

# Damper - circular

# DCT



## Description

DCT is a circular control and shut-off damper.

The damper can be used for pressure or volume flow regulation with external control options (open, closed, min., max.) depending on the form of control/regulation.

DCT is available with a spring return motor. The damper can be controlled by an FRU (as a VRU) or a PR regulator, by a BMS system or Regula Combi (with modulating signal) or as a slave for another damper (mechanical slave operation with the same damper position).

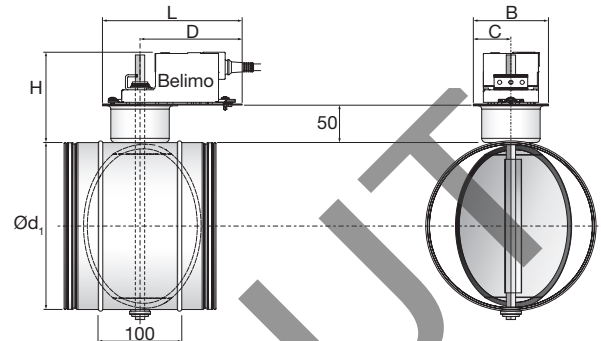
When ordering, it is important to specify the form of control, and whether the damper motor must be programmable. All DCT dampers are supplied with Belimo motors.

## Order code

Product	DCT	a	bbb	c	d
Type					
DCT					
Motor type					
0 = Standard					
3 = Spring return					
Dimension					
Ød <sub>1</sub> 100 - 630					
Form of control					
R: Regulator-controlled					
S: Parallel signal (modulating)					
Programming					
U: Without programming					
P: Programmable					

Example: DCT - 0 - 315 - R - U

## Dimensions



Type	B mm	C mm	D mm	H mm	L mm
DCT-0-RU/SU	80	40	140	112	165
DCT-0-RP/SP	80	40	162	112	187
DCT-3	96	48	204	130,5	236

## Motor overview

Type 0	Ød <sub>1</sub> 100-315 Motor 0 (Standard)	Ød <sub>1</sub> 400-630 Motor 0 (Standard)
DCT-RU	LM24A-V-F	NM24A-V-F
DCT-RP	LM24A-MF-F	NM24A-MF-F
DCT-SU	LM24A-SR-F	NM24A-SR-F
DCT-SP	LM24A-MF-F	NM24A-MF-F

Type 3	Ød <sub>1</sub> 100-315 Motor 3 (Spring-return)	Ød <sub>1</sub> 400-630 Motor 3 (Spring-return)
DCT-RU	LF24A-MFT	NF24A-MF
DCT-RP	LF24A-MFT	NF24A-MF
DCT-SU	LF24-SR	NF24A-SR
DCT-SP	LF24A-MFT	NNF24-MF

**RU** Used only with PR ( and FRU) and is preset to a VAV input signal: 6 ± V.

**RP** Has a programmable motor, is used together with PR and is preprogrammed for a VAV input signal: 6 ± V. Has modulating output signal indicating damper position for mechanical control of a slave damper.

**SU** Has a motor, which is controlled by modulating input signal (2-10 V). Also has a modulating output signal indicating damper position.

**SP** Has a programmable motor, which can be controlled by optional input signal (Standard modulating). Also has a modulating output signal indicating damper position for mechanical control of a slave damper.

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## Technical data

### Pressure drop diagram and sound data for dimensioning.

The solid curves indicate the total pressure drop  $\Delta p_t$  over the damper as a function of the volume flow  $q$  and the blade angle  $\alpha$ .

The broken curves indicate the A-weighted sound effect level  $L_{WA}$ , in dB to the duct.

#### Example:

Dimension:  $\varnothing 100$   
Volume flow: 60 l/s  
Pressure drop: 100 Pa

#### The following can be obtained from the diagram:

Blade angle  $\alpha$ :  $32^\circ$   
Sound effect level: 63 db(A)

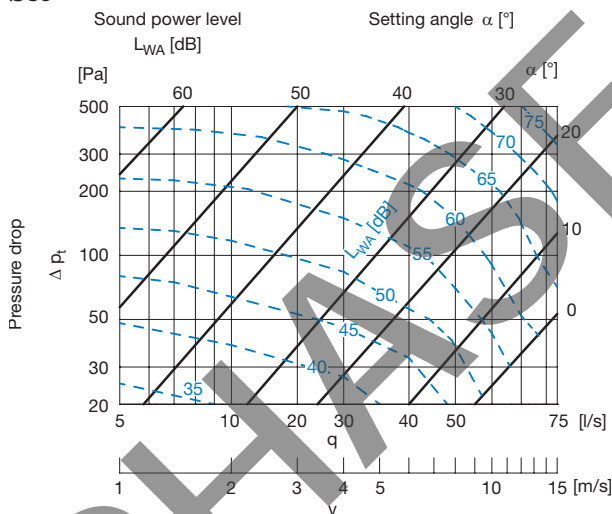
### Measuring method for sound:

Sound data has been measured by the Swedish National Testing and Research Institute (SP) with reference to ISO 5135 and EN/ISO 3741.

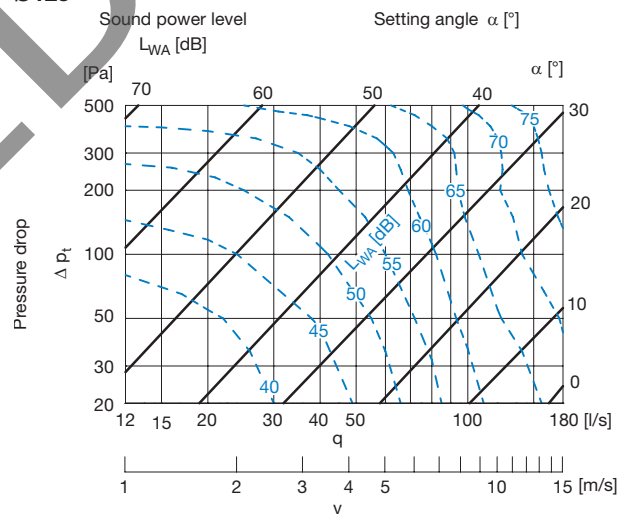
#### Blade angle $\alpha$ :

$0^\circ$  = Open damper.  
 $90^\circ$  = Closed damper.

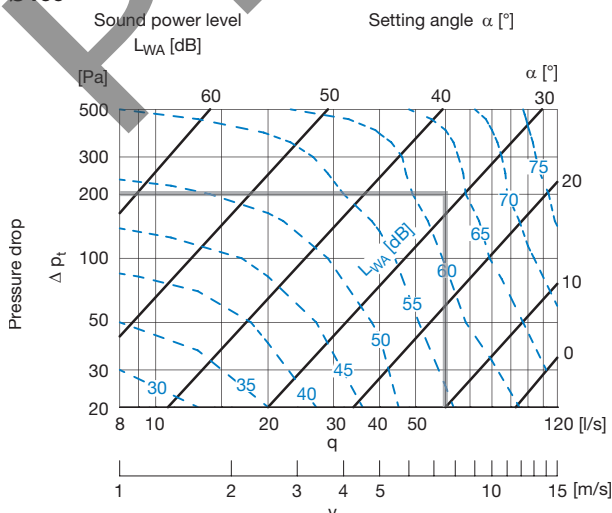
Ø80



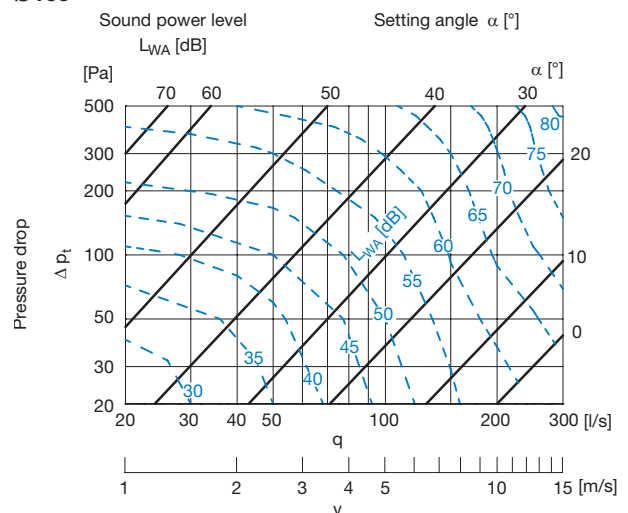
Ø125



Ø100



Ø160

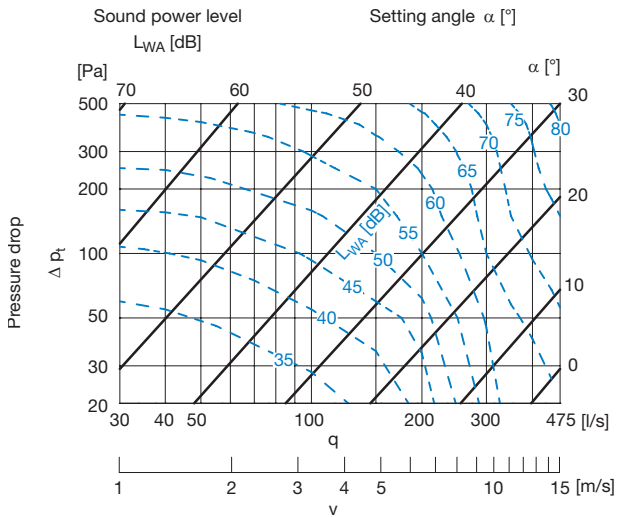


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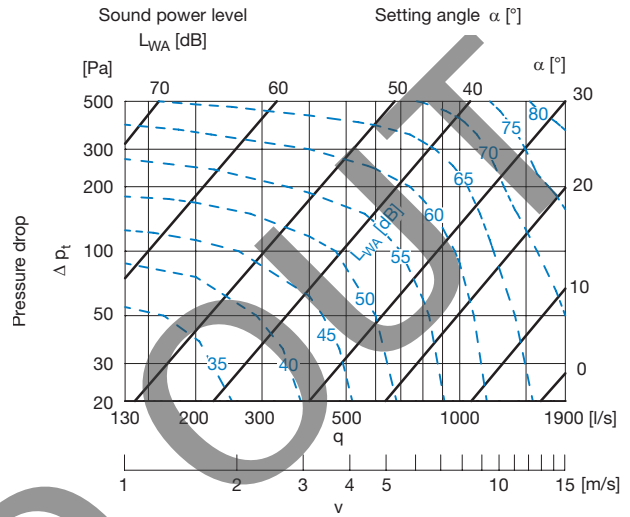
DCT

## Technical data

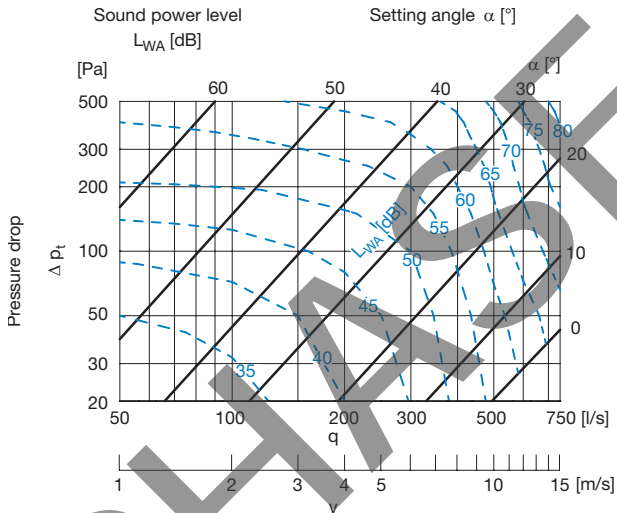
Ø200



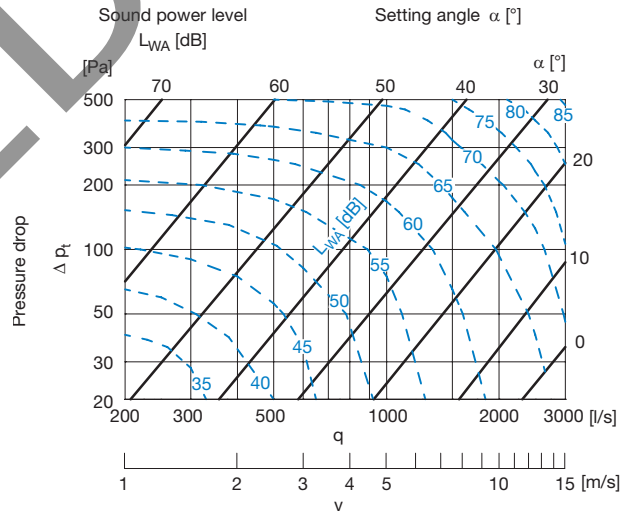
Ø400



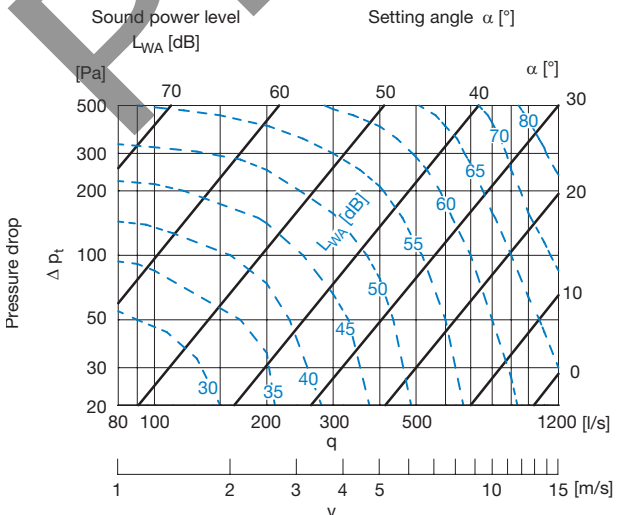
Ø250



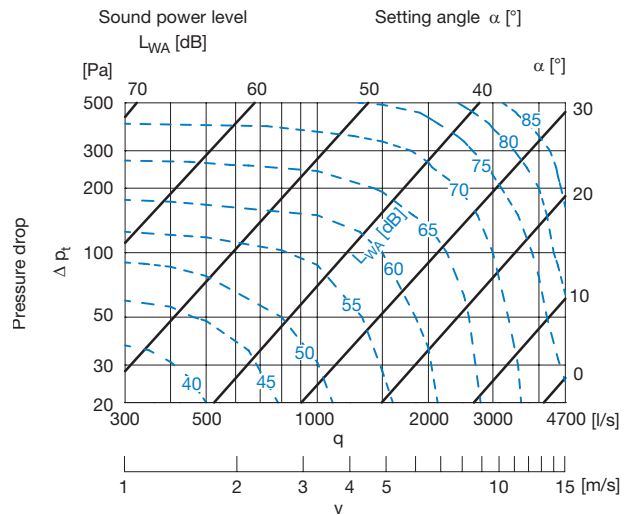
Ø500



Ø315



Ø630



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## Technical data

### Sound data

The following pages give sound effect levels for ducts (flow noise) with reference to ISO 5135 as a function of volume flow and pressure difference. The necessary minimum prepressure difference is 20 Pa for all sizes, equivalent to the pressure loss over DCT at nominal volume flow and with a fully open damper.

dim Ød	Pressure drop [Pa]	Velocity app. 1 [m/s]								Velocity app. 3 [m/s]								Velocity app. 6 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]								Centre frequency [Hz]							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
100		Flow 8 [l/s] / 29 [m³/h]								Flow 25 [l/s] / 90 [m³/h]								Flow 50 [l/s] / 180 [m³/h]							
	500	60	60	59	52	50	44	44	44	67	64	64	57	54	48	48	48	72	69	69	62	59	52	52	52
	200	53	51	53	43	42	35	32	32	59	58	58	50	48	40	37	37	66	65	64	57	54	45	42	42
	100	51	46	44	38	35	28	21	20	58	55	53	46	41	34	26	24	65	64	62	54	48	40	31	29
	50	48	42	38	33	26	19	16	14	55	53	48	42	35	26	22	18	64	63	60	53	44	33	28	22
	20	43	35	30	23	17	9	7	6	50	49	42	37	28	17	15	14	62	61	57	51	41	27	25	15
125		Flow 12 [l/s] / 43 [m³/h]								Flow 40 [l/s] / 144 [m³/h]								Flow 75 [l/s] / 270 [m³/h]							
	500	66	63	61	55	52	46	47	44	71	68	65	59	56	50	50	47	76	73	70	63	60	53	53	50
	200	59	53	49	44	38	34	33	32	65	62	57	51	46	41	38	38	72	71	65	59	53	47	43	43
	100	58	49	43	40	31	28	22	22	64	59	53	47	39	34	29	27	71	70	63	55	47	40	35	32
	50	57	42	41	31	29	20	17	15	63	54	50	41	36	27	25	20	70	68	60	51	43	34	32	24
	20	56	32	39	29	27	11	15	11	62	48	48	34	34	20	22	15	68	65	56	47	39	29	28	17
160		Flow 20 [l/s] / 72 [m³/h]								Flow 60 [l/s] / 216 [m³/h]								Flow 120 [l/s] / 432 [m³/h]							
	500	62	63	61	56	52	51	50	49	68	67	64	59	55	53	52	51	73	71	68	62	59	55	54	53
	200	52	52	51	44	43	38	37	36	61	58	56	50	48	42	40	40	71	65	62	56	53	47	44	44
	100	47	43	39	37	32	27	27	25	59	54	50	45	40	35	33	31	70	64	60	53	48	42	39	38
	50	42	36	33	28	25	20	17	16	54	50	46	37	33	29	25	25	69	63	58	48	42	37	32	32
	20	37	30	30	26	19	16	11	10	49	46	43	35	27	24	19	18	68	61	55	44	36	32	27	23
200		Flow 30 [l/s] / 108 [m³/h]								Flow 100 [l/s] / 360 [m³/h]								Flow 200 [l/s] / 720 [m³/h]							
	500	65	60	56	52	49	47	44	42	70	64	61	55	52	52	55	55	75	69	65	59	55	55	59	59
	200	55	52	51	43	40	37	38	38	62	57	55	47	44	42	42	42	71	65	61	53	50	48	47	47
	100	46	43	41	34	32	29	29	29	57	52	48	41	39	36	34	34	69	64	58	50	47	44	42	42
	50	40	38	33	30	28	27	23	22	51	45	41	36	32	32	28	28	63	56	51	44	39	39	34	34
	20	34	31	26	25	25	23	18	16	44	37	33	29	27	25	21	19	56	47	43	36	29	27	24	22
250		Flow 50 [l/s] / 180 [m³/h]								Flow 150 [l/s] / 540 [m³/h]								Flow 300 [l/s] / 1080 [m³/h]							
	500	67	65	57	50	47	52	51	50	69	66	59	53	50	54	53	52	71	67	61	56	53	56	55	54
	200	55	54	49	43	42	38	42	42	59	57	52	46	44	41	44	44	63	60	55	49	46	44	46	46
	100	52	48	40	37	34	33	31	28	56	52	45	41	38	36	34	31	62	57	51	46	43	40	38	35
	50	44	41	35	32	29	24	22	20	52	48	40	38	34	30	28	24	61	56	47	45	40	38	33	28
	20	33	35	29	29	25	15	12	10	47	44	37	35	31	25	22	17	59	54	46	42	38	36	30	24
315		Flow 80 [l/s] / 288 [m³/h]								Flow 250 [l/s] / 900 [m³/h]								Flow 500 [l/s] / 1800 [m³/h]							
	500	63	60	53	49	47	46	45	44	68	65	59	53	50	50	53	50	74	71	65	58	55	55	58	55
	200	50	44	42	38	38	33	37	34	60	55	50	45	43	40	43	40	70	65	58	52	49	48	49	46
	100	42	39	33	31	30	25	30	23	54	52	45	41	38	36	36	31	66	64	56	50	47	46	44	39
	50	34	34	30	26	22	21	19	15	49	49	43	38	34	32	30	24	64	63	55	49	45	42	40	32
	20	26	30	27	21	16	15	13	11	44	46	41	35	30	27	25	18	62	61	54	48	43	37	34	24
400		Flow 130 [l/s] / 468 [m³/h]								Flow 400 [l/s] / 1440 [m³/h]								Flow 800 [l/s] / 2880 [m³/h]							
	500	76	71	66	59	55	58	57	56	79	73	67	62	57	60	59	58	82	75	68	65	59	62	61	60
	200	61	58	50	44	43	44	45	41	67	62	56	50	48	48	48	45	74	68	62	56	53	52	52	49
	100	50	45	40	34	36	35	35	29	61	56	49	44	42	39	39	34	72	67	58	53	49	47	46	40
	50	42	37	31	29	28	27	25	20	57	52	44	39	37	35	34	26	71	66	56	50	47	44	44	33
	20	40	34	27	25	24	23	21	11	55	50	40	35	34	32	30	20	70	65	54	47	44	40	38	28
500		Flow 200 [l/s] / 720 [m³/h]								Flow 600 [l/s] / 2160 [m³/h]								Flow 1200 [l/s] / 4320 [m³/h]							
	500	82	76	69	63	62	61	60	59	84	77	70	64	63	62	61	60	85	78	71	65	64	63	62	61
	200	66	60	55	48	45	44	46	43	71	65	59	53	50	50	47	77	70	64	58	56	55	54	51	
	100	55	50	47	38	38	36	34	31	63	58	53	47	46	44	42	37	72	66	60	55	53	51	49	43
	50	46	40	36	33	32	29	29	25	59	52	47	44	42	38	38	31	71	63	57	54	51	46	46	37
	20	41	33	29	27	26	19	18	20	56	47	42	40	38	32	30	26	70	60	54	52	49	44	40	32
630		Flow 300 [l/s] / 1080 [m³/h]								Flow 900 [l/s] / 3240 [m³/h]								Flow 1800 [l/s] / 6480 [m³/h]							
	500	86	77	71	67	64	61	61	60	88	80	73	69	66	64	63	62	90	83	75	71	68	67	65	64
	200	76	70	63	60	56	53	52	48	78	72	65	62	59	55	55	49	80	74	67	64	60	57	57	50
	100	65	61	52	49	45	43	41	37	71	66	59	54	50	46	45	40	78	71	66	59	56	49	48	44
	50	54	49	45	39	34	36	30	26	66	58	53	48	43	40	39	30	77	68	62	57	51	45	47	36
	20	45	35	38	30	29	29	26	20	61	50	47	43	38	36	33	25	76	65	57	55	46	42	39	30