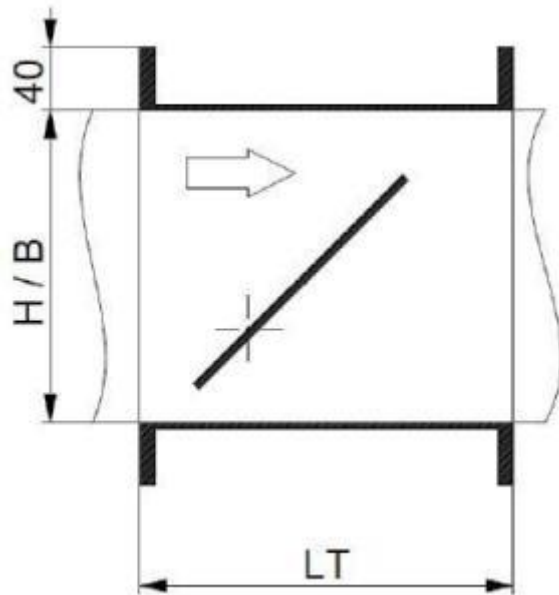# ORV pressure relief vent
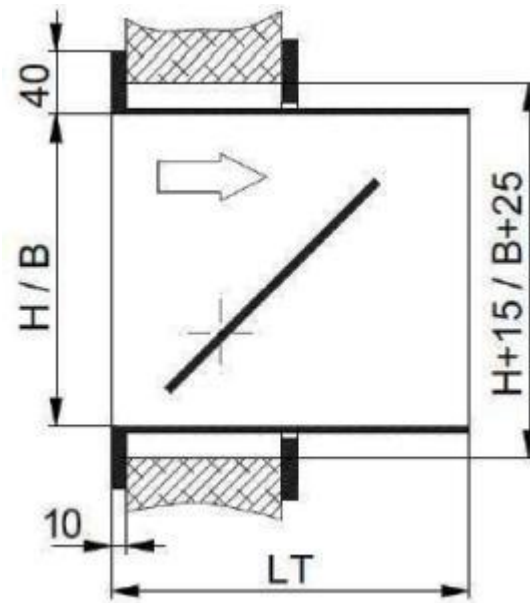
Selection guide

23.5.2017
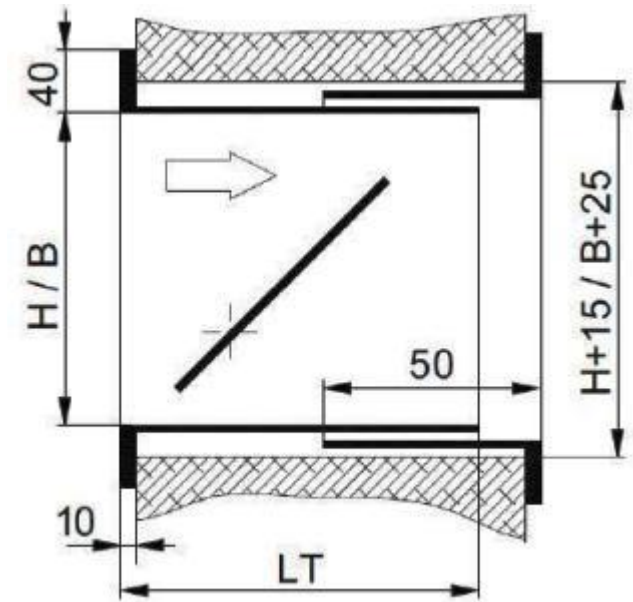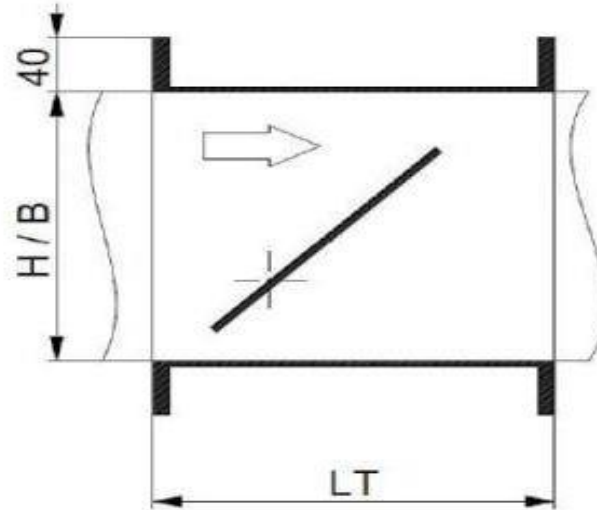
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Models

Duct form D

Wall form T

Wall form W

Features ORV (= Overpressure Relief Vent

- Casing from magnelis steel sheet

- Flaps from aluminium, bronze bushes

- 3 standard forms: duct D and wall W / T

- Special versions possible

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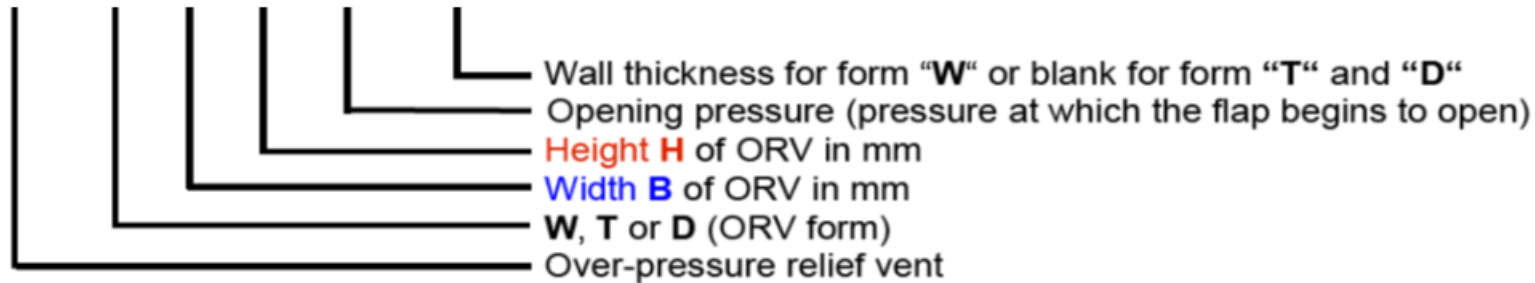# Features ORV - dimensions

Lenght LT > lenght of the blade

Dimensions

Width B											Height H	Lenght LT
200	250	280	315	355	400	450	500	560	630	710		
1	1	1	1	1	1	1	1	1	1	1	200	230
1	1	1	1	1	1	1	1	1	1	1	224	260
1	1	1	1	1	1	1	1	1	1	1	250	280
1	1	1	1	1	1	1	1	1	1	1	280	310
1	1	1	1	1	1	1	1	1	1	1	315	350
2	2	2	2	2	2	2	2	2	2	2	400	230
2	2	2	2	2	2	2	2	2	2	2	450	260
2	2	2	2	2	2	2	2	2	2	2	500	280
			2	2	2	2	2	2	2	2	560	310
				2	2	2	2	2	2	2	630	350
						3	3	3	3	3	750	280
							4	4	4	4	1000	280

Number of blades (1...4) for flaps ORV with standard dimensions

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Features ORV - marking

ORV - X - **B** - **H** - YPa - Lmm

                      Wall thickness for form "**W**" or blank for form "**T**" and "**D**"
                Opening pressure (pressure at which the flap begins to open)
             Height **H** of ORV in mm
          Width **B** of ORV in mm
       W, **T** or **D** (ORV form)
    Over-pressure relief vent

ORV - X - **B** - **H** - Zm3/h/YPa - Lmm

Alternatively to opening pressure: air flow at pressure drop

                      Wall thickness for form "**W**" or blank for form "**T**" and "**D**"
                Air volume at specific pressure
             Height **H** of ORV in mm
          Width **B** of ORV in mm
       W, **T** or **D** (ORV form)
    Over-pressure relief vent

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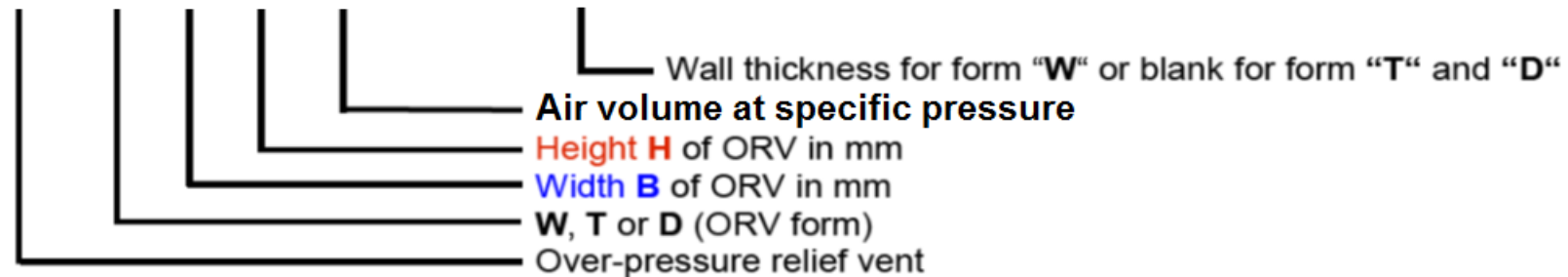
Application (Sys web – global)

Over-pressure relief vent is a device, which opens automatically at design pressure difference to give free flow path from a pressurized space (for example staircase, wardrobe) to a space of lower pressure (for example lobby, accommodation, laboratory) or to the open air.

ORV is designed for maintenance the adjusted pressure difference between two rooms or between room and exterior, when we wish to prevent contamination of the inside or exterior with chemical or biological polluted air.

ORV is a passive element with quick respond. It is not tight and should be always used with other active elements for maintenance of the pressure difference (for example fans). Wind load or any other not controlled pressure influence should be observed or avoided. Flaps cannot be insulated (serially it is not).
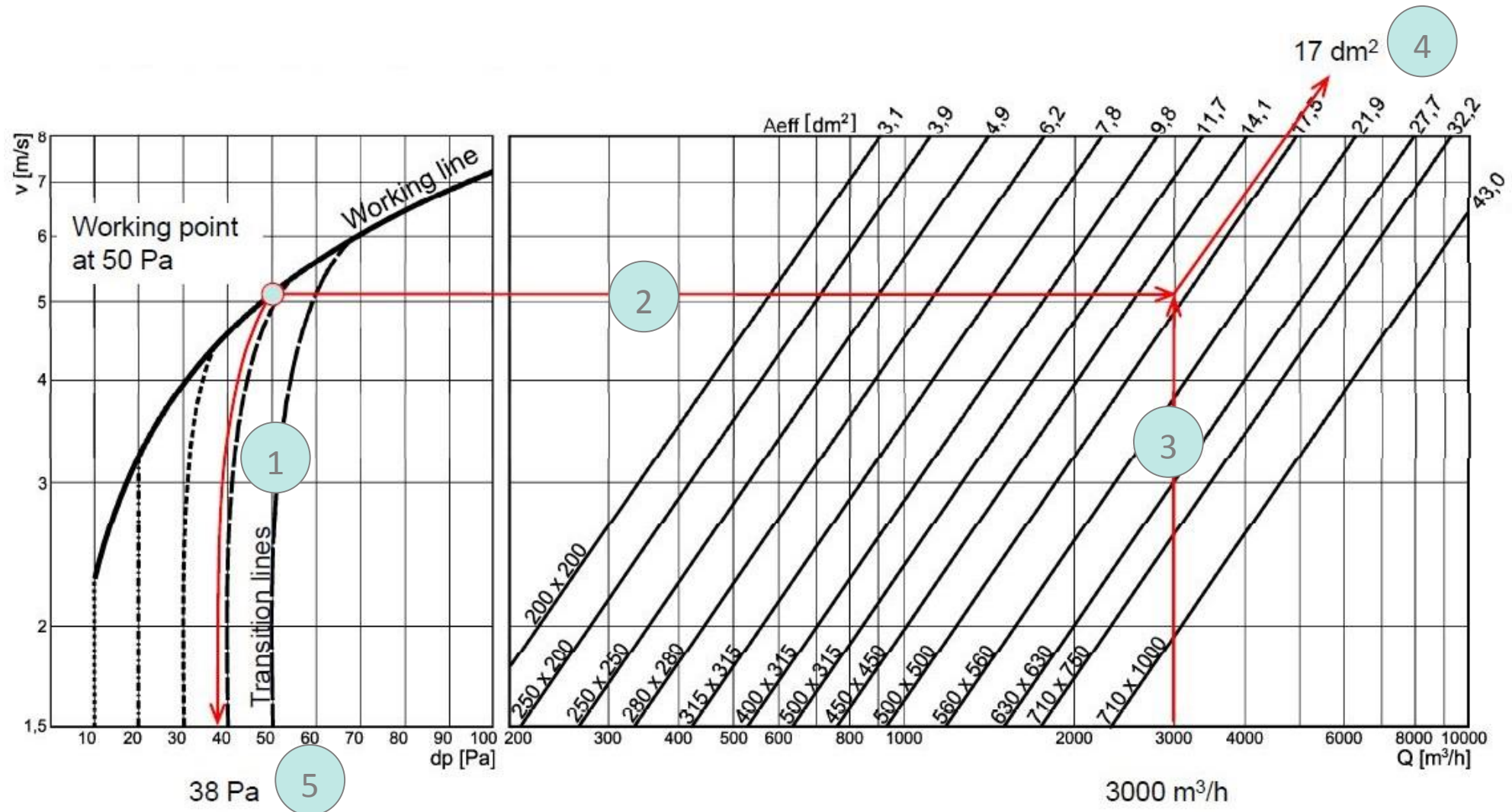
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Application (Sys web – global)

Applications:

- Maintenance of the pressure difference between clean room and soiled zone in laundry, pharmaceutics and electronic industry for preventing pollution of the process (for example pressurization cascade in wardrobe near the clean room);

- Maintenance of the pressure difference in chemical laboratory for preventing pollution of exterior;

- Pressurization of evacuation corridor in an event of fire for maintenance of smokeless zone (for example stairways, EN 12101-6);

- Air supply to smoking rooms with under-pressure (exhaust fan only);

- Ventilating of rooms (air supply or exhaust, depending on fan position)

Selection 1

From the room it is to releive 3000 m3/h at pressure difference 50 Pa. How to choose ORV?

Selection 1

From the room it is to releive 3000 m3/h at pressure difference 50 Pa. How to choose ORV?

1. The working point always lies on the working curve.
2. From working point at 50 Pa draw horizontal line to the right diagram.
3. The crossection of horizontal line with vertical line at 3000 m^3/h gives needed effective area A_{eff} in dm2.
4. For the given example app. 17 dm^2.
5. Draw a line paralel to the nearest dashed transition curve from the working point and get the opening pressure 38 Pa (i.e. pressure difference, at which the blade starts to open); round down to 30 Pa. If needed, the flap can be on site adjusted to open at a bit higher pressure difference (5-10 Pa).

6. From the table of dimensions we choose 560-450 with A_{eff} = 16,1 dm^2 (other possibilities: 500-500 with A_{eff} = 17,5 dm^2, 450-500 with A_{eff} = 16,2 dm^2).
7. The marking of the flap with opening pressure: ORV-W 560-450-30Pa

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Selection 1

From the room it is to relieve 3000 m3/h at pressure difference 50 Pa. How to choose ORV?

Selection - Aeff depending on dimensions

Width B											Height H	Lenght LT
200	250	280	315	355	400	450	500	560	630	710		
3,1	3,9	4,3	4,7	5,1	5,6	6,0	6,4	6,8	7,2	7,6	200	230
3,5	4,4	4,9	5,4	5,9	6,5	7,0	7,5	8,0	8,6	9,1	224	260
3,9	4,9	5,5	6,1	6,8	7,4	8,1	8,7	9,4	10,1	10,7	250	280
4,3	5,5	6,2	6,9	7,7	8,5	9,4	10,1	10,9	11,8	12,7	280	310
4,7	6,1	6,9	7,8	8,8	9,8	10,8	11,7	12,8	13,9	15,0	315	350
6,3	7,8	8,6	9,4	10,3	11,2	12,0	12,8	13,6	14,5	15,3	400	230
7,0	8,8	9,7	10,8	11,9	13,0	14,1	15,0	16,1	17,2	18,2	450	260
7,8	9,8	11,0	12,2	13,5	14,9	16,2	17,5	18,8	20,1	21,5	500	280
		13,8	15,4	17,0	18,7	20,2	21,9	23,6	25,3	560	310
			17,5	19,5	21,6	23,5	25,5	27,7	29,9	630	350
					24,3	26,2	28,2	30,2	32,2	750	280
						34,9	37,5	40,3	43,0	1000	280

Choice: ORV-D 560-450-30Pa (opening pressure is rounded down, it can be increased up to +10Pa, but not decreased without change of weights).

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Selection 2

From the room it is to releive 3000 m3/h at pressure difference 50 Pa. How to choose ORV?

1. to 6. as selection 1.
7. Alternatively the marking of the flap with working point (always air flow at working pressure):
   ORV-W 560-450-3000/50Pa
   The flap will be delivered with opening pressure 30 Pa. After opening, the   velocity rises up to dashed transition line
   to working line and at 50 Pa reaches the working point.

Selection 3

From room V = 3.000 m³/h of air at pressure difference Δp = 15 Pa (working point) should be released. How to select ORV-T?

1. The working point always lies on the working curve. From working point at 15 Pa draw horizontal line to the right diagram. The crossection of horizontal line with vertical line at 3000 m3/h gives needed effective area A_{eff} in dm². For the given example app. 30 dm².
2. From the table of dimensions we choose 710-630 with A_{eff} = 29,9 (other possibilities: 630-750 with A_{eff} = 30,2 dm², 710-750 with A_{eff} = 32,2 dm²).
3. Draw a line paralel to the dashed transition curve from the working point and get the opening pressure 15 Pa (i.e. pressure difference, at which the blade starts to open); round down to 10 Pa. If needed, the flap can be on site adjusted to open at a bit higher pressure difference (5-10 Pa).
4. The marking of the flap with opening pressure: ORV-T 710-630-10Pa

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Selection 3