Dampers of **DA** series are mounted in air ducts of either rectangular or circular cross-section to control volumetric flow rate in branches of air conditioning ductworks.

Technical description - General

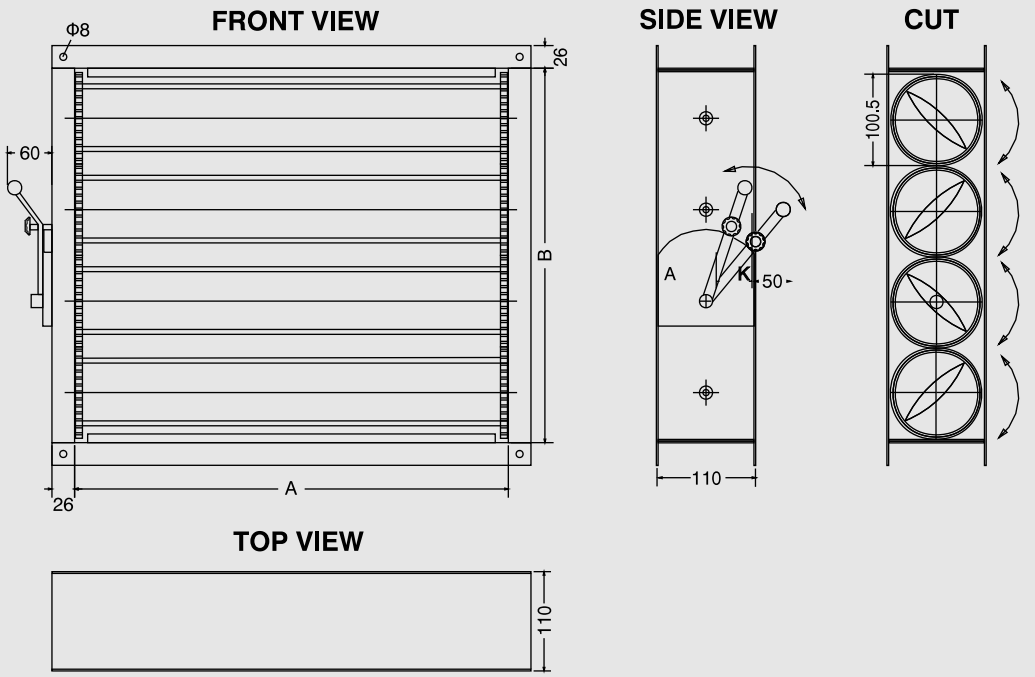
DA series dampers can be manufactured at any size. Galvanized iron plates of 1.5 mm thick and aluminum is used in their construction providing long life. Their blades have aerodynamic shape, reducing resistance and swirl of the passing air. Plastic gears located at the two sides of the blades move the blades. High accuracy in their construction guarantees steady and reliable operation, without vibrations. The DA series dampers may be driven using electric servomotor, requiring no further modifications. Their technical characteristics are : Flow rate : ... [m^3/h], Pressure drop : ... [Pa], Noise level : ... [dBA].

DA series dampers are used in cases where manual or automatic (electric) regulation of volumetric flow rate is required, usually in ventilation air ducts or air conditioning installations. For example they can be mounted on ducts in order to balance airflow, or they can work in combination with analog sensors for volumetric flow rate for ventilated air regulation. More than one damper combinations may be used in order to keep steady volumetric flow rate in an air conditioning system.

The figure below shows the DA series dampers dimensions. Their nominal width A- and height B- are necessary to define their operating data.

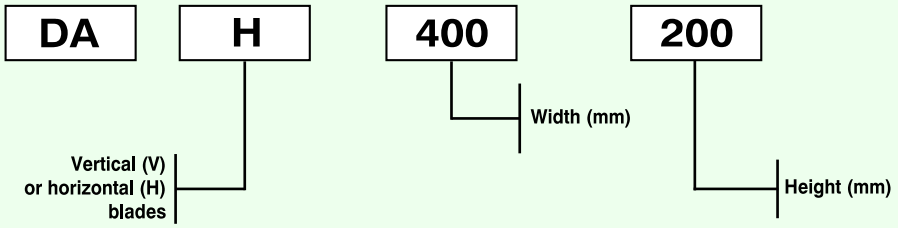
Selection of DA dampers

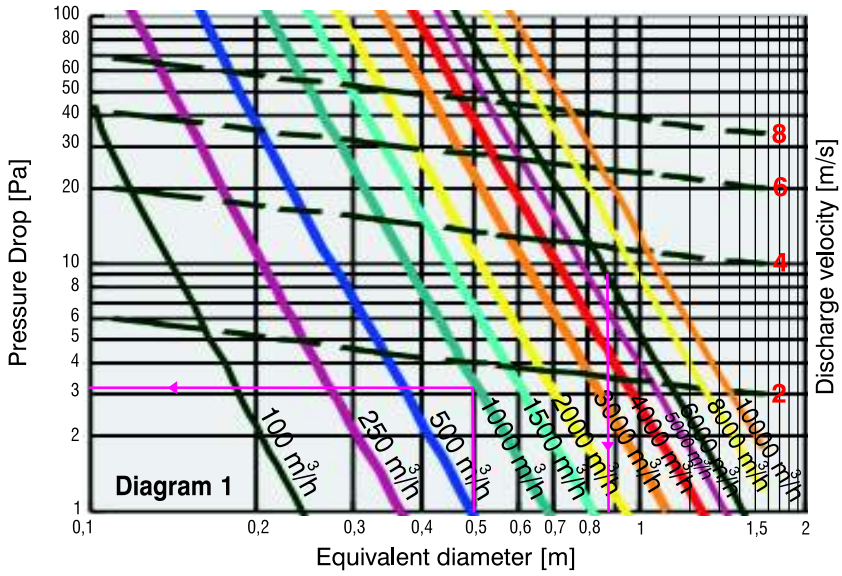
The selection parameters of DA series dampers are pressure drop, air velocity at the damper and noise level. **The following diagrams show operating data of dampers at full open position. To calculate the damper characteristics at different opening angles one may use the data from Table 1.**

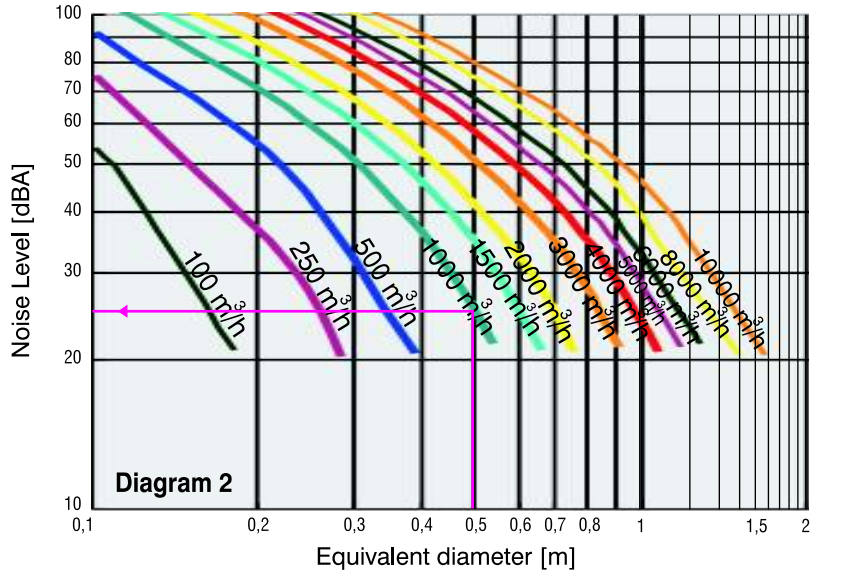


ORDER GUIDELINES

A series of numbers and letters is used to order DA series dampers. Their characteristics are defined according to the code below. The order example corresponds to a DA series damper of nominal dimensions 400X200 mm, of 400mm horizontal blades and servomotor placed on the 200mm dimension.







Selection example

What is the pressure requirement for a DA series damper of nominal dimensions 50X40 cm, used for a flow rate of 1000m³/h fresh air? What is the resulting noise level?

The equivalent diameter of the 50x40 cm DA series damper is found from the equivalent diameter selection table to be 50 cm. According to diagram 1, for 1000m³/h the pressure drop is 3,1 Pa or approximately 0,31 mmWG (mm of water gauge). This volumetric flow rate corresponds to a mean air velocity of about 1,5 m/s at the damper. The resulting noise may be found from diagram 2 to be around 24 dBA.

What are the necessary dimensions of a DA series damper in a ventilating system, in order to cover a need of 5000 m³/h of fresh air?

Diagram 1 shows that for an airflow of 5000 m³/h the pressure requirement lies between 100 and 4 Pa, for equivalent diameters of 0,45 and 1 m, respectively.
By considering that a pressure drop of 10 Pa is adequate to cover the specific need, then, following diagram 1, the required equivalent diameter is 0,79 m. If due to constructional reasons the grille height is kept to 70 cm, then according to the table of equivalent diameter selection the damper's width is 70 cm. For an operating angle of 30° the required pressure drop is 10x3,8 = 38 Pa, according to Table 1. If the pressure drop remained the same (10 Pa), the air flow rate should have been reduced to 2500 m³/h.

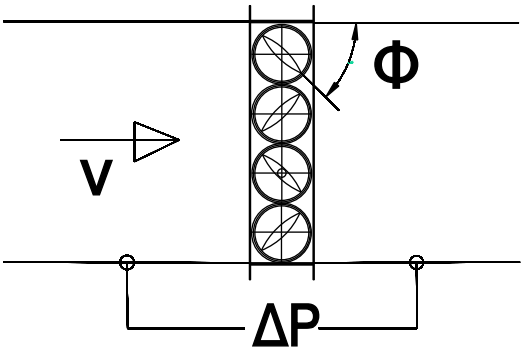


TABLE 1

Blade's inclination in (°) from horizontal	Reduction of free area	Mean excess ratio of pressure drop	Volumetric flow rate reduction for the same pressure drop	Mean noise increase for the same flowrate
30°	50%	x 3,8	49%	+7,8 dBA
45°	70%	x 8,7	66%	+15,9 dBA
60°	86%	x 15,8	75%	+24,6 dBA

EQUIVALENT DIAMETER SELECTION TABLE B[cm]

A(cm)	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
10	11	14	16	18	20	21	23	24	25	26	28	29	30	31	32	33	34	35	36	37	37	38	39	40	41	41	42	43	44
15	14	17	20	22	24	26	28	29	31	32	34	35	37	38	39	40	41	43	44	45	46	47	48	49	50	51	52	53	54
20	16	20	23	25	28	30	32	34	36	37	39	41	42	44	45	47	48	49	50	52	53	54	55	56	58	59	60	61	62
25	18	22	25	28	31	33	36	38	40	42	44	45	47	49	50	52	54	55	56	58	59	61	62	63	64	66	67	68	69
30	20	24	28	31	34	37	39	41	44	46	48	50	52	54	55	57	59	60	62	63	65	66	68	69	70	72	73	74	76
35	21	26	30	33	37	40	42	45	47	50	52	54	56	58	60	62	63	65	67	68	70	72	73	75	76	78	79	80	82
40	23	28	32	36	39	42	45	48	50	53	55	58	60	62	64	66	68	70	71	73	75	77	78	80	81	83	84	86	87
45	24	29	34	38	41	45	48	51	54	56	59	61	63	66	68	70	72	74	76	78	79	81	83	85	86	88	90	91	93
50	25	31	36	40	44	47	50	54	56	59	62	64	67	69	71	74	76	78	80	82	84	86	87	89	91	93	94	96	98
55	26	32	37	42	46	50	53	56	59	62	65	67	70	72	75	77	79	82	84	86	88	90	92	94	95	97	99	101	103
60	28	34	39	44	48	52	55	59	62	65	68	70	73	76	78	81	83	85	87	90	92	94	96	98	100	102	103	105	107
65	29	35	41	45	50	54	58	61	64	67	70	73	76	79	81	84	86	89	91	93	95	98	100	102	104	106	108	110	111
70	30	37	42	47	52	56	60	63	67	70	73	76	79	82	84	87	90	92	94	97	99	101	103	106	108	110	112	114	116
75	31	38	44	49	54	58	62	66	69	72	76	79	82	85	87	90	93	95	98	100	103	105	107	109	111	114	116	118	120
80	32	39	45	50	55	60	64	68	71	75	78	81	84	87	90	93	96	98	101	103	106	108	111	113	115	117	119	122	124
85	33	40	47	52	57	62	66	70	74	77	81	84	87	90	93	96	99	101	104	107	109	112	114	116	119	121	123	125	127
90	34	41	48	54	59	63	68	72	76	79	83	86	90	93	96	99	102	104	107	110	112	115	117	120	122	124	127	129	131
95	35	43	49	55	60	65	70	74	78	82	85	89	92	95	98	101	104	107	110	113	115	118	121	123	125	128	130	132	135
100	36	44	50	56	62	67	71	76	80	84	87	91	94	98	101	104	107	110	113	116	118	121	124	126	129	131	134	136	138