



Multi-Leaf Damper HK



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Multi-leaf damper HK

Contents

Description	3
Mounting instructions	3
Construction	3
Model	4
Accessories	4
Cleaning of stainless steel models	4
Models and dimensions	5
Dimensions	5
Dimensions of accessories	8
Technical data	10
Volumetric flow range	10
Pressure loss and noise level	10
Selection actuator / servo cylinder	11
Legend	13
Order details	14
Specification texts	16

Multi-leaf damper HK

Description

Application range

Multi-leaf dampers type HK are used in air-conditioning and ventilation systems **as control, throttle or shut-off dampers to control pressure and volumetric flow.**

The **flow-favouring blades are adjusted together, rotating in opposite directions**, via external plastic gear wheels. The external arrangement of the gears has the advantage that, in comparison with internally arranged gears exposed to the air flow, they do not become dirty that quickly. A cover plate protects the gear wheels from outside dirt and reduces the personal accident danger during assembly or maintenance.

The multi-leaf dampers type HK are suitable for a maximum pressure of up to 1000 Pa.

For maintenance, service, retrofitting, etc., inspection openings in sufficient number and size must be provided on-site.

Housing leakage according to DIN EN 1751, class B, at a duct pressure of up to 1000 Pa.

Adjustment

The multi-leaf dampers type HK can be adjusted either manually, electrically or pneumatically.

Temperature resistance

HK-P:	temperature-resistant to a max. of +80°C
HK-U:	temperature-resistant to a max. of +100°C
HK-K:	temperature-resistant to a max. of +120°C
Gear wheels:	temperature-resistant to a max. of +100°C
with electric actuator:	-20°C < permissible ambient temperature < +50°C
with pneumatic servo cylinder:	-5°C < permissible ambient temperature < +60°C

Installation information

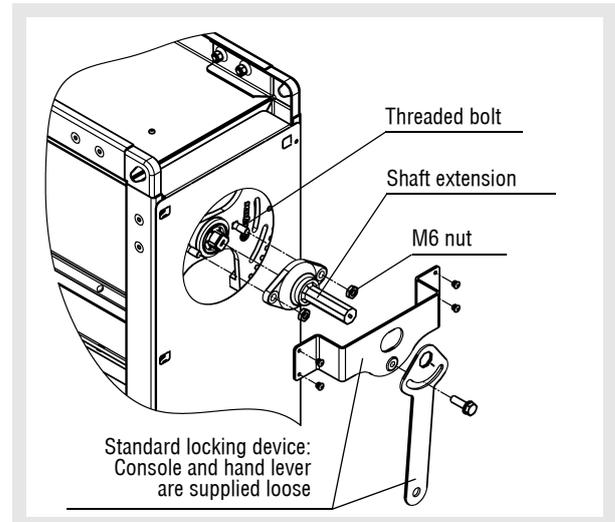
The multi-leaf dampers must not be tilted during installation. This could lead to problems with the adjusting mechanism or cause leakage.

It is recommended mounting the multi-leaf dampers while closed. To screw the multi-leaf damper to the duct, the cover plate on the operating side can be simply dismantled by loosening the Parker screw. After the multi-leaf damper has been screwed in, the cover plate must be replaced. To do this, the plate is attached to the housing by means of the lugs, screwed down and the lugs on the screw side are folded down.

Please note

The order number is always written on the topside on the multi-leaf damper.

Mounting instructions



1. Push shaft extension on to threaded bolt and fasten it with M6 nuts.
2. Fasten the console to the frame.
3. Place the hand lever on the shaft extension and fasten it.

The hand lever or actuator must be fitted on the same side as the gear wheel. If there is an odd number of blades, the actuating lever / actuator must be mounted on the central blade. If there is an even number of blades it must be mounted on one of the two central blades.

To fit the hand lever / actuator, the shaft extension must be inserted. If an actuator is mounted (on site), the console for manual adjustment must not be fastened.

Construction

- locking device
 - galvanised sheet steel
 - loose
- Hollow-body blades
 - Block adjustment in opposite directions
 - Galvanised sheet steel (-SV)
 - Stainless steel 1.4301 (V2A) (HK-K not possible) (-V2)
- Storage
 - Plastic bearing (HK-P)
 - Sintered bearing (HK-U)
 - Brass bearing (only H=100) (HK-K)
- Frame
 - Profiled sheet steel galvanised 1.5 mm, dimensionally stable (-SV)
 - Stainless steel 1.4301 (V2A) (HK-K not possible) (-V2)
 - with profile connection frame
 - with frame bores (at an extra charge): on one side (-RB1)
 - with frame bore (at an extra charge): on two sides (-RB2)
 - Depth of the frame = 180 mm
- Gear wheels
 - Plastic, externally fitted

Multi-leaf damper HK

Model

- HK-P - with plastic bearing
- HK-U - with sintered bearing
- HK-K - with brass bearing (only H = 100 available)
- HK-...-R - Operating side right
- HK-...-L - Operating side left

Accessories

- Add-on parts
 - Installation frame 35/35/4 with riveted wall anchors (-ER2)
 - Flat-steel counter frame 33/5 (-FG1)
 - Angular steel counter frame 30/30/3 (-WG1)
 - Locking device (-M001, only HK-U / HK-P), mounted to the multi-leaf damper.
- Shaft design (at an extra charge, not possible for HK-K) (-W02/ -W03)
 - including bearing block
- Electric actuator, 2/3-point
 - 5 Nm, 24 V AC/DC (-E001) / 230 V AC (-E002)
 - 10 Nm, 24 V AC/DC (-E003) / 230 V AC (-E004)
 - 20 Nm, 24 V AC/DC (-E005) / 230 V AC (-E006)
 - 40 Nm, 24 V AC/DC (-E007) / 230 V AC (-E008)
- Electric actuator with spring return 2/3-point
 - 4 Nm, 24 V AC/DC (-E021) / 230 V AC (-E020), currentless OPEN
 - 4 Nm, 24 V AC/DC (-E021) / 230 V AC (-E020), currentless CLOSED
 - 10 Nm, 24 V AC/DC (-E027) / 230 V AC (-E029), currentless OPEN
 - 10 Nm, 24 V AC/DC (-E027) / 230 V AC (-E029), currentless CLOSED
 - 20 Nm, 24 V AC/DC (-E025) / 230 V AC (-E024), currentless OPEN
 - 20 Nm, 24 V AC/DC (-E025) / 230 V AC (-E024), currentless CLOSED
- Electric actuator 0-10 V (continuous)
 - 5 Nm, 24 V AC/DC (-E012) / 230 V AC (-E016)
 - 10 Nm, 24 V AC/DC (-E013) / 230 V AC (-E017)
 - 20 Nm, 24 V AC/DC (-E014) / 230 V AC (-E018)
 - 40 Nm, 24 AC/DC (-E015)
- Actuator with spring return, 0-10 V (continuous)
 - 4 Nm, 24 V AC/DC (-E023)
 - 10 Nm, 24 V AC/DC (-E028)
 - 20 Nm, 24 V AC/DC (-E026)
- Electric actuator with integrated limit switches
 - limit switch
 - "CLOSED" (-ESZ)
 - "OPEN" (-ESA)
 - 2 limit switches, "CLOSED" and "OPEN" (-ES2)
- Pneumatic servo cylinder (not for HK-K)
 - Piston force 295 N (supply) / 247 N (return), 6 bar, double-acting (-P001)
 - Piston force 753 N (supply) / 633 N (return), 6 bar, double-acting (-P002)
 - including bearing block

Cleaning of stainless steel models

Attention!

We would like to point out that for cleaning stainless steel models, only suitable cleaning materials may be used!

Note:

The gear wheels consists of the plastic PA6. The plastic PA 6 has the property of changing its dimensions as a function of the relative humidity. The gear wheels have been pre-conditioned for a standard climate of 23°C and a relative humidity of 50%. If the gear wheels are exposed permanently to a relative humidity of more than 60% over a longer period, the damper may run sluggishly. At a permanent relative humidity of under 40%, the gear wheels shrink, and the gear play may become too large. If the multi-leaf dampers are to be used in rooms in which the relative humidity is permanently <40% / >60%, we recommend using stainless steel gear wheels made of V2A (1.4301) instead of the plastic ones. Extra charge upon request.

Attention!

When using linkage adjustment (only available upon request) instead of adjustment by means of external gear wheels, the force required for adjustment is twice as high as with gear wheel adjustment.

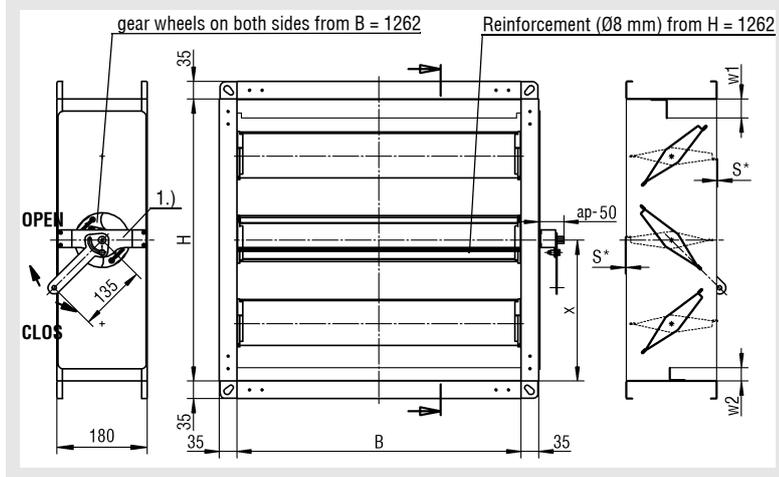
Multi-leaf damper HK

Models and dimensions

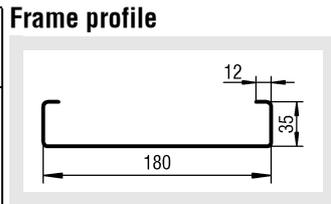
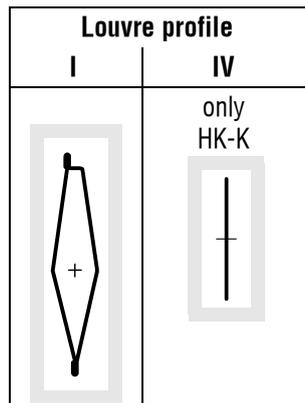
Dimensions

HK-P (with plastic bearing)

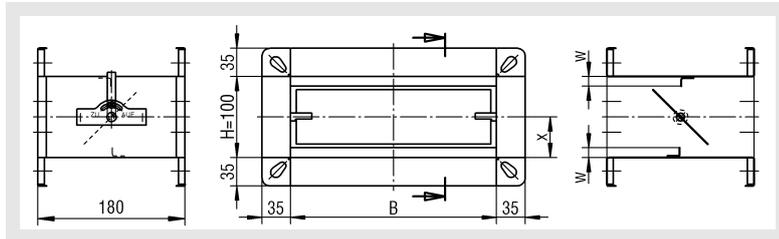
HK-U (with sintered bearing)



*Projection length with a damper leaf position of 100% OPEN.
1.) Locking device (console and adjusting lever) supplied loose as standard.



HK-K (with brass bearing)



Available sizes HK-K

B	H	Number of blades	w	x
201	100	1	10	50
225				
252				
318				
357	All combined lengths and heights available.			
400	able.			

Available sizes HK-P / HK-U

Standard series of dimensions

B	H	Number of blades	w1	w2	x	S
201	201	1	24	13	101	3
225	225	1	36	25	113	
252	252	1	12	12	126	
318	318	1	12	12	159	60
357	357	2	18	7	95	3
400	400	2	39	28	116	
449	449	2	64	53	141	
503	503	2	91	80	168	
565	565	3	38	27	283	
634	634	3	72	61	317	
711	711	4	27	16	272	
797	797	4	70	59	315	
894	894	5	35	24	447	
1003	1003	5	89	78	502	
1125	1125	6	66	55	646	
1262	1262	7	51	40	799	
1416	1416	8	44	33	624	
1588	1588	9	46	35	794	
1781	1781	10	59	48	974	
1998	1998	11	84	73	1167	

All combined lengths and heights available.

Available sizes HK-P / HK-U

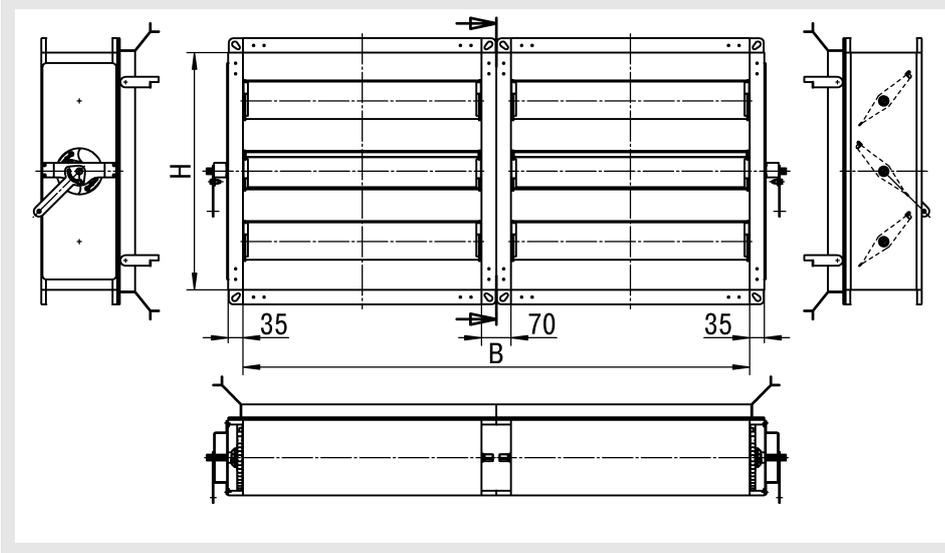
B	H	Number of blades	w1	w2	x	S
200	200	1	23	12	96	3
250	250	1	12	12	121	36
300	300	1	12	12	146	60
400	400	2	39	28	279	3
500	500	2	89	78	329	
600	600	3	55	44	296	
800	800	4	72	61	478	
1000	1000	5	88	77	496	
1200	1200	7	20	9	596	
1400	1400	8	36	25	612	
1600	1600	9	52	41	796	
1800	1800	10	69	58	812	
2000	2000	11	85	74	996	

All combined lengths and heights available.

Note: The dimensions w1, w2 and x are rounded values!

Multi-leaf damper HK

Multi-leaf damper divided vertically



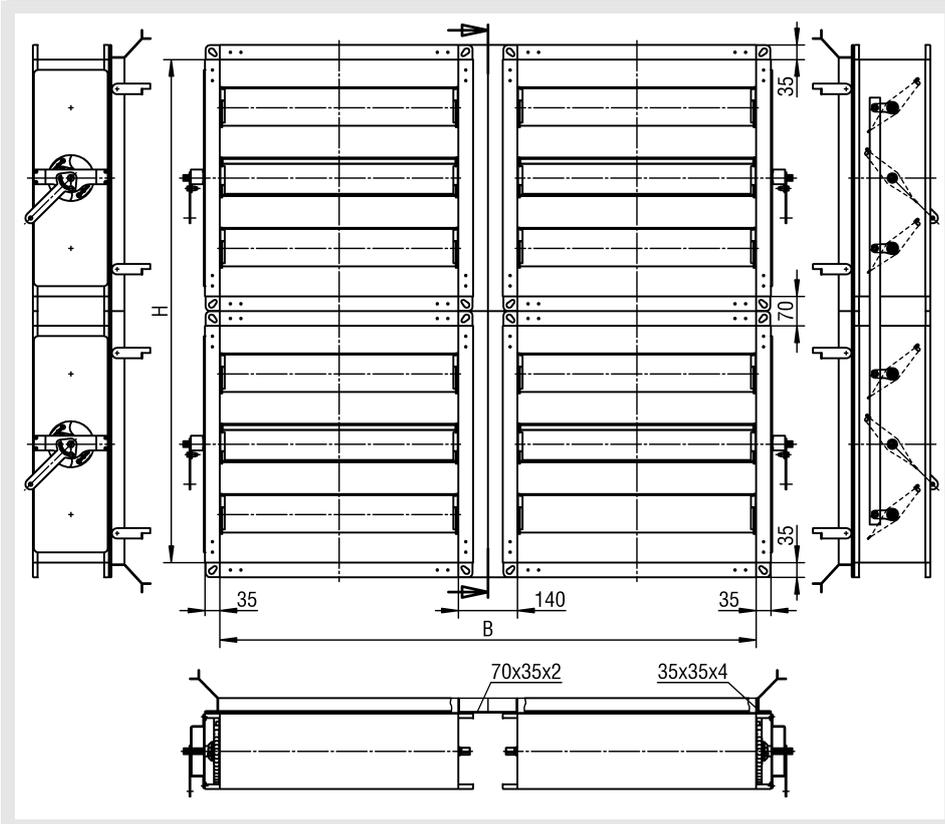
The figure opposite shows the division of multi-leaf dampers greater than 1998 mm and 2000 mm in width.

It is not possible to join the two sections.

Operating side 1 x "on the left" and 1 x "on the right".

All frames are supplied in primed design.

Vertically and horizontally divided multi-leaf dampers



The figure opposite shows the division of multi-leaf dampers greater than 1998 mm and 2000 mm in width and height.

The blades in the two sections on top of each other are joined by a coupling rod. It is not possible to join the horizontally adjacent sections.

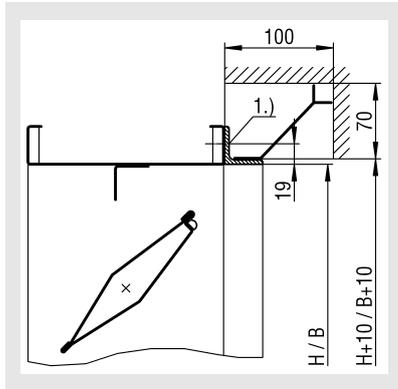
All frames are supplied in primed design.

Multi-leaf damper HK

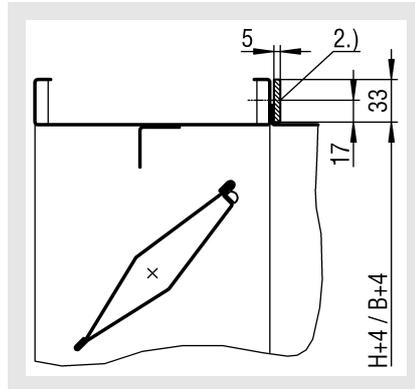
Accessories - dimensions

Assembly detail

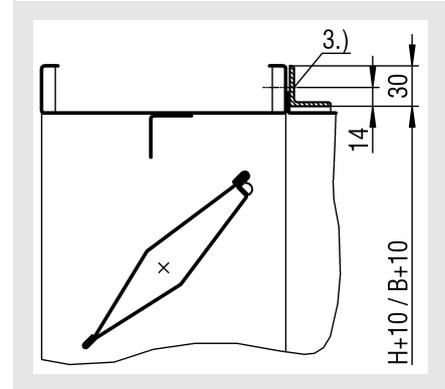
Installation frame (-ER2)



Flat-steel counter frame (-FG1)



Angular steel counter frame (-WG1)



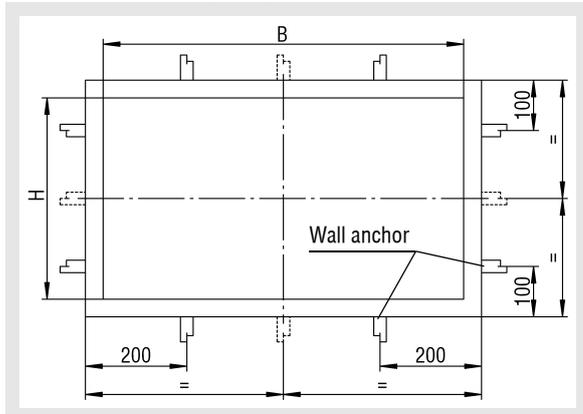
Multi-leaf dampers can be additionally fitted with:

- 1.) Installation frame 35/35/4 with riveted wall anchors (-ER2)
- 2.) Flat-steel counter frame 33/5 (-FG1)
- 3.) Angular steel counter frame 30/30/3 (-WG1)

undrilled or drilled.

All frames are supplied in primed design.

Installation frame (-ER2)



Wall anchor arrangement

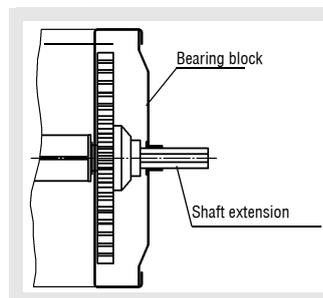
Height (mm):

- $H \leq 1000$ or $1003 \rightarrow 2$ wall anchors per side
 $H > 1000$ or $1003 \rightarrow 3$ wall anchors per side

Width (mm):

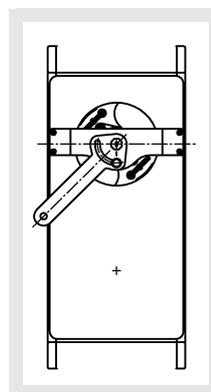
- $B \leq 797$ or $800 \rightarrow$ without wall anchors
 797 or $800 < B \leq 1000$ or $1003 \rightarrow 2$ wall anchors per side
 $B > 1000$ or $1003 \rightarrow 3$ wall anchors per side

Bearing block



A bearing block is already mounted ex-works for shaft design (W02/W03). When a servo cylinder is mounted in factory, the bearing block is mounted as well as standard. The bearing block must be additionally installed when a pneumatic servo cylinder is mounted on site, otherwise the adjusting mechanism could be damaged by the thrust.

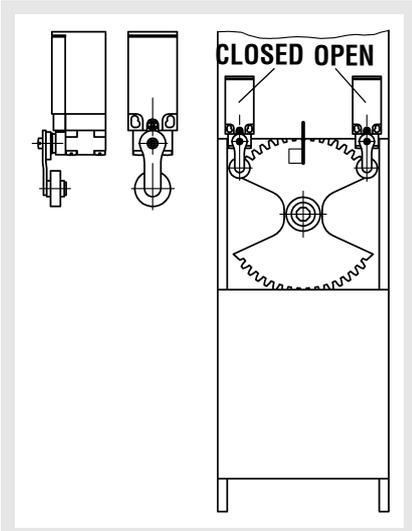
Locking device (not for HK-K)



The manual adjusting device is supplied loose as standard (-E000). In the model with the locking device (-M001), the manual adjusting device (hand lever and console) is delivered mounted ex works. The blades can be adjusted continuously by means of the manual adjusting device. The locking device (-M001) is not available for HK-K, since the locking device (-M001) is delivered already mounted ex works as standard.

Multi-leaf damper HK

limit switch



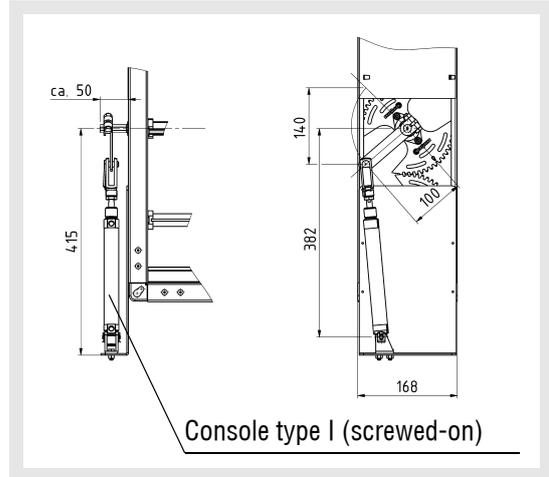
Electric limit switches can be installed to indicate position or to perform switching functions

Installation options:

- Damper position "CLOSED" 1 limit switch (-ESZ)
- Damper position "OPEN" 1 limit switch (-ESA)
- with 2 limit switches, "CLOSED" and "OPEN" (-ES2)

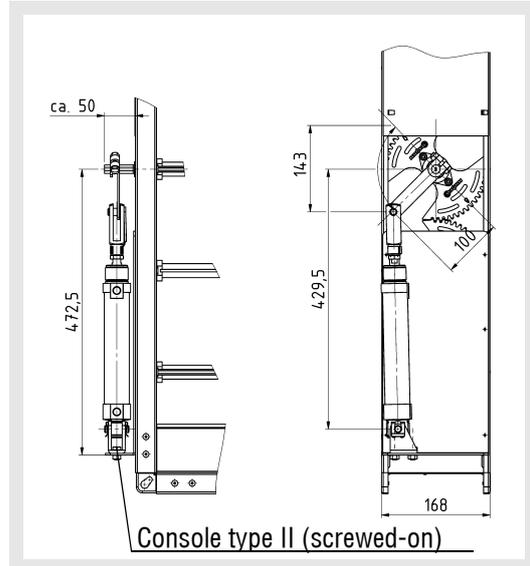
If an electric actuator or pneumatic servo cylinder is used, the limit switches can also be installed as shown in the figure.

H = 201-565 or H = 200-600



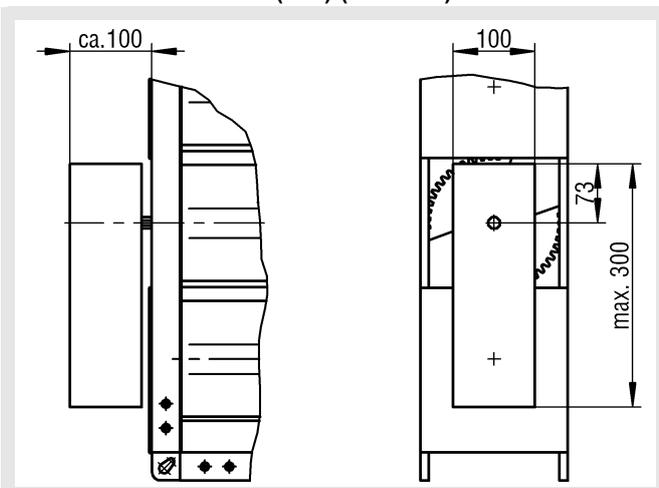
only available with shaft design (W02/W03)!

H = 634-1998 or H = 800-2000



only available with shaft design (W02/W03)!

Actuator is fitted outside (-AU) (standard)



Integrated limit switches

The electric actuators are available with integrated / mounted limit switches.

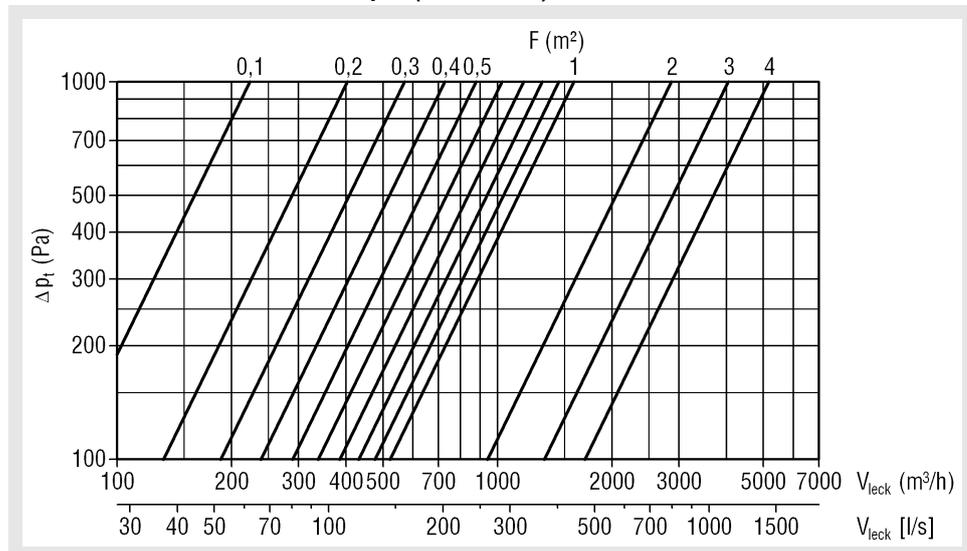
with pneumatic servo cylinder (not available for HK-K)

Multi-leaf damper HK

Technical data

Volumetric flow range

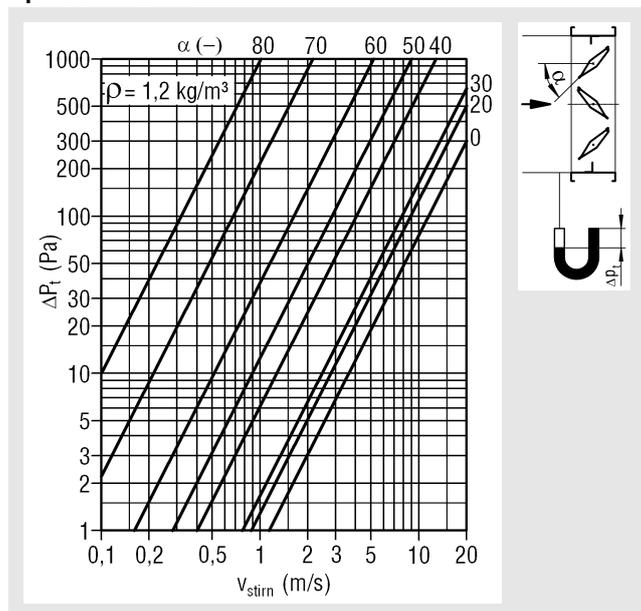
Leak air volume with closed damper (HK-U/HK-P)



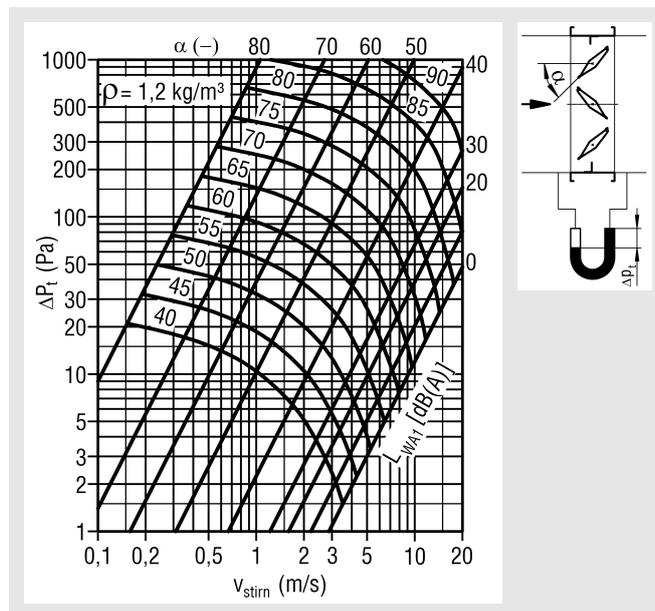
Pressure loss and noise level

Pressure loss (as a function of the blade position α)

Open connection



Duct connection



Correction factor (for flow generated noise)

A_{stirn} (m ²)	0,04	0,06	0,08	0,10	0,12	0,16	0,2	0,25	0,3	0,4	0,5	0,6	0,8	1
KF [-]	-14	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0

$$L_{WA} = L_{WA1} + KF$$

Multi-leaf damper HK

Selection actuator / servo cylinder

HK-P/HK-U (with electric actuator)

	0-10 V		2/3-point		Spring return "OPEN" and "CLOSED"		Spring return 0-10 V
	24 V AC/DC	230 V AC	24 V AC/DC	230 V AC	24 V AC/DC	230 V AC	24 V AC/DC
4 Nm^{1.)}	-	-	-	-	E021	E020	E023
5 Nm	E012	E016	E001	E002	-	-	-
10 Nm	E013	E017	E003	E004	E027	E029	E028
20 Nm	E014	E018	E005	E006	E025	E024	E026
40 Nm	E015	-	E007	E008	-	-	-

HK-P/HK-U with pneumatic servo cylinder

pneumatic servo cylinder	Damper size WxH (mm)	
	P001	201 x 100 to 797 x 565
P002	894 x 201 to 1998 x 1998	800 x 200 to 2000 x 2000

The actuators E001 - E008 and E012 - E015 can be fitted with a limit switch "OPEN" or "CLOSED" or with two limit switches "CLOSED" and "OPEN".

The actuators with spring return can be fitted with two limit

switches "CLOSED" and "OPEN".

When a pneumatic servo cylinder is mounted in factory, a bearing block is mounted on the multi-leaf damper as well by default.

^{1.)} spring return actuator

Selection

	B																			
	201	225	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1588	1781	1998
100							X	X	X	X	X	X	X	X	X	X	X	X	X	X
201																				
225																				
252																				
318																				
357																				
400																				
449																				
503																				
565																				
634																				
711																				
797																				
894																				
1003																				
1125																				
1262																				
1416																				
1588																				
1781																				
1998																				

X = not available

The electric actuator or pneumatic cylinder can also be installed at a later stage.

When a thrust actuator or servo cylinder is mounted on site, the shaft design (W02/W03) must be ordered, in order to ensure better absorption of the thrust.

Multi-leaf damper HK

Selection

		B													
		200	250	300	400	500	600	800	1000	1200	1400	1600	1800	2000	
H	200														
	250				4 Nm										
	300														
	400														
	500														
	600														
	800								5 Nm						
	1000														
	1200				10 Nm										
	1400														
	1600														
	1800													20 Nm	
	2000														

Model

Electric actuators

	2/3-point							
	E001	E003	E005	E007	E002	E004	E006	E008
Torque min. (Nm)	5	10	20	40	5	10	20	40
Operating voltage	24 V AC / 24 V DC				230 V AC			
Frequency	50 / 60 Hz				50 / 60 Hz			
Dimensioning in VA	2	3,5	4	6	4	5,5	6	9
Protection class	III				II			
Protection type	IP54				IP54			
Optional auxiliary switch	-	2			-	2		
Ambient temperature	-30° C..... +50° C							
Max. sound power level in dB(A)	35	35	45	45	35	35	45	45

	0-10V						
	E012	E013	E014	E015	E016	E017	E018
Torque min. (Nm)	5	10	20	40	5	10	20
Operating voltage	24 V AC / 24 V DC				230 V AC		
Frequency	50 / 60 Hz				50 / 60 Hz		
Dimensioning in VA	2	4	4	6,5	4	6,5	6
Protection class	III				II		
Protection type	IP54				IP54		
Optional auxiliary switch	2				2		
Ambient temperature	-30° C..... +50° C				-30° C..... +50° C		
Max. sound power level in dB(A)	35	35	45	45	35	35	45

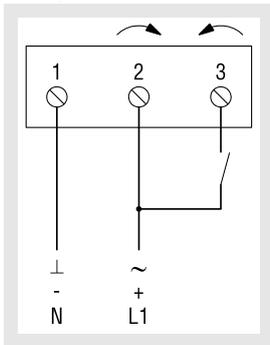
Multi-leaf damper HK

	Spring return "OPEN" and "CLOSED"						Spring return 0-10V		
	E021	E027	E025	E020	E029	E024	E023	E028	E026
Torque min. (Nm)	4	10	20	4	10	20	4	10	20
Operating voltage	24 V AC/DC			230 V AC			24 V AC/DC		
Frequency	50 / 60 Hz			50 / 60 Hz			50 / 60 Hz		
Dimensioning in VA	7	8,5	10	7	9,5	11	5	5,5	7
Protection class	III			II			III		
Protection type	IP54			IP54			IP54		
Optional auxiliary switch	-			-			2		
Ambient temperature	-30°C..... +50°C						-30°C..... +50°C		
Max. sound power level in dB(A)	50*	45*	45*	50*	45*	45*	30	40	40

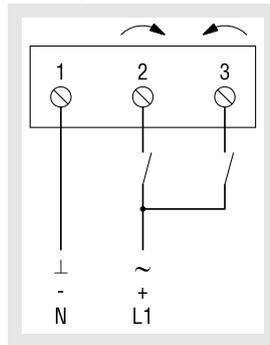
*Spring return actuator 62 dB (A)

Electric terminals 24 V AC/DC, 230 V AC

Two-point

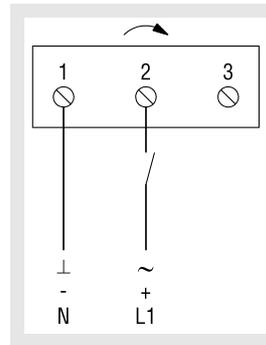


Three-point



Electric terminals 24 V AC/DC, 230 V AC

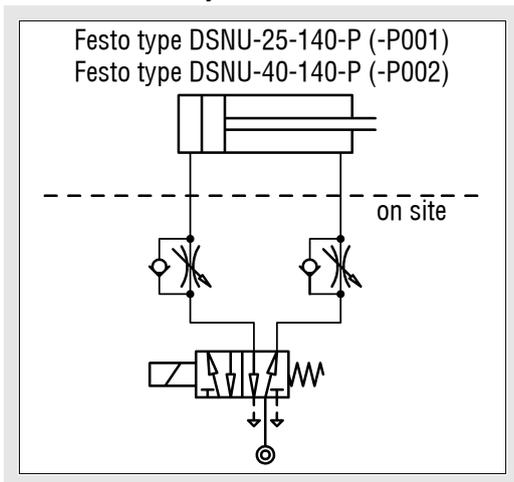
OPEN - CLOSED control



E020 and E021 actuators have OPEN - CLOSED control.
Three-point actuators on request

Connection diagram

Pneumatic servo cylinder



Legend

- Δp_t (Pa) = Pressure loss
- v_{stirn} (m/s) = Intake velocity, blower stream velocity, out-flow velocity, relative to $B \times H$
- α (°) = Blade position
- L_{WA} [dB(A)] = A-weighted sound power level
[$L_{WA} = L_{WA1} + KF$]
- L_{WA1} [dB(A)] = A-weighted sound power level, relative to 1 m²
- ρ (kg/m³) = Density
- KF (-) = Correction factor
- A_{stirn} (m²) = Face area
- H (mm) = Height
- B (mm) = Width
- V_{leck} (m³/h) = Leak air volume
- V_{leck} [l/s] = Leak air volume
- F (m²) = Leaf area

Multi-leaf damper HK

Order details

01	02	03	04	05	06	07	08
Type	Model	Width	Height	Material	Shaft design	Operating side	Actuator
Example							
HK	-U	-0400	-0201	-SV	-W01	-R	-E000

09	10	11	12	13
Actuator position	Damper position	Installation frame	Frame bores	External limit switches
-AU	-NA	-ER2	-RB1	-ESA

Example

HK-U-0400-0201-SV-W01-R-E000-AU-NA-ER2-RB1-ESA

Multi-leaf damper, rectangular design, not airtight | with sintered bearing | width 400 mm | height 201 mm | galvanised sheet steel | shaft design 50 mm | operating side on the right | without actuator, with loose locking device | fitted outside | no spring return actuator | with installation frame, with wall anchors | with frame bores on one side | with external limit switch, position "OPEN"

ORDER DETAILS

01 - Type

HK = Multi-leaf damper, rectangular design, not airtight

02 - Model

P = with plastic bearing
U = with sintered bearing
K = with brass bearing

03 - Width

0200 - 0201 - 0225 - 0250 - 0252 - 0300 - 0318 - 0357 - 0400 - 0449 - 0500 - 0503 - 0565 - 0600 - 0634 - 0711 - 0797 - 0800 - 0894 - 1000 - 1003 - 1125 - 1200 - 1262 - 1400 - 1416 - 1588 - 1600 - 1781 - 1800 - 1998 - 2000 in mm,
always four digits (-K model only 0201 - 0225 - 0252 - 0318 - 0357 - 0400 mm)

04 - Height

0200 - 0201 - 0225 - 0250 - 0252 - 0300 - 0318 - 0357 - 0400 - 0449 - 0500 - 0503 - 0565 - 0600 - 0634 - 0711 - 0797 - 0800 - 0894 - 1000 - 1003 - 1125 - 1200 - 1262 - 1400 - 1416 - 1588 - 1600 - 1781 - 1800 - 1998 - 2000 in mm,
always four digits (-K model only 100 mm)

05 - Material

SV = Galvanised sheet steel (standard)
V2 = Stainless steel V2A, 1.4301 (not for HK-K)

06 - Shaft design

W01 = Length 50 mm (standard)
W02 = Length 100 mm (not for HK-K)
W03 = Length 150 mm (not for HK-K)

07 - Operating side

R = right (standard)
L = left

08 - Actuator

E000 = without actuator, with loose locking device (standard)
M001 = without actuator, with mounted locking device

Actuator, 2/3-point

E001 = 5 Nm, 24 V AC/DC
E002 = 5 Nm, 230 V AC
E003 = 10 Nm, 24 V AC/DC
E004 = 10 Nm, 230 V AC
E005 = 20 Nm, 24 V AC/DC
E006 = 20 Nm, 230 V AC
E007 = 40 Nm, 24 V AC/DC
E008 = 40 Nm, 230 V AC

Actuator with spring return, 2/3-point

E021 = 4 Nm, 24 V AC/DC
E020 = 4 Nm, 230 V AC
E027 = 10 Nm, 24 V AC/DC
E029 = 10 Nm, 230 V AC
E025 = 20 Nm, 24 V AC/DC
E024 = 20 Nm, 230 V AC

Multi-leaf damper HK

Actuator, 0-10 V (continuous)

E012 = 5 Nm, 24 V AC/DC

E016 = 5 Nm, 230 V AC

E013 = 10 Nm, 24 V AC/DC

E017 = 10 Nm, 230 V AC

E014 = 20 Nm, 24 V AC/DC

E018 = 20 Nm, 230 V AC

E015 = 40 Nm, 24 V AC/DC

Actuator with spring return, 0-10 V (continuous)

E023 = 4 Nm, 24 V AC/DC

E028 = 10 Nm, 24 V AC/DC

E026 = 20 Nm, 24 V AC/DC

Pneumatic servo cylinder (not for HK-K)

P001 = with pneumatic servo cylinder, 295 N

P002 = with pneumatic servo cylinder, 753 N

Further actuators and servo cylinders upon request!!!

09 - Actuator position

AU = fitted outside (standard)

Locking device/servo cylinder only outside possible!!!

10 - Damper position

NA = no spring return actuator (standard)

NO = currentless OPEN - normally open

NC = currentless CLOSED - normally closed

(only for drives with spring return)

11 - Installation frame

ER0 = Without installation frame (standard)

ER2 = with mounting frame and wall anchors

FG1 = with flat-steel counter frame

WG1 = with angular steel counter frame

12 - Frame bores

RBO = without frame bores (standard)

RB1 = with bores on one side

RB2 = with bores on both sides

Number of holes according to table!!!

13 - External limit switches

ES0 = without limit switch (standard)

ESA = one limit switch, position "OPEN"

ESZ = one limit switch, position "CLOSED"

ES2 = two limit switches

Please note!

Accessories and actuators must be ordered separately!!!

Multi-leaf damper HK

Specification texts

Multi-leaf damper, consisting of dimensionally stable profiled frame made of 1.5 mm galvanised sheet steel, frame depth 180 mm with profiled connection frame (4-screw duct connection), with joint flow-favouring hollow-body blades adjustable in opposite directions made of profiled galvanised sheet steel. Suitable for pressures up to 1000 Pa.

The blades are adjusted via external, actuating lever, actuator/servo cylinder.

Housing leakage according to DIN EN 1751, class B, at a duct pressure of up to 1000 Pa.

- with plastic bearing, temperature-resistant up to +80°C. Frame depth 180 mm. Manually adjustable. Locking device (hand lever and console) supplied loose.
Product: SCHAKO **type HK-P**
- With sintered bearing, temperature resistant up to +100°C. Frame depth 180 mm. Manually adjustable. Locking device (hand lever and console) supplied loose.
Product: SCHAKO **type HK-U**
- with brass bearing, temperature-resistant up to +120°C. Frame depth 180 mm. Damper leaf made of galvanised sheet steel (only H = 100 combined with W = 201-400 available). Manually adjustable. Locking device (hand lever and console) mounted ex works.
Product: SCHAKO **type HK-K**
- Frame and hollow-body blades made of stainless steel 1.4301 (V2A) (HK-K not possible).
- with frame bore
 - on one side (RB1)
 - on two sides (-RB2)

Accessories:

- Add-on parts
 - Installation frame (-ER2), 35/35/4 with riveted wall anchors
 - Flat-steel counter frame (-FG1), 33/5
 - Angular steel counter frame (-WG1), 30/30/3
 - Locking device (-M001, not for HK-K), console and hand lever mounted ex works to the multi-leaf damper.
 - Shaft design (W01= 50 mm, W02= 100 mm, W03= 150 mm)
- with electric actuator
 - 5 Nm, 24 V AC/DC (-E001) / 230 V AC (-E002)
 - 10 Nm, 24 V AC/DC (-E003) / 230 V AC (-E004)
 - 20 Nm, 24 V AC/DC (-E005) / 230 V AC (-E006)
 - 40 Nm, 24 V AC/DC (-E015) / 230 V AC (-E008)
 - 5 Nm, 0 - 10 V DC, 24 V AC/DC (-E012) / 230 V AC (-E016)
 - 10 Nm, 0 - 10 V DC, 24 V AC/DC (-E013) / 230 V AC (-E017)
 - 20 Nm, 0 - 10 V DC, 24 V AC/DC (-E014) / 230 V AC (-E018)
 - Spring return actuator 4 Nm, 24 V AC/DC (-E021, -E023)
 - Spring return actuator 10 Nm, 24 V AC/DC (-E027, -E028)
 - Spring return actuator 20 Nm, 24 V AC/DC (-E025, -E026)
 - Spring return actuator 4 Nm, 230 V AC (-E020)
 - Spring return actuator 10 Nm, 230 V AC (-E029)
 - Spring return actuator 20 Nm, 230 V AC (-E024)
- limit switch
 - "CLOSED" (-ESZ)
 - "OPEN" (-ESA)
 - with 2 limit switches, "CLOSED" and "OPEN" (-ES2)
- with pneumatic servo cylinder (not for HK-K)
 - Piston force 295 N (supply) / 247 N (return), 6 bar, double-acting (-P001)
 - Piston force 753 N (supply) / 633 N (return), 6 bar, double-acting (-P002)
 - including bearing block