

# VRE

Circular E600 60/120 S single compartment smoke control damper.



CE  
1812







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## Explanation of the abbreviations and pictograms

Wn = nominal width	hod = horizontal duct	OP = option (delivered with the product)
Hn = nominal height	vew = vertical wall penetration	KIT = kit (delivered separately for repair or upgrade)
Sn = free air passage	V = volt	PG = connection flange to the duct
E = integrity	W = watt	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)
I = thermal insulation	V AC = Volt alternating current	Cal-Sil = calcium silicate
S = smoke leakage	V DC = Volt direct current	$\zeta [-]$ = pressure loss coefficient
60/120 = fire resistance time	E.TELE = power supply magnet	Q = air flow
Pa = pascal	E.ALIM = power supply motor	$\Delta P$ = static pressure drop
o -> i = meets the criteria from the outside (o) to the inside (i)	Auto = automatic	v = air speed in the duct
i <-> o = fire side not important	Tele = remote controlled	Lwa = A-weighted sound power level
AA = automatic activation	Pnom = nominal capacity	ME = motorised
multi = multi compartment	Pmax = maximum capacity	H = habitat
ved = vertical duct	DAS MOD = modular product	

	optimal acoustic performance		optimal free air passage and minimal pressure loss
	air-tightness class C according to EN1751		suitable for installation remote from the wall or floor

# DECLARATION OF PERFORMANCE

CE\_DoP\_Rf-t\_V31\_EN = B-04/2021

1. Unique identification code of the product-type:	VRE
2. Intended use/es:	Smoke control damper to be used in smoke control systems, in single-compartment applications.
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 12101-8:2011, Effects with identification number 1812; Effects_1812_CPR_1820
6. Declared performance according to EN 12101-8:2011	(fire resistance according to EN 1366-10, classification according to EN 13501-4)
<b>Essential characteristics</b>	<b>Performance</b>
<b>Range</b>	<b>Classification</b>
Ø 100-630 mm	E600 60/120 (V <sub>ei</sub> , h <sub>ei</sub> , j ↔ o) S500 C10000 AA, single
1	E600 60/120 (V <sub>ei</sub> , h <sub>ei</sub> , j ↔ o) S500 Cmod AA, single
Harmonised standard EN 12101-8:2011	



1 Type of installation: 0-180°

Nominal activation conditions/sensitivity:	Pass - automatic activation
Response delay (response time); closure time	Pass - automatic activation
Operational reliability; cycling	C10000; Belimo BEE 24/230 (with load); C10000; Belimo BEN 24/230 (no load); Cmod; Belimo BEE 24/230 SR (with load)
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 C

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



*Mathieu Steenland*

Oosterzele, 04/2021

## Product presentation VRE

### Product presentation VRE

Circular E600 single compartment smoke control damper with a fire resistance of 60 and 120 minutes, available in diameters from 100 to 630 mm. The VRE damper is suitable for remote-mounting and available in a "C10.000" or "Cmod" version for combination with comfort ventilation or variable air volume control.

Smoke evacuation shutters and dampers are suitable for use in ventilating protected lobbies, venting to shafts either naturally or mechanically. They open to evacuate smoke in emergency situations whilst maintaining fire resistant integrity in standby position.

- ✓ easy to install
- ✓ optimal free air passage and minimal pressure loss
- ✓ optimal acoustic performance
- ✓ air-tightness class C according to EN1751



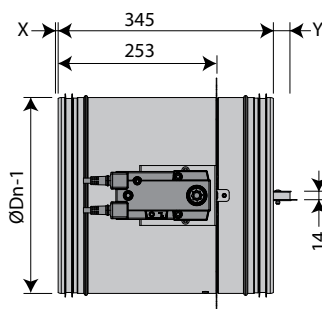
- suitable for installation remote from the wall or floor
- tested according to EN 1366-10
- compliant with EN 12101-8
- maintenance-free
- for indoor use

1. casing in galvanised steel
2. damper blade
3. operating mechanism
4. rubber sealing ring
5. intumescent strip
6. sealing ring for damper blade



### Range and dimensions VRE

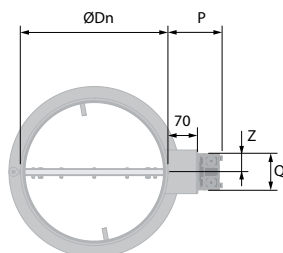
Exceeding blade: X = on the mechanism side, Y = on the wall side



ØDn (mm)	250	315	400	500	630
x	-	-	-	30	95
y	2	35	77	127	192








ØDn (mm)	100	125	160	200	250	315	400	500	630
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#### VRE + BEE



	BEN	BEE
<b>P</b>	119	123
<b>Q</b>	80	98
<b>Z</b>	40	49

## Evolution - kits

	<b>KITS BEN24</b>	Servomotor BEN 24V
	<b>KITS BEN230</b>	Servomotor BEN 230V
	<b>KITS BEE24</b>	Servomotor BEE 24V
	<b>KITS BEE230</b>	Servomotor BEE 230V
	<b>KITS BEE24-SR-10V</b>	Modulating actuator BEE24-SR-10V for control of the air flow
	<b>KITS BEE24-SR-0V</b>	Modulating actuator BEE24-RS-0V for control of the air flow
	<b>KITS SN2 BFL/BFN</b>	Auxiliary limit switch 'open/closed'

## Storage and handling

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### Storage and handling

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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

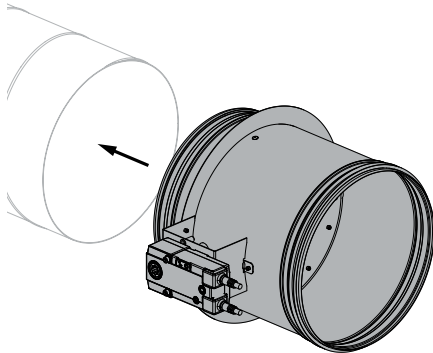
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#### General points

- The installation must comply with the installation manual and the classification report.
- The installation of the smoke evacuation duct must comply with the classification report delivered by the manufacturer.
- Axis orientation: see the declaration of performance.
- Avoid the obstruction of adjoining smoke evacuation ducts.
- Verify if the blade can move freely.
- Rf-t smoke dampers may be applied to smoke evacuation ducts that have been tested according to EN 1366-8 and EN 1366-9 as appropriate, constructed from similar materials with a fire resistance, thickness and density equal or superior to these of the tested materials.
  - ⚠ Caution: when fitting, the product should be handled with care and remain protected from any sealing products.
  - ⚠ Caution: before putting the installation into operation, clean off all the dust and dirt.
  - ⚠ Caution: bear in mind the blade's clearance inside the smoke evacuation duct.

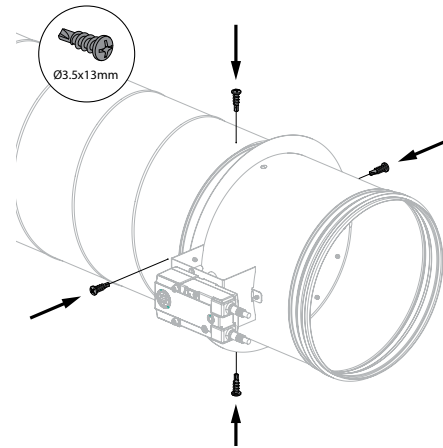
## Installation remote from the wall or the floor

1



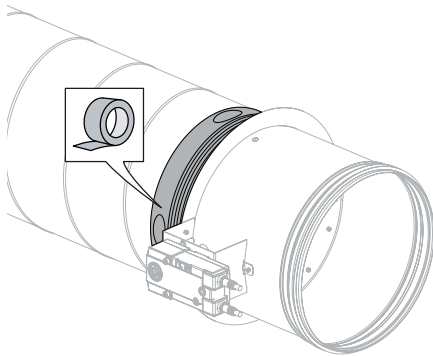
1. Slide the damper in the smoke evacuation duct.

2



2. Screw the damper using 4 Ø 3.5 mm screws through the wall of the damper and the smoke evacuation duct.

3



3. Seal the transition between smoke control damper and duct by means of self-adhesive aluminum tape, width  $\geq 50$  mm.

**⚠ Caution:** This applies to both sides of the damper.

## Maintenance

- No specific maintenance required.
- Schedule at least two running visual 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



### BEN/BEE Remotely controlled servomotor

The servomotor BEN/BEE is specially designed to remotely control fire dampers.

1. access for manual resetting



#### Opening

- **manual opening:** turn the enclosed handle anti-clockwise
- **remote opening:** power cables 1 and 2.

#### Caution:

⚠ Do not use a drill or screwing machine.

#### Closing

- **manual closing:** turn the enclosed handle clockwise.
- **motorised closing:** power cables 1 and 3.

#### Caution:

⚠ Do not use a drill or screwing machine.



### BEE-SR-10V Remotely controlled modulating actuator

The modulating actuator BEE-SR is specially designed to remotely control fire dampers. The position of the damper blade is adjustable by means of a 0 to 10 V connection.

1. access for manual resetting



#### Opening

- **manual opening:** turn the enclosed handle anti-clockwise.
- **remote opening:** apply 10 V to cable 3.

#### Caution:

⚠ Do not use a drill or screwing machine.

#### Closing

- **manual closing:** turn the enclosed handle clockwise.
- **motorised closing:** apply (0)2 V to cable 3.

#### Caution:

⚠ Do not use a drill or screwing machine.





## BEE-SR-0V Remotely controlled modulating actuator

The modulating actuator BEE-SR is specially designed to remotely control fire dampers. The position of the damper blade is adjustable by means of a 0 to 10 V connection.

1. access for manual resetting



### Opening

- **manual opening:** turn the enclosed handle anti-clockwise.
- **remote opening:** apply (0)2 V to cable 3.

#### Caution:

⚠ Do not use a drill or screwing machine.

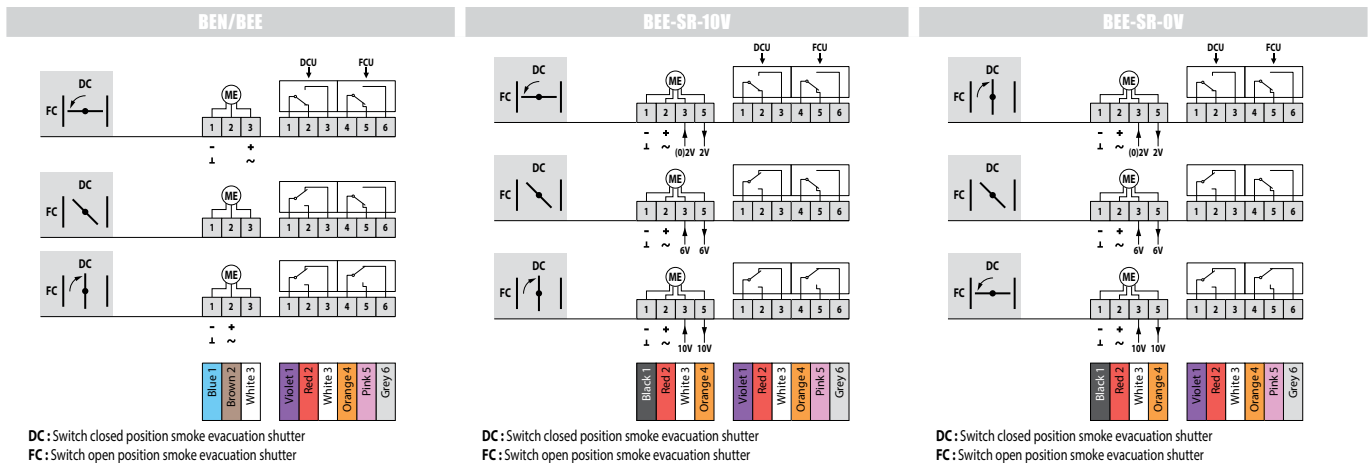
### Closing

- **manual closing:** turn the enclosed handle clockwise.
- **motorised closing:** apply 10 V to cable 3.

#### Caution:

⚠ Do not use a drill or screwing machine.

## Electrical connection



MEC	Nominal voltage motor	Power consumption (stand-by)	Power consumption (operating)	Standard switches	Resetting time motor
BEN24	24 V AC/DC	0,1W	3W	1mA...3A, AC 250V	< 30 s (90°)
BEN230	230 V AC	0,4W	4W	1mA...3A, AC 250V	< 30 s (90°)
BEE24	24 V AC/DC	0,1W	2,5W	1mA...3A, AC 250V	< 60 s (90°)
BEE230	230 V AC	0,4W	3,5W	1mA...3A, AC 250V	< 60 s (90°)
BEE24-SR-10V	24 V AC/DC	0,3W	3W	1mA...3A, AC 250V	< 60 s (90°)
BEE24-SR-0V	24 V AC/DC	0,3W	3W	1mA...3A, AC 250V	< 60 s (90°)

MEC	Noise level motor	Cable supply / control	Cable auxiliary switch	Protection class
BEN24	58 dB (A)	1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
BEN230	58 dB (A)	1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
BEE24	58 dB (A)	1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
BEE230	58 dB (A)	1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
BEE24-SR-10V	58 dB (A)	1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54
BEE24-SR-0V	58 dB (A)	1 m, 3 x 0.75 mm <sup>2</sup> (halogen-free)	1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	IP 54

## Weights

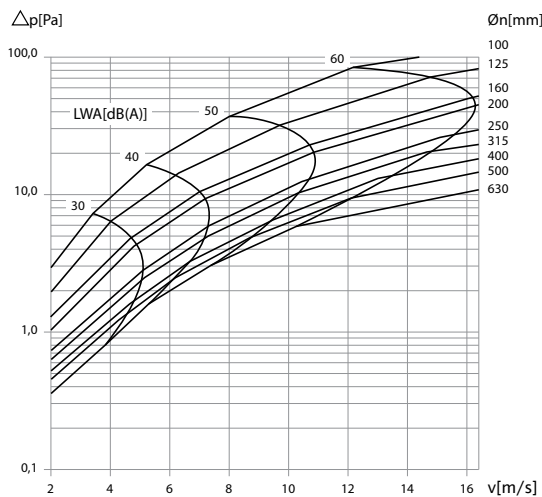
## VRE + BEN

$\varnothing D_n$ [mm]	100	125	160	200	250	315	400	500	630	
kg	3,4	3,9	4,6	5,4	6,4	7,8	9,5	11,5	14,1	

## VRE + BEE

$\varnothing D_n$ [mm]	100	125	160	200	250	315	400	500	630	
kg	3,6	4,1	4,8	5,6	6,6	8,0	9,7	11,7	14,3	

## Selection graphs



$\varnothing D_n$ [mm]	100	125	160	200	250	315	400	500	630	
$\zeta$ [-]	0,9559	0,5551	0,328	0,2812	0,1908	0,1597	0,1274	0,1078	0,0932	

## Selection data

## VRE - A-weighted sound power level in the duct

$\varnothing D_n$ [mm]	100	125	160	200	250	315	400	500	630		
$S_n$ [m <sup>2</sup> ]	0,0061	0,0101	0,0174	0,0281	0,0450	0,0728	0,1184	0,1875	0,3002		
$S_n$ [%]	77,00	82,00	86,00	89,00	92,00	93,00	94,00	95,00	96,00		
Q [m <sup>3</sup> /h]	344,16	652,52	1.160,29	1.850,40	2.664,86	4.107,60	5.881,06	8.545,92	11.503,45		60 dB
$\Delta p$ [Pa]	84,40	71,97	50,14	44,80	26,09	20,51	13,11	9,45	5,86		
Q [m <sup>3</sup> /h]	225,36	428,97	775,21	1.227,60	1.846,66	2.898,00	4.288,65	6.135,53	8.268,66		50 dB
$\Delta p$ [Pa]	37,30	32,30	23,04	20,40	12,51	10,32	6,57	4,84	3,05		
Q [m <sup>3</sup> /h]	147,60	278,76	506,67	813,60	1.292,49	2.044,80	3.026,48	4.361,31	5.943,60		40 dB
$\Delta p$ [Pa]	16,50	14,40	10,51	9,30	5,95	5,00	3,27	2,46	1,60		
Q [m <sup>3</sup> /h]	96,48	176,71	337,30	540,00	897,71	1.443,60	2.103,61	3.018,28	4.273,20		30 dB
$\Delta p$ [Pa]	7,30	6,45	4,79	4,20	2,81	2,50	1,60	1,22	0,80		

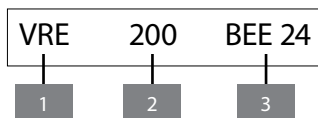
Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level for the respective dimension.

## Correction factor $\Delta L$

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

m/s \  Hz	63	125	250	500	1000	2000	4000	8000
2-4	15,00	5,33	0,67	-2,67	-7,00	-11,33	-13,33	-12,33
6-8	13,65	5,65	1,90	-2,73	-7,98	-11,23	-14,10	-16,35
10-12	11,08	4,88	1,68	-2,92	-6,72	-8,72	-13,32	-19,52

## Sample order



1. product
2. diameter
3. mechanism type

## Approvals and certificates

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



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