

mcr FID B

single-blade smoke exhaust fire dampers for multi-zone
fire ventilation systems

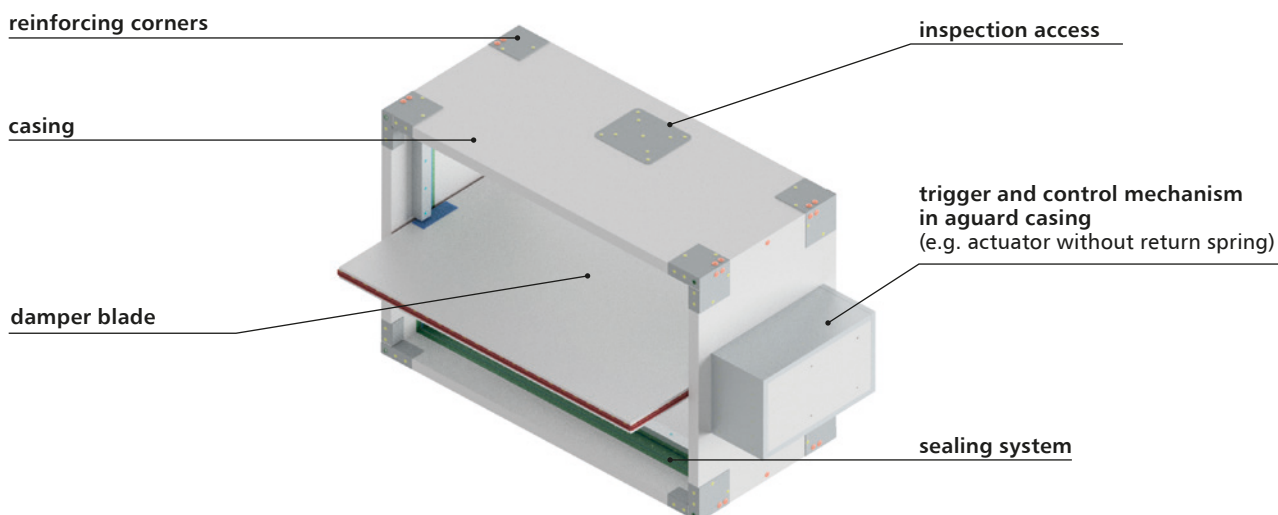


- ▶ **EIS120**
- ▶ **Certificate of constancy of performance 2434-CPR-0031.**
- ▶ **Dampers certified for compliance with EN 12101-8.**
- ▶ **Dampers qualified under EN 13501-4 tested under EN 1366-10.**
- ▶ **Cut-off dampers with the fire resistance independent of airflow direction and installation side.**
- ▶ **Lower acoustic noise and hydraulic resistance in the system thanks to reduction of damper blade thickness – 40mm thickness for EIS120.**
- ▶ **MA feature (the damper partition can change its position during a fire).**

1.1. application

The mcr FID B smoke exhaust dampers are intended for installation in automatically operated fire ventilation systems. Dampers mcr FID B are used in fire ventilation systems, or in mixed, fire and comfort ventilation systems. They support both single and multiple fire zones in a building. The devices prevent fire, smoke and fire gases propagation to the adjacent areas. During normal operation, the fire damper is in open or closed position depending on its function. The damper blade opens in the zone on fire and dampers close in other zones. The damper blade during a fire can change its position - feature MA, depending on the needs of rescue teams and the fire scenario.

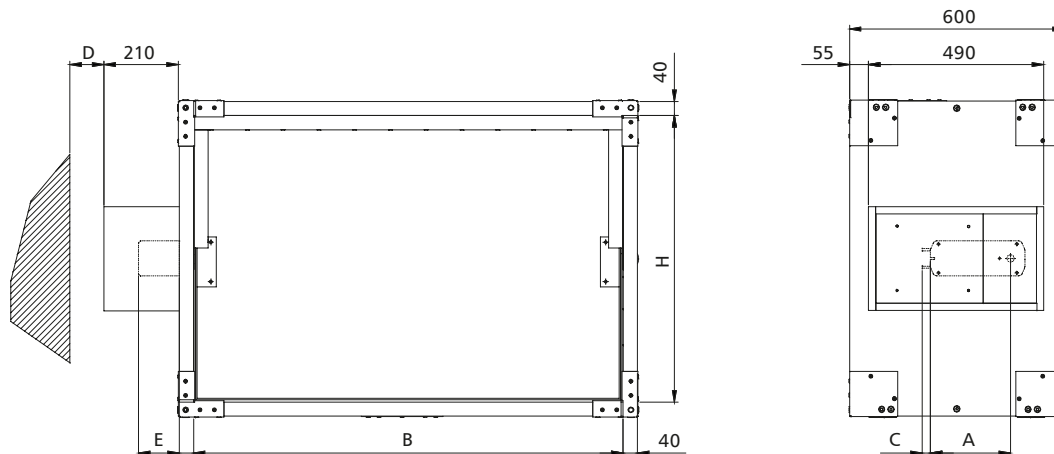
1.2. design



The mcr FID B smoke exhaust dampers consist of a casing with a rectangular cross-section consisting of fire-proof boards, a moving damper blade and an actuator activated manually or remotely. For chemically aggressive environments, the fire-proof boards are impregnated. The casing total length is 600 mm. The damper blade is made of a fire-proof board with a total thickness of 40 mm. The inner side of the fire damper casing is equipped with a gasket system. There are stop profiles fastened to the inner casing surface, which limit the rotating motion of the damper blade. The damper is equipped as standard with an inspection access, located on one of the sides of the casing. At the corners of the casing there are steel reinforcements with a rivet nut system, enabling the installation of masking grilles and frames for connecting steel ventilation ducts.

1.3. versions

1.3.1. damper closing and opening with an actuator



| mechanism | A | C | D | E |
|-----------|-----|----|----|----|
| BE | 198 | 10 | 75 | 81 |
| BLE | 130 | 30 | 75 | 70 |
| BEE | 149 | 30 | 75 | 52 |
| BEN | 130 | 30 | 75 | 48 |

During normal operation, the damper blade of the fire damper remains open or closed. In case of fire, the blade of the damper in the zone on fire opens, while in other zones the damper blades are closed - the dampers are remotely activated by applying the power supply.

The mcr FID B dampers are equipped with a trigger and control mechanisms BE, BLE, BEE or BEN series axial actuator, powered with 24 V AC / DC or 230 V AC. BE and BLE series actuators are equipped with limit switches used to monitor the blade position. Furthermore, the mechanical position indicator is placed on the actuator.

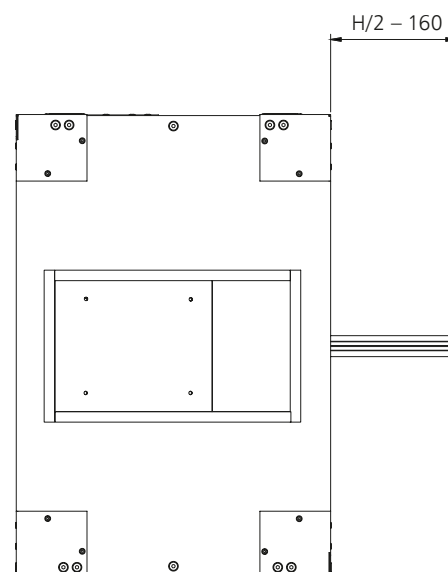
Dampers with Belimo BE, BLE, BEE or BEN series actuators close and open when the voltage is applied to the actuator terminals.

1.4. dimensions

rectangular dampers:

- nominal width B: from 200 mm to 1200 mm
- nominal height H: from 200 mm to 800 mm
- the maximum cross-section surface of one damper up to: 0,96m²
- the design of the damper ensures that its damper blade, regardless of the dimensions of the BxH damper, does not protrude beyond the device housing on one side.

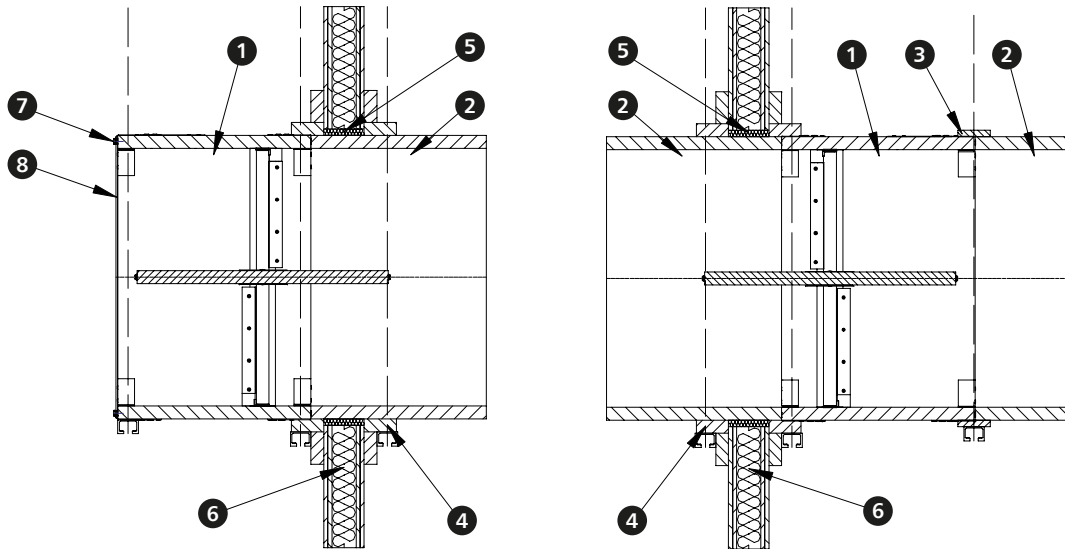
Apart from the standard dimensions, fire dampers may be manufactured with intermediate dimensions (in 1 mm increments, in the given range).



1.5. installation

The mcr FID B rectangular dampers are EI120(ved hod i↔o)S1500C10.000 MA multi-rated if installed on fire-resistant ducts classified according to EN 1366-8 and EN 1366-9.

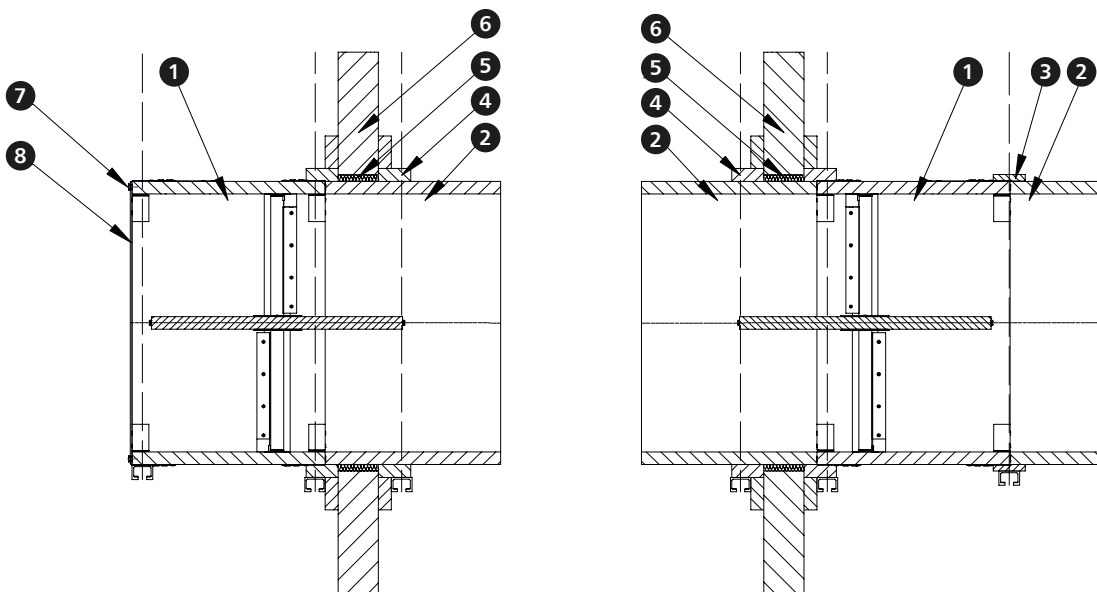
1.5.1. installation of damper in panel walls



- 1. mcr FID B BxH damper
- 2. multi-zone smoke extract duct - eg made of fire-rated boards
- 3. a strip of fire-resistant board along the entire length of the side BxH
- 4. system of ceiling hanger

- 5. system of installation transition of the fireproof duct
- 6. panel wall
- 7. M10x20 screw
- 8. MWB system grille

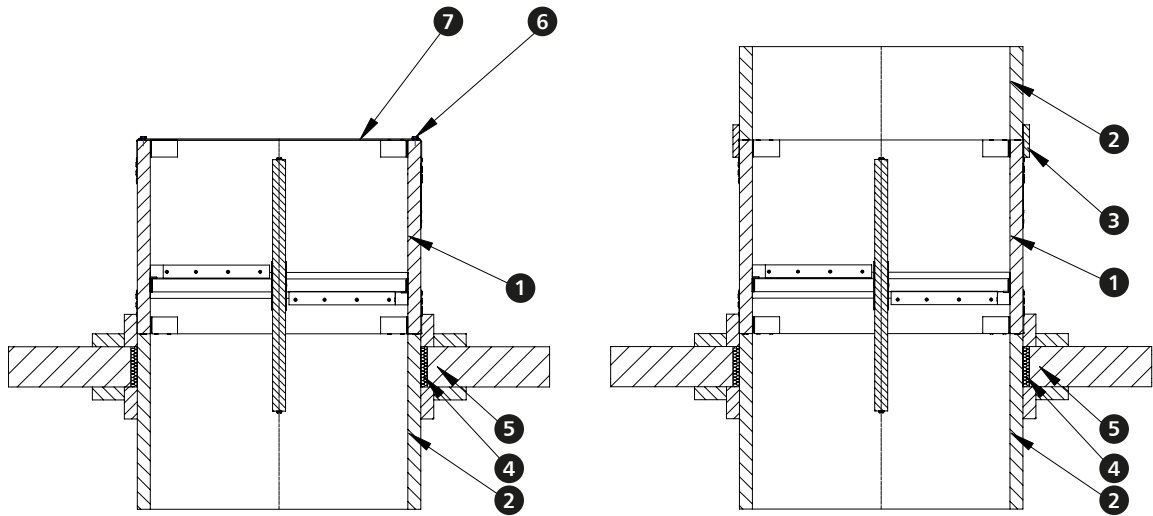
1.5.2. installation of damper in solid walls



- 1. mcr FID B BxH damper
- 2. multi-zone smoke extract duct - eg made of fire-rated boards
- 3. a strip of fire-resistant board along the entire length of the side BxH
- 4. system of ceiling hanger

- 5. system of installation transition of the fireproof duct
- 6. panel wall
- 7. M10x20 screw
- 8. MWB system grille

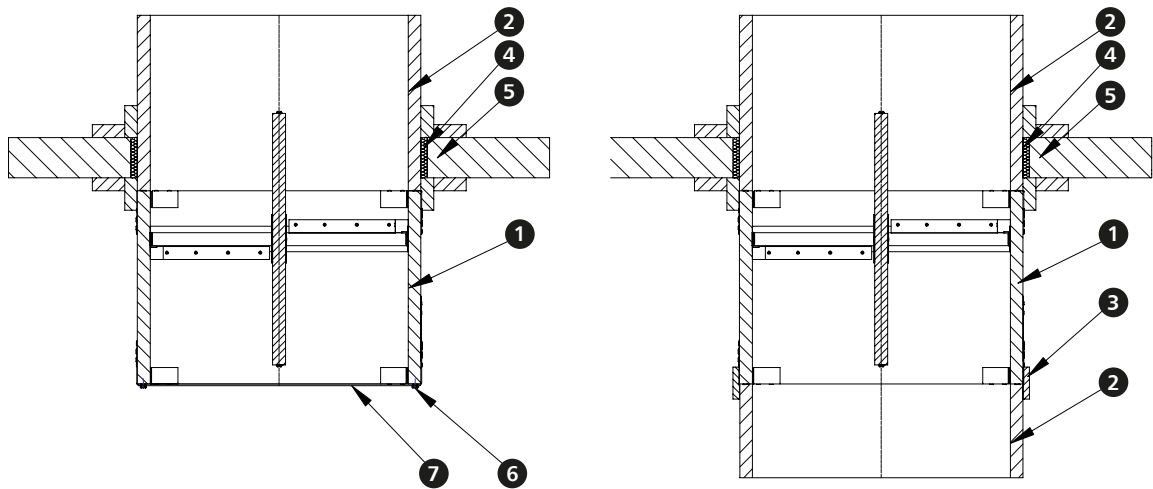
1.5.3. installation of damper in rigid floor – above the rigid floor



- 1. mcr FID B BxH damper
- 2. multi-zone smoke extract duct - eg made of fire-rated boards
- 3. a strip of fire-resistant board along the entire length of the side BxH
- 4. system of installation transition of the fireproof duct

- 5. rigid floor
- 6. M10x20 screw
- 7. MWB system grille

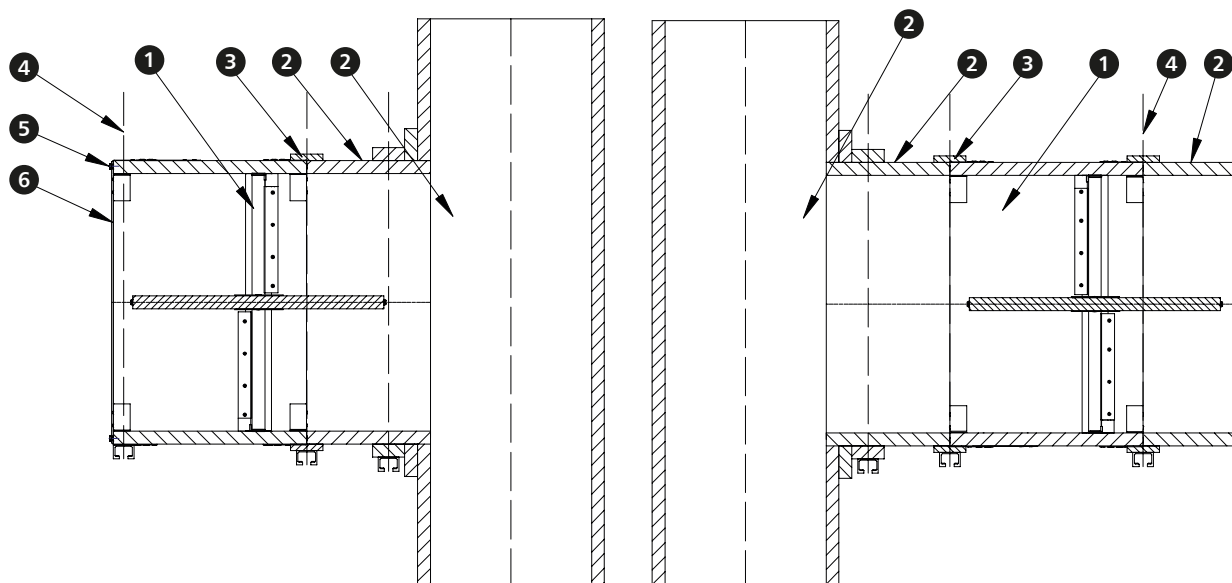
1.5.4. installation of damper in rigid floor – below the rigid floor



- 1. mcr FID B BxH damper
- 2. multi-zone smoke extract duct - eg made of fire-rated boards
- 3. a strip of fire-resistant board along the entire length of the side BxH
- 4. system of installation transition of the fireproof duct

- 5. rigid floor
- 6. M10x20 screw
- 7. MWB system grille

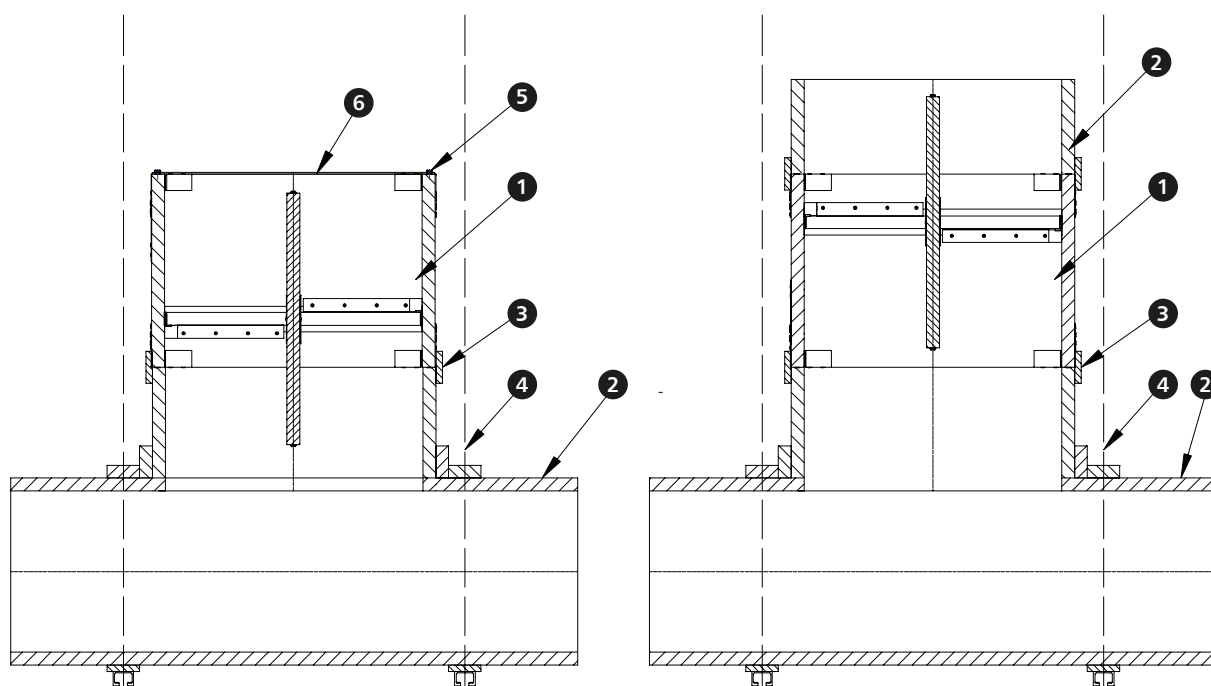
1.5.5. installation of the damper on horizontal ducts



- 1. mcr FID B BxH damper
- 2. multi-zone smoke extract duct - eg made of fire-rated boards
- 3. a strip of fire-resistant board along the entire length of the side BxH

- 4. system of ceiling hanger
- 5. M10x20 screw
- 6. MWB system grille

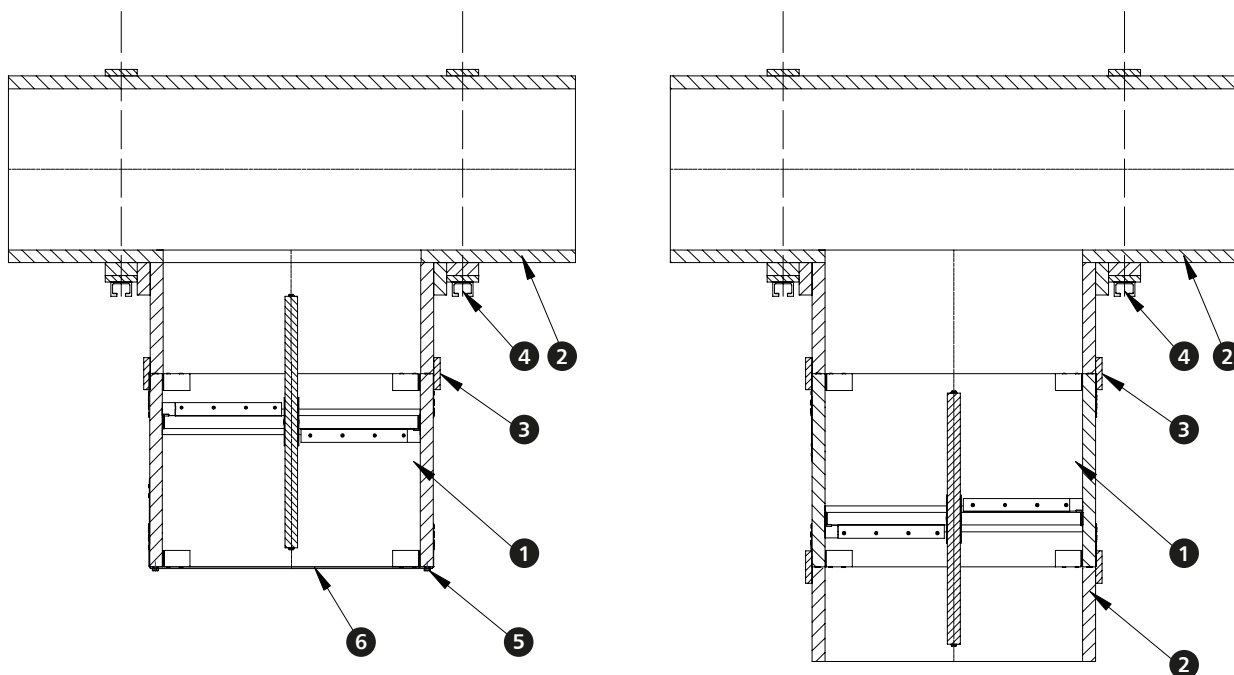
1.5.6. Installation of the damper on vertical ducts



- 1. mcr FID B BxH damper
- 2. multi-zone smoke extract duct - eg made of fire-rated boards
- 3. a strip of fire-resistant board along the entire length of the side BxH

- 4. system of ceiling hanger
- 5. M10x20 screw
- 6. MWB system grille

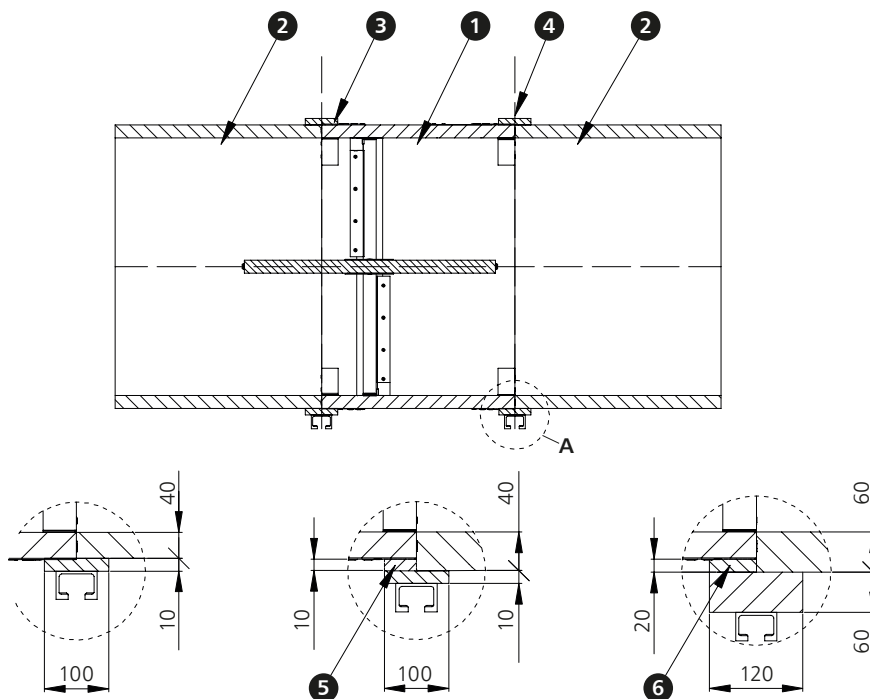
1.5.7. installation of the damper on vertical ducts



- 1. mcr FID B BxH damper
- 2. multi-zone smoke extract duct - eg made of fire-rated boards
- 3. a strip of fire-resistant board along the entire length of the side BxH

- 4. system of ceiling hanger
- 5. M10x20 screw
- 6. MWB system grille

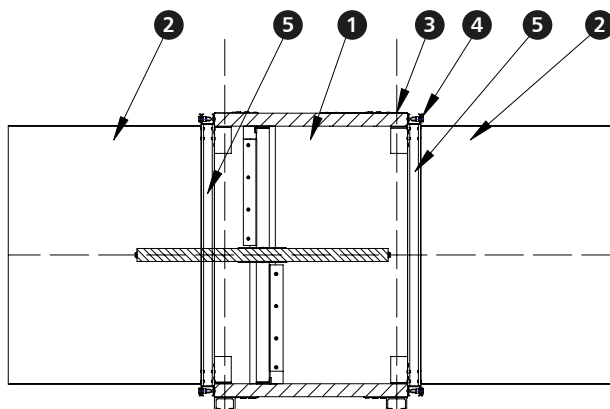
1.5.8. connection of a multi-zone fireproof duct, e.g. made of fire-rated boards



- 1. mcr FID B BxH damper
- 2. multi-zone smoke extract duct - eg made of fire-rated boards
- 3. a strip of fire-resistant board along the entire length of the side BxH

- 4. system of ceiling hanger
- 5. a strip of fire-resistant board along the entire length of the side BxH with dimensions 10x50mm
- 6. a strip of fire-resistant board along the entire length of the side BxH with dimensions 20x50mm

1.5.9. connection of a single- compartment fireproof duct, e.g. made of metal sheets



- | | |
|---|----------------------|
| 1. mcr FID B BxH damper | 4. M10x20 screw |
| 2. single-compartment smoke extract duct - eg metal one | 5. RB mounting frame |
| 3. system of ceiling hanger | |

Smoke extraction duct should be made in accordance with the duct manufacturer's guidelines. The ducts must have adequate fire resistance in accordance with the fire resistance provided for the entire solution. Seal all connections between the damper and the ducts with appropriate mortar / glue / gaskets, ensuring fire resistance. The shut-off damper in vertical position fire ventilation systems may be mounted across the horizontal smoke extract duct or on the sides of the horizontal smoke extract duct or on the surface of any side of the vertical smoke extract duct.

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

| | | height H [mm] | | | | | | | | | | | | | | | |
|--------------|-----|---------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|
| | | 200 | | | | | 250 | | | | | 300 | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 200 | 4 | 0.040 | 0.029 | 420 | 9 | 31 | 0.050 | 0.039 | 564 | 9 | 31 | 0.06 | 0.049 | 708 | 8 | 32 |
| | | 6 | | | 631 | 21 | 41 | | | 847 | 19 | 42 | | | 1 063 | 19 | 42 |
| | | 8 | | | 841 | 37 | 49 | | | 1 129 | 35 | 49 | | | 1 417 | 33 | 50 |
| | | 10 | | | 1 051 | 58 | 55 | | | 1 411 | 54 | 55 | | | 1 771 | 52 | 55 |
| | 250 | 4 | 0.050 | 0.037 | 526 | 9 | 31 | 0.063 | 0.049 | 706 | 9 | 32 | 0.075 | 0.062 | 886 | 8 | 32 |
| | | 6 | | | 788 | 21 | 42 | | | 1 058 | 19 | 43 | | | 1 328 | 18 | 42 |
| | | 8 | | | 1 051 | 37 | 50 | | | 1 411 | 35 | 50 | | | 1 771 | 31 | 50 |
| | | 10 | | | 1 314 | 57 | 55 | | | 1 764 | 54 | 56 | | | 2 214 | 49 | 56 |
| | 300 | 4 | 0.060 | 0.044 | 631 | 9 | 32 | 0.075 | 0.059 | 847 | 8 | 33 | 0.09 | 0.074 | 1 063 | 8 | 32 |
| | | 6 | | | 946 | 20 | 43 | | | 1 270 | 19 | 43 | | | 1 594 | 17 | 43 |
| | | 8 | | | 1 261 | 36 | 50 | | | 1 693 | 34 | 51 | | | 2 125 | 30 | 50 |
| | | 10 | | | 1 577 | 56 | 56 | | | 2 117 | 53 | 56 | | | 2 657 | 47 | 56 |
| 350 | 4 | 0.070 | 0.051 | 736 | 9 | 33 | 0.088 | 0.069 | 988 | 8 | 33 | 0.105 | 0.086 | 1 240 | 7 | 32 | |
| | 6 | | | 1 104 | 20 | 43 | | | 1 482 | 19 | 44 | | | 1 860 | 16 | 43 | |
| | 8 | | | 1 472 | 36 | 51 | | | 1 976 | 33 | 51 | | | 2 480 | 29 | 50 | |
| | 10 | | | 1 840 | 56 | 57 | | | 2 470 | 52 | 57 | | | 3 100 | 45 | 56 | |
| 400 | 4 | 0.080 | 0.058 | 841 | 9 | 33 | 0.100 | 0.078 | 1 129 | 8 | 34 | 0.12 | 0.098 | 1 417 | 7 | 32 | |
| | 6 | | | 1 261 | 19 | 43 | | | 1 693 | 19 | 44 | | | 2 125 | 15 | 42 | |
| | 8 | | | 1 682 | 35 | 51 | | | 2 258 | 33 | 52 | | | 2 834 | 27 | 50 | |
| | 10 | | | 2 102 | 54 | 57 | | | 2 822 | 52 | 57 | | | 3 542 | 42 | 56 | |
| 450 | 4 | 0.090 | 0.066 | 946 | 9 | 33 | 0.113 | 0.088 | 1 270 | 7 | 32 | 0.135 | 0.111 | 1 594 | 7 | 32 | |
| | 6 | | | 1 419 | 19 | 44 | | | 1 905 | 17 | 43 | | | 2 391 | 15 | 43 | |
| | 8 | | | 1 892 | 35 | 51 | | | 2 540 | 29 | 51 | | | 3 188 | 27 | 50 | |
| | 10 | | | 2 365 | 54 | 57 | | | 3 175 | 46 | 56 | | | 3 985 | 42 | 56 | |
| 500 | 4 | 0.100 | 0.073 | 1 051 | 9 | 34 | 0.125 | 0.098 | 1 411 | 7 | 32 | 0.15 | 0.123 | 1 771 | 7 | 32 | |
| | 6 | | | 1 577 | 19 | 44 | | | 2 117 | 16 | 43 | | | 2 657 | 15 | 43 | |
| | 8 | | | 2 102 | 35 | 52 | | | 2 822 | 28 | 50 | | | 3 542 | 26 | 50 | |
| | 10 | | | 2 628 | 54 | 58 | | | 3 528 | 44 | 56 | | | 4 428 | 41 | 56 | |
| 550 | 4 | 0.110 | 0.080 | 1 156 | 8 | 34 | 0.138 | 0.108 | 1 552 | 7 | 33 | 0.165 | 0.135 | 1 948 | 6 | 33 | |
| | 6 | | | 1 734 | 19 | 44 | | | 2 328 | 16 | 43 | | | 2 922 | 14 | 43 | |
| | 8 | | | 2 313 | 34 | 52 | | | 3 105 | 28 | 51 | | | 3 897 | 26 | 51 | |
| | 10 | | | 2 891 | 53 | 58 | | | 3 881 | 44 | 57 | | | 4 871 | 40 | 56 | |
| 600 | 4 | 0.120 | 0.088 | 1 261 | 8 | 34 | 0.150 | 0.118 | 1 693 | 7 | 33 | 0.18 | 0.148 | 2 125 | 6 | 33 | |
| | 6 | | | 1 892 | 19 | 45 | | | 2 540 | 15 | 43 | | | 3 188 | 14 | 43 | |
| | 8 | | | 2 523 | 34 | 52 | | | 3 387 | 27 | 51 | | | 4 251 | 26 | 51 | |
| | 10 | | | 3 154 | 53 | 58 | | | 4 234 | 42 | 56 | | | 5 314 | 40 | 57 | |
| 650 | 4 | 0.130 | 0.095 | 1 367 | 8 | 35 | 0.163 | 0.127 | 1 835 | 6 | 32 | 0.195 | 0.160 | 2 303 | 6 | 33 | |
| | 6 | | | 2 050 | 19 | 45 | | | 2 752 | 14 | 43 | | | 3 454 | 14 | 44 | |
| | 8 | | | 2 733 | 34 | 53 | | | 3 669 | 26 | 50 | | | 4 605 | 26 | 51 | |
| | 10 | | | 3 416 | 53 | 59 | | | 4 586 | 40 | 56 | | | 5 756 | 40 | 57 | |
| 700 | 4 | 0.140 | 0.102 | 1 472 | 8 | 35 | 0.175 | 0.137 | 1 976 | 6 | 33 | 0.21 | 0.172 | 2 480 | 6 | 34 | |
| | 6 | | | 2 208 | 19 | 45 | | | 2 964 | 14 | 43 | | | 3 720 | 14 | 44 | |
| | 8 | | | 2 943 | 33 | 53 | | | 3 951 | 26 | 51 | | | 4 959 | 26 | 52 | |
| | 10 | | | 3 679 | 52 | 59 | | | 4 939 | 40 | 56 | | | 6 199 | 40 | 57 | |

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

| | | height H [mm] | | | | | | | | | | | | | | | |
|--------------|------|---------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|
| | | 200 | | | | | 250 | | | | | 300 | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 800 | 4 | 0.160 | 0.117 | 1 682 | 8 | 35 | 0.200 | 0.157 | 2 258 | 6 | 32 | 0.24 | 0.197 | 2 834 | 6 | 33 |
| | | 6 | | | 2 523 | 18 | 45 | | | 3 387 | 14 | 43 | | | 4 251 | 14 | 44 |
| | | 8 | | | 3 364 | 32 | 53 | | | 4 516 | 24 | 51 | | | 5 668 | 24 | 52 |
| | | 10 | | | 4 205 | 50 | 59 | | | 5 645 | 38 | 56 | | | 7 085 | 38 | 57 |
| | 900 | 4 | 0.180 | 0.131 | 1 892 | 7 | 34 | 0.225 | 0.176 | 2 540 | 6 | 32 | 0.27 | 0.221 | 3 188 | 5 | 32 |
| | | 6 | | | 2 838 | 16 | 44 | | | 3 810 | 13 | 43 | | | 4 782 | 12 | 42 |
| | | 8 | | | 3 784 | 29 | 52 | | | 5 080 | 23 | 50 | | | 6 376 | 21 | 50 |
| | | 10 | | | 4 730 | 45 | 58 | | | 6 350 | 36 | 56 | | | 7 970 | 32 | 56 |
| | 1000 | 4 | 0.200 | 0.146 | 2 102 | 7 | 34 | 0.250 | 0.196 | 2 822 | 6 | 32 | 0.3 | 0.246 | 3 542 | 5 | 32 |
| | | 6 | | | 3 154 | 16 | 45 | | | 4 234 | 13 | 43 | | | 5 314 | 12 | 43 |
| | | 8 | | | 4 205 | 29 | 52 | | | 5 645 | 22 | 50 | | | 7 085 | 21 | 50 |
| | | 10 | | | 5 256 | 45 | 58 | | | 7 056 | 35 | 56 | | | 8 856 | 32 | 56 |
| | 1100 | 4 | 0.220 | 0.161 | 2 313 | 7 | 35 | 0.275 | 0.216 | 3 105 | 5 | 32 | 0.33 | 0.271 | 3 897 | 5 | 33 |
| | | 6 | | | 3 469 | 16 | 45 | | | 4 657 | 12 | 43 | | | 5 845 | 12 | 43 |
| | | 8 | | | 4 625 | 29 | 53 | | | 6 209 | 22 | 50 | | | 7 793 | 21 | 51 |
| | | 10 | | | 5 782 | 45 | 59 | | | 7 762 | 34 | 56 | | | 9 742 | 32 | 56 |
| | 1200 | 4 | 0.240 | 0.175 | 2 523 | 8 | 37 | 0.300 | 0.235 | 3 387 | 5 | 33 | 0.36 | 0.295 | 4 251 | 9 | 40 |
| | | 6 | | | 3 784 | 18 | 47 | | | 5 080 | 12 | 43 | | | 6 376 | 20 | 51 |
| | | 8 | | | 5 046 | 29 | 53 | | | 6 774 | 22 | 51 | | | 8 502 | 36 | 58 |
| | | | | | 6 307 | 45 | 59 | | | 8 467 | 34 | 57 | | | 10 627 | 42 | 60 |

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

| | | height H [mm] | | | | | | | | | | | | | | | |
|--------------|-----|---------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|
| | | 350 | | | | | 400 | | | | | 450 | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 200 | 4 | 0.070 | 0.059 | 852 | 8 | 32 | 0.080 | 0.069 | 996 | 7 | 31 | 0.090 | 0.079 | 1 140 | 7 | 31 |
| | | 6 | | | 1 279 | 18 | 42 | | | 1 495 | 17 | 42 | | | 1 711 | 15 | 41 |
| | | 8 | | | 1 705 | 32 | 50 | | | 1 993 | 29 | 49 | | | 2 281 | 26 | 49 |
| | | 10 | | | 2 131 | 50 | 56 | | | 2 491 | 46 | 55 | | | 2 851 | 41 | 54 |
| | 250 | 4 | 0.088 | 0.074 | 1 066 | 7 | 31 | 0.100 | 0.087 | 1 246 | 6 | 29 | 0.113 | 0.099 | 1 426 | 6 | 29 |
| | | 6 | | | 1 598 | 16 | 42 | | | 1 868 | 13 | 40 | | | 2 138 | 13 | 40 |
| | | 8 | | | 2 131 | 29 | 50 | | | 2 491 | 23 | 47 | | | 2 851 | 22 | 47 |
| | | 10 | | | 2 664 | 45 | 55 | | | 3 114 | 36 | 53 | | | 3 564 | 35 | 53 |
| | 300 | 4 | 0.105 | 0.089 | 1 279 | 7 | 32 | 0.120 | 0.104 | 1 495 | 6 | 30 | 0.135 | 0.119 | 1 711 | 5 | 30 |
| | | 6 | | | 1 918 | 16 | 43 | | | 2 242 | 13 | 41 | | | 2 566 | 12 | 40 |
| | | 8 | | | 2 557 | 28 | 50 | | | 2 989 | 24 | 48 | | | 3 421 | 22 | 48 |
| | | 10 | | | 3 197 | 44 | 56 | | | 3 737 | 37 | 54 | | | 4 277 | 34 | 54 |
| 350 | 4 | 0.123 | 0.104 | 1 492 | 7 | 32 | 0.140 | 0.121 | 1 744 | 6 | 30 | 0.158 | 0.139 | 1 996 | 5 | 30 | |
| | 6 | | | 2 238 | 15 | 42 | | | 2 616 | 13 | 41 | | | 2 994 | 12 | 41 | |
| | 8 | | | 2 984 | 26 | 50 | | | 3 488 | 22 | 48 | | | 3 992 | 21 | 48 | |
| | 10 | | | 3 730 | 41 | 56 | | | 4 360 | 35 | 54 | | | 4 990 | 33 | 54 | |
| 400 | 4 | 0.140 | 0.118 | 1 705 | 6 | 31 | 0.160 | 0.138 | 1 993 | 6 | 31 | 0.180 | 0.158 | 2 281 | 5 | 30 | |
| | 6 | | | 2 557 | 13 | 41 | | | 2 989 | 13 | 41 | | | 3 421 | 12 | 41 | |
| | 8 | | | 3 410 | 24 | 49 | | | 3 986 | 22 | 49 | | | 4 562 | 21 | 48 | |
| | 10 | | | 4 262 | 37 | 55 | | | 4 982 | 35 | 55 | | | 5 702 | 32 | 54 | |
| 450 | 4 | 0.158 | 0.133 | 1 918 | 5 | 30 | 0.180 | 0.156 | 2 242 | 5 | 30 | 0.203 | 0.178 | 2 566 | 4 | 29 | |
| | 6 | | | 2 877 | 12 | 41 | | | 3 363 | 12 | 41 | | | 3 849 | 10 | 40 | |
| | 8 | | | 3 836 | 22 | 48 | | | 4 484 | 21 | 48 | | | 5 132 | 18 | 47 | |
| | 10 | | | 4 795 | 34 | 54 | | | 5 605 | 32 | 54 | | | 6 415 | 28 | 53 | |
| 500 | 4 | 0.175 | 0.148 | 2 131 | 5 | 31 | 0.200 | 0.173 | 2 491 | 5 | 30 | 0.225 | 0.198 | 2 851 | 4 | 29 | |
| | 6 | | | 3 197 | 12 | 41 | | | 3 737 | 11 | 40 | | | 4 277 | 9 | 39 | |
| | 8 | | | 4 262 | 22 | 49 | | | 4 982 | 19 | 48 | | | 5 702 | 17 | 47 | |
| | 10 | | | 5 328 | 34 | 55 | | | 6 228 | 30 | 54 | | | 7 128 | 26 | 52 | |
| 550 | 4 | 0.193 | 0.163 | 2 557 | 5 | 30 | 0.220 | 0.190 | 2 740 | 5 | 30 | 0.248 | 0.218 | 3 136 | 4 | 29 | |
| | 6 | | | 3 836 | 12 | 41 | | | 4 110 | 11 | 41 | | | 4 704 | 9 | 40 | |
| | 8 | | | 5 115 | 21 | 48 | | | 5 481 | 19 | 48 | | | 6 273 | 17 | 47 | |
| | 10 | | | 6 394 | 32 | 54 | | | 6 851 | 30 | 54 | | | 7 841 | 26 | 53 | |
| 600 | 4 | 0.210 | 0.178 | 2 557 | 5 | 30 | 0.240 | 0.208 | 2 989 | 4 | 28 | 0.270 | 0.238 | 3 421 | 4 | 29 | |
| | 6 | | | 3 836 | 10 | 40 | | | 4 484 | 8 | 37 | | | 5 132 | 9 | 40 | |
| | 8 | | | 5 115 | 19 | 48 | | | 5 979 | 14 | 45 | | | 6 843 | 17 | 47 | |
| | 10 | | | 6 394 | 29 | 53 | | | 7 474 | 27 | 53 | | | 8 554 | 26 | 53 | |
| 650 | 4 | 0.228 | 0.192 | 2 771 | 5 | 30 | 0.260 | 0.225 | 3 239 | 4 | 30 | 0.293 | 0.257 | 3 707 | 4 | 30 | |
| | 6 | | | 4 156 | 10 | 40 | | | 4 858 | 10 | 40 | | | 5 560 | 9 | 40 | |
| | 8 | | | 5 541 | 19 | 48 | | | 6 477 | 17 | 48 | | | 7 413 | 17 | 48 | |
| | 10 | | | 6 926 | 29 | 54 | | | 8 096 | 27 | 53 | | | 9 266 | 26 | 54 | |
| 700 | 4 | 0.245 | 0.207 | 2 984 | 5 | 30 | 0.28 | 0.242 | 3 488 | 4 | 30 | 0.315 | 0.277 | 3 992 | 4 | 30 | |
| | 6 | | | 4 476 | 10 | 41 | | | 5 232 | 10 | 40 | | | 5 988 | 9 | 40 | |
| | 8 | | | 5 967 | 19 | 48 | | | 6 975 | 17 | 48 | | | 7 983 | 16 | 48 | |
| | 10 | | | 7 459 | 29 | 54 | | | 8 719 | 27 | 54 | | | 9 979 | 25 | 53 | |

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

| | | height H [mm] | | | | | | | | | | | | | | | |
|--------------|------|---------------|-------------------------|-------------------------|--------------------------|------------|-------------------------|-------------------------|-------------------------|--------------------------|------------|-------------------------|-------------------------|-------------------------|--------------------------|------------|-------------------------|
| | | 350 | | | | | 400 | | | | | 450 | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 700 | 4 | 0.280 | 0.237 | 3 410 | 4 | 30 | 0.32 | 0.277 | 3 986 | 4 | 30 | 0.360 | 0.317 | 4 562 | 4 | 29 |
| | | 6 | | | 5 115 | 10 | 41 | | | 5 979 | 9 | 41 | | | 6 843 | 9 | 40 |
| | | 8 | | | 6 820 | 18 | 48 | | | 7 972 | 17 | 48 | | | 9 124 | 16 | 47 |
| | | 10 | | | 8 525 | 28 | 54 | | | 9 965 | 26 | 54 | | | 11 405 | 25 | 53 |
| | 800 | 4 | 0.315 | 0.266 | 3 836 | 4 | 31 | 0.360 | 0.311 | 4 484 | 6 | 35 | 0.405 | 0.356 | 5 132 | 4 | 29 |
| | | 6 | | | 5 754 | 10 | 41 | | | 6 726 | 12 | 44 | | | 7 698 | 9 | 40 |
| | | 8 | | | 7 672 | 18 | 49 | | | 8 968 | 26 | 54 | | | 10 264 | 16 | 47 |
| | | 10 | | | 9 590 | 28 | 55 | | | 11 210 | 33.4 | 58 | | | 12 830 | 25 | 53 |
| | 900 | 4 | 0.350 | 0.296 | 4 262 | 4 | 30 | 0.400 | 0.346 | 4 982 | 4 | 31 | 0.450 | 0.396 | 5 702 | 4 | 29 |
| | | 6 | | | 6 394 | 9 | 41 | | | 7 474 | 9 | 42 | | | 8 554 | 9 | 40 |
| | | 8 | | | 8 525 | 17 | 48 | | | 9 965 | 17 | 49 | | | 11 405 | 16 | 47 |
| | | 10 | | | 10 656 | 26 | 54 | | | 12 456 | 26 | 55 | | | 14 256 | 25 | 53 |
| | 1000 | 4 | 0.385 | 0.326 | 4 689 | 4 | 32 | 0.440 | 0.381 | 5 481 | 4 | 31 | 0.495 | 0.436 | 6 273 | 4 | 29 |
| | | 6 | | | 7 033 | 10 | 42 | | | 8 221 | 9 | 42 | | | 9 409 | 9 | 39 |
| | | 8 | | | 9 377 | 18 | 50 | | | 10 961 | 17 | 49 | | | 12 545 | 15 | 47 |
| | | 10 | | | 11 722 | 28 | 56 | | | 13 702 | 26 | 55 | | | 15 682 | 24 | 53 |
| | 1100 | 4 | 0.420 | 0.355 | 5 115 | 4 | 31 | 0.480 | 0.415 | 5 979 | 4 | 31 | 0.540 | 0.475 | 6 843 | 4 | 29 |
| | | 6 | | | 7 672 | 9 | 41 | | | 8 968 | 9 | 42 | | | 10 264 | 9 | 39 |
| | | 8 | | | 10 230 | 16 | 49 | | | 11 958 | 16 | 49 | | | 13 686 | 15 | 47 |
| | | 10 | | | 12 787 | 25 | 54 | | | 14 947 | 25 | 55 | | | 17 107 | 24 | 53 |
| 1200 | 4 | 0.385 | 0.326 | 4 689 | 4 | 30 | 0.440 | 0.381 | 5 481 | 4 | 31 | 0.495 | 0.436 | 6 273 | 4 | 29 | |
| | 6 | | | 7 033 | 10 | 42 | | | 8 221 | 9 | 41 | | | 9 409 | 9 | 40 | |
| | 8 | | | 9 377 | 19 | 50 | | | 10 961 | 17 | 50 | | | 12 545 | 16 | 47 | |
| | 10 | | | 11 722 | 29 | 56 | | | 13 702 | 27 | 56 | | | 15 682 | 25 | 53 | |

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

| | | height H [mm] | | | | | | | | | | | | | | | |
|--------------|-----|---------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|
| | | 500 | | | | | 550 | | | | | 600 | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 200 | 4 | 0.1 | 0.089 | 1 284 | 6 | 29 | 0.110 | 0.099 | 1 428 | 5 | 29 | 0.120 | 0.109 | 1 572 | 5 | 29 |
| | | 6 | | | 1 927 | 13 | 40 | | | 2 143 | 12 | 39 | | | 2 359 | 12 | 39 |
| | | 8 | | | 2 569 | 22 | 47 | | | 2 857 | 21 | 47 | | | 3 145 | 21 | 47 |
| | | 10 | | | 3 211 | 35 | 53 | | | 3 571 | 33 | 53 | | | 3 931 | 32 | 53 |
| | 250 | 4 | 0.125 | 0.112 | 1 606 | 6 | 30 | 0.138 | 0.124 | 1 786 | 5 | 30 | 0.150 | 0.137 | 1 966 | 5 | 30 |
| | | 6 | | | 2 408 | 13 | 41 | | | 2 678 | 12 | 40 | | | 2 948 | 12 | 40 |
| | | 8 | | | 3 211 | 22 | 48 | | | 3 571 | 21 | 48 | | | 3 931 | 21 | 48 |
| | | 10 | | | 4 014 | 35 | 54 | | | 4 464 | 33 | 53 | | | 4 914 | 32 | 54 |
| | 300 | 4 | 0.15 | 0.134 | 1 927 | 5 | 30 | 0.165 | 0.149 | 2 143 | 5 | 30 | 0.180 | 0.164 | 2 359 | 5 | 30 |
| | | 6 | | | 2 890 | 12 | 41 | | | 3 214 | 12 | 41 | | | 3 538 | 11 | 40 |
| | | 8 | | | 3 853 | 21 | 48 | | | 4 285 | 21 | 48 | | | 4 717 | 19 | 48 |
| | | 10 | | | 4 817 | 33 | 54 | | | 5 357 | 32 | 54 | | | 5 897 | 30 | 53 |
| | 350 | 4 | 0.175 | 0.156 | 2 248 | 5 | 30 | 0.193 | 0.174 | 2 500 | 5 | 31 | 0.210 | 0.191 | 2 752 | 5 | 30 |
| | | 6 | | | 3 372 | 12 | 41 | | | 3 750 | 12 | 41 | | | 4 128 | 10 | 40 |
| | | 8 | | | 4 496 | 21 | 48 | | | 5 000 | 21 | 49 | | | 5 504 | 19 | 48 |
| | | 10 | | | 5 620 | 32 | 54 | | | 6 250 | 32 | 55 | | | 6 880 | 29 | 54 |
| | 400 | 4 | 0.2 | 0.178 | 2 569 | 5 | 30 | 0.220 | 0.198 | 2 857 | 5 | 30 | 0.240 | 0.218 | 3 145 | 4 | 30 |
| | | 6 | | | 3 853 | 11 | 41 | | | 4 285 | 10 | 41 | | | 4 717 | 10 | 41 |
| | | 8 | | | 5 138 | 19 | 48 | | | 5 714 | 19 | 48 | | | 6 290 | 18 | 48 |
| | | 10 | | | 6 422 | 30 | 54 | | | 7 142 | 29 | 54 | | | 7 862 | 28 | 54 |
| | 450 | 4 | 0.225 | 0.201 | 2 890 | 4 | 29 | 0.248 | 0.223 | 3 214 | 4 | 29 | 0.270 | 0.246 | 3 538 | 4 | 30 |
| | | 6 | | | 4 335 | 9 | 39 | | | 4 821 | 9 | 40 | | | 5 307 | 9 | 40 |
| | | 8 | | | 5 780 | 17 | 47 | | | 6 428 | 17 | 47 | | | 7 076 | 17 | 48 |
| | | 10 | | | 7 225 | 26 | 52 | | | 8 035 | 26 | 53 | | | 8 845 | 26 | 53 |
| | 500 | 4 | 0.250 | 0.223 | 3 211 | 4 | 27 | 0.275 | 0.248 | 3 571 | 4 | 29 | 0.300 | 0.273 | 3 931 | 4 | 29 |
| | | 6 | | | 4 817 | 8 | 38 | | | 5 357 | 9 | 39 | | | 5 897 | 9 | 39 |
| | | 8 | | | 6 422 | 14 | 45 | | | 7 142 | 15 | 47 | | | 7 862 | 15 | 47 |
| | | 10 | | | 8 028 | 20 | 50 | | | 8 928 | 24 | 52 | | | 9 828 | 24 | 53 |
| | 550 | 4 | 0.275 | 0.245 | 3 853 | 3 | 27 | 0.303 | 0.273 | 4 285 | 4 | 28 | 0.330 | 0.300 | 4 717 | 4 | 28 |
| | | 6 | | | 5 780 | 8 | 37 | | | 6 428 | 8 | 38 | | | 7 076 | 8 | 39 |
| | | 8 | | | 7 707 | 13 | 45 | | | 8 571 | 14 | 46 | | | 9 435 | 14 | 46 |
| | | 10 | | | 9 634 | 21 | 51 | | | 10 714 | 22 | 52 | | | 11 794 | 22 | 52 |
| 600 | 4 | 0.3 | 0.268 | 3 853 | 3 | 27 | 0.330 | 0.298 | 4 285 | 3 | 28 | 0.360 | 0.328 | 4 717 | 3 | 28 | |
| | 6 | | | 5 780 | 8 | 38 | | | 6 428 | 8 | 38 | | | 7 076 | 8 | 39 | |
| | 8 | | | 7 707 | 13 | 45 | | | 8 571 | 13 | 46 | | | 9 435 | 13 | 46 | |
| | 10 | | | 9 634 | 21 | 51 | | | 10 714 | 21 | 51 | | | 11 794 | 21 | 52 | |
| 650 | 4 | 0.325 | 0.290 | 4 175 | 4 | 31 | 0.358 | 0.322 | 4 643 | 3 | 28 | 0.390 | 0.355 | 5 111 | 3 | 28 | |
| | 6 | | | 6 262 | 10 | 41 | | | 6 964 | 8 | 38 | | | 7 666 | 8 | 39 | |
| | 8 | | | 8 349 | 17 | 49 | | | 9 285 | 13 | 46 | | | 10 221 | 13 | 46 | |
| | 10 | | | 10 436 | 21 | 51 | | | 11 606 | 21 | 52 | | | 12 776 | 21 | 52 | |
| 700 | 4 | 0.350 | 0.312 | 4 496 | 3 | 28 | 0.385 | 0.347 | 5 000 | 3 | 28 | 0.420 | 0.382 | 5 504 | 3 | 29 | |
| | 6 | | | 6 744 | 8 | 38 | | | 7 500 | 8 | 39 | | | 8 256 | 8 | 39 | |
| | 8 | | | 8 991 | 13 | 46 | | | 9 999 | 13 | 46 | | | 11 007 | 13 | 47 | |
| | 10 | | | 11 239 | 21 | 52 | | | 12 499 | 21 | 52 | | | 13 759 | 21 | 52 | |

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

| | | height H [mm] | | | | | | | | | | | | | | | |
|--------------|------|---------------|-------------------------|-------------------------|--------------------------|------------|-------------------------|-------------------------|-------------------------|--------------------------|------------|-------------------------|-------------------------|-------------------------|--------------------------|------------|-------------------------|
| | | 500 | | | | | 550 | | | | | 600 | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 800 | 4 | 800 | 0.335 | 4 817 | 4 | 30 | 0.413 | 0.372 | 5 357 | 4 | 31 | 0.450 | 0.410 | 5 897 | 4 | 31 |
| | | 6 | | | 7 225 | 10 | 42 | | | 8 035 | 10 | 43 | | | 8 845 | 9 | 42 |
| | | 8 | | | 9 634 | 19 | 51 | | | 10 714 | 18 | 50 | | | 11 794 | 17 | 50 |
| | | 10 | | | 12 042 | 29 | 56 | | | 13 392 | 28 | 56 | | | 14 742 | 27 | 56 |
| | 900 | 4 | 900 | 0.357 | 5 138 | 4 | 30 | 0.440 | 0.397 | 5 714 | 4 | 31 | 0.480 | 0.437 | 6 290 | 4 | 31 |
| | | 6 | | | 7 707 | 10 | 42 | | | 8 571 | 9 | 42 | | | 9 435 | 9 | 42 |
| | | 8 | | | 10 276 | 18 | 50 | | | 11 428 | 17 | 50 | | | 12 580 | 16 | 50 |
| | | 10 | | | 12 845 | 29 | 56 | | | 14 285 | 27 | 56 | | | 15 725 | 26 | 56 |
| | 1000 | 4 | 1000 | 0.379 | 5 459 | 4 | 30 | 0.468 | 0.422 | 6 071 | 4 | 31 | 0.510 | 0.464 | 6 683 | 4 | 32 |
| | | 6 | | | 8 189 | 10 | 42 | | | 9 107 | 9 | 42 | | | 10 025 | 9 | 42 |
| | | 8 | | | 10 918 | 18 | 50 | | | 12 142 | 17 | 50 | | | 13 366 | 16 | 50 |
| | | 10 | | | 13 648 | 28 | 56 | | | 15 178 | 26 | 56 | | | 16 708 | 25 | 56 |
| | 1100 | 4 | 1100 | 0.401 | 5 780 | 4 | 30 | 0.495 | 0.446 | 6 428 | 4 | 32 | 0.540 | 0.491 | 7 076 | 3 | 28 |
| | | 6 | | | 8 670 | 9 | 41 | | | 9 642 | 9 | 42 | | | 10 614 | 8 | 39 |
| | | 8 | | | 11 560 | 17 | 49 | | | 12 856 | 16 | 50 | | | 14 152 | 15 | 47 |
| | | 10 | | | 14 450 | 27 | 55 | | | 16 070 | 25 | 55 | | | 17 690 | 24 | 52 |
| | 1200 | 4 | 1200 | 0.446 | 6 422 | 4 | 30 | 0.550 | 0.496 | 6 428 | 3 | 28 | 0.600 | 0.546 | 7 862 | 3 | 29 |
| | | 6 | | | 9 634 | 9 | 41 | | | 9 642 | 8 | 41 | | | 11 794 | 8 | 41 |
| | | 8 | | | 12 845 | 16 | 48 | | | 12 856 | 15 | 49 | | | 15 725 | 14 | 49 |
| | | | | | | 25 | 54 | | | 16 070 | 24 | 55 | | | 19 656 | 23 | 55 |
| 1100 | 4 | 0.55 | 0.491 | 7 065 | 3 | 27 | 0.605 | 0.546 | 7 857 | 3 | 29 | 0.660 | 0.601 | 8 649 | 3 | 29 | |
| | 6 | | | 10 597 | 8 | 39 | | | 11 785 | 8 | 41 | | | 12 973 | 7 | 40 | |
| | 8 | | | 14 129 | 15 | 48 | | | 15 713 | 14 | 49 | | | 17 297 | 13 | 48 | |
| | 10 | | | 17 662 | 24 | 54 | | | 19 642 | 22 | 55 | | | 21 622 | 21 | 54 | |

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

| | | height H [mm] | | | | | | | | | | | | | | | |
|--------------|-----|---------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|
| | | 650 | | | | | 700 | | | | | 750 | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 200 | 4 | 0.130 | 0.119 | 1 716 | 5 | 29 | 0.140 | 0.129 | 1 860 | 5 | 29 | 0.150 | 0.139 | 2 004 | 5 | 29 |
| | | 6 | | | 2 575 | 11 | 39 | | | 2 791 | 11 | 40 | | | 3 007 | 11 | 40 |
| | | 8 | | | 3 433 | 20 | 47 | | | 3 721 | 20 | 47 | | | 4 009 | 20 | 47 |
| | | 10 | | | 4 291 | 31 | 53 | | | 4 651 | 31 | 53 | | | 5 011 | 31 | 53 |
| | 250 | 4 | 0.163 | 0.149 | 2 146 | 5 | 30 | 0.175 | 0.162 | 2 326 | 5 | 30 | 0.188 | 0.174 | 2 506 | 5 | 30 |
| | | 6 | | | 3 218 | 11 | 40 | | | 3 488 | 11 | 41 | | | 3 758 | 11 | 41 |
| | | 8 | | | 4 291 | 20 | 48 | | | 4 651 | 20 | 48 | | | 5 011 | 20 | 48 |
| | | 10 | | | 5 364 | 31 | 53 | | | 5 814 | 31 | 54 | | | 6 264 | 31 | 54 |
| | 300 | 4 | 0.195 | 0.179 | 2 575 | 5 | 30 | 0.210 | 0.194 | 2 791 | 4 | 29 | 0.225 | 0.209 | 3 007 | 4 | 30 |
| | | 6 | | | 3 862 | 10 | 40 | | | 4 186 | 10 | 40 | | | 4 510 | 10 | 40 |
| | | 8 | | | 5 149 | 19 | 48 | | | 5 581 | 18 | 47 | | | 6 013 | 18 | 48 |
| | | 10 | | | 6 437 | 29 | 53 | | | 6 977 | 28 | 53 | | | 7 517 | 28 | 54 |
| | 350 | 4 | 0.228 | 0.209 | 3 004 | 4 | 30 | 0.245 | 0.226 | 3 256 | 4 | 30 | 0.263 | 0.244 | 3 508 | 4 | 30 |
| | | 6 | | | 4 506 | 10 | 40 | | | 4 884 | 10 | 40 | | | 5 262 | 10 | 41 |
| | | 8 | | | 6 008 | 18 | 48 | | | 6 512 | 17 | 48 | | | 7 016 | 17 | 48 |
| | | 10 | | | 7 510 | 28 | 54 | | | 8 140 | 27 | 53 | | | 8 770 | 27 | 54 |
| | 400 | 4 | 0.260 | 0.238 | 3 433 | 4 | 30 | 0.280 | 0.258 | 3 721 | 4 | 30 | 0.300 | 0.278 | 4 009 | 4 | 31 |
| | | 6 | | | 5 149 | 10 | 41 | | | 5 581 | 10 | 41 | | | 6 013 | 10 | 41 |
| | | 8 | | | 6 866 | 18 | 48 | | | 7 442 | 17 | 48 | | | 8 018 | 17 | 49 |
| | | 10 | | | 8 582 | 28 | 54 | | | 9 302 | 27 | 54 | | | 10 022 | 27 | 54 |
| | 450 | 4 | 0.293 | 0.268 | 3 862 | 4 | 30 | 0.315 | 0.291 | 4 186 | 4 | 29 | 0.338 | 0.313 | 4 510 | 4 | 30 |
| | | 6 | | | 5 793 | 9 | 40 | | | 6 279 | 9 | 40 | | | 6 765 | 9 | 40 |
| | | 8 | | | 7 724 | 17 | 48 | | | 8 372 | 15 | 47 | | | 9 020 | 15 | 48 |
| | | 10 | | | 9 655 | 26 | 54 | | | 10 465 | 24 | 53 | | | 11 275 | 24 | 53 |
| | 500 | 4 | 0.325 | 0.298 | 4 291 | 4 | 29 | 0.350 | 0.323 | 4 651 | 4 | 29 | 0.375 | 0.348 | 5 011 | 4 | 29 |
| | | 6 | | | 6 437 | 9 | 40 | | | 6 977 | 8 | 40 | | | 7 517 | 8 | 40 |
| | | 8 | | | 8 582 | 15 | 47 | | | 9 302 | 15 | 47 | | | 10 022 | 15 | 47 |
| | | 10 | | | 10 728 | 24 | 53 | | | 11 628 | 23 | 53 | | | 12 528 | 23 | 53 |
| | 550 | 4 | 0.358 | 0.328 | 5 149 | 4 | 29 | 0.385 | 0.355 | 5 116 | 4 | 29 | 0.413 | 0.383 | 5 512 | 4 | 29 |
| | | 6 | | | 7 724 | 8 | 39 | | | 7 674 | 8 | 39 | | | 8 268 | 8 | 40 |
| | | 8 | | | 10 299 | 14 | 47 | | | 10 233 | 14 | 47 | | | 11 025 | 14 | 47 |
| | | 10 | | | 12 874 | 22 | 52 | | | 12 791 | 22 | 53 | | | 13 781 | 22 | 53 |
| 600 | 4 | 0.390 | 0.358 | 5 149 | 3 | 28 | 0.420 | 0.388 | 5 581 | 3 | 29 | 0.450 | 0.418 | 6 013 | 3 | 29 | |
| | 6 | | | 7 724 | 8 | 39 | | | 8 372 | 8 | 39 | | | 9 020 | 8 | 40 | |
| | 8 | | | 10 299 | 13 | 46 | | | 11 163 | 13 | 47 | | | 12 027 | 13 | 47 | |
| | 10 | | | 12 874 | 21 | 52 | | | 13 954 | 21 | 53 | | | 15 034 | 21 | 53 | |
| 650 | 4 | 0.423 | 0.387 | 5 579 | 3 | 28 | 0.455 | 0.420 | 6 047 | 3 | 28 | 0.488 | 0.452 | 6 515 | 3 | 28 | |
| | 6 | | | 8 368 | 7 | 39 | | | 9 070 | 7 | 39 | | | 9 772 | 7 | 39 | |
| | 8 | | | 11 157 | 13 | 46 | | | 12 093 | 13 | 46 | | | 13 029 | 12 | 46 | |
| | 10 | | | 13 946 | 20 | 52 | | | 15 116 | 20 | 52 | | | 16 286 | 19 | 52 | |
| 700 | 4 | 0.455 | 0.417 | 6 008 | 3 | 28 | 0.490 | 0.452 | 6 512 | 3 | 29 | 0.525 | 0.487 | 7 016 | 3 | 28 | |
| | 6 | | | 9 012 | 7 | 39 | | | 9 768 | 7 | 39 | | | 10 524 | 7 | 39 | |
| | 8 | | | 12 015 | 13 | 46 | | | 13 023 | 13 | 47 | | | 14 031 | 12 | 46 | |
| | 10 | | | 15 019 | 20 | 52 | | | 16 279 | 20 | 53 | | | 17 539 | 19 | 52 | |

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

| | | height H [mm] | | | | | | | | | | | | | | | |
|--------------|------|---------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|----------------------|----------------------|-----------------------|---------|----------------------|
| | | 650 | | | | | 700 | | | | | 750 | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 800 | 4 | 0.520 | 0.477 | 6 866 | 3 | 27 | 0.560 | 0.517 | 7 442 | 4 | 29 | 0.600 | 0.557 | 8 018 | 3 | 28 |
| | | 6 | | | 10 299 | 6 | 38 | | | 11 163 | 7 | 37 | | | 12 027 | 6 | 39 |
| | | 8 | | | 13 732 | 12 | 45 | | | 14 884 | 11 | 43 | | | 16 036 | 12 | 46 |
| | | 10 | | | 17 165 | 18 | 51 | | | 18 605 | 16 | 47 | | | 20 045 | 18 | 52 |
| | 900 | 4 | 0.585 | 0.536 | 7 724 | 3 | 26 | 0.630 | 0.581 | 8 372 | 3 | 27 | 0.675 | 0.626 | 9 020 | 3 | 27 |
| | | 6 | | | 11 586 | 6 | 36 | | | 12 558 | 6 | 37 | | | 13 530 | 6 | 38 |
| | | 8 | | | 15 448 | 10 | 44 | | | 16 744 | 10 | 45 | | | 18 040 | 10 | 45 |
| | | 10 | | | 19 310 | 16 | 50 | | | 20 930 | 16 | 51 | | | 22 550 | 16 | 51 |
| | 1000 | 4 | 0.650 | 0.596 | 8 582 | 3 | 26 | 0.700 | 0.646 | 9 302 | 3 | 27 | 0.750 | 0.696 | 10 022 | 3 | 28 |
| | | 6 | | | 12 874 | 6 | 36 | | | 13 954 | 6 | 38 | | | 15 034 | 6 | 38 |
| | | 8 | | | 17 165 | 10 | 44 | | | 18 605 | 10 | 45 | | | 20 045 | 10 | 46 |
| | | 10 | | | 21 456 | 16 | 50 | | | 23 256 | 16 | 51 | | | 25 056 | 16 | 52 |
| | 1100 | 4 | 0.715 | 0.656 | 9 441 | 3 | 29 | 0.770 | 0.711 | 10 233 | 3 | 31 | 0.825 | 0.766 | 11 025 | 3 | 28 |
| | | 6 | | | 14 161 | 8 | 40 | | | 15 349 | 8 | 42 | | | 16 537 | 6 | 39 |
| | | 8 | | | 18 881 | 13 | 47 | | | 20 465 | 13 | 49 | | | 22 049 | 10 | 46 |
| | | 10 | | | 23 602 | 21 | 53 | | | 25 582 | 21 | 55 | | | 27 562 | 16 | 52 |
| | 1200 | 4 | 0.780 | 0.715 | 10 299 | 3 | 28 | 0.840 | 0.775 | 11 163 | 3 | 30 | 0.900 | 0.835 | 12 027 | 2 | 28 |
| | | 6 | | | 15 448 | 7 | 39 | | | 16 744 | 7 | 41 | | | 18 040 | 5 | 38 |
| | | 8 | | | 20 598 | 12 | 46 | | | 22 326 | 12 | 48 | | | 24 054 | 10 | 46 |
| | | | | | 25 747 | 19 | 52 | | | 27 907 | 19 | 54 | | | 30 067 | 15 | 52 |
| 1100 | 4 | 0.715 | 0.656 | 9 441 | 3 | 28 | 0.770 | 0.711 | 10 233 | 3 | 30 | 0.825 | 0.766 | 11 025 | 3 | 30 | |
| | 6 | | | 14 161 | 7 | 39 | | | 15 349 | 7 | 41 | | | 16 537 | 6 | 39 | |
| | 8 | | | 18 881 | 13 | 47 | | | 20 465 | 12 | 48 | | | 22 049 | 12 | 48 | |
| | 10 | | | 23 602 | 20 | 53 | | | 25 582 | 19 | 54 | | | 27 562 | 18 | 53 | |

1.6. technical parameters of mcr FID B rectangular dampers

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

v – velocity [m/s]
Sk – duct cross-section [m²]
Se – damper active cross-section [m²]

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

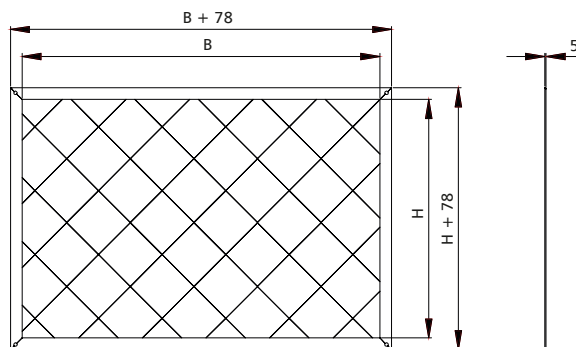
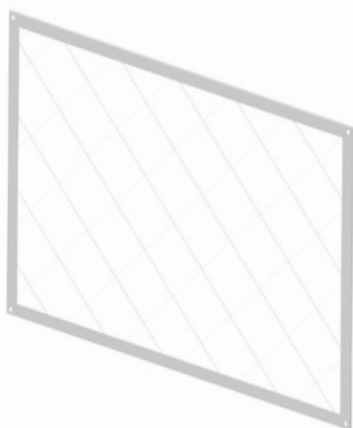
| | | height H [mm] | | | | | | | | | | | | |
|--------------|-----|---------------|----------------------|----------------------|-----------------------|---------|----------------------|------|---------|----------------------|----------------------|-----------------------|---------|----------------------|
| | | 800 | | | | | | | | | | | | |
| | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] | | v [m/s] | Sk [m ²] | Se [m ²] | Q [m ³ /h] | dp [Pa] | L _{WA} [dB] |
| width B [mm] | 200 | 4 | 0.160 | 0.149 | 2 148 | 5 | 29 | 600 | 4 | 0.480 | 0.448 | 6 445 | 3 | 29 |
| | | 6 | | | 3 223 | 11 | 40 | | 6 | | | 9 668 | 7 | 39 |
| | | 8 | | | 4 297 | 19 | 47 | | 8 | | | 12 891 | 13 | 47 |
| | | 10 | | | 5 371 | 30 | 53 | | 10 | | | 16 114 | 20 | 53 |
| | 250 | 4 | 0.200 | 0.187 | 2 686 | 5 | 30 | 650 | 4 | 0.520 | 0.485 | 6 983 | 3 | 28 |
| | | 6 | | | 4 028 | 11 | 41 | | 6 | | | 10 474 | 7 | 39 |
| | | 8 | | | 5 371 | 19 | 48 | | 8 | | | 13 965 | 12 | 46 |
| | | 10 | | | 6 714 | 30 | 54 | | 10 | | | 17 456 | 19 | 52 |
| | 300 | 4 | 0.240 | 0.224 | 3 223 | 4 | 30 | 700 | 4 | 0.560 | 0.522 | 7 520 | 3 | 28 |
| | | 6 | | | 4 834 | 10 | 41 | | 6 | | | 11 280 | 6 | 39 |
| | | 8 | | | 6 445 | 18 | 48 | | 8 | | | 15 039 | 12 | 46 |
| | | 10 | | | 8 057 | 28 | 54 | | 10 | | | 18 799 | 18 | 52 |
| | 350 | 4 | 0.280 | 0.261 | 3 760 | 4 | 30 | 800 | 4 | 0.640 | 0.597 | 8 594 | 3 | 27 |
| | | 6 | | | 5 640 | 10 | 41 | | 6 | | | 12 891 | 6 | 38 |
| | | 8 | | | 7 520 | 17 | 48 | | 8 | | | 17 188 | 10 | 45 |
| | | 10 | | | 9 400 | 27 | 54 | | 10 | | | 21 485 | 16 | 51 |
| | 400 | 4 | 0.320 | 0.298 | 4 297 | 4 | 31 | 900 | 4 | 0.720 | 0.671 | 9 668 | 3 | 28 |
| | | 6 | | | 6 445 | 10 | 41 | | 6 | | | 14 502 | 6 | 38 |
| | | 8 | | | 8 594 | 17 | 49 | | 8 | | | 19 336 | 10 | 46 |
| | | 10 | | | 10 742 | 27 | 55 | | 10 | | | 24 170 | 16 | 51 |
| | 450 | 4 | 0.360 | 0.336 | 4 834 | 4 | 29 | 1000 | 4 | 0.800 | 0.746 | 10 742 | 3 | 28 |
| | | 6 | | | 7 251 | 8 | 39 | | 6 | | | 16 114 | 6 | 39 |
| | | 8 | | | 9 668 | 14 | 47 | | 8 | | | 21 485 | 10 | 46 |
| | | 10 | | | 12 085 | 22 | 53 | | 10 | | | 26 856 | 16 | 52 |
| | 500 | 4 | 0.400 | 0.373 | 5 371 | 4 | 29 | 1100 | 4 | 0.880 | 0.821 | 11 817 | 3 | 28 |
| | | 6 | | | 8 057 | 8 | 40 | | 6 | | | 17 725 | 6 | 39 |
| | | 8 | | | 10 742 | 14 | 47 | | 8 | | | 23 633 | 10 | 46 |
| | | 10 | | | 13 428 | 22 | 53 | | 10 | | | 29 542 | 16 | 52 |
| 550 | 4 | 0.440 | 0.410 | 5 908 | 3 | 29 | 1200 | 4 | 0.960 | 0.895 | 12 891 | 2 | 28 | |
| | 6 | | | 8 862 | 8 | 40 | | 6 | | | 19 336 | 5 | 39 | |
| | 8 | | | 11 817 | 13 | 47 | | 8 | | | 25 782 | 10 | 46 | |
| | 10 | | | 14 771 | 21 | 53 | | | | | 32 227 | 15 | 52 | |

1.7. estimated weights of mcr FID B rectangular dampers [kg]

| | | width B [mm] | | | | | | | | | | | | | | | | | | | | | |
|---------------|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|----|
| | | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 | 1150 | 1200 | |
| height H [mm] | 200 | 26 | 28 | 29 | 31 | 33 | 34 | 36 | 37 | 39 | 40 | 42 | 43 | 45 | 46 | 48 | 49 | 51 | 53 | 54 | 56 | 57 | |
| | 250 | 28 | 30 | 31 | 33 | 34 | 36 | 37 | 39 | 41 | 42 | 44 | 45 | 47 | 49 | 50 | 52 | 53 | 55 | 57 | 58 | 60 | 60 |
| | 300 | 29 | 31 | 33 | 34 | 36 | 38 | 39 | 41 | 43 | 44 | 46 | 48 | 49 | 51 | 53 | 54 | 56 | 58 | 59 | 61 | 62 | 62 |
| | 350 | 31 | 33 | 34 | 36 | 38 | 40 | 41 | 43 | 45 | 46 | 48 | 50 | 51 | 53 | 55 | 57 | 58 | 60 | 62 | 63 | 65 | 65 |
| | 400 | 33 | 34 | 36 | 38 | 40 | 41 | 43 | 45 | 47 | 48 | 50 | 52 | 54 | 55 | 57 | 59 | 61 | 62 | 64 | 66 | 68 | 68 |
| | 450 | 34 | 36 | 38 | 40 | 41 | 43 | 45 | 47 | 49 | 50 | 52 | 54 | 56 | 58 | 59 | 61 | 63 | 65 | 67 | 69 | 70 | 70 |
| | 500 | 36 | 37 | 39 | 41 | 43 | 45 | 47 | 49 | 51 | 52 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 67 | 69 | 71 | 73 | 73 |
| | 550 | 37 | 39 | 41 | 43 | 45 | 47 | 49 | 51 | 53 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 76 |
| | 600 | 39 | 41 | 43 | 45 | 47 | 49 | 51 | 53 | 55 | 57 | 59 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 78 |
| | 650 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 57 | 59 | 61 | 63 | 65 | 67 | 69 | 71 | 73 | 75 | 77 | 79 | 81 | 81 |
| | 700 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 59 | 61 | 63 | 65 | 67 | 69 | 71 | 73 | 75 | 77 | 79 | 81 | 84 | 84 |
| | 750 | 43 | 45 | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 63 | 65 | 67 | 69 | 71 | 73 | 76 | 78 | 80 | 82 | 84 | 86 | 86 |
| 800 | 45 | 47 | 49 | 51 | 54 | 56 | 58 | 60 | 62 | 65 | 67 | 69 | 71 | 73 | 76 | 78 | 80 | 82 | 84 | 87 | 89 | 89 | |

1.8. accessories

1.8.1. MWB system grille



The MWB system duct covers are used for air supply or extraction. They allow the installation to be finished aesthetically. They come with a fixed steel mesh covering the visibility of the damper. The casing of the duct cover is fixed to the damper with bolts. Such a solution allows for installing the product even in the most visually - demanding applications. The duct cover are painted in RAL 9010, as standard (available on request in any colour from the RAL range).

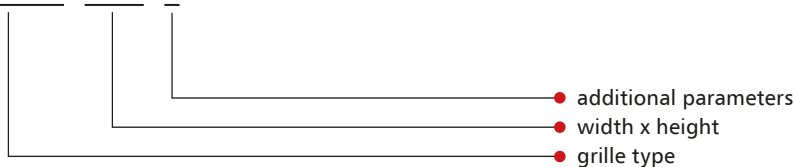
Dimensions:

- nominal width B: from 200 to 1200 mm
- nominal height H: form 200 to 800 mm
- nominal thickness G: 5 mm

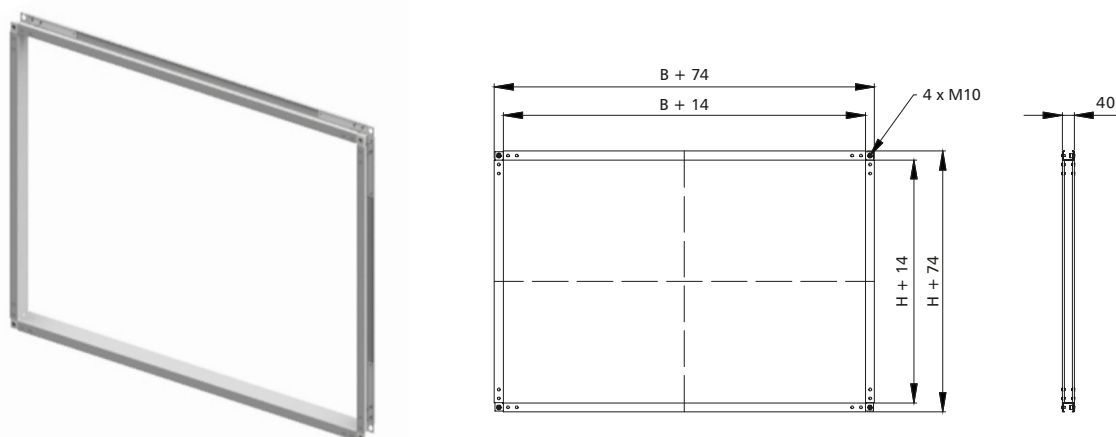
Apart from the standard dimensions there is a possibility to produce duct covers with intermediate dimensions.

Marking:

mcr MWB / B x H / 1



1.8.2. RB connecting subframe



The mcr RB connection frames are used to connect a steel ventilation duct to the damper. The connection can be made with screws in the corners of the frame as well as with clamps for ventilation ducts, as well as self-drilling screws.

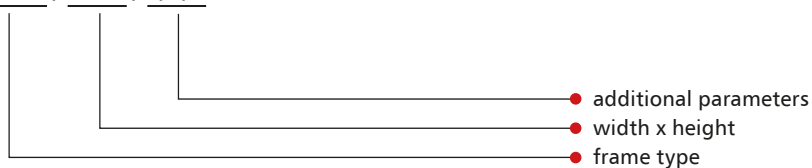
Dimensions:

- nominal width B: from 200 to 1200 mm
- nominal height H: from 200 to 800 mm
- nominal thickness G: 40 mm

Apart from the standard dimensions there is a possibility to produce duct covers with intermediate dimensions.

Oznaczenie:

mcr RB / B x H / 1/2/3



1.9. marking

1 – control:

- Belimo trigger control mechanism

BE24 – actuator without a return spring, U = 24 V AC/DC

BLE24 – actuator without a return spring, U = 24 V AC/DC

BEE24 – actuator without a return spring, U = 24 V AC/DC

BEN24 – actuator without a return spring, U = 24 V AC/DC

BE24-ST (with the BKNE230-24 option) – actuator without a return spring, U = 24 V AC/DC w/plug for the SBS control system

BLE24-ST (with the BKNE230-24 option) – actuator without a return spring, U = 24 V AC/DC w/plug for the SBS control system

BEE24-ST (with the BKNE230-24 option) – actuator without a return spring, U = 24 V AC/DC w/plug for the SBS control system

BEN24-ST (with the BKNE230-24 option) – actuator without a return spring, U = 24 V AC/DC w/plug for the SBS control system

BE230 – actuator without a return spring, U = 230 V AC

BLE230 – actuator without a return spring, U = 230 V AC

BEE230 – actuator without a return spring, U = 230 V AC

BEN230 – actuator without a return spring, U = 230 V AC

2 – material

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

KN – stainless steel

KK – 1.4404 acid-proof steel

3 – additional parameters

Position of the control mechanism (see chapter 14.2 of this Catalogue)

[no symbol] – along the axis of damper rotation

Axis of rotation of the damper

[no symbol] – horizontal axis of rotation

PP – vertical axis of rotation

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

G – vertical axis of rotation – mechanism at the top of the damper

Extended damper casing

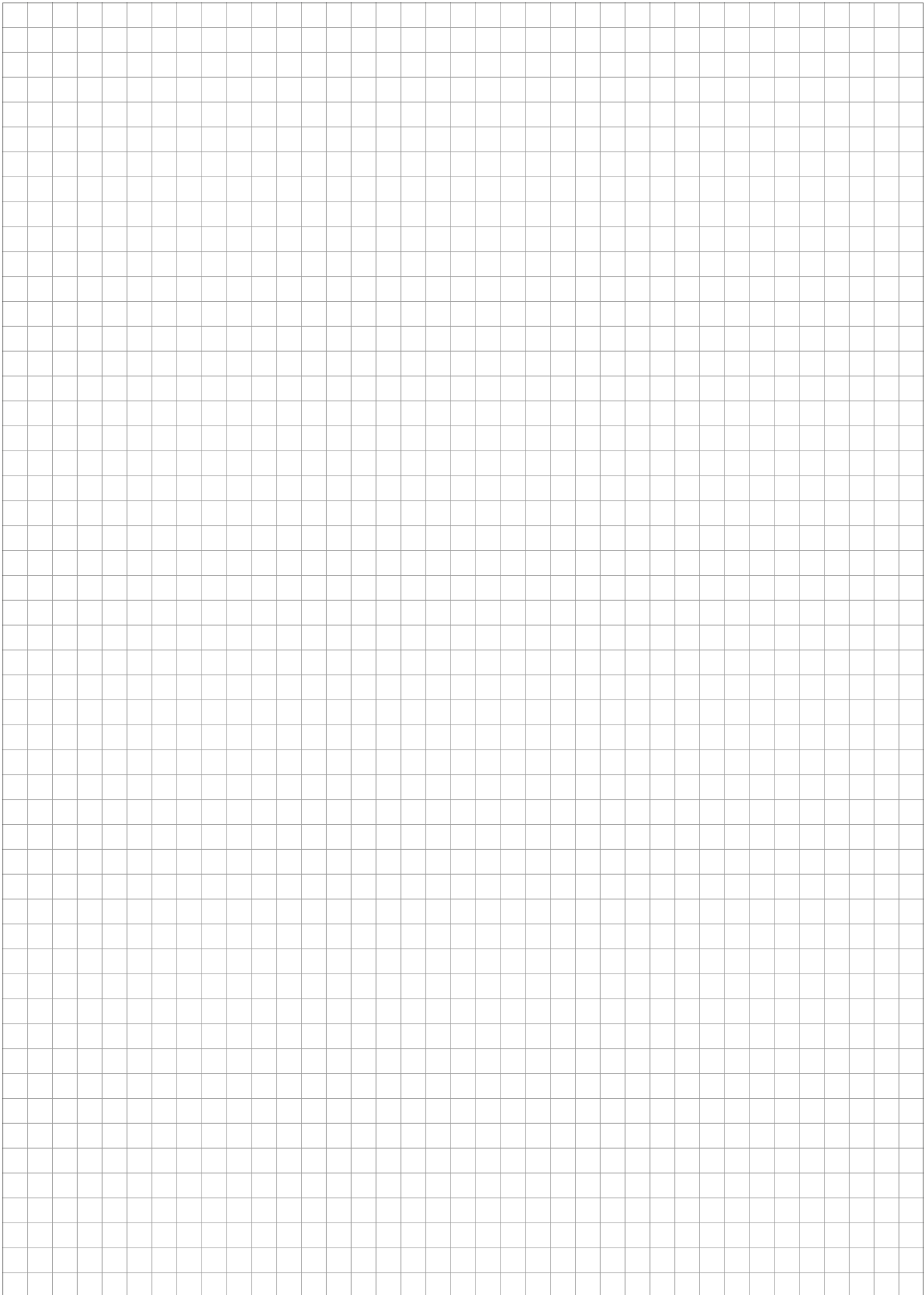
[no symbol] – standard casing length

Note: the additional parameters to be entered preceded by the “/” sign

example marking:

mcr FID B 400 x 400 BLE24

Smoke exhaust damper for fire ventilation systems with a 24 V compact Belimo actuator with limit switches.



FIRE PROTECTION SYSTEMS

- ▶ smoke and heat exhaust systems
- ▶ fire ventilation systems
- ▶ fire protection of building structures



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