Fire damper: Multi-blade smoke exhaust fire dampers for multi-zone fire ventilations systems

Model WIP PRO/V & WIP PRO/V-M

Technical Catalogue



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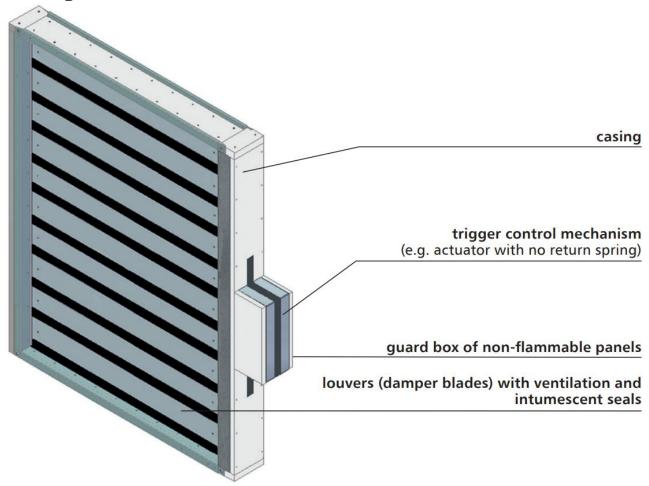
EIS120, EIS90, ES120

- Certificate of constancy of performance 1396-CPR-0115.
- Dampers certified for compliance with EN 12101-8.
- Dampers qualified under EN 13501-4 and tested under EN 1366-10.
- Narrow louvered fire dampers for fire ventilation systems.

1. Application

Multi-blade WIP PRO/V, WIP PRO/V-M fire dampers for use in automatic fire ventilation systems. WIP PRO/V fire dampers are used in fire ventilation systems, WIP PRO/V-M fire dampers are used in mixed systems, combining both fire and comfort ventilation systems. 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. In the fire-covered area, the fire damper is open, whereas it remains closed in the other areas. WIP PRO/V, WIP PRO/V-M fire dampers due to their design are intended for use in systems, where the components such as a silencer, bend or supply/return grille are installed downstream of the fire damper.

2. Design



Multi-blade WIP PRO/V, WIP PRO/V-M dampers consist of a rectangular casing made of two steel sections joined with a noncombustible plate using rivets and galvanized steel fasteners, a set of movable blades rotating around their axis and a trigger control mechanism. The fire damper casing is made of fire resistant panels and galvanized steel "C" shape profiles. The device is reinforced on both sides with steel corners. Intumescent and ventilation seals are installed on the inside. Each fire damper blade is made of two 20 mm thick fire resistant plates. Intumescent seal and ventilation seals fixed with staples are installed at the entire blade length. The blades rotate around the axis made by two steel pins. Each pin is mounted in a brass sleeve mounted on a vertical side H of the fire damper casing.

3. Versions

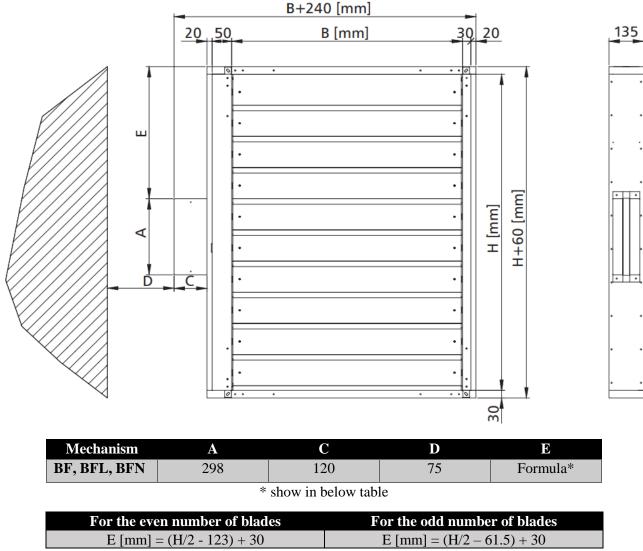
3.1 WIP PRO/V, WIP PRO/V-M fire damper for multi-zone fire ventilation systems with actuator – damper opened/closed with an actuator

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

WIP PRO/V, WIP PRO/V-M fire dampers feature a Belimo trigger control mechanisms **BLE**, **BE** axial actuator without the return spring (24 V AC/DC or 230 V AC). BLE, BE series actuators are equipped with

limit switches used to monitor the blade position. Furthermore, the mechanical blade position indicator is placed on the actuator.

WIP PRO/V, WIP PRO/V-M fire dampers with Belimo BLE, BE actuators are opened or closed by supplying voltage to the actuator terminals. Furthermore, dampers with those actuators may be opened/closed manually using a key.



Number for blades = H/123

4. Dimensions

Rectangular dampers:

- Nominal width B: from 110 mm to 900 mm
- Nominal height H: from 263 mm to 1250 mm
- The maximum cross-section surface of one damper up to 1.125 m^2

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

Square fire dampers may also be fitted with round connectors for the spigot connection to the round ducts.

5. Installation

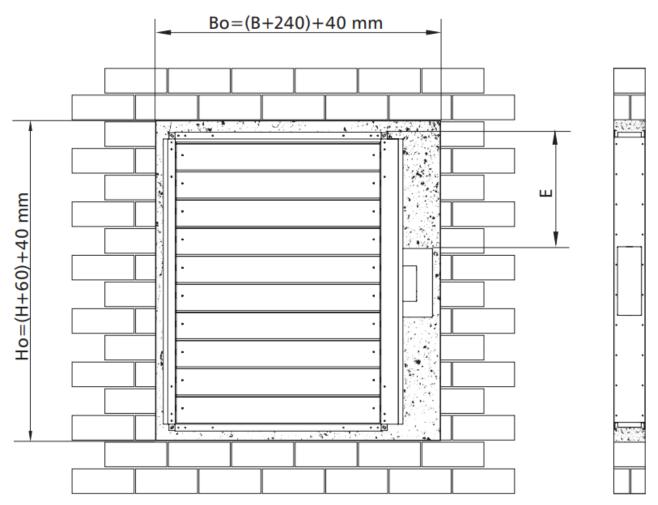
Rectangular WIP PRO/V, WIP PRO/V-M fire dampers are class EI120($v_e i i \leftrightarrow o$)S-rated devices, if installed in concrete partitions, min. 110 mm thick, made of common bricks or aerated concrete blocks, min. thickness 115 mm or stud partitions with min. EI120 fire rating.

5.1 Preparation of installation openings

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

Bo = (B + 240) + 40 mm

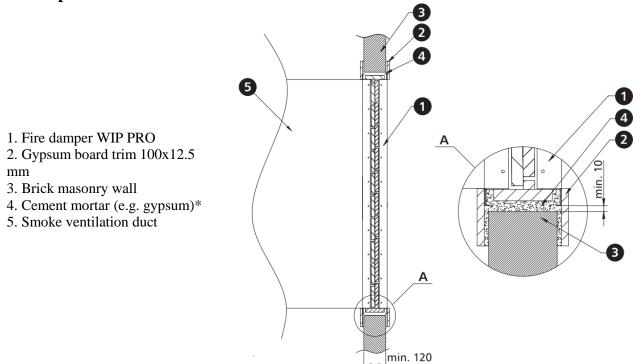
Ho = (H + 60) + 40 mm



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:

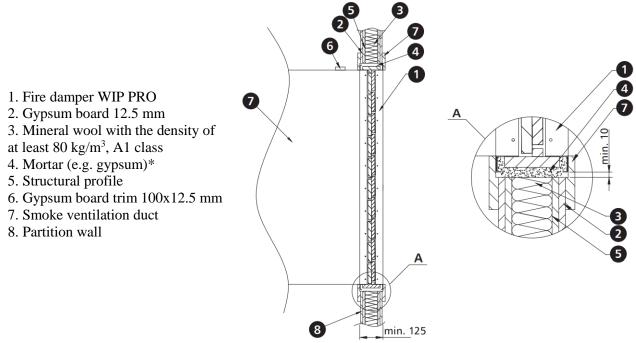
Mechanism	For the even number of blades	For the odd number of blades
BE, BLE	E [mm] = (H/2 - 123) + 30	E [mm] = (H/2 - 61.5) + 30

5.2 Sample installation in concrete block or full brick walls



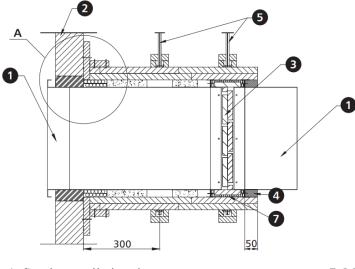
1 It is possible to use a different sealing which ensures the required fire resistance

5.3 Sample installation in in lightweight walls



1 It is possible to use a different sealing which ensures the required fire resistance

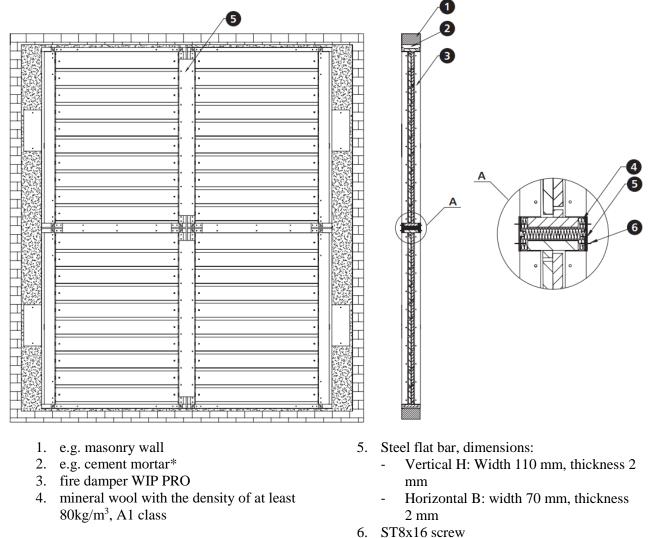
5.4 Sample installation outside the fire partition



- 1. Smoke ventilation duct
- 2. partition wall
- 3. Fire damper WIP PRO
- 4. Gypsum infill
- 5. Duct suspension
- 6. Sealing (cement or cement-lime masonry mortar)*
- 7. Mineral wool with the density of at least 80 kg/m³, A1 class
- 8. Ridurit fire retardant board
- 9. Screws 3.5 x 50 at ~150 mm centres
- 10. Steel expansion anchor $Ø8 \ge 80 \text{ mm}$
- 11. Board joints sealed with Conlit Glue

1 It is possible to use a different sealing which ensures the required fire resistance

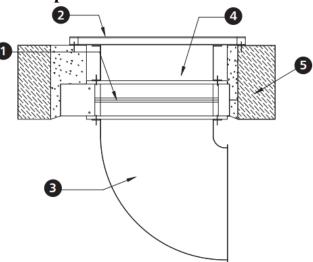
5.5 Sample installation in a multiple set (a battery of four dampers)



1 It is possible to use a different sealing which ensures the required fire resistance

5.6 Example applications – installation with end cap

- 1. Fire damper WIP
- 2. Duct cover
- 3. Ventilation duct
- 4. Duct ventilation straight connection pipe
- 5. Wall, ceiling



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

6. Technical parameters of WIP PRO/V, WIP PRO/V-M rectangular

height H [mm]

dampers

B – nominal width [mm]

H – nominal height [mm]

v – velocity [m/s]

Sk – duct cross section [m²] Se – damper active cross section [m²] $\mathbf{Q} - flow [m^3/h]$ $\mathbf{Dp} - pressure drop [Pa]$

 L_{WA} – damper noise level [dB]

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

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300 8 0 1.40 0.099 2550 52 53 0.179 0.188 337 45 39 400 4 4 1.457 13 1437 14 18 2915 55 36 0 0.18 4337 45 39 40 6 13 13 14 2915 55 36 0 0.18 4337 45 39 433 45 40 50 6 10 10 1639 11 11 21 200 11 210 11 22 20 11 220 30 11 220 30 11			_															
10 10 188 81 37 3 388 64 41 42 423 71 44 400 6 0.160 0.101 2186 29 24 0.101 2186 29 24 0.101 2186 3183 06 421 10 10 293 318 06 421 293 321 387 45 39 31 45 39 31 45 39 31 45 39 31 45 39 31 45 39 31 45 39 31 45 30 45 31 38 45 40 318 46 42 433 31 217 11 22 435 32 32 32 325 32 325 32 325 32 325 32 435 437 445 40 40 438 40 11 22 435 438 45 4		350		0.140	0.089				0.158	0.089				0.179	0.118			
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400 6 0.160 0.160 2 286 24 0.180 0.180 2166 31 28 0.134 293 26 39 400 6 0.160 2165 52 364 86 42 400 6 0.180 0.114 293 293 26 39 400 6 0.180 0.114 2237 52 23 31 28 32 31 28 31 28 326 32 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 31 32 32 31 32 31 32 31 32 31 31 32 <td></td>																		
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100 4 4 500 8 0.180 0.114 16.39 1.3 1.4 0.203 0.114 16.39 1.1 1.1 2.217 1.1 2.22 500 6 0.200 0.180 2.23 2.23 2.23 2.25 3.1 2.49 3.1 2.93 2.25 3.1 2.99 2.11 4.4 1.630 1.1 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9 2.21 3.1 4.9		400		0.100	0.101				0.100	0.101				0.205	0.134			
450 6 0 0.180 0.114 2459 24 0 0.23 0.114 2459 31 29 4099 0.230 0.151 3266 26 32 500 6 0 0 0.127 2732 23 237 55 36 42 500 6 0 0 0.127 2732 29 25 31 29 0.230 0.18 3266 26 32 600 6 0.200 0.127 2732 29 25 31 1822 182										<u> </u>								
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4 500 4 2732 29 25 0.275 1822 13 14 2732 29 25 500 6 0.200 0.127 3643 52 322 0.275 1822 11 22 233 31 14 19 0.256 0.166 249 26 33 500 6 0.200 0.139 3006 29 25 0.248 20304 31 300 0.282 0.186 2661 11 22 33 466 433 45 400 600 6 0.240 0.152 300 29 25 33 0.248 0.138 300 0.307 0.282 0.186 33 522 44 660 6 0.240 0.152 327 29 26 11 21 233 11 233 293 21 11 233 250 12 333 300 12 300 12		450		0.180	0.114				0.203	0.114				0.230	0.151		45	
550 4 0.20 0.139 2064 13 15 2004 14 19 2004 14 19 2004 14 19 2004 14 19 2004 14 19 2004 14 19 2004 14 19 2004 14 19 2004 14 19 2004 16 10 222 45 400 60 6 0.200 81 306 22 33 0.200 86 43 0.200 653 71 466 60 6 0.200 0.522 33 0.200 23279 31 300 3037 4327 553 38 400 7258 738 71 47 6 0.260 0.164 7552 34 0.29 2650 14 200 3337 718 71 26 34 10 0 750 8 4 20 38 400	F																	
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$ \left[\begin{array}{c} 4 \\ 600 \\ \hline 8 \\ \hline 10 \\ \hline \\ 600 \\ \hline 8 \\ \hline 10 \\ \hline \\ 600 \\ \hline \\ 8 \\ \hline \\ 10 \\ \hline \\ 600 \\ \hline \\ 8 \\ \hline \\ 10 \\ \hline \\ 600 \\ \hline \\ 8 \\ \hline \\ 10 \\ \hline \\ 600 \\ \hline \\ 8 \\ \hline \\ 10 \\ \hline \\ 600 \\ \hline \\ 8 \\ \hline \\ 10 \\ \hline \\ 700 \\ \hline \\ 8 \\ \hline \\ 8 \\ 700 \\ \hline \\ 8 \\ \hline \\ 8 \\ 700 \\ \hline \\ 8 \\ \hline \\ 8 \\ 700 \\ \hline \\ 8 \\ \hline \\ 8 \\ 700 \\ \hline \\ 8 \\ \hline \\ 8 \\ 700 \\ \hline \\ 8 \\ \hline \\ 8 \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 8 \\ 70 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 8 \\ 70 \\ \hline \\ \\ 8 \\ 70 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ \\ 8 \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ 8 \\ \hline \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ \\ 8 \\ \\ 700 \\ \hline \\ \\ 700 \\ \hline \\ \\ 8 \\ \\ 8 \\ \\ 700 \\ \hline \\ \\ 700 \\ \\$																		
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$ \left[\begin{array}{c c c c c c c c c c c c c c c c c c c $		600		0.240	0.152				0.270	0.152				0.307	0.202			
$ \left[\begin{array}{cccccccccccccccccccccccccccccccccccc$				0.2.40	0.102				0.210	0.102				0.207	0.202			
650 6 8 0.260 0.164 3 552 29 26 4 736 0.293 0.164 3 552 31 31 4 736 0.333 0.333 0.218 4 717 26 34 10 5 920 81 3 90 81 3 90 5 920 86 44 7862 71 47 700 6 0.280 0.177 3 825 29 26 0.315 0.177 3 825 31 31 0.358 7862 71 47 6 6 0.280 0.177 3 825 29 26 0.315 0.177 3 825 31 31 0.358 0.358 0.286 6774 45 42 6 6 0.300 0.190 2732 13 16 2732 14 21 14 21 14 21 14 21 14 24 16 17 48 16 17 48 16 18 16 16			_							<u> </u>								
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$ \left[\begin{array}{cccccccccccccccccccccccccccccccccccc$		650	8	0.260	0.164				0.293	0.164				0.333	0.218			
$ \left[\begin{array}{cccccccccccccccccccccccccccccccccccc$					<u> </u>					<u> </u>								
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$ \left[\begin{array}{c c c c c c c c c c c c c c c c c c c $		700		0.280	0.177				0.315	0.177				0.358	0.235			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			10			6 376	81	40			6 3 7 6	86	44			8 467	71	47
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$																		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		750		0.300	0.190				0.338	0.190				0.384	0.252			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			10			0.000	0.1	4.0			0.000	0.0	40			0.022	214	40
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			4			2 915	13	16			2 915	14	20			3 871	11	24
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		800		0.320	0.202				0.360	0.202				0.410	0.269			
4 3 097 13 17 3 097 14 20 6 0.340 0.215 4 645 29 27 0.383 0.215 4 645 31 31 0.435 0.435 6 619 26 34 10 7 742 81 40 742 86 44 20 0.435 0.435 0.286 4113 11 24 900 6 0.360 0.228 4918 29 27 0.405 31 31 0.435 0.435 6169 26 34 900 6 0.360 0.228 4918 29 27 0.405 0.228 4918 31 31 0.461 0.302 6532 26 34 900 6 0.360 0.228 455 355 38 0.461 0.302 6532 26 34 8 0.360 0.228 555 38 0.461 0.302 6532																		
6 0.340 0.215 6 193 2.27 0.383 0.215 6 193 0.215 4 645 2.15 4 645 3.1 0.435 0.286 6 169 2.6 3.1 0.435 0.286 6 169 2.6 3.1 0.435 0.286 6 169 2.6 3.1 0.435 0.286 6 169 2.6 3.1 0.435 0.286 6 169 2.6 3.1 0.435 0.286 6 169 2.6 3.1 0.435 0.286 6 169 2.6 3.1 0.435 0.286 6 169 2.6 3.1 0.435 0.286 6 10 2.6 3.1 1.1 2.4 3.1 1.1 2.4 <																		
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4 3279 13 17 3279 14 20 4355 11 24 900 6 0.360 0.228 4918 29 27 0.405 0.228 4918 31 31 0.461 0.302 6532 26 34 900 8 0.360 0.228 55 35 55 38 0.461 0.302 6532 26 34		830	8	0.340	0.215			35	0.365	0.215				0.433	0.200	8 2 2 5		
900 6 0.360 0.228 4 918 29 27 0.405 0.228 4 918 31 31 0.461 0.302 6 532 26 34 900 8 0.360 0.228 55 35 0.405 0.228 6 558 55 38 0.461 0.302 6 532 26 34										<u> </u>								
900 8 0.360 0.228 6 558 52 35 0.405 0.228 6 558 55 38 0.461 0.302 8 709 45 42																		
		900		0.360	0.228				0.405	0.228				0.461	0.302			

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

									hei	ght H (m	ım]						
			c 1	-	550			a 1		630					650		
_		v [m/s]	Sk [m²]	Se [m²]	Q [m³/h]	dp [Pa]	L _{WA} [dB]	Sk [m²]	Se [m²]	Q [m³/h]	dp [Pa]	L _{WA} [dB]	Sk [m²]	Se [m ²]	Q [m³/h]	dp [Pa]	L _{WA} [dB]
		6			532 798	13	10			664 996	25	14 24			664 996	12 27	9 20
	110	8	0.061	0.037	1 064	51	29	0.070	0.046	1 327	44	32	0.072	0.046	1 327	48	27
		10			1 331	79	34	1		1 659	69	38			1 659	76	33
		4			726	13	12			905	11	15			905	12	10
	150	8	0.083	0.050	1 089	29	22	0.095	0.063	1 358	25 44	26	0.098	0.063	1 358	27	21 28
		10			1 814	79	36			2 263	69	39			1 810 2 263	76	34
		4			968	13	13			1 207	11	16			1 207	12	12
	200	6	0.110	0.067	1 452	29	24	0.127	0.084	1 810	25	27	0.130	0.084	1 810	27	22
	200	8	0.110	0.007	1 935	51	31	0.127	0.004	2 413	44	34	0.150	0.004	2 413	48	30
		10			2 419	79	37			3 017	69 11	40			3 017	76	36 13
		6			1 814	29	25			1 508 2 263	25	28			1 508	27	23
	250	8	0.138	0.084	2 419	51	32	0.159	0.105	3 017	44	35	0.163	0.105	3 017	48	31
		10			3 024	79	38			3 771	69	41			3 771	76	36
		4			1 4 5 2	13	15			1 810	11	18			1 810	12	13
	300	6	0.165	0.101	2 177 2 903	29	25	0.191	0.126	2 715 3 620	25 44	29	0.195	0.126	2 715 3 620	27	24
		10			3 629	79	39			4 525	69	42			4 525	76	37
		4			1 693	13	15			2 112	11	19			2 112	12	14
	350	6	0.193	0.118	2 540	29	26	0.222	0.147	3 168	25	29	0.228	0.147	3 168	27	25
		8			3 387	51	34			4 224	44	37			4 224	48	32
		10			4 234	79	39 16	<u> </u>		5 279 2 413	69 11	43			5 279 2 413	76	38
		6			2 903	29	27			3 620	25	30			3 620	27	25
	400	8	0.220	0.134	3 871	51	34	0.254	0.168	4 827	44	37	0.260	0.168	4 827	48	33
		10			4 838	79	40			6 0 3 4	69	43			6 0 3 4	76	39
		4			2 177 3 266	13	17 27			2 715 4 073	25	20			2 715 4 073	12 27	15 26
	450	6	0.248	0.151	4 3 5 5	51	35	0.286	0.189	5 430	44	38	0.293	0.189	5 430	48	33
7		10			5 4 4 3	79	40			6 788	69	44			6 788	76	39
B [mm]		4			2 419	13	17			3 0 1 7	11	20			3 017	12	16
	500	<u>6</u> 8	0.275	0.168	3 629	29	28	0.318	0.210	4 525 6 034	25	31	0.325	0.210	4 525	27	26
width		10			4 838 6 048	51	41			7 542	44 69	44			6 034 7 542	48	40
8		4			2 661	13	17			3 318	11	21			3 318	12	16
	550	6	0.303	0.185	3 992	29	28	0.349	0.230	4 978	25	31	0.358	0.230	4 978	27	27
	550	8	0.303	0.165	5 322	51	36	0.343	0.230	6 637	44	39	0.356	0.230	6 637	48	34
		10 4			6 653 2 903	79	41			8 296 3 620	69 11	45 21			8 296 3 620	76	40
		6			4 355	29	28			5 430	25	32			5 430	27	27
	600	8	0.330	0.202	5 806	51	36	0.381	0.251	7 240	44	39	0.390	0.251	7 240	48	34
		10			7 258	79	42			9 0 5 0	69	45			9 050	76	40
		4			3 145	13	18			3 922	11	21 32			3 922	12 27	17
	650	6	0.358	0.218	6 2 9 0	29 51	36	0.413	0.272	5 883 7 844	25	32	0.423	0.272	5 883 7 844	48	27
		10			7 862	79	42			9 805	69	45			9 805	76	41
		4			3 387	13	18			4 2 2 4	11	22			4 2 2 4	12	17
	700	6	0.385	0.235	5 080	29	29	0.445	0.293	6 335	25 44	32 40	0.455	0.293	6 335 8 447	27 48	28
		8			6 774 8 467	51 79	37 42			8 447	69	40			8 447	48	35
		4			3 629	13	19			4 525	11	22			4 525	12	17
	750	6	0.413	0.252	5 443	29	29	0.476	0.314	6788	25	33	0.488	0.314	6 788	27	28
	130	8	0.413	0.232	7 258	51	37	0.470	0.314	9 0 5 0	44	40	0.400	0.314	9 050	48	35
		4			9 072 3 871	79	43			11 313	69 11	46 22			11 313	76	41
		6			5 806	13	30			4 827	25	33			4 827 7 240	27	28
	800	8	0.440	0.269	7 741	51	37	0.508	0.335	9 654	44	40	0.520	0.335	9 654	48	35
		10			9 677	79	43			12 067	69	46			12 067	76	41
		4			4 113	13	19			5 129	11	23			5 129	12	17
	850	6	0.468	0.286	6 169 8 225	29	30 37	0.540	0.356	7 693	25 44	33	0.553	0.356	7 693	27	28
		10			10 282	79	43			12 821	69	46			12 821	76	41
		4			4 355	13	20			5 4 3 0	11	23			5 430	12	17
	900	6	0.495	0.302	6 532	29	30	0.572	0.377	8 145	25	32	0.585	0.377	8 145	27	28
		8			8 709	51 79	38			10 860 13 576	44 69	39 44			10 860 13 576	48	35 41
		10			10 886	79	43			13 576	69	44			13 576	70	41

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

		1							hei	ight H (m	ım]						
		+			700					750				-	800		
_		(m/s)	Sk [m²]	Se [m²]	Q [m ³ /h]	dp [Pa]	L _{WA} [dB]	Sk [m²]	Se [m²]	Q [m³/h]	dp [Pa]	L _{WA} [dB]	Sk [m²]	Se [m²]	Q [m ³ /h]	dp [Pa]	L _{WA} [dB]
		6			664 996	14 30	12 23			859 1 288	9	15			795	22	11 22
	110	8	0.077	0.046	1 327	54	30	0.083	0.060	1 717	35	33	0.088	0.055	1 590	40	29
		10			1 659	85	36			2 146	55	39			1 988	62	35
		4			905	14 30	14			1 171	9	16			1 084	10	12
	150	6	0.105	0.063	1 358 1 810	54	24	0.114	0.081	2 341	35	27	0.120	0.075	1 626 2 169	22	23 30
		10			2 263	85	37			2 927	55	40			2 711	62	36
		4			1 207	14	15			1 561	9	17			1 4 4 6	10	14
	200	6	0.140	0.084	1 810	30 54	25	0.152	0.108	2 341	20	28	0.160	0.100	2 169	22	24 32
		8			2 413 3 017	85	33			3 122 3 902	35	41			2 892 3 614	40 62	32
		4			1 508	14	16			1 951	9	18			1 807	10	15
	250	6	0.175	0.105	2 263	30	26	0.190	0.136	2 927	20	29	0.200	0.126	2 711	22	25
		8		0.100	3 017 3 771	54 85	34		0.120	3 902	35	36	0.200	0.120	3 614 4 518	40 62	33
		4			1 810	14	17			2 341	9	19			2 169	10	15
	300	6	0.210	0.126	2 715	30	27	0.227	0.163	3 512	20	30	0.240	0.151	3 2 5 3	22	26
	300	8	0.210	0.126	3 620	54	35	0.227	0.163	4 683	35	37	0.240	0.151	4 3 37	40	33
		10			4 525 2 112	85	40	<u> </u>		5 854	55	43 20			5 422 2 530	62 10	39 16
		6			3 168	30	28			2 732 4 098	20	30			3 795	22	27
	350	8	0.245	0.147	4 224	54	35	0.265	0.190	5 463	35	38	0.280	0.176	5 060	40	34
		10			5 279	85	41			6 829	55	44			6 325	62	40
		4			2 413	14	18			3 122	9	20			2 892	10	17
	400	6	0.280	0.168	3 620	30 54	28 36	0.303	0.217	4 683 6 244	20	31 38	0.320	0.201	4 337 5 783	22 40	27 35
		10			6 034	85	42			7 805	55	44			7 229	62	41
		4			2 715	14	18			3 512	9	21			3 2 5 3	10	17
	450	6	0.315	0.189	4 073	30	29	0.341	0.244	5 268	20	31	0.360	0.226	4879	22	28
_		10			5 430 6 788	54 85	36			7 024 8 780	35	39			6 506 8 132	40 62	35
width B [mm]		4			3 017	14	19			3 902	9	21			3 614	10	18
i iii	500	6	0.350	0.210	4 525	30	29	0.379	0.271	5 854	20	32	0.400	0.251	5 4 2 2	22	28
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v – velocity [m/s]
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Se – damper active cross section [m²]

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100 4 8 0.0 9 3 8.8 10 7 695 3 8.8 10 7 695 3 8.8 10 7 695 11 9 19 7 695 48 9 17 7 695 13 9 17 9 10 9 17 9 10 9 17 9 10 9 17 9 10 9 10 9 <th< td=""><td></td><td>350</td><td></td><td>0.351</td><td>0.234</td><td></td><td></td><td></td><td>0.368</td><td>0.234</td><td></td><td></td><td></td><td>0.394</td><td>0.263</td><td></td><td></td><td></td></th<>		350		0.351	0.234				0.368	0.234				0.394	0.263			
400 6 0,402 0,202 7 31 0,420 0,267 772 29 27 31 0,420 0,267 772 29 27 31 0,420 0,267 772 29 27 31 0,420 0,267 6,499 79 41 0,301 6,489 24 29 12 10 10 44.8 27 31 0,473 0,316 6,499 27 43 37 10 6 6.9 0,452 0,314 7 48.8 29 0,473 0,414 0,473 0,414					L										L			
400 8 0 0.402 0.402 0.402 0.402 0.402 0.403 0.507 0.433 0.403 0.403 0.403 0.507 0.434 0.403 0.403 0.507 0.413 0.403 0.507 <td></td>																		
10 9 619 76 44 9 619 79 41 10 10 814 67 43 450 6 0.452 0.301 6493 27 31 0.473 0.473 0.473 0.501 6493 29 28 0.501 9.502 0.334 7300 24 30 27 31 0.473 0.473 0.473 0.501 6693 79 41 0.531 7300 24 30 6 0.502 0.334 7214 27 21 0.525 0.334 701 13 18 7300 24 30 6 0.502 0.334 7214 27 22 0.525 0.344 701 12 20 1351 66 31 44 30 311 24 30 311 24 30 600 6.50 0.502 0.367 7396 27 27 31 811 326 64 33 <t< td=""><td></td><td>400</td><td></td><td>0.402</td><td>0.267</td><td></td><td></td><td></td><td>0.420</td><td>0.267</td><td></td><td></td><td></td><td>0.451</td><td>0.300</td><td></td><td></td><td></td></t<>		400		0.402	0.267				0.420	0.267				0.451	0.300			
450 6 0.452 0.301 6493 27 31 0.473 0.301 6493 279 28 0.507 0.338 7300 24 307 10 10822 76 45 10 10822 79 41 10 973 43 37 4 0.502 0.334 76 45 0.527 98 41 10 12 16 67 42 37 500 8 0.502 0.334 79 42 91 13 18 647 74 30 12 12 12 12 12 12 12 12 13 18 13 18 13 18 13 18 13 18 13 18 13 18 13 18 13 18 13 18 13 18 13 18 13 13 13 13 13 13 13 13 13 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>44</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								44										
450 8 0.452 0.430 8.657 51 35 0.507 0.38 9.73 4.3 37 10 4 7214 12 21 35 0.507 0.387 9.733 4.3 37 500 6 0.502 0.334 919 221 79 410 13 18 71 216 6.7 43 30 500 6 0.502 0.334 919 43 39 10 10 101 43 38 6 0.552 0.367 7936 27 322 0.578 0.578 0.578 10 10 10 101 44 38 10 10 13 26 79 42 7936 27 32 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 3																		
10 10 10 822 76 45 10 822 79 41 10 826 76 43 500 6 0.502 0.334 7214 22 32 9 410 11 200 810 12 66 7 43 500 8 0.502 0.334 7214 22 32 9 610 13 18 9 64 0.564 13 10 13 14 43 38 13 18 67 44 30 500 6 0.552 0.367 776 45 0.578 0.578 0.578 0.578 0.578 0.578 0.578 0.578 0.571 13 18 0.676 0.676 0.61 11896 43 388 600 6 0.602 0.601 11439 79 42 0.676 0.676 0.676 0.68 0.733 10 11 20 20 20 21		450		0.452	0.301				0.473	0.301				0.507	0.338			
Vert 4 0.502 4 0.502 0.334 4 810 12 21 221 13 18 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 16 251 13 17 18 251 13 16 251 13 13 16 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>																		
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No 9 10 </td <td>15</td> <td>500</td> <td>6</td> <td>0.502</td> <td>0.224</td> <td>7 214</td> <td>27</td> <td>32</td> <td>0.525</td> <td>0.224</td> <td>7 214</td> <td>29</td> <td>28</td> <td>0.564</td> <td>0.276</td> <td>8 111</td> <td>24</td> <td>30</td>	15	500	6	0.502	0.224	7 214	27	32	0.525	0.224	7 214	29	28	0.564	0.276	8 111	24	30
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	₽	300		0.302	0.334				0.325	0.334				0.304	0.370			
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		550		0.552	0.367				0.578	0.367				0.620	0.413			
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$																		21
$ \left[\begin{array}{cccccccccccccccccccccccccccccccccccc$		650		0.653	0.434				0.683	0.434				0.733	0.488			
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		700		0.703	0.000				0.775	0.000				0.700	0.536			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		700		0.703	0.468				0.735	0.468				0.789	0.526			
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$																		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		750		0.753	0.501				0.788	0.501				0.845	0.563			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$							76	47			18 036						67	45
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		800		0.803	0.534				0.840	0.534				0.902	0.601			
4 6 0.853 8 176 12 23 0.893 0.668 8 176 13 20 12 264 29 31 12 264 33 10<																		
850 6 8 0.853 0.568 12 264 27 34 0.893 0.568 12 264 29 31 0.958 13 788 24 33 10 16 353 48 41 0.893 0.568 16 353 51 38 0.958 0.638 18 384 43 40 20 41 76 47 20 441 79 44 22 981 67 46 900 6 0.904 0.601 12 2986 27 34 0.945 12 2986 29 31 0.073 11 22 900 6 0.904 0.601 12 2986 27 34 0.945 12 2986 29 31 0.073 14 599 24 33 17 315 48 42 0.945 17 315 51 38 1.014 0.676 14 599 24 33																		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		850		0.852	0.569				0.893	0.569				0.059	0.639			
4 8 657 12 24 900 6 0.904 0.601 12.986 27 34 17.315 48 42 0.945 0.601 12.986 29 31 1.014 0.676 19.466 43 40		850		0.033	0.508				0.033	0.308				0.930	0.036			
900 6 8 0.904 0.601 12 986 27 34 17 315 48 42 0.945 0.601 12 986 29 31 17 315 51 38 1.014 0.676 14599 24 33 19466 43 40																		
900 8 0.904 0.601 17 315 48 42 0.945 0.601 17 315 51 38 1.014 0.676 19466 43 40																		
		900		0.904	0.601				0.945	0.601				1.014	0.676			

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

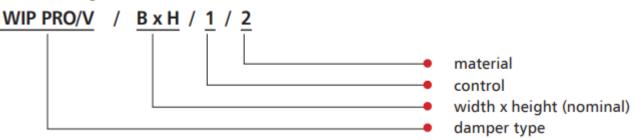
					4450				hei	ight H [m	nm]				4350		
	1		Sk	50	1150	do	1	Sk	Se	1200 Q	da	1	Sk	50	1250 Q	do	
_	_	[m/s]	[m ²]	Se [m²]	Q [m³/h]	dp [Pa]	L _{WA} [dB]	5K [m ²]	5e [m²]	[m³/h]	dp [Pa]	LwA [dB]	5K [m ²]	Se [m ²]	[m ³ /h]	dp [Pa]	L _{WA} [dB]
		6			1 190	13	22			1 190	2	13 23			1 321	24	10 21
	110	8	0.127	0.083	2 379	52	29	0.132	0.083	2 379	7	31	0.138	0.092	2 642	43	28
		10			2 974	81	35			2 974	11	37			3 303	66	34
		4			1 622	13	12			1 622	2	14			1 801	11	12
	150	6	0.173	0.113	2 433	29	23	0.180	0.113	2 433	4	25	0.188	0.125	2 702	24	22
		8			3 244 4 055	52 81	30 36			3 244 4 055	7	32 38			3 603	43 66	30
		4			2 163	13	12			2 163	2	14			2 402	11	11
	200	6	0.230	0.150	3 244	29	23	0.240	0.150	3 2 4 4	4	25	0.250	0.167	3 603	24	22
	200	8	0.2.50	0.150	4 326	52	31	0.240	0.150	4 326	7	33	0.230	0.167	4 804	43	29
		10			5 407	81	36		<u> </u>	5 407	11	38			6 005	66	35
		6			2 704	13	13			2 704	2	15 26			3 002	24	12 23
	250	8	0.288	0.188	5 407	52	32	0.300	0.188	5 407	7	33	0.313	0.209	6 005	43	30
		10			6 759	81	37	1		6 759	11	39			7 506	66	36
		4			3 244	13	14			3 2 4 4	2	16			3 603	11	13
	300	6	0.345	0.225	4 866	29	25	0.360	0.225	4 866	4	27	0.375	0.250	5 4 0 4	24	24
		8			6 489 8 111	52 81	32			6 489 8 111	11	40			7 206	43 66	31 37
		4			3 785	13	15			3 785	2	17			4 203	11	14
	350	6	0.403	0.263	5 678	29	25	0.420	0.263	5 678	4	27	0.438	0.292	6 305	24	24
	350	8	0.403	0.263	7 570	52	33	0.420	0.263	7 570	7	35	0.438	0.292	8 407	43	32
		10		<u> </u>	9 463	81	39	<u> </u>	<u> </u>	9 463	11	41			10 508	66	38
		6			4 326 6 489	13	15 26			4 326 6 489	2	17 28			4 804	24	14 25
	400	8	0.460	0.300	8 652	52	34	0.480	0.300	8 652	7	36	0.500	0.334	9 608	43	32
		10			10 814	81	39			10 814	11	41			12 010	66	38
		4			4 866	13	16			4 866	2	18			5 4 0 4	11	15
	450	6	0.518	0.338	7 300	29	27	0.540	0.338	7 300	4	29	0.563	0.375	8 106	24	25
_		8			9 733	52 81	34			9 733	7	36			10 809 13 511	43 66	33
width B [mm]		4			5 407	13	16			5 407	2	18			6 005	11	15
-	500	6	0.575	0.376	8 111	29	27	0.600	0.376	8 111	4	29	0.625	0.417	9 007	24	26
≨	500	8	0.373	0.370	10 814	52	35	0.000	0.370	10.814	7	36	0.013	0.417	12 010	43	33
wid		10			13 518 5 948	81	40		<u> </u>	13 518 5 948	11	42			15 012	66	39 16
		6			8 922	29	17 27			8 922	2	29			6 605 9 908	24	26
	550	8	0.633	0.413	11 896	52	35	0.660	0.413	11 896	7	37	0.688	0.459	13 211	43	34
		10			14870	81	41			14 870	11	43			16 513	66	40
		4			6 489	13	17			6489	2	19			7 206	11	16
	600	6	0.690	0.451	9 733	29	28	0.720	0.451	9 733	4	30 37	0.750	0.500	10 809 14 412	24 43	27
		10			16 222	81	41			16 222	11	43			18 014	66	40
		4			7 029	13	18			7 029	2	20			7 806	11	17
	650	6	0.748	0.488	10 544	29	28	0.780	0.488	10 544	4	30	0.813	0.542	11 709	24	27
		8			14 059 17 573	52 81	36			14 059	7	38			15 612 19 516	43 66	35 40
		4			7 570	13	18			7 570	2	20			8 407	11	17
	700	6	0.005	0.536	11 355	29	28	0.840	0.536	11 355	4	30	0.075	0.594	12 610	24	27
	700	8	0.805	0.526	15 140	52	36	0.840	0.526	15 140	7	38	0.875	0.584	16 813	43	35
		10			18 925	81	42			18 925	11	44			21 017	66	41
		4			8 111	13	18			8 111	2	20			9 007	11	17 28
	750	8	0.863	0.563	12 166 16 222	52	36	0.900	0.563	12 166 16 222	7	31 38	0.938	0.626	13 511 18 014	24 43	35
		10			20 277	81	42			20 277	11	44			22 518	66	41
		4			8 652	13	18			8 652	2	20			9 608	11	17
	800	6	0.920	0.601	12 977	29	29	0.960	0.601	12 977	4	31	1.000	0.667	14 412	24	28
		8			17 303 21 629	52 81	37 42			17 303 21 629	7	39 44			19 215 24 019	43 66	35
		4			9 192	13	42			9 192	2	21			10 208	11	18
	850	6	0.978	0.638	13 788	29	29	1.020	0.638	13 788	4	31	1.063	0.709	15 312	24	28
	830	8	0.978	0.038	18 384	52	37	1.020	0.038	18 384	7	39	1.063	0.709	20 416	43	36
		10			22 981	81	43			22 981	11	45			25 520	66	42
		4			9 733	13	19 30			9 733	2	21 32			10 809 16 213	24	18 28
	900	8	1.035	0.676	19 466	52	30	1.080	0.676	19 466	7	32	1.125	0.751	21 617	43	36
		10			24 332	81	43			24 332	11	45			27 022	66	42
_																	

7. Estimated Weights of WIP PRO/V, WIP PRO/V-M dampers [kg]

						he	eight H [m	m]				
		263	300	400	500	600	700	800	900	1000	1100	1250
	110	3	3	4	5	7	8	9	10	11	13	14
	150	4	4	6	8	9	11	12	14	16	17	20
	200	5	6	8	10	12	15	17	19	21	23	27
	250	7	8	12	13	16	18	21	24	27	29	33
[mm]	300	8	9	12	16	19	22	25	29	32	35	40
	350	9	11	15	18	22	26	30	34	37	41	47
B	400	11	12	17	21	25	30	34	38	43	47	54
width	500	14	16	21	27	32	37	43	48	54	59	67
-	600	16	19	25	32	38	45	51	58	64	71	81
	700	19	22	30	37	45	52	60	68	75	83	94
	800	22	25	34	43	51	60	69	77	86	95	108
	900	25	29	38	48	58	68	77	87	97	106	128

1 The table shows the weight of dampers with RST-KW1 type trigger control mechanism or actuators

8. Marking



1 – Control:

_

Belimo trigger control mechanism
BE24 – actuator with no return spring, U = 24 V AC/DC
BE24-ST (with the BKNE230-24 option) – actuator with no return spring, U = 24 V AC/DC, with a SBS Control system
BE230 – actuator with no return spring, U = 230 V AC/DC
BLE24 – actuator with no return spring, U = 24 V AC/DC
BLE24-ST (with the BKNE230-24 option) – actuator with no return spring, U = 24 V AC/DC, with a SBS Control system
BLE24-ST (with the BKNE230-24 option) – actuator with no return spring, U = 24 V AC/DC
BLE24-ST (with the BKNE230-24 option) – actuator with no return spring, U = 24 V AC/DC
BLE24-ST (with the BKNE230-24 option) – actuator with no return spring, U = 24 V AC/DC, with a SBS Control system
BLE230 – actuator with no return spring, U = 230 V AC/DC

2 – Material:

Example marking:

WIP PRO/V 400 x 400 BLE24

Louvered fire damper EIS120 with a compact 24 V Belimo actuator with limit switches.

9. Power Supply Control

9.1 Cooperation with smoke exhaust/cut-off dampers – drive quick selection table

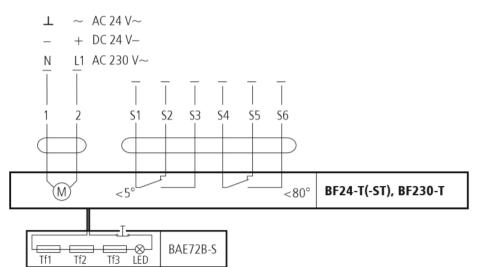
	FID S/S	FID S/S p/P	FID S/V p/P	FID	WIP/	WIP/T	WIP/T-	WIP/V	WIP	WIP PRO/V
	c/P	FID S/S p/O	FID S/V-M p/P	PRO	S		G	WIP/V-M	PRO/S	WIP PRO/V-M
BF24-T (ST)		Х			Х	Х			Х	
ВF230-Т		Х			Х	Х			Х	
BFL24-T (-ST)	Х	Х		Х	Х	Х			Х	
BFL230-T	Х	Х		Х	Х	Х			Х	
BFN24-T (-ST)	Х	Х			Х	Х			Х	
BFN230-T	Х	Х			Х	Х			Х	
BE24			Х			Х		Х		Х
BE230			Х			Х		Х		Х
BLE24			Х			Х		Х		Х
BLE230			Х			Х		Х		Х
EXBF24-T	Х	Х		Х	Х	Х			Х	
EXBF230-T	Х	Х		Х	Х	Х			Х	
BF24TL-T (-ST)	Х	Х		Х	Х	Х			Х	
RST	Х	Х		Х						
RST/WK1	Х	Х		Х						
RST/WK2	Х	Х		Х						
RST-KW1/S	Х	Х		Х						
RST-KW1/S/WK2	Х	Х		Х	Х	Х	Х		Х	
RST-KW1/24I	Х	Х		Х						
RST-KW1/24P	Х	Х		Х					Х	
RST-KW1/230I	Х	Х		Х						
RST-KW1/230P	Х	Х		Х					Х	
BF24 (-ST)							Х			
BF230							Х			
BFL24 (-ST)							Х			
BFL230							Х			
BFN24 (-ST)							Х			
BFN230							Х			

9.2 Actuators

9.2.1 BF electric actuators

SPECIFIKATIONS	BF24 (BF24-T)	BF230 (BF230-T)
Power supply	AC 24 V 50/60 Hz DC 24 V	AC 220-240 V 50/60 Hz
Power demand:		
- For spring tensioning	7 W	8 W
- For holding	2 W	3 W
Sizing (apparent power)	10 VA	11 VA
Protection class	III	II
Ingress protection rating	IP 54	IP 54
Auxiliary circuit breaker:	2 x EPU	2 x EPU
	3 (0.5) A 250 V	3 (0.5) A 250 V~
- Activation position	5°, 80°	5°, 80°
Torque		
- Motor	18 Nm	18 Nm
- Return spring	12 Nm	12 Nm
Cable connection:		
- Motor (length: 0.9 m)	$2 \ge 0.75 \text{ mm}^2$	2 x 0.75 mm ²
- Auxiliary circuit breaker	6 x 0.75 mm ²	2 x 0.75 mm ²
Movement time (0-90°)		
- Motor	120 s	120 s
- Return spring	~16 s	~16 s
Operating temperature range	-30+50°C	-30+50°C
Sound intensity level:		
- Motor	max 45 dB (A)	max 45 dB (A)
- Return spring	~63 dB (A)	~63 dB (A)

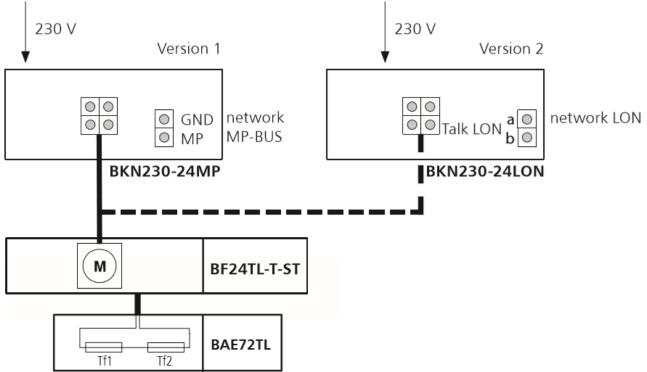
9.2.1.1 Electrical diagram of the BF...-T series actuator:



note: 24 V connection through a safety transformer.

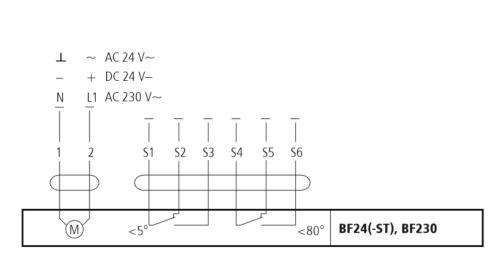
To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further actuators in parallel. Check the power consumption.

note:



9.2.1.2 Electrical diagram of the BF24TL-T(-ST) and BF24TL(-ST) actuator:

9.2.1.3 Electrical Diagram of the BF series actuator:



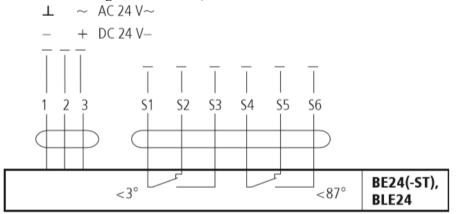
note: 24 V connection through a safety transformer. To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further actuators in parallel. Check the power consumption.

note:

9.2.2 BE, BLE electric actuators

Specifications	BE24. BE24-ST	BE230	BLE24	BLE230
Power Supply	AC 24 V 50/60 Hz	AC 230 V 50/60 Hz	AC 24 V 50/60	AC 230 V 50/60
			Hz DC 24 V	Hz
Power demand:				
- In movement	12 W	8 W	7.5 W	5 W
- For holding	0.5 W	0.5 W	0.5 W	0.5
Sizing (apparent power)	18 VA	15 VA	9 VA	12 VA
Protection class	III	II	III	II
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
Auxiliary circuit breaker:	2 x SPDT	2 x SPDT	2 x EPU	2 x EPU
	6 (1.5) A AC 250 V	6 (1.5) A AC 250 V	3 (1.5) A 250 V	3 (1.5) A 250 V~
- Activation position	5°, 80°	5°, 80°	5°, 80°	5°, 80°
Torque - motor	40 Nm	40 Nm	15 Nm	15 Nm
Movement time (0-90°) – motor	$< 60 \text{ s for } 90^{\circ}$	$< 60 \text{ s for } 90^{\circ}$	$< 30 \text{ s for } 90^{\circ}$	$< 30 \text{ s for } 90^{\circ}$
Operating temperature	-30+50°C	-30+50°C	-30+50°C	-30+50°C
Sound intensity level	~62 dB (A)	~62 dB (A)	~62 dB (A)	~62 dB (A)

9.2.2.1Electric diagram of the BE, BLE series actuator



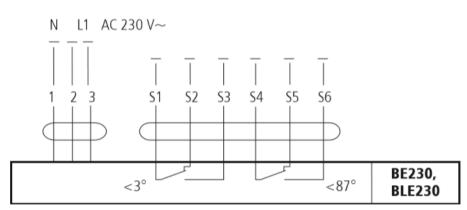


The actuator operation control requires routing three wire system to it. The actuator rotation sense is changed by the application of the power supply voltage to the terminal 2 or 3, depending on the desired direction.

note: 24 V connection through a safety transformer.

To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further drives in parallel. Check the power consumption.

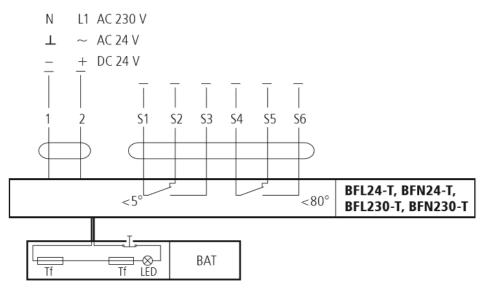
note:



Specifications	BFL24 (BFL24-T)	BFL230 (BFL230-T)	BFN24 (BFN24-T)	BFN230 (BFN230-T)
Power Supply	AC 24 V 50/60 Hz	AC 220-240 V 50/60	AC 24 V 50/60 Hz	AC 220-240 V 50/60
	DC 24 V	Hz	DC 24 V	Hz
Power demand:				
- Spring tensioning	2.5 W	3.5 W	4 W	5 W
- For holding	0.7 W	1.1 W	1.4 W	2.1
Sizing (apparent power)	4 VA	6.5 VA	6 VA	10 VA
Protection class	III	II	III	II
Ingress protection rating	IP 54	IP 54	IP 54	IP 54
Auxiliary circuit breaker:	2 x SPDT	2 x SPDT	2 x EPU	2 x EPU
- Activation position	3 (0.5) A AC 250 V	3 (0.5) A AC 250 V	3 (0.5) A 250 V	3 (0.5) A 250 V
	5°, 80°	5°, 80°	5°, 80°	5°, 80°
Torque				
- motor	4 Nm	4 Nm	9 Nm	9 Nm
- return spring	3 Nm	3 Nm	7 Nm	7 Nm
Movement time (0-90°):				
- motor	< 60 s	< 60 s	< 60 s	< 60 s
- return spring	~20 s	~20 s	~20 s	~20 s
Operating temperature	-30+55°C	-30+55°C	-30+55°C	-30+55°C
Sound intensity level				
- motor	max 43 dB (A)	max 43 dB (A)	max 55 dB (A)	max 55 dB (A)
- return spring	~62 dB (A)	~62 dB (A)	~67 dB (A)	~67 dB (A)

9.2.3 BFL, BFN ELECTRIC ACTUATORS

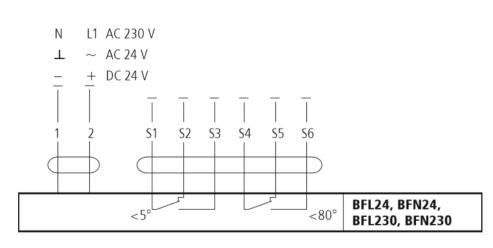
9.2.3.1 Electrical diagram of the BFL...-T, BFN...-T series actuator:



note: 24 V connection through a safety transformer. To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further actuators in parallel. Check the power consumption.

note:

9.2.3.2 Electrical diagram of the BFL, BFN series actuator:



note: 24 V connection through a safety transformer.

To disconnect the 230 V actuator from the mains, the gap of at least 3 mm between the contacts (when off) is required in the switch. It is possible to connect further actuators in parallel. Check the power consumption.

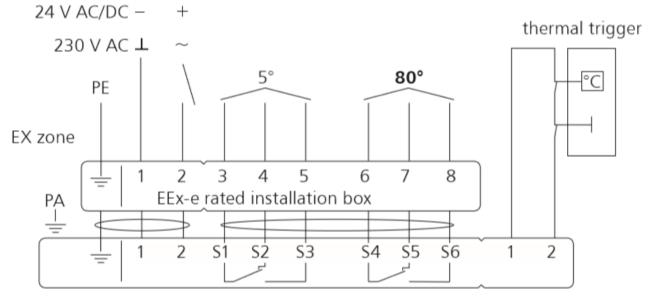
note:

The location of the actuator limit switches is shown for the no voltage position.

9.2.4 EXBF actuators

SPECIFIKATIONS	EXBF B 001 20 N 000	EXBF A 001 20 N 000		
Zone	1, 2, 21, 22			
ATEX-rating	II 2 GD EEx d IIC T6			
Power supply	24 V AC ±20% 50/60 Hz / 24 V DC - 10/+20%	230 V AC ±14% 50/60 Hz		
Power demand:				
- For spring tensioning	7 W	8 W		
- For holding	2 W	3 W		
Sizing (apparent power)	10 VA	11 VA		
Ingress protection rating	IP 66	IP 66		
Auxiliary circuit breaker:	2 x SPDT 6 A (3) max 250 v AC	2 x SPDT 6 A (3) max 250 V AC		
- Activation position	5°, 80°	5°, 80°		
Torque:				
- Motor	18 Nm	18 Nm		
- Return spring	12 Nm	12 Nm		
Movement time (0-90°)				
- Motor	150 s	150 s		
- Return spring	~20 s	~20 s		
Ambient temperature	-30+50°C	-30+50°C		

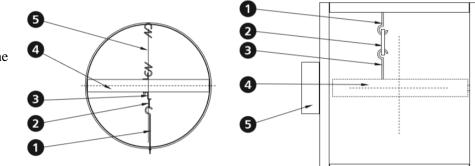
9.2.4.1 Connection diagram for EXBF and EXBF...-T actuators:



9.3 RST trigger control mechanisms

In the RST version the WK1 limit switches are independent units installed inside the fire damper casing. The thermal trigger is on the damper blade. The driving spring is installed on the damper blade or in a guard box on its casing.

- 1. Moving hook with nut
- 2. Fusible link
- Fixed hook on the damper blade
- 4. Damper blade
- 5. Drive spring



9.3.1 Independent limit switches – RST version

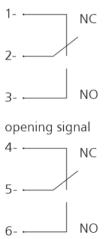
- WK1 limit switch (closed damper blade signal)
- WK2 limit switch (closed/open damper blade signal)

9.3.2 Switch specifications

WK1 and WK2 limit switch	1xNO/1xNC SPDT 5 A, 230 V AC
Limit switch operating temperature	-25 +85°C
Casing	plastic

9.3.2.1 Electric connection diagram of WK1 and WK2 limit switches

opening signal



note:

When the damper blade closes, the closed indication limit switch is switched over (contacts 2-3 are closed).

9.4 RST-KW1 mechanisms

	RST-KW1/S	RST- KW1/S/WK2	RST-KW1/24I	RST-KW1/24P	RST- KW1/230I	RST- KW1/230P
Rated voltage	-	-	24 V – 48 V DC	24 V – 48 V DC	230 AC	230 AC
Power consumption	-	-	3.5 W	1.6 W	2 W	2 W
Thermal trigger		74°C (optionally 95°C)				
Connections – trigger	-	- Wire 0.6m, 2 x 0.5 mm ²				
Connections – limit switches	-	Wire 0.6m, 6 x 0.5 mm ²				
Limit switch	-	2 x BI/NC 5A. 230 V AC				
Movement time			ma	x. 2 s		
Mechanism operation control (closing)	-	-	Voltage application "pulse"	Voltage removal "break"	Voltage application "pulse"	Voltage removal "break"
Mechanism operation control (opening)	Manual	Manual	Manual	Manual	Manual	Manual
Pulse width	max. 1 s					

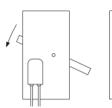
9.4.1 Description of electrical connections:

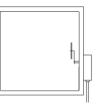
RST-KW1 mechanism power supply	Closing limit switch	Opening limit switch
Wire number: 1-2	Wire number: 3-4 – NO (normally open)	Wire number 6-7 – NO (normally open)
	Wire number 4-5 – NC (normally closed)	Wire number 7-8 – NC (normally closed)

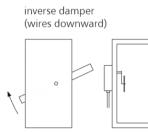
9.5 Manufacture standards

Damper type	Description	Standard	Option
	Right damper	Х	
	Inverse damper		X
FID S/S c/P	Left damper		Х
	Actuator normal to the axis flow	X	
	Actuator along the axis flow		
	Right damper	X	
	Inverse damper		Х
FID S/S p/P FID S/V p/P	Left damper		X
FID 5/ v p/F	Actuator normal to the axis flow	Х	
	Actuator along the axis flow		X
	Right damper	Х	
	Inverse damper		
FID S/S p/O	Left damper		
FID 5/5 P/O	Actuator normal to the axis flow	X	
	BF actuator along the v (exception)	Х	
	Actuator along the axis flow		X
	Right damper	X	
	Inverse damper		
FID PRO	Left damper		
	Actuator normal to the axis flow	X	
	Actuator along the axis flow		Х
WIP	Right damper		
	Inverse damper		Х
	Left damper		X
	Actuator normal to the axis flow	Х	
	Actuator along the axis flow	X	
WIP PRO	Right damper		X
	Inverse damper		X
	Left damper	Х	
	Actuator normal to the axis flow	X	
	Actuator along the axis flow		

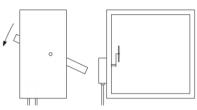
9.5.1 FID S/S c/P damper right damper standard



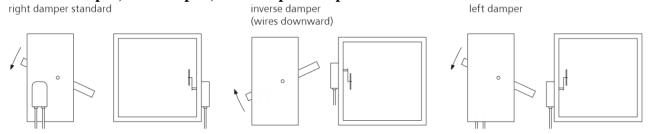




left damper

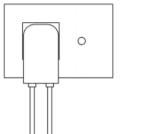


9.5.2 FID S/S p/P, FID S/S p/O, FID S/V p/P damper



9.5.3 FID PRO/S damper

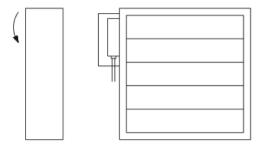
right damper standard actuator along the axis flow



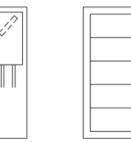


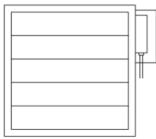
9.5.4 WIP/S, WIP/V, WIP/V-M, WIP/T, WIP/T-G damper

left damper standard



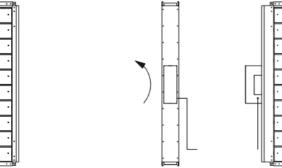
inverse damper (wires downward)

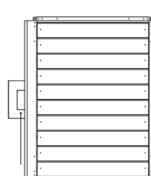




9.5.5 WIP PRO/S, WIP PRO/V, WIP PRO/V-M damper with an actuator

left damper standard inverse damper reversed cable outlet



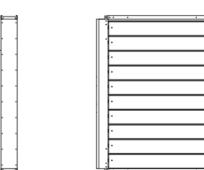


Installation in reversed horizontal and vertical position available

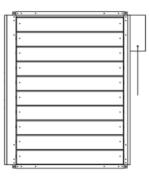
9.5.6 WIP PRO/S, WIP PRO/V, VIP PRO/V-M damper with RST-KW1 mechanism

left damper standard

inverse damper reversed cable outlet







(i) Installation in reversed horizontal and vertical position available