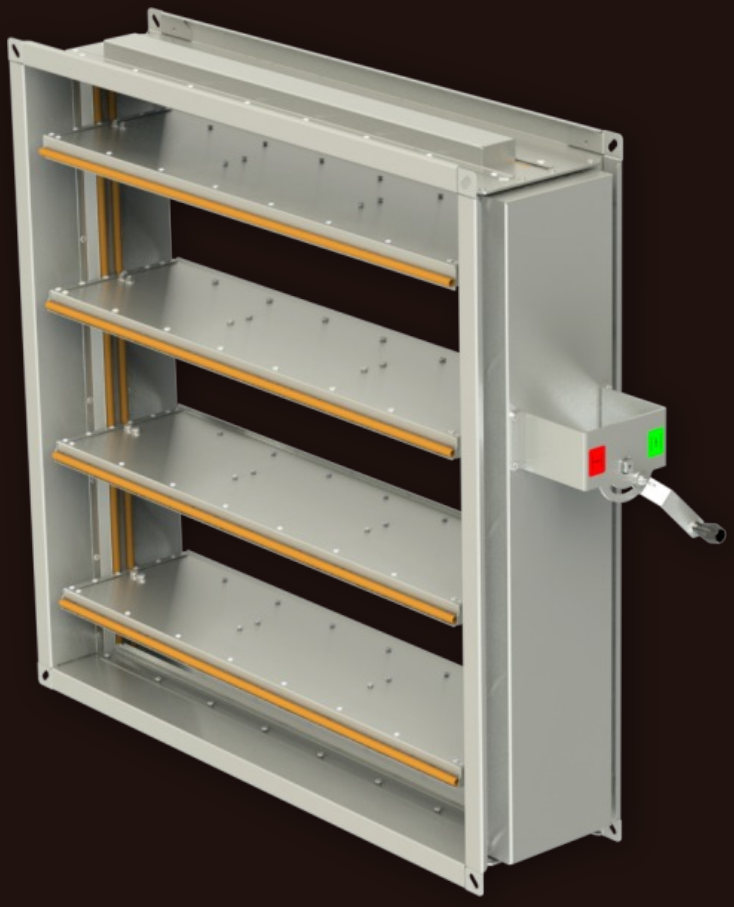
MANDÍK

TPM 167/23
Version 2025-11-24

VCDM

Volume control damper

Technical Documentation
Installation, Commissioning, Operation, Maintenance and Service Manual



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These technical specifications state a row of manufactured sizes and models of volume control damper VCDM. It is valid for production, designing, ordering, delivery, maintenance and operation.

CONTENT

I. GENERAL

Description

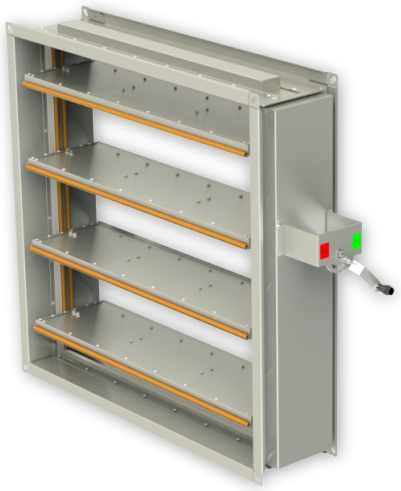
Mandik VCDM is a volume control damper suitable for use at high temperatures.

The VCDM can be used to control and balance the airflow through connecting ductwork and has been tested for high temperature applications.

The VCDM is available in sizes from 200x200 to 1200x1200 as a single unit.

The damper comes equipped with a manual handle which can be sent incrementally to set the position of the blades.

An extended spindle allows for the damper to be insulated to meet the requirements of the ductwork.



Damper VCDM

Damper characteristics

- Tested in accordance with EN 1366-1, Type B for 120 minutes.
- External Casing leakage class B, Internal leakage min. class 3 acc. to EN 1751
- Please Note: The damper will require a Flamebar BW11 or BW18 coating to achieve fire resistance to BS EN 1366-1.
- Declaration of conformity No. PM/VCDM/02/23/1

Working conditions

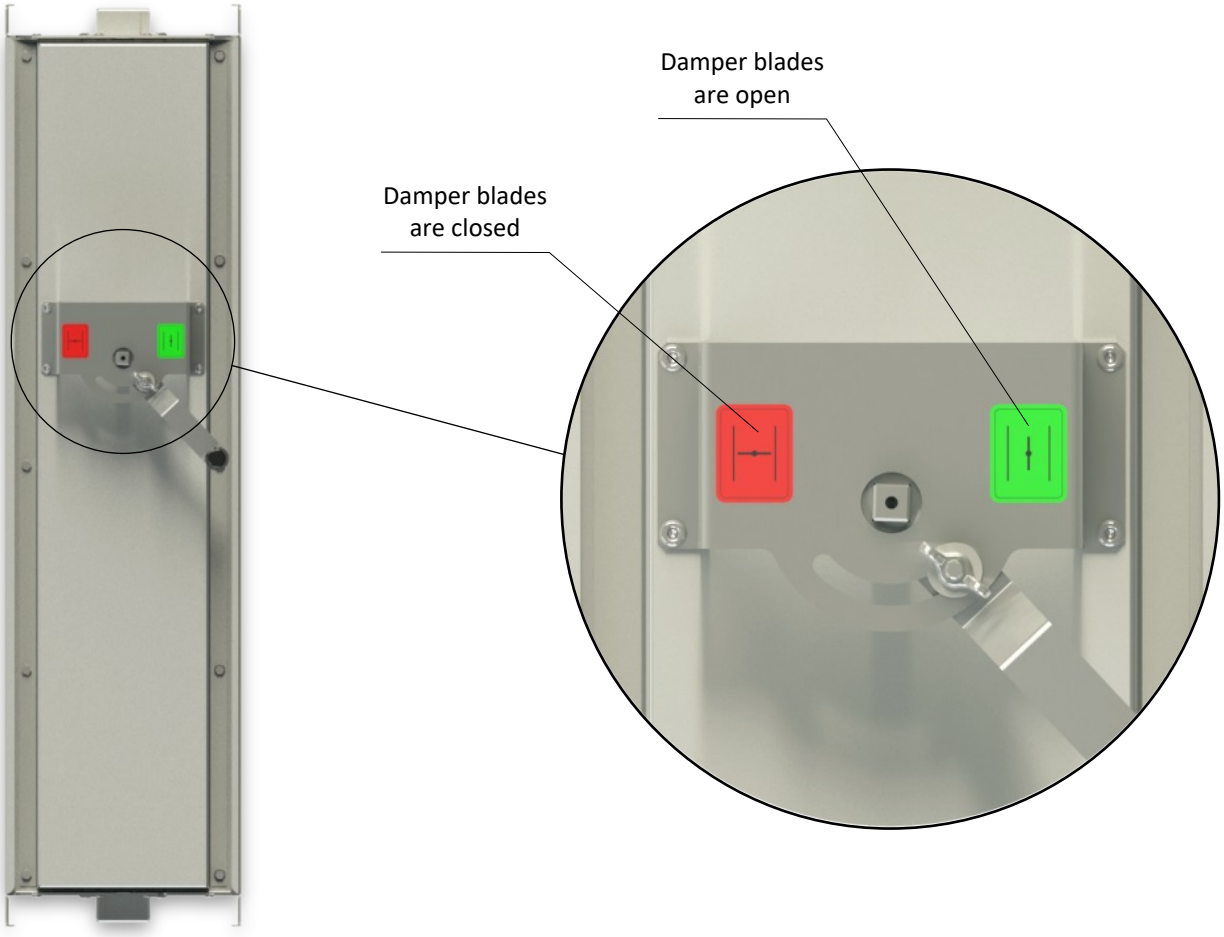
- Exact damper function is provided under the following conditions
  - maximum air velocity 12 m/s
  - underpressure max. -1500 Pa or overpressure max. 500 Pa
- Dampers are installed with the horizontal or vertical axis of the blades.
- Dampers are suitable for systems without abrasive, chemical and adhesive particles.
- Dampers are designed for macroclimatic areas with mild climate according to EN IEC 60 721-3-3 ed.2., class 3K22.
- Temperature in the place of installation is permitted to range from -20°C to +50°C.

Design

Design with manual control

Design .01

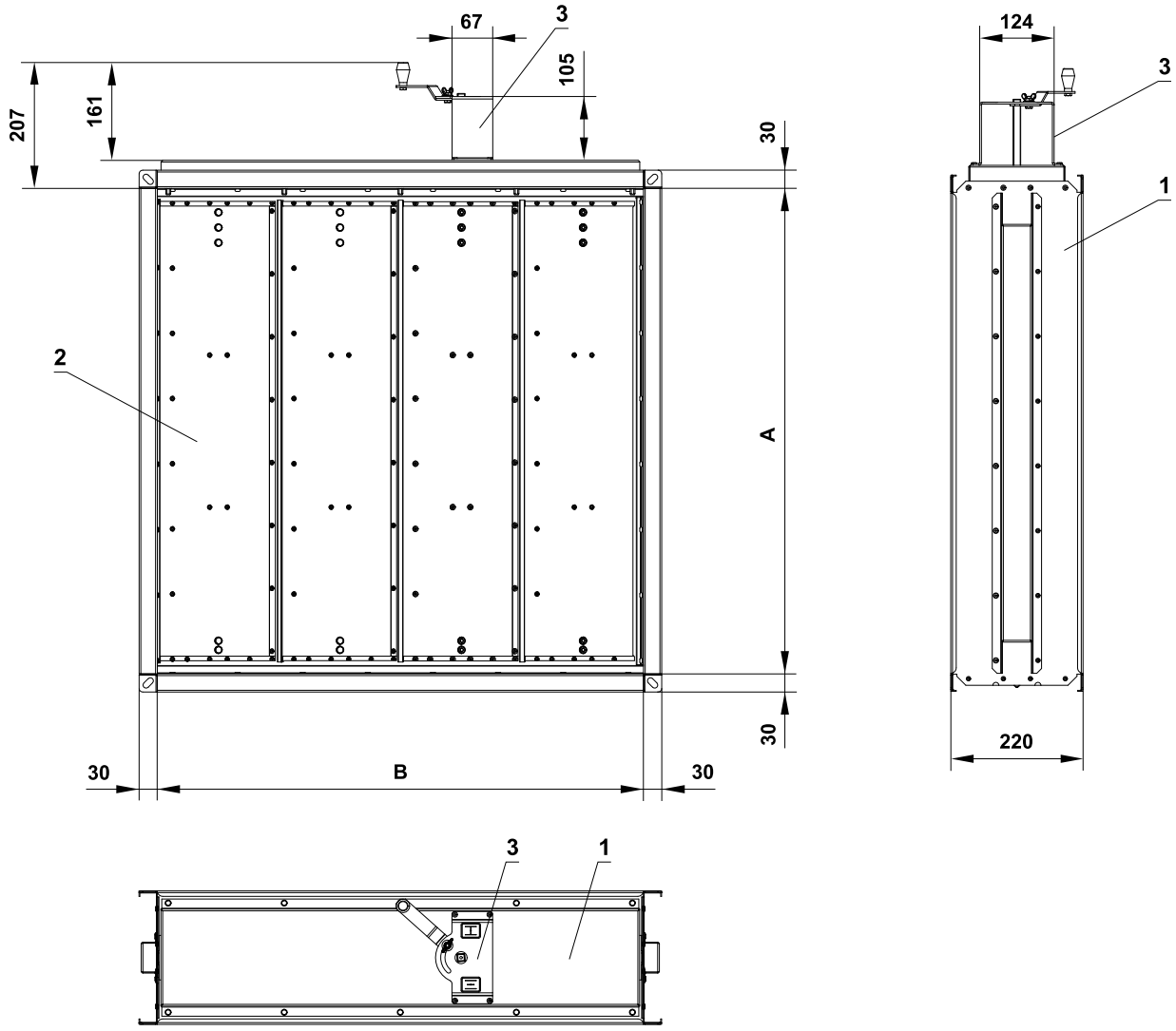
- Design with manual control which actuates the shutting device



Design .01

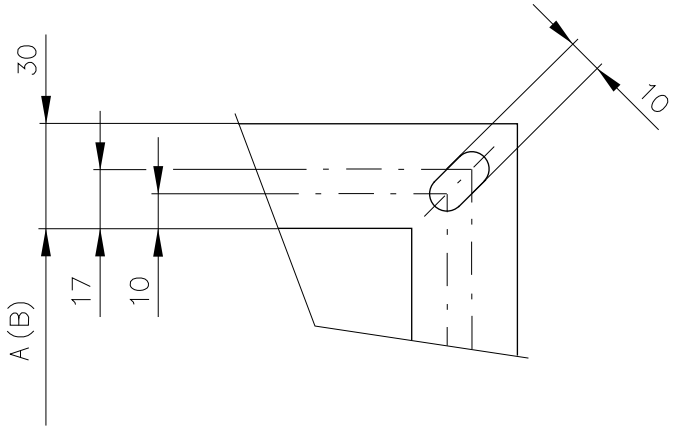
Dimensions

Damper VCDM



1 Damper body
2 Damper blade
3 Manual control

Flange with corner hole



Flanges of dampers are 30 mm wide with oval hole.

Technical parameters

A x B [mm]		Number of blades	Weight [kg]	Free area S_f [m^2]	A x B [mm]		Number of blades	Weight [kg]	Free area S_f [m^2]
200 x	200	1	14,3	0,0227	400 x	200	1	17,6	0,0511
	250	2	16,4	0,0270		250	2	20,3	0,0608
	300	2	17,3	0,0350		300	2	21,5	0,0788
	350	2	18,3	0,0430		350	2	22,6	0,0968
	400	2	19,2	0,0510		400	2	23,8	0,1148
	450	3	21,2	0,0554		450	3	26,4	0,1246
	500	3	22,2	0,0634		500	3	27,6	0,1426
	600	3	24,1	0,0794		600	3	30,0	0,1786
	700	4	27,0	0,0917		700	4	33,7	0,2063
	800	4	28,9	0,1077		800	4	36,1	0,2423
	900	5	34,5	0,1200		900	5	42,5	0,2700
	1000	5	36,4	0,1360		1000	5	44,8	0,3060
	1100	6	39,3	0,1483		1100	6	48,6	0,3337
	1200	6	41,2	0,1643		1200	6	51,0	0,3697
250 x	200	1	15,1	0,0298	450 x	200	1	18,4	0,0582
	250	2	17,4	0,0355		250	2	21,3	0,0693
	300	2	18,4	0,0460		300	2	22,5	0,0898
	350	2	19,4	0,0565		350	2	23,7	0,1103
	400	2	20,4	0,0670		400	2	25,0	0,1308
	450	3	22,5	0,0727		450	3	27,7	0,1419
	500	3	23,5	0,0832		500	3	28,9	0,1624
	600	3	25,5	0,1042		600	3	31,4	0,2034
	700	4	28,7	0,1203		700	4	38,0	0,2349
	800	4	30,7	0,1413		800	4	40,5	0,2759
	900	5	36,5	0,1575		900	5	44,5	0,3075
	1000	5	38,5	0,1785		1000	5	47,0	0,3485
	1100	6	41,6	0,1947		1100	6	50,9	0,3801
	1200	6	43,6	0,2157		1200	6	53,4	0,4211
300 x	200	1	15,9	0,0369	500 x	200	1	19,2	0,0653
	250	2	18,3	0,0439		250	2	22,2	0,0777
	300	2	19,4	0,0569		300	2	23,5	0,1007
	350	2	20,5	0,0699		350	2	24,8	0,1237
	400	2	21,5	0,0829		400	2	26,1	0,1467
	450	3	23,8	0,0900		450	3	29,0	0,1592
	500	3	24,9	0,1030		500	3	30,3	0,1822
	600	3	27,0	0,1290		600	3	32,9	0,2282
	700	4	30,3	0,1490		700	4	39,7	0,2636
	800	4	32,5	0,1750		800	4	42,3	0,3096
	900	5	38,5	0,1950		900	5	46,5	0,3450
	1000	5	40,6	0,2210		1000	5	49,1	0,3910
	1100	6	43,9	0,2410		1100	6	53,2	0,4264
	1200	6	46,1	0,2670		1200	6	55,8	0,4724
350 x	200	1	16,8	0,0440	600 x	200	1	20,9	0,0795
	250	2	19,3	0,0524		250	2	24,2	0,0946
	300	2	20,4	0,0679		300	2	25,6	0,1226
	350	2	21,6	0,0834		350	2	27,0	0,1506
	400	2	22,7	0,0989		400	2	28,4	0,1786
	450	3	25,1	0,1073		450	3	31,6	0,1938
	500	3	26,2	0,1228		500	3	33,0	0,2218
	600	3	28,5	0,1538		600	3	35,8	0,2778
	700	4	32,0	0,1776		700	4	43,1	0,3209
	800	4	34,3	0,2086		800	4	45,9	0,3769
	900	5	40,5	0,2325		900	5	50,5	0,4200
	1000	5	42,7	0,2635		1000	5	53,3	0,4760
	1100	6	46,3	0,2874		1100	6	57,9	0,5191
	1200	6	48,5	0,3184		1200	6	60,7	0,5751

A x B [mm]		Number of blades	Weight [kg]	Free area S_f [m^2]	A x B [mm]		Number of blades	Weight [kg]	Free area S_f [m^2]
700 x	200	1	22,5	0,0937	1000 x	200	1	27,5	0,1363
	250	2	26,1	0,1115		250	2	32,0	0,1622
	300	2	27,7	0,1445		300	2	33,9	0,2102
	350	2	29,2	0,1775		350	2	35,7	0,2582
	400	2	30,7	0,2105		400	2	37,6	0,3062
	450	3	34,2	0,2284		450	3	42,0	0,3322
	500	3	35,7	0,2614		500	3	43,9	0,3802
	600	3	38,8	0,3274		600	3	50,3	0,4762
	700	4	46,4	0,3782		700	4	56,5	0,5501
	800	4	49,5	0,4442		800	4	60,3	0,6461
	900	5	54,5	0,4950		900	5	66,5	0,7200
	1000	5	57,5	0,5610		1000	5	70,2	0,8160
	1100	6	62,5	0,6118		1100	6	76,5	0,8899
	1200	6	65,6	0,6778		1200	6	80,2	0,9859
800 x	200	1	24,2	0,1079	1100 x	200	1	29,1	0,1505
	250	2	28,1	0,1284		250	2	34,0	0,1791
	300	2	29,7	0,1664		300	2	35,9	0,2321
	350	2	31,4	0,2044		350	2	37,9	0,2851
	400	2	33,0	0,2424		400	2	39,9	0,3381
	450	3	36,8	0,2630		450	3	47,2	0,3668
	500	3	38,4	0,3010		500	3	49,2	0,4198
	600	3	41,7	0,3770		600	3	53,2	0,5258
	700	4	49,8	0,4355		700	4	59,9	0,6074
	800	4	53,1	0,5115		800	4	63,8	0,7134
	900	5	58,5	0,5700		900	5	70,5	0,7950
	1000	5	61,8	0,6460		1000	5	74,5	0,9010
	1100	6	67,2	0,7045		1100	6	81,1	0,9826
	1200	6	70,5	0,7805		1200	6	85,1	1,0886
900 x	200	1	25,8	0,1221	1200 x	200	1	30,8	0,1647
	250	2	30,0	0,1453		250	2	35,9	0,1960
	300	2	31,8	0,1883		300	2	38,0	0,2540
	350	2	33,5	0,2313		350	2	40,1	0,3120
	400	2	35,3	0,2743		400	2	42,2	0,3700
	450	3	39,4	0,2976		450	3	49,8	0,4014
	500	3	41,1	0,3406		500	3	51,9	0,4594
	600	3	47,3	0,4266		600	3	56,1	0,5754
	700	4	53,1	0,4928		700	4	63,2	0,6647
	800	4	56,7	0,5788		800	4	67,4	0,7807
	900	5	62,5	0,6450		900	5	74,5	0,8700
	1000	5	66,0	0,7310		1000	5	78,7	0,9860
	1100	6	71,8	0,7972		1100	6	85,8	1,0753
	1200	6	75,4	0,8832		1200	6	90,0	1,1913

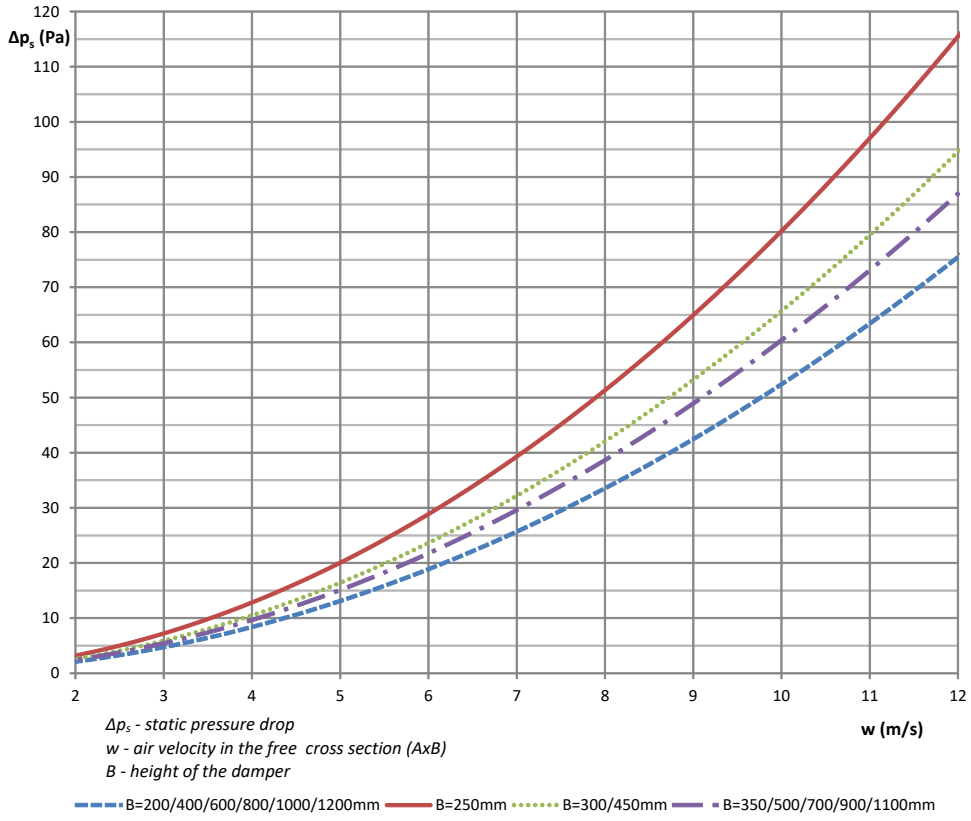
Placement and Assembly

- Dampers are designed for installation with horizontal or vertical axis of the blades.
- Dampers can be mounted in ductwork and insulated to meet the requirements of the ductwork system

II. TECHNICAL DATA

Pressure loss

Determination of pressure loss by using diagram ρ = 1,2 kg/m³



Noise data - level of acoustic output corrected with filter A

Sound power level Lw in dB(A) for B=250/300/450mm, damper fully open

	f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
w (m/s)	2	16	24	29	29	28	26	23	9	**35**
	3	25	33	38	38	37	35	32	18	**44**
	4	32	40	45	45	44	42	39	25	**51**
	5	38	46	51	51	50	48	45	31	**57**
	6	42	50	55	55	54	52	49	35	**61**
	7	46	54	59	59	58	56	53	39	**65**
	8	49	57	62	62	61	59	56	42	**68**
	9	50	58	63	63	62	60	57	43	**69**
	10	53	61	66	66	65	63	60	46	**72**
	11	55	63	68	68	67	65	62	48	**74**
	12	57	65	70	70	69	67	64	50	**76**

w - air velocity in the free cross section (AxB) - i.e. before blades
f - frequency of octave band

Sound power level Lw in dB(A) for B=350/500/700/900/1100mm, damper fully open

	f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
w (m/s)	2	15	23	28	28	27	25	22	8	**34**
	3	24	32	37	37	36	34	31	17	**43**
	4	31	39	44	44	43	41	38	24	**50**
	5	36	44	49	49	48	46	43	29	**55**
	6	41	49	54	54	53	51	48	34	**60**
	7	45	53	58	58	57	55	52	38	**64**
	8	48	56	61	61	60	58	55	41	**67**
	9	49	57	62	62	61	59	56	42	**68**
	10	51	59	64	64	63	61	58	44	**70**
	11	53	61	66	66	65	63	60	46	**72**
	12	55	63	68	68	67	65	62	48	**74**

w - air velocity in the free cross section (AxB) - i.e. before blades
f - frequency of octave band

Sound power level Lw in dB(A) for B=200/400/600/800/1000/1200mm, damper fully open

	f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
w (m/s)	2	13	21	26	26	25	23	20	6	**32**
	3	21	29	34	34	33	31	28	14	**40**
	4	28	36	41	41	40	38	35	21	**47**
	5	34	42	47	47	46	44	41	27	**53**
	6	38	46	51	51	50	48	45	31	**57**
	7	42	50	55	55	54	52	49	35	**61**
	8	45	53	58	58	57	55	52	38	**64**
	9	47	55	60	60	59	57	54	40	**66**
	10	48	56	61	61	60	58	55	41	**67**
	11	50	58	63	63	62	60	57	43	**69**
	12	52	60	65	65	64	62	59	45	**71**

w - air velocity in the free cross section (AxB) - i.e. before blades
f - frequency of octave band

III. MATERIAL, FINISHING

Material

- Damper casing and damper blades are made of galvanized sheet metal without any other surface finish.
- Fasteners are galvanized.
- According to the customer's requirements, damper can be made of stainless material.

  Specifications for stainless-steel models – classification of stainless steel:

  - Class A2 – Food-grade stainless steel (AISI 304 – EN 17240)
  - Class A4 – Chemistry-grade stainless steel (AISI 316, 316L – EN 17346, 17349)

  The respective stainless steel is the material for all components present or accessing the damper interior; components outside the damper body are typically from galvanised sheet metal.

  The following components, including the fasteners, are made from stainless steel at all times:

  - Damper body and all components permanently attached
  - Blade´s holders, including pins, metal parts of blade

  Plastic, rubber and silicon components, sealants, foaming bands, glass-ceramic seals, housings, brass bearings of the blade, actuators, and end switches are identical for all material variants of the dampers.

  Some fasteners and components are available in one class of stainless steel; the type will be used in all stainless-steel variants.

  Any other requirements for the design shall be considered atypical and shall be addressed on an individual basis.

IV. INSPECTION, TESTING

- The appliance is constructed and preset by the manufacturer, its operation is dependent on proper installation and adjustment.

V. TRANSPORTATION AND STORAGE

Logistic terms

- Dampers are delivered on a pallets. As standard, the dampers are wrapped in plastic foil for protection during transport and must not be used for long-term storage of the equipment . Changes in temperature during transport may cause condensation of water vapour inside the packaging and thereby condisitions may arise inside the packaging that are suitable for corrosion of materials used in the equipment (e.g. white corrosion on zinc-coated items or mould on calcium silicate). Therefore, it is necessary to remove the transport packaging immediately after unloading to allow air to circulate around the product.
- The equipment must be stored in clean, dry, well ventilated and dust-free environment out of direct sunlight. ensuring protection against moisture and extremes of temperatures (minumum temperature +5°C) the equipment must be protected against mechanical and accidental damage prior to installation.
- Another required packaging system should be approved and agreed by manufacturer. Packaging material is not returnable in case that another packaging system (material) is required and used and it is not included into final price of damper.
- For unloading and further manipulation with the damper is necessary to use appropriate tooling (forklifts) due to damper weight. Dampers are fragile.
- Dampers are transported by box freight vehicles without direct weather impact, there must not occur any shocks and ambient temperature must not exceed +50°C. Dampers must be protected against impact when transported and manipulated. During transportation, the damper blade must be in the "CLOSED" position.
- Dampers are stored indoor in environment without any aggressive vapours, gases or dust. Indoor temperature must be in the range from -30°C to +50°C and maximum relative humidity 95% (avoid condensation on the damper body). Dampers must be protected against impact when transported and manipulated.

VI. ASSEMBLY, ATTENDANCE AND MAINTENANCE

Assembly

- Assembly, maintenance and damper function check can be done only by qualified and trained person, i.e. “AUTHORIZED PERSON” according to the manufacturer documentation. All works done on the dampers must be done according international and local norms and laws.
- All effective safety standards and directives must be observed during damper assembly.

Entry into service and revisions

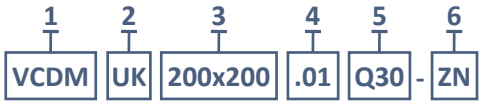
- Before entering the dampers into operation after assembly and after sequential revisions, checks and functionality tests. After entering into operation, these revisions must be done according to requirement set by national regulations.
- In case that dampers are found unable to serve for their function for any cause, it must be clearly marked. The operator is obliged to ensure that the damper is put into condition in which it is ready for function.

Spare parts

- Spare parts are supplied only on basis of an order.

X. ORDERING INFORMATIONS

Ordering key



EXAMPLE:

VCDM UK 200x200 .01 Q30-ZN
Smoke control damper VCDM, dimension 200x200 mm, control design with manual control, flange dimension 30 mm, galvanized material variant.

1| Smoke control damper type - VCDM

2| Country of destination

3| Damper dimensions A x B → see pages 6 to 7
"A" is the width of the damper
"B" is the height of the damper

4| Damper design

.01	Manual control

5| Flange dimension

Q30	Flange width 30 mm

6| Material and other design options

ZN	Galvanized
A2	Stainless steel 1.4301 (AISI 304)
A4	Stainless steel 1.4404 (AISI 316L) - included damper blade impregnation against chemical - type PROMAT SR

The producer reserves the right for innovations of the product.
For actual product information see www.mandik.co.uk

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