

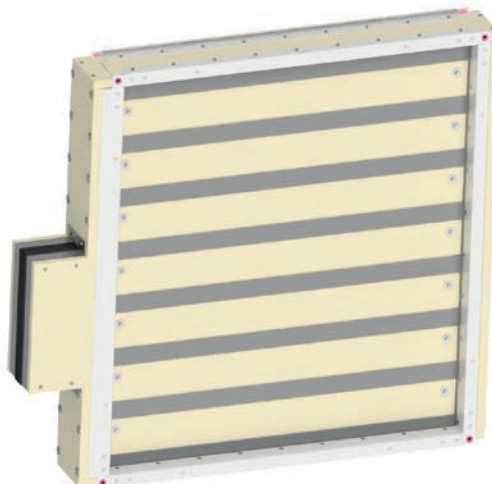
A large, stylized graphic element in the bottom left corner, consisting of a white 'L' shape with a red arrow pointing towards the bottom right, set against a red background.

FIRE VENTILATION SYSTEMS
FIRE DAMPERS AND FIRE VALVES

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems



downloadable models
on the website
under the designer zone tab



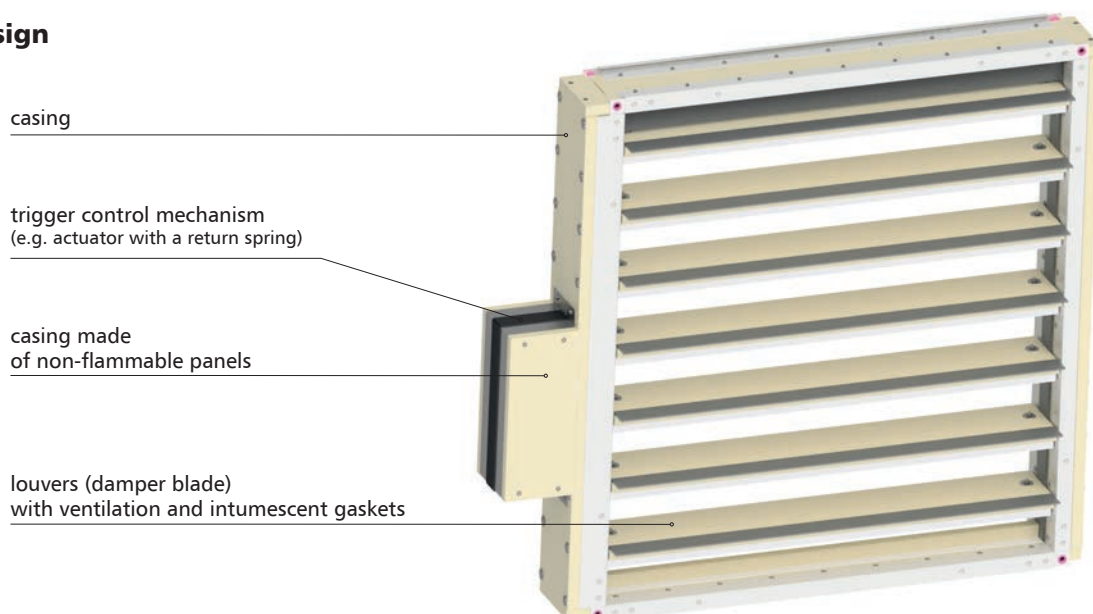
» **EIS120, E₆₀₀ 120**

- » Fire resistance class: EI120 (v_{ew} i↔o)S1000C₁₀₀₀₀AAmulti, EI120 (v_{ed} h_{od} i↔o)S1000C₁₀₀₀₀AAmulti, EI120(v_{edw} i↔o)S1000C₁₀₀₀₀AAmulti.
- » Certificate of constancy of performance 2434-CPR-0031.
- » Dampers certified for compliance with EN 12101-8.
- » Dampers rated under EN 13501-4 and tested under EN 1366-10.
- » Narrow louvered smoke control dampers for fire ventilation systems.
- » Certified installation on smoke ventilation ducts.
- » Dampers certified for installation in batteries.
- » Permitted operation with both vertical and horizontal axis of rotation.

13.1| **Application**

mcr WIP PRO/V, mcr WIP PRO/V-M multi-blade smoke control dampers are intended for installation in automatically operated fire ventilation systems. mcr WIP PRO/V dampers are used in fire ventilation systems, while dampers marked as mcr WIP PRO/V-M are used in mixed, fire and comfort ventilation systems. When installed, these devices prevent the propagation of fire, smoke and fire gases to adjacent areas. During normal operation, the fire damper blade is in the open or closed position, depending on its function. The fire damper blade in the fire compartment is opened, whereas in other areas the blades are closed. Admissible flow velocity in the connected duct is 12 m/s. Due to their design, mcr WIP PRO/V, mcr WIP PRO/V-M fire dampers are intended for use in systems, where the components such as a silencer, bend or supply and extraction grille are installed downstream of the smoke control damper. Dampers may be installed in smoke extract ducts, shafts and at system ends.

13.2| **Design**



mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

The multi-blade mcr WIP PRO/V, mcr WIP PRO/V-M damper consists of a rectangular casing made of two steel sections connected with a non-combustible plate using rivets and galvanized steel sheet fasteners, a set of movable blades rotating around their axes and a trigger control mechanism. The damper casing is made of fire resistant panels and galvanized "C" shape metal sheet profiles. The device is reinforced on both sides with steel flat bar corners. Intumescent and ventilation gaskets are installed on the inside of the damper. Each damper blade is made of two fire resistant panels, which are displaced against each other. An intumescent gasket and ventilation gasket are attached with staples along the entire blade length. The damper blades revolve on their own axes, which consist of two steel pins. Each pin is mounted in a sleeve installed on the vertical side H of the fire damper casing.

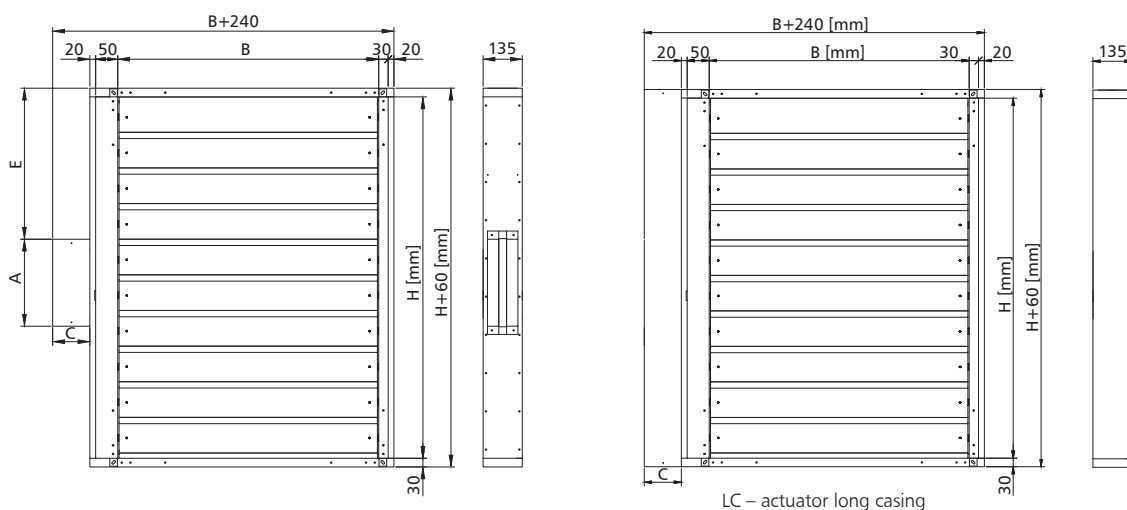
13.3 | Versions

13.3.1 | Damper closing and opening with an actuator

During normal operation, the smoke control dampers are opened or closed. In case of fire, the smoke control damper louvers are opened in the fire compartment area and closed in the other areas - the smoke control damper is released remotely by feeding the supply voltage to the trigger control mechanism.

mcr WIP PRO/V, mcr WIP PRO/V-M smoke control damper are equipped with a trigger control mechanism in the form of a BE, BEE, BEN, MLE or ME axial actuator without the return spring (24 V AC/DC or 230 V AC). The BE, BEE, BEN, MLE or ME series actuators are equipped with limit switches used to monitor the damper blade position. Furthermore, a mechanical position indicator is placed on the actuator.

mcr WIP PRO/V, mcr WIP PRO/V-M smoke control dampers with BE, BEE, BEN, MLE or ME actuators can be opened/closed by supplying voltage to the actuator terminals. Dampers with those actuators may be opened/closed manually using a key.



insert symmetrically against the wall axis

dimensions in [mm]

mechanism	A	C	E
BE, BEE, BEN, ME, MLE	298	120	formula

for an even number of blades
$E [mm] = (H/2 - 123) + 30$
for an odd number of blades
$E [mm] = (H/2 - 61,5) + 30$

Number of blades = $H/123$

13.4 | Dimensions

» Rectangular dampers:

- » nominal width B: from 110 mm to 1250 mm
- » nominal height H from 270 mm to 1250 mm
- » maximum single damper cross-section surface up to 1.5625 m²

Apart from the standard dimensions, fire dampers may be manufactured with intermediate dimensions (at 10 mm increments within the given ranges).

Square dampers may also be additionally equipped with round connection collars allowing for so called "bare end" connection to round ducts.

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

13.5 | Installation

mcr WIP PRO/V rectangular dampers are rated EI120(v_{ew} $i \leftrightarrow o$)S1000C₁₀₀₀₀AAmulti if installed in wall/shaft partitions made of concrete, bricks, hollow bricks, masonry or prefabricated slabs with a min. thickness of 125 mm. The mcr WIP PRO/V rectangular dampers are rated EI120(v_{ew} $i \leftrightarrow o$)S1000C₁₀₀₀₀AAmulti if installed in yielding wall/shaft partitions made from gypsum board panels with the thickness of at least 125 mm.

mcr WIP PRO/V rectangular dampers are rated EI120(v_{ed} h_{od} $i \leftrightarrow o$)S1000C₁₀₀₀₀AAmulti if installed in a fireproof duct compliant with EN 1366-8 or EN 1366-9, with fire resistances equal to or lesser than the fire resistance of the damper.

Rectangular dampers mcr WIP PRO/V have been classified in the EI120(v_{edw} $i \leftrightarrow o$)S1000C₁₀₀₀₀AAmulti class when installed in solid building shafts, masonry shafts made of blocks, bricks, or hollow blocks, and flexible walls/shafts made of plasterboard with a minimum thickness of 125 mm and a fire resistance of the damper rating of at least EI120. The battery (set) composed of up to 4 rectangular dampers is rated EI120(v_{ew} $i \rightarrow o$)S1500C₁₀₀₀₀AAmulti if installed in solid partitions, partitions made of concrete, bricks or hollow bricks. mcr WIP PRO/V rectangular dampers are rated E₆₀₀ 120 (v_{ed} $i \leftrightarrow o$) S1000C₁₀₀₀₀AA single in single-zone fire ventilation systems.

* The above mentioned installation must be clearly specified in the design documentation and communicated to the manufacturer when placing the order. The dimensions of the damper BxH (width x height), which is to be installed with a vertical rotation axis, should be provided as if for a damper with a horizontal rotation axis (the power and control mechanism is mounted on the H dimension) with an indication of vertical axis installation.

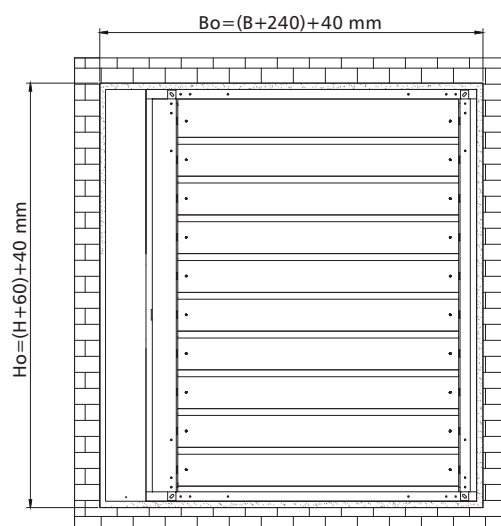
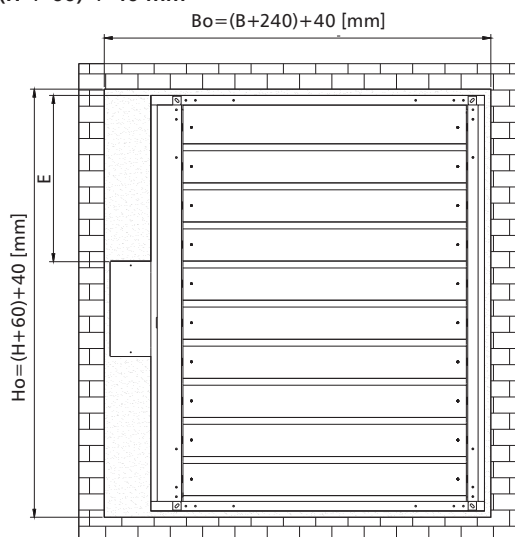
13.5.1 | Preparation of installation openings

The minimum dimensions of the installation opening that permits correct installation of the mcr WIP PRO/V, mcr WIP PRO/V-M damper is:

Preferred

$$Bo = (B + 240) + 40 \text{ mm}$$

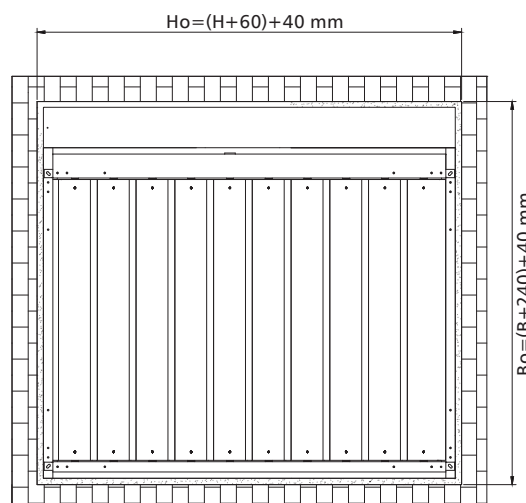
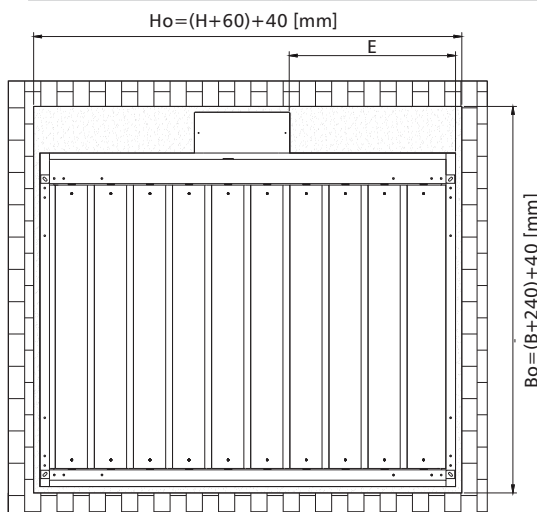
$$Ho = (H + 60) + 40 \text{ mm}$$



v_{ew} damper with a horizontal rotation axis: 110 x 270 to 900 x 1250 [mm], also applicable for versions with LC casing

Dimension E (distance from the top fire damper edge to the edge of the trigger control mechanism box) - depending on the dimension H and the trigger control mechanism used:

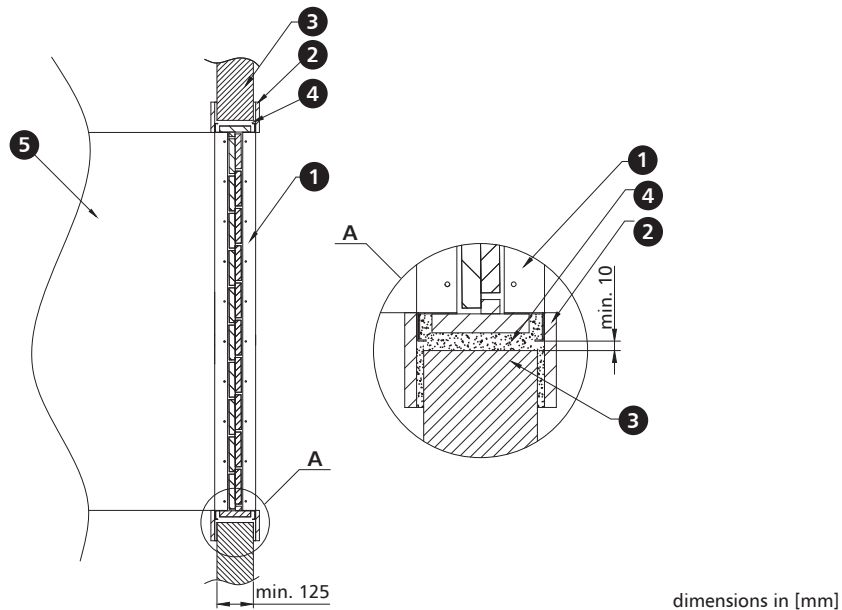
mechanism	for an even number of blades	for an odd number of blades
BE, BEE, BEN	$E \text{ [mm]} = (H/2 - 123) + 30$	$E \text{ [mm]} = (H/2 - 61,5) + 30$



v_{ew} damper with a vertical rotation axis: 110 x 270 to 1250 x 1250 [mm], also applicable for versions with LC casing

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

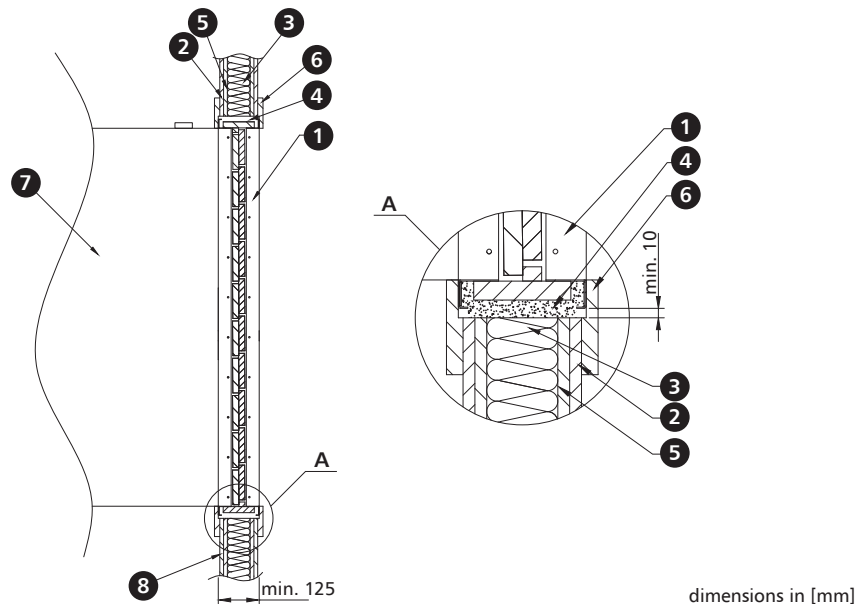
13.5.2 | Sample installation in concrete block or full brick walls



- | | |
|--|---------------------------|
| 1. mcr WIP PRO/V or mcr WIP PRO/V-M smoke control damper | 4. assembly mortar* |
| 2. gypsum board trim 100 x 12.5 mm | 5. smoke ventilation duct |
| 3. solid wall | |

* Recommended damper installation in a wet system is based on assembly mortar on the basis of gypsum or cement. The manufacturer allows for using other materials with parameters that confirm and ensure the appropriate fire resistance rating for the installation method applied.

13.5.3 | Sample installation in light walls

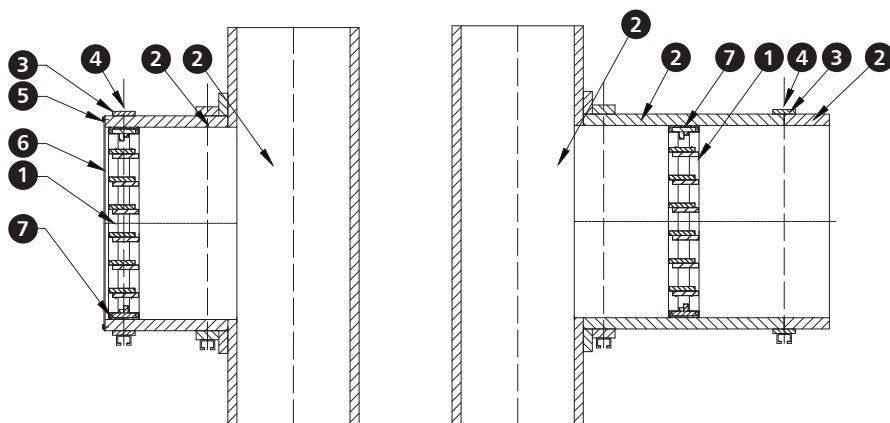


- | | | |
|--|------------------------------------|----------------------------|
| 1. mcr WIP PRO/V or mcr WIP PRO/V-M smoke control damper | 4. installation grout* | 7. smoke ventilation duct |
| 2. gypsum board 12.5 mm | 5. structural profile | 8. gypsum board light wall |
| 3. mineral wool with a density of at least 80 kg/m ³ , A1 class | 6. gypsum board trim 100 x 12.5 mm | |

* Recommended damper installation in a wet system is based on assembly mortar on the basis of gypsum or cement. The manufacturer allows for using other materials with parameters that confirm and ensure the appropriate fire resistance rating for the installation method applied.

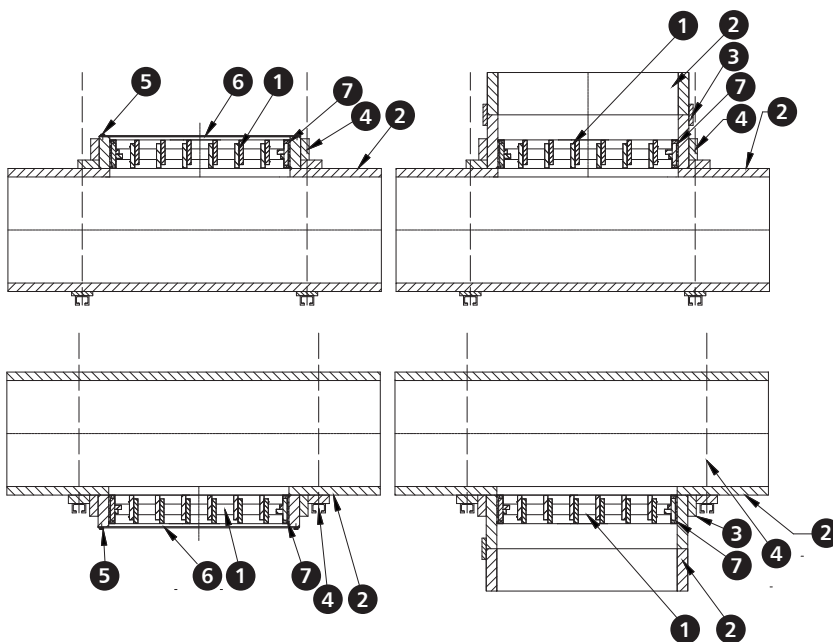
mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

13.5.4.1 | Sample installation in fire ventilation system ducts



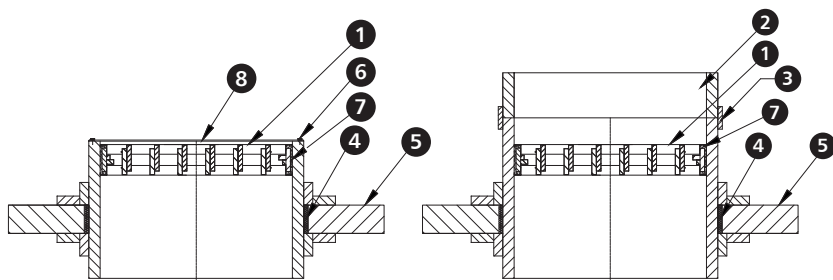
1. mcr WIP PRO/V or mcr WIP PRO/V-M BxH smoke control damper
2. Multi-zone smoke extract duct – e.g. made of fire-proof boards
3. A strip of fire-proof board along the entire length of the BxH side
4. Installation hangers system

5. M10 x 20 bolt
6. MWB system grille (optional)
7. System duct sealing



1. mcr WIP PRO/V or mcr WIP PRO/V-M BxH smoke control damper
2. Multi-zone smoke extract duct – e.g. made of fire-proof boards
3. A strip of fire-proof board along the entire length of the BxH side
4. Installation hangers system

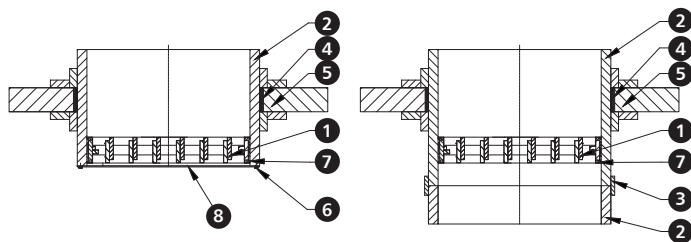
5. M10 x 20 bolt
6. MWB system grille (optional)
7. System duct sealing



1. mcr WIP PRO/V or mcr WIP PRO/V-M BxH smoke control damper
2. Multi-zone smoke extract duct – e.g. made of fire-proof boards
3. A strip of fire-proof board along the entire length of the BxH side
4. Installation hangers system

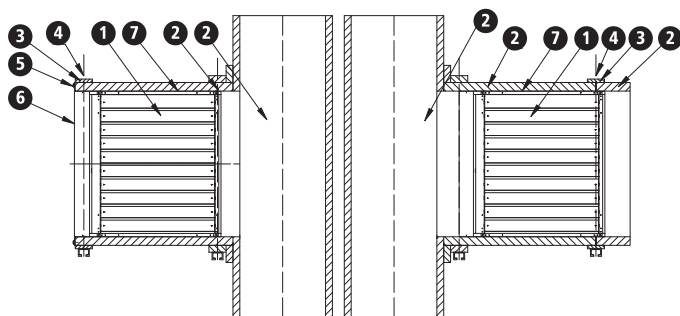
5. Floor slab
6. M10 x 20 bolt
7. System duct sealing
8. MWB system grille (optional)

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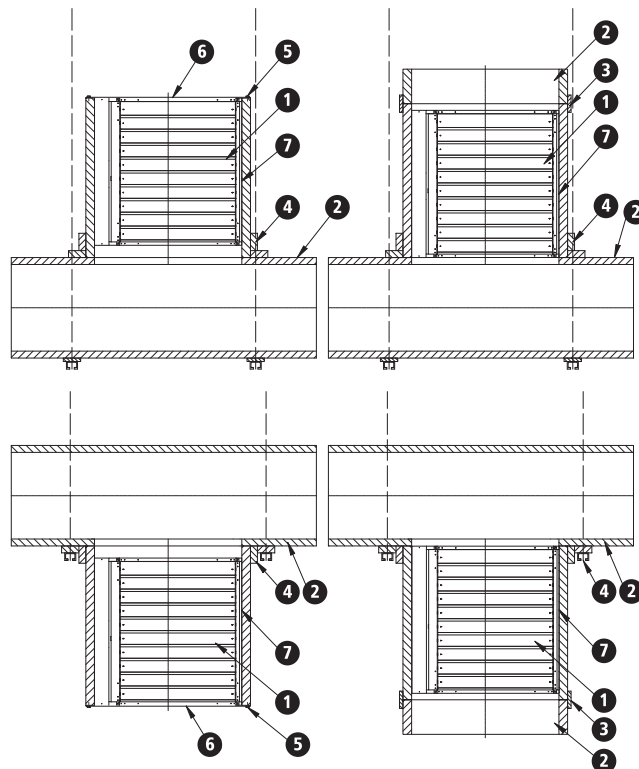


1. mcr WIP PRO/V or mcr WIP PRO/V-M BxH smoke control damper
2. Multi-zone smoke extract duct – e.g. made of fire-proof boards
3. A strip of fire-proof board along the entire length of the BxH side
4. Fireproof duct installation penetration system.
5. Floor slab
6. M10 x 20 bolt
7. System duct sealing
8. MWB system grille (optional)

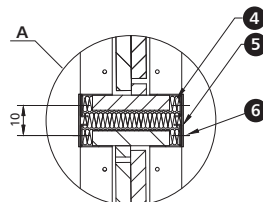
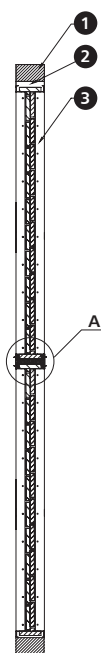
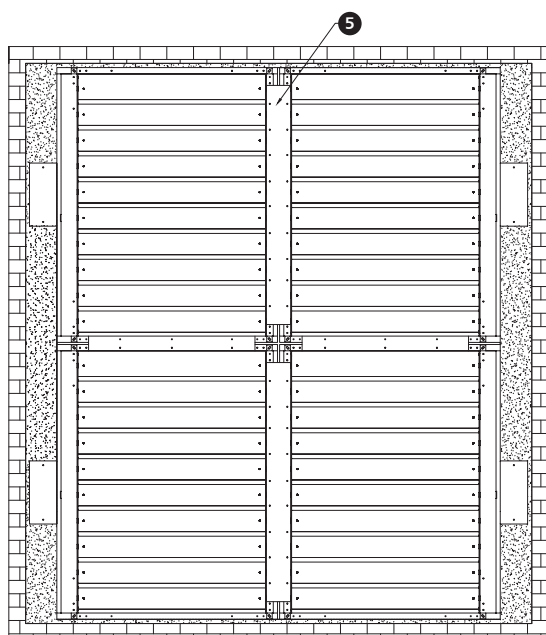
13.5.4.2 | Sample installation in fire ventilation system ducts with LC casing



1. mcr WIP PRO/V or mcr WIP PRO/V-M BxH smoke control damper with LC casing
2. multi-zone smoke extract duct – e.g. made of fire-proof boards
3. a strip of fire-proof board along the entire length of the BxH side
4. installation hangers system
5. M10 x 20 bolt
6. MWB system grille
7. system duct sealing



13.5.5 | Sample modular installation



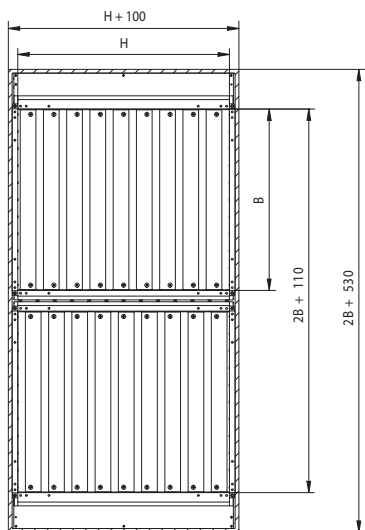
1. e.g. masonry wall
2. assembly mortar*
3. mcr WIP PRO/V or mcr WIP PRO/V-M damper module
4. mineral wool with a density of at least 80 kg/m³, A1 class
5. steel installation element
6. ST8 x 16 screw

dimensions in [mm]

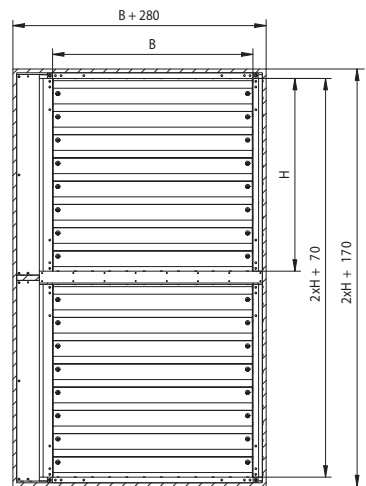
* Recommended damper installation in a wet system is based on assembly mortar on the basis of gypsum or cement. The manufacturer allows for using other materials with parameters that confirm and ensure the appropriate fire resistance rating for the installation method applied.
Also applicable for versions with LC casing

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

13.5.5.1 | Modular installation – 1x2



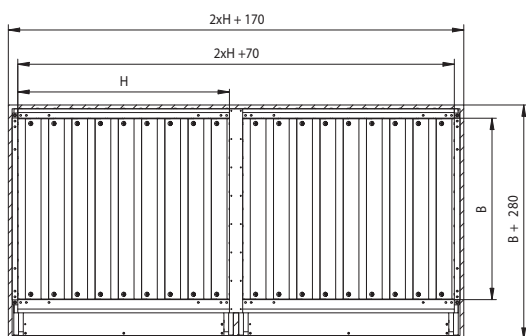
» vertical



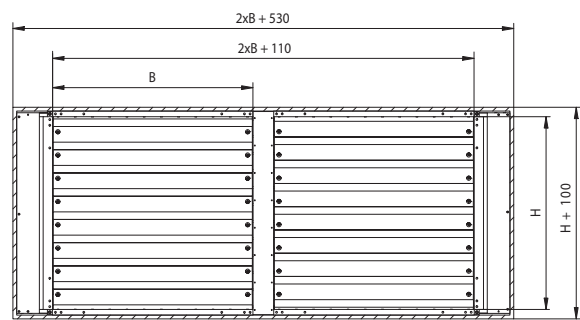
dimensions in [mm]

» horizontal

13.5.5.2 | Modular installation – 2x1



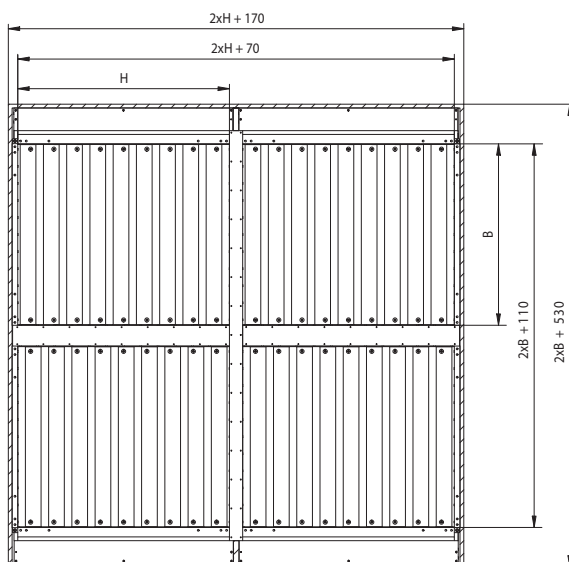
» vertical



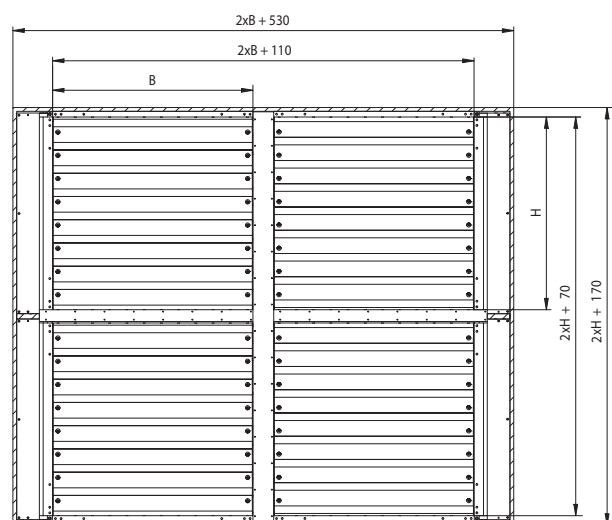
dimensions in [mm]

» horizontal

13.5.5.3 | Modular installation – 2x2



» vertical

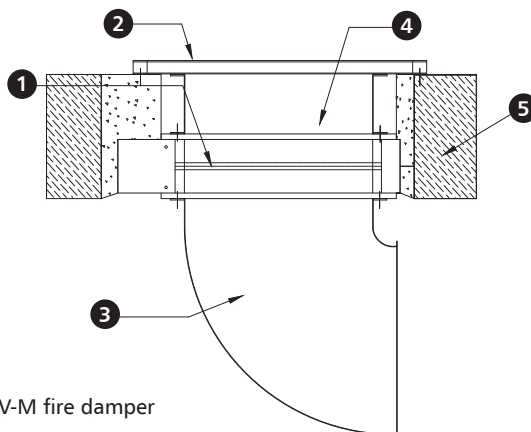


dimensions in [mm]

» horizontal

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

» Example applications - installation with a masking element



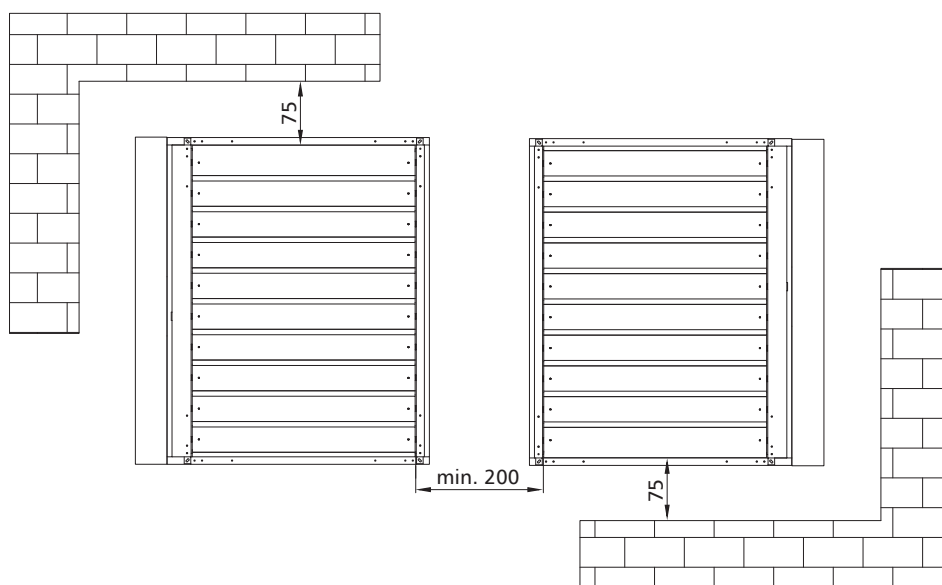
1. mcr WIP PRO/V or mcr WIP PRO/V-M fire damper
2. masking element
3. smoke ventilation duct
4. duct - ventilation straight connection piece
5. wall, floor slab

If a mcr WIP PRO/V, mcr WIP PRO/V-M damper is used, thanks to the shutters (no single-blade partition) it is possible to use the space in front of and behind the damper for such system elements as a masking grille or a rectangular silencer or to route a duct along the wall using a duct bend or reduction.

» Damper installation with a vertical louver rotation axis

The damper can operate with a vertical louver rotation axis with a top or bottom-mounted mechanism.

» Minimum distance between systems and partitions



dimensions in [mm]

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

13.5.6 | MST system masking grilles



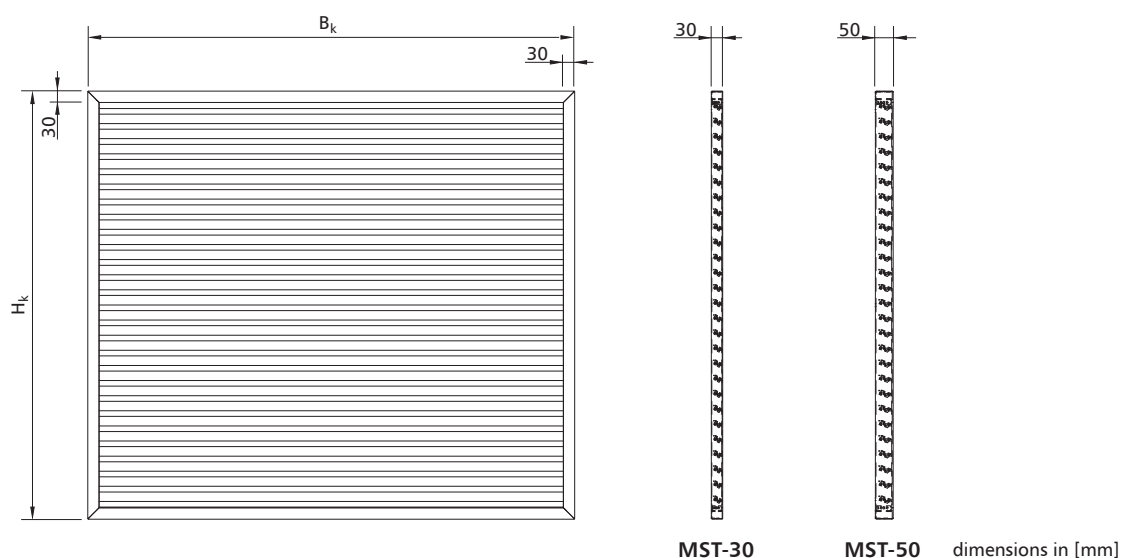
MST system masking grilles are designed to fulfill either supply or exhaust function. They enable the transfer of air through construction partitions. They come with fixed steel louvers with a 40 mm span, obscuring damper visibility.

Bolts embedded in the body are used to attach the masking grille body. After installation, an outer frame is mounted on the masking grille body so that the holes and bolts cannot be seen from the outside. Such a solution allows for installing the product even in the most visually-demanding applications. The masking grilles are painted in RAL 9010 as a standard (available in any colour from the RAL range on request).

dimensions:

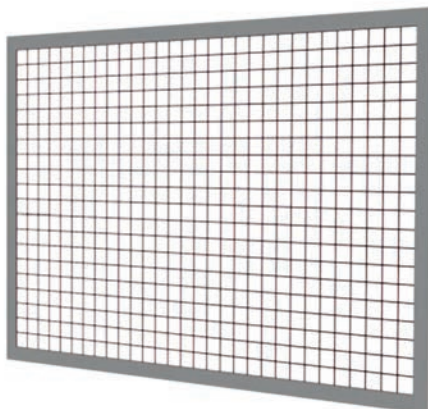
- » nominal width B_k : from 200 mm to 1500 mm
- » nominal height H_k from 200 mm to 1500 mm
- » nominal thickness G 30 and 50 mm

Apart from the standard dimensions, masking grilles may be manufactured with intermediate dimensions.



mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

13.5.7 | MWP mesh cover

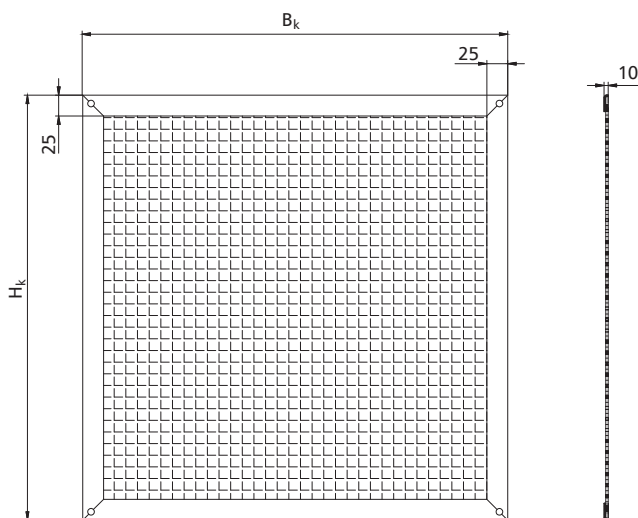


The MWP mesh cover may be supplied together with the damper by the damper manufacturer. System masking grilles, dedicated especially for commercial premises with high architectonical and service requirements allows for covering the damper with any additional masking grille while fulfilling the fire rating requirements of the mcr WIP damper. With a wall thickness greater than 200 mm, system and non-system grilles can be applied directly to the wall.

dimensions:

- » nominal width B_k : from 200 mm to 1100 mm
- » nominal height H_k from 200 mm to 1100 mm
- » nominal thickness 10 mm

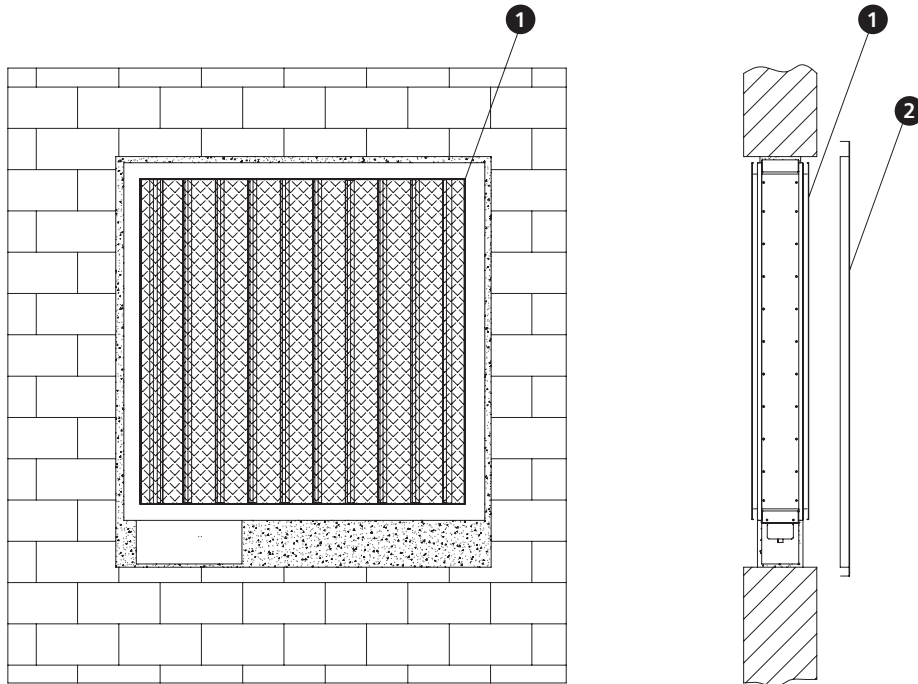
Apart from the standard dimensions, masking grilles may be manufactured with intermediate dimensions.



dimensions in [mm]

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

» sample installation



- 1. MWP mesh cover
- 2. decorative grille (any, e.g. as indicated by the architect)

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

13.6 | mcr WIP PRO/V, mcr WIP PRO/V-M rectangular dampers technical parameters

B – nominal width [mm]
H – nominal height [mm]

v – velocity [m/s]
S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		270					300					350				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	110	4	0.030	0.019	269	13	0.033	0.019	269	14	34	0.039	0.019	269	16	36
		6			404	30			404	30	44			404	36	46
		8			539	53			539	54	52			539	63	54
		10			673	82			673	85	58			673	99	60
	150	4	0.041	0.026	367	13	0.045	0.026	367	14	35	0.053	0.026	367	16	37
		6			551	30			551	30	46			551	36	48
		8			734	53			734	54	53			734	63	55
		10			918	82			918	85	59			918	99	61
	200	4	0.054	0.034	490	13	0.060	0.034	490	14	36	0.070	0.034	490	16	38
		6			734	30			734	30	47			734	36	49
		8			979	53			979	54	54			979	63	56
		10			1 224	82			1 224	84	60			1 224	99	62
	250	4	0.068	0.043	612	13	0.075	0.043	612	14	37	0.088	0.043	612	16	39
		6			918	30			918	30	48			918	36	50
		8			1 224	53			1 224	54	55			1 224	63	57
		10			1 530	82			1 530	85	61			1 530	99	63
	300	4	0.081	0.051	734	13	0.090	0.051	734	14	38	0.105	0.051	734	16	40
		6			1 102	30			1 102	30	49			1 102	36	51
		8			1 469	53			1 469	54	56			1 469	63	58
		10			1 836	82			1 836	85	62			1 836	99	64
	350	4	0.095	0.060	857	13	0.105	0.060	857	14	39	0.123	0.060	857	16	41
		6			1 285	30			1 285	30	49			1 285	36	51
		8			1 714	53			1 714	54	57			1 714	63	59
		10			2 142	82			2 142	85	63			2 142	99	65
	400	4	0.108	0.068	979	13	0.120	0.068	979	14	39	0.140	0.068	979	16	41
		6			1 469	30			1 469	30	50			1 469	36	52
		8			1 958	53			1 958	54	57			1 958	63	59
		10			2 448	82			2 448	84	63			2 448	99	65
	450	4	0.122	0.077	1 102	13	0.135	0.077	1 102	14	40	0.158	0.077	1 102	16	42
		6			1 652	30			1 652	30	50			1 652	36	52
		8			2 203	53			2 203	54	58			2 203	63	60
		10			2 754	82			2 754	84	64			2 754	99	66
	500	4	0.135	0.085	1 224	13	0.150	0.085	1 224	14	40	0.175	0.085	1 224	16	42
		6			1 836	30			1 836	30	51			1 836	36	53
		8			2 448	53			2 448	54	58			2 448	63	60
		10			3 060	82			3 060	85	64			3 060	99	66
	550	4	0.149	0.094	1 346	2	0.165	0.094	1 346	14	41	0.193	0.094	1 346	16	43
		6			2 020	4			2 020	30	51			2 020	36	53
		8			2 693	7			2 693	54	59			2 693	63	61
		10			3 366	10			3 366	84	65			3 366	99	67
	600	4	0.162	0.102	1 469	13	0.180	0.102	1 469	14	41	0.210	0.102	1 469	16	43
		6			2 203	30			2 203	30	52			2 203	36	54
		8			2 938	53			2 938	54	59			2 938	63	61
		10			3 672	82			3 672	85	65			3 672	99	67
	650	4	0.176	0.111	1 591	13	0.195	0.111	1 591	14	41	0.228	0.111	1 591	16	43
		6			2 387	30			2 387	30	52			2 387	36	54
		8			3 182	53			3 182	54	59			3 182	63	62
		10			3 978	82			3 978	85	65			3 978	99	67

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

B – nominal width [mm]
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v – velocity [m/s]
S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		270					300					350				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	700	4	0.189	0.119	1 714	13	0.210	0.119	1 714	14	42	0.245	0.119	1 714	16	44
		6			2 570	30			2 570	30	52			2 570	36	54
		8			3 427	53			3 427	54	60			3 427	63	62
		10			4 284	82			4 284	85	66			4 284	99	68
	750	4	0.203	0.128	1 836	13	0.225	0.128	1 836	14	42	0.263	0.128	1 836	16	44
		6			2 754	30			2 754	30	53			2 754	36	55
		8			3 672	53			3 672	54	60			3 672	63	62
		10			4 590	82			4 590	85	66			4 590	99	68
	800	4	0.216	0.136	1 958	13	0.240	0.136	1 958	14	42	0.280	0.136	1 958	16	44
		6			2 938	30			2 938	30	53			2 938	36	55
		8			3 917	53			3 917	54	60			3 917	63	62
		10			4 896	82			4 896	84	66			4 896	99	68
	850	4	0.230	0.145	2 081	13	0.255	0.145	2 081	14	43	0.298	0.145	2 081	16	45
		6			3 121	30			3 121	30	53			3 121	36	55
		8			4 162	53			4 162	54	61			4 162	63	63
		10			5 202	82			5 202	84	66			5 202	99	68
	900	4	0.243	0.153	2 203	13	0.270	0.153	2 203	14	43	0.315	0.153	2 203	16	45
		6			3 305	30			3 305	30	53			3 305	36	55
		8			4 406	53			4 406	54	61			4 406	63	63
		10			5 508	82			5 508	84	67			5 508	99	69
	950	4	0.257	0.162	2 326	13	0.285	0.162	2 326	18	47	0.333	0.162	2 326	25	51
		6			3 488	30			3 488	41	57			3 488	57	62
		8			4 651	53			4 651	72	65			4 651	102	69
		10			5 814	82			5 814	113	71			5 814	159	75
	1000	4	0.270	0.170	2 448	13	0.300	0.170	2 448	18	47	0.350	0.170	2 448	25	51
		6			3 672	30			3 672	41	58			3 672	57	62
		8			4 896	53			4 896	72	65			4 896	102	70
		10			6 120	82			6 120	113	71			6 120	159	75
	1050	4	0.284	0.179	2 570	13	0.315	0.179	2 570	18	47	0.368	0.179	2 570	25	52
		6			3 856	30			3 856	41	58			3 856	57	62
		8			5 141	53			5 141	72	65			5 141	102	70
		10			6 426	82			6 426	113	71			6 426	159	76
	1100	4	0.297	0.187	2 693	13	0.330	0.187	2 693	18	47	0.385	0.187	2 693	25	52
		6			4 039	30			4 039	41	58			4 039	57	62
		8			5 386	53			5 386	72	65			5 386	102	70
		10			6 732	82			6 732	113	71			6 732	159	76
	1150	4	0.311	0.196	2 815	13	0.345	0.196	2 815	18	48	0.403	0.196	2 815	25	52
		6			4 223	30			4 223	41	58			4 223	57	63
		8			5 630	53			5 630	72	66			5 630	102	70
		10			7 038	82			7 038	113	71			7 038	159	76
	1200	4	0.324	0.204	2 938	13	0.360	0.204	2 938	18	48	0.420	0.204	2 938	25	52
		6			4 406	30			4 406	41	58			4 406	57	63
		8			5 875	53			5 875	72	66			5 875	102	70
		10			7 344	82			7 344	113	72			7 344	159	76
	1250	4	0.338	0.213	3 060	13	0.375	0.213	3 060	18	48	0.438	0.213	3 060	25	52
		6			4 590	30			4 590	41	59			4 590	57	63
		8			6 120	53			6 120	72	66			6 120	102	70
		10			7 650	82			7 650	113	72			7 650	159	76

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		390					450					520				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	110	4	0.043	0.028	401	12	0.050	0.028	401	14	36	0.057	0.037	532	12	35
		6			601	27			601	31	46			798	27	46
		8			802	47			802	55	54			1 064	48	53
		10			1 002	74			1 002	86	60			1 331	75	59
	150	4	0.059	0.038	546	12	0.068	0.038	546	14	37	0.078	0.050	726	12	36
		6			820	27			820	31	48			1 089	27	47
		8			1 093	47			1 093	55	55			1 452	48	54
		10			1 366	74			1 366	86	61			1 814	75	60
	200	4	0.078	0.051	729	12	0.090	0.051	729	14	38	0.104	0.067	968	12	38
		6			1 093	27			1 093	31	49			1 452	27	48
		8			1 457	47			1 457	55	56			1 935	48	56
		10			1 822	74			1 822	86	62			2 419	75	62
	250	4	0.098	0.063	911	12	0.113	0.063	911	14	39	0.130	0.084	1 210	12	39
		6			1 366	27			1 366	31	50			1 814	27	49
		8			1 822	47			1 822	55	57			2 419	48	57
		10			2 277	74			2 277	86	63			3 024	75	63
	300	4	0.117	0.076	1 093	12	0.135	0.076	1 093	14	40	0.156	0.101	1 452	12	39
		6			1 639	27			1 639	31	51			2 177	27	50
		8			2 186	47			2 186	55	58			2 903	48	57
		10			2 732	74			2 732	86	64			3 629	75	63
	350	4	0.137	0.089	1 275	12	0.158	0.089	1 275	14	41	0.182	0.118	1 693	12	40
		6			1 913	27			1 913	31	51			2 540	27	51
		8			2 550	47			2 550	55	59			3 387	48	58
		10			3 188	74			3 188	86	65			4 234	75	64
	400	4	0.156	0.101	1 457	12	0.180	0.101	1 457	14	41	0.208	0.134	1 935	12	41
		6			2 186	27			2 186	31	52			2 903	27	51
		8			2 915	47			2 915	55	59			3 871	48	59
		10			3 643	74			3 643	86	65			4 838	75	65
	450	4	0.176	0.114	1 639	12	0.203	0.114	1 639	14	42	0.234	0.151	2 177	12	41
		6			2 459	27			2 459	31	52			3 266	27	52
		8			3 279	47			3 279	55	60			4 355	48	59
		10			4 099	74			4 099	86	66			5 443	75	65
	500	4	0.195	0.127	1 822	12	0.225	0.127	1 822	14	42	0.260	0.168	2 419	12	42
		6			2 732	27			2 732	31	53			3 629	27	52
		8			3 643	47			3 643	55	60			4 838	48	60
		10			4 554	74			4 554	86	66			6 048	75	66
	550	4	0.215	0.139	2 004	12	0.248	0.139	2 004	14	43	0.286	0.185	2 661	12	42
		6			3 006	27			3 006	31	53			3 992	27	53
		8			4 008	47			4 008	55	61			5 322	48	60
		10			5 009	74			5 009	86	67			6 653	75	66
	600	4	0.234	0.152	2 186	12	0.270	0.152	2 186	14	43	0.312	0.202	2 903	12	42
		6			3 279	27			3 279	31	54			4 355	27	53
		8			4 372	47			4 372	55	61			5 806	48	61
		10			5 465	74			5 465	86	67			7 258	75	66
	650	4	0.254	0.164	2 368	12	0.293	0.164	2 368	14	43	0.338	0.218	3 145	12	43
		6			3 552	27			3 552	31	54			4 717	27	53
		8			4 736	47			4 736	55	61			6 290	48	61
		10			5 920	74			5 920	86	67			7 862	75	67

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		390					450					520				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	700	4	0.273	0.177	2 550	12	0.315	0.177	2 550	14	44	0.364	0.235	3 387	12	43
		6			3 825	27			3 825	31	54			5 080	27	54
		8			5 100	47			5 100	55	62			6 774	48	61
		10			6 376	74			6 376	86	68			8 467	75	67
	750	4	0.293	0.190	2 732	12	0.338	0.190	2 732	14	44	0.390	0.252	3 629	12	43
		6			4 099	27			4 099	31	55			5 443	27	54
		8			5 465	47			5 465	55	62			7 258	48	61
		10			6 831	74			6 831	86	68			9 072	75	67
	800	4	0.312	0.202	2 915	12	0.360	0.202	2 915	14	43	0.416	0.269	3 871	12	43
		6			4 372	27			4 372	31	54			5 806	27	54
		8			5 829	47			5 829	55	61			7 741	48	61
		10			7 286	74			7 286	86	67			9 677	75	67
	850	4	0.332	0.215	3 097	12	0.383	0.215	3 097	14	43	0.442	0.286	4 113	12	43
		6			4 645	27			4 645	31	54			6 169	27	54
		8			6 193	47			6 193	55	61			8 225	48	61
		10			7 742	74			7 742	86	67			10 282	75	67
	900	4	0.351	0.228	3 279	12	0.405	0.228	3 279	14	43	0.468	0.302	4 355	12	43
		6			4 918	27			4 918	31	54			6 532	27	54
		8			6 558	47			6 558	55	61			8 709	48	61
		10			8 197	74			8 197	86	67			10 886	75	67
	950	4	0.371	0.240	3 461	12	0.428	0.240	3 461	18	49	0.494	0.319	4 596	12	44
		6			5 192	27			5 192	41	59			6 895	27	55
		8			6 922	47			6 922	74	67			9 193	48	62
		10			8 653	74			8 653	115	73			11 491	75	68
	1000	4	0.390	0.253	3 643	12	0.450	0.253	3 643	18	49	0.520	0.336	4 838	12	45
		6			5 465	27			5 465	41	60			7 258	27	55
		8			7 286	47			7 286	74	67			9 677	48	63
		10			9 108	74			9 108	115	73			12 096	75	69
	1050	4	0.410	0.266	3 825	12	0.473	0.266	3 825	18	49	0.546	0.353	5 080	12	45
		6			5 738	27			5 738	41	60			7 620	27	55
		8			7 651	47			7 651	74	67			10 161	48	63
		10			9 563	74			9 563	115	73			12 701	75	69
	1100	4	0.429	0.278	4 008	12	0.495	0.278	4 008	18	49	0.572	0.370	5 322	12	45
		6			6 011	27			6 011	41	60			7 983	27	56
		8			8 015	47			8 015	74	67			10 644	48	63
		10			10 019	74			10 019	115	73			13 306	75	69
	1150	4	0.449	0.291	4 190	12	0.518	0.291	4 190	18	50	0.598	0.386	5 564	12	45
		6			6 285	27			6 285	41	60			8 346	27	56
		8			8 379	47			8 379	74	68			11 128	48	63
		10			10 474	74			10 474	115	73			13 910	75	69
	1200	4	0.468	0.304	4 372	12	0.540	0.304	4 372	18	50	0.624	0.403	5 806	12	45
		6			6 558	27			6 558	41	60			8 709	27	56
		8			8 744	47			8 744	74	68			11 612	48	64
		10			10 930	74			10 930	115	74			14 515	75	69
	1250	4	0.488	0.316	4 554	12	0.563	0.316	4 554	18	50	0.650	0.420	6 048	12	46
		6			6 831	27			6 831	41	61			9 072	27	56
		8			9 108	47			9 108	74	68			12 096	48	64
		10			11 385	74			11 385	115	74			15 120	75	70

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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		550					640					650				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	110	4	0.061	0.037	532	13	0.070	0.046	664	11	35	0.072	0.046	664	12	36
		6			798	29			996	26	46			996	27	47
		8			1 064	51			1 327	46	53			1 327	48	54
		10			1 331	79			1 659	72	59			1 659	76	60
	150	4	0.083	0.050	726	13	0.096	0.063	905	11	37	0.098	0.063	905	12	37
		6			1 089	29			1 358	26	47			1 358	27	48
		8			1 452	51			1 810	46	55			1 810	48	56
		10			1 814	79			2 263	72	61			2 263	76	61
	200	4	0.110	0.067	968	13	0.128	0.084	1 207	11	38	0.130	0.084	1 207	12	39
		6			1 452	29			1 810	26	49			1 810	27	49
		8			1 935	51			2 413	46	56			2 413	48	57
		10			2 419	79			3 017	72	62			3 017	76	63
	250	4	0.138	0.084	1 210	13	0.160	0.105	1 508	11	39	0.163	0.105	1 508	12	40
		6			1 814	29			2 263	26	50			2 263	27	50
		8			2 419	51			3 017	46	57			3 017	48	58
		10			3 024	79			3 771	72	63			3 771	76	64
	300	4	0.165	0.101	1 452	13	0.192	0.126	1 810	11	40	0.195	0.126	1 810	12	41
		6			2 177	29			2 715	26	50			2 715	27	51
		8			2 903	51			3 620	46	58			3 620	48	59
		10			3 629	79			4 525	72	64			4 525	76	64
	350	4	0.193	0.118	1 693	13	0.224	0.147	2 112	11	40	0.228	0.147	2 112	12	41
		6			2 540	29			3 168	26	51			3 168	27	52
		8			3 387	51			4 224	46	58			4 224	48	59
		10			4 234	79			5 279	72	64			5 279	76	65
	400	4	0.220	0.134	1 935	13	0.256	0.168	2 413	11	41	0.260	0.168	2 413	12	42
		6			2 903	29			3 620	26	52			3 620	27	52
		8			3 871	51			4 827	46	59			4 827	48	60
		10			4 838	79			6 034	72	65			6 034	76	66
	450	4	0.248	0.151	2 177	13	0.288	0.189	2 715	11	42	0.293	0.189	2 715	12	42
		6			3 266	29			4 073	26	52			4 073	27	53
		8			4 355	51			5 430	46	60			5 430	48	60
		10			5 443	79			6 788	72	65			6 788	76	66
	500	4	0.275	0.168	2 419	13	0.320	0.210	3 017	11	42	0.325	0.210	3 017	12	43
		6			3 629	29			4 525	26	53			4 525	27	53
		8			4 838	51			6 034	46	60			6 034	48	61
		10			6 048	79			7 542	72	66			7 542	76	67
	550	4	0.303	0.185	2 661	13	0.352	0.230	3 318	11	42	0.358	0.230	3 318	12	43
		6			3 992	29			4 978	26	53			4 978	27	54
		8			5 322	51			6 637	46	60			6 637	48	61
		10			6 653	79			8 296	72	66			8 296	76	67
	600	4	0.330	0.202	2 903	13	0.384	0.251	3 620	11	43	0.390	0.251	3 620	12	44
		6			4 355	29			5 430	26	53			5 430	27	54
		8			5 806	51			7 240	46	61			7 240	48	62
		10			7 258	79			9 050	72	67			9 050	76	67
	650	4	0.358	0.218	3 145	13	0.416	0.272	3 922	11	43	0.423	0.272	3 922	12	44
		6			4 717	29			5 883	26	54			5 883	27	54
		8			6 290	51			7 844	46	61			7 844	48	62
		10			7 862	79			9 805	72	67			9 805	76	68

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

B – nominal width [mm]
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v – velocity [m/s]
S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		550					640					650				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	700	4	0.385	0.235	3 387	13	0.448	0.293	4 224	11	43	0.455	0.293	4 224	12	44
		6			5 080	29			6 335	26	54			6 335	27	55
		8			6 774	51			8 447	46	61			8 447	48	62
		10			8 467	79			10 559	72	67			10 559	76	68
	750	4	0.413	0.252	3 629	13	0.480	0.314	4 525	11	44	0.488	0.314	4 525	12	44
		6			5 443	29			6 788	26	54			6 788	27	55
		8			7 258	51			9 050	46	62			9 050	48	63
		10			9 072	79			11 313	72	68			11 313	76	68
	800	4	0.440	0.269	3 871	13	0.512	0.335	4 827	11	44	0.520	0.335	4 827	12	44
		6			5 806	29			7 240	26	55			7 240	27	55
		8			7 741	51			9 654	46	62			9 654	48	63
		10			9 677	79			12 067	72	68			12 067	76	68
	850	4	0.468	0.286	4 113	13	0.544	0.356	5 129	11	44	0.553	0.356	5 129	12	44
		6			6 169	29			7 693	26	55			7 693	27	55
		8			8 225	51			10 257	46	62			10 257	48	63
		10			10 282	79			12 821	72	68			12 821	76	68
	900	4	0.495	0.302	4 355	13	0.576	0.377	5 430	11	45	0.585	0.377	5 430	12	44
		6			6 532	29			8 145	26	52			8 145	27	55
		8			8 709	51			10 860	46	60			10 860	48	63
		10			10 886	79			13 576	72	65			13 576	76	68
	950	4	0.523	0.319	4 596	15	0.608	0.398	5 732	11	45	0.618	0.398	5 732	12	46
		6			6 895	33			8 598	26	55			8 598	27	56
		8			9 193	58			11 464	46	63			11 464	48	64
		10			11 491	91			14 330	72	69			14 330	76	69
	1000	4	0.550	0.336	4 838	15	0.640	0.419	6 034	11	45	0.650	0.419	6 034	12	46
		6			7 258	33			9 050	26	56			9 050	27	56
		8			9 677	58			12 067	46	63			12 067	48	64
		10			12 096	91			15 084	72	69			15 084	76	70
	1050	4	0.578	0.353	5 080	15	0.672	0.440	6 335	11	45	0.683	0.440	6 335	12	46
		6			7 620	33			9 503	26	56			9 503	27	57
		8			10 161	58			12 671	46	63			12 671	48	64
		10			12 701	91			15 838	72	69			15 838	76	70
	1100	4	0.605	0.370	5 322	15	0.704	0.461	6 637	11	45	0.715	0.461	6 637	12	46
		6			7 983	33			9 955	26	56			9 955	27	57
		8			10 644	58			13 274	46	63			13 274	48	64
		10			13 306	91			16 592	72	69			16 592	76	70
	1150	4	0.633	0.386	5 564	15	0.736	0.482	6 939	11	46	0.748	0.482	6 939	12	46
		6			8 346	33			10 408	26	56			10 408	27	57
		8			11 128	58			13 877	46	64			13 877	48	64
		10			13 910	91			17 347	72	69			17 347	76	70
	1200	4	0.660	0.403	5 806	15	0.768	0.503	7 240	11	46	0.780	0.503	7 240	12	47
		6			8 709	33			10 860	26	56			10 860	27	57
		8			11 612	58			14 481	46	64			14 481	48	65
		10			14 515	91			18 101	72	70			18 101	76	70
	1250	4	0.688	0.420	6 048	15	0.800	0.524	7 542	11	46	0.813	0.524	7 542	12	47
		6			9 072	33			11 313	26	57			11 313	27	57
		8			12 096	58			15 084	46	64			15 084	48	65
		10			15 120	91			18 855	72	70			18 855	76	71

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

B – nominal width [mm]
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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		700					760					800				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	110	4	0.077	0.046	664	14	0.084	0.055	795	12	37	0.088	0.055	795	10	34
		6			996	30			1 193	28	48			1 193	22	45
		8			1 327	54			1 590	50	55			1 590	40	52
		10			1 659	85			1 988	78	61			1 988	62	58
	150	4	0.105	0.063	905	14	0.114	0.075	1 084	12	39	0.120	0.075	1 084	10	36
		6			1 358	30			1 626	28	49			1 626	22	46
		8			1 810	54			2 169	50	57			2 169	40	54
		10			2 263	85			2 711	78	62			2 711	62	60
	200	4	0.140	0.084	1 207	14	0.152	0.100	1 446	12	40	0.160	0.100	1 446	10	37
		6			1 810	30			2 169	28	50			2 169	22	48
		8			2 413	54			2 892	50	58			2 892	40	55
		10			3 017	85			3 614	78	64			3 614	62	61
	250	4	0.175	0.105	1 508	14	0.190	0.126	1 807	12	41	0.200	0.126	1 807	10	38
		6			2 263	30			2 711	28	51			2 711	22	49
		8			3 017	54			3 614	50	59			3 614	40	56
		10			3 771	85			4 518	78	65			4 518	62	62
	300	4	0.210	0.126	1 810	14	0.228	0.151	2 169	12	42	0.240	0.151	2 169	10	39
		6			2 715	30			3 253	28	52			3 253	22	49
		8			3 620	54			4 337	50	60			4 337	40	57
		10			4 525	85			5 422	78	66			5 422	62	63
	350	4	0.245	0.147	2 112	14	0.266	0.176	2 530	12	42	0.280	0.176	2 530	10	39
		6			3 168	30			3 795	28	53			3 795	22	50
		8			4 224	54			5 060	50	60			5 060	40	57
		10			5 279	85			6 325	78	66			6 325	62	63
	400	4	0.280	0.168	2 413	14	0.304	0.201	2 892	12	43	0.320	0.201	2 892	10	40
		6			3 620	30			4 337	28	53			4 337	22	51
		8			4 827	54			5 783	50	61			5 783	40	58
		10			6 034	85			7 229	78	67			7 229	62	64
	450	4	0.315	0.189	2 715	14	0.342	0.226	3 253	12	43	0.360	0.226	3 253	10	41
		6			4 073	30			4 879	28	54			4 879	22	51
		8			5 430	54			6 506	50	61			6 506	40	59
		10			6 788	85			8 132	78	67			8 132	62	64
	500	4	0.350	0.210	3 017	14	0.380	0.251	3 614	12	44	0.400	0.251	3 614	10	41
		6			4 525	30			5 422	28	54			5 422	22	52
		8			6 034	54			7 229	50	62			7 229	40	59
		10			7 542	85			9 036	78	68			9 036	62	65
	550	4	0.385	0.230	3 318	14	0.418	0.276	3 976	12	44	0.440	0.276	3 976	10	41
		6			4 978	30			5 964	28	55			5 964	22	52
		8			6 637	54			7 952	50	62			7 952	40	59
		10			8 296	85			9 940	78	68			9 940	62	65
	600	4	0.420	0.251	3 620	14	0.456	0.301	4 337	12	45	0.480	0.301	4 337	10	42
		6			5 430	30			6 506	28	55			6 506	22	52
		8			7 240	54			8 675	50	63			8 675	40	60
		10			9 050	85			10 843	78	69			10 843	62	66
	650	4	0.455	0.272	3 922	14	0.494	0.326	4 699	12	45	0.520	0.326	4 699	10	42
		6			5 883	30			7 048	28	56			7 048	22	53
		8			7 844	54			9 397	50	63			9 397	40	60
		10			9 805	85			11 747	78	69			11 747	62	66

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		700					760					800				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	700	4	0.490	0.293	4 224	14	0.532	0.351	5 060	12	45	0.560	0.351	5 060	10	42
		6			6 335	30			7 590	28	56			7 590	22	53
		8			8 447	54			10 120	50	63			10 120	40	61
		10			10 559	85			12 650	78	69			12 650	62	66
	750	4	0.525	0.314	4 525	14	0.570	0.377	5 422	12	46	0.600	0.377	5 422	10	43
		6			6 788	30			8 132	28	56			8 132	22	53
		8			9 050	54			10 843	50	64			10 843	40	61
		10			11 313	85			13 554	78	69			13 554	62	67
	800	4	0.560	0.335	4 827	14	0.608	0.402	5 783	12	46	0.640	0.402	5 783	10	43
		6			7 240	30			8 675	28	56			8 675	22	54
		8			9 654	54			11 566	50	64			11 566	40	61
		10			12 067	85			14 458	78	70			14 458	62	67
	850	4	0.595	0.356	5 129	14	0.646	0.427	6 144	12	46	0.680	0.427	6 144	10	43
		6			7 693	30			9 217	28	57			9 217	22	54
		8			10 257	54			12 289	50	64			12 289	40	61
		10			12 821	85			15 361	78	70			15 361	62	67
	900	4	0.630	0.377	5 430	14	0.684	0.452	6 506	12	46	0.720	0.452	6 506	10	44
		6			8 145	30			9 759	28	57			9 759	22	54
		8			10 860	54			13 012	50	64			13 012	40	62
		10			13 576	85			16 265	78	70			16 265	62	67
	950	4	0.665	0.398	5 732	15	0.722	0.477	6 867	11	45	0.760	0.477	6 867	13	48
		6			8 598	35			10 301	25	56			10 301	30	58
		8			11 464	62			13 735	44	63			13 735	53	66
		10			14 330	97			17 168	69	69			17 168	83	71
	1000	4	0.700	0.419	6 034	15	0.760	0.502	7 229	11	45	0.800	0.502	7 229	13	48
		6			9 050	35			10 843	25	56			10 843	30	58
		8			12 067	62			14 458	44	63			14 458	53	66
		10			15 084	97			18 072	69	69			18 072	83	72
	1050	4	0.735	0.440	6 335	15	0.798	0.527	7 590	11	46	0.840	0.527	7 590	13	48
		6			9 503	35			11 385	25	56			11 385	30	59
		8			12 671	62			15 180	44	64			15 180	53	66
		10			15 838	97			18 976	69	69			18 976	83	72
	1100	4	0.770	0.461	6 637	15	0.836	0.552	7 952	11	46	0.880	0.552	7 952	13	48
		6			9 955	35			11 928	25	56			11 928	30	59
		8			13 274	62			15 903	44	64			15 903	53	66
		10			16 592	97			19 879	69	70			19 879	83	72
	1150	4	0.805	0.482	6 939	15	0.874	0.577	8 313	11	46	0.920	0.577	8 313	13	48
		6			10 408	35			12 470	25	56			12 470	30	59
		8			13 877	62			16 626	44	64			16 626	53	66
		10			17 347	97			20 783	69	70			20 783	83	72
	1200	4	0.840	0.503	7 240	15	0.912	0.602	8 675	11	46	0.960	0.602	8 675	13	49
		6			10 860	35			13 012	25	57			13 012	30	59
		8			14 481	62			17 349	44	64			17 349	53	67
		10			18 101	97			21 686	69	70			21 686	83	72
	1250	4	0.875	0.524	7 542	15	0.950	0.628	9 036	11	46	1.000	0.628	9 036	13	49
		6			11 313	35			13 554	25	57			13 554	30	59
		8			15 084	62			18 072	44	64			18 072	53	67
		10			18 855	97			22 590	69	70			22 590	83	73

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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		890					900					950				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	110	4	0.098	0.064	927	13	0.099	0.064	927	13	39	0.105	0.064	927	14	40
		6			1 390	29			1 390	30	49			1 390	32	50
		8			1 853	51			1 853	53	57			1 853	57	58
		10			2 317	79			2 317	83	63			2 317	89	64
	150	4	0.134	0.088	1 264	13	0.135	0.088	1 264	13	40	0.143	0.088	1 264	14	41
		6			1 895	29			1 895	30	51			1 895	32	52
		8			2 527	51			2 527	53	58			2 527	57	59
		10			3 159	79			3 159	83	64			3 159	89	65
	200	4	0.178	0.117	1 685	13	0.180	0.117	1 685	13	41	0.190	0.117	1 685	14	42
		6			2 527	29			2 527	30	52			2 527	32	53
		8			3 370	51			3 370	53	59			3 370	57	60
		10			4 212	79			4 212	83	65			4 212	89	66
	250	4	0.223	0.146	2 106	13	0.225	0.146	2 106	13	42	0.238	0.146	2 106	14	43
		6			3 159	29			3 159	30	53			3 159	32	54
		8			4 212	51			4 212	53	60			4 212	57	61
		10			5 265	79			5 265	83	66			5 265	89	67
	300	4	0.267	0.176	2 527	13	0.270	0.176	2 527	13	43	0.285	0.176	2 527	14	44
		6			3 791	29			3 791	30	54			3 791	32	55
		8			5 054	51			5 054	53	61			5 054	57	62
		10			6 318	79			6 318	83	67			6 318	89	68
	350	4	0.312	0.205	2 948	13	0.315	0.205	2 948	13	44	0.333	0.205	2 948	14	45
		6			4 423	29			4 423	30	54			4 423	32	55
		8			5 897	51			5 897	53	62			5 897	57	63
		10			7 371	79			7 371	83	68			7 371	89	69
	400	4	0.356	0.234	3 370	13	0.360	0.234	3 370	13	44	0.380	0.234	3 370	14	45
		6			5 054	29			5 054	30	55			5 054	32	56
		8			6 739	51			6 739	53	62			6 739	57	63
		10			8 424	79			8 424	83	68			8 424	89	69
	450	4	0.401	0.263	3 791	13	0.405	0.263	3 791	13	45	0.428	0.263	3 791	14	46
		6			5 686	29			5 686	30	55			5 686	32	56
		8			7 582	51			7 582	53	63			7 582	57	64
		10			9 477	79			9 477	83	69			9 477	89	70
	500	4	0.445	0.293	4 212	13	0.450	0.293	4 212	13	45	0.475	0.293	4 212	14	46
		6			6 318	29			6 318	30	56			6 318	32	57
		8			8 424	51			8 424	53	63			8 424	57	64
		10			10 530	79			10 530	83	69			10 530	89	70
	550	4	0.490	0.322	4 633	13	0.495	0.322	4 633	13	46	0.523	0.322	4 633	14	47
		6			6 950	29			6 950	30	56			6 950	32	57
		8			9 266	51			9 266	53	64			9 266	57	65
		10			11 583	79			11 583	83	70			11 583	89	70
	600	4	0.534	0.351	5 054	13	0.540	0.351	5 054	13	46	0.570	0.351	5 054	14	47
		6			7 582	29			7 582	30	57			7 582	32	58
		8			10 109	51			10 109	53	64			10 109	57	65
		10			12 636	79			12 636	83	70			12 636	89	71
	650	4	0.579	0.380	5 476	13	0.585	0.380	5 476	13	46	0.618	0.380	5 476	14	47
		6			8 213	29			8 213	30	57			8 213	32	58
		8			10 951	51			10 951	53	65			10 951	57	65
		10			13 689	79			13 689	83	70			13 689	89	71

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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

			height H [mm]															
			890						900					950				
			v [m/s]	S _k [m²]	S _e [m²]	Q [m³/h]	d _p [Pa]	L _{WA} [dB]	S _k [m²]	S _e [m²]	Q [m³/h]	d _p [Pa]	L _{WA} [dB]	S _k [m²]	S _e [m²]	Q [m³/h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	700	4	0.623	0.410	5 897	13	46	0.630	0.410	5 897	13	47	0.665	0.410	5 897	14	48	
		6			8 845	29	57			8 845	30	57			8 845	32	58	
		8			11 794	51	64			11 794	53	65			11 794	57	66	
		10			14 742	79	70			14 742	83	71			14 742	89	72	
	750	4	0.668	0.439	6 318	13	47	0.675	0.439	6 318	13	47	0.713	0.439	6 318	14	48	
		6			9 477	29	57			9 477	30	58			9 477	32	59	
		8			12 636	51	65			12 636	53	65			12 636	57	66	
		10			15 795	79	70			15 795	83	71			15 795	89	72	
	800	4	0.712	0.468	6 739	13	47	0.720	0.468	6 739	13	47	0.760	0.468	6 739	14	48	
		6			10 109	29	57			10 109	30	58			10 109	32	59	
		8			13 478	51	65			13 478	53	65			13 478	57	66	
		10			16 848	79	71			16 848	83	71			16 848	89	72	
	850	4	0.757	0.497	7 160	13	47	0.765	0.497	7 160	13	48	0.808	0.497	7 160	14	49	
		6			10 741	29	58			10 741	30	58			10 741	32	59	
		8			14 321	51	65			14 321	53	66			14 321	57	67	
		10			17 901	79	71			17 901	83	71			17 901	89	72	
	900	4	0.801	0.527	7 582	13	47	0.810	0.527	7 582	13	48	0.855	0.527	7 582	14	49	
		6			11 372	29	58			11 372	30	58			11 372	32	59	
		8			15 163	51	65			15 163	53	66			15 163	57	67	
		10			18 954	79	71			18 954	83	72			18 954	89	73	
	950	4	0.846	0.556	8 003	11	46	0.855	0.556	8 003	12	47	0.903	0.556	8 003	14	49	
		6			12 004	25	57			12 004	26	57			12 004	32	60	
		8			16 006	45	64			16 006	47	65			16 006	57	67	
		10			20 007	70	70			20 007	74	70			20 007	89	73	
	1000	4	0.890	0.585	8 424	11	46	0.900	0.585	8 424	12	47	0.950	0.585	8 424	14	49	
		6			12 636	25	57			12 636	26	57			12 636	32	60	
		8			16 848	45	64			16 848	47	65			16 848	57	67	
		10			21 060	70	70			21 060	74	71			21 060	89	73	
	1050	4	0.935	0.614	8 845	11	46	0.945	0.614	8 845	12	47	0.998	0.614	8 845	14	49	
		6			13 268	25	57			13 268	26	58			13 268	32	60	
		8			17 690	45	65			17 690	47	65			17 690	57	67	
		10			22 113	70	70			22 113	74	71			22 113	89	73	
	1100	4	0.979	0.644	9 266	11	47	0.990	0.644	9 266	12	47	1.045	0.644	9 266	14	50	
		6			13 900	25	57			13 900	26	58			13 900	32	60	
		8			18 533	45	65			18 533	47	65			18 533	57	68	
		10			23 166	70	71			23 166	73	71			23 166	89	74	
	1150	4	1.024	0.673	9 688	11	47	1.035	0.673	9 688	12	47	1.093	0.673	9 688	14	50	
		6			14 531	25	57			14 531	26	58			14 531	32	60	
		8			19 375	45	65			19 375	47	65			19 375	57	68	
		10			24 219	70	71			24 219	74	71			24 219	89	74	
	1200	4	1.068	0.702	10 109	11	47	1.080	0.702	10 109	12	48	1.140	0.702	10 109	14	50	
		6			15 163	25	58			15 163	26	58			15 163	32	61	
		8			20 218	45	65			20 218	47	66			20 218	57	68	
		10			25 272	70	71			25 272	74	71			25 272	89	74	
	1250	4	1.113	0.731	10 530	11	47	1.125	0.731	10 530	12	48	1.188	0.731	10 530	14	50	
		6			15 795	25	58			15 795	26	58			15 795	32	61	
		8			21 060	45	65			21 060	47	66			21 060	57	68	
		10			26 325	70	71			26 325	74	72			26 325	89	74	

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

B – nominal width [mm]
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v – velocity [m/s]
S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		1010					1050					1100				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	110	4	0.111	0.073	1 058	12	0.116	0.073	1 058	13	39	0.121	0.073	1 058	15	41
		6			1 587	28			1 587	29	49			1 587	33	51
		8			2 116	50			2 116	51	57			2 116	59	59
		10			2 645	77			2 645	79	63			2 645	93	65
	150	4	0.152	0.100	1 443	12	0.158	0.100	1 443	13	40	0.165	0.100	1 443	15	42
		6			2 164	28			2 164	29	51			2 164	33	53
		8			2 886	50			2 886	51	58			2 886	59	60
		10			3 607	77			3 607	79	64			3 607	93	66
	200	4	0.202	0.134	1 924	12	0.210	0.134	1 924	13	41	0.220	0.134	1 924	15	43
		6			2 886	28			2 886	29	52			2 886	33	54
		8			3 848	50			3 848	51	59			3 848	59	61
		10			4 810	77			4 810	79	65			4 810	93	67
	250	4	0.253	0.167	2 405	12	0.263	0.167	2 405	13	42	0.275	0.167	2 405	15	44
		6			3 607	28			3 607	29	53			3 607	33	55
		8			4 810	50			4 810	51	60			4 810	59	62
		10			6 012	77			6 012	79	66			6 012	93	68
	300	4	0.303	0.200	2 886	12	0.315	0.200	2 886	13	43	0.330	0.200	2 886	15	45
		6			4 329	28			4 329	29	54			4 329	33	56
		8			5 772	50			5 772	51	61			5 772	59	63
		10			7 214	77			7 214	79	67			7 214	93	69
	350	4	0.354	0.234	3 367	12	0.368	0.234	3 367	13	44	0.385	0.234	3 367	15	46
		6			5 050	28			5 050	29	54			5 050	33	56
		8			6 733	50			6 733	51	62			6 733	59	64
		10			8 417	77			8 417	79	68			8 417	93	70
	400	4	0.404	0.267	3 848	12	0.420	0.267	3 848	13	44	0.440	0.267	3 848	15	46
		6			5 772	28			5 772	29	55			5 772	33	57
		8			7 695	50			7 695	51	62			7 695	59	64
		10			9 619	77			9 619	79	68			9 619	93	70
	450	4	0.455	0.301	4 329	12	0.473	0.301	4 329	13	45	0.495	0.301	4 329	15	47
		6			6 493	28			6 493	29	55			6 493	33	57
		8			8 657	50			8 657	51	63			8 657	59	65
		10			10 822	77			10 822	79	69			10 822	93	71
	500	4	0.505	0.334	4 810	12	0.525	0.334	4 810	13	45	0.550	0.334	4 810	15	47
		6			7 214	28			7 214	29	56			7 214	33	58
		8			9 619	50			9 619	51	63			9 619	59	65
		10			12 024	77			12 024	79	69			12 024	93	71
	550	4	0.556	0.367	5 291	12	0.578	0.367	5 291	13	46	0.605	0.367	5 291	15	48
		6			7 936	28			7 936	29	56			7 936	33	58
		8			10 581	50			10 581	51	64			10 581	59	66
		10			13 226	77			13 226	79	70			13 226	93	72
	600	4	0.606	0.401	5 772	12	0.630	0.401	5 772	13	46	0.660	0.401	5 772	15	48
		6			8 657	28			8 657	29	57			8 657	33	59
		8			11 543	50			11 543	51	64			11 543	59	66
		10			14 429	77			14 429	79	70			14 429	93	72
	650	4	0.657	0.434	6 252	12	0.683	0.434	6 252	13	46	0.715	0.434	6 252	15	48
		6			9 379	28			9 379	29	57			9 379	33	59
		8			12 505	50			12 505	51	65			12 505	59	67
		10			15 631	77			15 631	79	70			15 631	93	72

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

B – nominal width [mm]
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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		1010					1050					1100				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	700	4	0.707	0.468	6 733	12	0.735	0.468	6 733	13	0.770	0.468	6 733	15	0.770	0.468
		6			10 100	28			10 100	29			10 100	33		
		8			13 467	50			13 467	51			13 467	59		
		10			16 834	77			16 834	79			16 834	93		
	750	4	0.758	0.501	7 214	12	0.788	0.501	7 214	13	0.825	0.501	7 214	15	0.825	0.501
		6			10 822	28			10 822	29			10 822	33		
		8			14 429	50			14 429	51			14 429	59		
		10			18 036	77			18 036	79			18 036	93		
	800	4	0.808	0.534	7 695	12	0.840	0.534	7 695	13	0.880	0.534	7 695	15	0.880	0.534
		6			11 543	28			11 543	29			11 543	33		
		8			15 391	50			15 391	51			15 391	59		
		10			19 238	77			19 238	79			19 238	93		
	850	4	0.859	0.568	8 176	12	0.893	0.568	8 176	13	0.935	0.568	8 176	15	0.935	0.568
		6			12 264	28			12 264	29			12 264	33		
		8			16 353	50			16 353	51			16 353	59		
		10			20 441	77			20 441	79			20 441	93		
	900	4	0.909	0.601	8 657	12	0.945	0.601	8 657	13	0.990	0.601	8 657	15	0.990	0.601
		6			12 986	28			12 986	29			12 986	33		
		8			17 315	50			17 315	51			17 315	59		
		10			21 643	77			21 643	79			21 643	93		
	950	4	0.960	0.635	9 138	11	0.998	0.635	9 138	13	1.045	0.635	9 138	15	1.045	0.635
		6			13 707	25			13 707	29			13 707	33		
		8			18 276	44			18 276	51			18 276	59		
		10			22 846	69			22 846	79			22 846	93		
	1000	4	1.010	0.668	9 619	11	1.050	0.668	9 619	13	1.100	0.668	9 619	15	1.100	0.668
		6			14 429	25			14 429	29			14 429	33		
		8			19 238	44			19 238	51			19 238	59		
		10			24 048	69			24 048	79			24 048	93		
	1050	4	1.061	0.701	10 100	11	1.103	0.701	10 100	13	1.155	0.701	10 100	15	1.155	0.701
		6			15 150	25			15 150	29			15 150	33		
		8			20 200	44			20 200	51			20 200	59		
		10			25 250	69			25 250	79			25 250	93		
	1100	4	1.111	0.735	10 581	11	1.155	0.735	10 581	13	1.210	0.735	10 581	15	1.210	0.735
		6			15 872	25			15 872	29			15 872	33		
		8			21 162	44			21 162	51			21 162	59		
		10			26 453	69			26 453	79			26 453	93		
	1150	4	1.162	0.768	11 062	11	1.208	0.768	11 062	13	1.265	0.768	11 062	15	1.265	0.768
		6			16 593	25			16 593	29			16 593	33		
		8			22 124	44			22 124	51			22 124	59		
		10			27 655	69			27 655	79			27 655	93		
	1200	4	1.212	0.802	11 543	11	1.260	0.802	11 543	13	1.320	0.802	11 543	15	1.320	0.802
		6			17 315	25			17 315	29			17 315	33		
		8			23 086	44			23 086	51			23 086	59		
		10			28 858	69			28 858	79			28 858	93		
	1250	4	1.263	0.835	12 024	11	1.313	0.835	12 024	13	1.375	0.835	12 024	15	1.375	0.835
		6			18 036	25			18 036	29			18 036	33		
		8			24 048	44			24 048	51			24 048	59		
		10			30 060	69			30 060	79			30 060	93		

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers **for multi-compartment fire ventilation systems**

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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		height H [mm]														
		1130					1200					1250				
	v [m/s]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]	S _k [m ²]	S _e [m ²]	Q [m ³ /h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	110	4	0.124	0.083	1 190	12	0.132	0.083	1 190	13	40	0.138	0.092	1 321	11	37
		6			1 784	27			1 784	30				1 982	24	
		8			2 379	49			2 379	54				2 642	43	
		10			2 974	76			2 974	84				3 303	66	
	150	4	0.170	0.113	1 622	12	0.180	0.113	1 622	13	41	0.188	0.125	1 801	11	39
		6			2 433	27			2 433	30				2 702	24	
		8			3 244	49			3 244	54				3 603	43	
		10			4 055	76			4 055	84				4 504	66	
	200	4	0.226	0.150	2 163	12	0.240	0.150	2 163	13	42	0.250	0.167	2 402	11	39
		6			3 244	27			3 244	30				3 603	24	
		8			4 326	49			4 326	54				4 804	43	
		10			5 407	76			5 407	84				6 005	66	
	250	4	0.283	0.188	2 704	12	0.300	0.188	2 704	13	43	0.313	0.209	3 002	11	40
		6			4 055	27			4 055	30				4 504	24	
		8			5 407	49			5 407	54				6 005	43	
		10			6 759	76			6 759	84				7 506	66	
	300	4	0.339	0.225	3 244	12	0.360	0.225	3 244	13	44	0.375	0.250	3 603	11	41
		6			4 866	27			4 866	30				5 404	24	
		8			6 489	49			6 489	54				7 206	43	
		10			8 111	76			8 111	84				9 007	66	
	350	4	0.396	0.263	3 785	12	0.420	0.263	3 785	13	45	0.438	0.292	4 203	11	41
		6			5 678	27			5 678	30				6 305	24	
		8			7 570	49			7 570	54				8 407	43	
		10			9 463	76			9 463	84				10 508	66	
	400	4	0.452	0.300	4 326	12	0.480	0.300	4 326	13	45	0.500	0.334	4 804	11	42
		6			6 489	27			6 489	30				7 206	24	
		8			8 652	49			8 652	54				9 608	43	
		10			10 814	76			10 814	84				12 010	66	
	450	4	0.509	0.338	4 866	12	0.540	0.338	4 866	13	46	0.563	0.375	5 404	11	43
		6			7 300	27			7 300	30				8 106	24	
		8			9 733	49			9 733	54				10 809	43	
		10			12 166	76			12 166	84				13 511	66	
	500	4	0.565	0.376	5 407	12	0.600	0.376	5 407	13	46	0.625	0.417	6 005	11	43
		6			8 111	27			8 111	30				9 007	24	
		8			10 814	49			10 814	54				12 010	43	
		10			13 518	76			13 518	84				15 012	66	
	550	4	0.622	0.413	5 948	12	0.660	0.413	5 948	13	47	0.688	0.459	6 605	11	43
		6			8 922	27			8 922	30				9 908	24	
		8			11 896	49			11 896	54				13 211	43	
		10			14 870	76			14 870	84				16 513	66	
	600	4	0.678	0.451	6 489	12	0.720	0.451	6 489	13	47	0.750	0.500	7 206	11	44
		6			9 733	27			9 733	30				10 809	24	
		8			12 977	49			12 977	54				14 412	43	
		10			16 222	76			16 222	84				18 014	66	
	650	4	0.735	0.488	7 029	12	0.780	0.488	7 029	13	47	0.813	0.542	7 806	11	44
		6			10 544	27			10 544	30				11 709	24	
		8			14 059	49			14 059	54				15 612	43	
		10			17 573	76			17 573	84				19 516	66	

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S_k – duct cross-section [m²]
S_e – damper active cross-section [m²]

Q – flow [m³/h]
d_p – pressure drop [Pa]
L_{WA} – damper noise level [dB]

		v [m/s]	height H [mm]														
			1130					1200					1250				
			S _k [m²]	S _e [m²]	Q [m³/h]	d _p [Pa]	L _{WA} [dB]	S _k [m²]	S _e [m²]	Q [m³/h]	d _p [Pa]	L _{WA} [dB]	S _k [m²]	S _e [m²]	Q [m³/h]	d _p [Pa]	L _{WA} [dB]
width B [mm]	700	4	0.791	0.526	7 570	12	46	0.840	0.526	7 570	13	48	0.875	0.584	8 407	11	44
		6			11 355	27	57			11 355	30	58			12 610	24	55
		8			15 140	49	64			15 140	54	66			16 813	43	63
		10			18 925	76	70			18 925	84	71			21 017	66	68
	750	4	0.848	0.563	8 111	12	47	0.900	0.563	8 111	13	48	0.938	0.626	9 007	11	45
		6			12 166	27	57			12 166	30	58			13 511	24	55
		8			16 222	49	65			16 222	54	66			18 014	43	63
		10			20 277	76	70			20 277	84	72			22 518	66	69
	800	4	0.904	0.601	8 652	12	47	0.960	0.601	8 652	13	48	1.000	0.667	9 608	11	45
		6			12 977	27	57			12 977	30	59			14 412	24	56
		8			17 303	49	65			17 303	54	66			19 215	43	63
		10			21 629	76	71			21 629	84	72			24 019	66	69
	850	4	0.961	0.638	9 192	12	47	1.020	0.638	9 192	13	48	1.063	0.709	10 208	11	45
		6			13 788	27	58			13 788	30	59			15 312	24	56
		8			18 384	49	65			18 384	54	66			20 416	43	63
		10			22 981	76	71			22 981	84	72			25 520	66	69
	900	4	1.017	0.676	9 733	12	47	1.080	0.676	9 733	13	49	1.125	0.751	10 809	11	46
		6			14 599	27	58			14 599	30	59			16 213	24	56
		8			19 466	49	65			19 466	54	67			21 617	43	64
		10			24 332	76	71			24 332	84	73			27 022	66	69
950	4	1.074	0.713	10 274	11	47	1.140	0.713	10 274	13	49	1.188	0.792	11 409	11	47	
	6			15 411	24	57			15 411	30	60			17 114	24	57	
	8			20 547	43	65			20 547	54	67			22 818	43	65	
	10			25 684	67	70			25 684	84	73			28 523	66	71	
1000	4	1.130	0.751	10 814	11	47	1.200	0.751	10 814	13	50	1.250	0.834	12 010	11	47	
	6			16 222	24	57			16 222	30	60			18 014	24	58	
	8			21 629	43	65			21 629	54	68			24 019	43	65	
	10			27 036	67	71			27 036	84	73			30 024	66	71	
1050	4	1.187	0.789	11 355	11	47	1.260	0.789	11 355	13	50	1.313	0.876	12 610	11	47	
	6			17 033	24	58			17 033	30	60			18 915	24	58	
	8			22 710	43	65			22 710	54	68			25 220	43	65	
	10			28 388	67	71			28 388	84	74			31 525	66	71	
1100	4	1.243	0.826	11 896	11	47	1.320	0.826	11 896	13	50	1.375	0.917	13 211	11	47	
	6			17 844	24	58			17 844	30	61			19 816	24	58	
	8			23 792	43	65			23 792	54	68			26 421	43	65	
	10			29 740	67	71			29 740	84	74			33 026	66	71	
1150	4	1.300	0.864	12 437	11	47	1.380	0.864	12 437	13	50	1.438	0.959	13 811	11	48	
	6			18 655	24	58			18 655	30	61			20 717	24	58	
	8			24 873	43	65			24 873	54	68			27 622	43	66	
	10			31 091	67	71			31 091	84	74			34 528	66	71	
1200	4	1.356	0.901	12 977	11	48	1.440	0.901	12 977	13	50	1.500	1.001	14 412	11	48	
	6			19 466	24	58			19 466	30	61			21 617	24	58	
	8			25 955	43	66			25 955	54	68			28 823	43	66	
	10			32 443	67	71			32 443	84	74			36 029	66	72	
1250	4	1.413	0.939	13 518	11	48	1.500	0.939	13 518	13	51	1.563	1.043	15 012	11	48	
	6			20 277	24	58			20 277	30	61			22 518	24	59	
	8			27 036	43	66			27 036	54	69			30 024	43	66	
	10			33 795	67	72			33 795	84	74			37 530	66	72	

The WIP PRO/V fire damper selection program is available at www.mercor.com.pl, in the Designer Zone.

mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

13.7 | Estimated weights of mcr WIP PRO/V, mcr WIP PRO/V-M dampers [kg]

		width B [mm]														
		110	150	200	250	300	350	400	500	600	700	800	900	1000	1100	1250
height H [mm]	263	3	4	5	7	8	9	11	14	16	19	22	25	28	31	34
	300	3	4	6	8	9	11	12	16	19	22	25	29	33	37	41
	400	4	6	8	12	12	15	17	21	25	30	34	38	42	46	50
	500	5	8	10	13	16	18	21	27	32	37	43	48	53	58	63
	600	7	9	12	16	19	22	25	32	38	45	51	58	65	72	79
	700	8	11	15	18	22	26	30	37	45	52	60	68	76	84	92
	800	9	12	17	21	25	30	34	43	51	60	69	77	85	93	101
	900	10	14	19	24	29	34	38	48	58	68	77	87	97	107	117
	1000	11	16	21	27	32	37	43	54	64	75	86	97	108	119	130
	1100	13	17	23	29	35	41	47	59	71	83	95	106	117	128	139
	1250	14	20	27	33	40	47	54	67	81	94	108	122	136	150	164

The table shows the weights of dampers with RST-KW1 trigger control mechanisms or actuators.

13.8 | Accessories

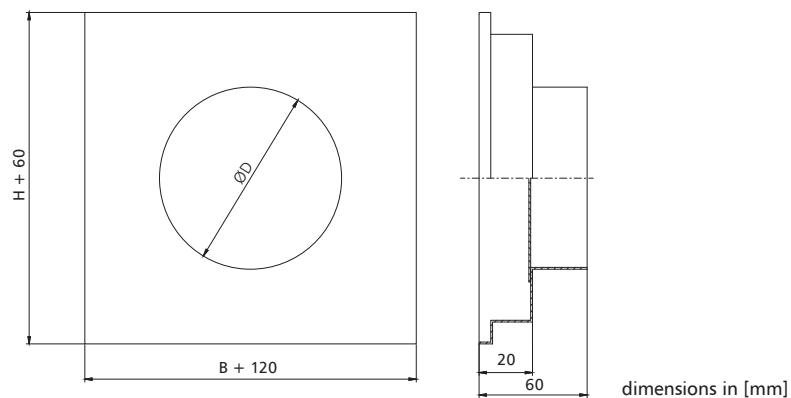
13.8.1 | mcr KRP connection stub

mcr KRP connection stubs are used to connect a circular ventilation duct to a rectangular damper. The connection is a „bare end“ pipe. The diameter of the stub pipe is 2 mm smaller than the diameter of the ventilation duct.

Dimensions:

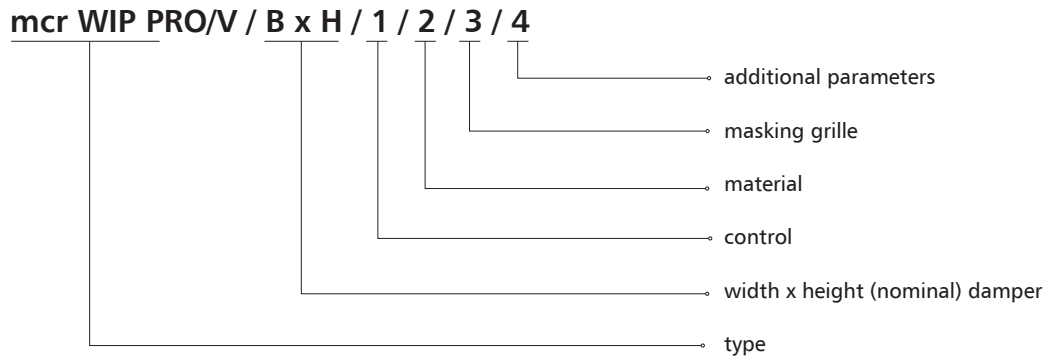
BxH - damper dimensions [mm]

ØD - diameter of the connection duct [mm]



mcr WIP PRO/V, mcr WIP PRO/V-M | Multi-blade smoke control dampers for multi-compartment fire ventilation systems

13.9 | Marking



1 - control:

» trigger and control mechanism, axial actuator

- BE24 – actuator without a return spring, U = 24 V AC/DC
- BE230 – actuator without a return spring, U = 230 V AC/DC
- BEE24 – actuator without a return spring, U = 24 V AC/DC
- BEE230 – actuator without a return spring, U = 230 V AC/DC
- BEN24 – actuator without a return spring, U = 24 V AC/DC
- BEN230 – actuator without a return spring, U = 230 V AC/DC
- MLE24 – actuator without a return spring, U = 24 V AC/DC
- MLE230 – actuator without a return spring, U = 230 V AC
- ME24 – actuator without a return spring, U = 24 V AC/DC
- ME230 – actuator without a return spring, U = 230 V AC

2 - material:

[no symbol] – galvanized steel, Zn 275 g/m² coating

KN – stainless steel

KK – 1.4404 acid-proof steel

KKM – special damper design - damper and its components made of stainless steel, damper partition sleeves additionally secured

KOM – special damper design - damper and its components made of galvanized steel, damper partition sleeves additionally secured

3 - masking element:

MSTx1 – single masking grille

MSTx2 – two masking grilles

MWPx1 – single mesh cover

MWPx2 – two mesh cover

4 - additional parameters :

» Damper axis of rotation

[no symbol] – horizontal axis of rotation

PP_D – vertical axis of rotation – mechanism at the bottom of the damper

PP_G – vertical axis of rotation - mechanism at the top of the damper

» Design standard

[no symbol] – left damper

KP – right damper

LC – actuator long casing

» Damper casing

BU - earth pin

NOTE: separate additional parameters entered with the “/” sign example marking:

mcr WIP PRO/V 400 x 400 BLE24

Chapter 18 in Technical Catalogue - power supply and control (p. 350) contains the following information:
- technical specifications and connection diagrams for the trigger control mechanisms supporting the damper.



> **Mercor Light&Vent Sp. z o.o.**

📍 ul. Grzegorza z Sanoka 2
80-408 Gdańsk
☎ (+48) 58 341 42 45
✉ hw.export@mercors.com.pl

www.mercor.com.pl/en



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