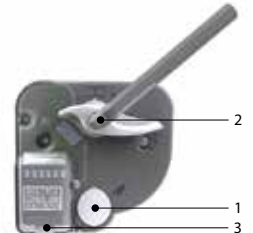
Operation and mechanisms



MFUS(P) Automatic unlocking mechanism

The operating mechanism MFUS(P) automatically unlocks the blade when the temperature in the duct exceeds 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

FDCU

Unipolar beginning and end of range switch

Unlocking

- **manual unlocking:** press the unlocking button (1).
- **automatic unlocking:** the fusible link melts when the temperature reaches 72°C in the duct.
- **remote unlocking:** n/a

Resetting

- **manual resetting:** turn the resetting handle (2) 90° clockwise (or use a 10 mm hex key).
- **motorised resetting:** n/a

Caution:

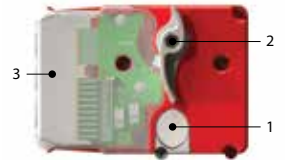
- ⚠ The mechanism may never be tested on its own, without being attached to the damper. Such a test might damage the mechanism or the operator might be injured.



MMAG Upgradeable automatically unlocking mechanism

The fusible link of the upgradeable unlocking mechanism MMAG automatically unlatches the damper blade when the temperature in the duct rises above 72°C. The damper must be reset manually. The automatic MMAG mechanism is easy to upgrade to a: - Remote controlled mechanism (remote electrical unlocking). - Motorised mechanism (remote resetting).

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



Options - at the time of order

VD	Natural magnet 24/48 V DC (order with FDCU)
VM	Electromagnet 24/48 V DC (order with FDCU)
FDCU	Unipolar beginning and end of range switch
FDCB	Bipolar beginning and end of range switch (incl. FDCU)
ME	Resetting motor ME 24V/48V (DC)

Unlocking

- **manual unlocking:** press the unlocking button (1).
- **automatic unlocking:** the fusible link melts when the temperature reaches 72°C in the duct.
- **remote unlocking:** option: by sending an electrical impulse (VD) or by interrupting the power supply (VM) to the magnet.

Resetting

- **manual resetting:** turn the resetting handle (2) 90° clockwise (or use a 10 mm hex key).
- **motorised resetting:** (option ME MMAG) switch off the power supply for at least 10 sec. Supply the actuator for at least 30 sec. (respect the prescribed voltage and polarity). The resetting stops automatically if a torque >15 Nm is detected.

Caution:

- ⚠ Switch off the power supply after resetting.
- ⚠ Switch off the power supply for at least 15 sec. in between each resetting cycle.

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.



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 ($\varnothing \leq 400$ mm or $W+H \leq 1200$ 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	Bipolar beginning and end of range switch
IXI-R1	Universal field controller (Modbus, BACnet or analog connection), pre-mounted on the damper.
IXI-R2	Universal field controller (Modbus, BACnet), pre-mounted on the damper and with a connection for a second damper.

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

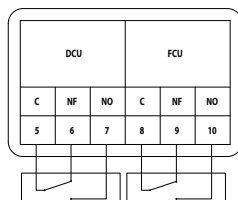
Caution:

- ⚠ 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.

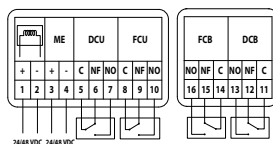
	prod. < 1/7/2015				prod. ≥ 1/7/2015			
	CR60(1s) CR120	CU-LT CU-LT-1s	CR2≤400 CU2≤1200	CR2>400 CU2>1200	CR60(1s) CR120	CU-LT CU-LT-1s	CR2≤400 CU2≤1200	CR2>400 CU2>1200
Kit BFL					●	●	●	
Kit BFN	●	●	●					●
Kit BF				●				

Electrical connection

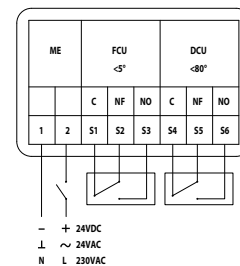
MFUS(P)



MMAG



BFL(T)



MEC	Nominal voltage motor	Nominal voltage magnet	Power consumption (stand-by)	Power consumption (operating)	standard switches	
MFUS	N/A	N/A	N/A	N/A	1mA...1A, DC 5V...AC 48V	
MMAG	24/48 V DC (automatic conversion)	24/48 V DC (automatic conversion in FDCU printed circuit / entrance capacity: 25 µF)	VM: 1,9W / VD: - / ME: -	VM: - / VD: 3,5W / ME: Pmax 10W (24V)/15W (48V)	1mA...500mA, DC 5V...AC 48V	
BFL24	24 V AC / 24 V DC	N/A	0,7W	2,5W	1mA...3A, AC 250V	
BFL24-ST	24 V AC / 24 V DC	N/A	0,7W	2,5W	1mA...3A, AC 250V	
BFLT24	24 V AC / 24 V DC	N/A	0,8W	2,5W	1mA...3A, AC 250V	
BFLT24-ST	24 V AC / 24 V DC	N/A	0,8W	2,5W	1mA...3A, AC 250V	
BFL230	230 V AC	N/A	1,1W	3,5W	1mA...3A, AC 250V	
BFLT230	230 V AC	N/A	1,4W	4W	1mA...3A, AC 250V	

	running time motor	running time spring	noise level motor	noise level spring	connection supply / control	Connection auxiliary switch	Protection class
	N/A	1 s	N/A	N/A			IP 42
	< 30 s	1 s	≤ 66 dB (A)	N/A			IP 42
	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.34 mm ² (halogen-free)	1 m, 6 x 0.75 mm ² (halogen-free)	IP 54
	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.75 mm ² (halogen-free)	1 m, 6 x 0.75 mm ² (halogen-free)	IP 54
	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.34 mm ² (halogen-free)	1 m, 6 x 0.75 mm ² (halogen-free)	IP 54
	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.75 mm ² (halogen-free)	1 m, 6 x 0.75 mm ² (halogen-free)	IP 54
	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.75 mm ² (halogen-free)	1 m, 6 x 0.75 mm ² (halogen-free)	IP 54
	< 60 s	20 s	≤ 45 dB (A)	ca. 63 dB (A)	1 m, 2 x 0.75 mm ² (halogen-free)	1 m, 6 x 0.75 mm ² (halogen-free)	IP 54

Weights

CR120 + MFUS

ØDn [mm]	100	125	150	160	180	200	250	300	315	
kg	1,6	1,8	2,0	2,1	2,5	2,6	3,3	4,1	4,2	

CR120 + MMAG

ØDn [mm]	100	125	150	160	180	200	250	300	315	
kg	2,1	2,3	2,5	2,6	3,0	3,1	3,8	4,6	4,7	

CR120 + BFL24

ØDn [mm]	100	125	150	160	180	200	250	300	315	
kg	2,3	2,5	2,7	2,8	3,2	3,3	4,0	4,8	4,9	

CR120 + BFL24-ST

ØDn [mm]	100	125	150	160	180	200	250	300	315	
kg	2,3	2,5	2,7	2,8	3,2	3,3	4,0	4,8	4,9	

CR120 + BFLT24

ØDn [mm]	100	125	150	160	180	200	250	300	315	
kg	2,4	2,6	2,8	2,9	3,3	3,4	4,1	4,9	5,0	

CR120 + BFLT24-ST

ØDn [mm]	100	125	150	160	180	200	250	300	315	
kg	2,4	2,6	2,8	2,9	3,3	3,4	4,1	4,9	5,0	

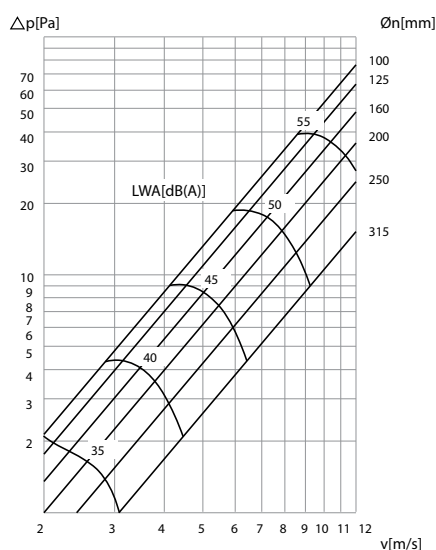
CR120 + BFL230

ØDn [mm]	100	125	150	160	180	200	250	300	315	
kg	2,3	2,5	2,7	2,8	3,2	3,3	4,0	4,8	4,9	

CR120 + BFLT230

ØDn [mm]	100	125	150	160	180	200	250	300	315	
kg	2,4	2,6	2,8	2,9	3,3	3,4	4,1	4,9	5,0	

Selection graphs



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

$\varnothing Dn$ [mm]	100	125	150	160	180	200	250	300	315	
ζ [-]	0,87	0,73	0,6	0,56	0,48	0,42	0,29	0,19	0,18	

Example

Data

$Dn = 250 \text{ mm}$, $v = 5 \text{ m/s}$

Requested

$\Delta p = \text{ca. } 4.3 \text{ Pa}$ (Cfr. selection graph)

$LWA = \text{ca. } 42 \text{ dB(A)}$

Calculation

$$\Delta p = 0.29 \cdot (5 \text{ m/s})^2 \cdot 0.6 = 4.35 \text{ Pa}$$

Selection data

CR120 - A-weighted sound power level in the duct

$\varnothing Dn$ [mm]	100	125	150	160	180	200	250	300	315		
S_n [m ²]	0,0047	0,0082	0,0128	0,0149	0,0195	0,0248	0,0407	0,0605	0,0672		
S_n [%]	61,06	68,23	71,43	74,79	77,41	79,58	83,52	86,18	86,82		
Q [m ³ /h]	116,83	200,68	312,00	362,52	482,00	615,95	1.043,33	1.606,00	1.796,56		
Δp [Pa]	9,01	9,03	9,00	8,45	8,00	7,41	6,00	5,00	4,34		45 dB
Q [m ³ /h]	81,14	139,37	217,00	251,77	335,00	427,76	724,57	1.115,00	1.247,67		
Δp [Pa]	4,35	4,35	4,00	4,07	4,00	3,57	2,89	2,00	2,09		40 dB
Q [m ³ /h]	56,35	96,79	151,00	174,85	232,00	297,07	503,20	774,00	866,49		
Δp [Pa]	2,10	2,10	2,00	1,97	2,00	1,72	1,39	1,00	1,01		35 dB
Q [m ³ /h]	39,13	67,22	105,00	121,43	161,00	206,31	349,46	538,00	601,76		
Δp [Pa]	1,01	1,01	1,00	0,95	1,00	0,83	0,67	1,00	0,49		30 dB
Q [m ³ /h]	27,18	46,68	73,00	84,33	112,00	143,28	242,70	374,00	417,91		
Δp [Pa]	0,49	0,49	0,00	0,46	0,00	0,40	0,32	0,00	0,23		25 dB

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

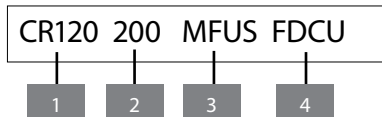
Correction factor ΔL

Correction factor ΔL

To obtain the sound power level for the octave midband: $LW_{oct} = \Delta L + L_{wa}$

[Hz]	63	125	250	500	1000	2000	4000	8000
2 - 4 m/s	24	7	-6	-16	-23	-26	-25	-18
6 - 8 m/s	20	10	0	-6	-10	-14	-21	-24
10 - 12 m/s	14	6	0	-4	-6	-9	-13	-19

Sample order



1. product
2. diameter
3. mechanism type
4. option: type magnet and voltage
option: resetting motor
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.



BC1-606-0464-15650.02-2517



Clapets coupe-feu et
Volets de désenfumage D.A.S.
Organisme Certificateur
AFNOR Certification - www.marquage-nf.com

05.20



SC0649-15



Z-56.4212-1009



9001: 2008

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.marquage-nf.com>; Phone: +33 (0)1.41.62.80.00, Fax: +33 (0)1.49.17.90.00, Email: certification@afnor.org

If the product is manipulated in any other way than described in this manual, Rf-Technologies will decline any responsibility and the guarantee will expire!