

Step twist outlet DS-RA-DN 80....

Step twist outlet DS-RA-DN 80

Preliminary remark

The step twist outlet DS-RA-DN 80 has been developed by KRANTZ KOMPONENTEN for integration into step risers made of wood or concrete. Its range of application includes auditoria, performance halls, sports arenas, convention centres, cinemas, theatres, and lecture halls. As a rule, an outdoor air flow rate of 6 to 11 l/s [20 to 40 m³/h] per occupant is to be considered in such applications; this means that provision should be made for 1 to 2 step twist outlets for each seat. Because of its low overall height, this outlet can also be built into low-height step risers. The step twist outlet DS-RA-DN 80 is easy to install and features a low sound power level.

Mode of operation

The supply air is delivered to the step twist outlet from a pressurized floor void. The supply air discharged through the outlet mixes with the indoor air and the temperatures of supply and indoor air equalize quickly. Delivering the conditioned air directly to the near-zone of the seated people ensures a high air quality. The stale, particle-laden warm indoor air flows upwards to the ceiling area where it is extracted. This so-called microclimate air distribution system features both a uniform temperature distribution in the occupied zone and a draught-free indoor air flow in the microclimate zone.

Construction design and installation

The construction design of the step twist outlet depends on the installation detail. In practice there are two typical installation options:

- Drywall systems where the step twist outlets are installed in boards made of calcium silicate, wood, or similar materials
- Installation of the step twist outlets in concrete steps.

For installation in **drywall systems**, the step twist outlet consists of a cylindrical sleeve **1** with rear air distribution plate **2** and a faceplate **3**. The sleeve is inserted into the step cutout and fixed to the step riser using proper fastening devices (screws, nails, or staples). The faceplate **3** is fixed to the air distribution plate by a threaded rod **4** and a countersunk nut **5**. Then the cap **6** is screwed into the countersunk nut by hand.

For installation in **concrete steps**, the step twist outlet consists of the rear air distribution plate **2** and the faceplate **3**.

The rear air distribution plate is to be positioned against the back end of the cut-out step riser. The faceplate **3** is clamped to the concrete step riser and fixed to the air distribution plate by a threaded rod **4** and a countersunk nut **5**. Then the cap **6** is screwed into the countersunk nut by hand.

Key	Material
1 Sleeve	aluminium
2 Air distribution plate	sheet metal, galvanized
3 Faceplate	sheet metal, powder coated
4 Threaded rod	steel, galvanized
5 Countersunk nut	brass
6 Cap	brass, powder coated

Selection and layout data

DS-RA-DN 80		
Maximum volume flow rate	l/s	6.9
	m ³ /h	25
Recommended volume flow rate	l/s	5.5
	m ³ /h	20
Number of outlets per seat	units	1 – 2
Maximum sound power level	dB(A) ref. 10 ⁻¹² W	24
Maximum pressure drop	Pa	18
Diameter D ₁	mm	79
Bore diameter D ₂	mm	80
Outside diameter D ₅	mm	110
Diameter D ₆	mm	110
H ₁	mm	80
H ₂	mm	5.5
H ₃	mm	≥ 18
H ₄	mm	≥ 80

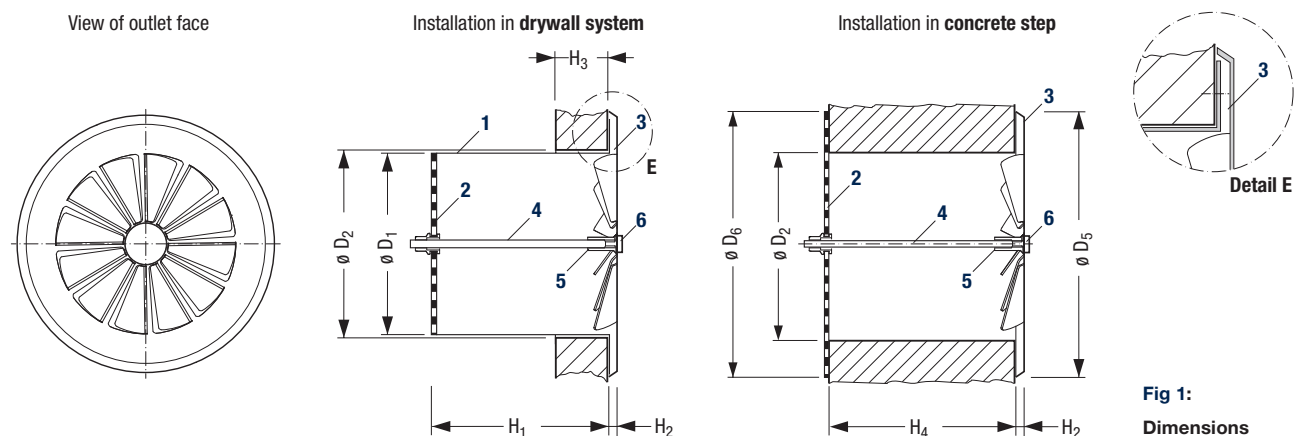
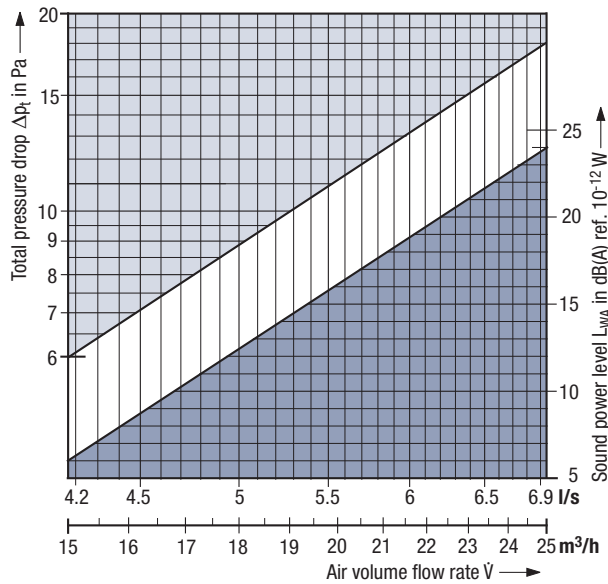


Fig 1:
Dimensions

Step twist outlet DS-RA-DN 80

Sound power level and total pressure drop



Air outlet volume flow rate \dot{V}		Total pressure drop Δp_t Pa	Sound power level L_{WA} in dB ref. 10^{-12} W							
l/s	m ³ /h		L_{WA} dB(A)	Octave band centre frequency in Hz						
				63	125	250	500	1 K	2 K	4 K
4.2	15	6	6	22	< 5	13	10	< 5	< 5	< 5
5.6	20	11	16	24	< 5	19	16	13	< 5	< 5
6.9	25	18	24	26	< 5	23	20	21	< 5	< 5

Features

- Air distribution system for auditoria, convention centres, theatres, and other assembly rooms
- For integration into step risers ≥ 130 mm in height
- Maximum volume flow rate 6.9 l/s [25 m³/h]
- Microclimate air distribution system with uniform temperature distribution in the occupied zone and draught-free indoor air flow in the microclimate zone
- Low sound power level
- Maximum temperature difference
 - between supply and indoor air : -5 K
 - between supply and return air: -12 K
 depending on internal heat loads and floor-to-ceiling height
- Low-outlay solution for comfortable climate
- Recommended minimum supply air temperature 18 °C

Type code

DS-RA-DN 80 - - -

Step twist outlet
Function / Kind
Size
Installation
Surface finish

Function / Kind

RA = Radial outlet

Size: DN 80

Installation

C = Installation in concrete step ¹⁾

W = Installation in wooden step ²⁾

Surface finish

0 = no coating

.... = face painted to RAL

Tender text

..... units

Step twist outlet for integration into step risers, for direct fresh air supply to ensure high-quality, draught-free indoor air flow along with quick equalization of supply and indoor air temperatures in the occupied zone,

consisting of:

- twist element with circular face
- air distribution plate positioned either at the rear of the outlet sleeve for installation in a **wooden step** (or similar material) or against the back end of the cut-out step riser for outlet installation in a **concrete step**
- threaded rod and countersunk nut for fixing the outlet to the step riser from the room side.

Material:

- Twist element made of galvanized sheet metal, powder coated to RAL
- Air distribution plate made of galvanized sheet metal
- Sleeve made of aluminium

Make:

KRANTZ KOMponenten

Type:

DS-RA-DN 80 - - -

Subject to technical alterations.

¹⁾ Please specify thickness of concrete step

²⁾ Or similar material



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