



Actuator

Nozzles

DUK



Connection to circular ducts



DUK-V

For installation into walls and onto rectangular and circular ducts, adjustable and fixed – made of aluminium

Adjustable and fixed jet nozzles for long throw distances with optimum acoustic properties

- Nominal sizes: 100, 125, 160, 200, 250, 315 and 400 mm
- Volume flow range: 15 – 400 l/s or 54 – 1440 m³/h
- Visible parts made of aluminium
- For constant and variable volume flows
- Low sound power level due to aerodynamic, optimised nozzle contour
- Discharge angle can be adjusted manually or with an actuator
- Quick, easy and concealed fixing



DUK-F

Optional equipment and accessories

- Exposed surface in RAL CLASSIC colours
- Circular spigot
- Connecting piece for circular and rectangular ducts
- Actuators for adjusting the discharge angle

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General information

Application

- Jet nozzles as supply air diffusers, with a long throw distance
- For factories, gymnasiums, theatres and conference rooms as well as for large internal spaces in airports, railway stations and shopping centres
- Attractive design element for building owners and architects with demanding aesthetic requirements
- For supply air to room air temperature differences from -12 – +20 K
- Adjustable discharge angle from -30 – +30°, for switching between heating and cooling mode
- Connection options:
 - Push-fit connection onto circular air ducts (pipe connection)
 - As a direct branch from circular and rectangular air ducts
 - For installation in walls or bulkheads

Special characteristics

- High discharge momentum, hence large penetration depth in heating mode
- Optimised nozzle contours
- Fixed and adjustable variants
- Discharge angle can be adjusted from -30° – +30°, either manually or with an actuator
- Electric actuator optional

Nominal sizes

- 100, 125, 160, 200, 250, 315, 400 mm
- From nominal size 160: with actuator

Variants

- F: fixed jet nozzle
- V: adjustable jet nozzle

Connection

- V-A: Pipe connection
- V-K: For rectangular air ducts
- V-R: For circular air ducts

Actuator

- Manual adjustment
- E*: electric actuator, external

Parts and characteristics

- Nozzle with acoustically optimised contours

Useful additions

- TDC temperature difference control module

Construction features

- Spigot (optional) suitable for circular air ducts according to DIN EN 1506 or DIN EN 13180

Material and surfaces

Fixed

- Nozzle made of aluminium
- Surface: untreated

Adjustable

- Nozzle and face cover ring made of aluminium
- Spherical nozzle casing ring, casing, saddle connector and spigot made of galvanised sheet steel
- Spherical nozzle casing made of plastic, UL 94, V-0, flame-retardant, temperature-resistant up to 50 °C
- Nozzle and face cover ring untreated
- Spherical nozzle casing similar to RAL 9010, white
- P0: Nozzle and face cover ring powder-coated RAL 9010, pure white
- P1: Nozzle and face cover ring powder-coated, RAL CLASSIC colour

Standards and guidelines

- Sound power level of the air-regenerated noise measured according to DIN EN ISO 5135

Maintenance

- Maintenance-free, as construction and materials are not subject to wear and tear
- Inspection and cleaning according to VDI 6022

Function

DUK

Functional description

Jet nozzles allow for supply air distribution over long distances. The airflow direction is adopted to the heating and cooling mode by adjusting the discharge angle. The supply air to room air temperature difference may range from -12 – +20 K.

Cooling mode

Cooling mode is carried out with a positive discharge angle of up to 30°. The supply air jet is directed towards the ceiling, but is deflected towards the floor as the distance from the jet nozzle increases, due to the higher density of the cooled air. When the supply air jet reaches the occupied zone, both supply air to room air temperature difference and airflow velocity have been reduced to comfortable levels.

This principle of operation allows for long throw distances.

Heating mode

Heating operation is carried out with a negative discharge angle of up to 30°. The supply air jet is directed towards the occupied zone. The lower density of the warm air causes the supply air jet to become buoyant. Ideally, the supply air jet reaches the occupied zone with a low supply air to room air temperature difference and airflow velocity.

The discharge angle can be changed manually or with an electric actuator.

DUK-F

Functional description

Jet nozzles allow for supply air distribution over long distances. Fixed jet nozzles can be used for heating and cooling mode. The supply air to room air temperature difference may range from -12 – +20 K.

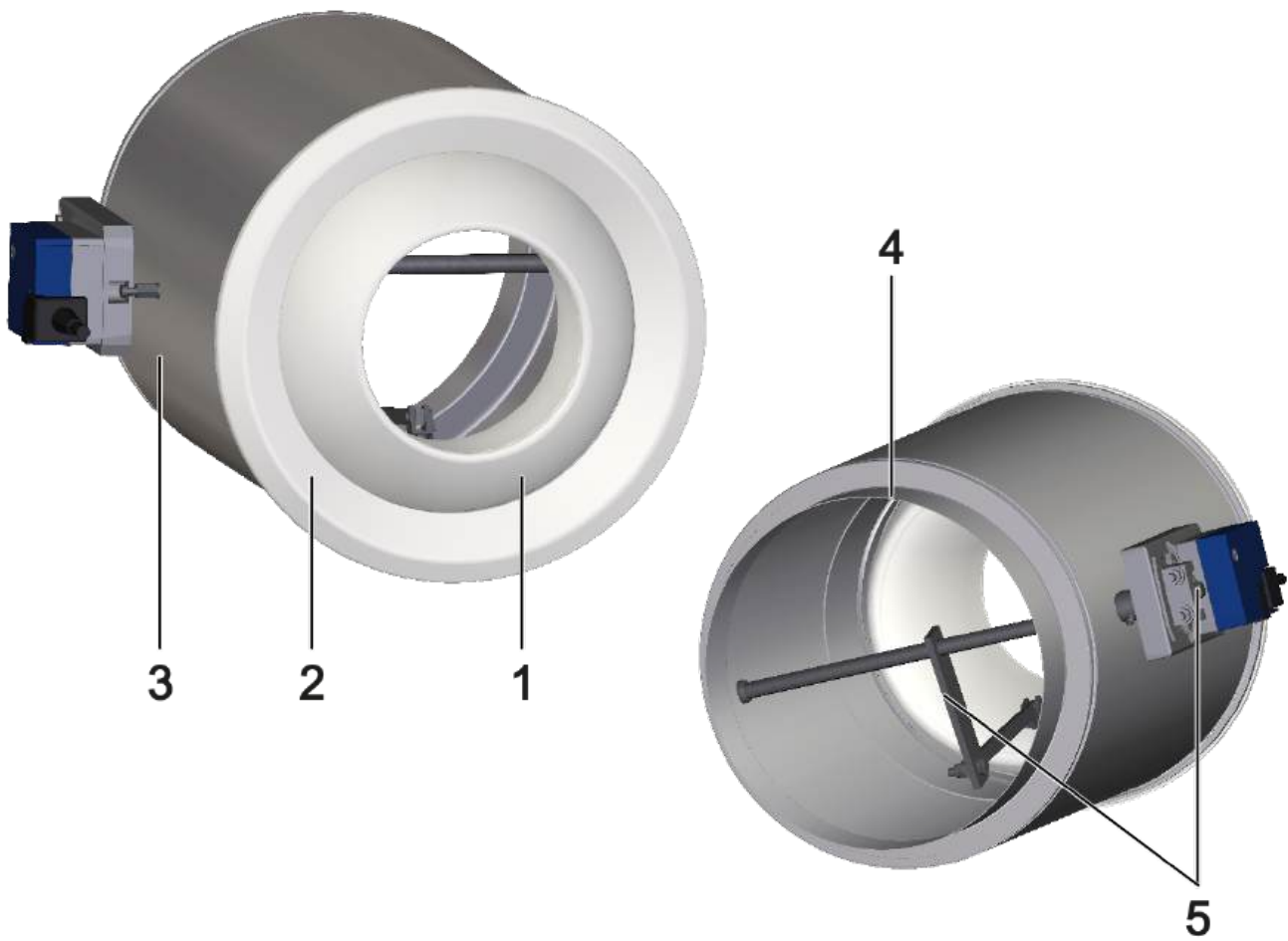
Cooling mode

Due to the higher density of the cooled air, the horizontal supply air jet is directed towards the floor with increasing distance from the jet nozzle. When the supply air jet reaches the occupied zone, both supply air to room air temperature difference and airflow velocity have been reduced to comfortable levels.

Heating mode

The supply air is discharged horizontally, but due to the lower density of warm air the supply air jet becomes buoyant. Ideally, the supply air jet reaches the occupied zone with a low supply air to room air temperature difference and airflow velocity.

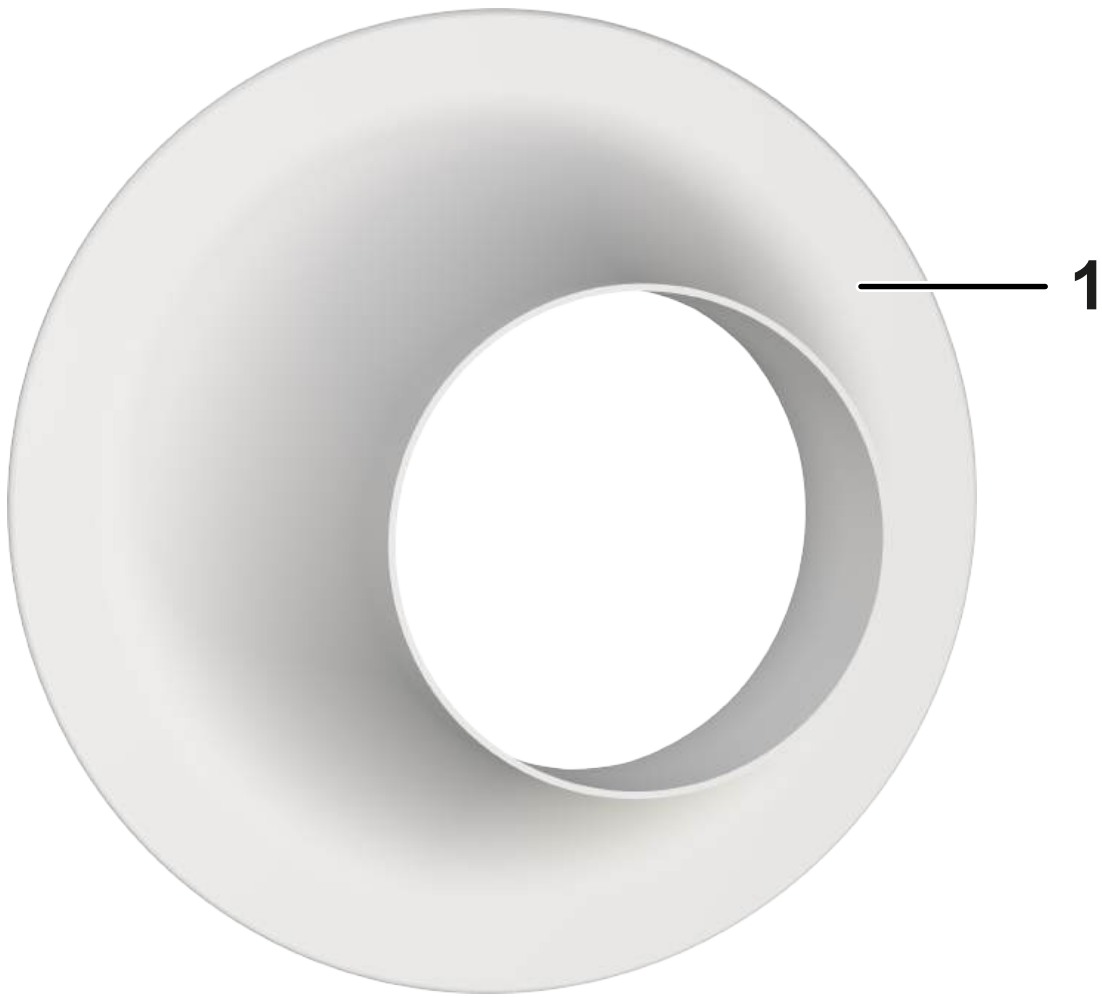
Schematic illustration of DUK-V



- 1 Nozzle
- 2 Face cover ring
- 3 Casing
- 4 Spigot

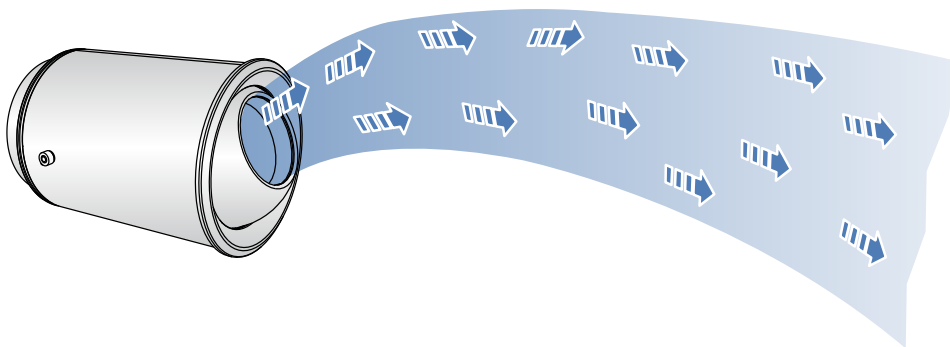
- Optional
- 5 Actuator
 - 6 driving linkage

Schematic illustration of DUK-F



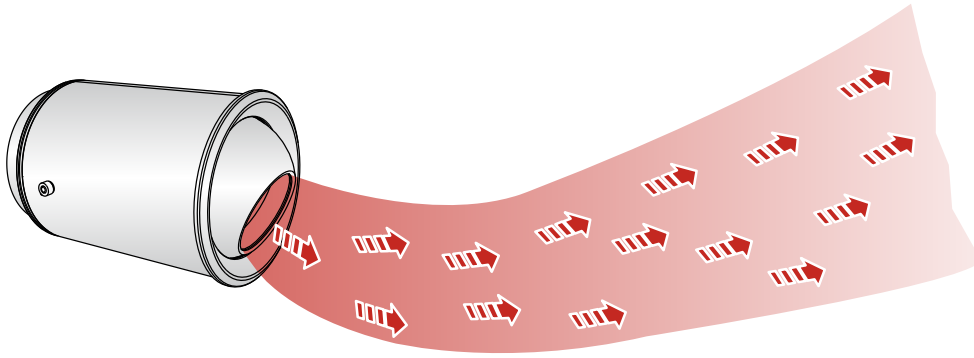
1 Nozzle

DUK-V air pattern in cooling mode



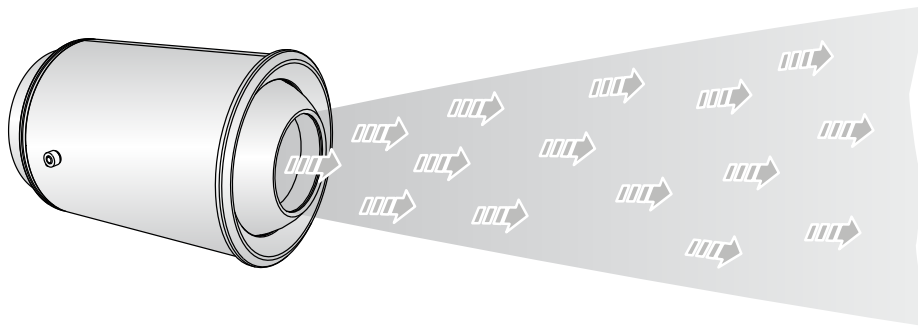
Positive discharge angle up to 30°

DUK-V air pattern in heating mode

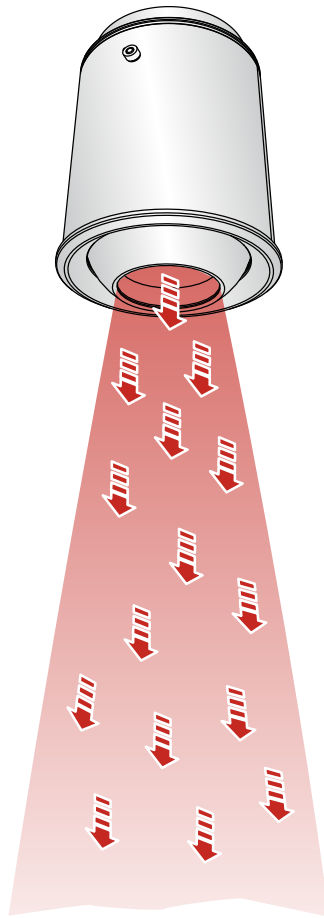


Negative discharge angle up to 30°

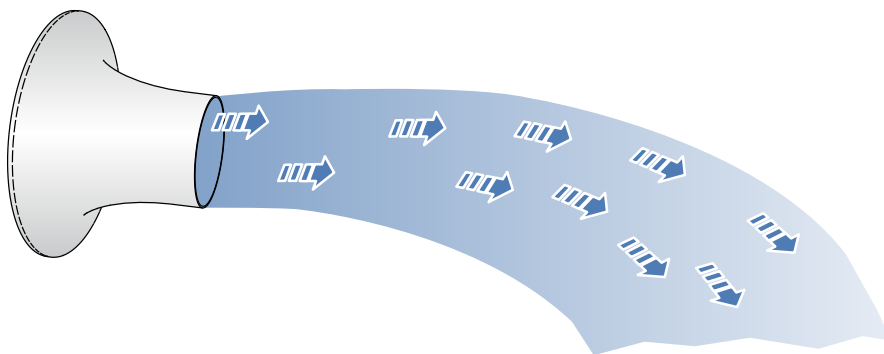
DUK-V air pattern with isothermal ventilation



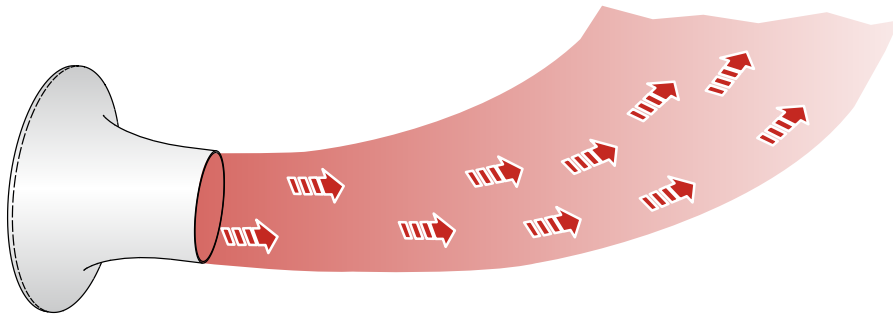
DUK-V air pattern with vertical discharge, heating mode



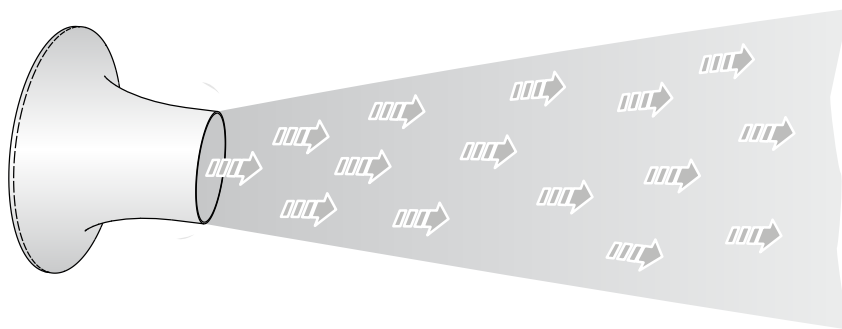
DUK-F air pattern in cooling mode



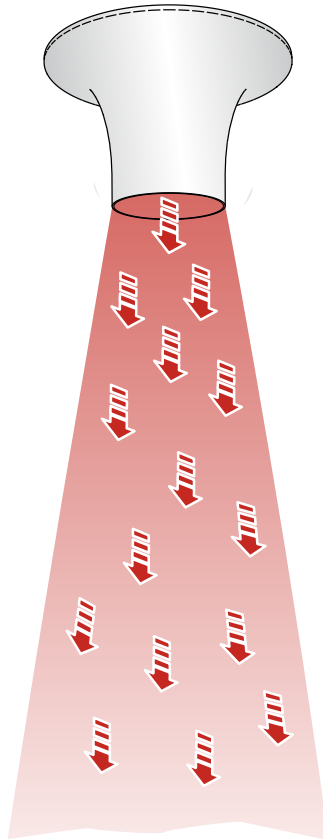
DUK-F air pattern in heating mode



DUK-F air pattern with isothermal ventilation



DUK-F air pattern with vertical discharge, heating mode



Technical data

Nominal sizes	100, 125, 160, 200, 250, 315, 400 mm
Volume flow rate range	15 – 400 l/s or 54 – 1440 m³/h
adjustable discharge angle	-30 – +30°
Supply air to room air temperature difference	-12 – +20 K

Quick sizing

Quick sizing tables provide a good overview of the volume flow rates and corresponding sound power levels and differential pressures.

Exact values for all parameters can be determined with our Easy Product Finder design program.

DUK-V, DUK-V-A, DUK-V-A-(E1, E2, E3), DUK-V-K, DUK-V-K-(E1, E2, E3), DUK-V-R, DUK-V-R-(E1, E2, E3), sound power level and total differential pressure

NS	Volume flow rate [l/s]	Volume flow rate [m³/h]	Δp_t [Pa]	L_{WA} [dB(A)]	v_L	
					0.5 m/s	1.0 m/s
					L [m]	
100	8	28	11	<15	<5	<5
100	15	54	38	<15	5	<5
100	20	72	68	<15	7	<5
100	30	108	152	30	10	5
125	15	54	13	<15	<5	<5
125	30	108	49	<15	8	<5
125	45	162	110	31	12	6
125	60	216	196	42	16	8
160	20	72	9	<15	<5	<5
160	40	144	36	<15	8	<5
160	60	216	81	19	13	6
160	80	288	144	30	17	8
200	35	126	10	<15	6	<5
200	70	252	37	<15	11	6
200	105	378	82	23	17	9
200	140	504	145	35	23	11
250	55	198	9	<15	7	<5
250	110	396	35	<15	14	7
250	165	594	77	22	21	11
250	220	792	137	34	28	14
315	90	324	9	<15	9	<5
315	185	666	37	<15	18	9
315	265	954	75	23	26	13
315	360	1296	137	35	>30	18
400	155	558	6	<15	12	6
400	310	1116	34	<15	24	12
400	465	1674	75	29	>30	18
400	620	2232	133	40	>30	24

All values apply to discharge angle 0°

L: Throw distance with isothermal operation



DUK-F, sound power level and total differential pressure

NS	Volume flow rate [l/s]	Volume flow rate [m³/h]	Δp_t [Pa]	L_{WA} [dB(A)]	v_L	
					0.5 m/s	1.0 m/s
					L [m]	
100	8	28	6	<15	3	<5
100	15	54	33	<15	5	<5
100	20	72	61	<15	7	4
100	30	108	142	19	11	5
125	15	54	10	<15	4	<5
125	30	108	52	<15	9	<5
125	45	162	122	16	13	6
125	60	216	220	26	17	9
160	20	72	5	<15	4	<5
160	40	144	31	<15	9	<5
160	60	216	74	<15	13	7
160	80	288	134	20	17	9
200	35	126	6	<15	6	<5
200	70	252	33	<15	12	6
200	105	378	79	<15	17	9
200	140	504	143	24	23	12
250	55	198	6	<15	7	<5
250	110	396	34	<15	14	<5
250	165	594	80	18	22	11
250	220	792	145	28	29	14
315	90	324	6	<15	9	5
315	185	666	36	<15	19	10
315	265	954	77	22	27	14
315	360	1296	145	33	37	19
400	155	558	6	<15	12	6
400	310	1116	34	17	24	12
400	465	1674	81	30	35	18
400	620	2232	148	40	>30	24

L: Throw distance with isothermal operation

Specification text

This specification text describes the general characteristics of the product. Texts for variants can be generated with our Easy Product Finder design programme.

Fixed and adjustable jet nozzles for the ventilation of large internal spaces such as halls and assembly rooms. Air discharge with long throw distance and optimal acoustic properties. For horizontal air discharge; variants with fixed discharge angle, adjustable air discharge (360°), or with a vertical swivelling range of -30 and +30°. Fixed nozzles with acoustically optimised contours and countersunk holes for screw-fixing to a plane surface. Adjustable jet nozzles include a spherical nozzle casing and a casing with a spigot, flanged collar or saddle connector. For push fitting directly onto circular ducts (duct connection) or as a direct branch off circular or rectangular ducts; also for installation on plane surfaces.

Special characteristics

- High discharge momentum, hence large penetration depth in heating mode
- Optimised nozzle contours
- Fixed and adjustable variants
- Discharge angle can be adjusted from -30° – +30°, either manually or with an actuator
- Electric actuator optional

Material and surfaces

Fixed

- Nozzle made of aluminium
- Surface: untreated

Adjustable

- Nozzle and face cover ring made of aluminium
- Spherical nozzle casing ring, casing, saddle connector and spigot made of galvanised sheet steel
- Spherical nozzle casing made of plastic, UL 94, V-0, flame-retardant, temperature-resistant up to 50 °C
- Nozzle and face cover ring untreated
- Spherical nozzle casing similar to RAL 9010, white
- P0: Nozzle and face cover ring powder-coated RAL 9010, pure white
- P1: Nozzle and face cover ring powder-coated, RAL CLASSIC colour

Technical data

- Nominal sizes: 100, 125, 160, 200, 250, 315, 400 mm
- Volume flow range: 15 – 400 l/s or 54 – 1440 m³/h
- Adjustable discharge angle: -30 – +30°
- Supply air to room air temperature difference: -12 – +20 K

Sizing data

- q_v [m³/h]
- Δp_t [Pa]

air-regenerated noise

- L_{WA} [dB(A)]

Order code

DUK-V-R-E1/250×630/P1 - RAL 9016

1	2	3	4	5	6	7

1 Type

DUK Jet nozzle

2 Discharge direction

F fixed

V adjustable

3 Connection

Applies to discharge direction V only

No entry: without spigot

A Pipe connection spigot (axial)**K** Duct connection spigot**R** Saddle connector**4 Adjustment**

No entry: manual adjustment

From nominal size 160

External electric actuator

E1 230 V AC, 3-point**E2** 24 V AC/DC, 3-point**E3** 24 V AC/DC, modulating, 2 – 10 V DC**5 Nominal size [mm]**

100, 125, 160, 200, 250, 315, 400

6 Circular duct diameter [mm]

Only for connection R

200 (nominal size 100)**250** (nominal size 125)**315** (nominal size 160)**500** (nominal sizes 160 – 315)**630** (from nominal size 160)**800** (from nominal size 160)**7 Exposed surface**

No entry: without surface finish

P0 powder-coated, RAL 9010 (pure white)**P1** powder-coated, specify RAL CLASSIC colour

Gloss level

RAL 9010 GU 50

RAL 9006 GU 30

All other RAL colours GU 70

Order example: DUK-V-R-E1/250×630/P1-RAL9016

Type	DUK
Air discharge direction	adjustable
Connection	saddle connector
Adjustment	230 V AC, 3-point
Nominal size [mm]	250
Circular duct diameter [mm]	630
Exposed surface	Powder-coated, RAL 9016 (traffic white)

Variants

DUK-F



Fixed jet nozzle

DUK-F

Variant

- Fixed jet nozzle

Nominal sizes

- 100, 125, 160, 200, 250, 315, 400

Parts and characteristics

- Nozzle with acoustically optimised contours
- Countersunk holes for screw-fixing the nozzle to a plane surface

DUK-V

Adjustable jet nozzle

DUK-V**Variant**

- Adjustable jet nozzle for wall and bulkhead installation

Nominal sizes

- 100, 125, 160, 200, 250, 315, 400

Parts and characteristics

- Nozzle with acoustically optimised contours
- Nozzle can be manually rotated inside the spherical nozzle casing by 360°
- Screw fixing concealed by face cover ring

DUK-V-A-E1

DUK for pipe connection

DUK-V-A

Designed for high comfort

Together with renowned designers and architects we have developed ceiling, wall, staircase and floor diffusers and grilles that are not only aesthetic design elements, but also meet demanding ventilation and acoustic requirements.

Variant

- Adjustable jet nozzle for the connection to circular ducts

Nominal sizes

- 100, 125, 160, 200, 250, 315, 400 mm
- From nominal size 160: with actuator

Parts and characteristics

- Nozzle with acoustically optimised contour
- Nozzle can be manually rotated inside the spherical nozzle casing by 360°
- Screw fixing concealed by face cover ring
- Casing and spigot
- The discharge angle can be adjusted from -30° – +30° with an electric actuator (optional)
- E1, E2, E3: External actuator

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180

DUK-V-K-E1



DUK for the connection to rectangular air ducts

DUK-V-K

Variant

- Adjustable jet nozzle for the connection to rectangular ducts

Nominal sizes

- 100, 125, 160, 200, 250, 315, 400 mm
- From nominal size 160: with actuator

Parts and characteristics

- Nozzle with acoustically optimised contour

- Nozzle can be manually rotated inside the spherical nozzle casing by 360°
- Screw fixing concealed by face cover ring
- Casing and flanged collar
- The discharge angle can be adjusted from -30° – +30° with an electric actuator (optional)
- E1, E2, E3: external actuator

DUK-V-R-E1

DUK for the connection to circular air ducts

DUK-V-R**Variant**

- Adjustable jet nozzle for the connection to circular ducts

Nominal sizes

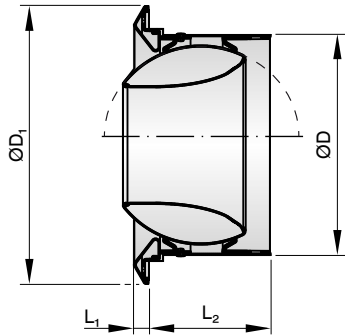
- 100, 125, 160, 200, 250, 315, 400 mm
- From nominal size 160: with actuator

Parts and characteristics

- Nozzle with acoustically optimised contour
- Nozzle can be manually rotated inside the spherical nozzle casing by 360°
- Screw fixing concealed by face cover ring
- Casing and saddle connector
- The discharge angle can be adjusted from -30° – +30° with an electric actuator (optional)
- E1, E2, E3: external actuator

Dimensions and weight

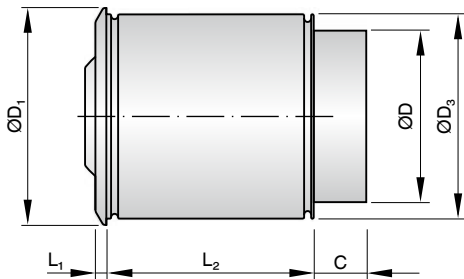
DUK-V



DUK-V

NS	ØD ₁	L ₁	L ₂	ØD	m [kg]
100	146	11	76	98	0.4
125	169	11	85	123	0.5
160	200	11	94	158	0.8
200	257	16	110	198	1.4
250	302	16	146	248	2.5
315	384	23	153	313	4
400	467	24	177	398	6

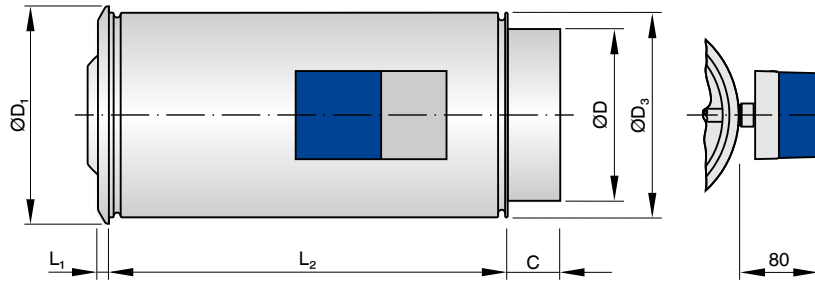
DUK-V-A



DUK-V-A

NS	ØD ₁	L ₁	L ₂	ØD ₃	ØD	C	m [kg]
100	146	11	84	134	98	50	0.8
125	169	11	94	157	123	50	1
160	200	11	114	188	158	50	1.6
200	257	16	143	242	198	50	2.5
250	302	16	172	287	248	50	4
315	384	23	223	358	313	50	6
400	467	24	262	441	398	50	9

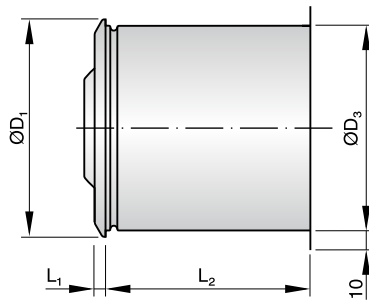
DUK-V-A-E1, DUK-V-A-E2, DUK-V-A-E3



DUK-V-A-E*

NS	ØD ₁	L ₁	L ₂	ØD ₃	ØD	C	m [kg]
160	200	11	365	188	158	50	3
200	257	16	365	242	198	50	4
250	302	16	365	287	248	50	5.5
315	384	23	365	358	313	50	7.5
400	467	24	365	441	398	50	10.2

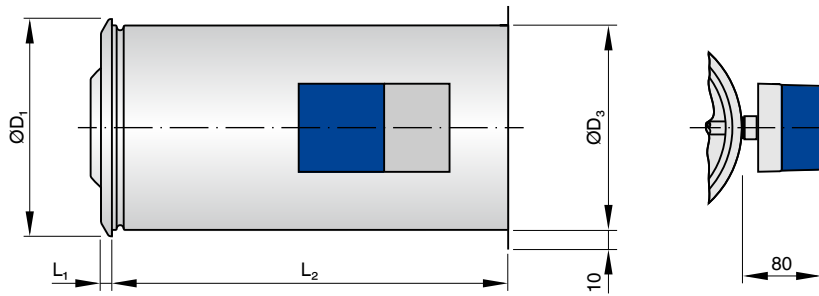
DUK-V-K



DUK-V-K

NS	ØD ₁	L ₁	L ₂	ØD ₃	C	m [kg]
100	146	11	84	134	50	0.8
125	169	11	94	157	50	1
160	200	11	114	188	50	1.5
200	257	16	143	242	50	2.3
250	302	16	172	287	50	4
315	384	23	223	358	50	6
400	467	24	262	441	50	9

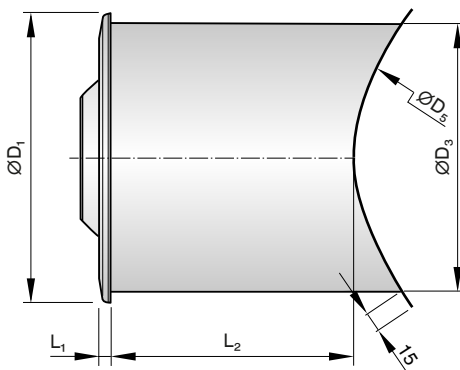
DUK-V-K-E1, DUK-V-K-E2, DUK-V-K-E3



DUK-V-K-E*

NS	$\varnothing D_1$	L_1	L_2	$\varnothing D_3$	C	m [kg]
160	200	11	365	188	50	3
200	257	16	365	242	50	4
250	302	16	365	287	50	5.5
315	384	23	365	358	50	7.5
400	467	24	365	441	50	10

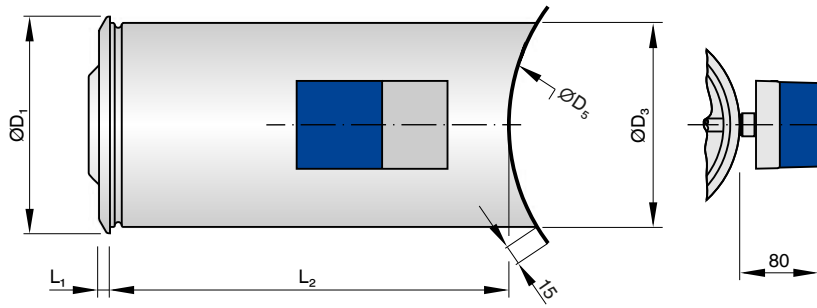
DUK-V-R



DUK-V-R

NS	$\varnothing D_1$	L_1	L_2	$\varnothing D_3$	C	m [kg]
100	146	11	84	134	50	0.7
125	169	11	94	157	50	0.9
160	200	11	114	188	50	1.3
200	257	16	143	242	50	2.2
250	302	16	172	287	50	3.7
315	384	23	223	358	50	5.9
400	467	24	262	441	50	8.7

DUK-V-R-E1, DUK-V-R-E2, DUK-V-R-E3



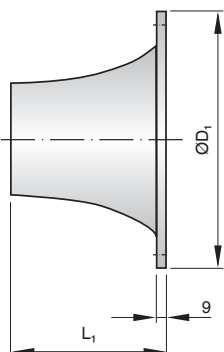
DUK-V-R-E*

NS	ØD ₁	L ₁	L ₂	ØD ₃	C	m [kg]
160	200	11	365	188	50	3.2
200	257	16	365	242	50	4.4
250	302	16	365	287	50	5.7
315	384	23	365	358	50	8
400	467	24	365	441	50	11.5

Circular duct diameter ØD₅ [mm]

NS	200	250	315	500	630	800
100	+					
125		+				
160			+	+	+	+
200				+	+	+
250				+	+	+
315				+	+	+
400					+	+

DUK-F



DUK-F

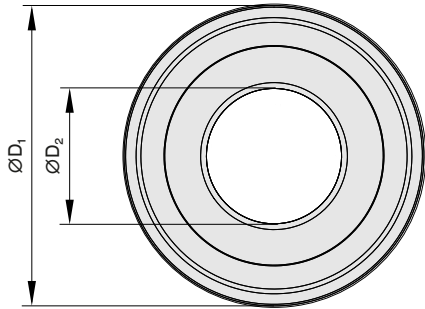
NS	ØD ₁	L ₁	m [kg]
100	138	94	0.1



NS	$\varnothing D_1$	L_1	m [kg]
125	161	112	0.1
160	225	122	0.2
200	265	153	0.3
250	315	187	0.4
315	400	224	0.6
400	485	287	0.9

Product details

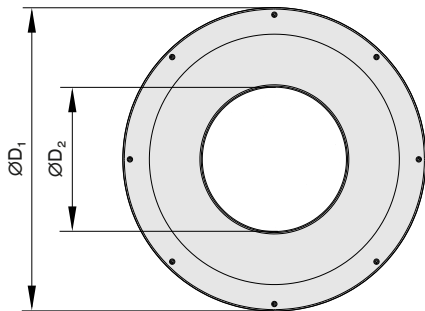
DUK-V front view



DUK-V

NS	ØD ₁	ØD ₂	A _{eff} [m ²]
100	146	50	0.0019
125	169	64	0.0031
160	200	82	0.005
200	257	108	0.0085
250	302	136	0.0135
315	384	174	0.0225
400	467	230	0.0385

DUK-F front view



DUK-F

NS	ØD ₁	ØD ₂	A _{eff} [m ²]
100	138	50	0.00174
125	161	64	0.00277

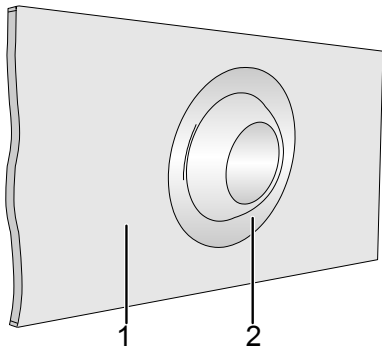
NS	ØD_1	ØD_2	$A_{\text{eff}} [\text{m}^2]$
160	225	82	0.00469
200	265	108	0.00813
250	315	136	0.01289
315	400	174	0.0211
400	485	230	0.03683

Installation and commissioning

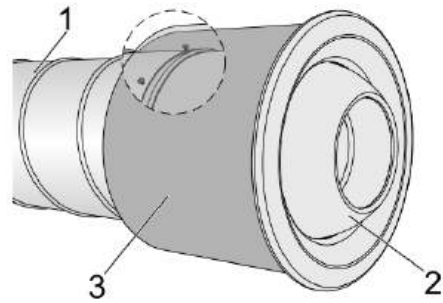
- Ensure correct installation orientation
- Pipe connection or as a branch off circular or rectangular air ducts
- DUK-F and DUK-V also on plane installation surfaces, e.g. walls and bulkheads

The schematic diagrams are provided to illustrate installation details.

Installation on a plane surface



Installation in circular air ducts, with pipe connection spigot

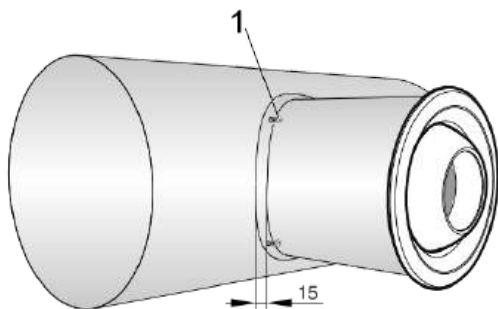


TJN, DUK-V

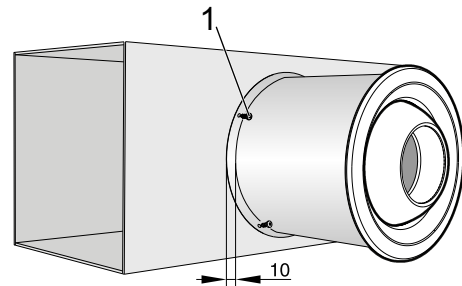
- 1 Plane installation surface
- 2 Jet nozzle

- 1 Circular duct
- 2 Jet nozzle
- 3 Spigot (axial)

DUK-V-R-*/... with saddle connector



DUK-V-K-*/... with duct connection spigot



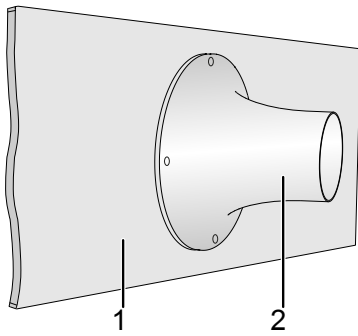
Create a hole for the saddle connector in the air duct. Fix the saddle connector, e.g. with drilling screws

Create a hole for the duct connection spigot in the air duct. Fix the duct connection spigot, e.g. with drilling screws

- 1 Drilling screw

- 1 Drilling screw

Installation onto a plane surface



DUK-F

- 1 Plane installation surface
- 2 Jet nozzle

Nomenclature

ØD [mm]
Diameter of spigot

ØD₁ [mm]
Outer diameter of the face cover ring

ØD₂ [mm]
Smallest nozzle diameter (at the discharge opening)

ØD₃ [mm]
Diameter of the nozzle casing

ØD₄ [mm]
Nominal width of the circular duct, for nozzles with saddle connector

ØD₅
Circular duct diameter

C [mm]
Length of spigot

L₁ [mm]
Length of the face cover ring

L₂ [mm]
Casing length

m [kg]

Weight

L_{WA} [dB(A)]
Sound power level of the air-regenerated noise

q_v [m³/h]; [l/s]
Volume flow rate

Δt_z [K]
Supply air to room air temperature difference

Δp_t [Pa]
Total differential pressure

v_L [m/s]
Air velocity at throw distance L (measured at the centre of the airflow)

L [m]
Throw distance with isothermal operation, no throw distance reduction

A_{eff} [m²]
Effective air discharge area

All sound power levels are based on 1 pW.

Lengths

All lengths are given in millimetres [mm] unless stated otherwise.