

Smoke control damper VD370

APPLICATION

VD370 dampers are dampers intended for use in duct smoke extraction installations. They allow for following the fire scenario and correct operation of the smoke extraction installation. These are normally closed dampers. They can also act as cut-off dampers for household ventilation and operate as normally open dampers. **VD370** dampers feature fire resistance of two hours and remote control function after fire has been detected by the fire signalling system (EI 120 S AA). Installation details are provided in the Technical and Operational Documentation of the damper.



CONSTRUCTION

VD370 smoke control dampers are built of two-part rectangular steel body, one-surface cut-off partition and a drive system. The damper body is made of galvanised steel plate.

On the internal surface of the insulation insert, around the closed cut-off partition, there are expanding seal bars. Bearing profiles made of galvanised steel plate are fixed to the inner surface of the casing, limiting the movement of the rotating cut-off partition. The profiles are provided with silicate tape to ensure damper tightness in the ambient conditions.

The drive system comprises BLE or BE type actuator by BELIMO. The actuator is placed in an insulated casing with screwed-on cover to allow for maintenance access. Between the actuator casing and the damper body, there is a calcium-silicate board which facilitates insulation after the damper is connected to the installation. The drive from the actuator to the damper is transferred via live axle and flexible connector.

STANDARD CROSS-SECTIONS OF VD370 DAMPERS MANUFACTURED CAN BE ANY COMBINATION OF THE FOLLOWING B AND H DIMENSIONS ON CONDITION THAT THE NOMINAL AREA OF THE DAMPER CROSS-SECTION IS SMALLER OR EQUAL TO 1 M²:

B (width) = 150, 200, 250, 300, 350, 400, 450, 500, 560, 630, 750, 800, 900, 1000, 1100, 1200, 1250, 1300, 1400, 1500 mm.

H (height) = 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000 mm

It is possible to manufacture untypical dampers with intermediate sizes of dimensions **B** or **H**. Dampers with intermediate dimensions are subject to an extra charge.

The length **VD370** dampers amounts to 370 mm regardless of their size. In the event where the width of the damper (dimension **B**) or the height of the damper (dimension **H**) exceed permissible dimensions for a single damper, the damper with the required dimension is made as a battery of dampers analogical to **V370** dampers.

BE and BLE Belimo actuators feature installed micro-switches that signal drive shaft rotation by 5° and 85° (position signalling), hence it is not required to install additional micro-switches informing about position of the partition.

VD370 dampers can be furnished with the following actuators: BLE24; BLE24-ST; BLE230; BE24-12; BE24-12-ST and BE230-12.

BLE Belimo actuators with all variations are applied in dampers with cross-sections < 0.2 m, while BE actuators with all variations are applied in dampers with the cross-section of 0.2 m.

BLE24-ST and BE24-ST actuators are adjusted for connection via BKNE230-24 control and power module.

The damper normally remains closed. Moving the damper from closed to open position, and the other way round, from open to closed position, occurs after connecting relevant drive to actuator. VD370 dampers do not feature tripping devices, and actuators applied in them do not have a return spring (power shortage does not cause movement of the damper's cut-off partition).

The actuators applied are secured against overload, and thus power is supplied to them also during downtime at limit positions. All actuator types are furnished with a crank that allows for manual tuning of damper partition's position to check its operation.

All actuators feature in-built limit switches that signal the position of damper's partition.

Position of the partition can also be read from the mechanical position indicator placed on the actuator.

ELECTRICAL CONNECTION OF ACTUATORS

Power and control cables, led out from actuator casing, must be connected according to the relevant diagram and secured so that they ensure power supply to the actuator for the time not shorter than 2 minutes from receiving the signal from the fire sensor via fire-resistant conductors.

Before executing the connection, check for conformity of voltage supplied with the requirements of the actuator installed at the damper. Power supply must be connected via the automatic control sensors and via maintenance switches.

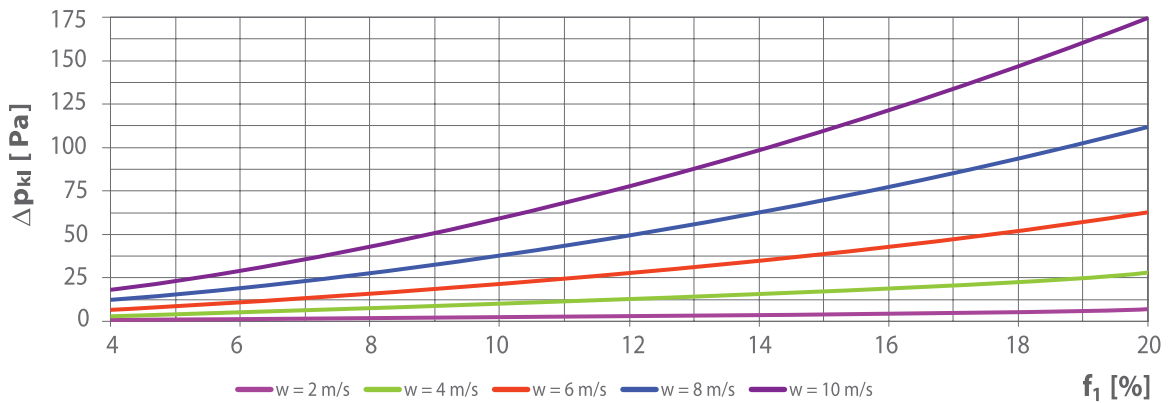
BE24-ST and BLE24-ST actuators are opened and closed via BKNE230-24 power and communication unit. The actuators are furnished with pin plugs on the power and control cable, which facilitate their connection with BKNE230-24 unit (three-pin plug for power and six-pin plug for control).

Details of electrical connections and the parameters of actuators applied are provided in the Technical and Operational Documentation for VD370 damper.

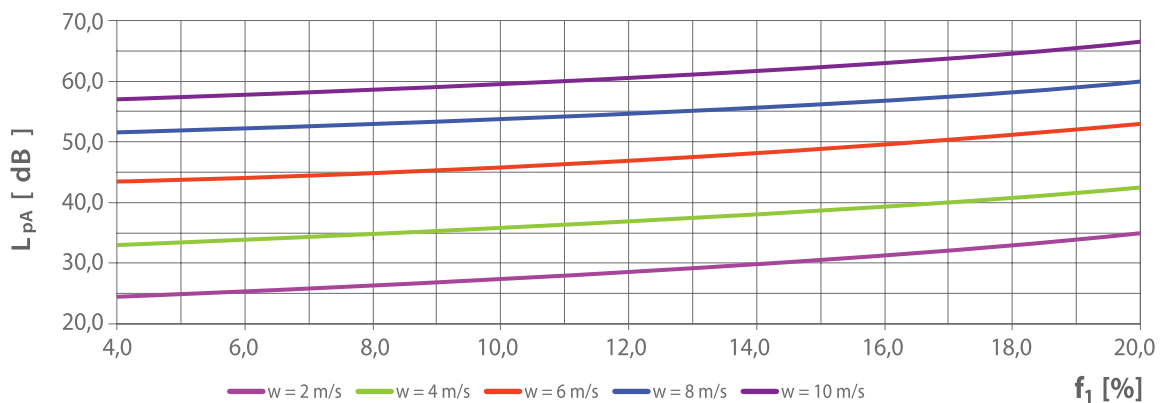
EFFECTIVE AREA AND f_1 COEFFICIENT VALUE

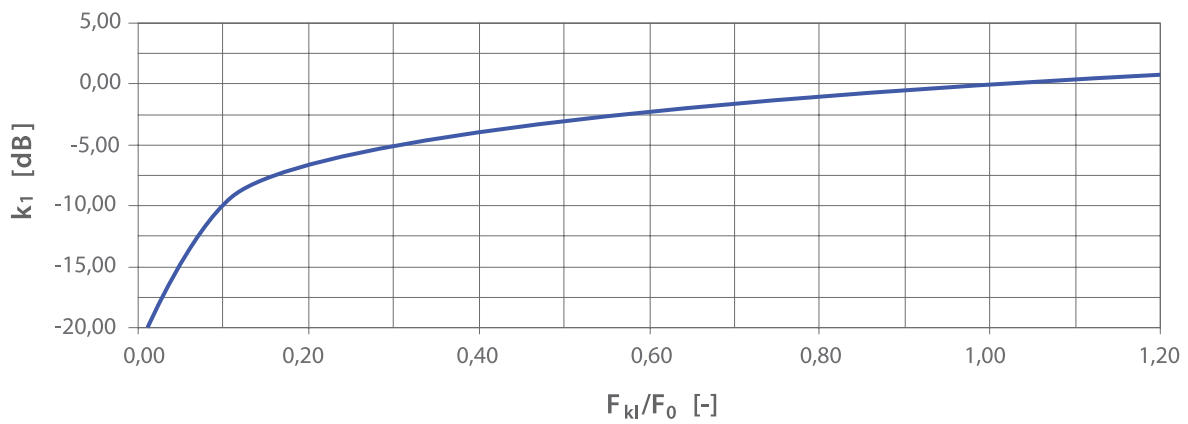
VD370 TYPE FIRE DAMPERS												
f_1	20,0	16,0	13,3	11,4	10,0	8,9	8,0	6,7	5,7	5,0	4,4	4,0
Dimensions	Height											
Width	200	250	300	350	400	450	500	600	700	800	900	1000
150	0,0156	0,0216	0,0276	0,0336	0,0396	0,0456	0,0516	0,0636	0,0756	0,0876	0,0996	0,1116
200	0,0221	0,0306	0,0391	0,0476	0,0561	0,0646	0,0731	0,0901	0,1071	0,1241	0,1411	0,1581
250	0,0286	0,0396	0,0506	0,0616	0,0726	0,0836	0,0946	0,1166	0,1386	0,1606	0,1826	0,2046
300	0,0351	0,0486	0,0621	0,0756	0,0891	0,1026	0,1161	0,1431	0,1701	0,1971	0,2241	0,2511
350	0,0416	0,0576	0,0736	0,0896	0,1056	0,1216	0,1376	0,1696	0,2016	0,2336	0,2656	0,2976
400	0,0481	0,0666	0,0851	0,1036	0,1221	0,1406	0,1591	0,1961	0,2331	0,2701	0,3071	0,3441
450	0,0546	0,0756	0,0966	0,1176	0,1386	0,1596	0,1806	0,2226	0,2646	0,3066	0,3486	0,3906
500	0,0611	0,0846	0,1081	0,1316	0,1551	0,1786	0,2021	0,2491	0,2961	0,3431	0,3901	0,4371
560	0,0689	0,0954	0,1219	0,1484	0,1749	0,2014	0,2279	0,2809	0,3339	0,3869	0,4399	0,4929
630	0,0780	0,1080	0,1380	0,1680	0,1980	0,2280	0,2580	0,3180	0,3780	0,4380	0,4980	0,5580
750	0,0936	0,1296	0,1656	0,2016	0,2376	0,2736	0,3096	0,3816	0,4536	0,5256	0,5976	0,6696
800	0,1001	0,1386	0,1771	0,2156	0,2541	0,2926	0,3311	0,4081	0,4851	0,5621	0,6391	0,7161
900	0,1131	0,1566	0,2001	0,2436	0,2871	0,3306	0,3741	0,4611	0,5481	0,6351	0,7221	0,8091
1000	0,1261	0,1746	0,2231	0,2716	0,3201	0,3686	0,4171	0,5141	0,6111	0,7081	0,8051	0,9021
1100	0,1391	0,1926	0,2461	0,2996	0,3531	0,4066	0,4601	0,5671	0,6741	0,7811	0,8881	X
1200	0,1521	0,2106	0,2691	0,3276	0,3861	0,4446	0,5031	0,6201	0,7371	0,8541	X	X
1250	0,1586	0,2196	0,2806	0,3416	0,4026	0,4636	0,5246	0,6466	0,7686	0,8541	X	X
1300	0,1651	0,2286	0,2921	0,3556	0,4191	0,4826	0,5461	0,6731	0,8001	X	X	X
1400	0,1781	0,2466	0,3151	0,3836	0,4521	0,5206	0,5891	0,7261	0,8631	X	X	X
1500	0,1911	0,2646	0,3381	0,4116	0,4851	0,5586	0,6321	0,7791	X	X	X	X

FLOW RESISTANCE VALUES DEPENDING ON f_1 AND W



L_{pA} SURFACE ACOUSTIC PRESSURE DEPENDING ON f_1 AND W





$$L_{wA} = L_{pA} + k_1 \quad [\text{dB(A)}]$$

where:

k₁ - correction in dB determined from the diagram depending on the F_{kl}/F₀ ratio

F_{kl} - damper cross-section area, m²

F₀ - reference area equal to 1 m²

APPROVALS

SMOKE CONTROL DAMPER VD370

- Technical Approval AT-15-8023/2009
- Certificate of Conformance No. ITB-1809/W
- Hygienic Attestation HK/B/0232/02/2009
 - Declaration of Conformity

EXEMPLARY ORDER

