air handling intelligence

Smoke Control Damper

VX-6

in libraries of Fluid Desk Building Engineering Solutions

EI 120 (v_{ew}-h_{ow}- i↔o) S1500
C_{10000} AA multi
EN 1366-10:2011
EN 12101-8:2011
Certificate of Constancy of Performance
CE **1391-CPR-0163/2014**
Damper tightness class: 4
Casing tightness class: C
EN-1751:2002

open in PartShelf24

GRYFIT NET

FUNCTION

The VX-6 smoke control dampers are designed for smoke control systems in buildings outfitted with a onestage evacuation scenario based on the fire-affected zone separation principle. The dampers meet the requirements for buildings where in the event of a fire the affected zone should be isolated from the other zones, and the escape routes should be protected by means of mechanical smoke control system.The performance criteria are satisfied in case of fire from inside to outside of damper as well as outside to inside or both, respectively.

APPLICATION

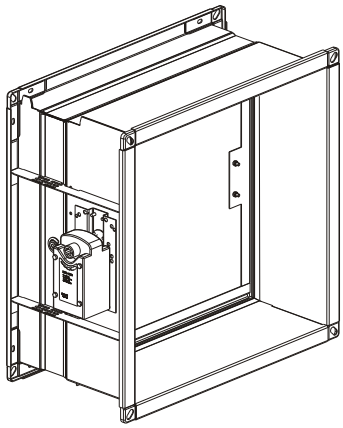
The VX-6 dampers can be used in multi compartment systems and should be activated automatically. The dampers may be used in smoke control systems as well as in combined smoke control and environmental systems. Dampers installation is allowed within a duct passing through a vertical or horizontal building partition or directly in vertical or horizontal building partition. The VX-6 dampers are designed for use in systems over the range from the negative pressure of 1500 Pa up to a positive pressure of 500 Pa.

DESCRIPTION

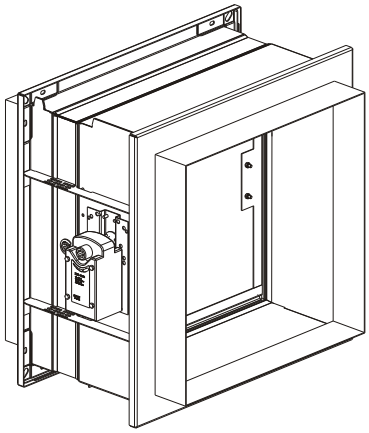
The GRYFIT VX-6 consists of:
- rectangular casing made of galvanized steel sheet alternatively stainless or acid proof steel,
- movable damper blade made of fire resistant board,
- combination of smoke and fire proof seals of damper blade,
- control mechanism and optional EMS module enabling fire damper assessment with the TZ tester.

CONNECTION OPTIONS

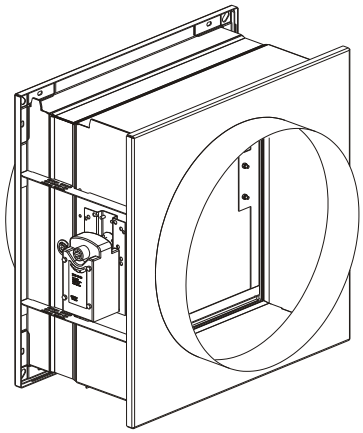
Rectangular flange connection



Rectangular sleeve connection



Round sleeve connection



DIMENSIONS OF DAMPER WITH FLANGE CONNECTION FOR RECTANGULAR DUCTS

H \ L	200	250	300	315	350	400	500	600	630	700	800	900	1000	1100	1200	1300	1400	1500	
200	2,2 0,86 8	2,9 0,79 10	3,5 0,78 11	3,7 0,77 11	4,2 0,75 13	4,8 0,75 14	6,1 0,72 17	7,4 0,71 20	7,8 0,70 22	8,7 0,70 23	10,0 0,69 26	11,3 0,68 29	12,6 0,68 32	13,9 0,68 35	15,2 0,67 38	16,5 0,67 41	17,8 0,67 44	19,1 0,66 47	S K M
250	3,1 0,70 10	4,0 0,66 12	4,9 0,65 13	5,1 0,64 13	5,8 0,60 15	6,7 0,59 19	8,5 0,57 19	10,3 0,55 22	10,9 0,54 24	12,1 0,54 25	13,9 0,53 23	15,7 0,53 31	17,5 0,52 34	19,7 0,52 37	21,1 0,51 40	22,9 0,51 43	24,7 0,51 46	26,5 0,51 52	S K M
300	3,9 0,63 11	5,1 0,57 13	6,2 0,55 14	6,6 0,52 14	7,4 0,51 16	8,5 0,50 19	10,8 0,48 22	13,1 0,46 25	13,8 0,45 26	15,4 0,45 28	17,7 0,44 31	20,0 0,43 34	22,3 0,42 37	24,6 0,42 40	26,9 0,42 43	29,2 0,41 46	31,5 0,41 49	33,8 0,41 52	S K M
315	4,2 0,60 11	5,4 0,55 13	6,6 0,52 14	7,0 0,51 14	7,8 0,50 16	9,1 0,47 19	11,5 0,45 22	14,0 0,43 25	14,7 0,43 26	16,4 0,42 28	18,9 0,41 31	21,3 0,41 34	23,8 0,40 37	26,2 0,40 40	28,7 0,39 43	31,1 0,39 46	33,6 0,38 49	36,0 0,38 52	S K M
350	4,8 0,55 13	6,3 0,50 15	7,6 0,47 16	8,0 0,46 16	9,0 0,44 18	10,4 0,42 21	13,2 0,40 24	16,0 0,38 27	16,9 0,37 28	18,8 0,37 30	21,6 0,36 33	24,4 0,35 36	27,2 0,35 39	30,0 0,34 42	32,8 0,34 45	35,6 0,34 48	38,4 0,33 51	41,2 0,33 54	S K M
400	5,6 0,52 14	7,3 0,45 16	8,9 0,43 17	9,4 0,42 17	10,6 0,39 19	12,2 0,38 22	15,5 0,35 25	18,8 0,33 28	19,8 0,33 29	22,1 0,32 31	25,4 0,31 34	28,7 0,30 37	32,0 0,30 40	35,3 0,29 43	38,6 0,29 46	41,9 0,28 49	45,2 0,28 52	48,5 0,28 55	S K M
500	7,3 0,45 17	9,5 0,39 19	11,6 0,36 20	12,3 0,34 20	13,8 0,32 22	15,9 0,31 25	20,2 0,28 28	24,5 0,26 31	25,8 0,26 32	28,8 0,25 34	33,1 0,24 37	37,4 0,24 40	41,7 0,23 43	46,0 0,23 46	50,3 0,23 49	54,6 0,22 52	58,9 0,22 55	63,2 0,22 58	S K M
600	9,0 0,41 20	11,7 0,34 22	14,3 0,31 23	15,1 0,30 23	17,0 0,28 25	19,6 0,26 28	25,0 0,23 31	30,2 0,23 34	31,8 0,22 35	35,5 0,22 37	40,8 0,21 40	46,1 0,21 43	51,4 0,20 46	56,7 0,20 49	62,0 0,20 52	67,3 0,20 55	72,6 0,20 58	77,9 0,20 61	S K M
630	9,5 0,40 23	12,3 0,34 25	15,1 0,30 26	16,0 0,28 26	17,9 0,27 28	20,7 0,25 31	26,3 0,23 34	31,9 0,22 37	33,6 0,22 38	37,5 0,21 40	43,1 0,21 43	48,7 0,20 46	54,3 0,20 49	59,9 0,20 52	65,5 0,20 55	71,1 0,19 58	76,7 0,19 61	82,3 0,19 64	S K M
700	10,7 0,38 26	13,9 0,31 28	17,0 0,28 29	18,0 0,26 29	20,2 0,25 31	23,2 0,24 34	29,6 0,22 37	35,9 0,21 40	37,8 0,20 41	42,2 0,20 43	48,5 0,20 46	54,8 0,19 49	61,1 0,19 52	67,4 0,19 55	73,7 0,19 58	80,0 0,19 61	86,3 0,19 64	92,6 0,19 67	S K M
800	12,4 0,35 29	16,1 0,29 31	19,7 0,26 32	20,8 0,25 32	23,4 0,23 34	27,0 0,22 37	34,3 0,20 40	41,6 0,20 43	43,8 0,20 44	48,9 0,19 46	56,2 0,19 49	63,5 0,19 52	70,8 0,19 55	78,1 0,18 58	85,4 0,18 61	92,7 0,18 64	100,0 0,18 66	107,3 0,18 70	S K M
900	14,1 0,33 32	18,3 0,27 34	22,4 0,24 35	23,7 0,23 35	26,6 0,22 37	30,7 0,21 40	39,0 0,20 43	47,3 0,19 46	49,8 0,19 47	55,6 0,19 49	63,9 0,19 52	72,2 0,19 55	80,5 0,18 58	88,8 0,18 61	97,1 0,18 64	105,4 0,18 67			S K M
1000	15,8 0,32 35	20,5 0,26 37	25,1 0,23 38	26,5 0,22 38	29,8 0,21 40	34,4 0,20 43	43,7 0,19 46	53,0 0,18 49	55,8 0,18 50	62,3 0,18 52	71,6 0,18 55	80,9 0,18 58	90,2 0,18 61	99,5 0,18 64	108,8 0,18 67				S K M
1100	17,5 0,31 38	22,7 0,25 40	27,8 0,22 41	29,4 0,21 41	33,0 0,20 43	38,1 0,20 46	48,4 0,19 49	58,7 0,18 52	61,8 0,18 53	69,0 0,18 55	79,3 0,18 58	89,6 0,18 61	99,9 0,18 64						S K M
1200	19,2 0,30 41	24,9 0,24 43	30,5 0,22 44	32,2 0,21 44	36,2 0,20 46	41,8 0,19 49	53,1 0,18 52	64,4 0,18 55	67,8 0,18 56	75,7 0,18 58	87,0 0,18 61	98,3 0,18 64	109,6 0,18 67						S K M

S - effective area [dm^2]
S = ((L-30) x (H-70))/10 000
where L and H in [mm]

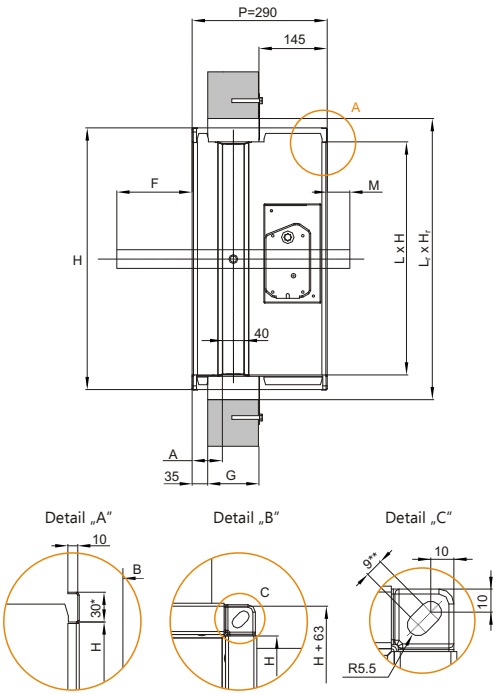
M - weight [kg]

K - correction value for acoustic calculations.

For dimensions not listed in this table, assembly in multiple arrangement of fire dampers is provided.

INSTALLATION OF SMOKE CONTROL DAMPER IN PARTITION WALL

CHARACTERISTICS OF DAMPER WITH FLANGE



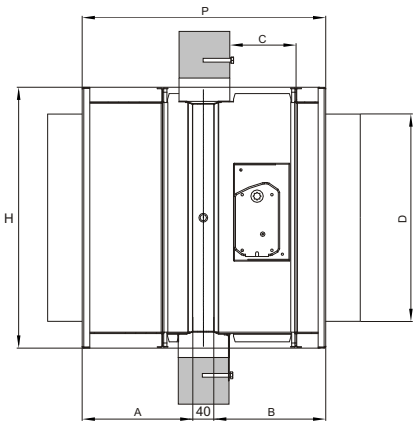
* Option of 20 [mm] flange is available.
** For 20 [mm] flage value of this dimension is 2 [mm].

Table of dimensions for brick/concrete partition wall G=110 mm (F, A, P)

H [mm]	F [mm]	M [mm]	A [mm]	P [mm]
200	5,5	-	70	290
250	30,5	-	70	290
300	55,5	-	70	290
315	63,0	-	70	290
350	80,5	-	70	290
400	105,5	-	70	290
500	155,5	45,5	70	290
600	205,5	95,5	70	290
630	220,5	110,5	70	290
700	255,5	145,5	70	290
800	305,5	195,5	70	290
900	355,5	245,5	70	290
1000	405,5	295,5	70	290
1100	455,5	345,5	70	290
1200	505,5	395,5	70	290

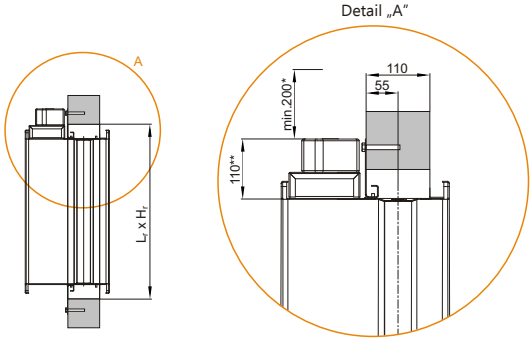
* When the partition wall has a different thickness than 110, custom damper casing width P is possible. Use the following formulas to calculate the parameters
A = G – 40
P = G + 180
F = H/2 – A – 24,5
M – as in the table above
Minimum partition wall thickness G=110 [mm].

CHARACTERISTICS OF DAMPER WITH SLEEVE FOR ROUND DUCTS



D [mm]	LxH [mm]	P [mm]	A [mm]	B [mm]	C [mm]	Weight [kg]	K [-]	S [dm²]
100	200	310,0	90,0	180,0	145,0	9	0,86	2,2
125		310,0	90,0	180,0	145,0	9	0,86	2,2
150		310,0	90,0	180,0	145,0	9	0,86	2,2
160		310,0	90,0	180,0	145,0	9	0,86	2,2
200		310,0	90,0	180,0	145,0	9	0,86	2,2
250	250	370,0	150,0	180,0	145,0	14	0,66	4,0
300	300	370,0	150,0	180,0	145,0	17	0,55	6,2
315	315	370,0	150,0	180,0	145,0	17	0,51	7,0
350	350	400,0	180,0	180,0	145,0	23	0,44	9,0
400	400	400,0	180,0	180,0	145,0	28	0,38	12,2
500	500	540,0	250,0	250,0	215,0	41	0,28	20,2
600	600	640,0	300,0	300,0	265,0	55	0,23	30,2
630	630	640,0	300,0	300,0	265,0	61	0,22	33,6
700	700	740,0	350,0	350,0	315,0	71	0,20	42,2
800	800	840,0	400,0	400,0	365,0	87	0,19	55,2
900	900	940,0	450,0	450,0	415,0	105	0,19	72,2
1000	1000	1040,0	500,0	500,0	465,0	125	0,18	90,2

DISTANCE REQUIRED FOR MAINTENANCE



*Minimum required distance for maintenance of mechanism
**Drawing shows damper with mechanism H i.e. electromagnet and FDG-8 actuator. In case of SDG-15 actuator height is 110 [mm]

Installation of smoke control dampers in partition:
- horizontal
- vertical

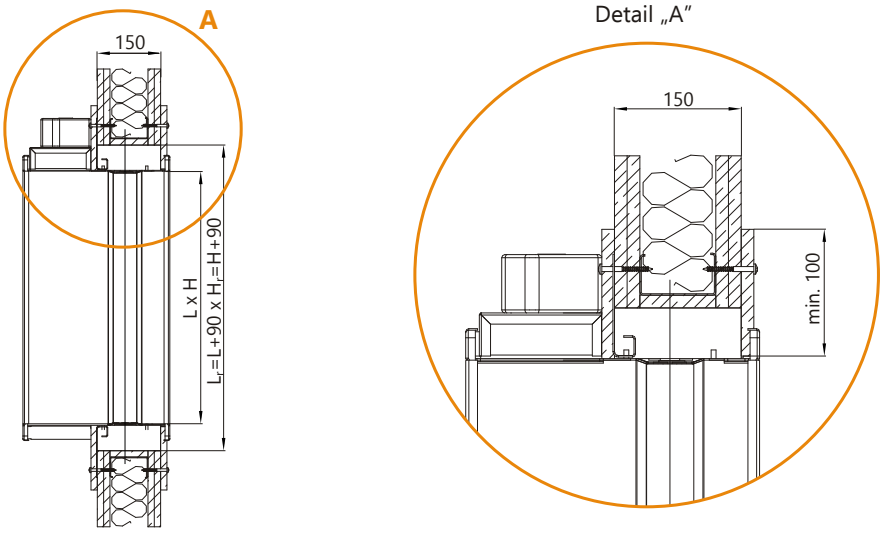
Minimum installation opening:
Concrete, brick or light weight partition walls
L_r x H_r = (L + 90) x (H + 90)

Mortaring border:
- is clearly marked by the label on the casing
- damper blade should align with the center line of the partition wall's thickness (for construction elements of 110 [mm] thickness)
- should always be respected to maintain the declared fire resistance of damper

The GRYFIT VX-6 smoke control damper can be installed with its blade axis positioned horizontally as well as vertically.

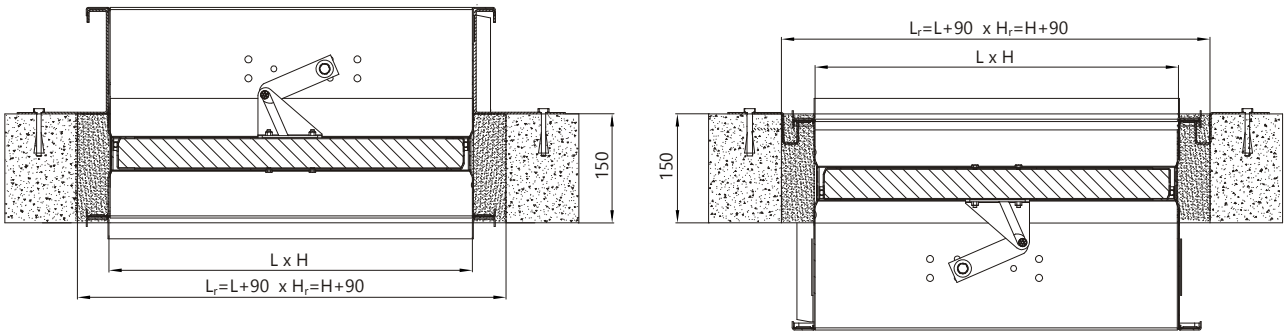
INSTALLATION OF SMOKE CONTROL DAMPER IN PARTITION WALL

INSTALLATION IN VERTICAL LIGHT WEIGHT GYPSUM BOARDS PARTITION



It is recommended to carry out damper installation with means of 8 installation brackets fixed to the damper casing. Brackets have to be bended before installation. Installation brackets assure that mortaring border is respected. The minimum thickness of light weight gypsum boards partition is 150 [mm].

INSTALLATION IN HORIZONTAL PARTITION



Damper installation with mechanizm above horizontal partition should be carried out with means of 8 installation brackets fixed to the damper casing. Brackets have to be bended before installation. Installlation brackets assure that mortaring border - clearly marked by the label on the casing, is respected. The minimum thickness of the horizontal partition is 150 [mm].

Damper installation with mechanizm below horizontal partition should be carried out with complementary installation brackets. Standard complementary brackets delivered by Manufacturer correspond to partition thickness of 150 [mm]. In case of thicker partitions it has to be specified when ordering. Mortaring border has to always respected.

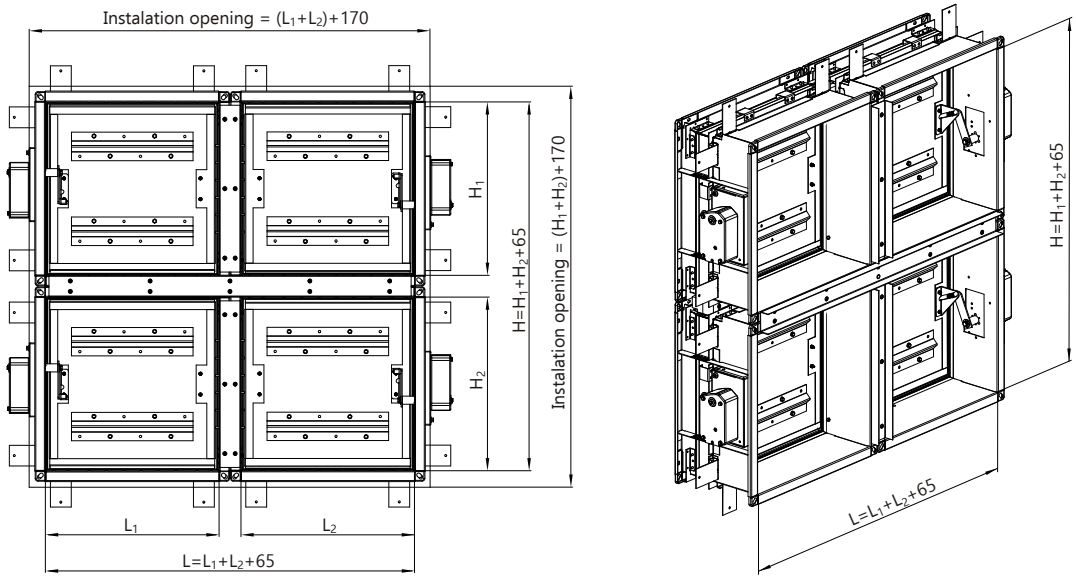
Note: Manufacturer installation and operation manual instructions that are delivered together with smoke control damper should be carefully read before beginning installation, especially in case of installation in horizontal partitions, in light-weight partition walls or in batteries.

DAMPERS ASSEMBLY IN BATERIES

Dampers are arranged in batteries in case of ventilation ducts of very large cross-section, for which the use of dampers selected from the standard dimension range is not possible.

Dampers are connected each other by means of steel C profiles, which are mounted to the flanges of the dampers and set of screws. Non-combustible fire protection spacers equipped with set of gaskets has to be placed between each damper arranged in battery assembly.

Battery assembly of 4 dampers

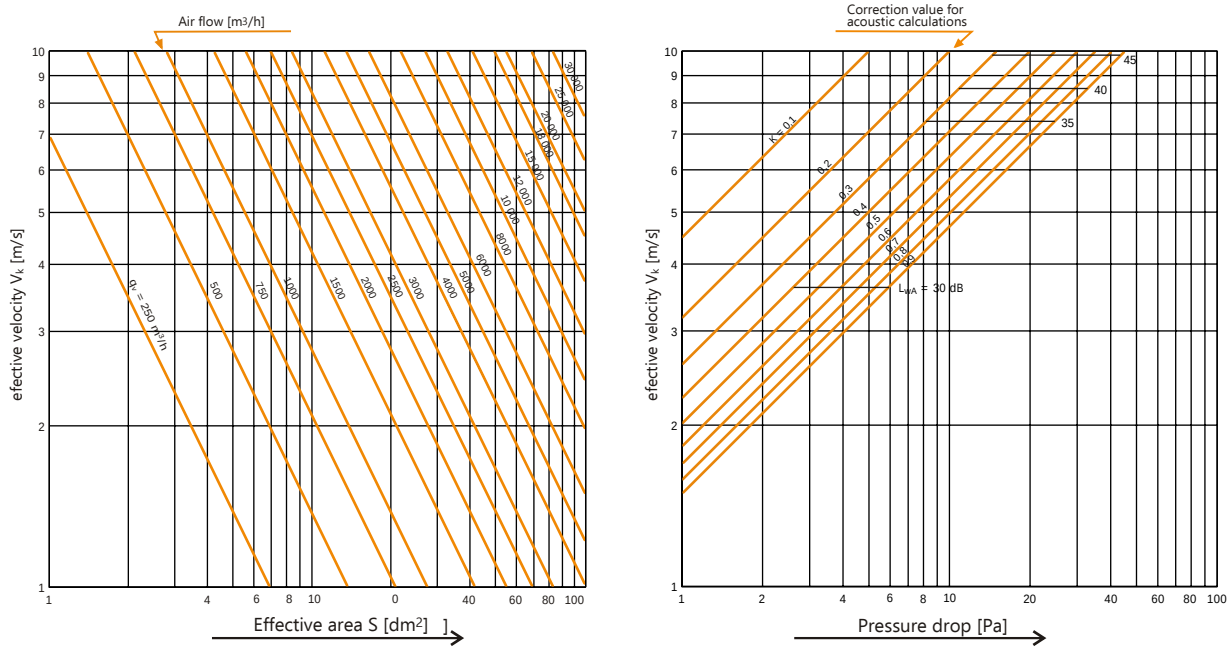


SELECTION & DIMENSIONS

Pressure drop ΔP [Pa] and sound power level values L_w [dB(A)]

L_w – acoustic pressure level inside damper [dB(A)]
K – correction value from tables on pages 3 and 4 [-]

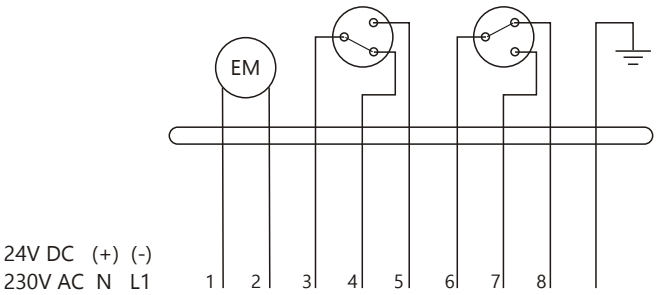
Example: Air flow = 1000 [m ^{3} /h]
LxH = 315x315 [mm]
S = 7,0 [dm^2]
K=0,51 [-]
L_w= 31 [dB(A)]
Δ P = 4 [Pa]



ELECTRICAL WIRING DIAGRAMS

SMOKE CONTROL DAMPER WITH ELECTO-MAGNET AND MICROSWITCHES

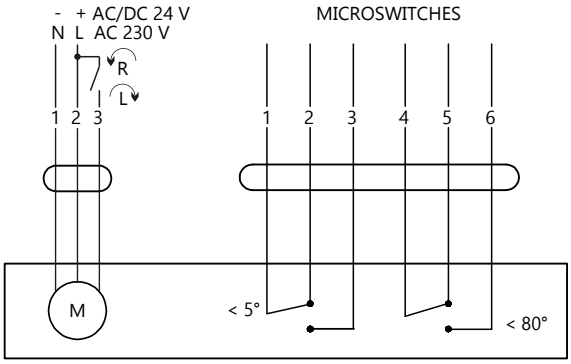
Electrical wiring diagram for electro-magnet and microswitches

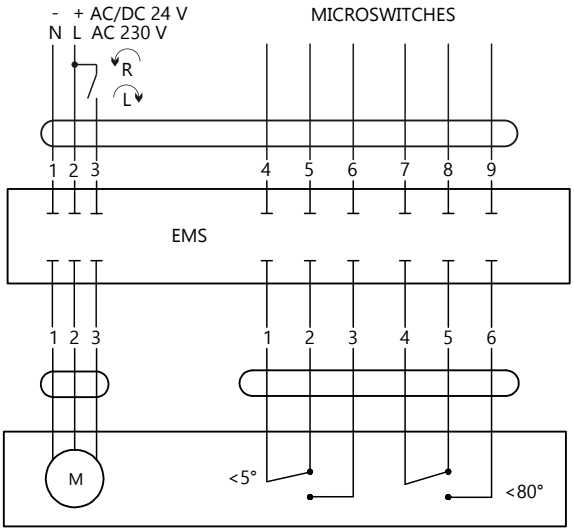


ELECTRO-MAGNET CHARACTERISTICS		
Supply voltage	24/48 V DC impulse	230 V AC impulse
Power input	3,5 W	5,5 VA

SMOKE CONTROL DAMPER WITH SDG-15 ACTUATOR

Electrical wiring diagrams for SDG-15 actuators



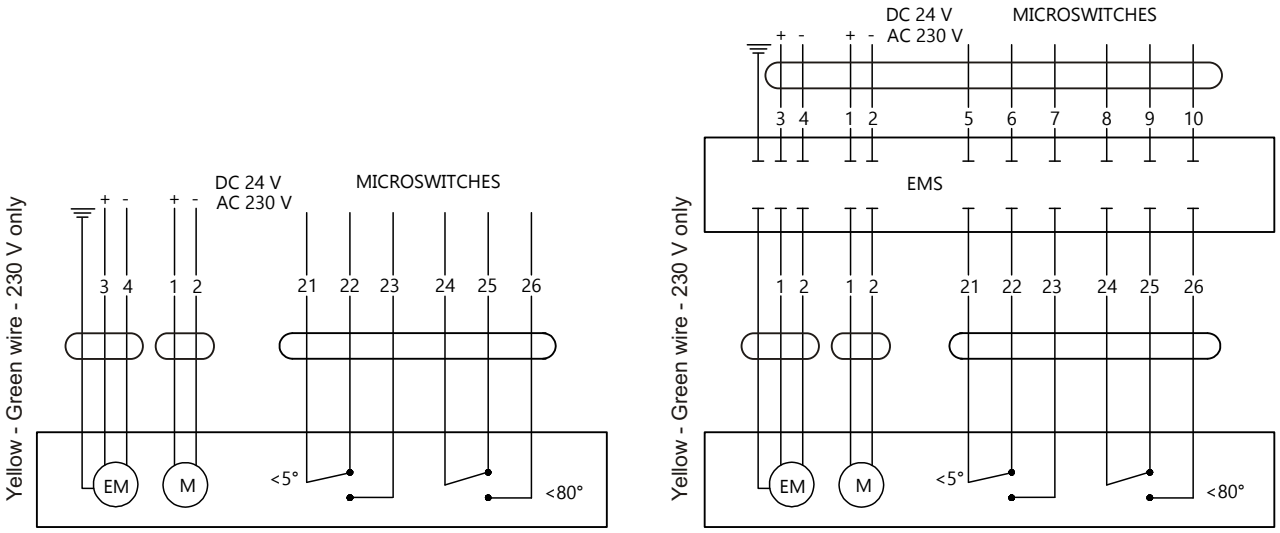


ACTUATOR CHARACTERISTICS		
Actuator type	SDG-15-24	SDG-15-230
Supply voltage	24 V AC/DC	230 V AC
Power consuption Motor (Motion)	7 W	7 W
Power consuption Standby (end position)	1,5 W	1,5 W
Running time Motor	<30 s	<30 s
Torque motor	15 Nm	15 Nm
Protection class	IP54	IP54
Sound power level Motor	47 dB(A)	47 dB(A)

ELECTRICAL WIRING DIAGRAMS

SMOKE CONTROL DAMPER WITHOUT FUSIBLE LINK, ELECTO-MAGNET AND ACTUATOR

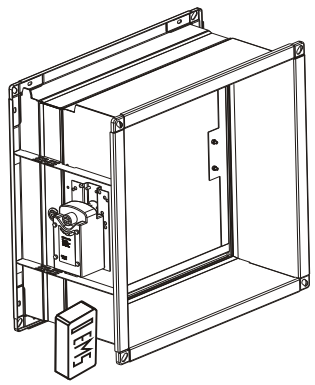
Electrical wiring diagrams for electro-magnet and FDG-8 actuators



ELECTRO-MAGNET CHARACTERISTICS		
Supply voltage	24/48 V DC impulse	230 V AC impulse
Power input	3,5 W	5,5 VA

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

EXAMPLE OF SPECIFICATION AND PURCHASE ORDER



Enquiry

VX-6 smoke control damper, EI120S, LxH=600x400, damper casing made of galvanized steel, flange 30 [mm], equipped with SDG-15-24 actuator and EMS module suitable for connection TZ tester.

GRYFIT quotation

VX-6, EI 120 (v_{ew}-h_{ow}-i↔o) S1500 C_{10000} AA multi, LxH=600x400, Galvanized steel, KP30+ SDG-15-24 + EMS