Technical Documentation

Swirl Diffusers Series DLA

Example:
Type DLA 9
with
rectangular box

LTG Aktiengesellschaft
D - 70435 Stuttgart, Grenzstraße 7
☎ +49 (711) 82 01-0, Fax +49 (711) 82 01-720
Internet: www.LTG-AG.de
E-Mail: info@LTG-AG.de

LTG Incorporated
105 Corporate Drive, Suite E
Spartanburg S.C., 29303 USA
☎ +1 (864) 599-6340, Fax +1 (864) 599-6344
Internet: www.LTG-INC.net
E-Mail: info@LTG-INC.net

LTG S.r.l. con socio unico
Via G. Leopardi 10
I-20066 Melzo
☎ +39 (02) 9 55 05 35, Fax +39 (02) 9 55 08 28
Internet: www.LTG-SRL.com
E-Mail:ltg@ltgsrl.191.it

DLA-eng-TP (08/10) 419-172

Swirl diffusers series DLA

Content

Notes

Dimensions stated in this brochure are in mm.

Dimensions stated in this brochure are subject to General Tolerances according to DIN ISO 2768-vL.

Straightness and twist tolerances for extruded aluminum profiles according to DIN EN 12020-2.

You will find the actual tender documentations at the end of this document.
They are available in word format at your local dealership or at www.LTG-AG.de.

Swirl diffusers series DLA

Application

Direct ventilation of occupied zones in commercial and industrial facilities which require high air exchange rates because of thermal loads, e.g. restaurants, shopping centers, laboratories.

Installation/Positioning

Integration in the ceiling or free suspension.
Recommended installation height: 2.5 ... 5 meters.

Functionality

The highly inductive, fanned rotational flow makes it possible to handle high cooling loads and still maintain comfortable air conditions in the occupied zones.

As the aerodynamic swirl disc is easily adjustable the patterns can be set to suit varying room conditions, even after installation.

Thanks to the highly inductive effect as a result of the large number of individual air jets, the diffuser is suitable for both high flow rates and variable flow rate systems with low flow rates.

Flow types

The swirl disc can be set for two flow types:
- tangential flow (basic version)
- vertical flow.

With tangential flow, the air jets will attach strongly to the ceiling resulting in a fully mixed turbulent flow structure in the room, with rapid temperature and velocity decay of the jet.

With vertical flow, the air is projected conically downwards. The vertical flow is used preferably in the heating mode and in high rooms.

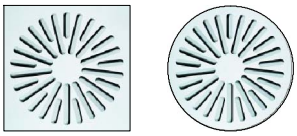
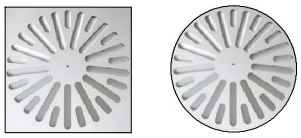
Advantages

- Highly inductive air diffuser with swirl characteristics.
- High comfort due to low air speeds and temperature differences in the occupied zone.
- Economical installation, thanks to
  - central fixing (up to size 625)
  - factory-set swirl disc, pattern may be modified at any time to meet new room conditions.
- Easy flow rate regulation thanks to integrated throttle valves as standard.
- Wide range of different design features.
- All metal construction
  - smooth surface
  - easy cleaning
- With rectangular, pyramid or cylindrical plenum box available.
- Connection box may be used in combination with a variety of LTG swirl diffusers.

Example for the installation of a swirl diffuser type DLA 7

Swirl diffusers series DLA

Product overview

	DLA 7					DLA 8					DLA 9				
	Primarily for use in convenience areas (e.g. offices, meeting rooms)					Primarily for use in convenience areas with high flow rates (e. g. conference rooms, halls)					Primarily for use in areas requiring high air exchange rates due to thermal load (e. g. shopping centers, restaurants, labs)				
Flow rate [m³/h]	100 to 900					500 to 1000					400 to 1000				
Flow type															
Tangential	All models					All models					All models				
Vertical	All model					All model					Only models 600, 625				
Model [mm]															
Square	400	500	600	625	800	---	---	600	625	---	400	500	600	625	---
Round	400	500	600	625	800	---	---	600	625	---	400	500	600	625	---
Diffuser plate															
															
Design	Basic version: visible side powder coated to RAL reference Special version (e. g. anodized, chrome-plated, stainless steel) on request														
Swirl disc															
Design	Basic version: coated in black or white Special version (e. g. anodized, chrome-plated, stainless steel) on request														
Air supply box															
Form	Rectangular box, pyramid box, cylindrical box														
Material	Galvanized sheet steel														
Flow restrictor	At round connection with adjustable flow restrictor, adjustment from below through the diffuser plate.														
Duct connection															
Lateral	Round spigot. For small box heights a side entry rectangular connection is available.														
From above	Round spigot														

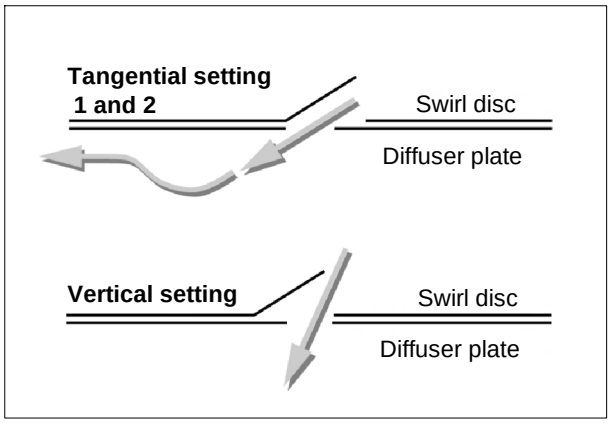
Swirl diffusers type DLA 7

Views of unit

Type DLA 7 with rectangular box

Type DLA 7 with pyramid box

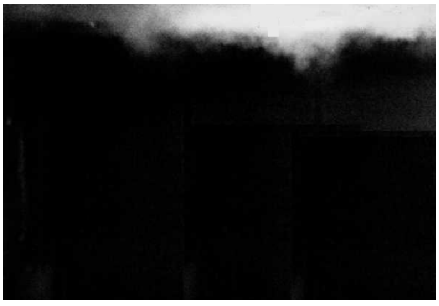
Flow types



The swirl disc can be set for two flow types : the tangential flow 1 and 2, or vertical flow.

With the tangential flow 1 (standard setting) the air jets will attach strongly to the ceiling resulting in a fully mixed turbulent flow structure in the room, with rapid temperature and velocity decay of the jet.

Tangential setting 2 is preferably used for lower flow rates and large cooling differentials.
The outlet cross-section is reduced, thus diffusing the air with increased momentum, ensuring that the jet remains powerfully attached to the ceiling. As a result, induction effect is increased.



Flow development with tangential setting

With the vertical setting, the air is projected conically downwards. The vertical flow is used preferably in the heating mode.

Flow development with vertical setting

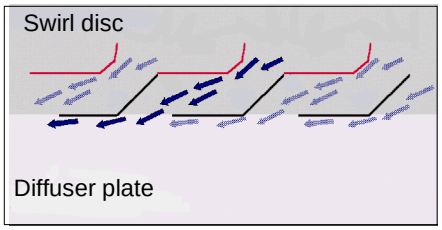
Swirl diffusers type DLA 8

Views of unit

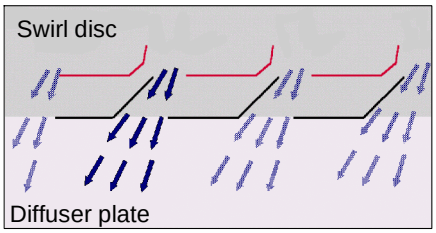
Type DLA 8 with rectangular box

Type DLA 8 with pyramid box

Flow types



Tangential flow



Vertical flow

The swirl disc can be set for two flow types: the tangential flow or vertical flow.

With the tangential flow (standard setting), the air jets will attach strongly to the ceiling resulting in a fully mixed turbulent flow structure in the room, with rapid temperature and velocity decay of the jet.

Flow development with tangential setting

With the vertical flow, the air is projected conically downwards. The vertical flow is used preferably in the heating mode.

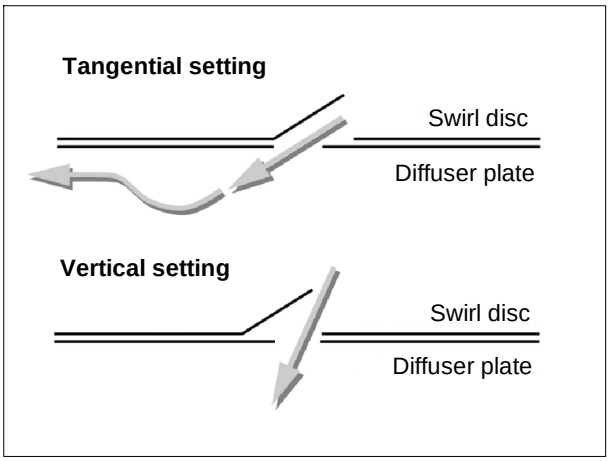
Flow development with vertical setting

Swirl diffusers type DLA 9

View of unit

Type DLA 9 with rectangular box

Flow types



The swirl disc can be set for two flow types: the tangential flow or vertical flow (vertical flow only for models 600/625).

With the tangential flow (standard setting), the air jets will attach strongly to the ceiling resulting in a fully mixed turbulent flow structure in the room, with rapid temperature and velocity decay of the jet.

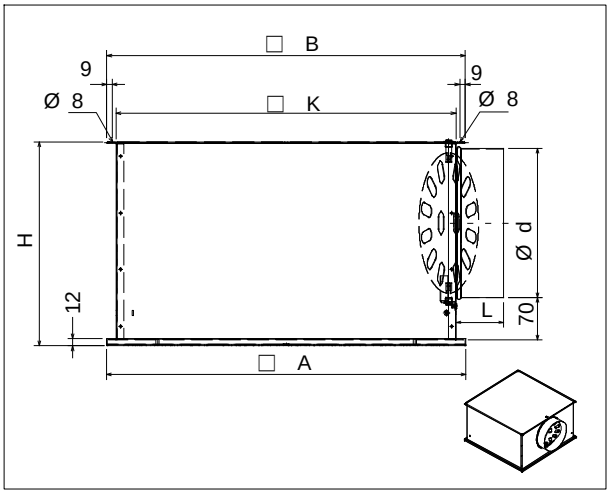
Flow development with tangential setting

With the vertical setting, the air is projected conically downwards. The vertical flow is used preferably in the heating mode.

Flow development with vertical setting (only models 600/625)

Swirl diffusers series DLA

Dimensions air distribution box
DLA with rectangular box and lateral connection for round supply ducts



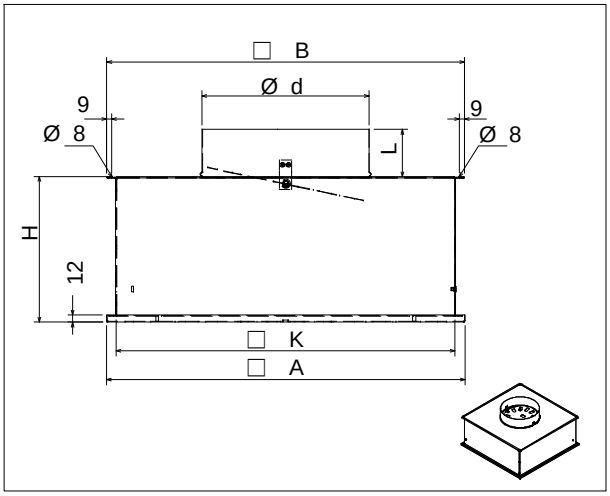
Model	400	500	600	625	800
Type	7, 9	7, 9	7, 8, 9	7, 8, 9	7
□ A*	398	498	598**	623**	798
□ B*	396	496	596	596	796
□ K	366	466	566	566	766
H	290	315	370 +	370 +	405
Ø d	199	223	279 +	279 +	314
L	60	80	80	80	80

* Tolerance +1/-0,5 mm

** 595 respectively 620 for installation in grid ceiling [QE]

\+ when Ø d = 249 and H = 340

DLA with rectangular box and connection from above for round supply ducts

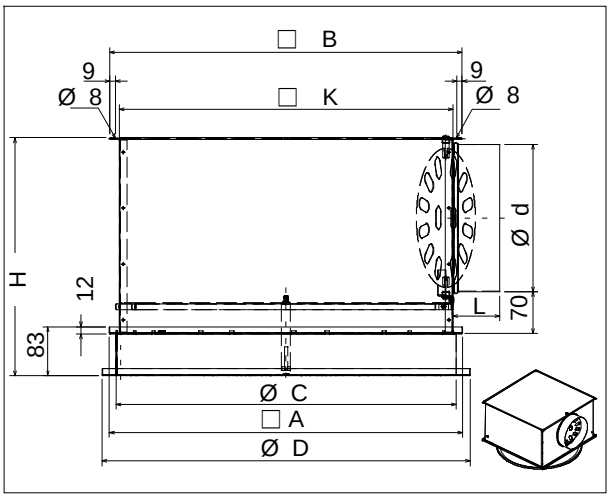


Model	400	500	600	625	800
Type	7, 9	7, 9	7, 8, 9	7, 8, 9	7
□ A*	398	498	598**	623**	798
□ B*	396	496	596	596	796
□ K	366	466	566	566	766
H	242	242	242	242	242
Ø d	199	223	279	279	314
L	60	80	80	80	80

* Tolerance +1/-0,5 mm

** 595 respectively 620 for installation in grid ceiling [QE]

DLA with rectangular box and lateral connection for round supply ducts and adapter for round diffuser plate



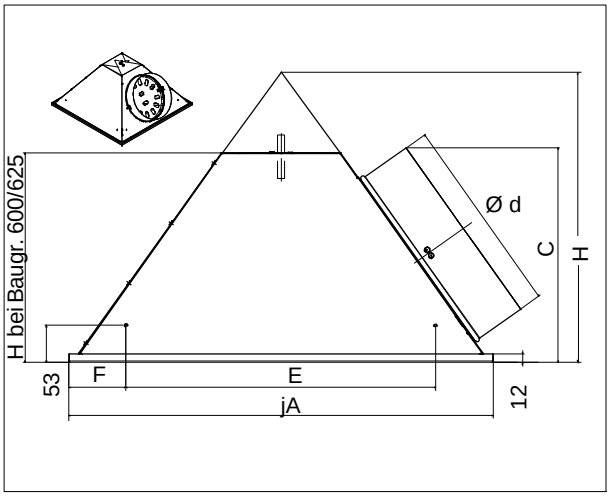
Model	400	500	600	625	800
Type	7, 9	7, 9	7, 8, 9	7, 8, 9	7
□ A*	397	498	597	597	798
□ B*	396	496	596	596	796
□ K	366	466	566	566	766
H	352	377	432 +	432 +	467
Ø C	376	476	576	576	776
Ø D	398	498	598	623	798
Ø d	199	223	279 +	279 +	314
L	60	80	80	80	80

* Tolerance +1/-0,5 mm

\+ when Ø d = 249 and H = 402

Swirl diffusers series DLA

Dimensions air distribution box
DLA with pyramid box and lateral connection for round supply ducts



Model	400	500	600	625	800
Type	7, 9	7, 9	7, 8, 9	7, 8, 9	7
□ A*	398	498	598**	623**	798
C	225	283	303	303	472
Ø d	199	223	279▪	279▪	279▪
E	236	336	436	436	636
F	81	81	81	81	81
H	273	344	297***	297***	556

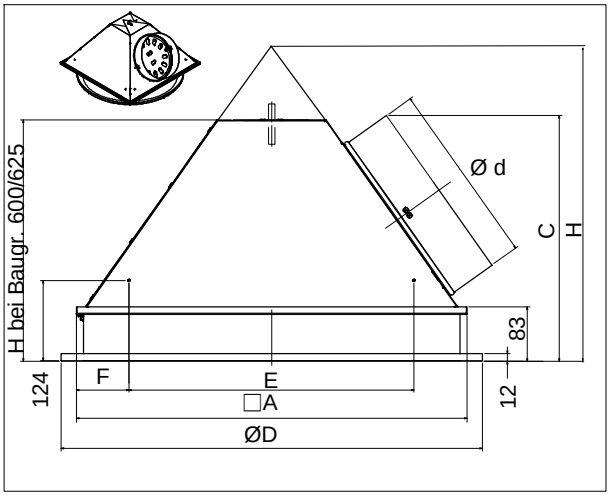
* Tolerance +1/-0,5 mm

** 595 respectively 620 for installation in grid ceiling [QE]

▪ at DLA 8: Ø d = 314

*** box executed as pyramid stump

DLA with pyramid box and lateral connection for round supply ducts and adapter for round diffuser plate



Model	400	500	600	625	800
Type	7, 9	7, 9	7, 8, 9	7, 8, 9	7
□ A*	398	498	598	623	798
C	308	366	386	386	555
Ø d	199	223	279▪	279▪	279▪
Ø D	399	499	599	624	799
E	236	336	436	436	636
F	81	81	81	81	81
H	345	416	368**	368**	628

* Tolerance +1/-0,5 mm

▪ at DLA 8: Ø d = 314

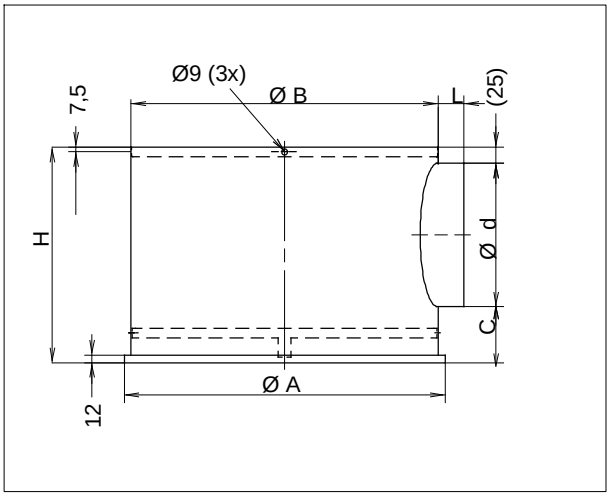
** box executed as pyramid stump

Features

- Minimum loss of energy on the surface.
- Stacking boxes with a minimum transport volume.
- Integrated flow restrictor, to be adjusted from below, through the diffuser. Delivery in closed position.
- Diffuser plate is delivered separately.
- Detached connecting piece enclosed.
- Flexible hose connection.
  For insertion and removal of the box, simply tilt.
  No need to disconnect.
- The pyramid boxes, models 400 to 625, are being fastened in the center.
  The air diffuser plate of model 800 is being fastened from the outside using 8 screws.

Swirl diffusers series DLA

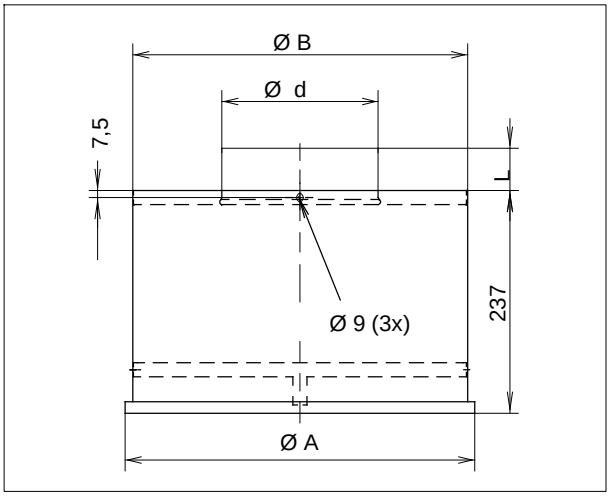
Dimensions air distribution box
DLA with cylindrical box and lateral connection for round supply ducts



Model	400	500	600	625	800
Type	7, 9	7, 9	7, 8, 9	7, 8, 9	7
A*	398	498	598	623	798
B	377	477	577	577	777
H	300	335	375	375	467
Ø d	199	223	279	279	279
L	40	40	60	60	60
C	76	87	71	71	163

* Tolerance +1/-0,5 mm

DLA with cylindrical box and connection from above for round supply ducts

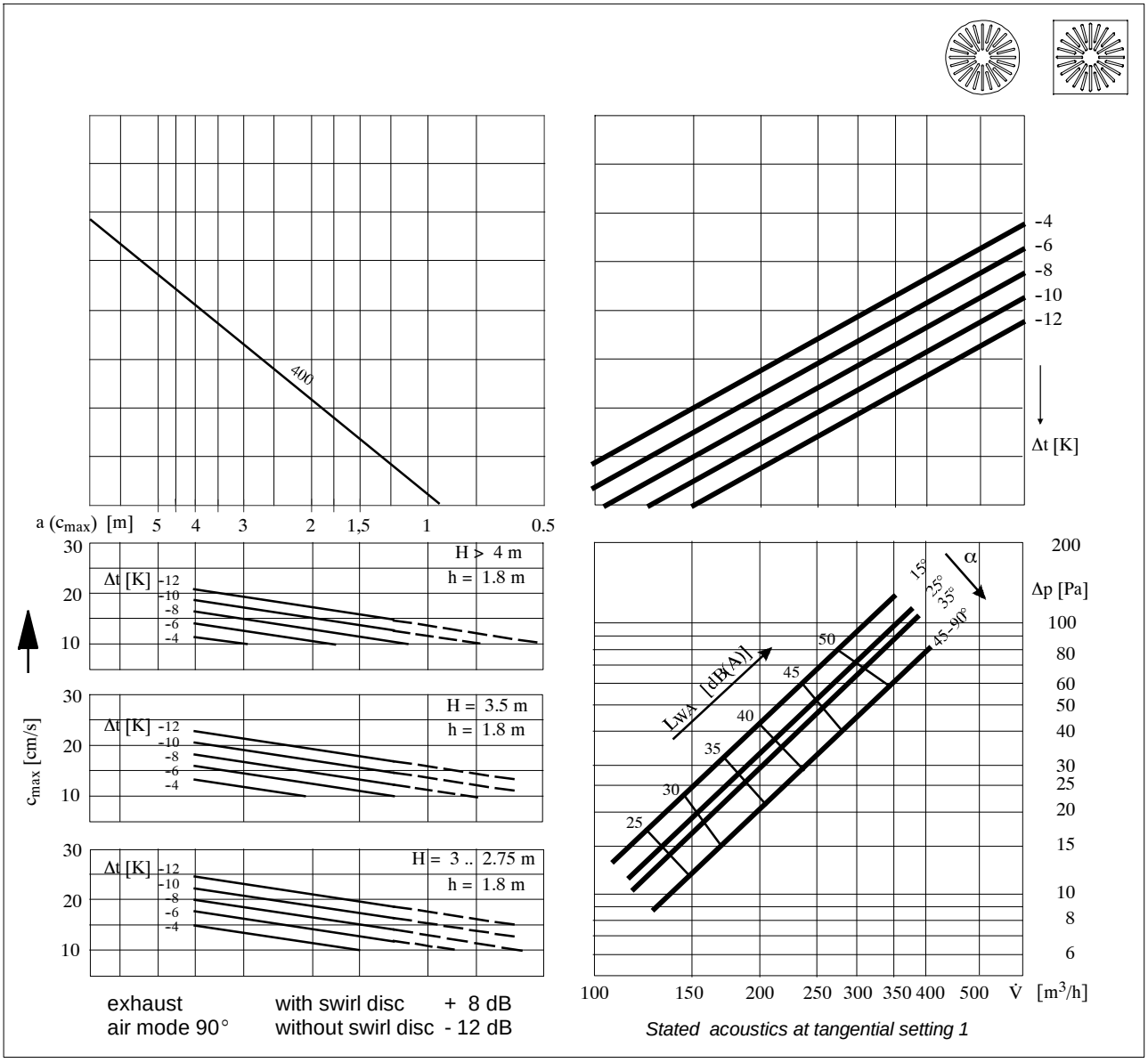


Model	400	500	600	625	800
Type	7, 9	7, 9	7, 8, 9	7, 8, 9	7
A*	398	498	598	623	798
B	377	477	577	577	777
Ø d	199	223	279	279	279
L	46	66	66	66	66

* Tolerance +1/-0,5 mm

Swirl diffusers type DLA 7

Selection diagram for DLA 7 with KLS, model 400, spigot 199 mm, tangential setting



Stated acoustics at tangential setting 1

Legend

V	=	volume flow	[m³/h]
t_{zu}	=	supply air temperature	[°C]
t_{RA}	=	room air temperature	[°C]
Δt	=	temperature difference between supply air and room air	[K]
Δp	=	pressure loss	[Pa]
L_{WA}	=	sound power level	[dB(A)]
$a(c_{max})$	=	spread at which the maximum speed of the jet air has been measured	[m]
c_{max}	=	maximum speed of jet air with uniformly distributed heat loads	[cm/s]
H	=	installation height	[m]

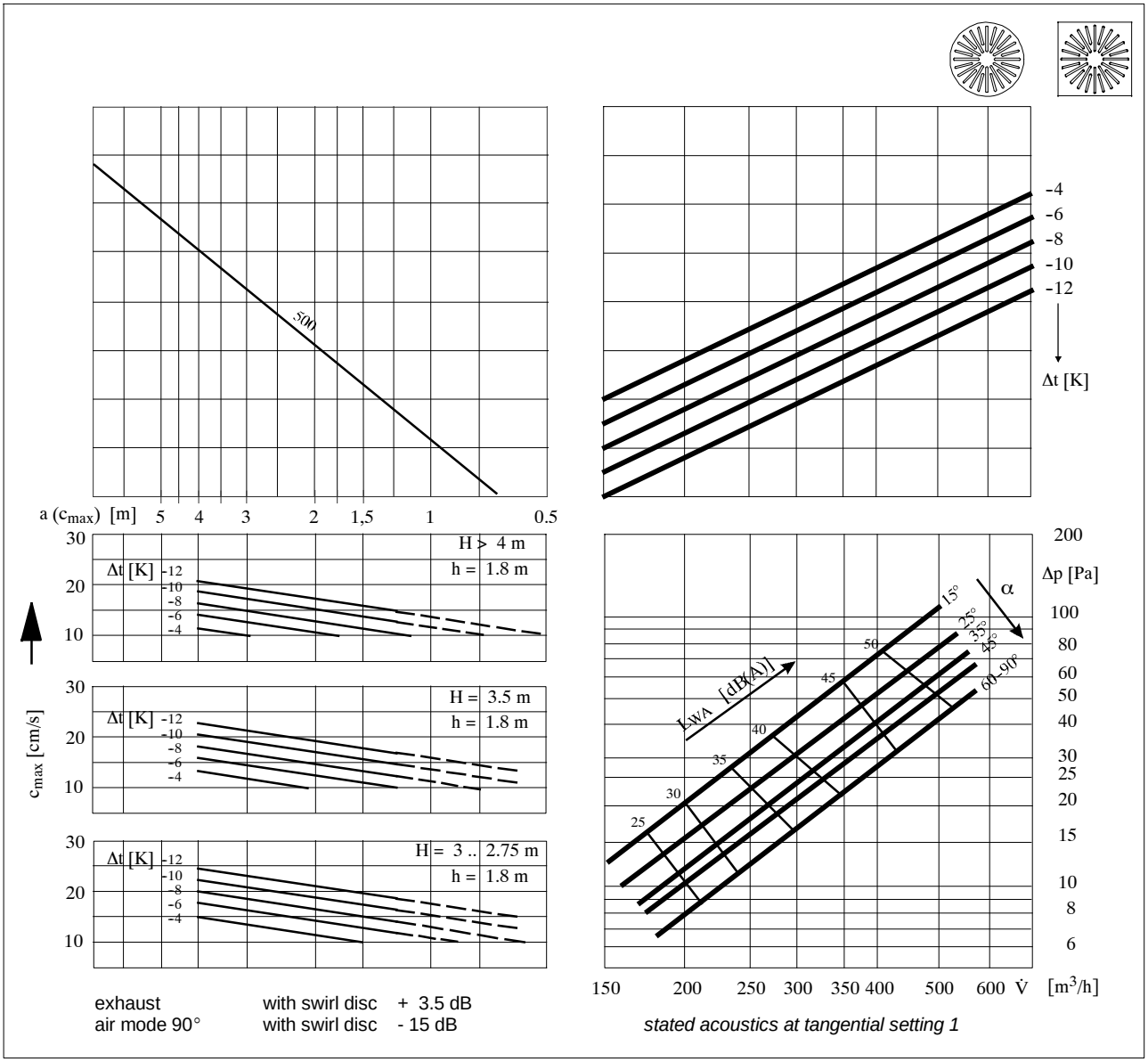
Note:
The stated L_{WA}-values are valid for the tangential setting 1. With the vertical setting, the level is 2 dB lower, with the tangential setting 2 the level is 12 dB higher.

Model		400
recommended volume flow	V [m³/h]	220
recomm. height of diffused air	H [m]	2.5...5.0
recommended distance between two diffusers (distance to wall a/2)	a [m]	3.0...3.5

Selection example see page 13

Swirl diffusers type DLA 7

Selection diagram for DLA 7 with KLS, model 500, spigot 223 mm, tangential setting



Legend

V	=	volume flow	[m³/h]
t_{zu}	=	supply air temperature	[°C]
t_{RA}	=	room air temperature	[°C]
Δt	=	temperature difference between supply air and room air	[K]
Δp	=	pressure loss	[Pa]
L_{WA}	=	sound power level	[dB(A)]
$a(c_{max})$	=	spread at which the maximum speed of the jet air has been measured	[m]
c_{max}	=	maximum speed of jet ai with uniformly distributed heat loads	[cm/s]
H	=	installation height	[m]

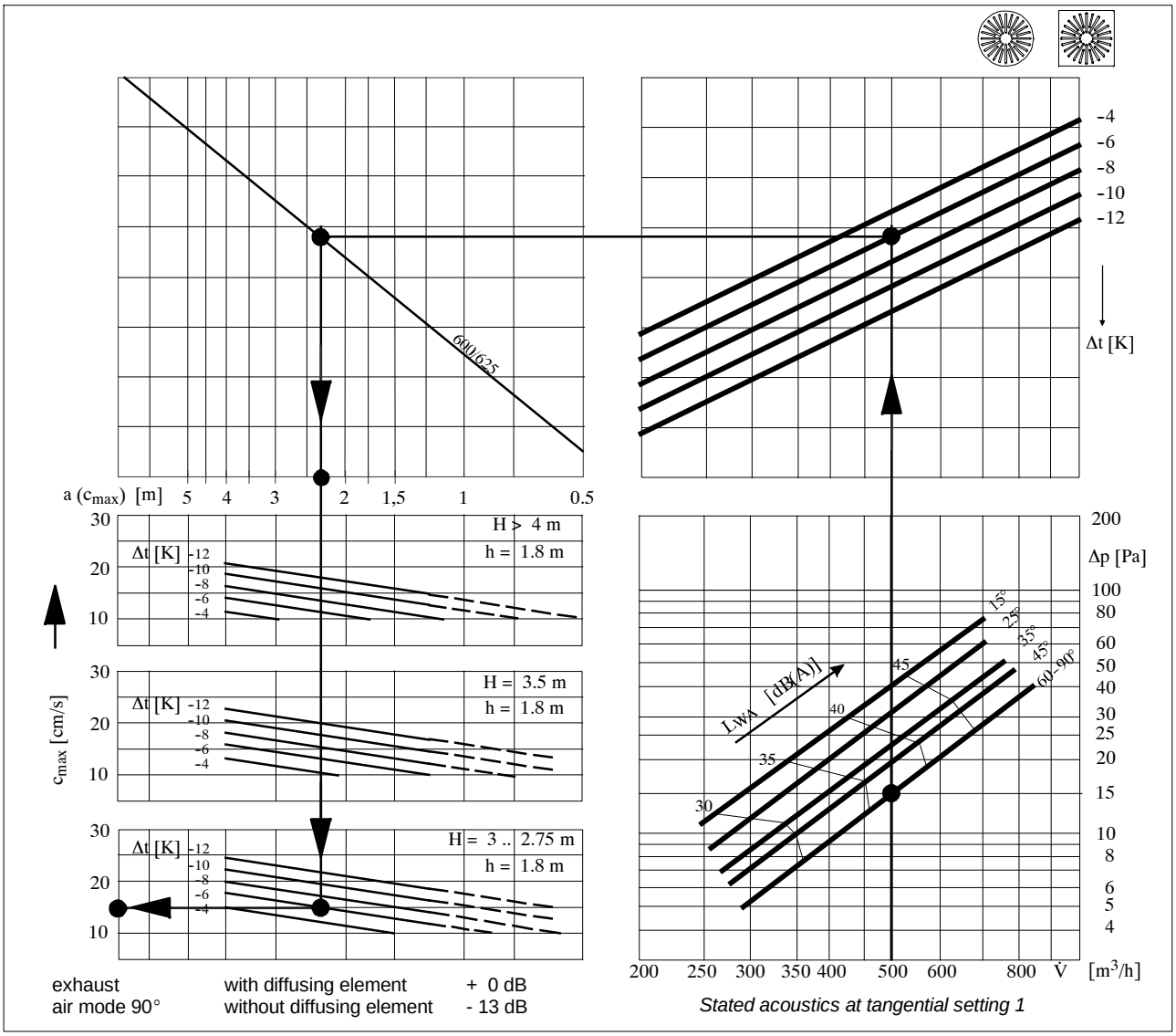
Note:
The stated L_{WA}-values are valid for the tangential setting 1. With the vertical setting, the level is 2 dB lower, with the tangential setting 2 the level is 12 dB higher.

Model		500
recommended volume flow	V [m³/h]	300
recomm. height of diffused air	H [m]	2.5...5.0
recommended distance between two diffusers (distance to wall a/2)	a [m]	3.0...3.5

Selection example see page 13

Swirl diffusers type DLA 7

Selection diagram for DLA 7 with KLS, model 600/625, spigot 280 mm, tangential setting



Stated acoustics at tangential setting 1

Legend

V	=	volume flow	[m³/h]
t_{zu}	=	supply air temperature	[°C]
t_{RA}	=	room air temperature	[°C]
Δt	=	temperature difference between supply air and room air	[K]
Δp	=	pressure loss	[Pa]
L_{WA}	=	sound power level	[dB(A)]
$a(c_{max})$	=	spread at which the maximum speed of the jet air has been measured	[m]
c_{max}	=	maximum speed of jet air with uniformly distributed heat loads	[cm/s]
H	=	installation height	[m]

Selection example in the diagram

DLA model 600/625:

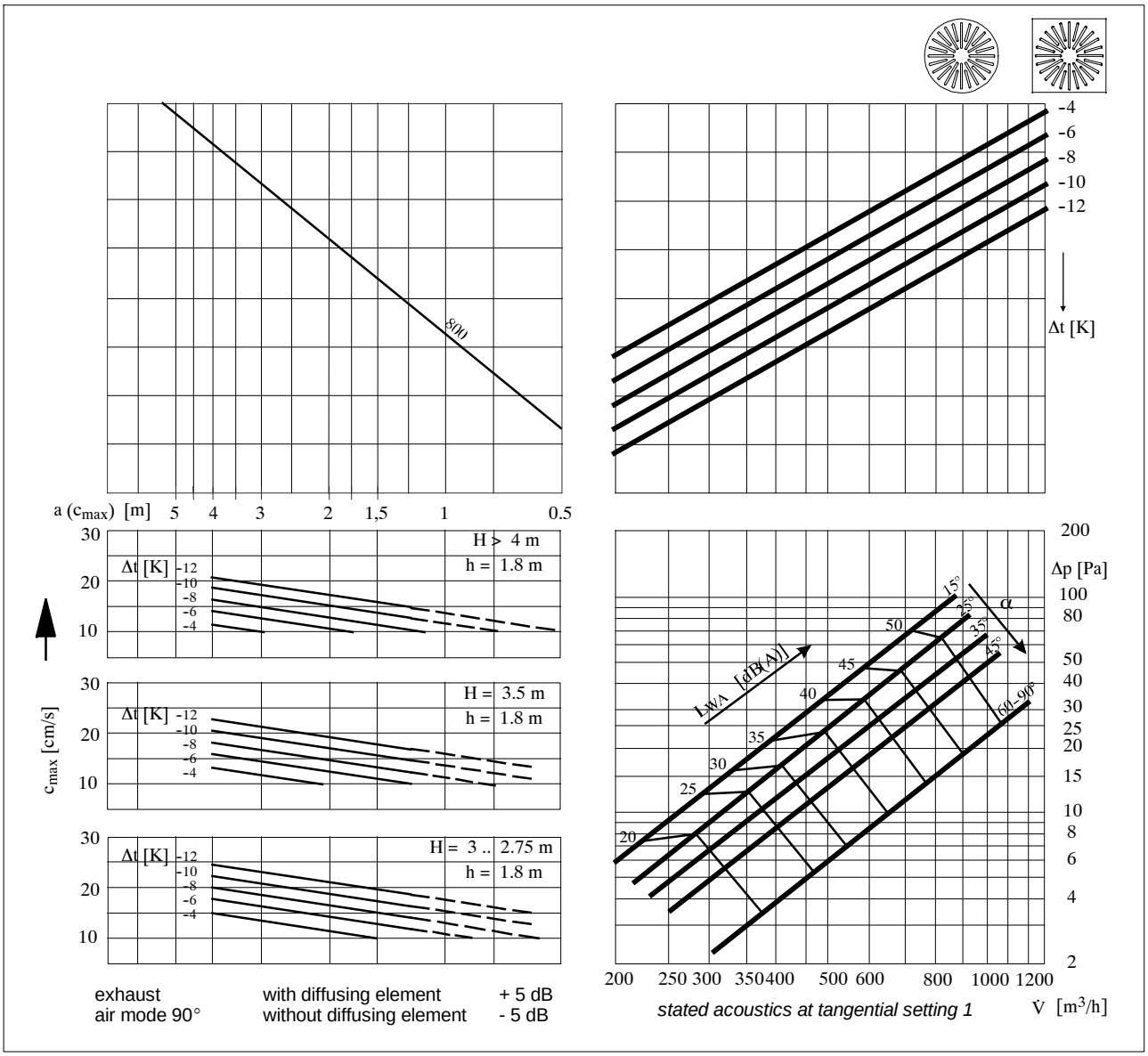
V_{zu}	=	500	m³/h
Δp	=	15	Pa
L_{WA}	=	37	dB(A)
Δt	=	- 6	K
$a(c_{max})$	≈	2.3	m
c_{max}	≤	15	cm/s
H	=	2.75	m

Note: The stated L_{WA}-values are valid for the tangential setting 1. With the vertical setting, the level is 2 dB lower, with the tangential setting 2 the level is 12 dB higher.

Model		600/625
recommended volume flow	V [m³/h]	500
recomm. height of diffused air	H [m]	2.5...5.0
recomm. distance between two diffusers (distance to wall a/2)	a [m]	3.0...3.5

Swirl diffusers type DLA 7

Selection diagram for DLA 7 with KLS, model 800, spigot 280 mm, tangential setting



Legend

V	=	volume flow	[m³/h]
t_{zu}	=	supply air temperature	[°C]
t_{RA}	=	room air temperature	[°C]
Δt	=	temperature difference between supply air and room air	[K]
Δp	=	pressure loss	[Pa]
L_{WA}	=	sound power level	[dB(A)]
$a(c_{max})$	=	spread at which the maximum speed of the jet air has been measured	[m]
c_{max}	=	maximum speed of jet air with uniformly distributed heat loads	[cm/s]
H	=	installation height	[m]

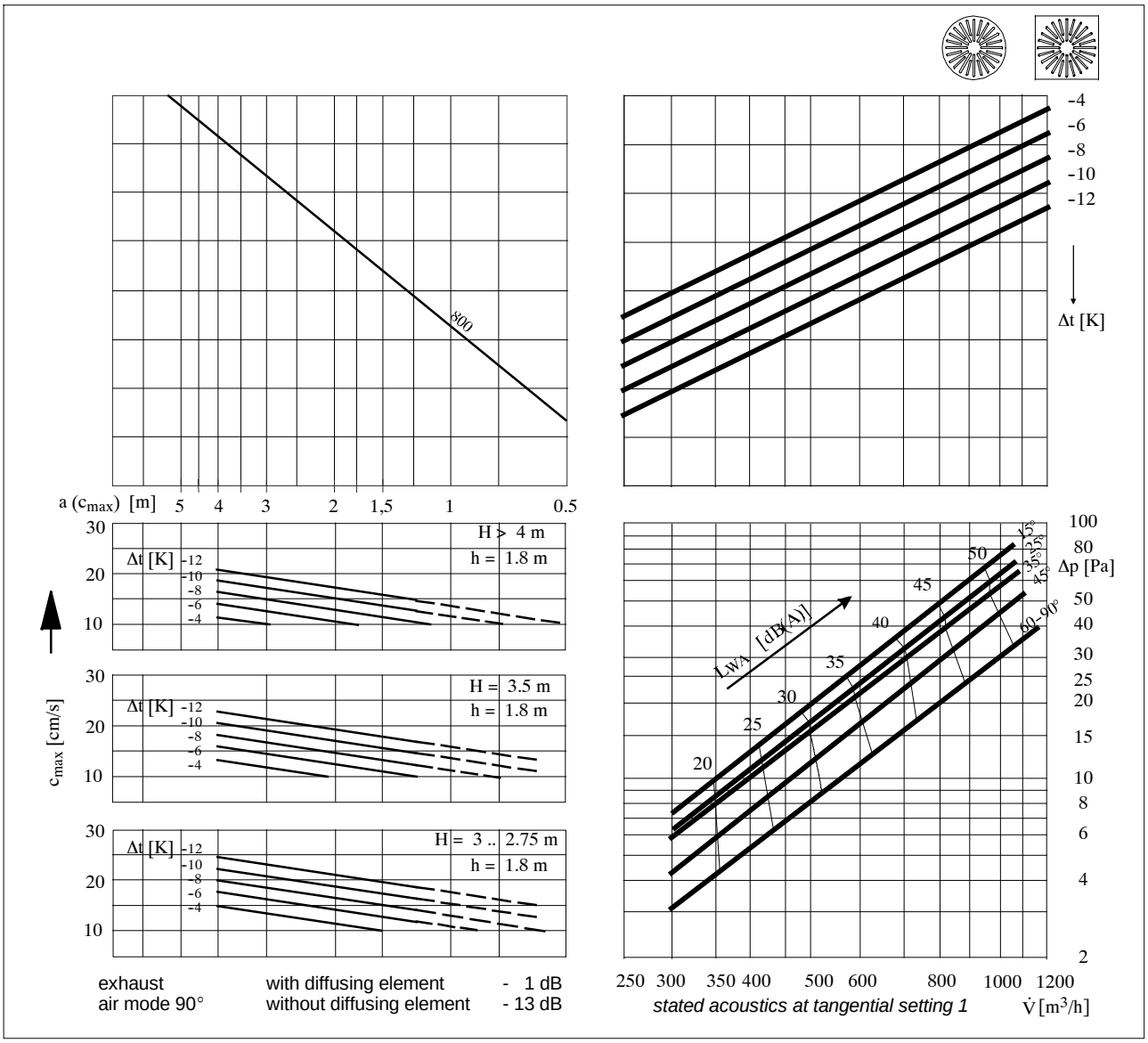
Note:
The stated L_{WA}-values are valid for the tangential setting 1. With the vertical setting, the level is 2 dB lower, with the tangential setting 2 the level is 12 dB higher.

Model		800
recommended volume flow	V [m³/h]	750
recomm. height of diffused air	H [m]	2.5...5.0
recommended distance between two diffusers (distance to wall a/2)	a [m]	3.0...3.5

Selection example see page 13

Swirl diffusers type DLA 7

Selection diagram DLA 7 with KLS, rectang. box, model 800, spigot 315 mm, tangential setting



Legend

V	=	volume flow	[m³/h]
t_{zu}	=	supply air temperature	[°C]
t_{RA}	=	room air temperature	[°C]
Δt	=	temperature difference between supply air and room air	[K]
Δp	=	pressure loss	[Pa]
L_{WA}	=	sound power level	[dB(A)]
$a(c_{max})$	=	spread at which the maximum speed of the jet air has been measured	[m]
c_{max}	=	maximum speed of jet air with uniformly distributed heat loads	[cm/s]
H	=	installation height	[m]

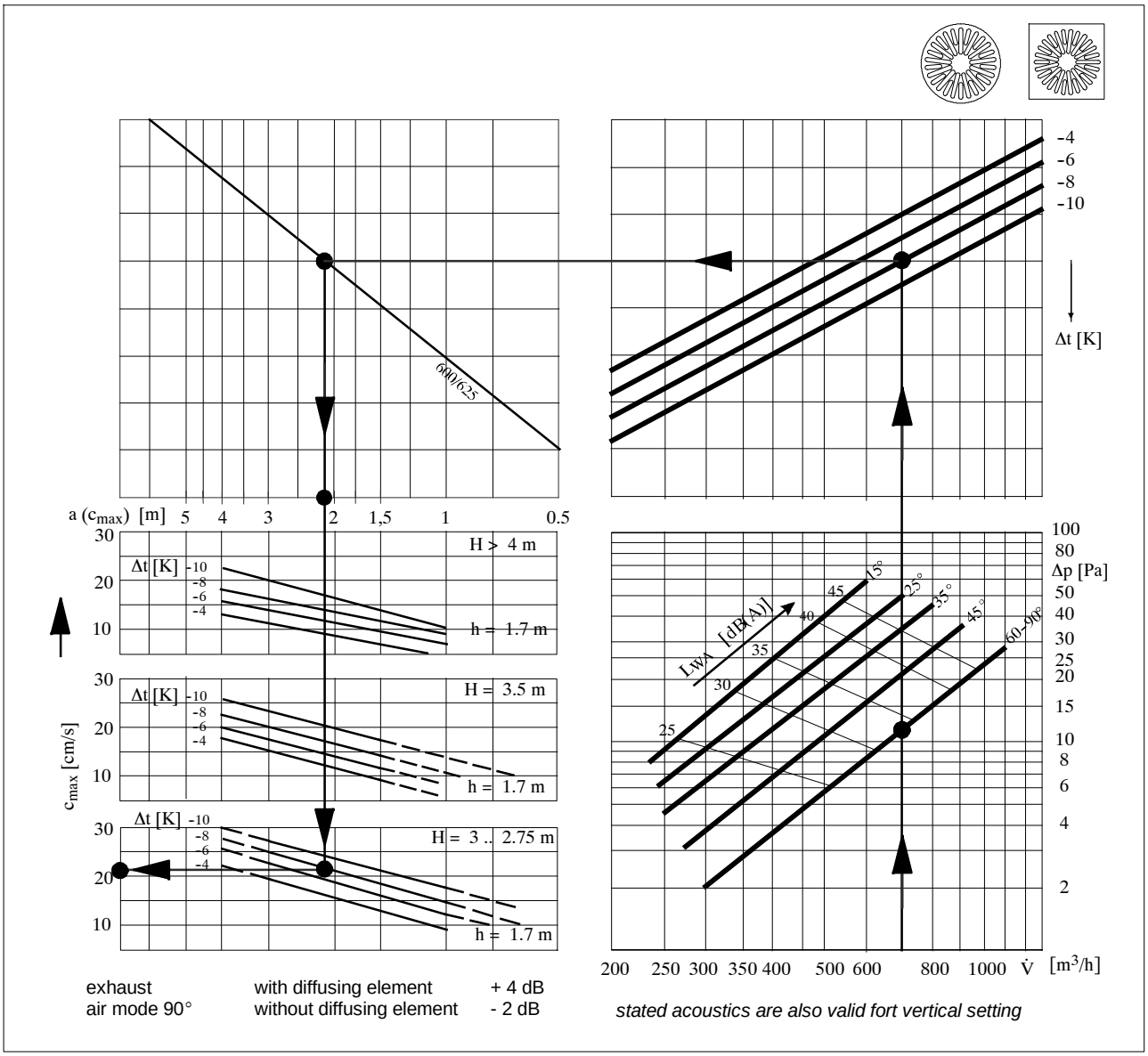
Note:
The stated L_{WA}-values are valid for the tangential setting 1. With the vertical setting, the level is 2 dB lower, with the tangential setting 2 the level is 12 dB higher.

Model		800
recommended volume flow	V [m³/h]	750
recomm. height of diffused air	H [m]	2.5...5.0
recommended distance between two diffusers (distance to wall a/2)	a [m]	3.0...3.5

Selection example see page 13

Swirl diffusers type DLA 8

Selection diagram DLA 8 with KLS, pyramid box, model 600/625, spigot 280 mm, tangent. setting



Legend

V	=	volume flow	[m³/h]
t_{zu}	=	supply air temperature	[°C]
t_{RA}	=	room air temperature	[°C]
Δt	=	temperature difference between supply air and room air	[K]
Δp	=	pressure loss	[Pa]
L_{WA}	=	sound power level	[dB(A)]
$a(c_{max})$	=	spread at which the maximum speed of the jet air has been measured	[m]
c_{max}	=	maximum speed of jet air with uniformly distributed heat loads	[cm/s]
H	=	installation height	[m]

Selection example in the diagram

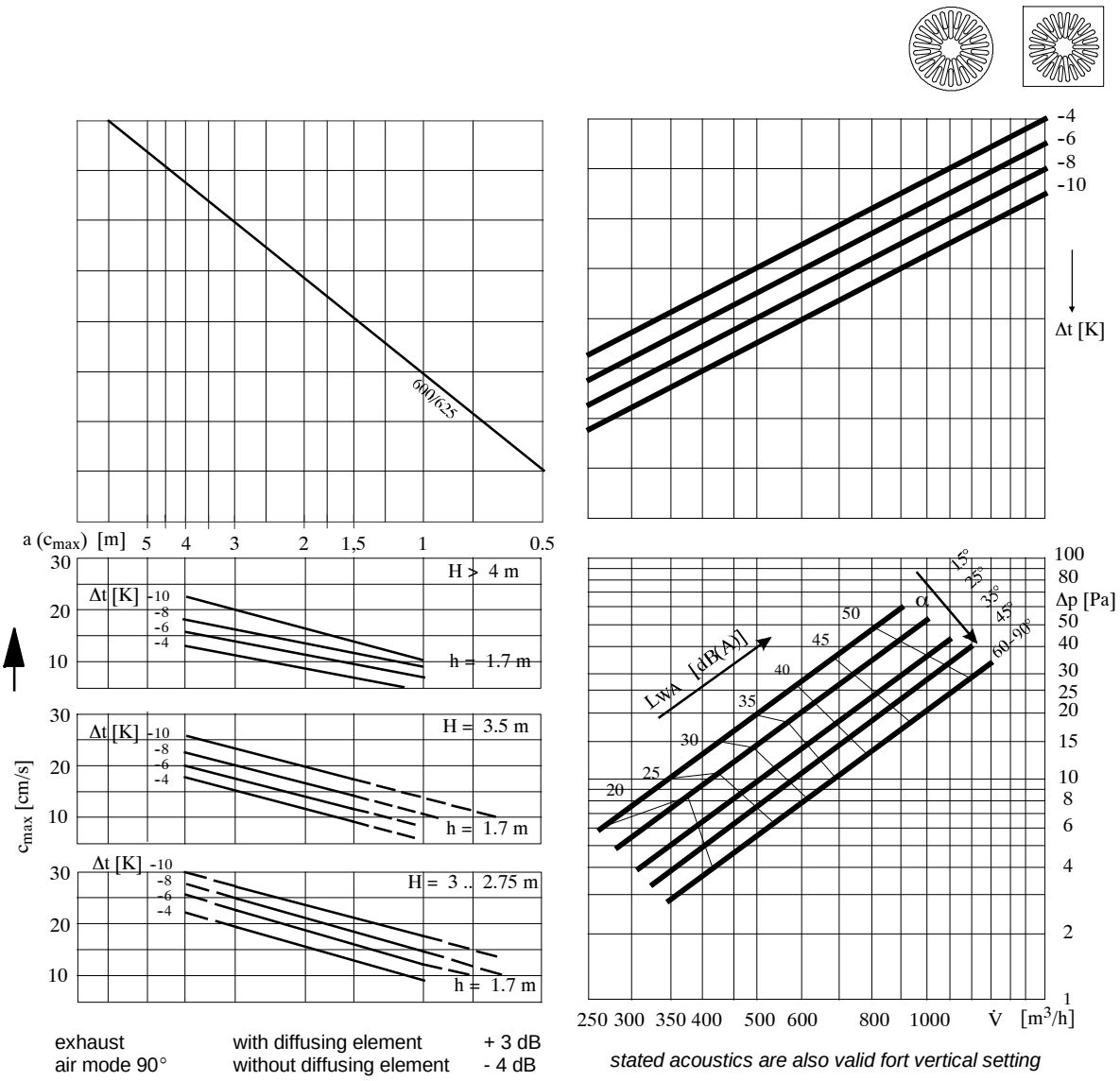
DLA model 600/625:

V_{zu}	=	700	m³/h
Δp	=	12	Pa
L_{WA}	=	33	dB(A)
Δt	=	-8	K
$a(c_{max})$	≈	2.1	m
c_{max}	≤	21	cm/s
H	=	2.75	m

Model		600/625
recommended volume flow	V [m³/h]	750
recomm. height of diffused air	H [m]	2.75...5.0
recommended distance between two diffusers (distance to wall a/2)	a [m]	2.0...3.0

Swirl diffusers type DLA 8

Selection diagram DLA 8 with KLS, pyramid box, model 600/625, spigot 315 mm, tangent. setting



Legend

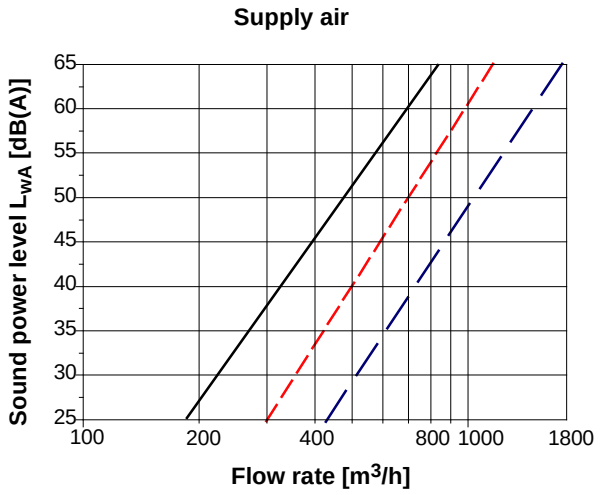
V	=	volume flow	[m³/h]
t_{zu}	=	supply air temperature	[°C]
t_{RA}	=	room air temperature	[°C]
Δt	=	temperature difference between supply air and room air	[K]
Δp	=	pressure loss	[Pa]
L_{WA}	=	sound power level	[dB(A)]
$a(c_{max})$	=	spread at which the maximum speed of the jet air has been measured	[m]
c_{max}	=	maximum speed of jet air with uniformly distributed heat loads	[cm/s]
H	=	installation height	[m]

Model		600/625
recommended volume flow	V [m³/h]	750
recomm. height of diffused air	H [m]	2.75...5.0
recommended distance between two diffusers (distance to wall a/2)	a [m]	2.5...3.0

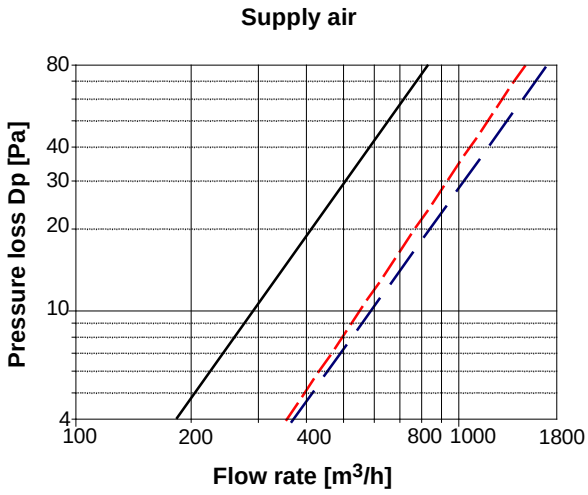
Selection example see page 16.

Swirl diffusers type DLA 9

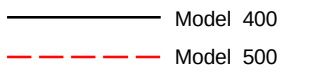
Selection diagram DLA 9 with KLS

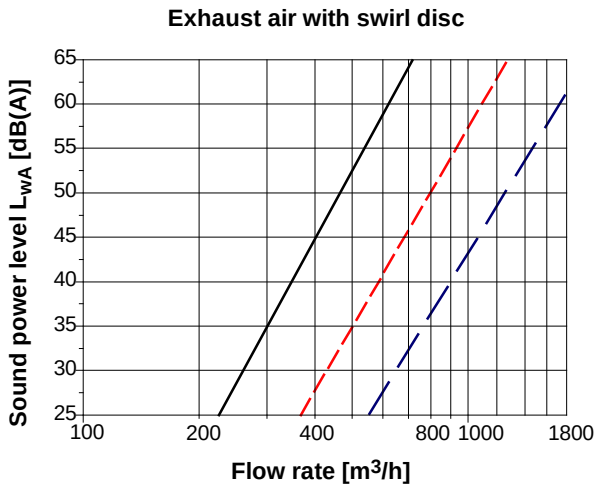


A-weighted sound power level type DLA 9

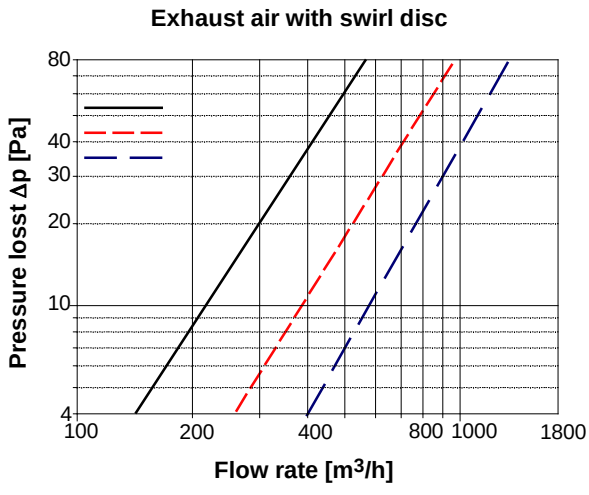


Pressure loss type DLA 9

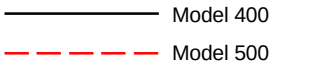




A-weighted sound power level type DLA 9



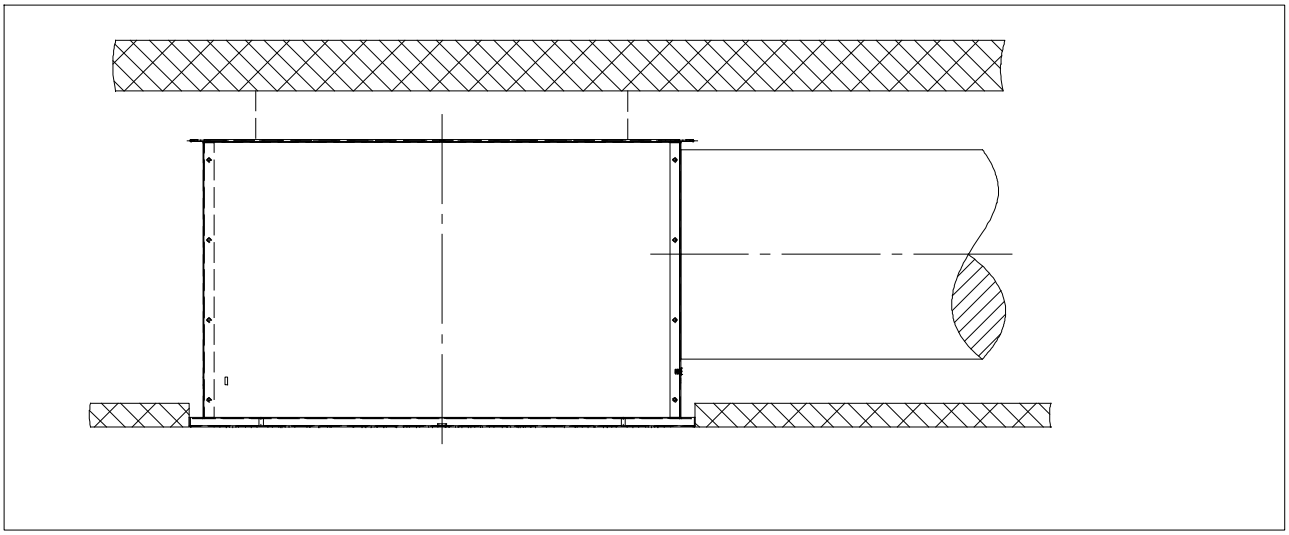
Pressure loss type DLA 9



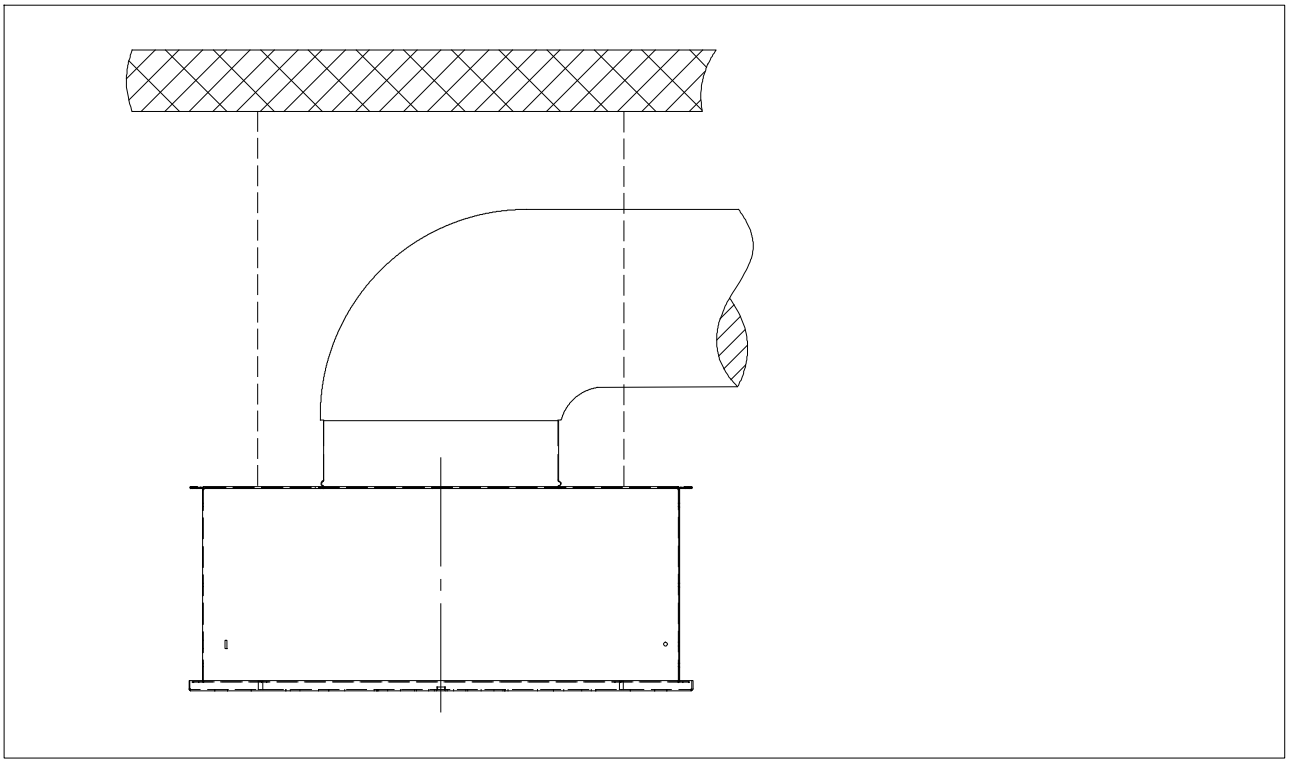
Swirl diffusers series DLA

Installation

The LTG diffuser DLA can be installed flush to ceiling or covering the joints in intermediate ceilings or freely suspended on the existing suspension holes of the box. The diffuser plate is connected to the air supply box with screws.



Installation flush to ceiling for intermediate ceilings, with lateral duct connection



Free suspension above a grid ceiling

Swirl diffusers series DLA

Nomenclature

DLA 600 / 600 / Q / D / 9 / PG 9010 / W / P / SR / KLS 280 / -

Model
DLA 7 **400, 500, 600, 625, 800**
DLA 8 **600, 625**
DLA 9 **400, 500, 600, 625**

Hole pattern
Size **400, 500, 600/625**

Form of diffuser plate
square **Q**
round **R**
square for inserting in grid ceiling **QE**

Swirl disc
with **D**
without **–**

Type **7** **8** **9**

Surface of the diffuser plate
powder coated similar RAL (state RAL No.) glossy (degree of gloss 70 % ± 10 %) **PG**
Basic version RAL 9010, glossy (degree of gloss 70 % ± 10 %)

powder coated similar RAL (state RAL No.), mat (degree of gloss 20 % ± 10 %) **PM**

Colour of swirl disc
RAL 9010, pure white, silk mat (basic version) **W**
RAL 9011, graphite black, silk mat **S**
powder coated similar RAL (state RAL number!) **P**

Air distribution box
rectangular box (basic version) **Q**
pyramid box **P**
cylindrical box **Z**
without **–**

Connection
lateral connection for round supply ducts **SR**
connection from above for round supply ducts **OR**
on request **.....**

Flow restrictor
without **–**
with **KLS**
DN 200
DN 225
DN 250
DN 280
DN 315

Accessories
without **–**
Adapter for round diffuser plate, made of galvanized steel sheet **A**

Locations and Representatives

Germany

Central Office (Frankfurt)
Sales area: **PLZ 54, 55, 60, 63, 64, 66 - 69, 97**
Sontraer Str. 27 · D-60386 Frankfurt am Main
Herr Bergmann ☎ +49 (69) 94 20 19-12, Fax -10
E-mail: Bergmann@LTG-AG.de

Central Office (Herborn)
Sales area:: **PLZ 30, 31, 34-38, 56, 57, 61, 65**
Sperberweg 16 · D-35745 Herborn
Herr Hartmann ☎ +49 (2772) 570-725, Fax -727
E-mail: Hartmann@LTG-AG.de

Eastern Office (Berlin)
Sales area:: **PLZ 10 - 25, 29, 39**
Eisenhutweg 51a · D-12487 Berlin
Herr Linke ☎ +49 (30) 63 22 87-74, Fax -75
E-mail: Linke@LTG-AG.de

Eastern Office (Chemnitz)
Sales area:: **PLZ 01 - 09, 98, 99**
Johannes-Ebert-Straße · 20 D-09128 Chemnitz
Herr Schenfeld ☎ +49 (371) 77118-01, Fax -02
E-mail: Schenfeld@LTG-AG.de

Southern Office
Sales area:: **PLZ 70 - 96**
Grenzstraße 7 · D-70435 Stuttgart
Herr Gau ☎ +49 (711) 8201-209, Fax -210
E-mail: Gau@LTG-AG.de

Sales area: **PLZ 80 - 87, 90 - 96**
Grenzstraße 7 · D-70435 Stuttgart
Herr Flaadt ☎ +49 (711) 8201-752, Fax -210
E-Mail: Flaadt@LTG-AG.de

Western Office
Verkaufsgebiet: **PLZ 26 - 28, 32, 33, 40 - 53, 58 - 59**
Baststraße 30 · D-46119 Oberhausen/Rheinl.
Herr Perenz ☎ +49 (208) 30431-55, Fax -56
E-mail: Perenz@LTG-AG.de

Austria

KTG Klimatechnische Gesellschaft mbH
Schubertstraße 13 · A-2126 Ladendorf
☎ +43 (2575) 21089, Fax (02575) 21022
E-Mail: office@ktg-wien.com

Great Britain

MAP Motorised Air Products Ltd.
Unit 5A · Sopwith Crescent
Wickford Business Park · Wickford GB-Essex SS11 8YU
☎ +44 (1268) 57 44 42, Fax +44 (1268) 57 44 43
E-Mail: info@mapuk.com

Netherlands

Opticlima Systems b.v.
Leeuwerikstraat 110 · NL-3853 AG Ermelo
☎ +31 (341) 493969, Fax +31 (341) 493931
E-Mail: info@opticlima.nl

Poland

HTK Went Sp.z.o.o.
ul. Chopina 13/3 · PL-30047 Krakow
☎ +48 (12) 632 31 32, Fax +48 (12) 632 81 93
E-Mail: info@htk-went.pl

Portugal

ArGelo S. A.
R. Luis Pastor de Macedo · Lote 28 B, P-1750-158 Lisboa
☎ +351 (21) 752 01 20, Fax +351 (21) 752 01 29
E-Mail: info@argelo.pt

Switzerland

Laminair AG
Kirchbergstrasse 105 · CH-3400 Burgdorf
☎ +41 (34) 420 02-10, Fax +41 (34) 420 02-11
E-Mail: info@laminair.ch

Turkey

Step Müh. Yapi Ltd.
Barbaros Mah. · Kayacan Sokak No. 10
TR-34746 Yenisahra-Atasehir-Istanbul
☎ +90 (216) 470 0070, Fax +90 (216) 470 0525
E-Mail: info@stepyapi.com.tr

The Program for Room Air Technology

Key components

Air diffusers for ceilings, walls and floors: LTG System clean®, linear diffusers Coandatrol®, ceiling air diffusers Coandavent®, displacement air diffusers, swirl diffusers · LTG chilled beam cool wave® · Induction units Klimavent® · Fan coil units Raumluft · Ceiling fan coil units Ventotel® · Facade fan coil units Univent® · Decentralized ventilation units · Airflow control units · labair® system: Components for lab ventilation






LTG Engineering Services

Technical services for investors, architects, engineers and plant builders during design, construction and operation of buildings. Reliable and precise data relating to the ventilation of air conditioning system are given already before realization of the project, determined by measurements, calculations, building simulations and experiments.

The Program for Process Air Technology

Key components

Axial, radial and tangential fans · Fahrtwind Simulators · LTG Filtration Technology: fans, suction nozzles, dampers, · filters, separators, compactors · LTG Humidification Technology: air humidifiers, product humidifiers

LTG Engineering Services

Technical services during development and operation of assembly groups, machines and plants · Analysis, simulation, optimization · Customized solutions · Mobile filtration lab/ filter engineering on site

Specification and Schedule of Prices
Swirl Diffusers Type DLA 7

Qty.	Description	Unit price in €	Total price in €
	Adjustable swirl diffuser for constant or variable flow rates. High induction ratio, optimum air guiding contour through swirl disc. Rapid reduction of expelled air speed and temperature difference. All-metal version. **Models** o 400 o 500 o 600 o 625 o 800 **Hole pattern** o 400 o 500 o 600/625 <u>Diffuser comprising of:</u> **Diffuser plate** made of galvanized steel sheet, o square [Q] visible side powder coated: o RAL 9010 pure white glossy (basic version) [PG9010], degree of gloss 70 % ± 10 % **Swirl disc** o with built-in swirl disc for supply air [D], with an flow-optimized contour for turbulence-free and noiseless air guidance, factury-set, subsequently adjustable even after installation. powder coated o RAL 9010 pure white silk mat (basic version) [W] o RAL 9011 graphite black silk mat [S] **Air distribution box** of galvanized steel sheet with suspension holes o rectangular box (basic version) [Q] **Connection socket** o lateral round (basic version) [SR] **Flow restrictor** o Flow restrictor [KLS], adjustable from below (basic version) **Manufacturer:** **LTG Aktiengesellschaft** **Series:** **Swirl diffusers** **Type:** **DLA 7**		

Specification and Schedule of Prices
Swirl Diffusers Type DLA 7

Qty.	Description	Unit price in €	Total price in €
	Special versions and accessories **Diffuser plate** o round [R] o square, for inserting in grid ceiling [QE] o special colour RAL _____ o mat [PM….], degree of gloss 20 % ± 10 % **Swirl disc** o special colour RAL _____ [P....] o without swirl disc [-] **Air distribution box** o pyramid box [P] o cylindrical box [Z] o without air distribution box [-] **Connection socket** o from above, round [OR] o on request _____ [....] **Flow restrictor** o without flow restrictor [-] **Adapter** o Adapter for round diffuser plate [A] (for pyramid box and rectangular box), made of galvanized steel sheet, size: o 400 o 500 o 600 o 625 o 800		

Specification and Schedule of Prices
Swirl Diffusers Type DLA 8

Qty.	Description	Unit price in €	Total price in €
	Adjustable swirl diffuser for constant or variable flow rates. High induction ratio, optimum air guiding contour through swirl disc. Rapid reduction of expelled air speed and temperature difference. All-metal version. **Model** o 600 o 625 <u>Diffuser comprising of:</u> **Diffuser plate** made of galvanized steel sheet, o square [Q] visible side powder coated: o RAL 9010 pure white glossy (basic version) [PG9010], degree of gloss 70 % ± 10 % **Swirl disc:** o with built-in swirl disc for supply air [D], with an flow-optimized contour for turbulence-free and noiseless air guidance, factory-set, subsequently adjustable even after installation. powder coated o RAL 9010 pure white silk mat (basic version) [W] o RAL 9011 graphite black silk mat [S] **Air distribution box** of galvanized steel sheet with suspension holes o rectangular box (basic version) [Q] **Connection socket** o lateral round (basic version) [SR] **Flow restrictor** o Flow restrictor [KLS], adjustable from below (basic version) **Manufacturer:** **LTG Aktiengesellschaft** **Series:** **Swirl diffusers** **Type:** **DLA 8**		

Specification and Schedule of Prices
Swirl Diffusers Type DLA 8

Qty.	Description	Unit price in €	Total price in €
	Special versions and accessories **Diffuser plate** o round [R] o square, for inserting in grid ceiling [QE] o special colour RAL _____ o mat [PM….], degree of gloss 20 % ± 10 % **Swirl disc** o special colour RAL _____ [P....] o without swirl disc [-] **Air distribution box** o pyramid box [P] o cylindrical box [Z] o without air distribution box [-] **Connection socket** o from above, round [OR] o on request _____ [....] **Flow restrictor** o without flow restrictor [-] **Adapter** o Adapter for round diffuser plate [A] (for pyramid box and rectangular box), made of galvanized steel sheet, size: o 600 o 625		

Specification and Schedule of Prices
Swirl Diffuser Type DLA 9

Qty.	Description	Unit price in €	Total price in €
	Adjustable swirl diffuser for constant or variable flow rates. High induction ratio, optimum air guiding contour through swirl disc. Rapid reduction of expelled air speed and temperature difference. All-metal version. **Model** o 400 o 500 o 600 o 625 **Hole pattern** o 400 o 500 o 600/625 <u>Diffuser comprising of:</u> **Diffuser plate** made of galvanized steel sheet, o square [Q] visible side powder coated: o RAL 9010 pure white glossy (basic version) [PG9010], degree of gloss 70 % ± 10 % **Swirl disc** o with built-in swirl disc for supply air [D], with an flow-optimized contour for turbulence-free and noiseless air guidance, factory-set, subsequently adjustable even after installation. powder coated o RAL 9010 pure white silk mat (basic version) [W] o RAL 9011 graphite black silk mat [S] **Air distribution box** of galvanized steel sheet with suspension bores: o rectangular box (basic version) [Q] **Connection socket** o lateral round (basic version) [SR] **Flow restrictor** o Flow restrictor [KLS], adjustable from below (basic version) **Manufacturer:** **LTG Aktiengesellschaft** **Series:** **Swirl diffusers** **Type:** **DLA 9**		

Specification and Schedule of Prices
Swirl Diffuser Type DLA 9

Qty.	Description	Unit price in €	Total price in €
	Special version and accessories: **Diffuser plate** o round [R] o square for inserting in grid ceiling [QE o special colour RAL _____ o mat [PM….], degree of gloss 20 % ± 10 % **Swirl disc** o special colour RAL _____ [P....] **Air distribution box** o pyramid box [P] o cylindrical box [Z] o without air distribution box [-] **Connection socket** o from above, round [OR] o on request _____ [....] **Flow restrictor** o without flow restrictor [-] **Adapter** O Adapter for round diffuser plate [A] (for pyramid box and rectangular box), made of galvanized steel sheet, size: o 400 o 500 o 600 o 625		