

# Chilled Beam Flexicool® IQSA



## Functions

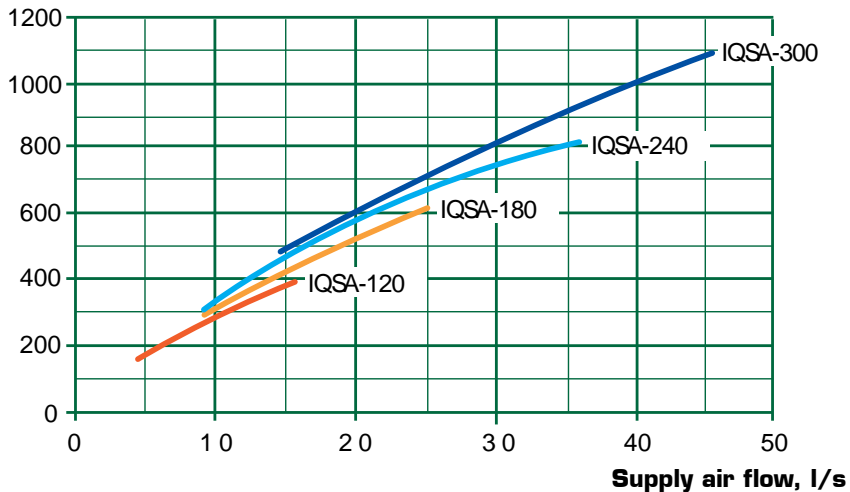
- High Air-flow
- Controls
- Lighting
- Comfort control
- Heating



The chilled beam Flexicool® IQSA is an integrated system for ventilation, cooling and heating, fulfilling most needs for indoor climate. These supply air beams are designed to manage high cooling effects that, because of good mixing with room air, provide comfort and low air velocities in the occupied zone. IQSA, with a covered top side, can be used for straight and slanting duct and water connections. The beam is designed for ceiling mounting and its dimensions are suited for a ceiling module sized 300 mm. The chilled beam is equipped with adjusting rails, comfort control, for the adjustment of air flow, cooling effect and flow pattern. The simple adjustment of flow pattern makes it possible to adapt to changing conditions in the room.

## Quick Selection

### Cooling effect in W incl supply air



The diagram shows the approximate cooling effect  $P_{tot}$  in W with water flow  $q_w = 0.05$  l/s, temperature difference between room air and supply air  $\Delta t = 8$  °C, difference between room air and average water temperature = 8 °C, pressure drop 60 Pa on the air side and max. sound pressure level  $L_{A10} = 34$  dB(A).

## Product Facts

- Chilled beam IQSA for ceiling mounting
- Suited for standard 300 mm ceiling module
- Capacity and flow directions easily adjustable
- Bottom plate can be pushed aside to enable adjustments of capacity as well as check-up and cleaning
- Patent pending for the sound attenuator
- Fastening brackets for quick and easy mounting - lift up - snap on

## Product code example

Chilled beam IQSA for ceiling mounting, suited for ceiling module 300 mm, manufactured by Fläkt Woods. With stepless adjustment of air flow and flow pattern. Chilled beam IQSA-180-1-1-1-1.

# Technical data for cooling and heating effect

Cooling effect for two-way chilled beam at static pressure drop 60 Pa on the air side

Beam length = 1,2 m (Coil length = 0,9 m)

Water flow,  $q_w = 0,05$  l/s

Pressure drop water,  $\Delta p_w = 2,0$  kPa

ql, l/s	P <sub>tot</sub> , W Δt, °C			P <sub>coil</sub> , W Δt, °C			LA10, dB(A)
	6	9	10	6	9	10	
5	140	170	200	90	120	150	<17
10	235	280	330	140	185	235	<19
15	320	375	435	175	230	290	<25

Beam length = 1,75/1,8m (Coil length = 1,45 m)

Water flow,  $q_w = 0,05$  l/s

Pressure drop water,  $\Delta p_w = 2,9$  kPa

ql, l/s	P <sub>tot</sub> , W Δt, °C			P <sub>coil</sub> , W Δt, °C			LA10, dB(A)
	6	9	10	6	9	10	
10	260	320	375	165	225	280	<17
15	350	420	490	205	275	345	<19
20	445	530	610	250	335	415	<26
25	520	610	705	280	370	465	<27

Beam length = 2,4 m (Coil length = 2,1 m)

Water flow,  $q_w = 0,05$  l/s

Pressure drop water,  $\Delta p_w = 3,9$  kPa

ql, l/s	P <sub>tot</sub> , W Δt, °C			P <sub>coil</sub> , W Δt, °C			LA10, dB(A)
	6	9	10	6	9	10	
10	275	340	400	180	245	305	<17
15	375	450	525	230	305	380	<17
20	480	575	670	285	380	475	18
25	560	665	775	320	425	535	23
30	640	755	875	355	470	590	29
35	715	796	970	380	510	635	30

Beam length = 3.0 m (Coil length = 2.7 m)

Water flow,  $q_w = 0,05$  l/s

Pressure drop water,  $\Delta p_w = 4,8$  kPa

ql, l/s	P <sub>tot</sub> , W Δt, °C			P <sub>coil</sub> , W Δt, °C			LA10, dB(A)
	6	9	10	6	9	10	
15	395	480	560	250	335	415	<17
20	505	605	710	310	410	515	18
25	585	700	815	345	460	575	21
30	680	805	940	395	520	655	24
35	755	895	1040	420	560	705	29
40	845	1000	1150	460	615	765	32
45	915	1075	1235	485	645	805	34

## Conditions for cooling effect tables

Total cooling effect of beam,  $P_{tot}$  = cooling effect of coil,  $P_{coil}$  + cooling effect of supply air,  $P_{air}$ .

The assumed pressure drop on the air side is 60 Pa.

The cooling effect of supply air is based on an undertemperature of 8 °C for the supply air, when compared to the room temperature.

The effects for other water flows can be found in the Fläkt Woods product selection program WinDon

Note! The tables here are based on tests done according to the Nordtest method. The purpose of this method is to be able to compare different chilled beams on the same terms. The method requires a non-existing temperature difference between the air entering the beam coil and the air at 1,1 m above floor surface. To achieve this, the walls in the test room are cooled.

In actual conditions, the temperature difference is normally 1- 2 °C. This is why the temperature difference  $\Delta t$  should be increased by 1 - 2 °C to avoid overdimensioning of the beam. This means that the table value concerned can be increased by 10 - 20 %.

With side connections the sound generation increases by 1 - dB(A). With top connections the sound generation decreases by 1 - dB(A).

The chilled beam can be supplied with a special construction for higher air flows than listed in these tables.

## Heating effect for two-way chilled beam IQSA at static pressure drop 60 Pa on the air side

Heating effects can be found in separate catalogue section, heating.

## Definitions

$q_l$	Supply air flow, l/s
$P_{tot}$	Total cooling effect, W
$P_{coil}$	Cooling effect of the coil, W
$P_{coil\ heat}$	Heating effect of the coil, W
$LA_{10}$	Sound pressure level in a room with 10 m <sup>2</sup> room absorption, dB(A)
$\Delta t$	Difference between room air temperature and average water temperature, °C
$\Delta p_w$	Pressure drop water, kPa
$\Delta t_w$	Temperature rise in the coil, °C. Calculated with the formula: $\Delta t_w = P_{coil} / 208$

# Technical data for other flow patterns, sound data

## Technical data for flow patterns other than two-way air distribution

Beams with two-way air distribution utilize the coil in full, which is not the case in one-way distribution or middle positions. This effect factor can be found in the table below.

For a particular beam and supply air flow, the obtained effect factor is multiplied by the value given in the effect tables on the previous page.

Type of distribution	Beam length, m	Max. supply air flow, l/s	Effect factor
One-way	1,2	5	0,8
	1,8	15	0,8
	2,4	20	0,8
	3,0	25	0,8
70% - 30%	1,2	10	0,9
	1,8	15	0,9
	2,4	25	0,9
	3,0	30	0,9

## Example

### Requirements:

Beam of length = 2,4 m with one-way air distribution, air flow = 20 l/s, pressure drop air = 60 Pa, difference between room air temperature and average water temperature = 8° C and water flow = 0,05 l/s.

### Result:

The table on the previous page gives coil effect  $P_{coil} = 380W$  Effect factor = 0,8

Coil effect for one-way air distribution =  $0,8 \times 380 = 304W$

## Sound power level

IQSA	Correction $K_{oct}$ dB							
	Octave band, middle frequency, [Hz]							
	63	125	250	500	1000	2000	4000	8000
-120	6	-2	1	1	0	-4	-10	-10
-175	6	-2	1	1	0	-4	-10	-10
-190	6	-2	1	1	0	-4	-10	-10
-240	6	-2	1	1	0	-4	-10	-10
-300	6	-2	1	1	0	-4	-10	-10
Tolerance	+/-	6	3	2	2	2	2	3

The sound power levels for every octave band are obtained by adding together the sound pressure level  $L_{A10}$ , dB(A), and the corrections  $K_{oct}$  given in the table above, according to the following formula:

$$L_W = L_{A10} + K_{oct}$$

The correction  $K_{oct}$  is the average in the area of application of the chilled beam IQSA.

## Sound attenuation

The average sound attenuation  $\Delta L$  of chilled beam IQSA from duct to room includes the end reflection of the connecting duct in ceiling mounting.

IQSA	Sound attenuation in supply air duct of the beam $\Delta L$ , dB							
	Octave band, middle frequency, Hz							
	63	125	250	500	1000	2000	4000	8000
-120	22	16	6	7	8	13	13	12
-175	22	16	6	7	8	13	13	12
-180	22	16	6	7	8	13	13	12
-240	22	16	6	7	8	13	13	12
-300	22	16	6	7	8	13	13	12
Tolerance	+/-	6	3	2	2	2	2	3

## Construction and function

The chilled beam IQSA is designed for ceiling mounting, and it is suited for ceiling modules of size 300 mm both in length and width, which means that it is flush with the ceiling surface.

The air flow can be adjusted by means of the patented adjusting rails, comfort control, with which the length of the holes in the supply air duct is changed. This can easily be done with normal adjustments. A regulating damper is normally not required.

The adjustable hole lengths allow different air distribution (two-way, one-way and middle positions).

The simple adjustment of air distribution and capacity makes it possible to adapt to changing conditions in the future.

Before delivery, the hole lengths of standard beams are preset at the longest possible position to provide a starting position for later adjustment.

The beam can be supplied with a coil for heating water.

The bottom plates can be pushed aside to allow easy cleaning and adjustment of air flow.

The purging nipple is included in accessories.

## Material and surface finish

The casing is mainly made of galvanized steel sheet and aluminium profiles. The frontplate is powder painted in white.

The standard colour RAL 9010, gloss level 30.

Coil made of copper pipe with connection,  $\varnothing = 15$  mm, and aluminium fins. Maximum working pressure 1,6 MPa.

## Installation, adjustment and maintenance

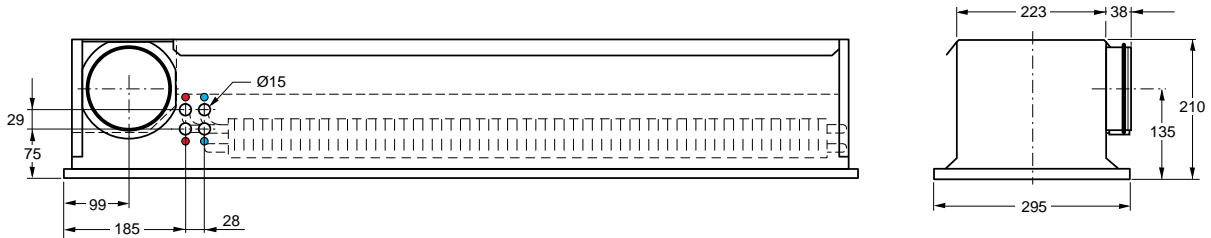
Detailed instructions for installation, adjustment and maintenance can be found in our technical instructions that are delivered with every product.

The instructions are also available on our web pages at [www.flaktwoods.com](http://www.flaktwoods.com)

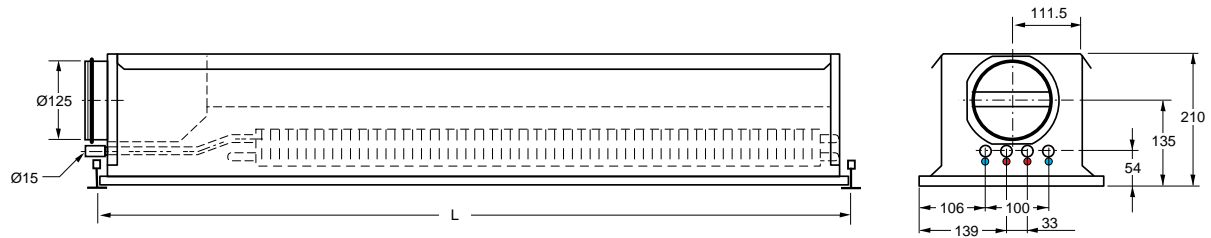
# Dimensions and weights

## Dimensions and weights

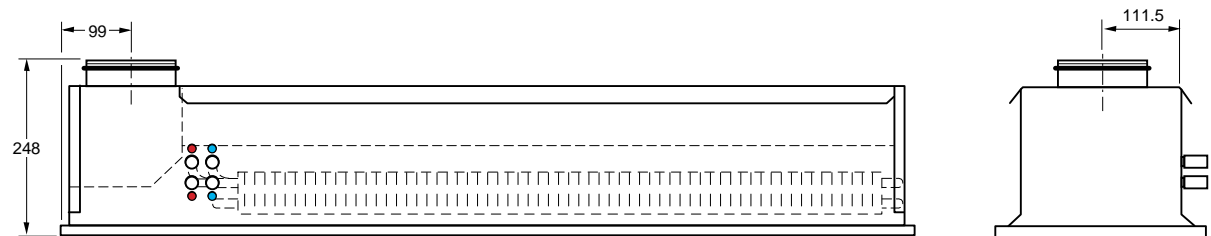
Connection alternative 1 - air and water connections right in air direction



Connection alternative 2 - air and water connections through end wall



Connection alternative 3 - air connection up, water connection right in air direction



Size	L	Weight, [kg]
IQSA-120	1195	14
IQSA-175	1745	20
IQSA-180	1795	21
IQSA-240	2395	28
IQSA-300	2995	35

Water volume cooling = 0.75 l/m coil

Water volume heating = 0.25 l/m coil

# Description, product code and accessories

## Description

Covered chilled beam IQSA for ceiling installation, manufactured by Fläkt Woods. With stepless adjustment of air flow and flow pattern.

## Product code

### Main code

**Covered supply air beam standard**                      **IQSA-aaa-b-c-d-e**

Nominal length, cm (aaa)

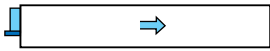
120, 175, 180, 240, 300

Connection alternatives (b)

1 = air connection right, water connections right in air direction



2 = air and water connections through end wall



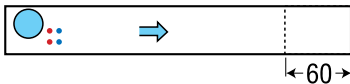
3 = air connection up, water connection right in air direction



Casing version (c)

1 = Standard

2 = Extended casing, 60 cm (only for casing lengths 120, 180, 240 cm)



Coil construction (d)

1 = cooling

2 = cooling and heating

Number of hole rows (e)<sup>1)</sup>

1 = 1 hole row

2 = 2 hole rows<sup>2)</sup>

<sup>1)</sup> 1 hole row = standard air flow

2 hole rows = high air flow

<sup>2)</sup> Not a standard solution for IQSA-120, can be offered by request.

### Attachment, unpainted

**QFAZ-19**

Set with 2 pcs.

1 pc. QFAZ-19 per beam.



## Accessories

### Construction for clean installation

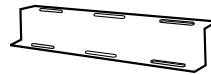
**IQAZ-11-1**

Protective film over painted surfaces  
(Plastic covers for duct and pipe openings are standard)

### Suspension brackets

**QFAZ-11-1**

2 pcs. QFAZ-11-1  
per beam



### Suspension rods M8

**QFAZ-12**

Set with 2 pcs. Length 500 mm.  
2 sets QFAZ-12 per beam



### The purging nipple

**BFAZ-01**

Placed in the return pipeline.

### Air connection, 100 mm

**IQAZ-03**

### High air flow, Controls, Lighting, Comfort control, Heating

Descriptions included in a separate section of this catalogue.