



Fire Damper

NEO

in libraries of
Fluid Desk
Building Information Modeling

EI 120 (v_e-i↔-o) S
EN 13501-3+A1:2012
EN 15650:2010
Certificate of Conformity
CE 1488-CPR-0281/W



GOLD MEDAL MTP

air handling intelligence



open in
PartShelf24



FUNCTION

The NEO fire dampers are designed for buildings where in the event of a fire the affected zone should be isolated from the other zones, by among others, closing fire dampers, while the ventilation and air conditioning systems should operate normally in the other non-affected zones of the building. The performance criteria are satisfied in case of fire from inside to outside as well as outside to inside or both, respectively.

APPLICATION

The NEO fire dampers installation is allowed within a duct passing through a vertical building partition or directly in vertical building partition. The most common applications of the dampers are protection of elevator shafts and ventilation ducts in garages. Blades of NEO dampers in open position do not project beyond the damper contour of 120 mm body, which enables the damper installation just behind elbow, silencer or other component of ventilation system. Once the blades of the damper have been closed, the fire-affected zone is isolated, while fire resistance of partition wall is maintained. Closing the fire damper resulting from rise in temperature in ventilation duct above 72°C or 95°C and activation of fuse otherwise by control signal transmitted from the fire alarm control panel if damper is with remote control mechanism.

DESCRIPTION

The NEO fire damper consists of:

- rectangular casing made of galvanized steel sheet alternatively stainless or acid proof steel,
- movable damper blades made of fire resistant board,
- combination of smoke and fire proof seals of damper blades,
- control mechanism and optional EMS module enabling fire damper assessment with the TZ tester.



SELECTION

DIMENSIONS AND BASIC CHARACTERISTICS OF NEO DAMPER

H	L	100	150	200	250	300	315	350	400	450	500	550	600	630	650	700	750	800	850	900	Number of blades	
200		0.96 5.2	1.56 6.6	2.16 6.6	2.76 8.0	3.36 8.0	3.54 8.0	3.96 9.4	4.56 9.4	5.16 10.2	5.76 10.2	6.36 11.5	6.96 11.5	7.32 12.8	7.56 12.8	8.16 12.8	8.76 14.1	9.36 14.1	9.96 15.4	10.56 15.4	2	S M
250		1.04 6.0	1.69 7.5	2.34 7.5	2.99 9.1	3.64 9.1	3.84 9.1	4.29 10.7	4.94 10.7	5.59 11.5	6.24 11.5	6.89 12.9	7.54 12.9	7.93 14.4	8.19 14.4	8.84 14.4	9.49 15.8	10.14 15.8	10.79 17.3	11.44 17.3	3	S M
300		1.44 6.6	2.34 8.3	3.24 8.3	4.14 10.1	5.04 10.1	5.31 10.1	5.94 11.9	6.84 11.9	7.74 12.8	8.64 12.8	9.54 14.4	10.44 14.4	10.98 16.0	11.34 16.0	12.24 16.0	13.14 17.7	14.04 17.7	14.94 19.3	15.84 19.3	3	S M
350		1.52 7.2	2.47 9.1	3.42 9.1	4.37 11.0	5.32 11.0	5.61 11.0	6.27 12.9	7.22 12.9	8.17 13.9	9.12 13.9	10.07 15.7	11.02 15.7	11.59 17.5	11.97 17.5	12.92 17.5	13.87 19.3	14.82 19.3	15.77 21.1	16.72 21.1	4	S M
400		1.92 7.8	3.12 9.9	4.32 9.9	5.52 12.0	6.72 12.0	7.08 12.0	7.92 14.1	9.12 14.1	10.32 15.2	11.52 15.2	12.72 17.2	13.92 17.2	14.64 19.2	15.12 19.2	16.32 19.2	17.52 21.2	18.72 21.2	19.92 23.1	21.12 23.1	4	S M
450		2.00 8.5	3.25 10.8	4.50 10.8	5.75 13.1	7.00 13.1	7.38 13.1	8.25 15.4	9.50 15.4	10.75 16.5	12.00 16.5	13.25 18.6	14.50 18.6	15.25 20.8	15.75 20.8	17.00 20.8	18.25 22.9	19.50 22.9	20.75 25.0	22.00 25.0	5	S M
500		2.40 9.1	3.90 11.6	5.40 11.6	6.90 14.1	8.40 14.1	8.85 14.1	9.90 16.6	11.40 16.6	12.90 17.8	14.40 17.8	15.90 20.1	17.40 20.1	18.30 22.4	18.90 22.4	20.40 22.4	21.90 24.7	23.40 24.7	24.90 27.0	26.40 27.0	5	S M
550		2.48 9.7	4.03 12.4	5.58 12.4	7.13 15.0	8.68 15.0	9.15 15.0	10.23 17.7	11.78 17.7	13.33 19.0	14.88 19.0	16.43 21.4	17.98 21.4	18.91 23.9	19.53 23.9	21.08 23.9	22.63 26.3	24.18 26.3	25.73 28.8	27.28 28.8	6	S M
600		2.88 10.4	4.68 13.2	6.48 13.2	8.28 16.0	10.08 16.0	10.62 16.0	11.88 18.9	13.68 18.9	15.48 20.3	17.28 20.3	19.08 22.9	20.88 22.9	21.96 25.5	22.68 25.5	24.48 25.5	26.28 28.2	28.08 28.2	29.88 30.8	31.68 30.8	6	S M
650		2.96 11.1	4.81 14.1	6.66 14.1	8.51 17.1	10.36 17.1	10.92 17.1	12.21 20.1	14.06 20.1	15.91 21.6	17.76 21.6	19.61 24.4	21.46 24.4	22.57 27.1	23.31 27.1	25.16 27.1	27.01 30.8	28.86 30.8	30.71 32.7	32.56 32.7	7	S M
700		3.36 11.7	5.46 14.9	7.56 14.9	9.66 18.1	11.76 18.1	12.39 18.1	13.86 21.3	15.96 21.3	18.06 22.9	20.16 22.9	22.26 25.8	24.36 25.8	25.62 28.8	26.46 28.8	28.56 28.8	30.66 31.8	32.76 31.8	34.86 34.7	36.96 34.7	7	S M
750		3.44 12.3	5.59 15.7	7.74 15.7	9.89 19.0	12.04 19.0	12.69 19.0	14.19 22.4	16.34 22.4	18.49 24.0	20.64 24.0	22.79 27.1	24.94 27.1	26.23 30.3	27.09 30.3	29.24 30.3	31.39 33.4	33.54 33.4	35.69 36.5	37.84 36.5	8	S M
800		3.84 12.9	6.24 16.5	8.64 16.5	11.04 20.0	13.44 20.0	14.16 20.0	15.84 23.6	18.24 23.6	20.64 25.3	23.14 25.3	25.44 28.6	27.84 28.6	29.28 31.9	30.24 31.9	32.64 31.9	35.04 35.2	37.44 35.2	39.84 38.5	42.24 38.5	8	S M
850		3.92 13.7	6.37 17.4	8.82 17.4	11.27 21.1	13.72 21.1	14.46 21.1	16.17 24.8	18.62 24.8	21.07 26.6	23.52 26.6	25.97 30.1	28.42 30.1	29.89 33.5	30.87 33.5	33.32 33.5	35.77 37.0	38.22 37.0	40.67 40.4	43.12 40.4	9	S M
900		4.32 14.3	7.02 18.2	9.72 18.2	12.42 22.1	15.12 22.1	15.93 22.1	17.82 26.0	20.52 26.0	23.22 27.9	25.92 27.9	28.62 31.5	31.32 31.5	32.94 35.2	34.02 35.2	36.72 35.2	39.42 38.8	42.12 38.8	44.82 42.4	47.52 42.4	9	S M
950		4.40 14.9	7.15 18.9	9.90 18.9	12.65 23.0	15.40 23.0	16.23 23.0	18.15 27.1	20.90 27.1	23.65 29.1	26.40 29.1	29.15 32.9	31.90 32.9	33.55 36.6	34.65 36.6	37.40 36.6	40.15 40.4	42.90 40.4	45.65 44.2	48.40 44.2	10	S M
1000		4.80 15.5	7.80 19.7	10.80 19.7	13.80 24.0	16.80 24.0	17.70 24.0	19.80 28.3	22.80 28.3	25.80 30.4	28.80 30.4	31.80 34.3	34.80 34.3	36.60 38.3	37.80 38.3	40.80 38.3	43.80 42.3	46.80 42.3	49.80 46.2	52.80 46.2	10	S M
1050		4.88 16.2	7.93 20.6	10.98 20.6	14.03 25.1	17.08 25.1	18.00 25.1	20.13 29.5	23.18 29.5	26.23 31.7	29.28 31.7	32.33 35.8	35.38 35.8	37.21 39.9	38.43 39.9	41.48 39.9	44.53 44.0	47.58 44.0	50.63 48.1	53.68 48.1	11	S M
1100		5.28 16.8	8.58 21.5	11.88 21.5	15.18 26.1	18.48 26.1	19.47 26.1	21.78 30.7	25.08 30.7	28.38 33.0	31.68 33.0	34.98 37.3	38.28 37.3	40.26 41.6	41.58 41.6	44.88 41.6	48.18 45.9	51.48 45.9	54.78 50.2	58.08 50.2	11	S M
1150		5.36 17.4	8.71 22.2	12.06 22.2	15.41 27.0	18.76 27.0	19.77 27.0	22.11 31.8	25.46 31.8	28.81 34.1	32.16 34.1	35.51 38.6	38.86 38.6	40.87 43.0	42.21 43.0	45.56 43.0	48.91 47.5	52.26 47.5	55.61 51.9	58.96 51.9	12	S M
1200		5.76 18.0	9.36 23.0	12.96 23.0	16.56 28.0	20.16 28.0	21.24 28.0	23.76 33.0	27.36 33.0	30.94 35.4	34.56 35.4	38.16 40.0	41.76 40.0	43.92 44.7	45.36 44.7	48.96 44.7	52.56 49.3	56.16 49.3	59.76 53.9	63.36 53.9	12	S M

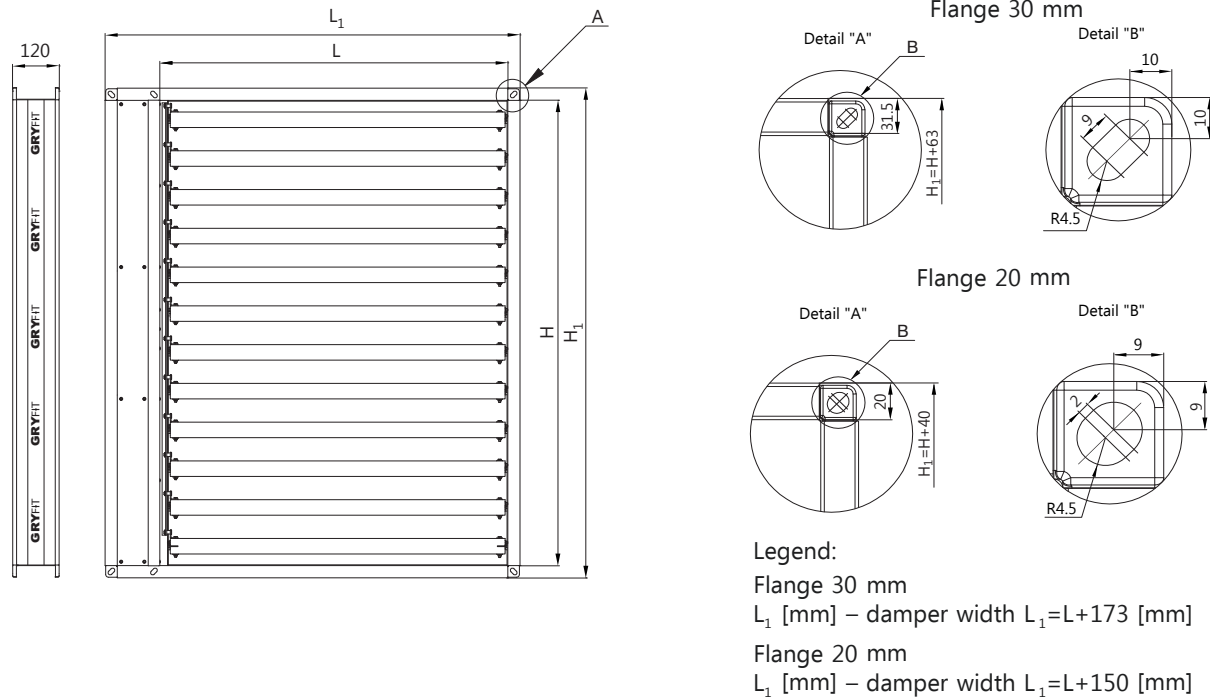
Legend:

L – damper width [mm]
H – damper height [mm]

S – effective area [dm²]
M – weight [kg]

For dimensions not listed in this table, assembly of fire dampers in batteries maybe considered.
NEO dampers with 5 mm step of L dimension may be provided.

DIMENSIONS OF NEO WITH ACTUATOR

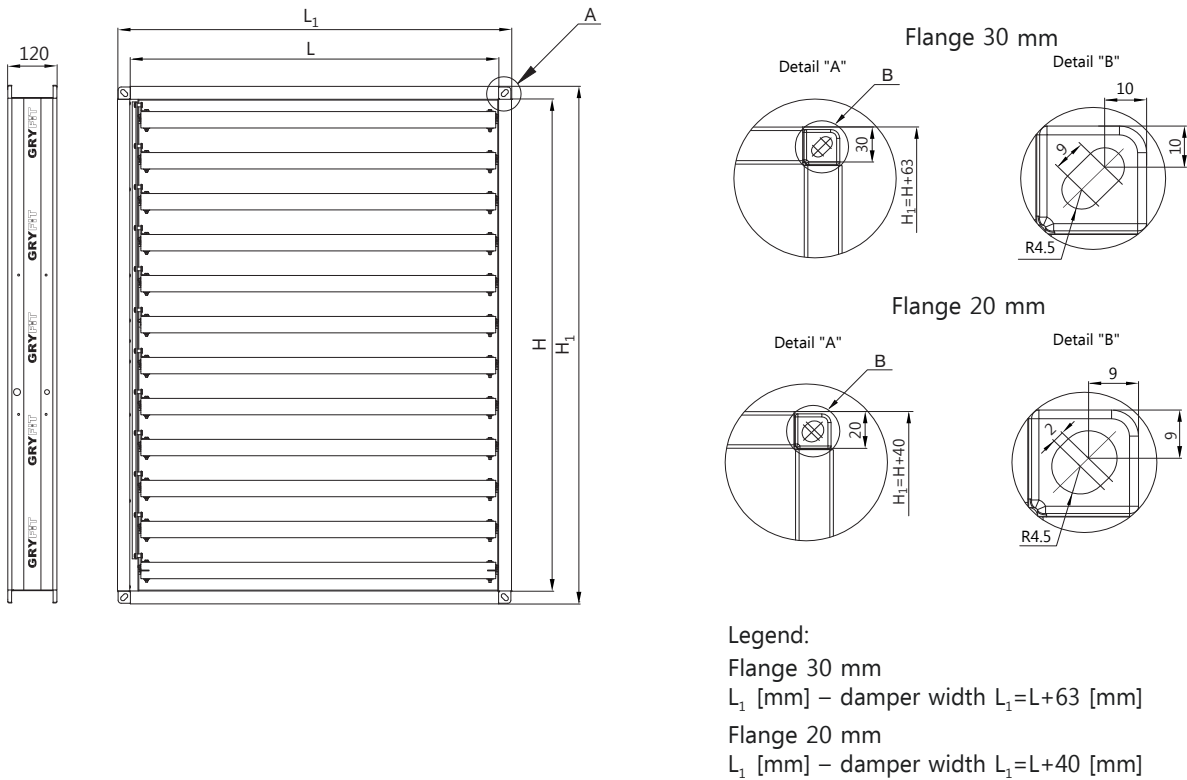


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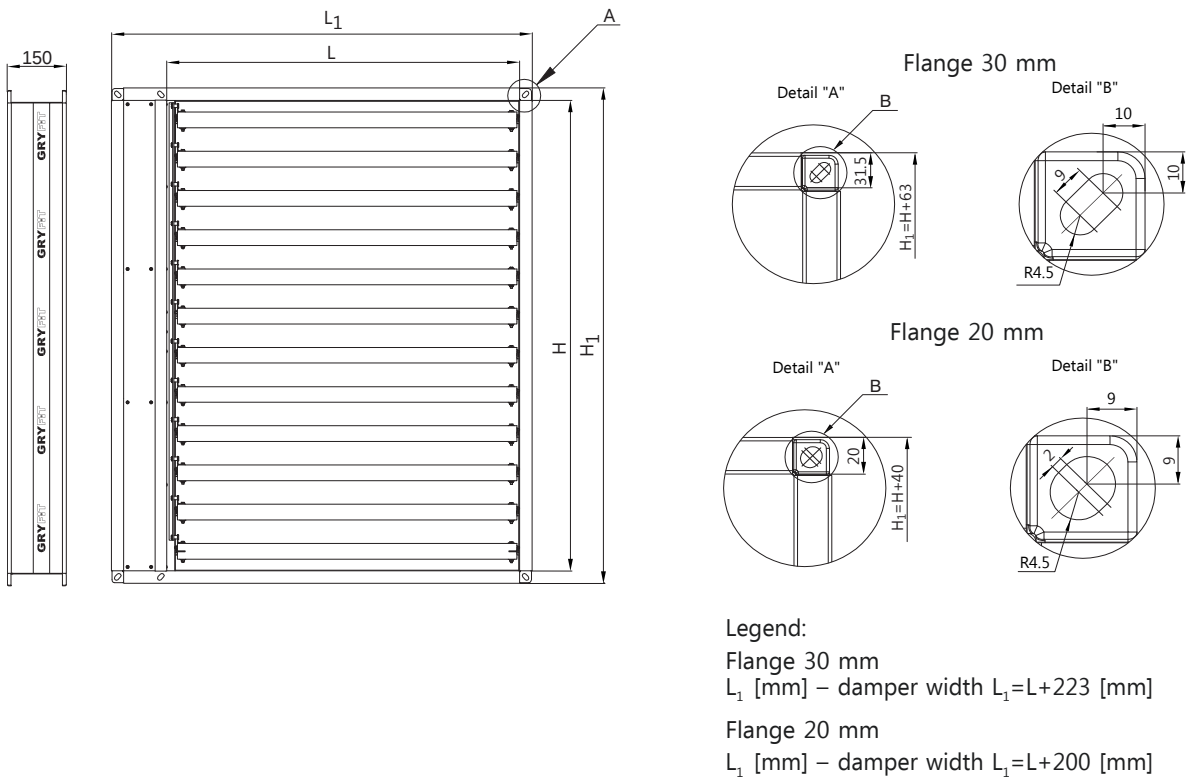
Flange 30 mm
L₁ [mm] – damper width L₁=L+173 [mm]
Flange 20 mm
L₁ [mm] – damper width L₁=L+150 [mm]

SELECTION

DIMENSIONS OF NEO WITH FUSIBLE LINK AND ELECTRO-MAGNET



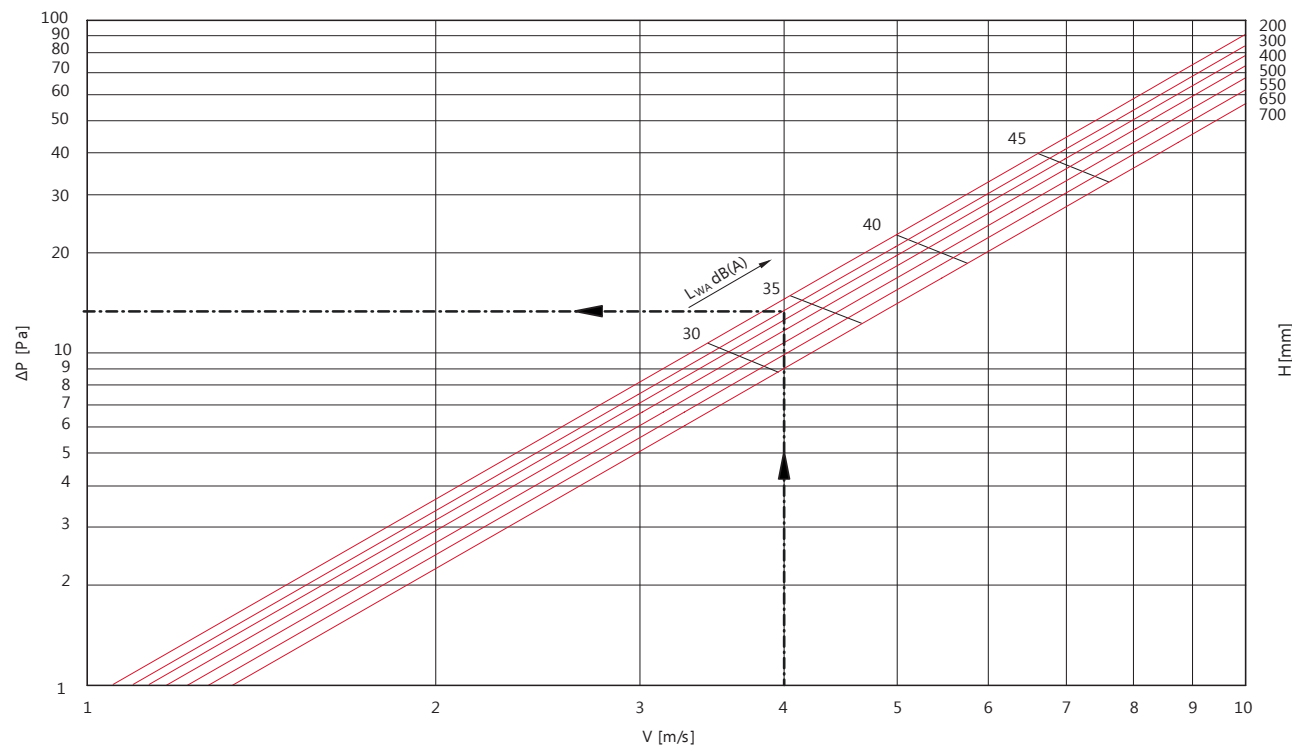
DIMENSIONS OF NEO WITH H MECHANISM



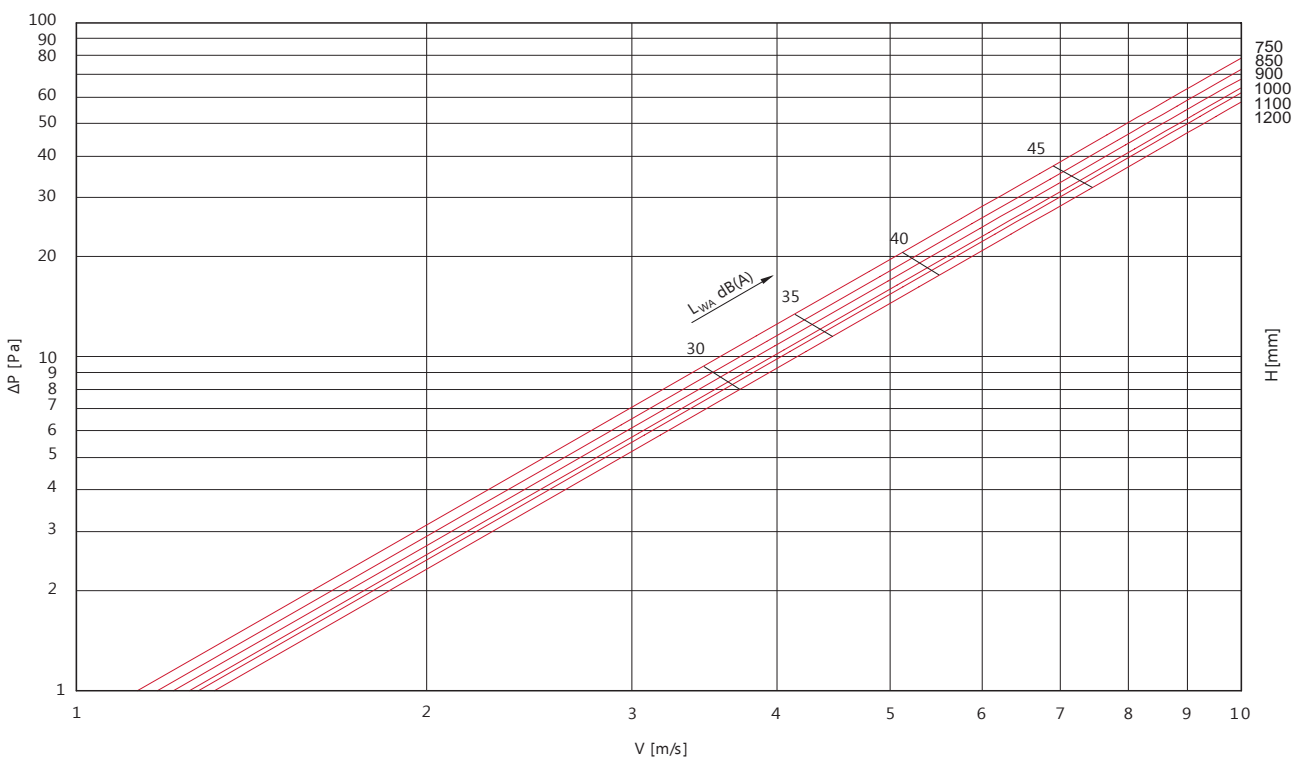
SELECTION

PRESSURE DROP AND SOUND POWER LEVEL

Pressure drop ΔP [Pa] in the function of air velocity V [m/s] with consideration of acoustic power L_{WA} [dB(A)] for the GRYFIT NEO damper of $L=700$ and H in the range of $200 \div 700$ [mm] – assembly with TRA grille at the ends of the ducts.



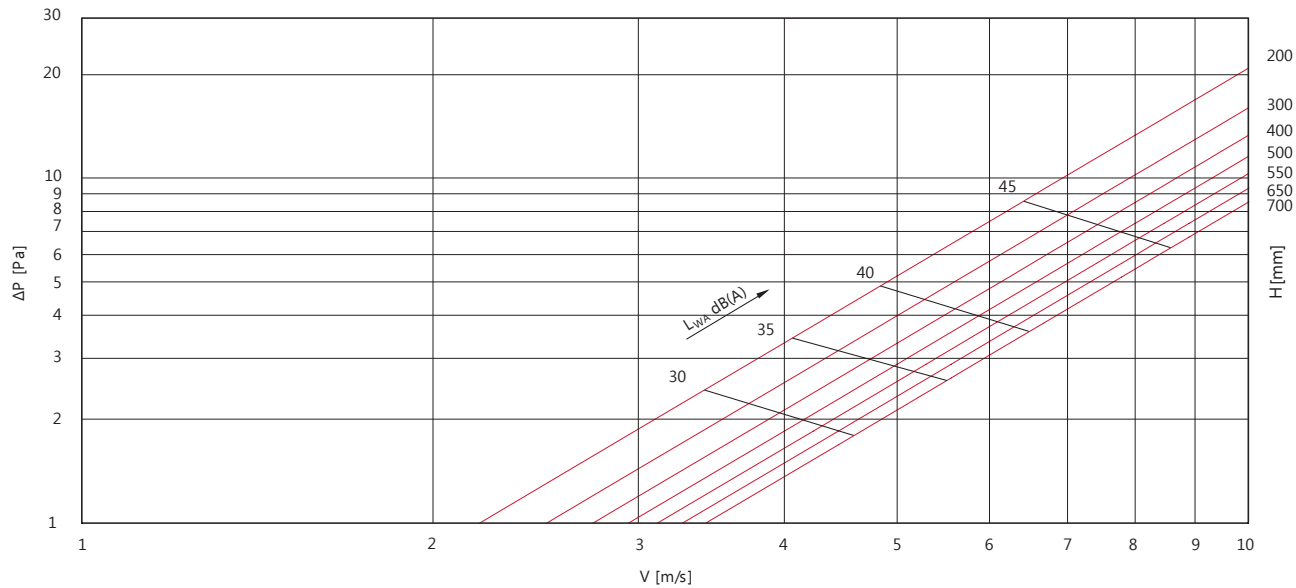
Pressure drop ΔP [Pa] in the function of air velocity V [m/s] with consideration of acoustic power L_{WA} [dB(A)] for the GRYFIT NEO damper of $L=700$ for H in the range of $750 \div 1200$ [mm] – assembly with TRA grille at the ends of the ducts



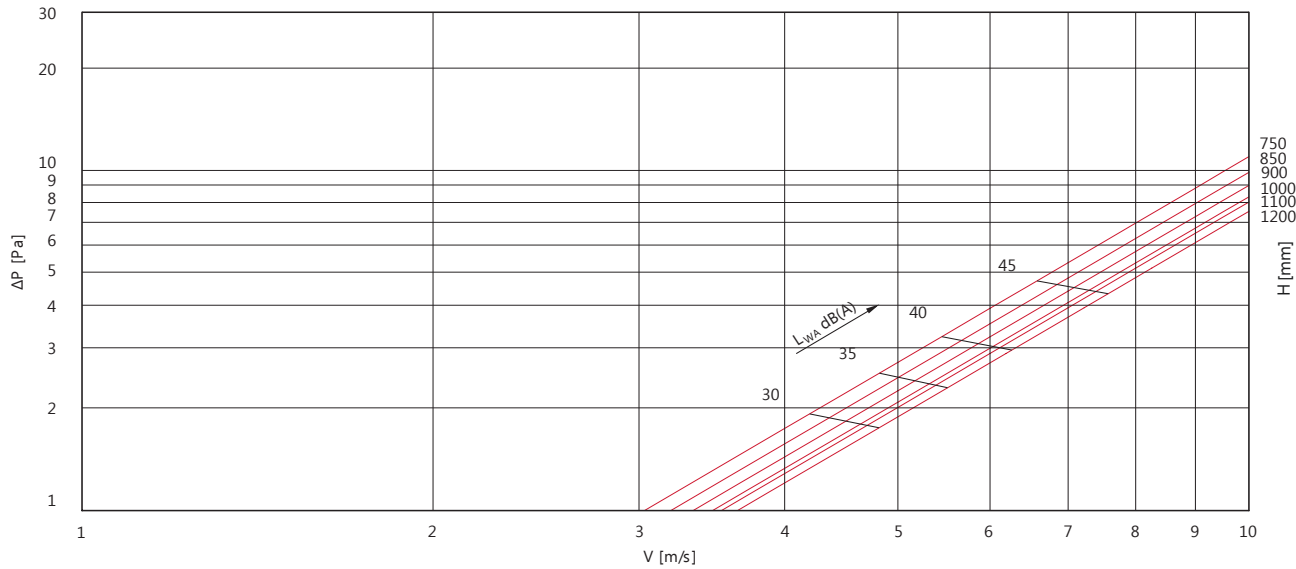
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PRESSURE DROP AND SOUND POWER LEVEL

Pressure drop ΔP [Pa] in the function of air velocity V [m/s] with consideration of acoustic power L_{WA} [dB(A)] for the GRYFIT NEO damper of $L=700$ and H in the range of $200 \div 700$ [mm]



Pressure drop ΔP [Pa] in the function of air velocity V [m/s] with consideration of acoustic power L_{WA} [dB(A)] for the GRYFIT NEO damper of $L=700$ and H in the range of $750 \div 1200$ [mm]



Legend:

- L [mm] – length of GRYFIT NEO damper
- H [mm] – height of GRYFIT NEO damper
- V [m/s] – air velocity referred to nominal size of GRYFIT NEO damper
- ΔP [Pa] – total pressure loss
- ζ – local resistance coefficient
- ρ [kg/m³] – air density (1,2 at 20°C)
- L_{WA} [dB(A)] – sound power level after frequency-dependent correction of A-type
- L_{WNC} [dB] – sound power level as per the graph NC $L_{WNC}=L_W-5$
- L_{WOKT} [dB] – sound power level in octave bands $L_{WOKT}=L_{WA}+\text{correction taken from Table 1}$
- f [Hz] – octave frequency



SELECTION

PRESSURE DROP AND SOUND POWER LEVEL

Table 1.

L [mm]	Aerodynamic and acoustic correction for dampers of other dimensions L [mm]	
	$\Delta P \times \zeta$	LW +
200	3.3	5.5
250	2.2	4.2
300	2.0	3.2
315	2.0	3.2
350	1.8	2.8
400	1.7	2.2
450	1.5	2.2
500	1.5	2.2
550	1.4	2.2
600	1.4	2.2
630	1.0	0.0
650	1.0	0.0
700	1.0	0.0
750	1.0	0.0
800	1.0	-1.5
850	0.8	-1.5
900	0.8	-0.5

Table 2.

Local resistance coefficient ζ for L=700 [mm]																						
H [mm]	200	250	300	315	350	400	450	500	550	600	630	650	700	750	800	850	900	950	1000	1050	1150	1200
ζ	2.65	1.85	1.45	1.33	1.25	1.18	1.15	1.10	1.08	1.02	0.95	0.86	0.80	0.75	0.71	0.71	0.65	0.63	0.59	0.58	0.50	0.50

Example no. 1

Parameters known: GRYFIT NEO fire damper of LxH=300x700 [mm]
Parameters required: ΔP [Pa], L_{WA} [dB(A)], L_{WNC} [dB], L_{WOKT} [dB] for 500 Hz octave at the velocity V=4 [m/s] referred to the nominal size of the damper
Results:
 $\Delta P = 13 \times 2,0 = 26$ Pa for L=300 mm taken from Table 1
 $L_{WA} = 34 + 3,2 = 37,2$ dB(A) for L=300 mm taken from Table 1
 $L_{WNC} = 37,2 - 5,0 = 32,2$ dB
 $L_{WOKT} = 37,2 - 5,0 = 32,2$ dB for 4 m/s, 500 Hz taken from Table 3

Example no. 2

Parameters known: GRYFIT NEO fire damper of LxH=700x300 [mm]
Parameters required: ΔP [Pa], L_{WA} [dB(A)], L_{WNC} [dB], L_{WOKT} [dB] for 500 Hz octave at the velocity V=4 [m/s] referred to the nominal size of the damper
Results:
 $\Delta P = 15$ Pa
 $L_{WA} = 35$ dB(A)
 $L_{WNC} = 35 - 5 = 30$ dB
 $L_{WOKT} = 35 - 5 = 30$ dB for 4 m/s, 500 Hz taken from Table 3

Note:

Replacement of dimension of L [mm] with H [mm] will result in reduction of pressure drop ΔP [Pa] and acoustic power level L_{WA} [dB(A)]

Example no. 3

Parameters known: GRYFIT NEO fire damper of LxH=200x300 [mm]
Parameters required: ΔP [Pa], L_{WA} [dB(A)], L_{WNC} [dB], L_{WOKT} [dB] for 500 Hz octave at the velocity V=4 [m/s] referred to the nominal size of the damper
Results:
 $\Delta P = 15 \times 3,3 = 49,5$ Pa for L=200 mm taken from Table 1
 $L_{WA} = 35 + 5,5 = 40,5$ dB(A) for L=200 mm taken from Table 1
 $L_{WNC} = 40,5 - 5 = 35,5$ dB
 $L_{WOKT} = 40,5 - 5,0 = 35,5$ dB for 4 m/s, 500 Hz taken from Table 3

Table 3.

Correction for octave in [dB]							
V [m/s]	63	125	250	500	1000	2000	4000
4	12	18	7	-5	-19	-25	-37
5	10	13	7	-5	-14	-23	-33
6	7	8	5	-5	-12	-16	-27
7	5	6	2	-4	-10	-15	-24
8	2	5	1	-4	-10	-11	-21
9	1	3	-1	-5	-7	-11	-19
10	-2	2	-4	-5	-7	-9	-16

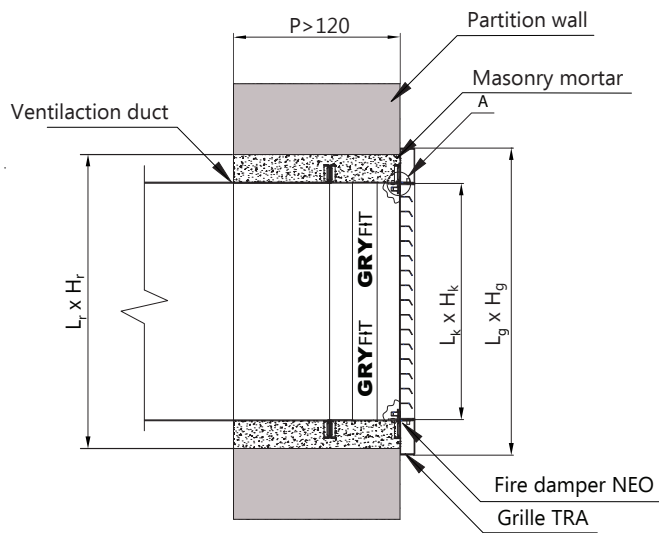
Note:

- Measurements have been made in accordance with the following standards: PN-ISO 5135: 2000, PN EN-ISO 3741: 2011, PN EN 1751: 2002
- Intermediate values may be determined by interpolation.
- Automatic verification of aerodynamic and acoustic characteristics in Ventpack.

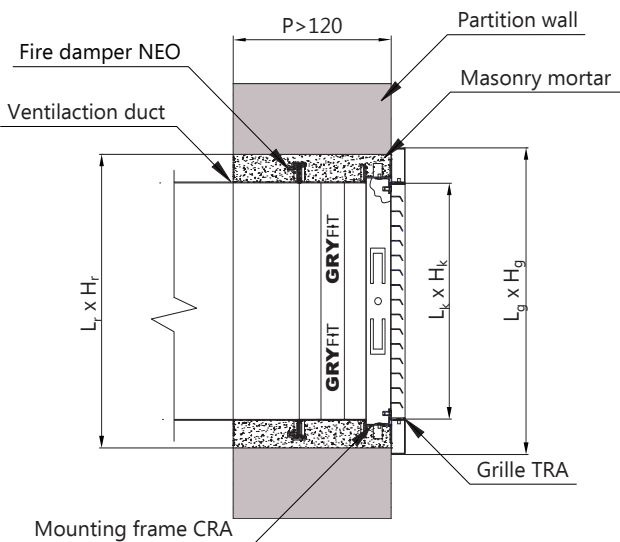


METHOD OF INSTALLATION

INSTALLATION OF NEO WITH TRA GRILLE

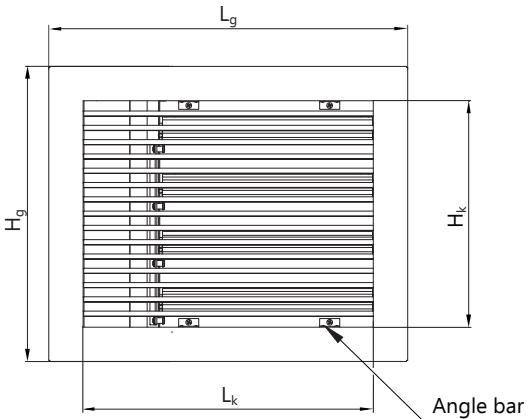
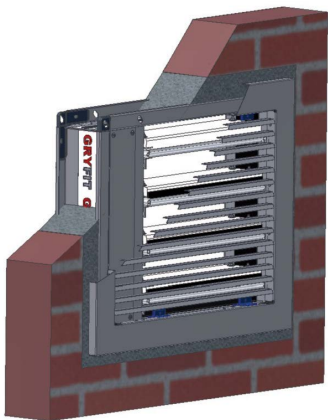
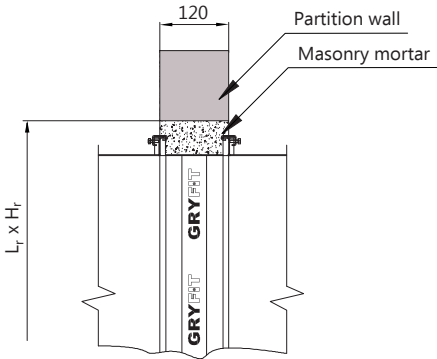
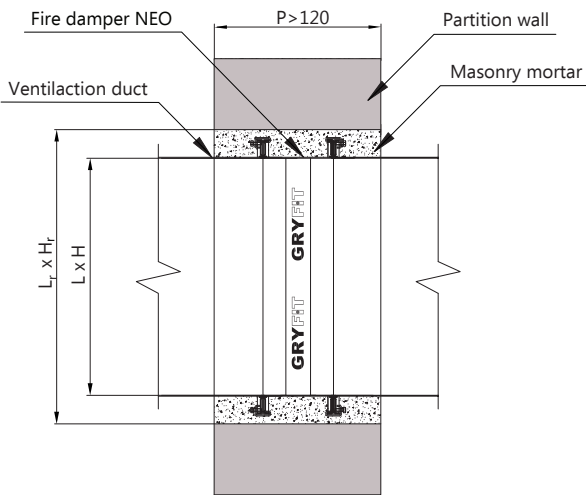


INSTALLATION OF NEO IN HORIZONTAL PARTITION



Damper dimensions	Dimensions of opening	Dimensions of opening GRYFIT H mechanism	Dimensions of TRA grille	Outside dimension of TRA grille
L	$L_r = L + 210$	$L_k = L + 260$	$L_k = L + 110$	$L_g = L + 230$
H	$H_r = H + 100$	$H_r = H + 100$	$H_k = H$	$H_g = H + 120$

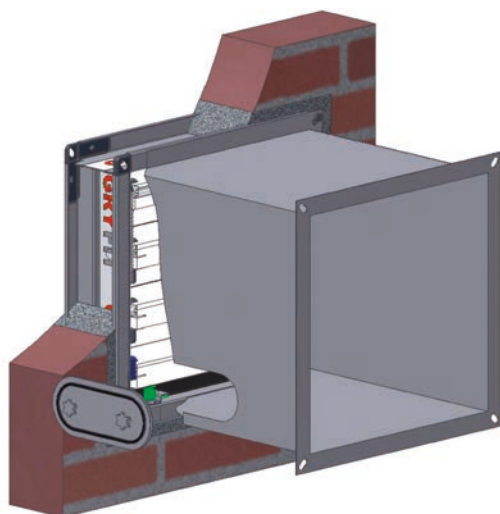
INSTALLATION OF NEO WITH VENTILATION DUCT CONNECTED ON BOTH SIDES





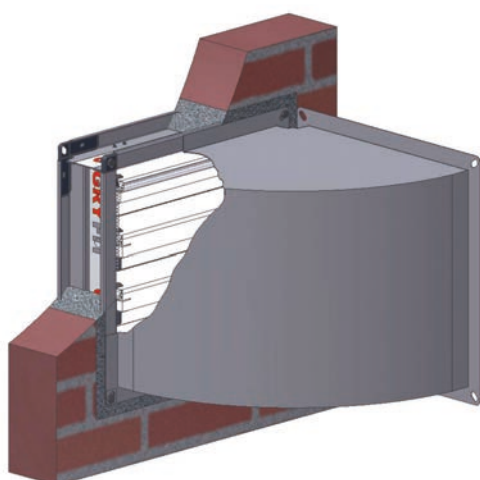
METHOD OF INSTALLATION

INSTALLATION OF NEO WITH FUSIBLE LINK AND ELECTRO-MAGNET



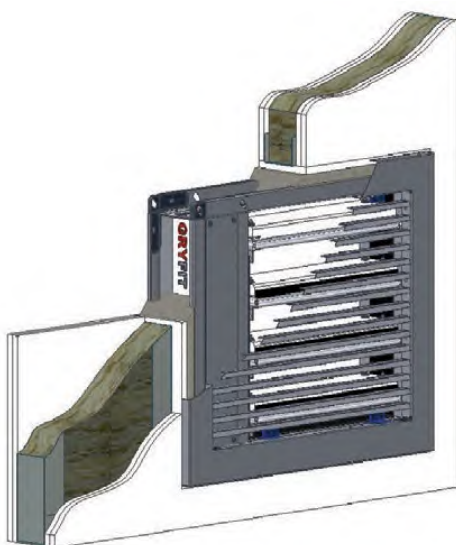
Access door should be arranged at the height of 200-300 [mm] above the damper bottom for enabling access for performance of maintenance works and retrofitting the GRYFIT NEO fire damper equipped with electro-magnet. Remove the cover of the revision hole and turn the blade to open position using the handle on the blade. Set the electro-magnet keeper in such position in which its whole surface is in contact with the surface of electro-magnet.

ASSEMBLY OF NEO WITH OTHER COMPONENTS OF VENTILATION SYSTEM



NEO EI120($v_e-i \leftrightarrow o$)S fire damper has a 120 mm thick body. When the damper is closed, no movable part protrudes beyond the body contour; therefore, such components as AC silencing grille, silencer, elbow may be installed directly behind the damper.

INSTALLATION OF NEO IN LIGHT-WEIGHT PARTITION WALLS



For installation of GRYFIT NEO fire damper with actuator in a light-weight wall prepare the opening of a width and a height of $L_r=L+235$ [mm] and $H_r=H+125$ [mm] respectively.

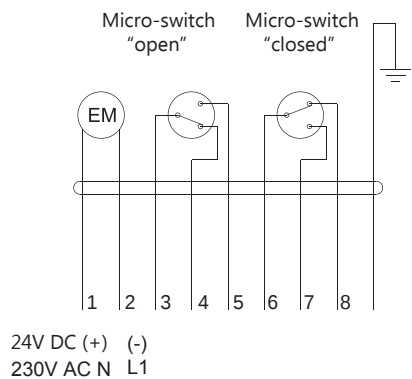
For installation of GRYFIT NEO fire damper with fusible link or electro-magnet in a light-weight wall, prepare the opening of a width and height of $L_r=L+125$ [mm] and $H_r=H+125$ [mm], respectively.

Insert a frame made of system profiles into the opening, and bolt light-weight walls around so prepared opening.

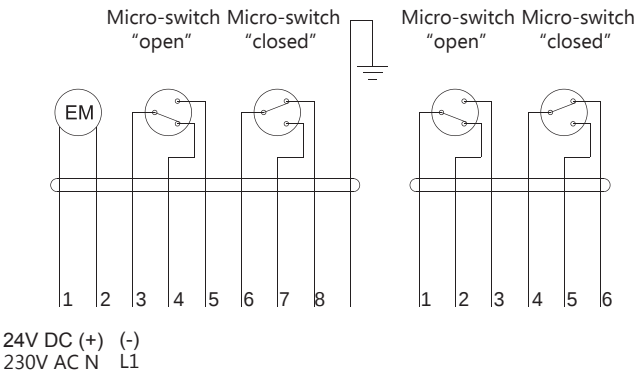
ELECTRICAL WIRING DIAGRAMS

NEO WITH MICROSWITCHES AND ELECTO-MAGNET

Damper with microswitches

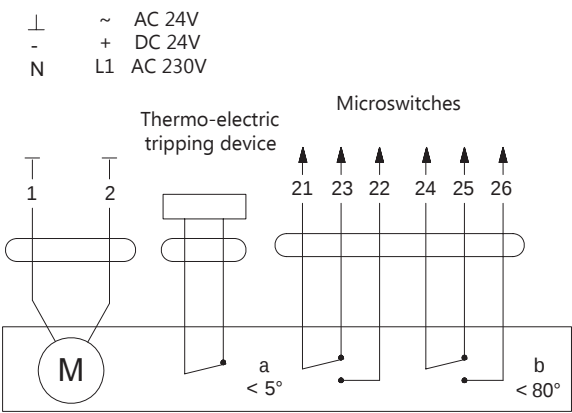


Damper with electro-magnet and double set of microswitches

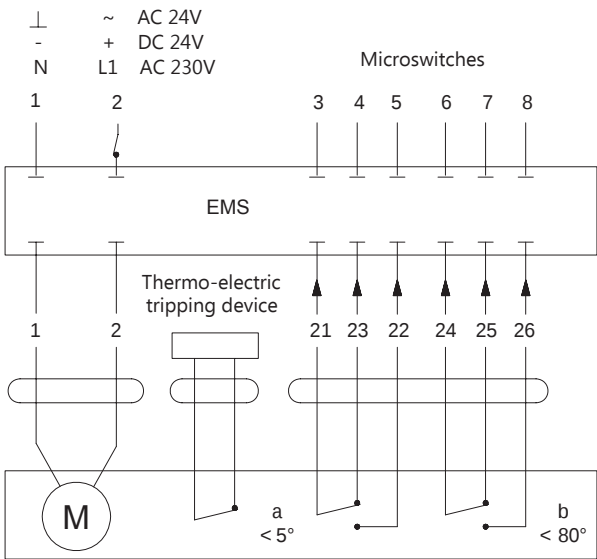


NEO WITH ACTUATOR AND OPTIONAL EMS

Damper with FDG-WT-8 actuator

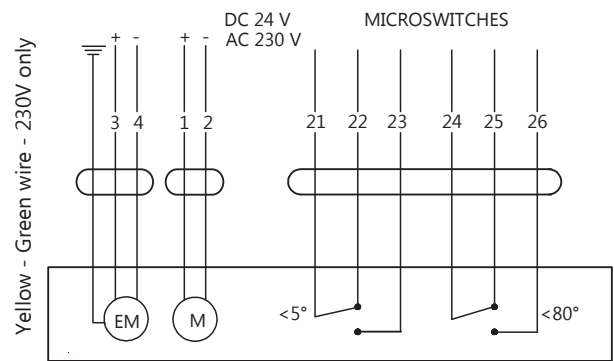


Damper with FDG-WT-8 actuator and EMS

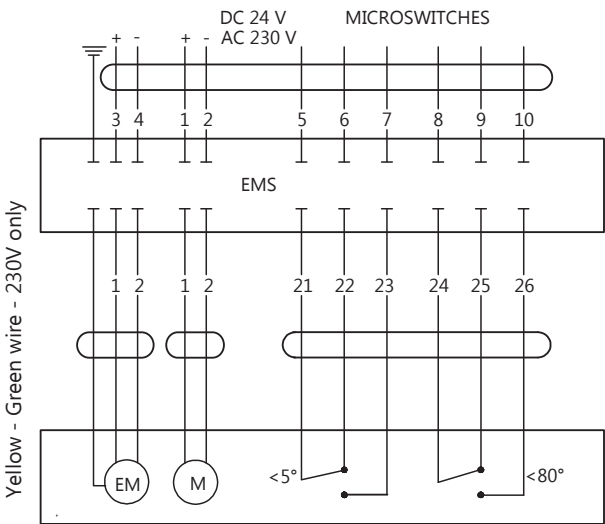


NEO-V WITH ELECTO-MAGNET AND ACTUATOR

Damper with mechanism H



Damper with mechanism H and EMS



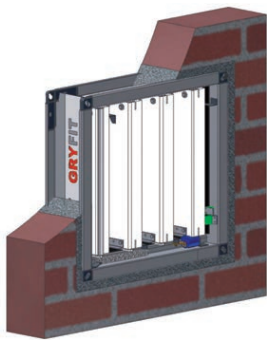
ELECTRICAL WIRING DIAGRAMS

CHARACTERISTICS OF ELECTRO-MAGNET				
Supply voltage	24 or 48 V DC impulse	230 V AC impulse	24 or 48 V DC de-energized	230 V AC de-energized
Power input	3,5 W	5,5 VA	1,6 W	4 VA

CHARACTERISTICS OF ACTUATOR	FDG-WT-8-230	FDG-WT-8-24
Supply voltage [V]	230V AC	24V AC/DC
Power input during tensioning the spring [W]	9,2VA	3,5W
Power input during stand-by [W]	6,9VA	0,5W
Time of movement – engine [s]	55-71s	55-71s
Time of movement – spring [s]	21s	21s
Torque motor [Nm]	8Nm	8Nm
Protection class IP	IP54	IP54
Sound power level – actuator dB(A)	47dB(A)	47dB(A)
Sound power level – spring dB(A)	52dB(A)	52dB(A)

OPTIONS AND ACCESSORIES

NEO WITH FUSIBLE LINK AND VERTICAL BLADES



GRYFIT NEO fire damper optionally equipped with fusible link does not have actuator compartment, and, therefore, the dimensions of the opening for such fire damper are following: $L_r=L+100$ [mm], $H_r=H+100$ [mm]. Fusible link is a standard equipment of the fire damper. It breaks and closes isolating partition once the temperature in ventilation duct has exceeded 72°C or 95°C.

In case of response or damage of fusible link, replace it with the new one prior to re-opening the isolating partition of the damper. Procedure of fusible link replacement is provided in a separate manual.

NEO WITH FUSIBLE LINK, ELECTRO-MAGNET AND MICROSWITCHES



The GRYFIT NEO fire damper optionally equipped with microswitches and electro-magnet does not have actuator compartment. Dampers in this version have the same dimensions as the dimensions of the fusible link fire dampers. In case of assembly with TRA grille at the end of ventilation duct, TRA grille has the same dimensions of L [mm], H [mm], L_k [mm], and H_k [mm] as the dimensions of the TRA grille for GRYFIT NEO fusible-link fire dampers.

EXAMPLE OF DESIGN SPECIFICATION AND PURCHASE ORDER



Enquiry:

GRYFIT NEO fire damper with rectangular flange connection, dimensions: $L \times H=400 \times 400$ [mm], equipped with:

- Actuator with thermo-electric tripping device FDG-WT-8-24, closing time: <20s, power consumption in stand-by conditions: 0,5W,
- EMS module suitable for connection of TZ tester.

GRYFIT quotation:

GRYFIT NEO EI120(v_e-i↔o)S $L \times H=400 \times 400$ [mm], Galvanized steel, KP30+FDG-WT-8-24+EMS