

# Non Return Dampers

Type ARK · ARK1

## Pressure Relief Damper

Type ARK2



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Non return dampers type ARK and ARK1 are designed for automatic shut off of individual sections of an air conditioning system. With fan running, the degree of blade opening is a function of the air velocity. If the fan is turned off, the blades close automatically. In a multi fan installation this prevents back draught through the non-operating fans.

Pressure relief dampers type ARK2 are used in ventilation systems and rooms of buildings to prevent excess pressures occurring. If a specified pressure difference is exceeded the damper blades automatically open to relieve the excess pressure. Pressure peaks, e.g. resulting from rapidly closing fire dampers or shut-off dampers, will be reliably controlled.

**ARK**



**ARK1**



**ARK2**



Type ARK (with linked blades) to be used in systems with variable air volume.

Type ARK1 (with adjustable stops to limit the blade opening angle) to be used in systems with constant air volume.

Permitted installation orientation: horizontal and vertical

Type ARK2 (with factory-set permanent magnets for locking the blades in closed position) to be used in ventilation systems and rooms of buildings in case of over pressure risks.

Permitted installation orientation: horizontal

## Type ARK · ARK1

### ARK

- Casing formed from galvanised sheet steel; casing in stainless steel on request
- Aluminium blades
- Coupling sections (with dampers having two or more blades) made of aluminium
- Blade shafts stainless steel
- Bearing from composite material with antifriction lining of PTFE/Pb (maintenance-free)
- Seals made of neoprene, temperature resistant up to 80 °C
- Limiting pressure 5000 Pa

### Construction variant ARK-G

As for type ARK, but both flanges drilled

- |               |                          |
|---------------|--------------------------|
| ① Casing      | ⑥ Bearing                |
| ② Blade       | ⑦ Blade coupling section |
| ③ Seal        | ⑧ Adjustable stop        |
| ④ Stop angle  | (2 elements per blade)   |
| ⑤ Blade shaft |                          |

### ARK1

As for type ARK, but:

- without blade coupling sections
- with stops to limit blade opening angle, which are adjustable externally

### Construction variant ARK1-G

As for type ARK1, but both flanges drilled

### Surface finish

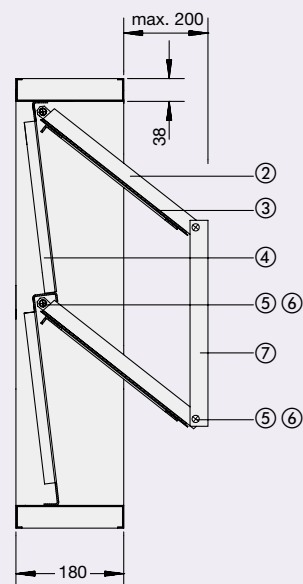
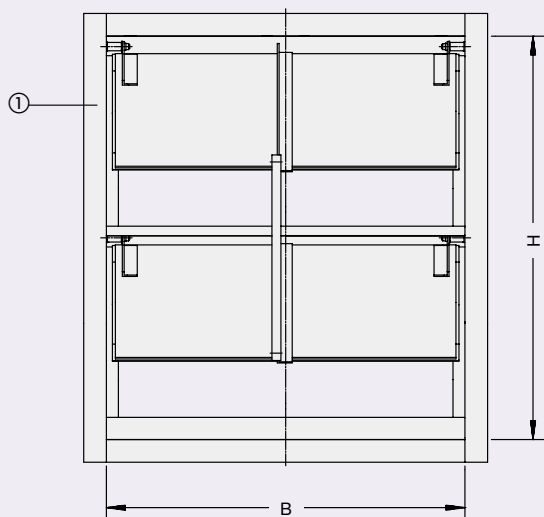
#### Powder coating P1

Standard RAL shades: RAL 9010-GE50\*, RAL 9006-GE30\*,  
RAL 9001, RAL 9002, RAL 9003,  
RAL 9005, RAL 9016, RAL 7001,  
RAL 7035 – all GE70\*

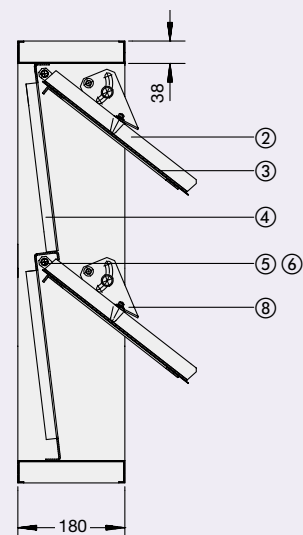
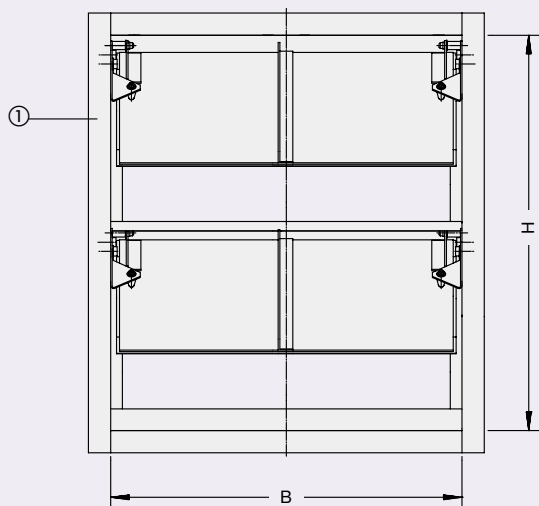
Other shades on request

\* GE = Gloss level

### Type ARK



### Type ARK1



# Construction

## Type ARK2

### ARK2

- Casing formed from galvanised sheet steel; casing in stainless steel on request
- Aluminium blades
- Blade shafts stainless steel
- Bearing from composite material with antifriction lining of PTFE/Pb (maintenance-free)
- Seals made of neoprene, temperature resistant up to 80 °C
- Opening pressure difference 50-1000 Pa for dampers up to a width of 600 mm
- Opening pressure difference max. 600 Pa for dampers with a width greater than 600-1200 mm
- The required opening pressure difference must be specified when ordering

### Construction variant ARK2-G

As for type ARK2, but both flanges drilled

## Surface finish

### Powder coating P1

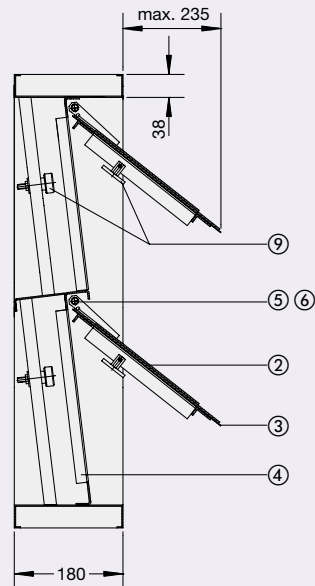
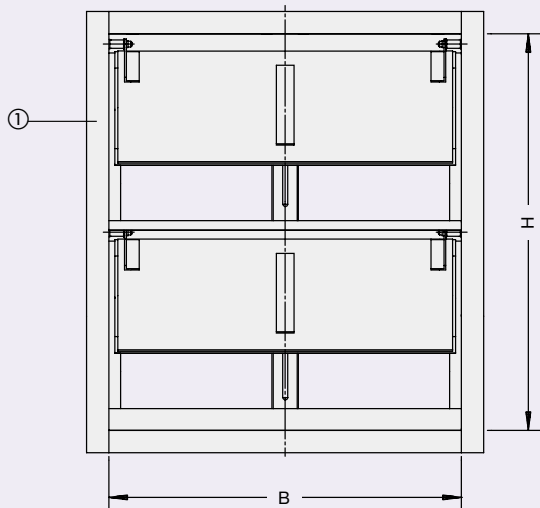
Standard RAL shades: RAL 9010-GE50\*, RAL 9006-GE30\*, RAL 9001, RAL 9002, RAL 9003, RAL 9005, RAL 9016, RAL 7001, RAL 7035 – all GE70\*

Other shades on request

\* GE = Gloss level

- |              |                    |
|--------------|--------------------|
| ① Casing     | ⑤ Blade shaft      |
| ② Blade      | ⑥ Bearing          |
| ③ Seal       | ⑨ Permanent magnet |
| ④ Stop angle |                    |

## Type ARK2



## Damper locked



## Damper unlocked



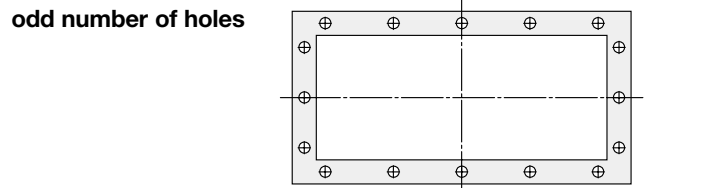
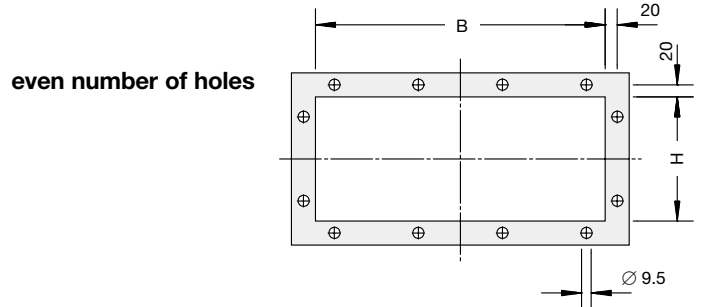
# Standard Sizes · Installation Details

Standard sizes					
B in mm	H in mm	Number of blades	Number of blade coupling sections *	Number of holes per B- dimension per H- dimension	
200	345	1	-	2	4
400	675	2	1	4	6
600	1005	3	1	5	9
800	1335	4	2	7	12
1000	1665	5	2	8	14
1200	1995	6	2	10	17

Any combinations of dimensions B x H listed above can be supplied. Intermediate dimensions on request. \* only with type ARK

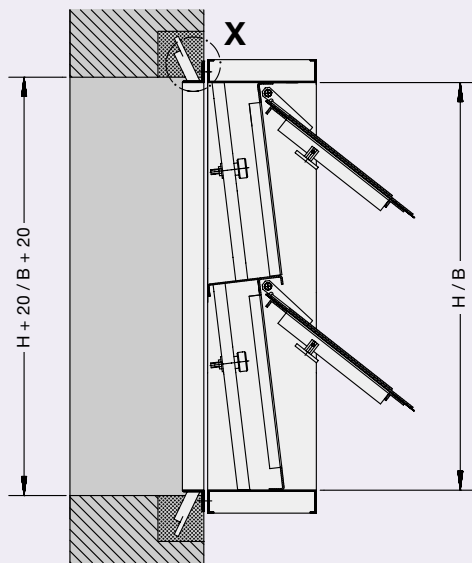
Inlet cross-section A in m <sup>2</sup>						
H in mm	B in mm					
	200	400	600	800	1000	1200
345	0.069	0.138	0.207	0.276	0.345	0.414
675	0.135	0.270	0.405	0.540	0.675	0.810
1005	0.201	0.402	0.603	0.804	1.005	1.206
1335	0.227	0.454	0.681	0.908	1.135	1.362
1665	0.333	0.666	0.999	1.332	1.665	1.998
1995	0.399	0.798	1.197	1.596	1.995	2.394

## Flange drilling details



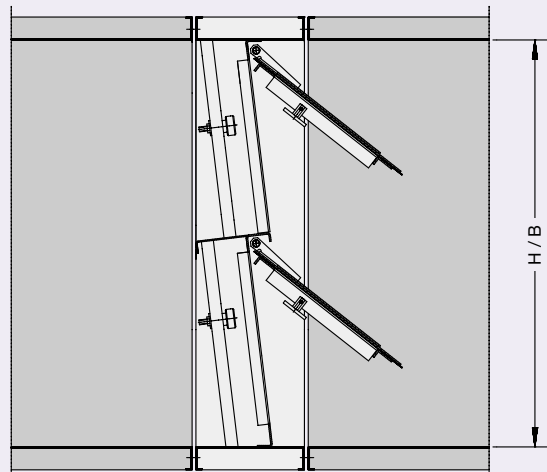
Hole pitch B- and H-dimensions = 125 mm

## Installation on surface of wall opening



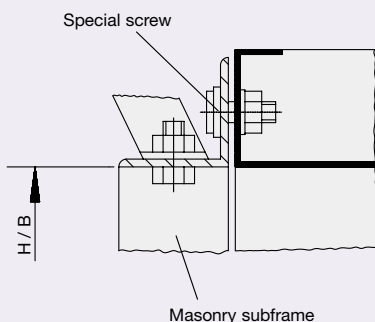
Type ARK2 shown  
Installation opening without masonry subframe B / H

## Installation between ventilation ducts



Type ARK2 shown

## Detail X



## Masonry subframe

Construction	Code
with one masonry subframe	22

For construction using masonry subframe, the casing flanges are drilled on both sides.

By using special screws in the masonry subframe, the non return damper or pressure relief damper can easily be demounted or mounted even when subframe is fitted in the wall.

Scope of supply masonry subframe:

Galvanised angle steel masonry subframe 35/35/3; builders cleats (screw-on type), special screws, screws, nuts and washers made of galvanised steel (installation on site, by others).

# Technical Data

## Nomenclature

- B in mm: Width
- H in mm: Height
- A in m<sup>2</sup>: Inlet cross-section (see page 5)
- v in m/s: Air velocity with damper opened based on inlet cross-section A
- $\Delta p_t$  in Pa: Total pressure drop (duct mounting) with damper open
- $\Delta p_D$  in Pa: Pressure difference with damper closed
- $\dot{V}_L$  in l/s: Leakage volume flow rate  
in m<sup>3</sup>/h: (independent of width B)
- $\Delta p_O$  in Pa: Opening pressure difference
- $\dot{V}$  in m<sup>3</sup>/h: Resulting volume flow

## Example 1

Data given: Non return damper type ARK  
 B = 600 mm, H = 1005 mm  
 $\Delta p_D = 2000$  Pa,  $v = 7$  m/s  
 Horizontal installation orientation

Required: Total pressure drop  $\Delta p_t$   
 Leakage volume flow  $\dot{V}_L$

Result: (from diagram)  
 $\Delta p_t = 100$  Pa  
 $\dot{V}_L = 1.3$  l/s (4.7 m<sup>3</sup>/h)

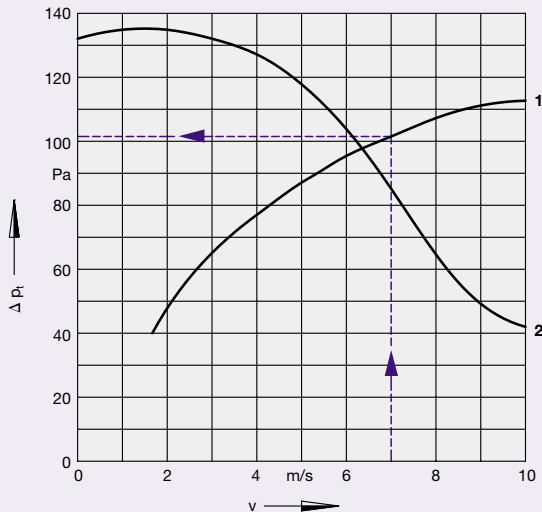
## Example 2

Data given: Pressure relief damper type ARK2 – 1000 Pa  
 B = 600 mm, H = 1005 mm, A = 0.6 m<sup>2</sup>  
 $\Delta p_O = 1000$  Pa,  $v = 2$  m/s

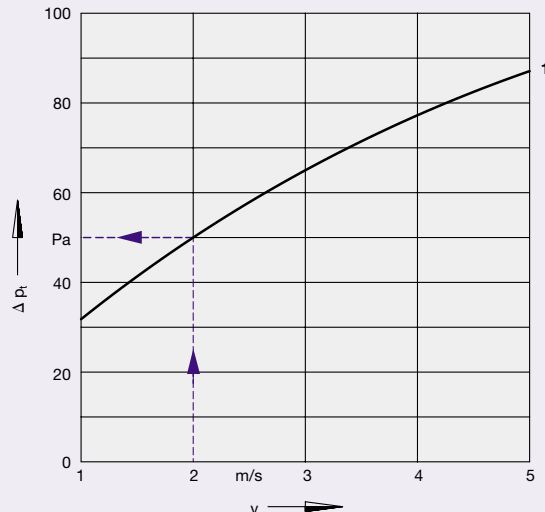
Required: Total pressure drop  $\Delta p_t$  with damper open  
 Resulting volume flow  $\dot{V}$

Result:  $\Delta p_t = 50$  Pa (from diagram)  
 $\dot{V} = v \cdot A \cdot 3600 = 2 \cdot 0.6 \cdot 3600 = 4320$  m<sup>3</sup>/h

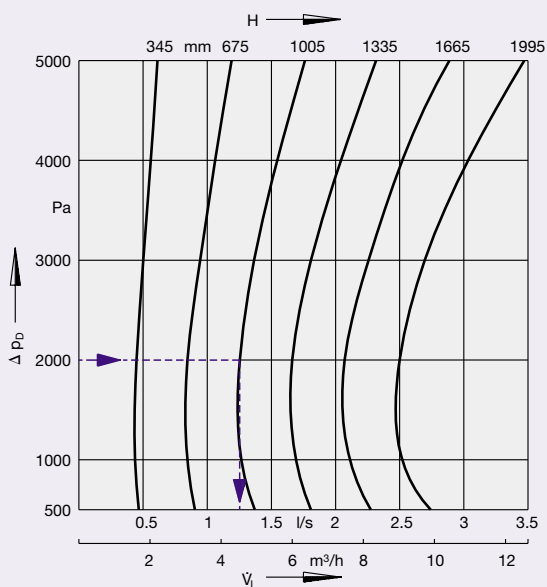
### Pressure drop type ARK · ARK1



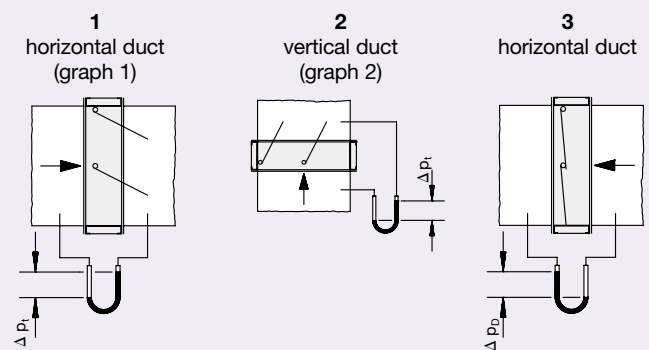
### Pressure drop type ARK2



### Leakage volume flow type ARK · ARK1

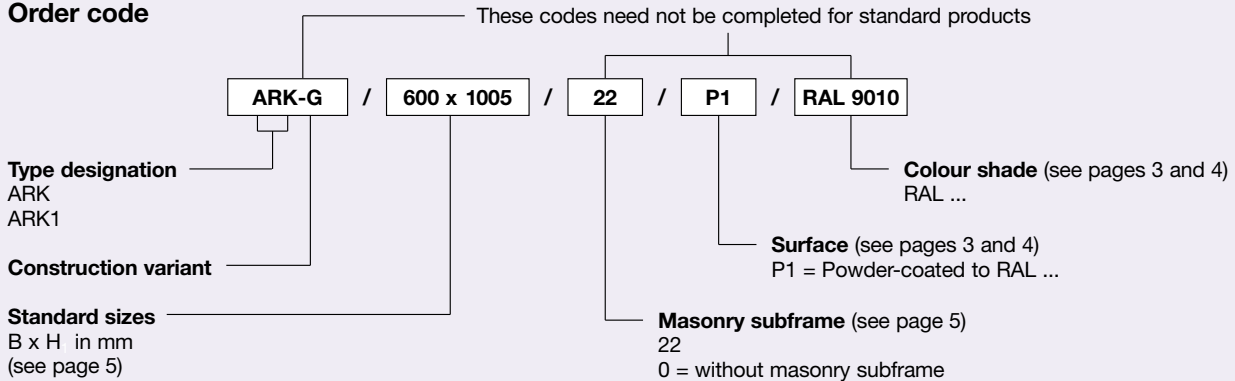


### Installation orientation



Installation orientations			
Diagram	Type ARK	Type ARK1	Type ARK2
Pressure drop	1 + 2	1 + 2	1
Leakage volume flow	3	3	-

## Order code



## Specification text

Non return dampers for automatic shut off of individual sections of an air conditioning system, permitted maximum pressure loading 5000 Pa (acting in closing direction).

Material and construction variants: details see page 3

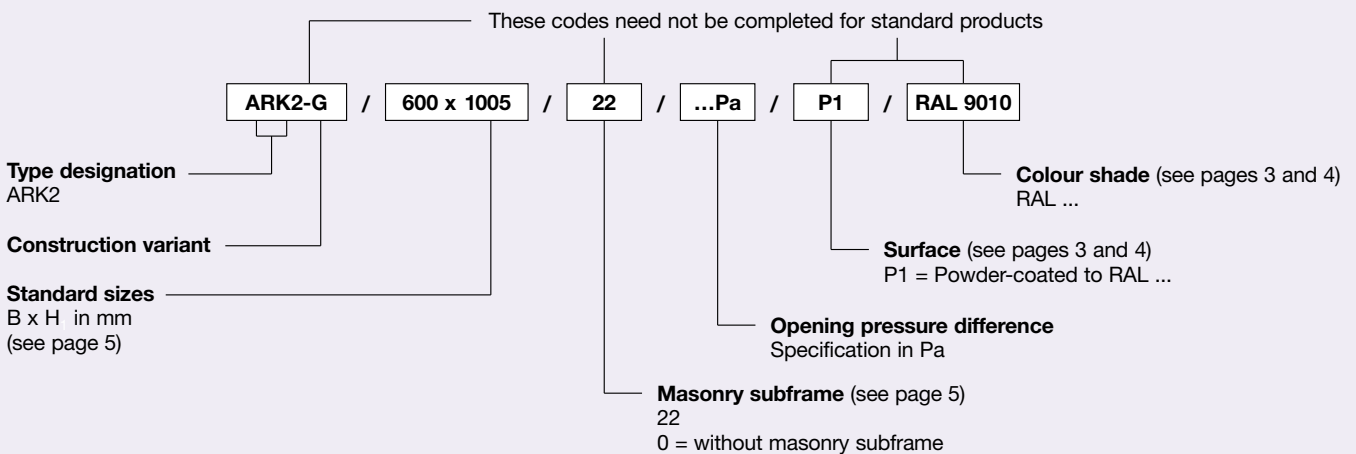
Masonry subframe: details see page 5

Make: TROX

Types: ARK · ARK1

## Order example

Make: TROX  
Type: ARK-G / 600 x 1005 / 22 / P1 / RAL 9010  
Qty.: 4



## Specification text

Pressure relief dampers with permanent locking magnet to protect ventilation systems and rooms in buildings against overpressure.

Opening pressure difference 50-1000 Pa for dampers up to a width of 600 mm

Opening pressure difference max. 600 Pa for dampers with a width greater than 600-1200 mm

Material and construction variants: details see page 4

Masonry subframe: details see page 5

Make: TROX

Type: ARK2

## Order example

Make: TROX  
Type: ARK2-G / 600 x 1005 / 22 / 1000 Pa / P1 / RAL 9010  
Qty.: 4

