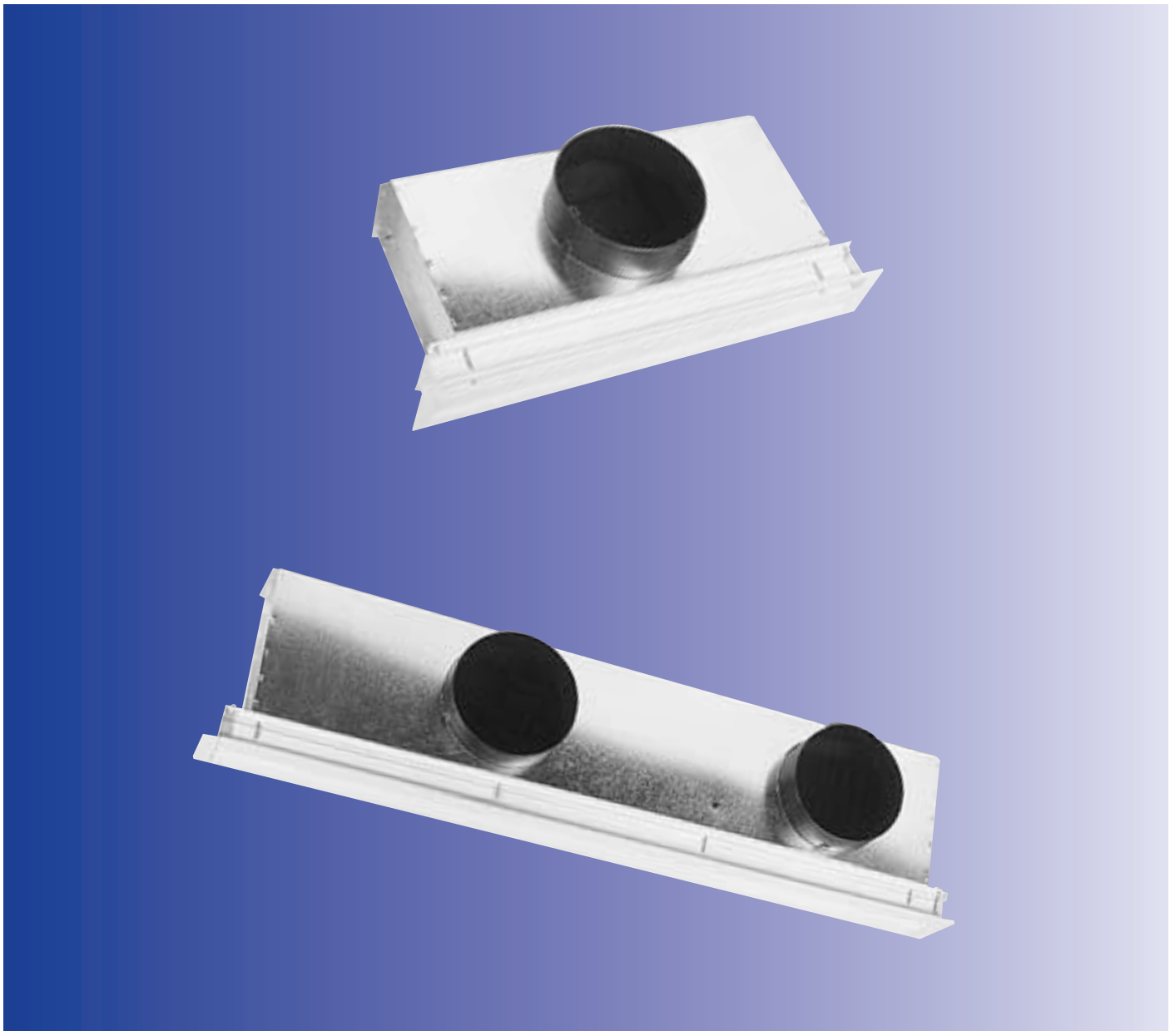
Carrier

35BD Moduboot
35SR Moduboot
Ceiling Mounted Diffusers for Variable Air Volume Systems



Selection Manual

LLOYD'S REGISTER QUALITY ASSURANCE ISO9001
UKAS QUALITY MANAGEMENT
001
Quality Management System Approval

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The photograph of the Moduboots shown on the front cover is for illustrative purposes only and is not part of any offer for sale or contract. The manufacturer reserves the right to change the design at any moment without prior warning.

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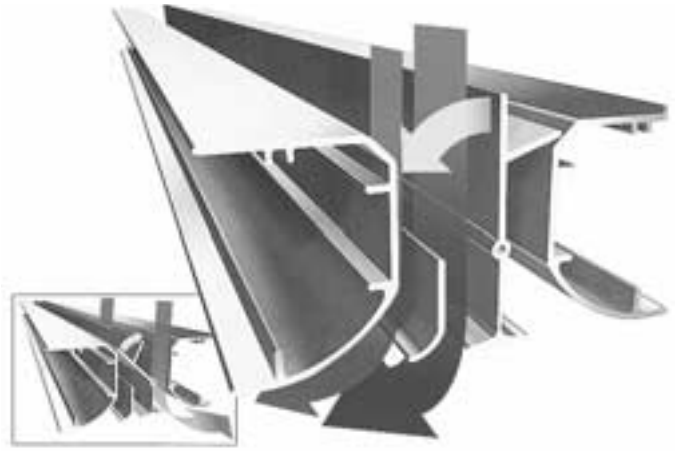
1 - INTRODUCTION

1.1 - General

The Moduboot ceiling mounted diffuser is the result of Carrier's unique experience and expertise in the domain of air flow.



Due to the profile of its diffuser, which makes use of the «Coanda» effect, the Moduboot provides an unequalled level of comfort without inconvenience to the occupants.

The fast moving air stream leaving the diffuser is directed across the false ceiling causing a depression, the resulting air flow pattern rapidly mixes the discharge air with the room air.

This high induction rate system avoids cold air «dumping» and assures the comfort of the occupants in silence.

The Moduboot is designed for variable and constant volume system applications and is a natural extension to the Carrier Comfort Zone and VVT Comfort System ranges. The Moduboot also complements the ICM, ATM and ITM range of chilled water air treatment modules.

1.2 - Comparative air diffusion tests

A test was set up to compare Carrier Moduboots with the main competitors' diffusers, using coloured cool air to show visually the difference in flow patterns.

Since VAV (Variable Air Volume) systems operate at variable air flows between minimum and nominal, all the tests were carried out at 50% of the diffusers nominal air flow. In each test the coloured air was introduced into stable room conditions.

Competitors diffuser «A»

At an air flow of 20 l/s (72 m³/h), this linear diffuser with adjustable vanes delivers a column of cold turbulent air, creating areas of great discomfort in the room.

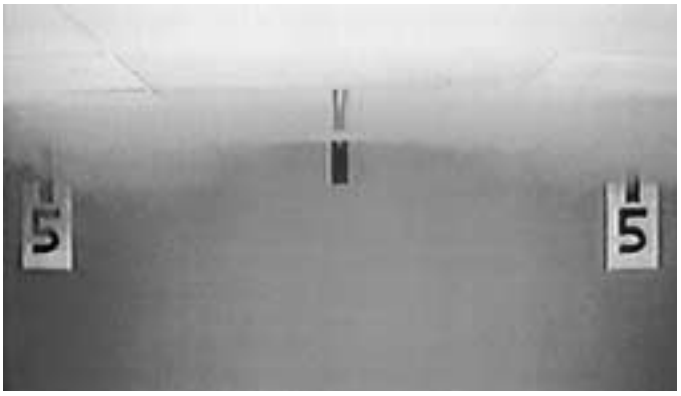
Competitors diffuser «B»

This round diffuser generates turbulence and produces inadequate air throw. At an air flow 20 l/s (72 m³/h), the resulting air mixing is poor.

Competitors diffuser «C»

The cold air emerging from this square perforated plate diffuser forms an L-shaped pattern.

The air flow patterns shown in these photos clearly show that only the Carrier «Moduboots» provide a perfect air distribution, guaranteeing a uniform air temperature both horizontally and vertically. Research and development within our test laboratory assures the continual product range development and quality.



Carrier Moduboot

At 20 l/s (72 m³/h), the emerging air hugs the ceiling for a distance greater than 1.50 m, achieving proper air distribution and room air motion. This photo demonstrates the excellent and well proven Carrier Moduboot concept.

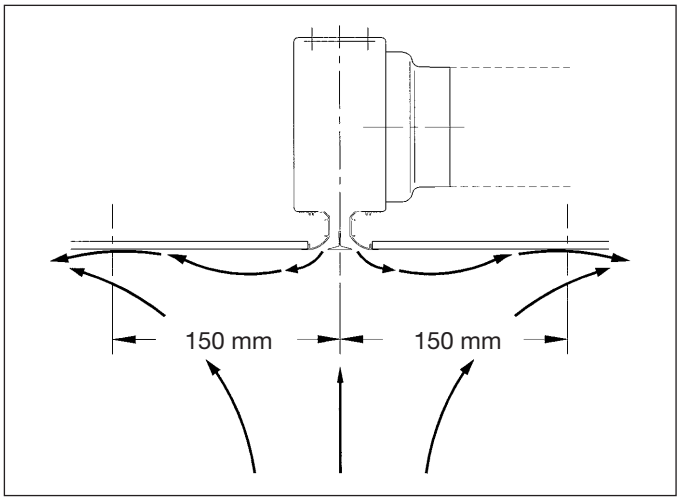
Acoustical and air flow tests and studies are carried out regularly in the demonstration suite, this is also available for client's testing. Thanks to this facility our clients can profit from our sound technical advice and benefit from solutions combining both technical and a esthetical criteria.

1.3 - Air Distribution

Air distribution is a fundamental comfort factor.

The Carrier «Moduboot» diffuser uses the «Coanda» effect for air distribution.

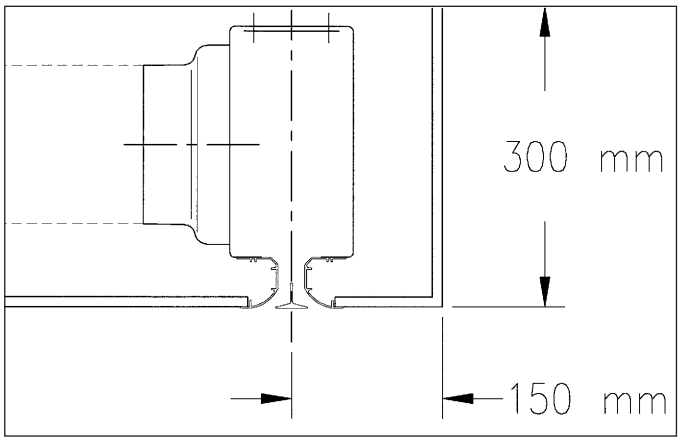
The design of the Carrier Moduboot linear diffuser maintains the Coanda effect down to 15% of nominal unit air flow. At lower air flows, the air velocity is such that the air feels still, and cold air drafts are avoided. At lower air flows it is unlikely that the space would be occupied, since it is mainly the occupants, lighting and other internal gains that make up the space heat load.



Due to the profile of the air stream leaving the diffuser and in order for the Coanda effect to fully develop and allow the supply and room air to mix, 150 mm of flat false ceiling is required on each side of the diffuser. This requirement is the same for all traditional false ceiling designs.

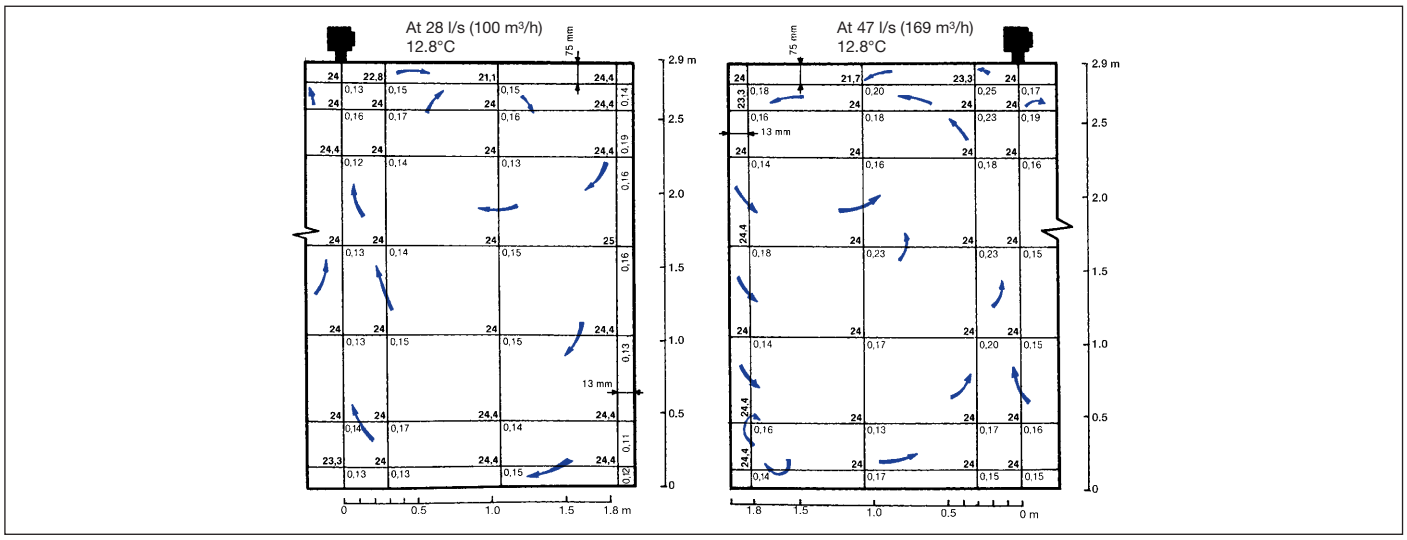
However, with certain open lattice and pyramidal false ceilings the chances of having a flat ceiling zone may be limited and may require an air diffusion test in our laboratory (contact your Carrier representative).

Carrier Moduboot diffusers may be soffit mounted. However, the soffit height must not exceed 300 mm and the diffuser should be located at least 150 mm from the edge of the soffit in order to allow the Coanda effect to develop.

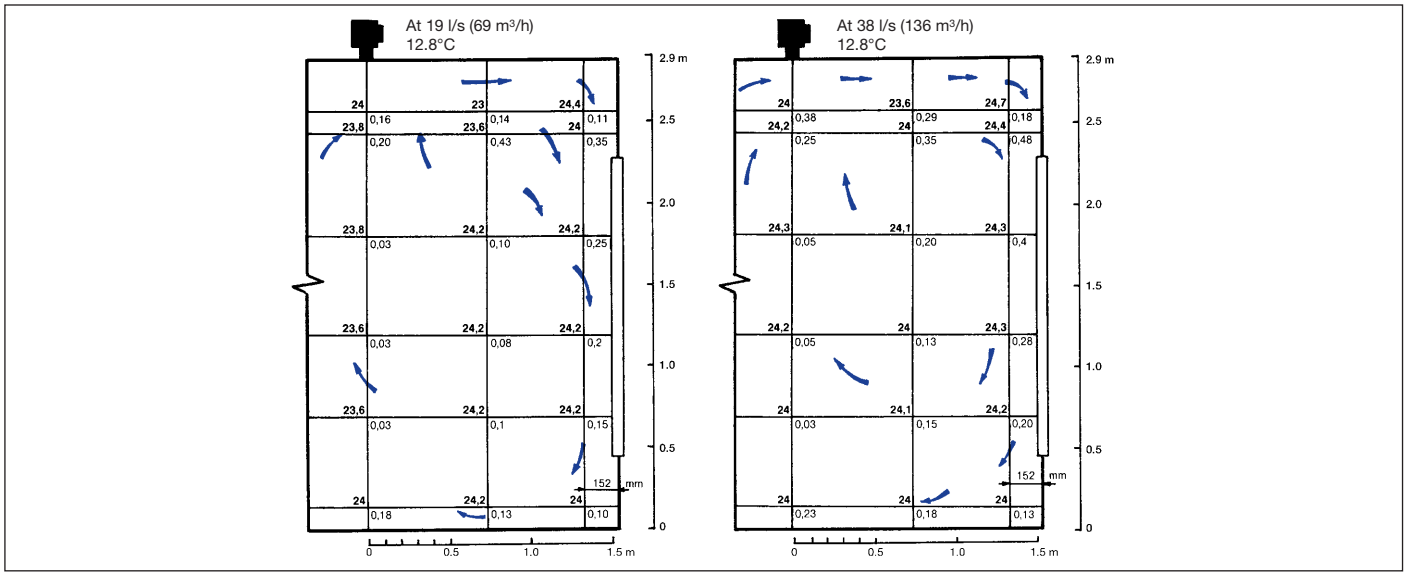


1.3.1 - Air distribution models

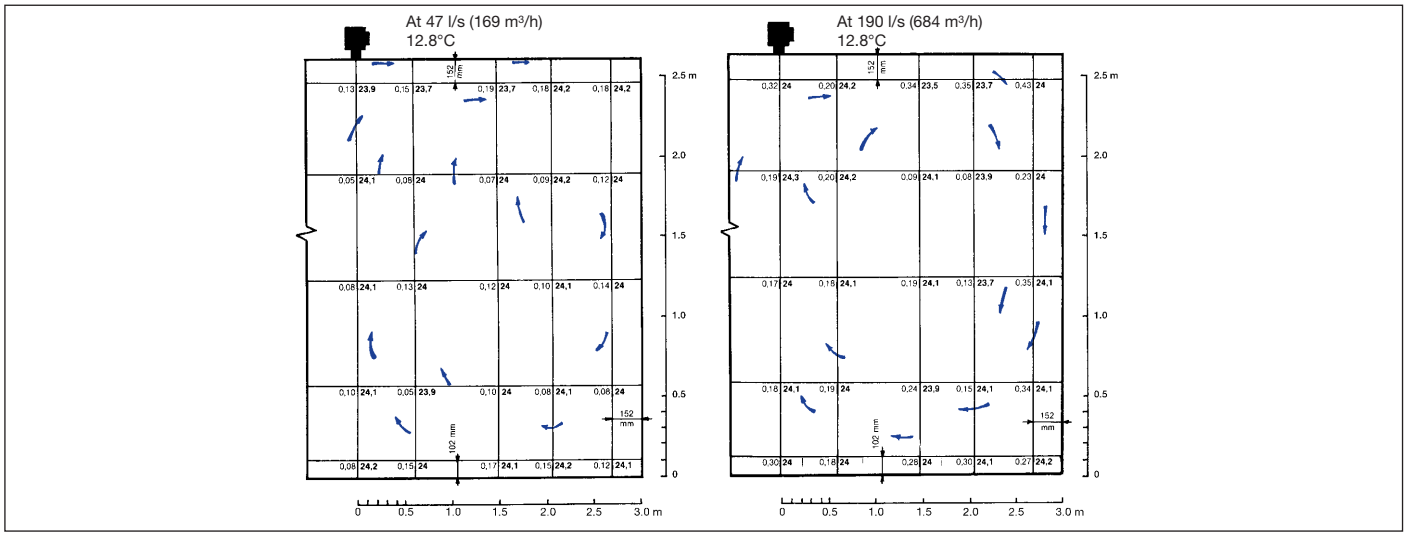
35BD-AG Two Way Blow Moduboot, at two different air flows (Fig. 1)



35BD-AG One Way Blow Moduboot, at two different air flows, for a room with an external wall (Fig. 2)



35BD-AH One Way Blow Moduboot, at two different air flows (Fig. 3)



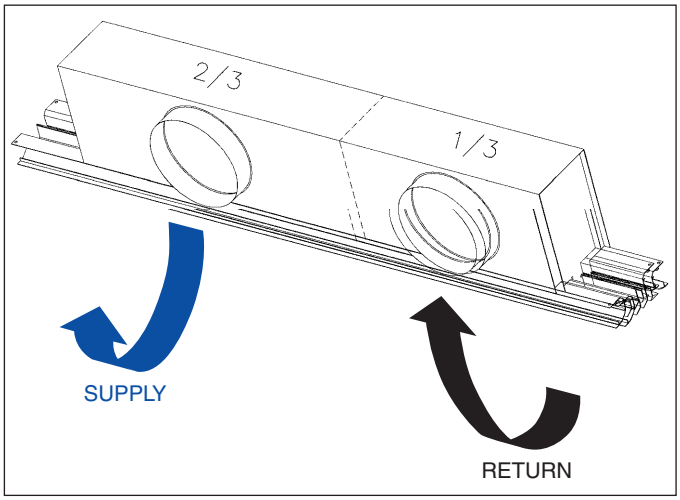
Figures 1, 2 and 3 show the measured air temperature and velocity distribution patterns for different Moduboot diffuser models. The dimensions of the test rooms are indicated. Note that in these examples the temperatures from the floor to a height of 2.40 m are within 0.8°C of the ambient room temperature of 24°C, demonstrating a high level of comfort is achieved. The bold numbers indicate temperature (°C) and the thin numbers the air velocity (m/s).

NOTE:
Due to excellent air distribution and the high induction rate resulting from the Coanda effect, Moduboots permit temperature differences of up to 14 K between the supply and room air without causing any discomfort to the occupants.

1.4 - Technical description

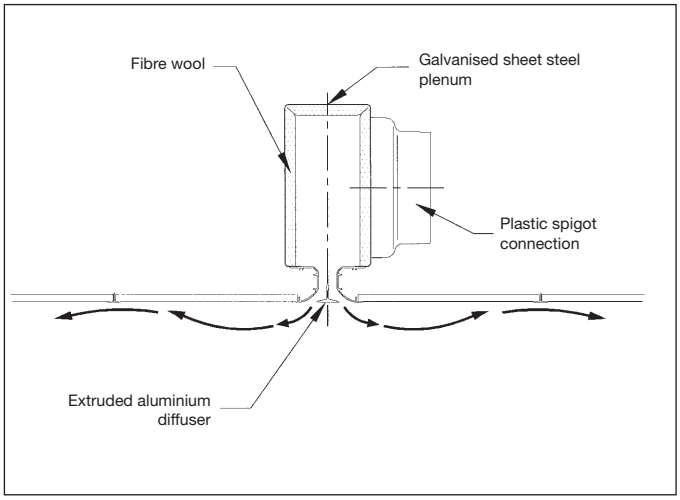
Moduboots are available in two versions: supply or return air, and supply/return air.

In the supply/return version, part of the diffuser is used for returning air from the conditioned space, allowing a simplified design and installation (additional return air grills are not required).



The supply or return Moduboot is available in 4 standard lengths of: 600, 1200, 1350 and 1450 mm.

The supply/return Moduboot is available in lengths of: 1200, 1350, 1500 and 1800 mm.



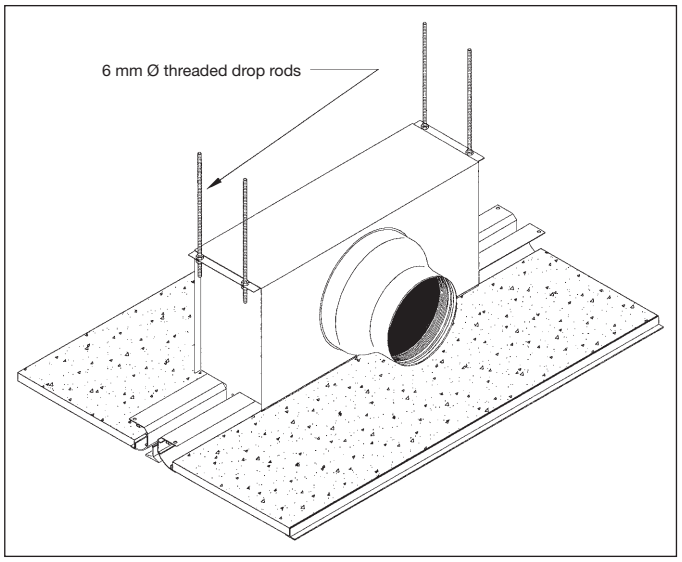
Moduboot plenums are manufactured from 6/10 mm galvanised sheet steel lined internally with 13 mm fibre wool, which is itself protected with a neoprene skin to avoid all risks of erosion (for air velocities < 20 m/s).

Only the internal plenum partition (supply/return Moduboot) is uninsulated.

The supply and return circular air inlet spigots are made from recyclable plastic (fire class V0), and are supplied in standardised diameters to allow the connection of circular ducts from the air handling unit or terminal units such as the ICM, ATM or ITM.

The two diameters available as standard are 160 and 200 mm. For other diameters please contact your Carrier representative.

Each Moduboot is provided with four 7 mm Ø fixing holes at the plenum ends. These are used for supporting the Moduboot from the building structure with 6 mm Ø threaded drop rods.



The diffuser is made from extruded aluminium and coated with a white baked epoxy paint finish (RAL 9010, 30% gloss factor). The extruded aluminium sections are painted in accordance with the «QUALICOAT» quality standard.

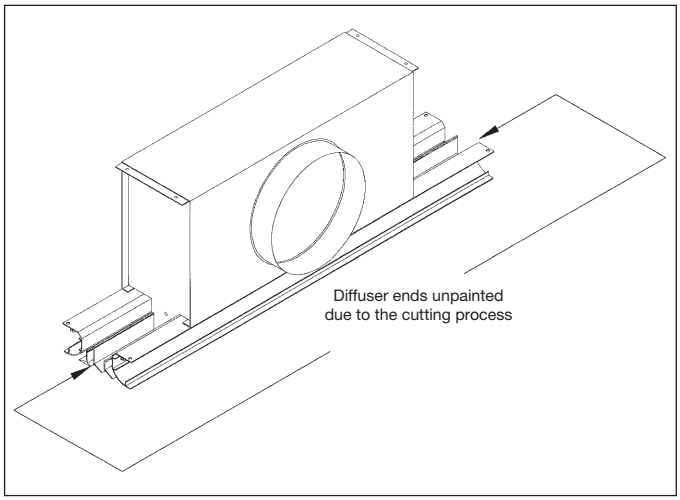
The main requirements of the QUALICOAT standard are:

Appearance
The paint on the visible surfaces of the diffuser must not include any scratches reaching the metal. When the surfaces of the diffuser are examined at an oblique angle of approximately 60°, no excessive amount of surface roughness, runs, bubbles, inclusions, craters, blistering, stains, pitting, scratches or other faults are allowed to be seen from a distance of 3 metres. The coating shall be of uniform colour and gloss factor and have good coverage when viewed at a distance of at least 3 metres on site.

Gloss factor
30 % ± 5 %

Minimum paint thickness
60 μm on the visible surfaces of the diffuser.

NOTE:
The Moduboot diffusers are manufactured from extruded aluminium sections. During the fabrication process these sections are painted and then cut to the required length before being assembled. Consequently the ends of the finished diffuser are not covered with paint.

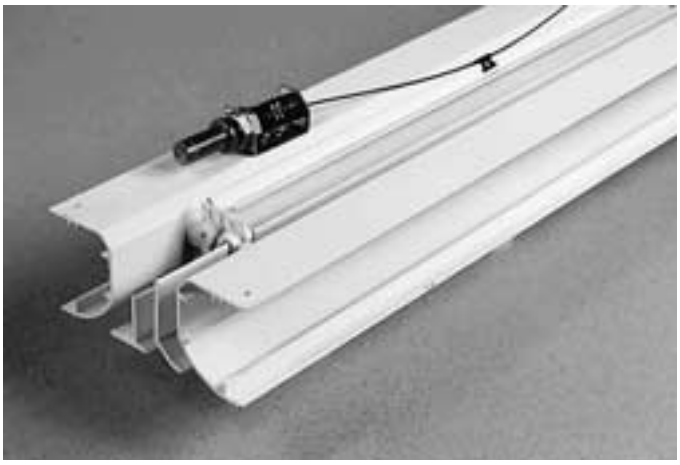


It is important to take this into account when installing the diffusers in the false ceiling, and when selecting the accessories (see the sections "integration of the diffusers in the false ceiling").

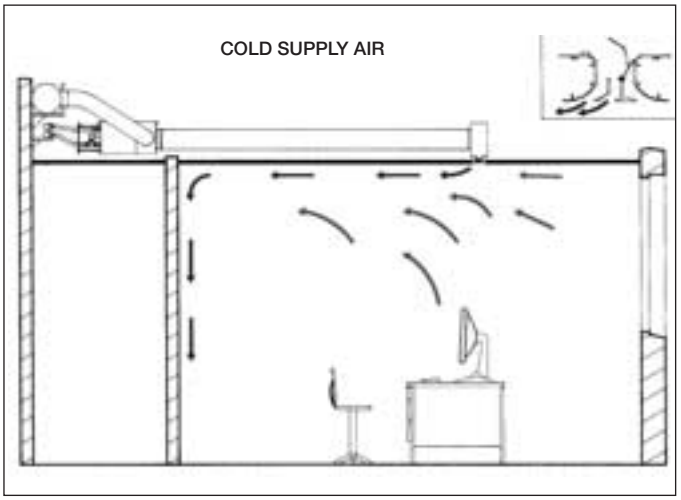
The diffusers are available with 2, 3, 4 or 5 slots and with or without the "Optimix®" damper blade.

The painted part of the diffuser is protected by a pealable adhesive strip, it is recommended that this be left in place until the installation is finished in order to protect the diffuser against any possible damage.

1.5 - "Optimix®" Moduboot



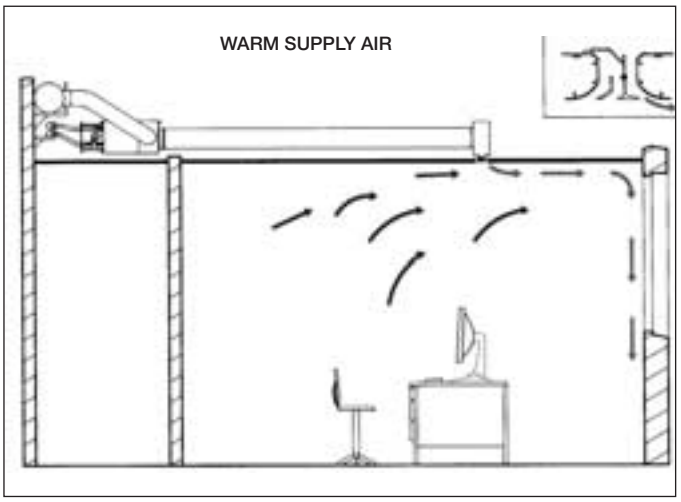
The "Optimix®" version includes a movable damper blade controlled by an internal calorstat, which changes the direction of the air flow in relation to the supply air temperature.



SUMMER

In summer the cold supply air is directed towards the centre of the conditioned space. This mixes quickly with room air along the false ceiling and descends smoothly by gravity producing a comfortable environment.

Air distribution by ICM terminal unit and "Optimix®" 3 slot linear diffuser.



WINTER

In winter the air flow direction is reversed. The warm air stream is directed towards the outside wall and descends down the window, cancelling the cold wall downdraft effect.

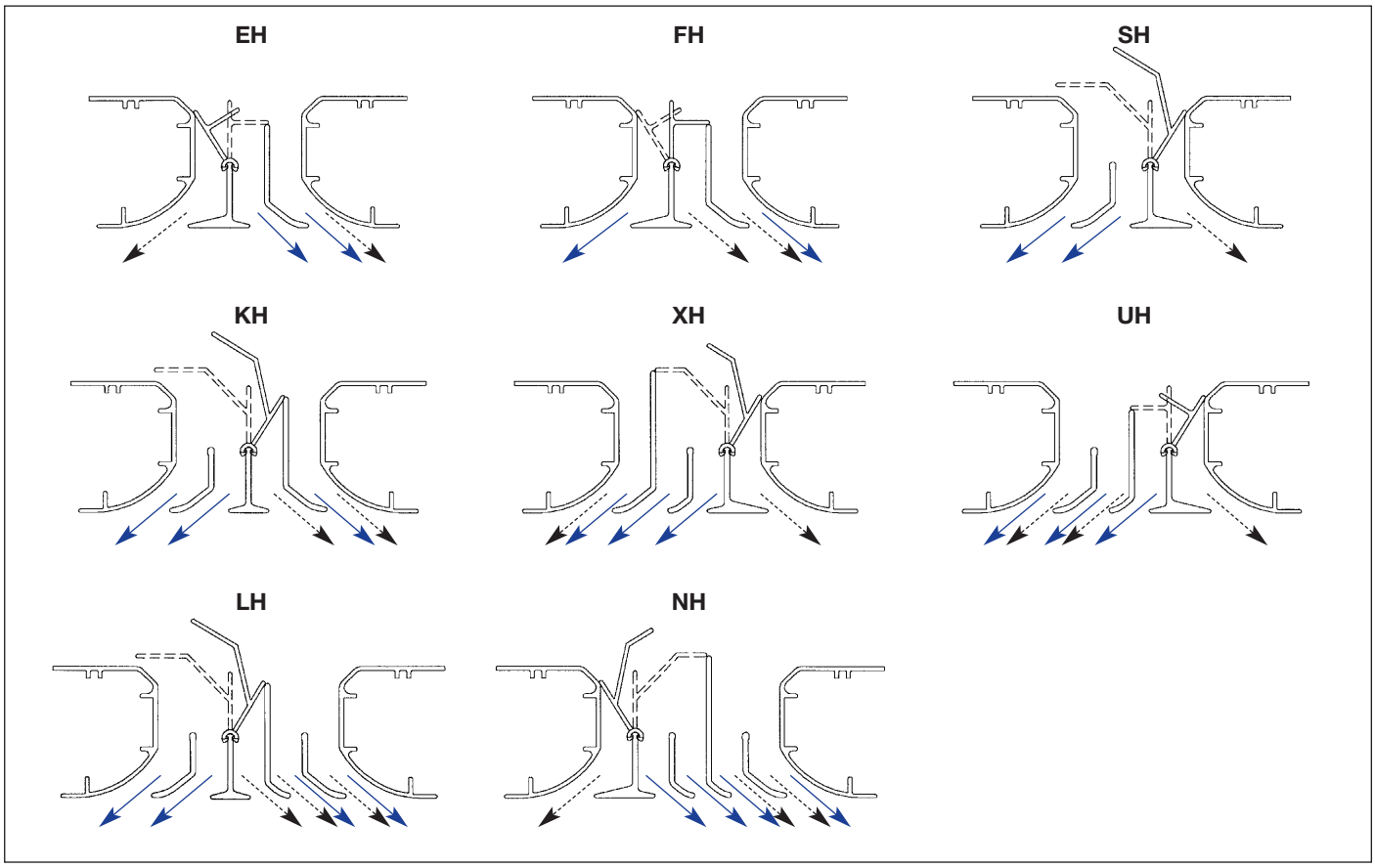
Operation

The calorstat sensing element is fixed to the diffuser inside the supply plenum, and starts to operate the diffuser blade between 19 and 21°C and is completely shut between 26 and 28°C.

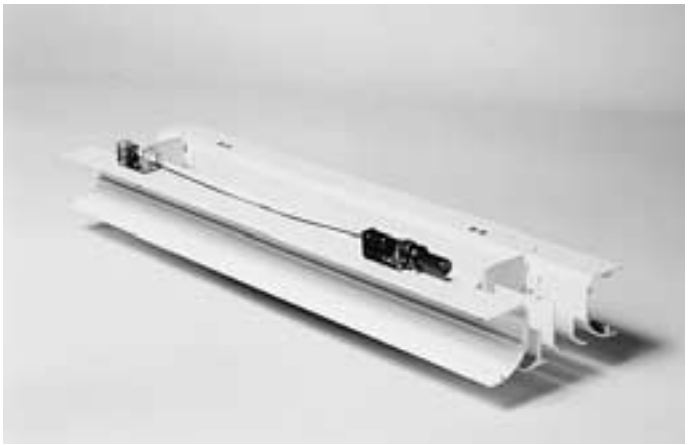
The diffuser may be selected with 3, 4 or 5 slots depending upon the air throw and the cold and warm supply air requirements of the room. This type of diffuser system is particularly adapted to provide perimeter heating to buildings with false ceilings.

1.6 - Diffuser Types

1.6.1 - Optimix® diffuser profiles

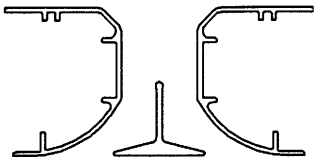


Cold supply air damper position
Warm supply air damper position

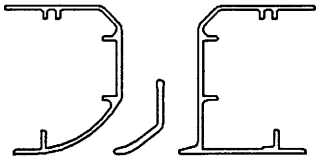


1.6.2 - Other diffuser profiles

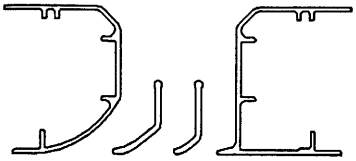
AH TWB



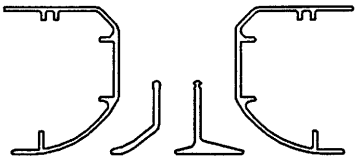
AH OWB



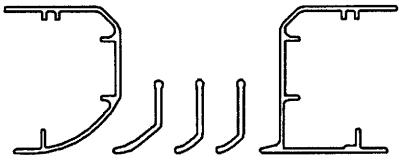
MH OWB



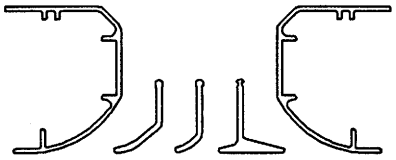
VH TWB



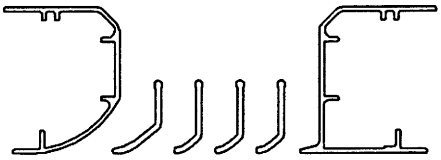
GH OWB



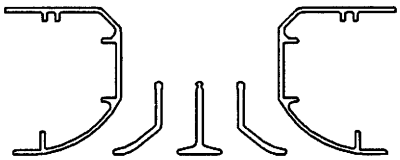
JH



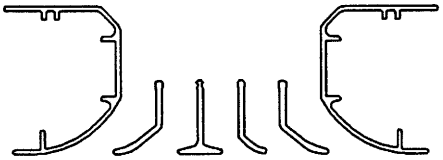
QH TWB



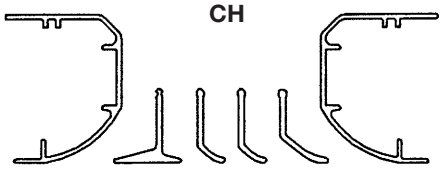
GH OWB



BH TWB



CH

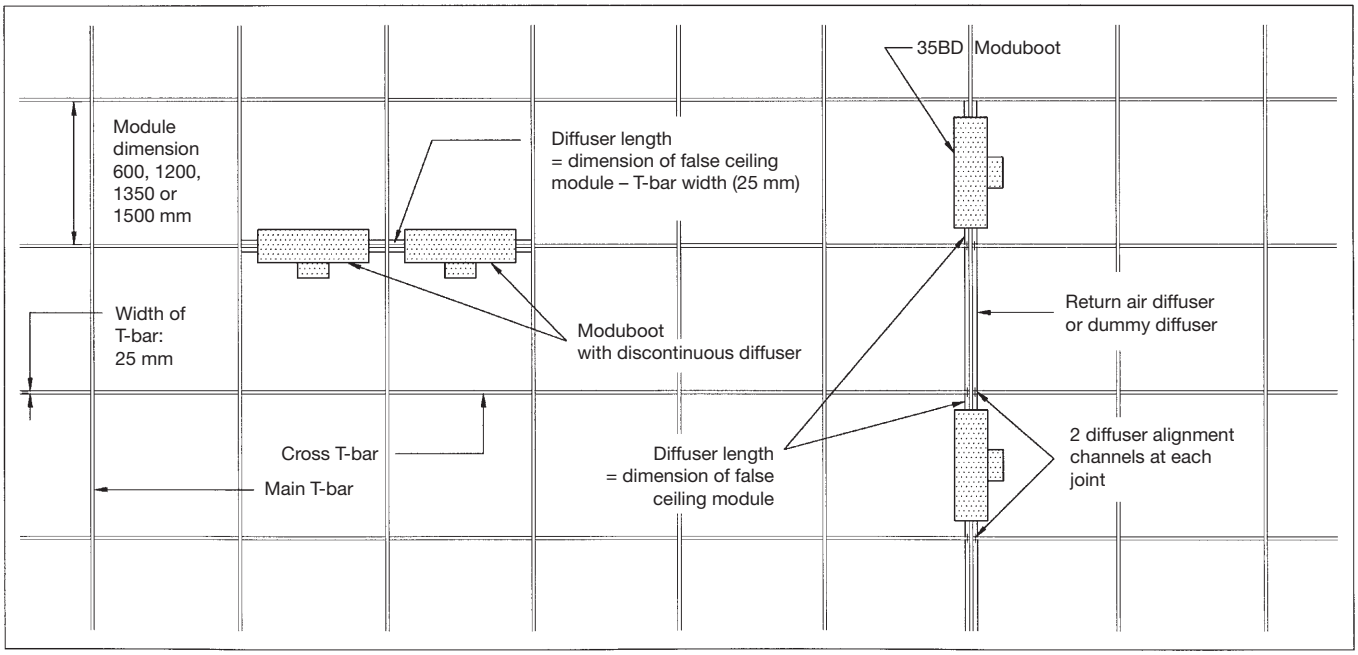


1.7 - Total Quality

Carrier's total quality concept is not just limited to the product quality but extends also to the design, performance reliability and fabrication processes.

Units are tested in Carrier's own research and development laboratory and/or at the "Centre Technique des Industries Aérauliques et Thermiques" (CETIAT), guaranteeing the quality of the performance data; Carrier has been accredited with L.R.Q.A. certification in accordance with the standard ISO 9001 since 1989.

ISO 9001 certification encompasses product design, production and delivery and also after sales support.



2 - INTEGRATION OF MODUBOOTS IN FALSE CEILINGS

Carrier Moduboots integrate perfectly with all types of false ceiling where they are practically invisible with only the discreet white profile of the aluminium diffuser being noticeable.

The diffuser can be used to support the false ceiling and become an integral part of the ceiling decoration (maximum load per metre length: 15 kg/m).

Moduboots are compatible with most currently available false ceiling designs.
- T-bar, both exposed and hidden T-bar
- Plaster
- Open lattice

Moduboots should ideally be positioned parallel to the perimeter wall, either using a TWB diffuser installed in the middle of the room or OWB diffuser installed near to the perimeter.

The exceptional characteristics of the diffuser and wide air flow range provide the Moduboot with a high degree installation flexibility.

The proximity of light fittings, misalignment of the false ceiling or any other objects projecting less than 15 mm will not affect the diffusion performance.

In every case the orientation of the T-bar, the false ceiling module and the location of the light fittings will always govern the position of the Moduboots.

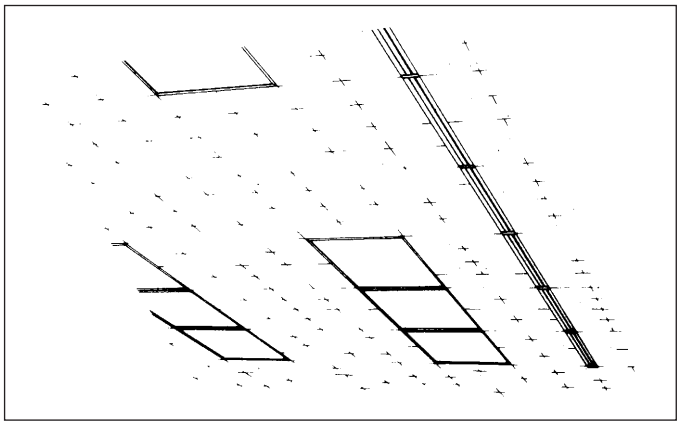
2.1 - Integration of Moduboots in T-bar ceilings

Exposed T-bar false ceilings are made up from “T” shaped metal profiles suspended inverted by wire hangers or drop rods.

The T-bars are positioned at standard intervals of 600, 1200, 1350, or 1500 mm. T-bar cross members are located between the main T-bar members to form the ceiling design.

2.1.1 - Continuous T-bar ceilings

In these ceiling systems the Moduboots, return air diffusers and the dummy diffusers are installed in a continuous line parallel with the main the T-bar members. The diffusers are installed end to end, each one having the same length as the ceiling module. With this arrangement T-bar end and filler trim accessories are not required.

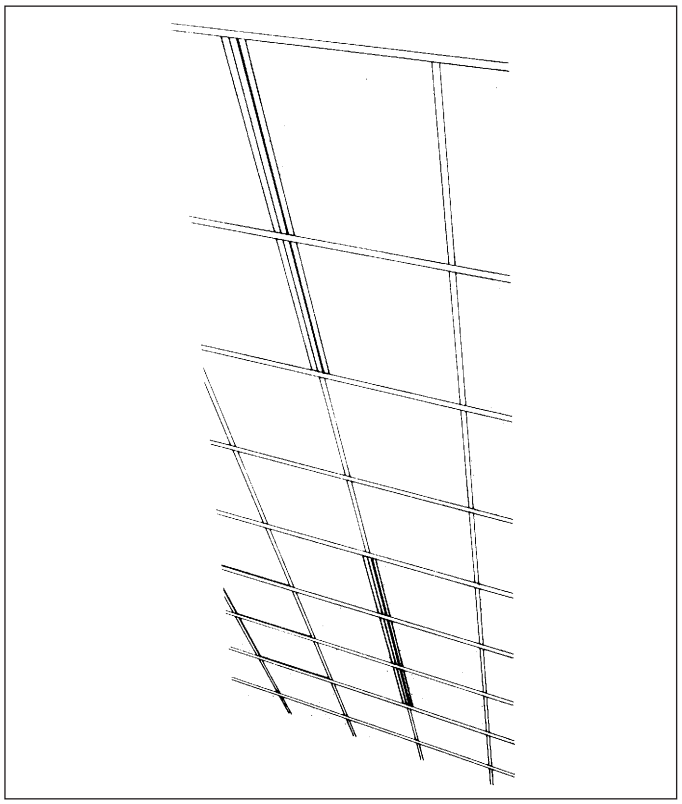


Continuous diffuser arrangement

The diffusers are aligned using 2 diffuser alignment channels at each joint (available as accessory items).

2.1.2 - Discontinuous T-bar ceilings

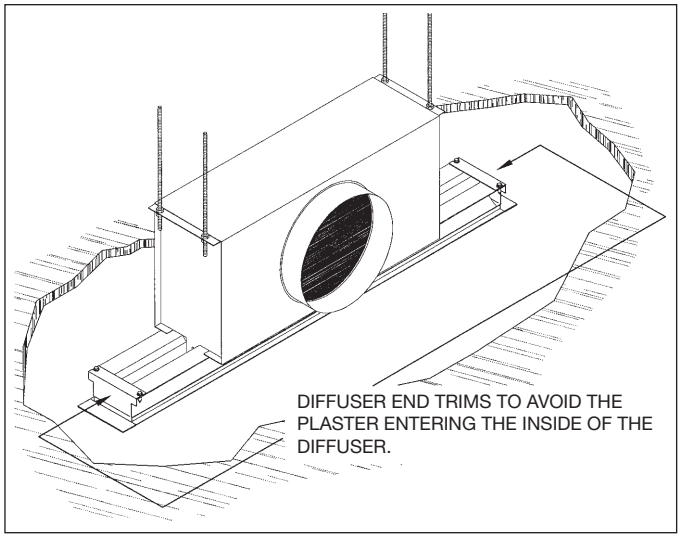
With these ceiling systems the Moduboots, return air diffusers, and dummy diffuser are installed perpendicular to the main T-bar ceiling members. The ends of adjacent diffusers are separated by the width of the T-bar. The diffusers are aligned using T-bar mounting brackets at each diffuser end. With this arrangement T-bar end and filler trim accessories are not required.



Discontinuous diffuser arrangement

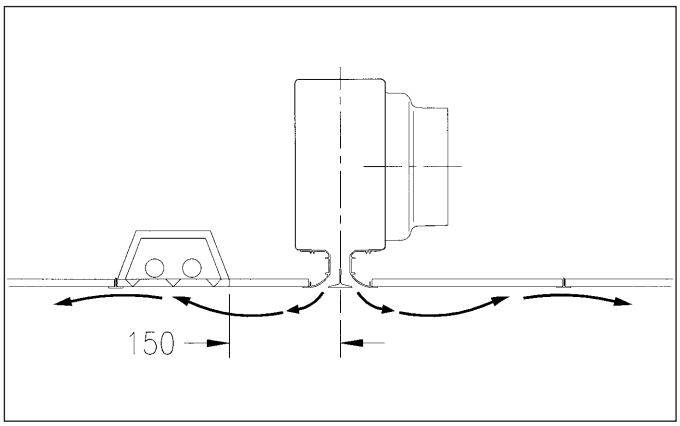
2.2 - Integration of Moduboots in fixed plaster ceilings

Moduboots may also be integrated in fixed plaster ceilings. The diffusers are firstly fixed to the structural ceiling above the false ceiling position. Once in place the plasterer then installs the ceiling. Diffuser end trim accessory items must be fitted to each end of the diffuser, as shown below, to avoid the plaster entering the ends of the diffuser.



2.3 - Integration of Moduboots in open lattice ceilings

It is difficult to install Moduboots in false ceilings with irregular contours (open lattice or pyramidal type). In fact the Coanda effect can only develop if the air stream leaving the diffuser flows across a flat surface. The minimum distance required for the development of the Coanda effect is 150 mm. If this distance is not respected, the air will not flow across the ceiling and will drop directly into the conditioned space.



The possibility of installing Moduboots in irregular contour false ceilings should be considered individually for each job. Certain open lattice type ceiling designs allow the use of Moduboots.

3 - AIR THROW

As the air stream progresses across the false ceiling it continues to induce room air, this produces a very slow upward motion of the room air mass creating a uniform temperature spread within the occupied space.

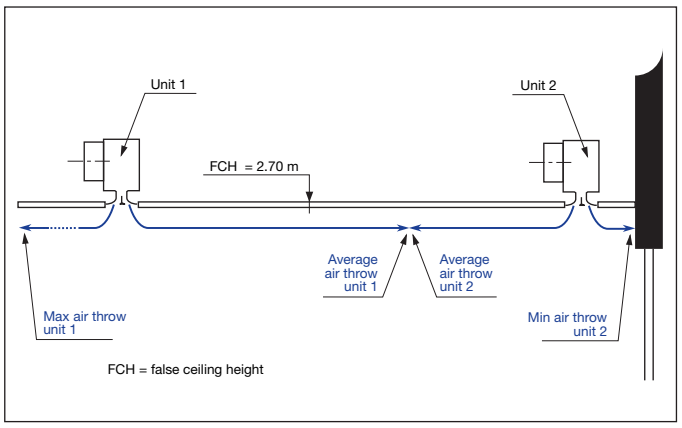
Temperature differences up to 14 K between the supply air and the room air temperature can therefore be accepted without causing discomfort to the occupants.

The performance of Moduboot diffusers enables them to be installed in special ceiling types such as pyramidal, open lattices, false beams etc or even in areas without false ceilings.

The air throw data given refers to a flat false ceiling. The profile of the diffuser allows the supply air to mix instantly with induced room air. The air throw depends upon the air flow rate and not the supply air duct pressure. The air throws are reduced by 0.1 m for each 0.1 m increase in false ceiling height and vice versa.

3.1 Using the air throw curves

- Minimum air throw: minimum distance between a Moduboot and a wall or partition.
- Maximum air throw: maximum length of the air stream from the Moduboot.
- Average air throw: minimum length of the air stream when two Moduline units discharge towards each other.



Average air throw

NOTES:

1) The air throws shown in this document are given for isothermal air streams.

Isothermal air stream: the supply air is at the same temperature as the room ambient air.

Non isothermal air stream: the supply air temperature is different to that of the room ambient air.

2) Air throw, cooling + 25% for a supply air temperature between 10°C and 15°C and a room air temperature between 23°C and 26°C.

Air throw, heating - 15% for a supply air temperature between 25°C and 37°C and a room air temperature between 19°C and 21°C.

4 - SOUND LEVELS

In order to properly analyse and compare the sound data of variable air volume systems, it is important to understand some basic acoustic concepts.

Source

Sound power levels (Lw) refer to the energy emitted by a sound source.

Sound reception

Sound affects our ear drums due to the variations in pressure caused by the sound waves. The magnitude of these variations, expressed in decibels (dB), is referred to as the 'sound pressure level' Lp. The ear responds differently to the variations in pressure Lp at different frequency.

Noise criteria NR

Weighted curves have been drawn to define noise criteria (NR).

Characterising sound levels by a NR (Noise Criterion) number has the advantage of describing, using a single number, the maximum sound pressure level for each of the 8 frequency bands shown in the NR diagram (Fig.1).

Recommended sound levels

Application	NR LEVEL
Private homes	20 to 30
Conference rooms	25 to 35
Offices	30 to 40
Public offices	35 to 45
Computer rooms	40 to 60
School rooms	30 to 40
Restaurants	35 to 45
Retail outlets	40 to 50
Restaurant kitchens	40 to 50
Gymnasiums	35 to 45

NOTE:
"A" Scale Sound pressure levels cannot be converted into equivalent NR numbers. "A" scale levels can be estimated as being approximately 5 dB higher than the same numerical NR value. (In reality they can be between 0 to 10 dB higher depending upon the octave band).

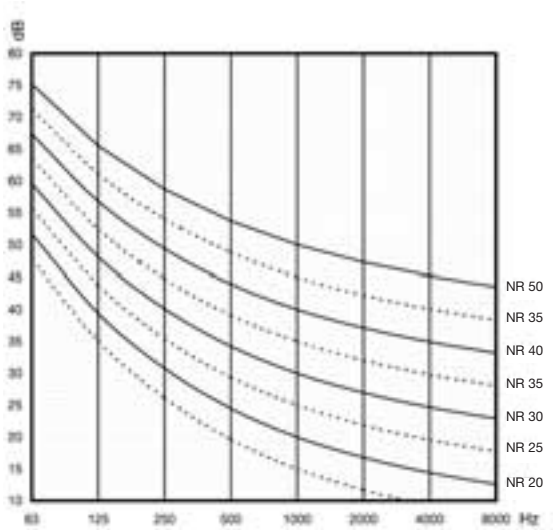


Fig. 1

Relationship between sound power Lw and sound pressure Lp

Sound power (Lw) introduced in a room results in sound pressure (Lp) dependent upon the room attenuation. Since room attenuation is independent of the air conditioning system, acoustical data for air conditioning equipment is expressed in sound power level Lw, and not sound pressure level Lp. This data is usually given for octave bands 2 to 8 of the frequency spectrum.

Conversion of Lw to Lp and NR

In order to supply Noise Criteria NR levels it is important to be able to calculate the NR value from the sound data provided in sound power level. Figure 2 shows the interaction of the different factors evolved.

Moduboot radiated noise

Moduboots do not have any moving parts and being internally lined with 13 mm fibre wool, Carrier considers that the radiated noise is very small and can be considered negligible.

Acoustic model

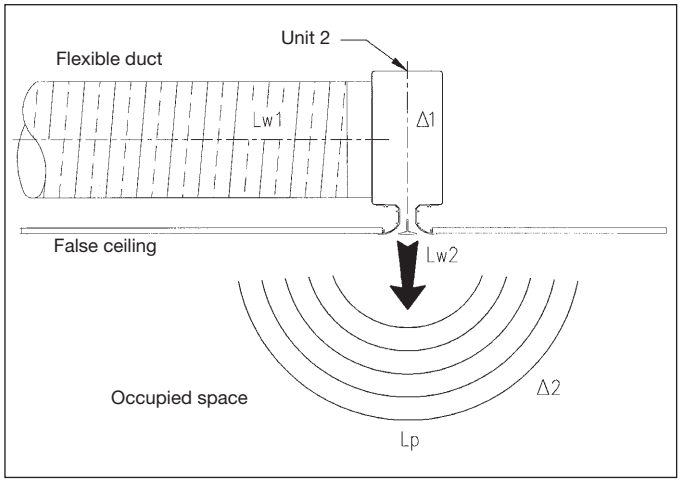


Fig. 2

Legend:
Lw1 : sound power transmitted to the inlet of the Moduboot
Lw2 : sound power generated by the diffuser supply/return
Δ1 : Moduboot attenuation
Δ2 : room attenuation

The above acoustic model is commonly used by the main diffuser manufacturers. The conversion of Lw to Lp, for each acoustic path, takes into account the acoustical attenuation for each main air stream.

It should be noted for this model that the noise radiated from the duct has been neglected.

Standard values are usually given for the different attenuation items when the manufacturer data for grills is expressed in NR and/or sound pressure level in the room.

The sound pressure in the room is the logarithmic sum of the transmitted noise at the Moduboot inlet and the noise generated by the diffuser.

- Lp (transmitted) = Lw_1 (transmitted sound power) - Δ_1 - Δ_2
- Lp_2 (generated by the diffuser) = Lw_2 (sound generated by the diffuser) - Δ_2

Moduboot sound attenuation

The table below gives values that may be subtracted from the system sound power levels upstream of the Moduboot (transmitted noise from the air handling unit, terminal units or other noise components of the air-side system).

The corrected values of sound power are added to the generated sound power levels logarithmically taking into account the room attenuation, in order to establish the actual sound pressure produced in the room.

Attenuation values, dB

Air inlet connection diameter	Nominal diffuser length	Octave band frequency, Hz					
mm	mm	250	500	1000	2000	4000	8000
159	600	4.5	10.5	13.0	19.0	22.0	21.0
	1200/1350	8.0	9.0	14.0	20.0	23.0	22.0
	1500	7.0	11.0	15.0	19.0	22.0	22.0
199	600	3.0	11.0	12.0	18.0	17.0	18.0
	1200/1350	6.0	11.0	13.0	20.0	18.0	18.0
	1500	6.0	12.0	13.0	19.0	18.0	18.0

NOTE:
Medium density fibre wool insulation can be used to attenuate the duct transmitted noise originating from the air handling unit or the terminal units.

Room attenuation

Most manufacturers allow a standard attenuation of 10 dB, which is not considered realistic. In the absence of architectural data, Carrier recommends limiting this to 4 dB in the 125 to 500 Hz frequency bands.

Addition of sound sources

The values (dB) in the following table should be added to the higher value when adding two different sound sources, in function of the difference between the two values (dB),

Difference between 2 levels dB	0	1	2	3	4	5	6	7	8	9	10
Value to be added to the higher value dB	3	2.5	2	1.5	1.5	1.5	1	1	1	0.5	0.5

NOTE:
When comparing acoustical data with a competitor's system, the most important point is to ensure that the same corrections are applied to both systems.

5 - SELECTION GUIDE

The calculation of the various heat gains and losses allows the room thermal load to be established. The supply air flow rate and temperature required to meet the maximum room load condition are calculated by the consulting engineer.

Depending upon the intended usage of the room, the consulting engineer determines the maximum room noise and the air velocity levels to be respected.

Once these constraints have been decided and the architectural aspects considered, the Moduboot can be selected.

5.1 - Preliminary

Essential data:

- Room dimensions
- Specified or required sound level
- Room design temperature
- Heat gains and losses
- Room attenuation

To be established:

- Number of units
- Unit type(s)
- Unit air flow
- Unit air throws
- Supply air duct diameter
- Diffuser length

Constraints imposed by the false ceiling:

- Module dimensions
- Ceiling design
- Ceiling height
- Accessibility
- Location of light fittings

And:

- Distance between the Moduboots and the walls and partitions.

5.2 - Selection procedure

5.2.1 - Determine the room air flow required from the parameters below:

- Heat gains and losses
- Room temperature required (Trm)
- Supply air temperature (Tsa)

The supply air flow is calculated for each room using the following formula:

$$\text{air flow (l/s)} = \frac{\text{sensible load (W)}}{1.214\ (\text{Trm} - \text{Tsa})}$$

NOTE:
The cooling supply air flows, to counter the heat gains, are generally greater than the warm air supply air flows to counter the heat losses, therefore summer conditions are normally used to calculate the maximum air flow of each Moduboot.

5.2.2 -Determine the number of units required

Select the unit type using the following criteria:
- Air flow per unit
- Required sound level

Recommended sound levels

Application	NC LEVEL
Private homes	20 to 30
Conference rooms	25 to 35
Offices	30 to 40
Public offices	35 to 45
Computer rooms	40 to 60
School rooms	30 to 40
Restaurants	35 to 45
Retail outlets	40 to 50
Restaurant kitchens	40 to 50
Gymnasiums	35 to 45

In the absence of precise data from the consulting engineer or specifier, it is advised to consider a sound level requirement of NC 35, and a room attenuation of 4 dB in order to make a selection.

Calculate the number of units required by dividing the total supply air flow by the recommended unit air flow.

Arrange the area to be conditioned into rectangular zones. Although in certain cases this may increase the amount of supply air ductwork, it will provide on the other hand a better diffuser layout offering better air coverage.

5.2.3 - Define

- The type of false ceiling (space available, module size, shape, removable or fixed)
- Orientation of T-bars
- Location of light fittings

5.2.4 - Position the terminal units selected in the false ceiling

5.2.5 -Check the computability of the air throws (min, max and average) and the available distances to partitions and walls and adjacent units.

When these are found to be compatible
- determine the diameter of Moduboot supply air duct connection.
- select the accessories needed for installing the Moduboots in the false ceiling.

If they are not found to be compatible
- find a compromise between the air throws and the required sound levels, by modifying the supply air temperature or by changing the type or quantity of units.
- return to 5.2.2 if the units change.

NOTE:
For special applications, contact your Carrier representative.

6 - CODIFICATION

6.1 - Supply or return air Moduboot

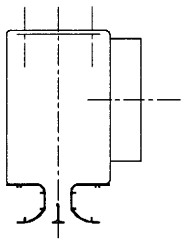
Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Codification	3	5	B	D	1	2	0	0	M	H	1	3	E	B	B	

Unit type
Diffuser length
Diffuser type
Air flow discharge direction relative to air inlet
Plenum height
Air inlet connection diameter
Revision index
Options
Special Moduboot

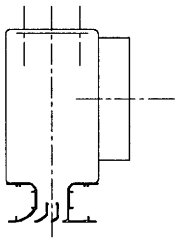
Character	Codification	Description
1, 2, 3, 4		**Unit type**
	35BD	**Supply or return air Moduboot**
5,6,7,8		**Diffuser length**
	600	For 600 mm false ceiling modules
	1200	For 1200 mm false ceiling modules
	1350	For 1350 mm false ceiling modules
	1500	For 1500 mm false ceiling modules
9,10		**Diffuser type**
	AG	AG diffuser, 2 slot
	AH	AH diffuser, 2 slot
	MH	MH diffuser, 3 slot
	VH	VH diffuser, 3 slot
	GH	GH diffuser, 4 slot
	JH	JH diffuser, 4 slot
	BH	BH diffuser, 5 slot
	CH	CH diffuser, 5 slot
	QH	QH diffuser, 5 slot
	SH	SH Optimix® diffuser, 3 slot
	FH	FH Optimix® diffuser, 3 slot
	EH	EH Optimix® diffuser, 3 slot
	KH	KH Optimix® diffuser, 4 slot
	XH	XH Optimix® diffuser, 4 slot
	UH	UH Optimix® diffuser, 4 slot
	LH	LH Optimix® diffuser, 5 slot
	NH	NH Optimix® diffuser, 5 slot
11		**Air discharge direction relative to air inlet connection**
	0	Two Way Blow
	1	the majority of the slots discharge away from the inlet duct connection slots in cooling mode.
	2	the majority of the slots discharge in the direction of the inlet duct connection slots in cooling mode
12		**Plenum height**
	3	230 mm plenum height
13		**Plastic air inlet connection diameter**
	E	160 mm Ø
	F	200 mm Ø
14	B	**Revision index**
15		**Options**
	B	Diffuser ends factory fitted with 23.8 mm end trims(1)
16		**Special Moduboots**

Legend:
(1) The length of the Moduboot is equal to the length of the diffuser + (2 x 23.8 mm)

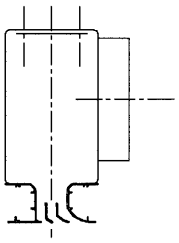
Examples: Air discharge direction relative to air inlet connection



35BD SUPPLY ONLY, CODE 0
AH DIFFUSER



35BD SUPPLY ONLY, CODE 1
MH DIFFUSER



35BD SUPPLY ONLY, CODE 2
MH DIFFUSER

6.2 - Supply/return air Moduboot

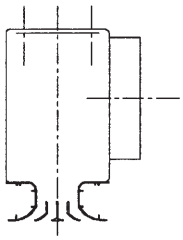
Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Codification	3	5	S	R	1	2	0	0	M	H	1	3	E	B	B	

Unit type
Diffuser length
Diffuser type
Air flow discharge direction relative to air inlet
Plenum height
Air inlet connection diameter
Revision index
Options
Special Moduboot

Character	Codification	Description
1, 2, 3, 4		**Unit type**
	35SR	**Supply/return air Moduboot**
5,6,7,8		**Diffuser length**
	1200	For 1200 mm false ceiling modules
	1350	For 1350 mm false ceiling modules
	1500	For 1500 mm false ceiling modules
	1800	For 1800 mm false ceiling modules
9,10		**Diffuser type**
	MH	MH diffuser, 3 slot
	VH	VH diffuser, 3 slot
	GH	GH diffuser, 4 slot
	JH	JH diffuser, 4 slot
	BH	BH diffuser, 5 slot
	CH	CH diffuser, 5 slot
	QH	QH diffuser, 5 slot
	SH	SH Optimix® diffuser, 3 slot
	FH	FH Optimix® diffuser, 3 slot
	EH	EH Optimix® diffuser, 3 slot
	KH	KH Optimix® diffuser, 4 slot
	XH	XH Optimix® diffuser, 4 slot
	UH	UH Optimix® diffuser, 4 slot
	LH	LH Optimix® diffuser, 5 slot
	NH	NH Optimix® diffuser, 5 slot
11		**Air discharge direction relative to air inlet connection**
	0	Two Way Blow, supply/return plenum
	1	The majority of the slots discharge away from the inlet duct connection slots in cooling mode, supply/return plenum
	2	The majority of the slots discharge in the direction of the inlet duct connection slots in cooling mode, supply/return plenum
	3	Two Way Blow, supply/return plenum
	4	Two Way Blow, return/supply plenum the majority of the slots discharge away from the inlet duct connection slots in cooling mode, return/supply plenum
	5	The majority of the slots discharge in the direction of the inlet duct connection slots in cooling mode, return/supply plenum
12		**Plenum height**
	3	230 mm plenum height
13		**Plastic air inlet connection diameter**
	E	160 mm Ø
	F	200 mm Ø
14	B	**Revision index**
15		**Options**
	B	Diffuser ends factory fitted with 23.8 mm end trims(1)
16		**Special Moduboots**

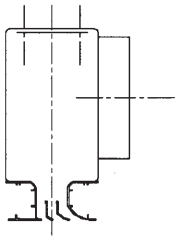
Legend:
(1) The length of the Moduboot is equal to the length of the diffuser + (2 x 23.8 mm)

Examples: Air discharge direction relative to air inlet connection



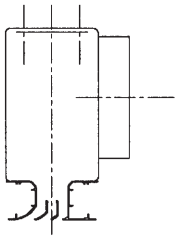
35SR SUPPLY/RETURN, CODE: 0
35SR RETURN/SUPPLY, CODE: 3

GH diffuser



35SR SUPPLY/RETURN, CODE: 2
35SR RETURN/SUPPLY, CODE: 5

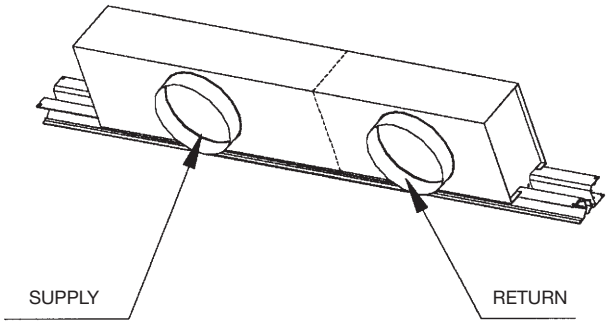
MH diffuser



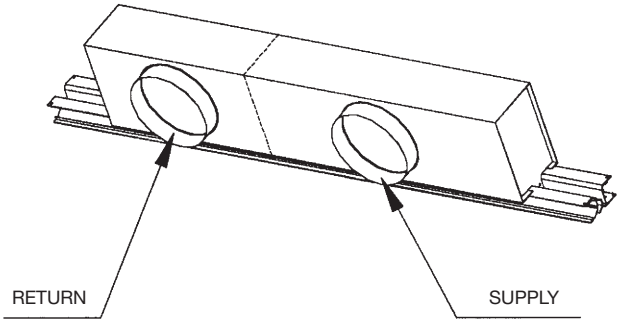
35SR SUPPLY/RETURN, CODE: 1
35SR RETURN/SUPPLY, CODE: 4

MH diffuser

SUPPLY-RETURN plenum



RETURN-SUPPLY plenum



7- PACKING

Moduboots are packed on wooden pallets and protected with a plastic shrink wrap film.

Return air and dummy diffusers are packed in boxes of 6.

NOTE:
Contact your Carrier representative for Export Packing.

7.1 - Moduboot packing

Diffuser length, mm	Number of Moduboots per pallet				Pallet dimensions, mm	Pallet weight kg
	2 slot	3 slot	4 slot	5 slot	length x width x height	
600	60	60	50	50	1600 x 1100 x 1550	230
1200	30	30	25	25	1600 x 1100 x 1550	220
1350	30	30	25	25	1600 x 1100 x 1550	240
1500	25	25	20	20	1900 x 1000 x 1550	250
1800	20	20	20	20	1900 x 1000 x 1550	240

7.2 - Return air and dummy diffusers packing

Diffuser length, mm	Weight of box, kg				Box dimensions, mm length x height x width (depending upon the number of slots)				
	2 slot	3 slot	4 slot	5 slot		2 slot	3 slot	4 slot	5 slot
600	7	8	8.5	9	630 x 320 x	110	125	140	155
1200	14	15	16	17	1240 x 320 x	110	125	140	155
1350	15	17	18	19	1544 x 320 x	110	125	140	155
1500	16	20	21	23	1544 x 320 x	110	125	140	155
1800	20	23	24	27	1820 x 320 x	110	125	140	155

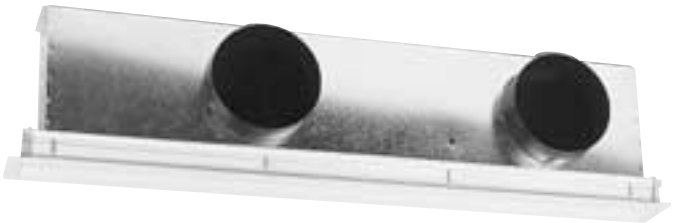
7.3 - Reception

Check the condition of the equipment upon receipt, any damage due to transport should be notified in writing to the transporter. Unpacking of the equipment should be left until just before final installation and should be as close to the installation as possible. Avoid placing any heavy objects on the packing.

8 - PHYSICAL AND PERFORMANCE DATA

SUPPLY OR RETURN AIR MODUBOOT

- 600 mm diffuser length (35BD)
- 1200 and 1350 mm diffuser length (35BD)
- 1500 mm diffuser length (35BD)

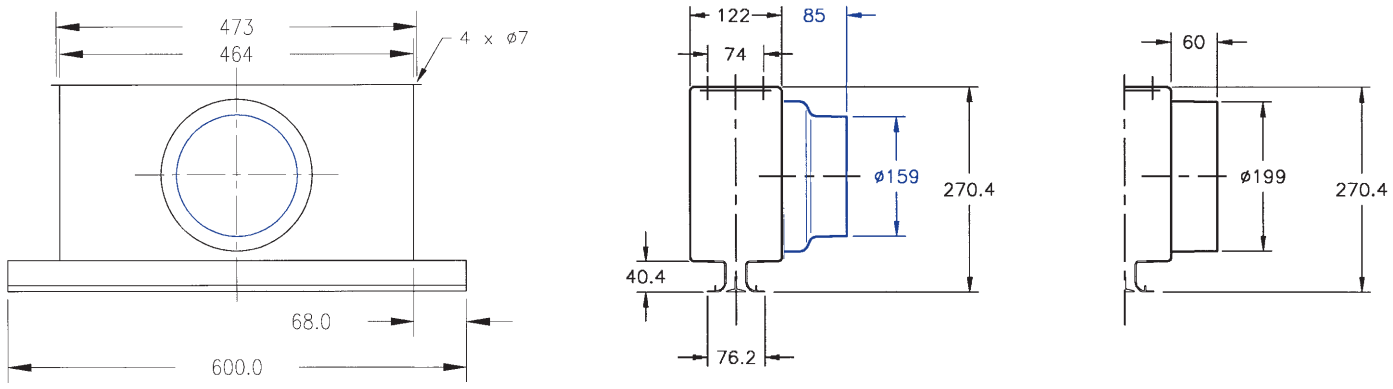


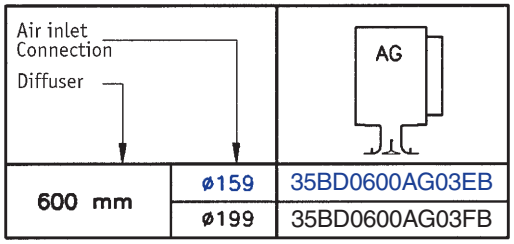
SUPPLY AND RETURN AIR MODUBOOT

- 1200 and 1350 mm diffuser length (35SR)
- 1500mm diffuser length (35SR)
- 1800mm diffuser length (35SR)

Moduboot supply or return air 2 slot 600 mm

All dimensions are in millimetres.

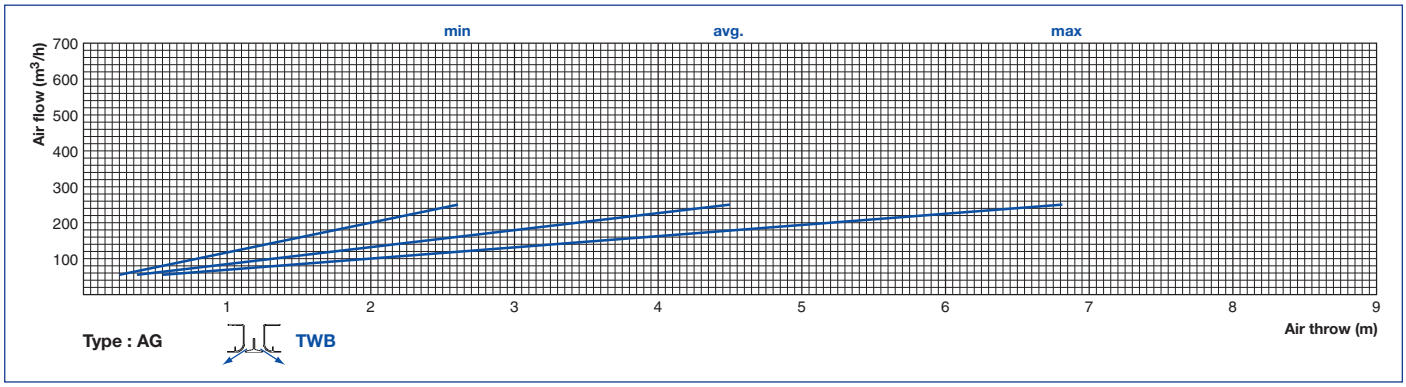




RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)													
m³/h	l/s	m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
85	23	100	28	9	7	–	–	–	–	32	31	34	33	30	29	24	22	26	25
110	30	140	38	19	16	–	–	–	–	42	40	44	44	40	40	33	32	36	36
130	36	170	47	31	26	–	–	–	–	45	43	47	47	45	43	39	38	41	39
150	41	200	57	41	36	–	–	–	–	49	46	51	50	50	47	46	45	46	44

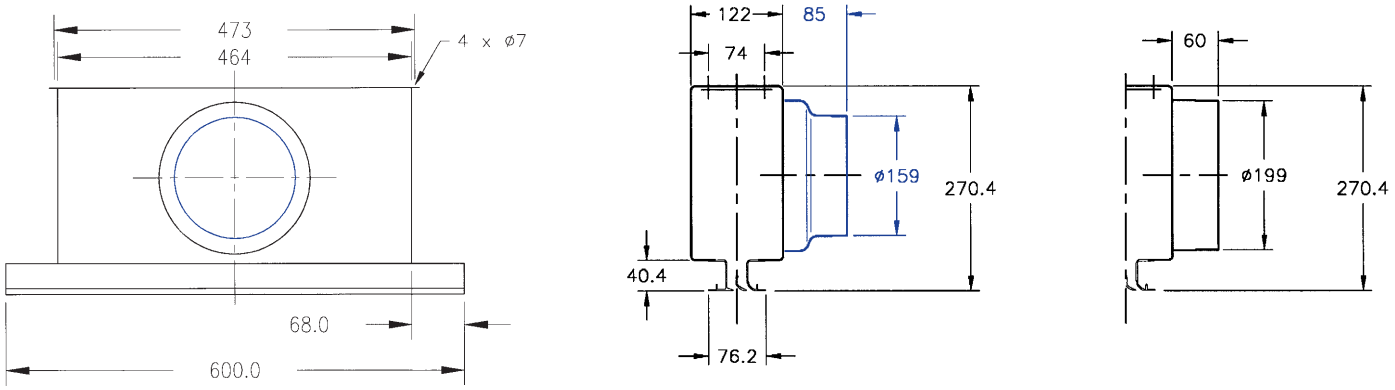
The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection. The NR values are based upon a room attenuation of 4 dB for each frequency band.

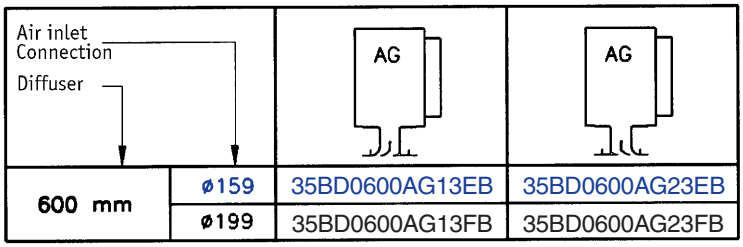
NOTE:
To convert m³/h to l/s, divide by 3.6



Moduboot supply or return air 2 slot — 600 mm

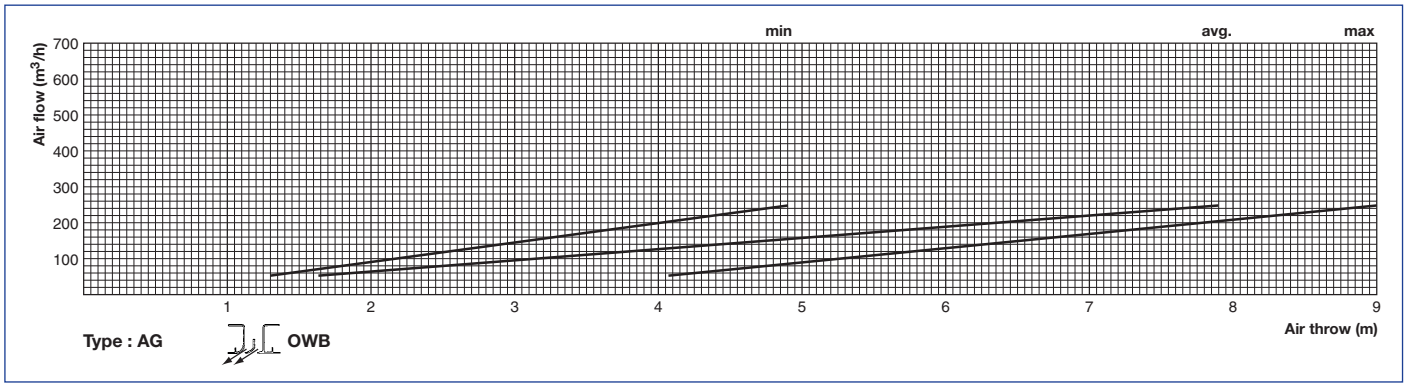
All dimensions are in millimetres.





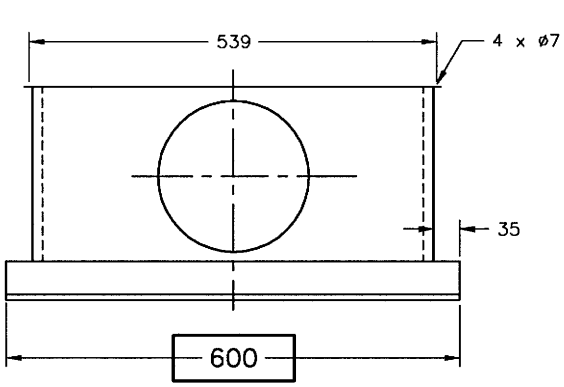
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)											
m³/h	l/s	m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
85	23	100	28	9	7	–	–	–	–	35	34	37	36	33	32	27	25	29	28
110	30	140	38	19	16	–	–	–	–	45	43	47	47	43	43	37	35	39	39
130	36	170	47	31	26	–	–	–	–	48	46	50	50	48	46	41	41	44	42
150	41	200	57	41	36	–	–	–	–	52	49	54	53	53	50	45	48	49	47

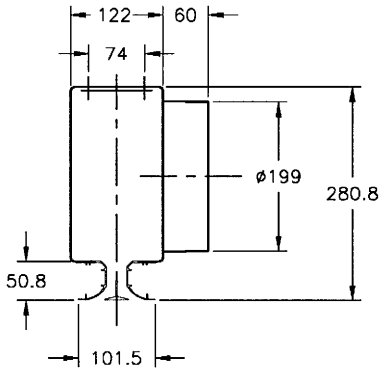
The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection. The NR values are based upon a room attenuation of 4 dB for each frequency band.

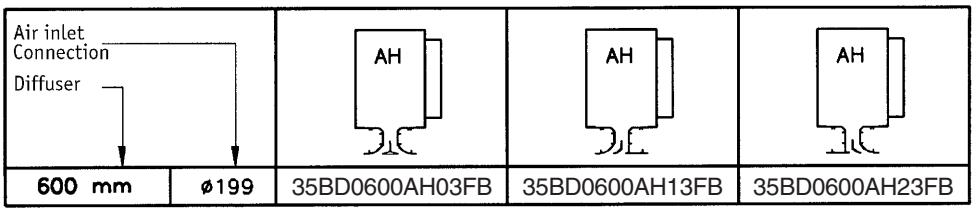


Moduboot supply or return air 2 slot 600 mm

All dimensions are in millimetres.

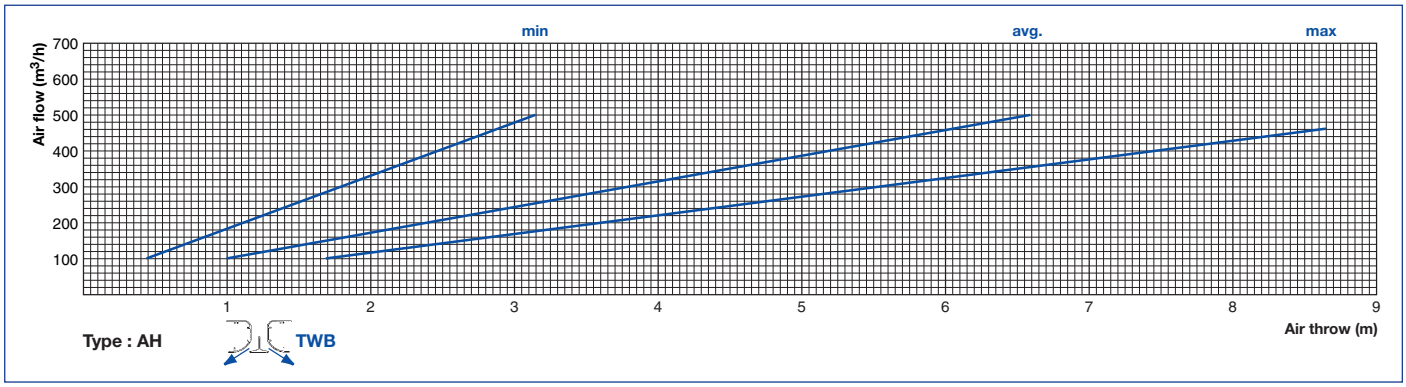


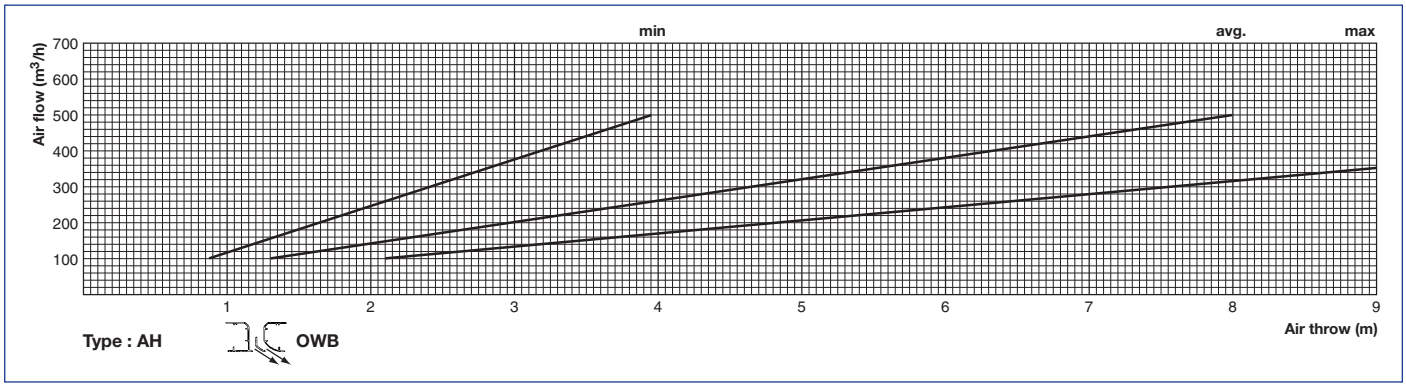




RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
119	33	140	38	7	–	34	31	30	22	20	22
170	47	200	56	16	–	45	39	40	36	30	32
200	55	270	75	26	–	50	47	48	44	37	40
255	70	340	94	36	–	53	51	53	49	43	45
307	85	410	113	41	–	57	56	57	52	47	49

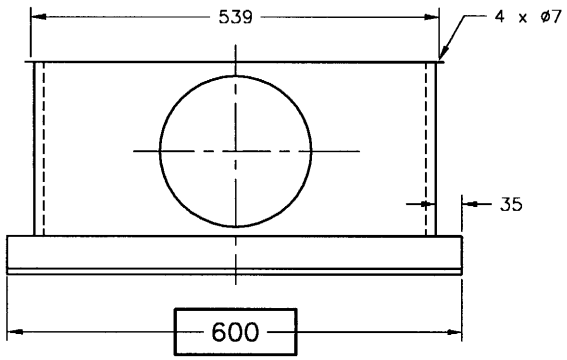
The NR values are based upon a room attenuation of 4 dB for each frequency band.

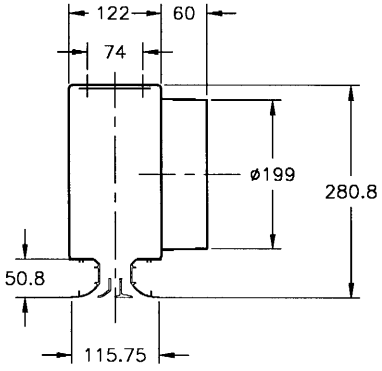




Moduboot supply or return air 3 slot 600 mm

All dimensions are in millimetres.

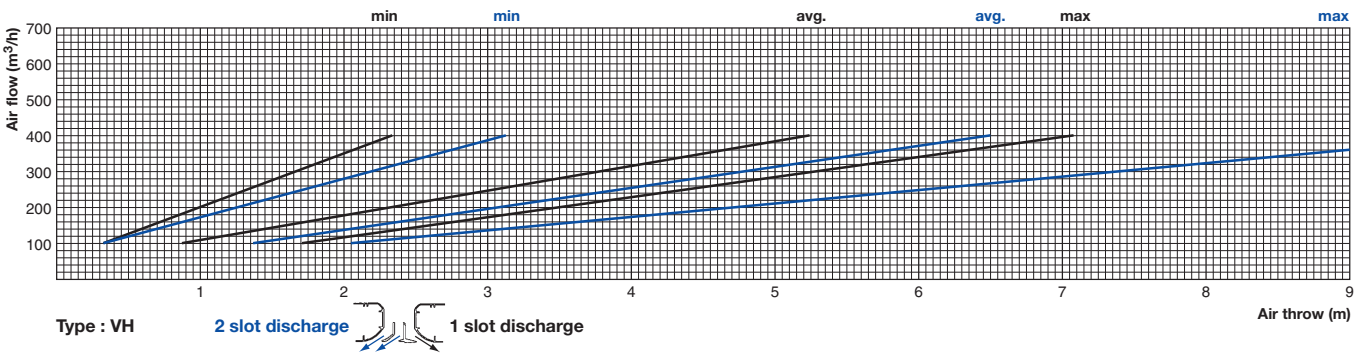


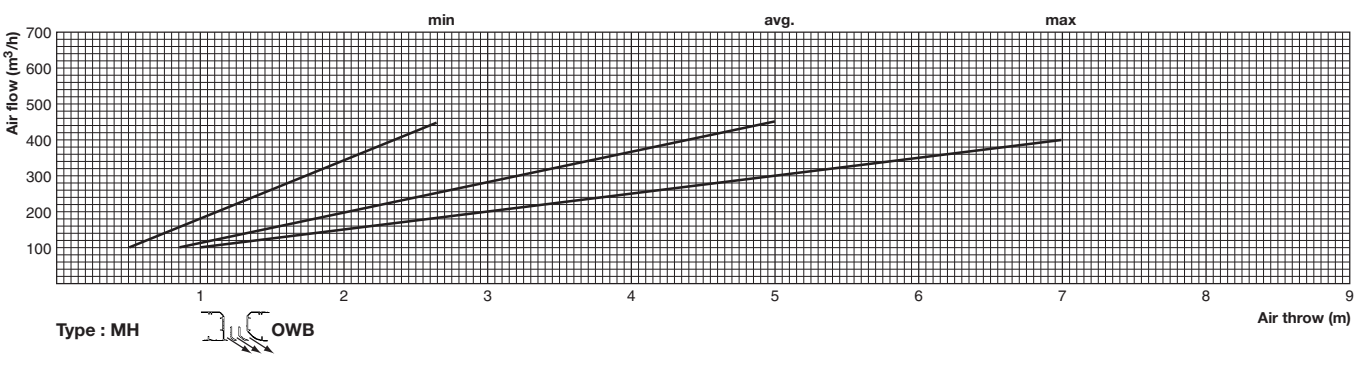


Air inlet Connection / Diffuser		VH	VH	MH	MH
600 mm	ø199	35BD0600VH13FB	35BD0600VH23FB	35BD0600MH13FB	35BD0600MH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
140	39	140	39	5	-	30	27	26	18	16	<20
140	39	200	55	10	-	41	38	39	35	26	31
200	55	270	75	21	-	46	44	44	40	33	36
250	70	340	94	32	-	49	47	49	45	39	41

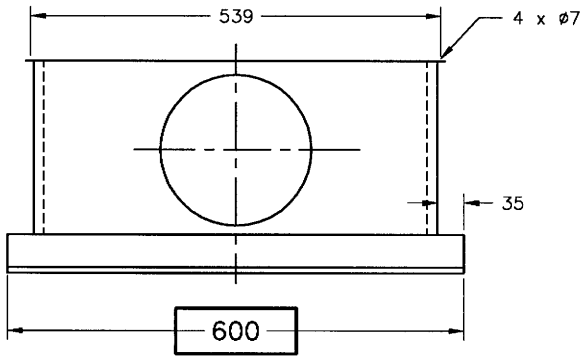
The NR values are based upon a room attenuation of 4 dB for each frequency band.

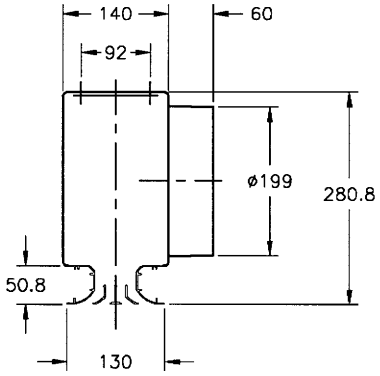


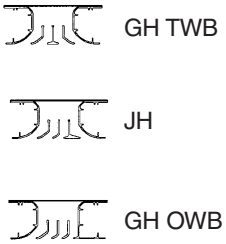


Moduboot supply or return air 4 slot 600 mm

All dimensions are in millimetres.



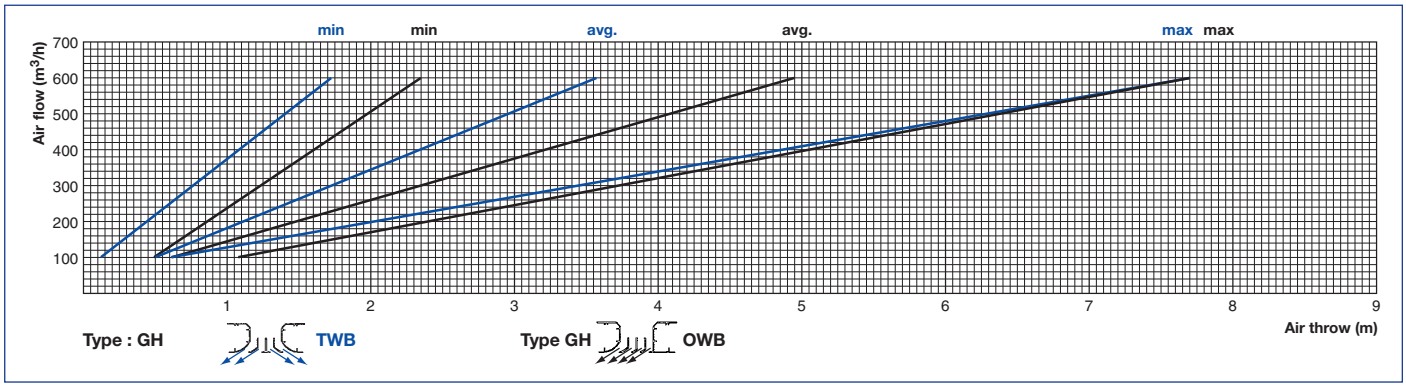


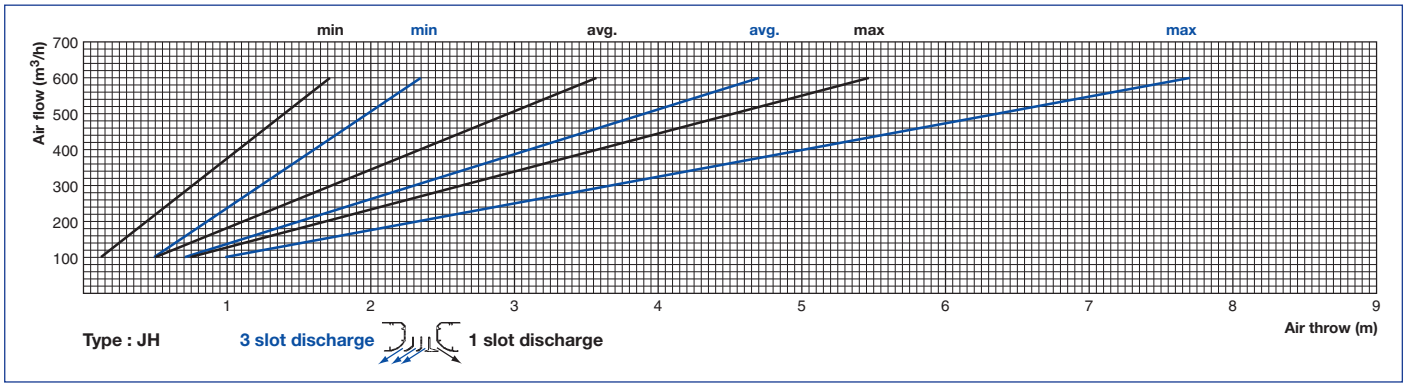


Air inlet Connection / Diffuser		GH	JH	JH	GH	GH
600 mm	ø199	35BD0600GH03FB	35BD0600JH13FB	35BD0600JH23FB	35BD0600GH13FB	35BD0600GH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
200	55	200	55	6	28	24	29	18	19	15	<20
300	83	300	83	23	40	42	37	38	34	29	30
350	100	400	110	46	42	45	39	40	36	30	32
450	125	600	166	76	47	54	33	50	45	39	42

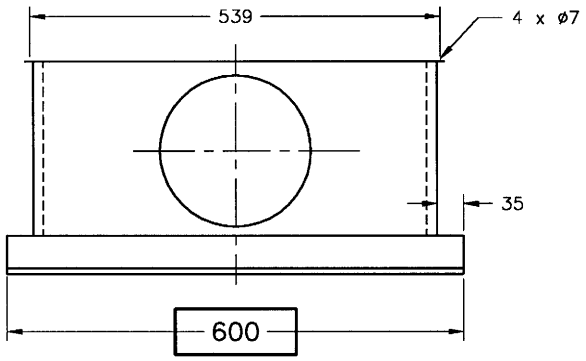
The NR values are based upon a room attenuation of 4 dB for each frequency band.

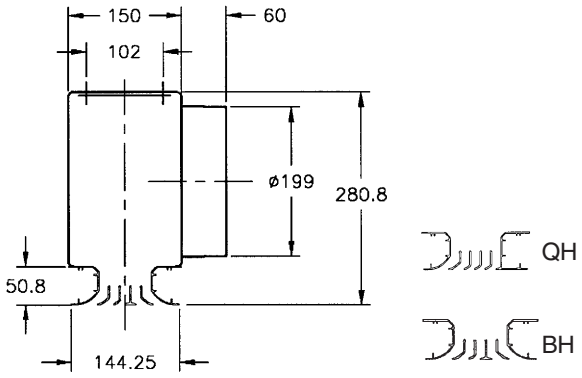


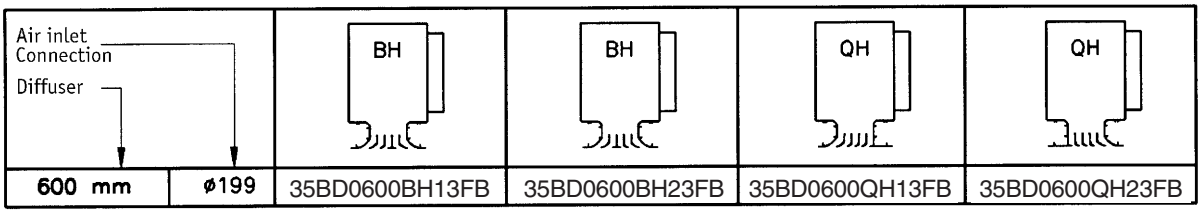


Moduboot supply or return air 5 slot 600 mm

All dimensions are in millimetres.

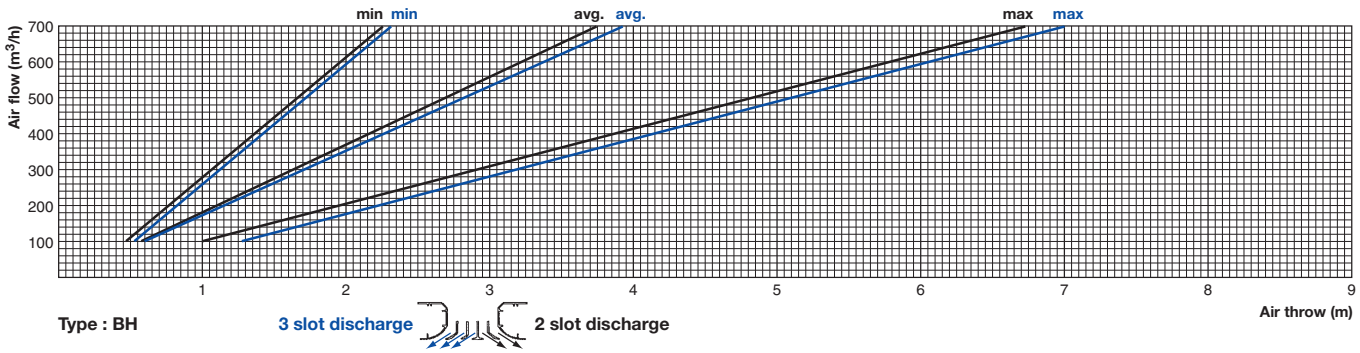


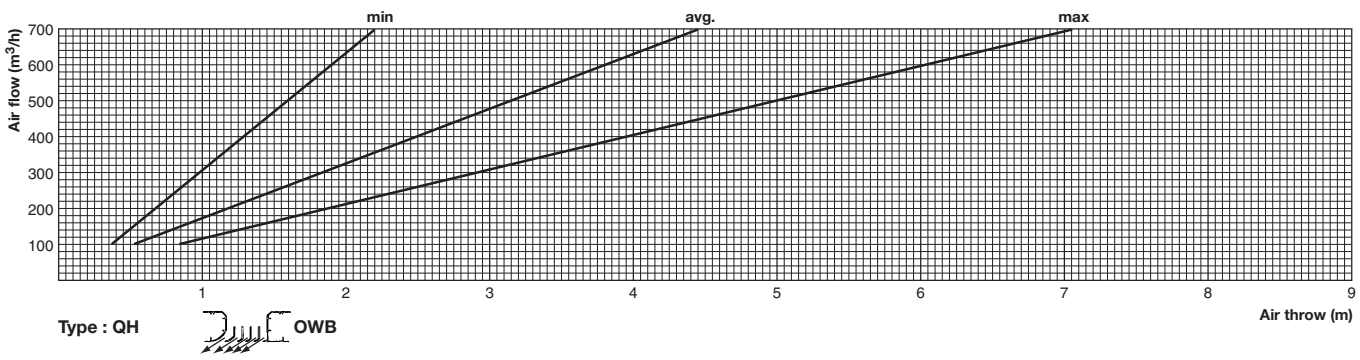




RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
150	42	200	55	4	26	26	27	15	_	_	<20
270	75	350	97	14	40	42	37	38	34	29	30
380	105	480	134	30	47	45	46	42	37	33	34
480	133	650	180	52	45	48	51	47	43	39	39

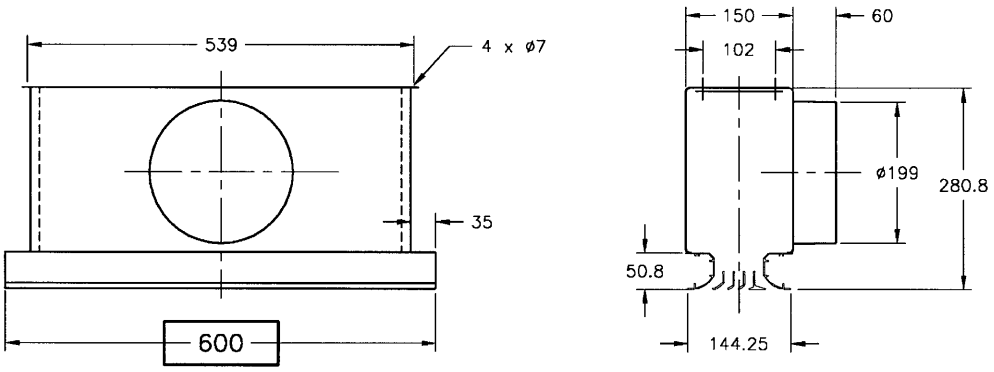
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply or return air 5 slot *600 mm*

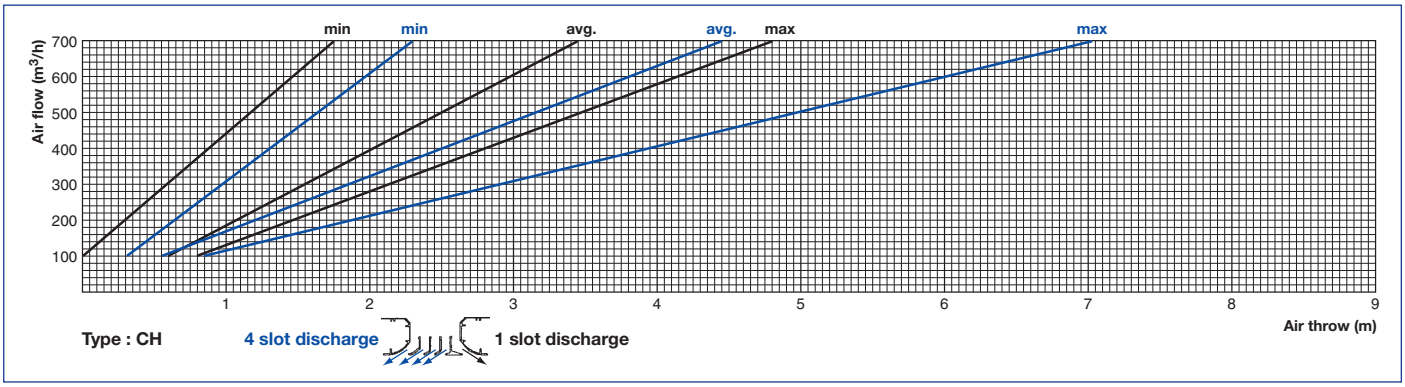
All dimensions are in millimetres.



Air inlet Connection / Diffuser		CH	CH
600 mm	ø199	35BD0600CH13FB	35BD0600CH23FB

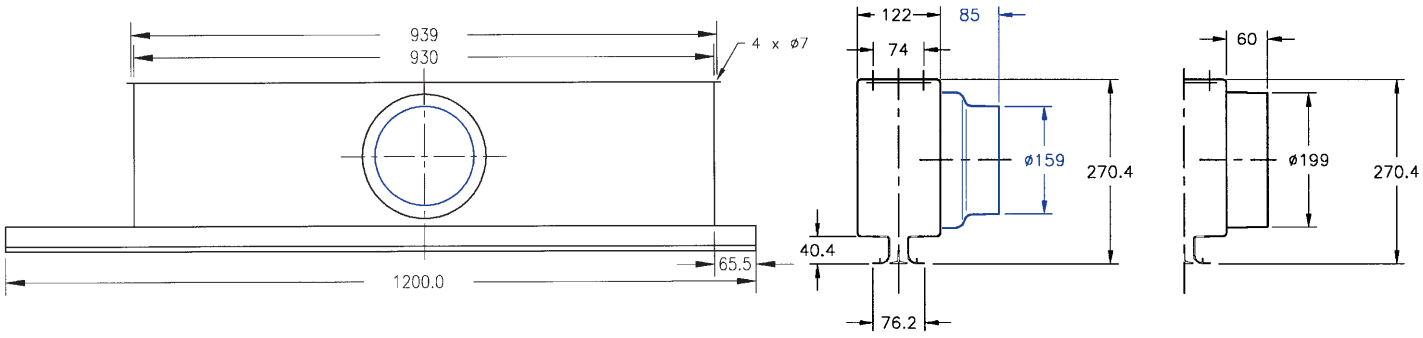
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
150	42	200	55	4	26	26	27	15	-	-	<20
270	75	350	97	14	40	42	37	38	34	29	30
380	105	480	134	30	47	45	46	42	37	33	34
480	133	650	180	52	45	48	51	47	43	39	39

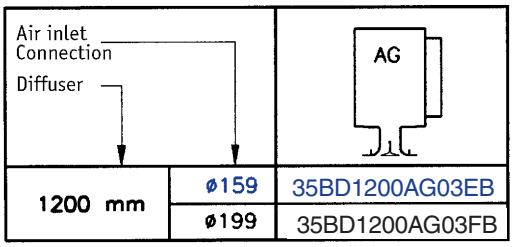
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply or return air 2 slot — 1200 mm

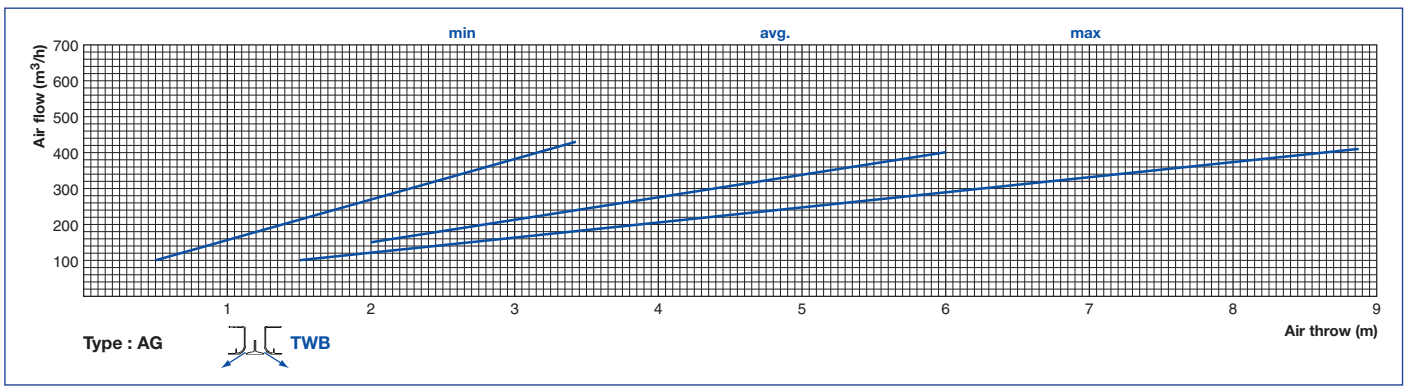
All dimensions are in millimetres.





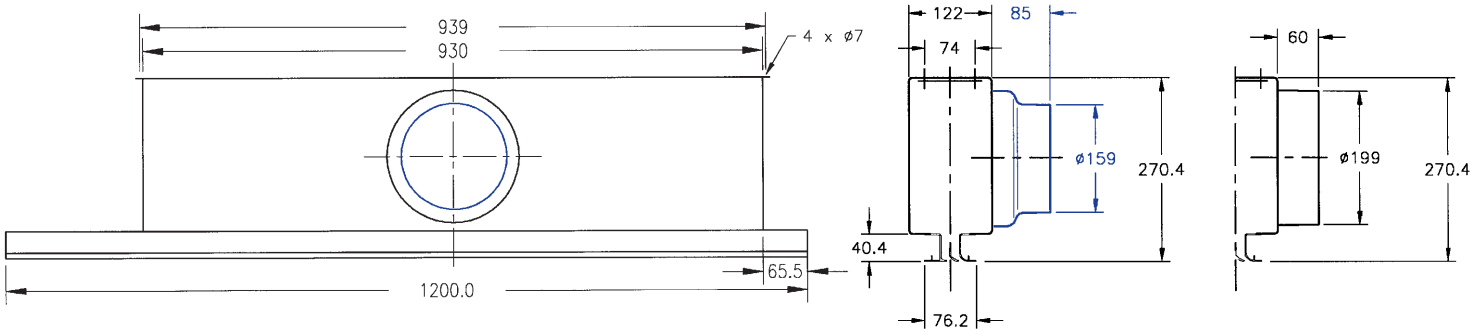
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)													
m³/h	l/s	m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
140	39	170	48	5	2	–	–	–	–	38	37	34	33	25	25	17	14	26	25
200	55	255	71	13	9	–	–	–	–	44	42	39	38	35	33	24	22	31	30
270	75	340	95	28	22	–	–	47	44	47	45	43	42	38	38	33	31	35	34
340	94	425	118	42	33	–	–	52	47	51	48	49	47	43	44	41	40	41	40
380	105	510	142	60	49	–	–	58	51	57	51	54	52	51	50	48	46	47	46

The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection. The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply or return air 2 slot *1200 mm*

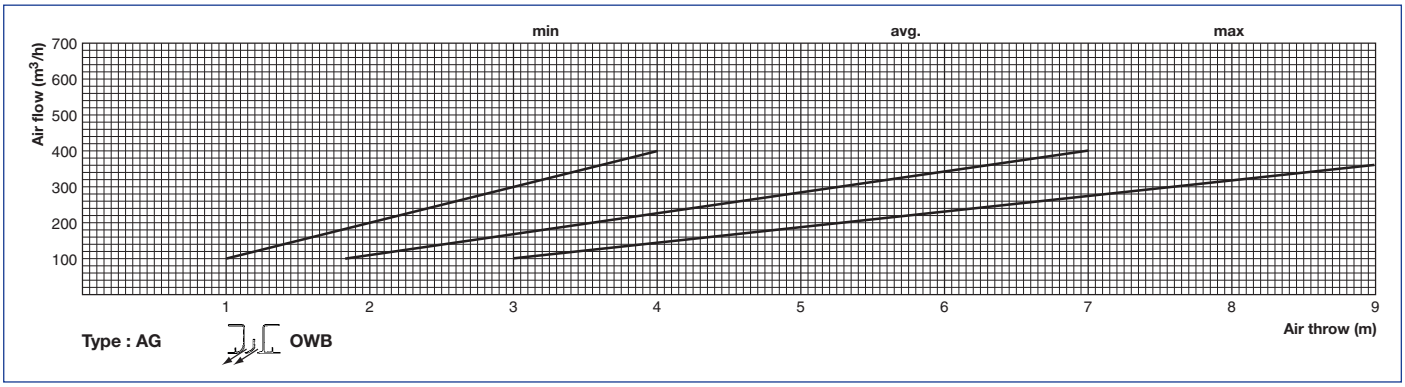
All dimensions are in millimetres.



Air inlet Connection / Diffuser		AG	AG
1200 mm	ø159	35BD1200AG13EB	35BD1200AG23EB
	ø199	35BD1200AG13FB	35BD1200AG23FB

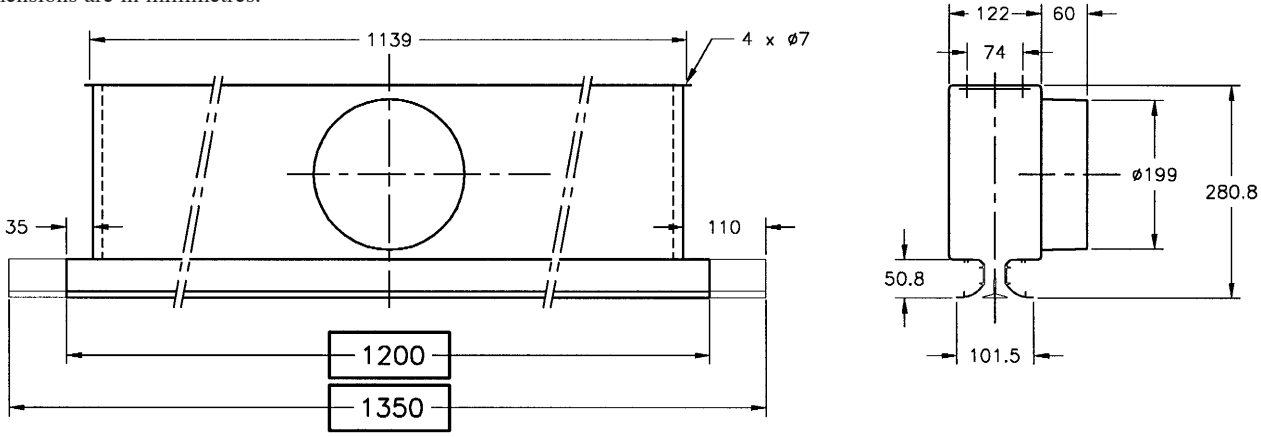
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)													
m³/h	l/s	m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
140	39	170	48	5	2	–	–	–	–	41	40	37	36	28	28	20	17	29	28
200	55	255	71	13	9	–	–	–	–	47	45	42	41	38	36	27	25	34	33
270	75	340	95	28	22	–	–	51	47	50	48	46	45	41	41	36	34	38	37
340	94	425	118	42	33	–	–	55	50	54	51	52	50	46	47	44	43	44	43
380	105	510	142	60	49	–	–	61	54	60	54	57	55	54	53	51	49	50	49

The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection. The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply or return air 2 slot 1200-1350 mm

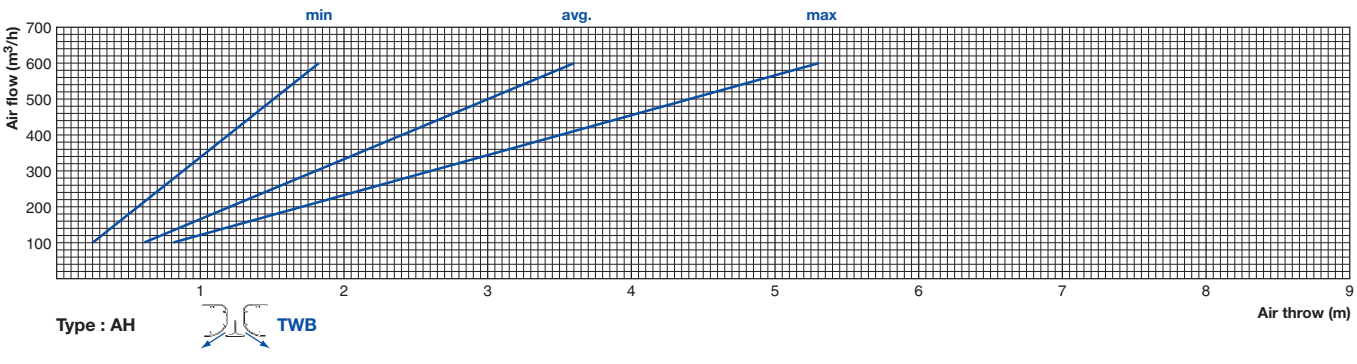
All dimensions are in millimetres.

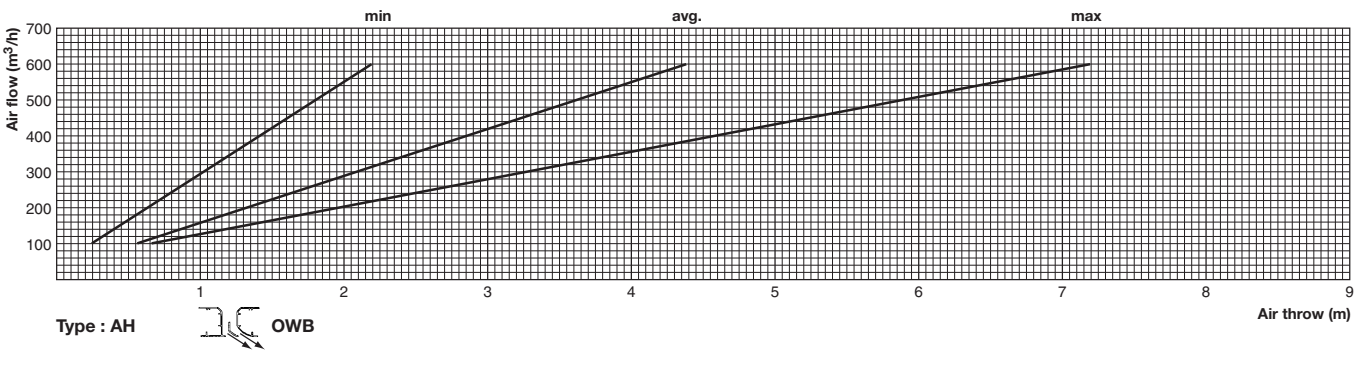


Air inlet Connection / Diffuser		AH	AH	AH
1200 mm	ø199	35BD1200AH03FB	35BD1200AH13FB	35BD1200AH23FB
1350 mm	ø199	35BD1350AH03FB	35BD1350AH13FB	35BD1350AH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
260	72	340	95	19	–	–	37	31	26	20	23
390	108	510	142	41	–	47	47	42	37	29	34
510	141	600	167	72	–	55	54	49	46	41	42

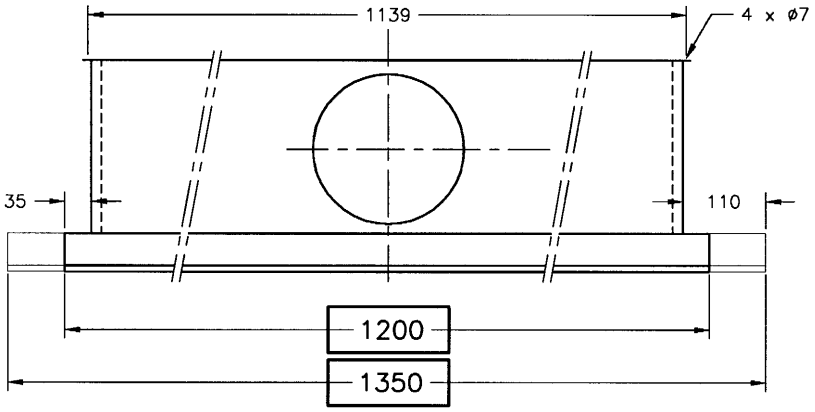
The NR values are based upon a room attenuation of 4 dB for each frequency band.

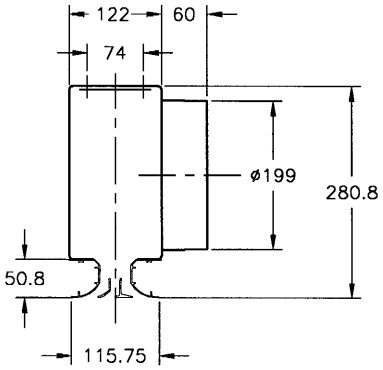




Moduboot supply or return air 3 slot 1200-1350 mm

All dimensions are in millimetres.

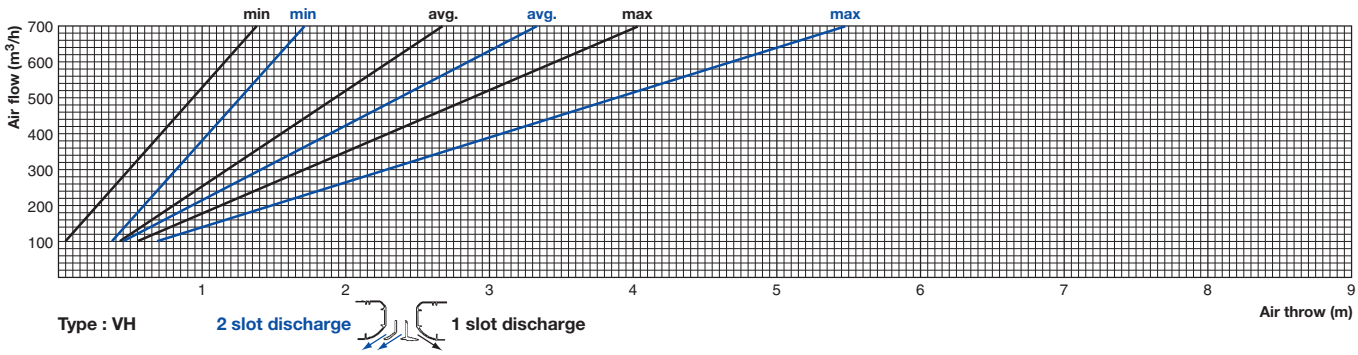


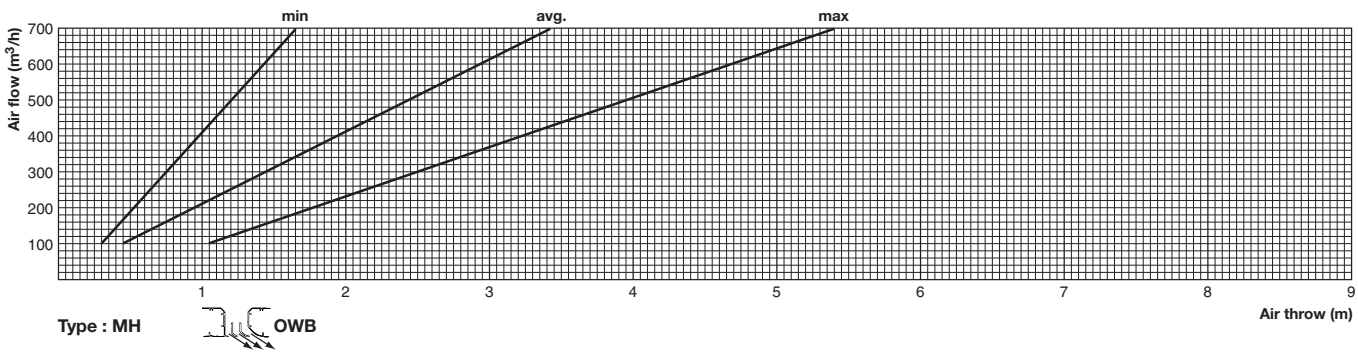


Air inlet Connection / Diffuser		VH	VH	MH	MH
1200 mm	ø199	35BD1200VH13FB	35BD1200VH23FB	35BD1200MH13FB	35BD1200MH23FB
1350 mm	ø199	35BD1350VH13FB	35BD1350VH23FB	35BD1350MH13FB	35BD1350MH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
340	94	340	94	14	31	35	33	22	-	-	<20
360	100	450	125	28	39	43	43	39	26	15	31
490	136	600	166	47	44	49	49	45	37	28	37

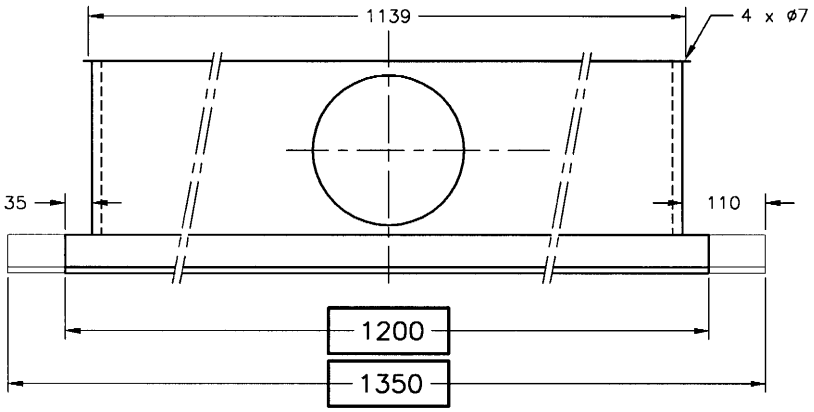
The NR values are based upon a room attenuation of 4 dB for each frequency band.

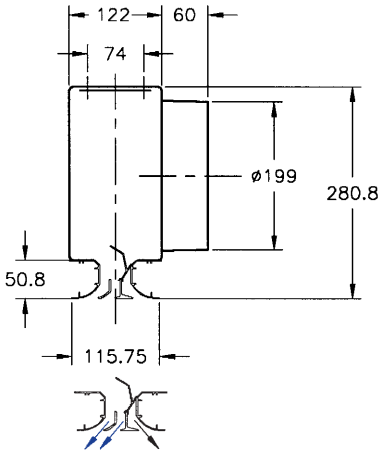




Moduboot supply air Optimix® 3 slot 1200-1350 mm

All dimensions are in millimetres.

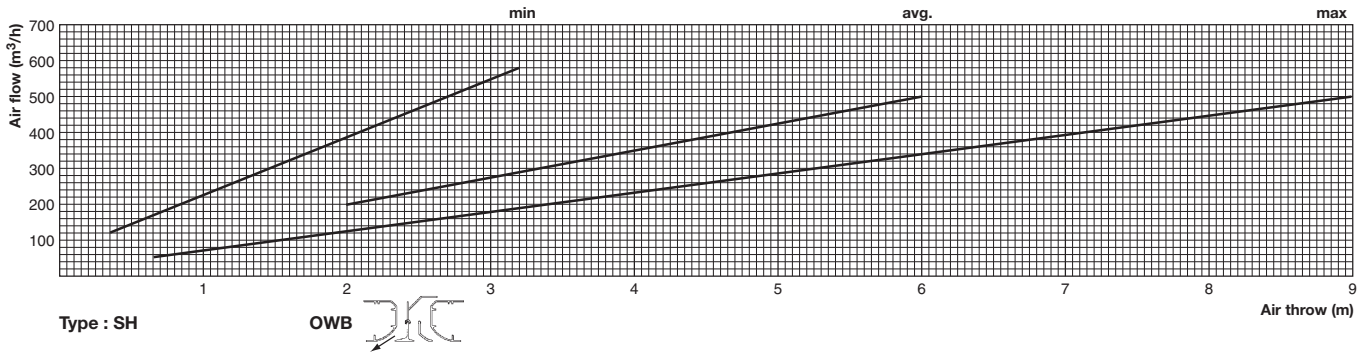


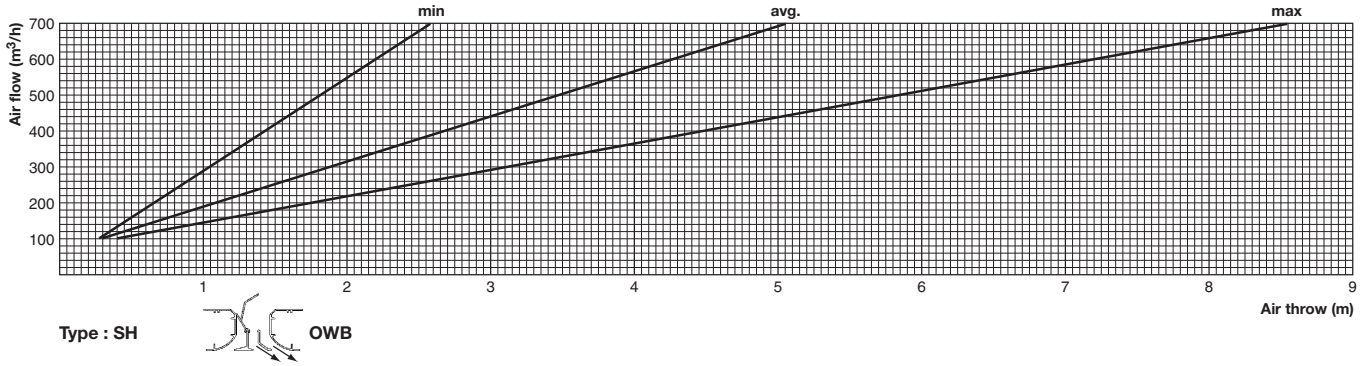


Air inlet Connection / Diffuser		SH	SH
1200 mm	ø199	35BD1200SH13FB	35BD1200SH23FB
1350 mm	ø199	35BD1350SH13FB	35BD1350SH23FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	340	94	17	-	-	39	33	28	20	25
	510	141	34	-	-	49	43	38	30	35
	600	167	60	-	56	57	52	46	42	44
Warm	170	47	19	-	-	38	32	27	20	24
	255	71	39	-	-	48	43	38	30	35
	340	94	71	-	55	56	51	46	42	43

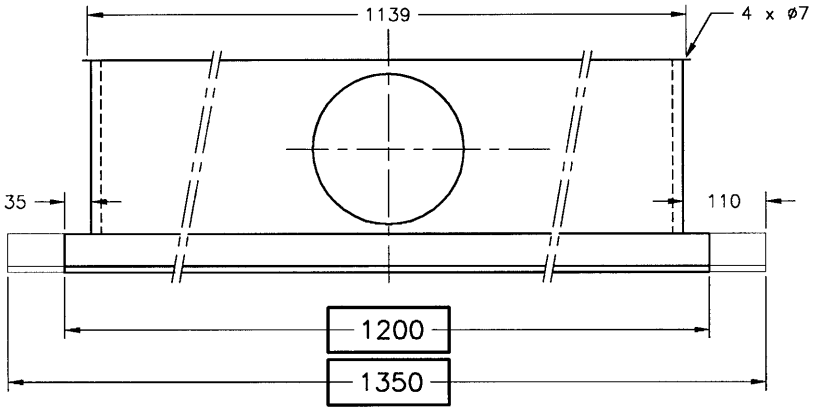
The NR values are based upon a room attenuation of 4 dB for each frequency band.

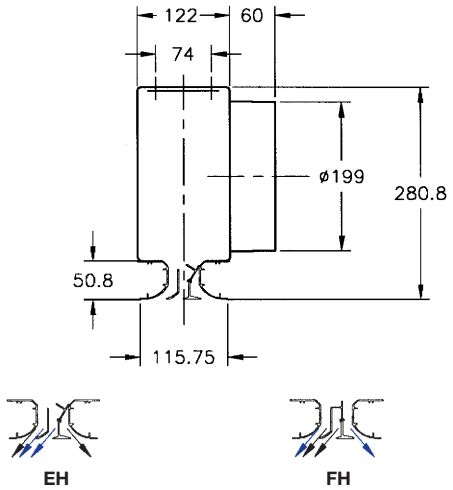




Moduboot supply air Optimix® 3 slot 1200-1350 mm

All dimensions are in millimetres.

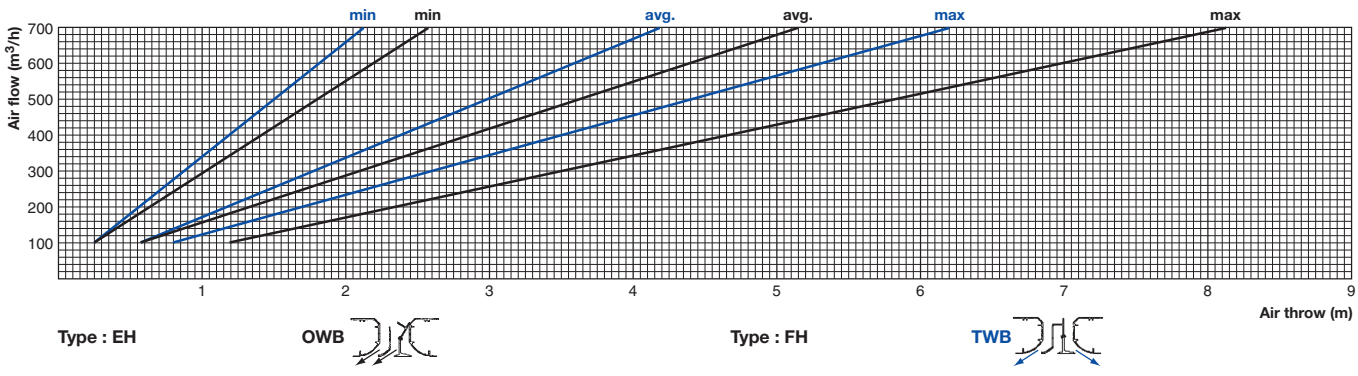




Air inlet / Connection / Diffuser		EH	EH	FH	FH
1200 mm	ø199	35BD1200EH13FB	35BD1200EH23FB	35BD1200FH13FB	35BD1200FH23FB
1350 mm	ø199	35BD1350EH13FB	35BD1350EH23FB	35BD1350FH13FB	35BD1350FH23FB

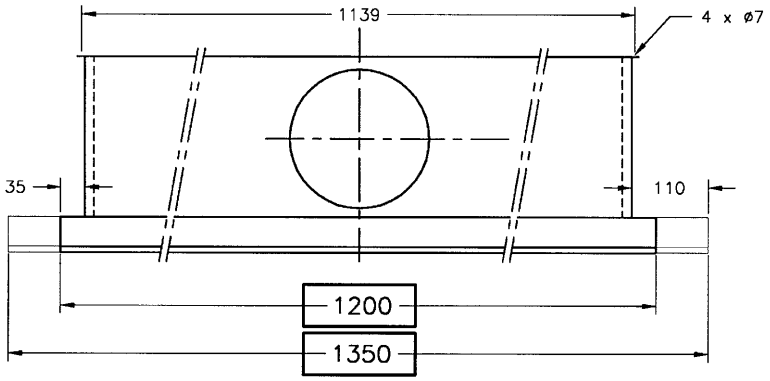
	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	340	94	17	-	-	38	32	27	20	24
	510	141	34	-	-	48	43	38	30	35
	600	167	60	-	55	56	51	46	42	43
Warm	340	94	17	-	-	38	32	27	20	24
	510	141	34	-	-	48	43	38	30	35
	680	189	60	-	55	56	51	46	42	43

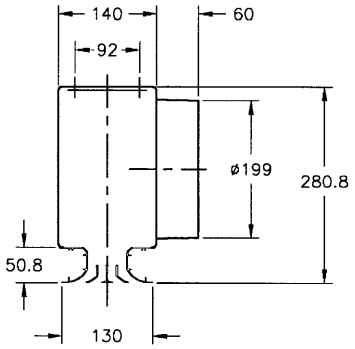
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply or return air 4 slot 1200-1350 mm

All dimensions are in millimetres.

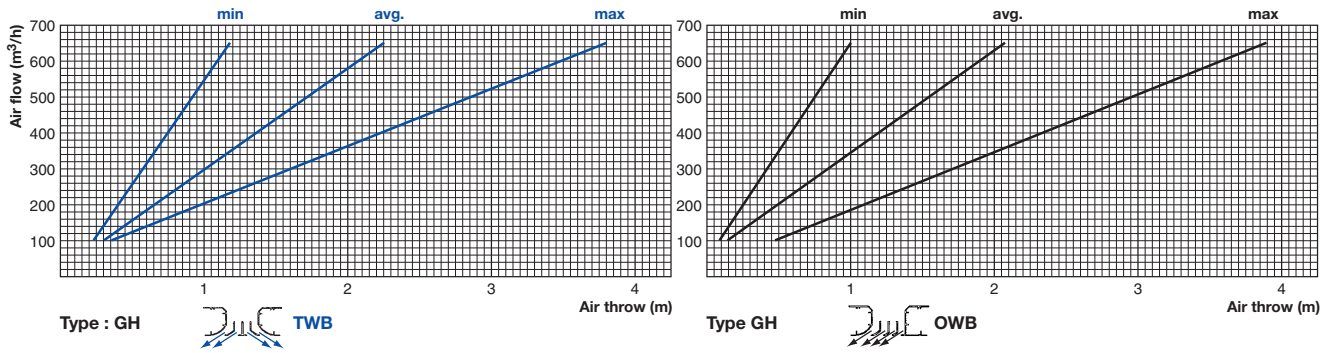


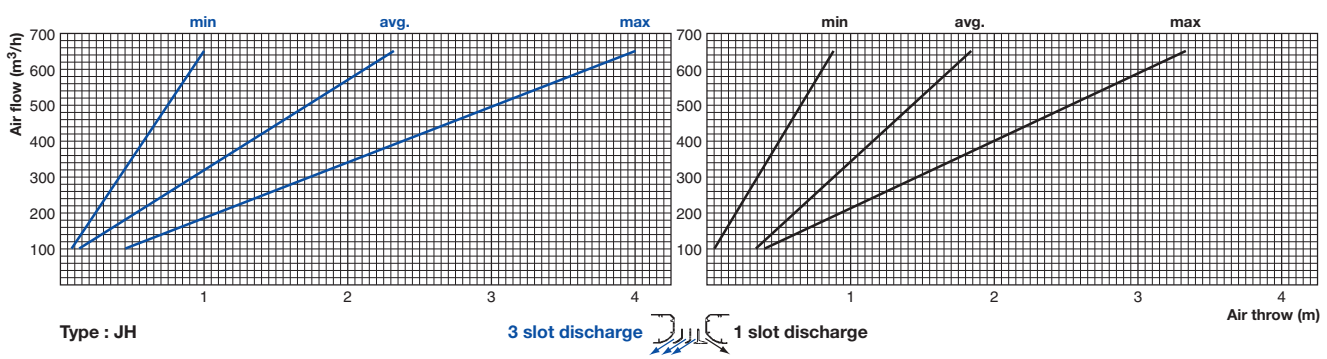


Air inlet Connection / Diffuser		GH	JH	JH	GH	GH
1200 mm	ø199	35BD1200GH03FB	35BD1200JH13FB	35BD1200JH23FB	35BD1200GH13FB	35BD1200GH23FB
1350 mm	ø199	35BD1350GH03FB	35BD1350JH13FB	35BD1350JH23FB	35BD1350GH13FB	35BD1350GH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
200	55	200	55	2	28	30	17	10	-	-	<20
300	83	350	97	9	38	37	42	35	26	15	28
420	116	550	152	21	47	45	46	42	37	33	34
500	140	600	167	35	49	46	48	41	35	27	34

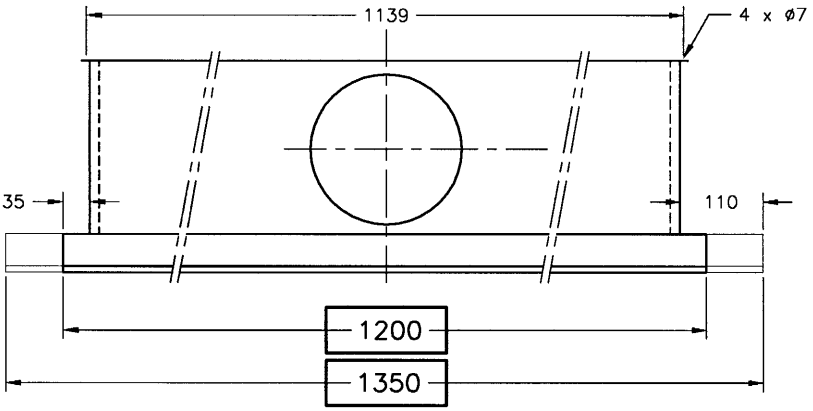
The NR values are based upon a room attenuation of 4 dB for each frequency band.

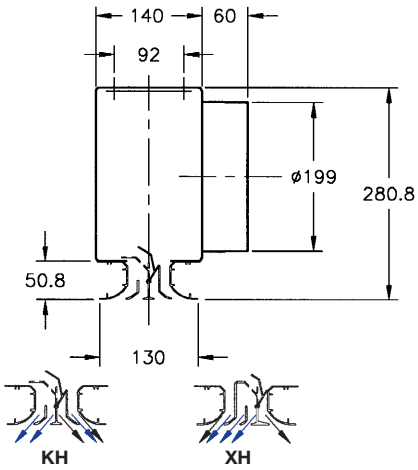




Moduboot supply air Optimix® 4 slot 1200-1350 mm

All dimensions are in millimetres.

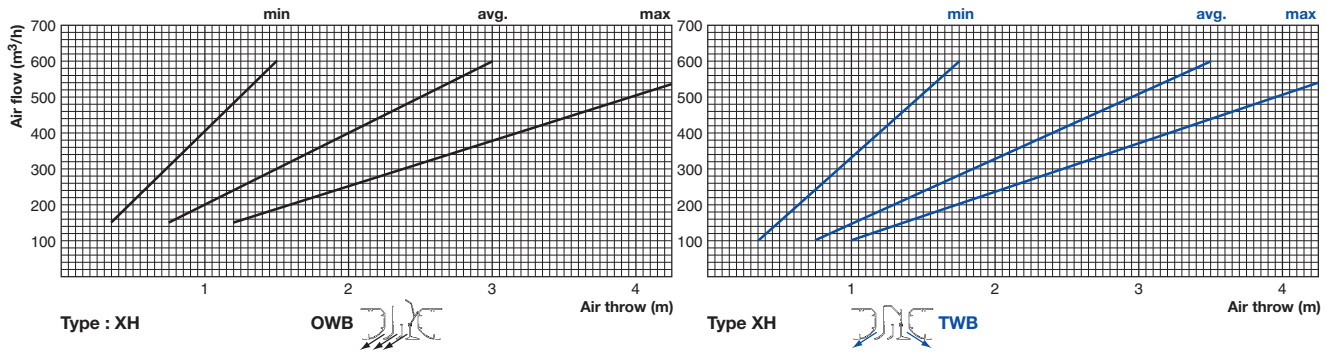


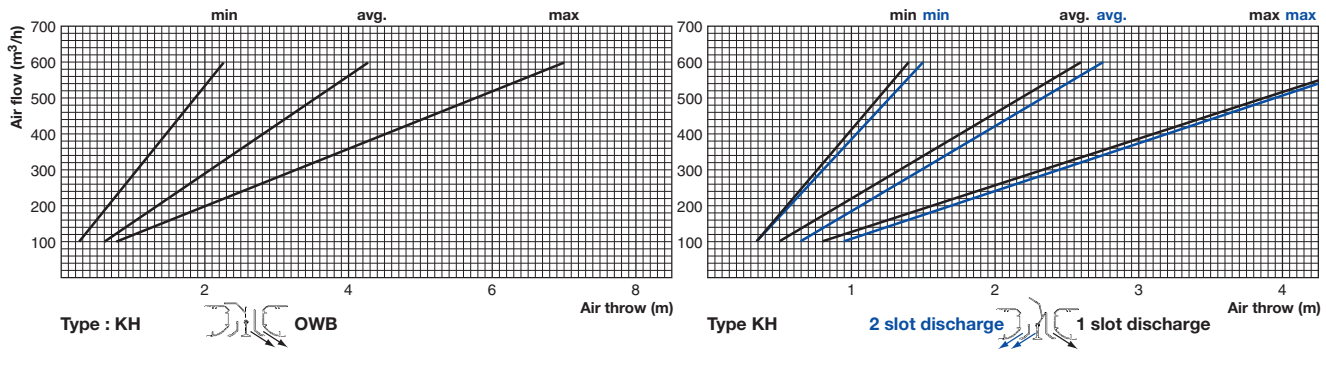


Air inlet Connection / Diffuser		KH	KH	XH	XH
1200 mm	ø199	35BD1200KH13FB	35BD1200KH23FB	35BD1200XH13FB	35BD1200XH23FB
1350 mm	ø199	35BD1350KH13FB	35BD1350KH23FB	35BD1350XH13FB	35BD1350XH23FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	42	2	25	25	26	7	-	-	<20
	350	97	15	39	36	38	34	27	21	26
	500	139	28	47	45	46	42	37	33	34
	650	180	47	45	49	51	45	41	37	37
Warm	150	42	5	17	24	24	15	-	-	<20
	350	97	19	49	46	44	44	40	33	36
	500	139	32	51	49	49	49	45	39	41

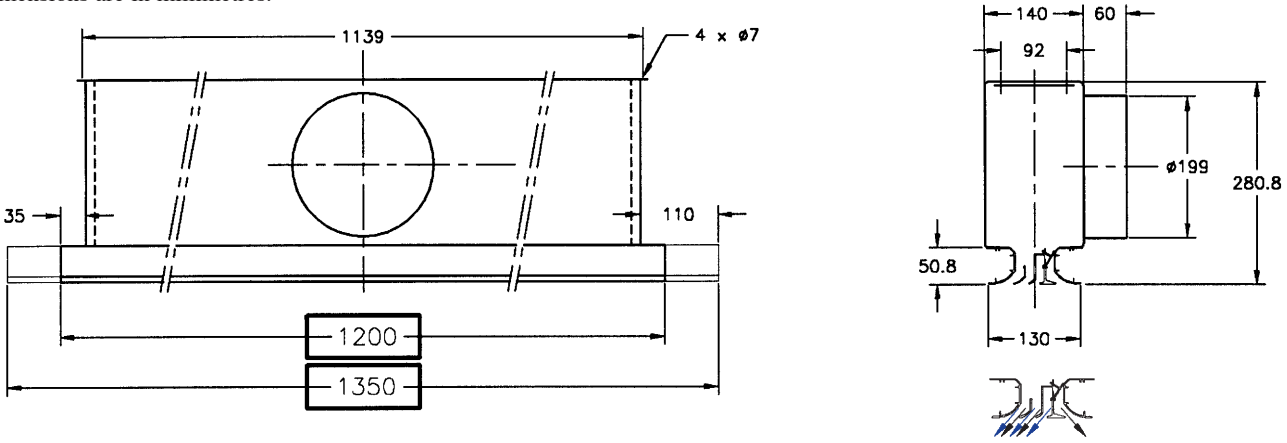
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply air Optimix® 4 slot 1200-1350 mm

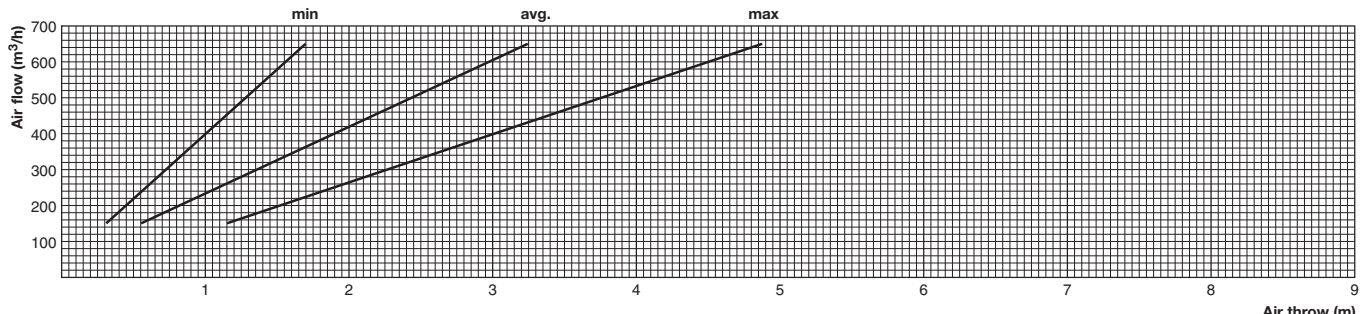
All dimensions are in millimetres.

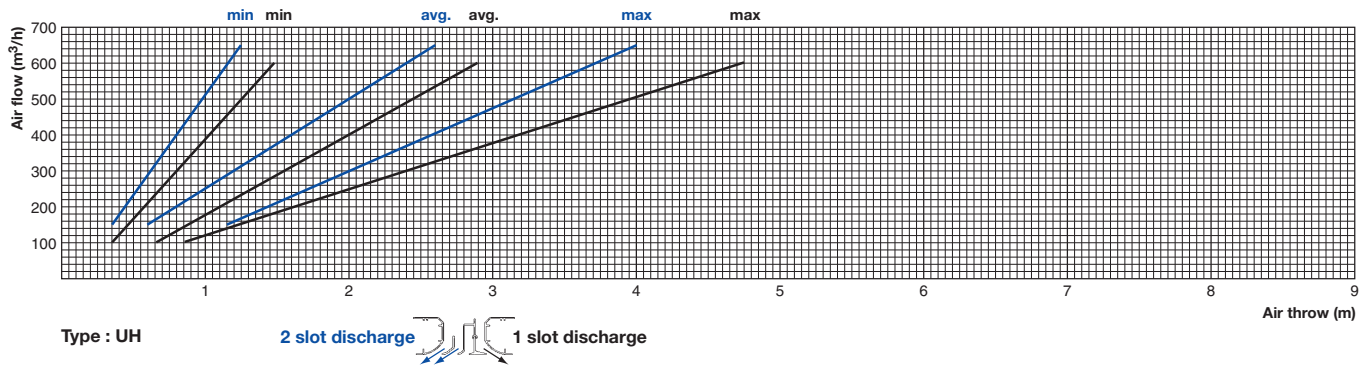


Air inlet Connection / Diffuser		UH	UH
1200 mm	**ø199**	35BD1200UH13FB	35BD1200UH23FB
1350 mm	**ø199**	35BD1350UH13FB	35BD1350UH23FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	42	2	25	25	26	7	-	-	<20
	350	97	15	39	36	38	34	27	21	26
	500	139	28	47	45	46	42	37	33	34
	650	180	47	45	49	51	45	41	37	37
Warm	150	42	5	25	25	26	7	-	-	<20
	350	97	19	39	36	38	34	27	21	26
	500	139	32	47	45	46	42	37	33	34

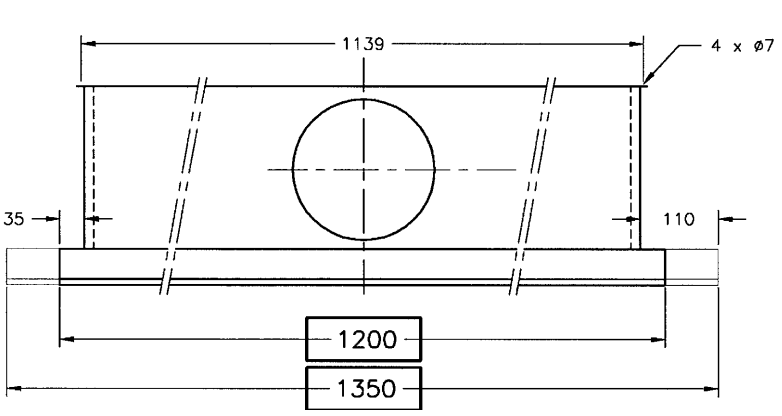
The NR values are based upon a room attenuation of 4 dB for each frequency band.

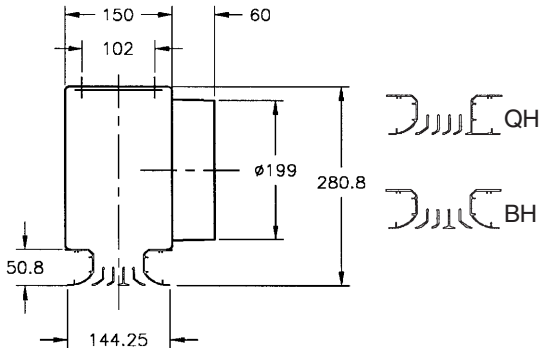




Moduboot supply or return air 5 slot 1200-1350 mm

All dimensions are in millimetres.

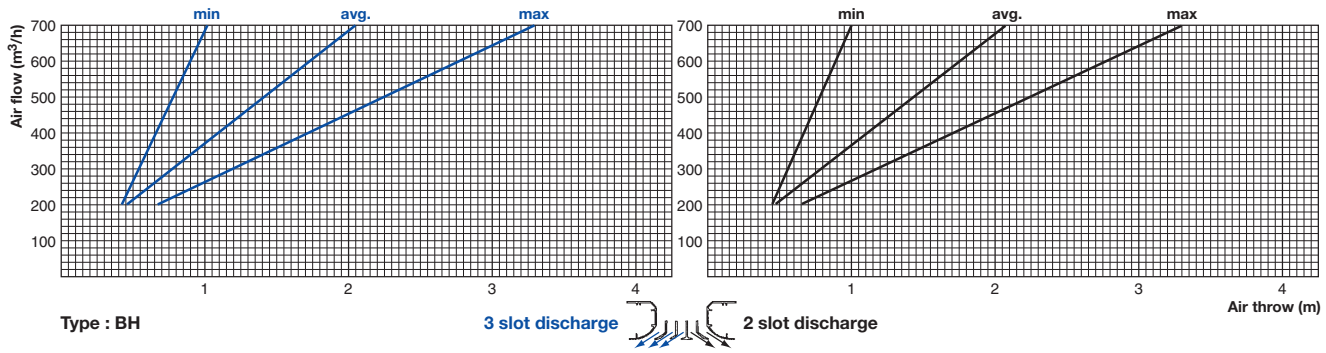


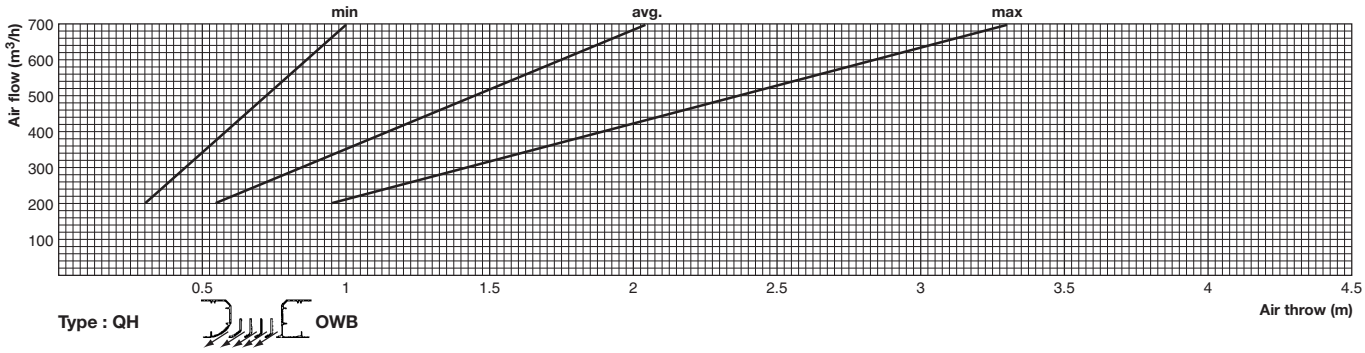


Air inlet Connection / Diffuser		BH	BH	QH	QH
1200 mm	ø199	35BD1200BH13FB	35BD1200BH23FB	35BD1200QH13FB	35BD1200QH23FB
1350 mm	ø199	35BD1350BH13FB	35BD1350BH23FB	35BD1350QH13FB	35BD1350QH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
250	69	440	122	6	31	28	32	23	-	-	<20
300	83	600	167	16	34	39	40	35	20	17	27
420	116	680	189	28	47	45	39	40	36	30	32
500	139	700	194	38	48	49	51	46	41	32	38

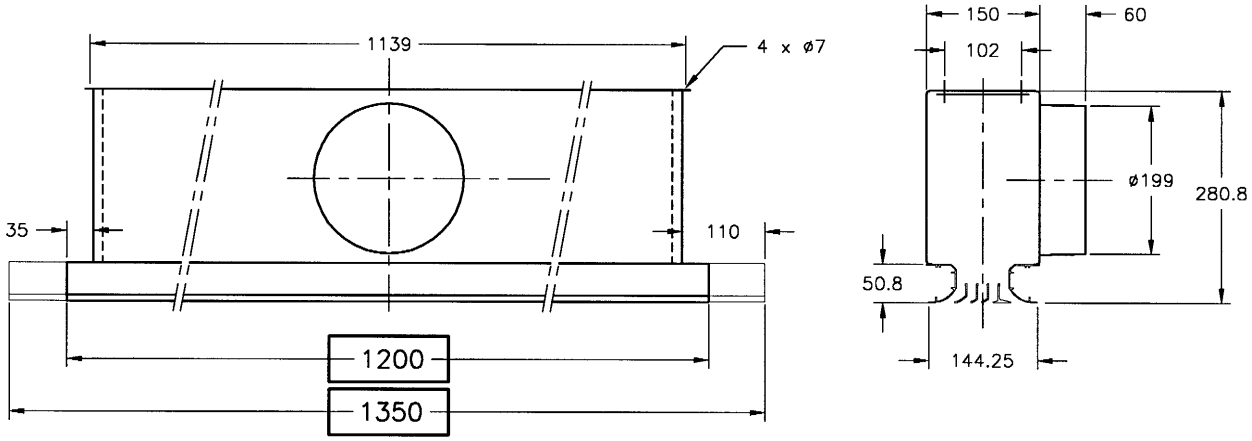
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply or return air 5 slot 1200-1350 mm

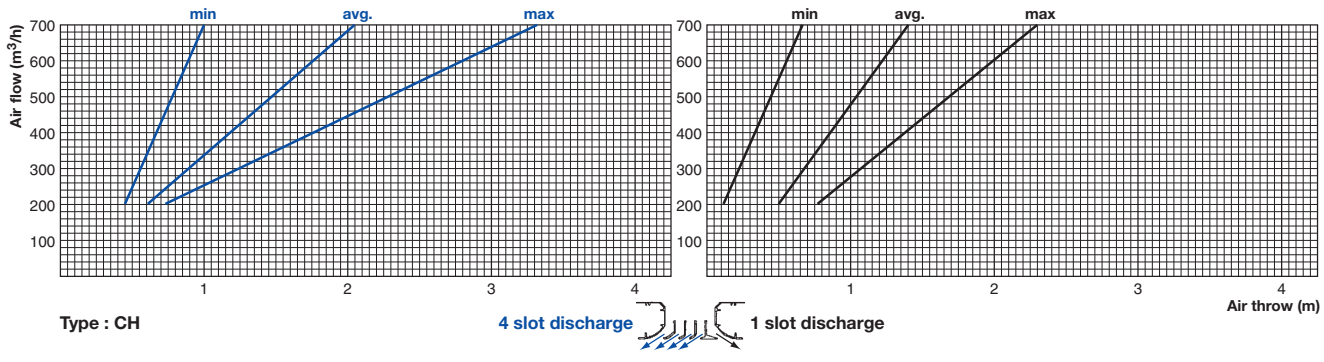
All dimensions are in millimetres.



Air inlet Connection / Diffuser		CH	CH
1200 mm	ø199	35BD1200CH13FB	35BD1200CH23FB
1350 mm	ø199	35BD1350CH13FB	35BD1350CH23FB

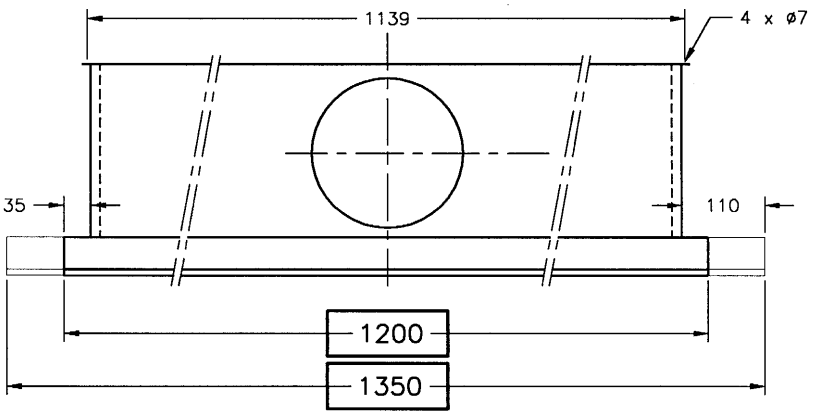
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
250	69	340	94	6	31	28	32	23	-	-	<20
300	83	440	122	16	34	39	39	35	20	17	27
420	116	600	167	28	47	45	44	40	36	30	32
500	139	680	189	38	48	49	51	46	41	32	38

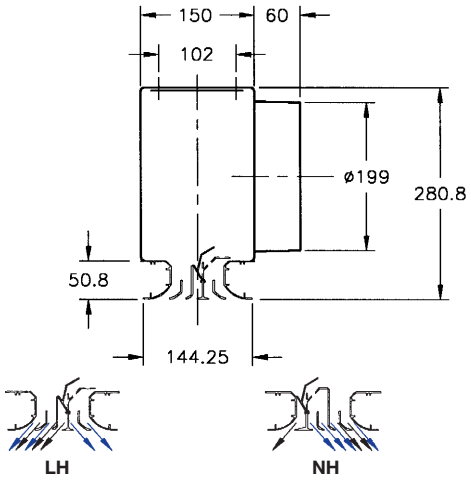
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply air Optimix® 5 slot 1200-1350 mm

All dimensions are in millimetres.

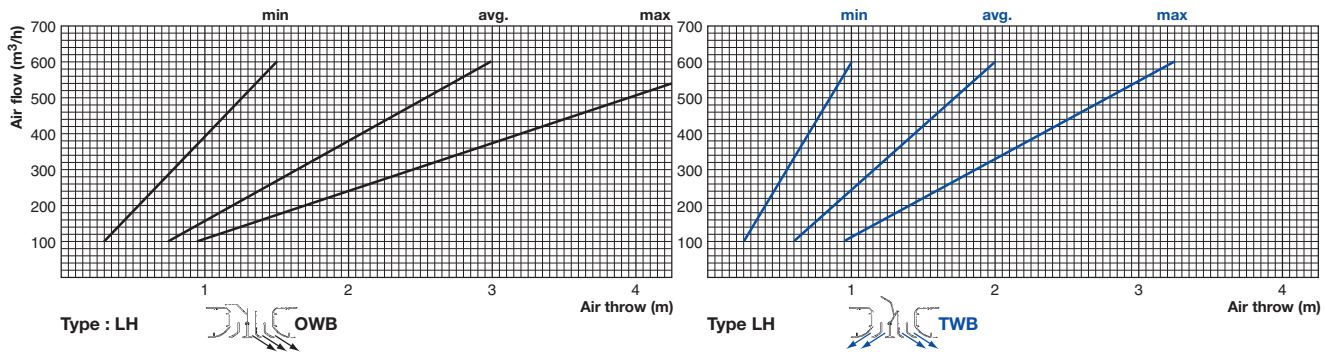


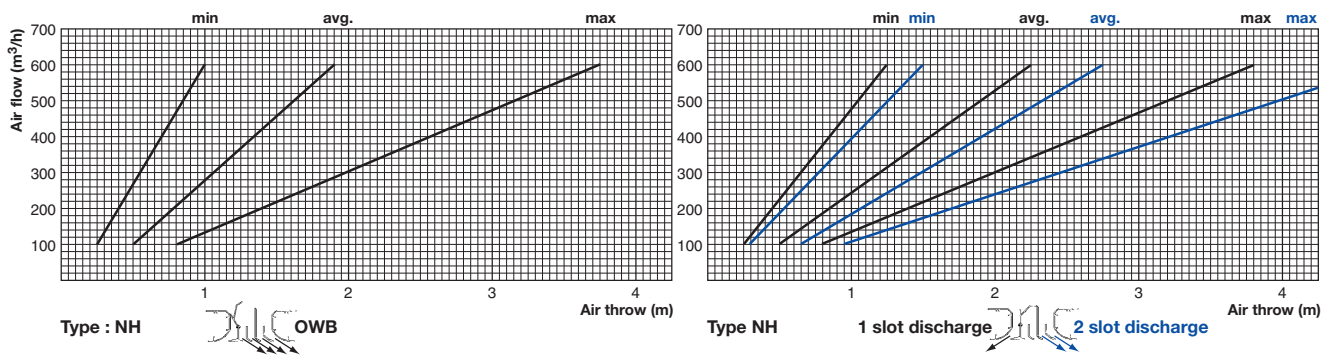


Air inlet Connection / Diffuser		LH	LH	NH	NH
1200 mm	ø199	35BD1200LH13FB	35BD1200LH23FB	35BD1200NH13FB	35BD1200NH23FB
1350 mm	ø199	35BD1350LH13FB	35BD1350LH23FB	35BD1350NH13FB	35BD1350NH23FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	350	97	9	30	30	33	24	12	-	<20
	500	139	21	40	40	41	35	32	25	28
	600	167	35	41	46	45	44	40	33	36
	700	195	52	56	56	57	54	49	48	46
Warm	170	47	2	22	21	23	12	-	-	<20
	350	97	15	38	37	42	35	26	15	28
	450	125	24	34	40	42	35	25	14	28

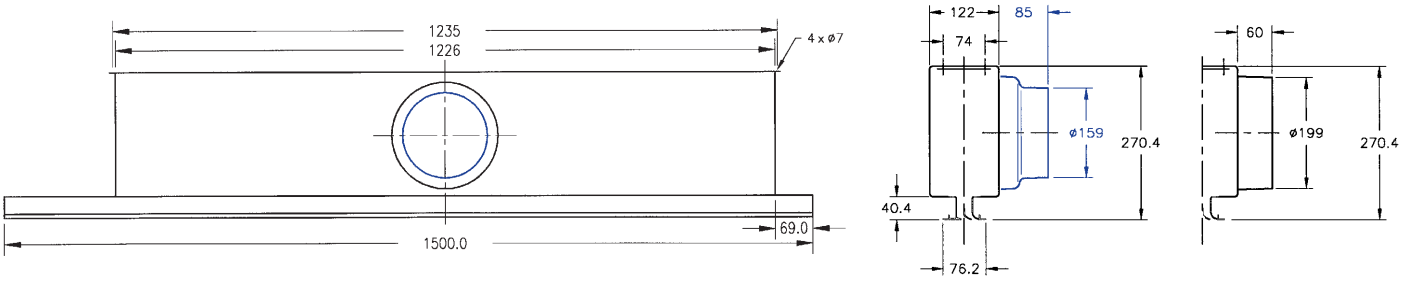
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply or return air 2 slot 1500 mm

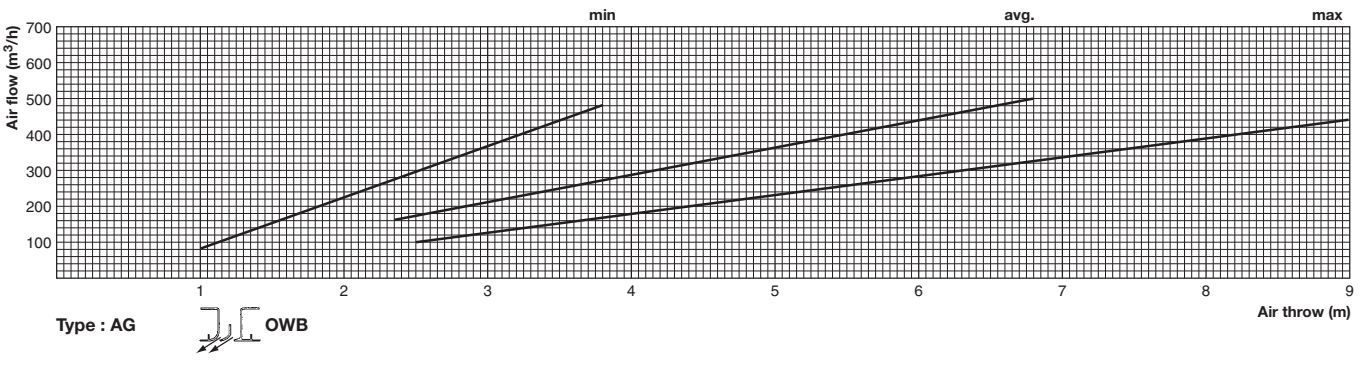
All dimensions are in millimetres.



Air inlet Connection / Diffuser		AG	AG
1500 mm	ø159	35BD1500AG13EB	35BD1500AG23EB
	ø199	35BD1500AG13FB	35BD1500AG23FB

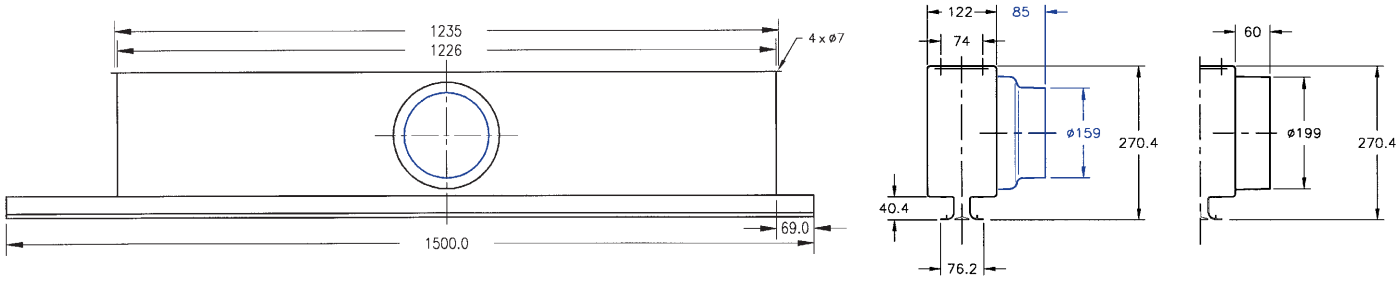
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)													
m³/h	l/s	m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
150	42	170	48	4	3	–	–	–	–	36	34	32	28	18	18	–	–	24	<20
240	66	255	71	9	8	–	–	–	–	42	41	36	35	30	26	17	15	28	27
270	75	310	86	19	17	–	–	46	42	44	43	39	40	31	31	26	24	31	32
330	92	400	111	26	24	–	–	50	45	50	46	44	42	36	37	34	33	36	34
360	100	450	125	39	32	–	–	56	49	54	49	50	48	44	53	41	39	42	49

The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection. The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply or return air 2 slot 1500 mm

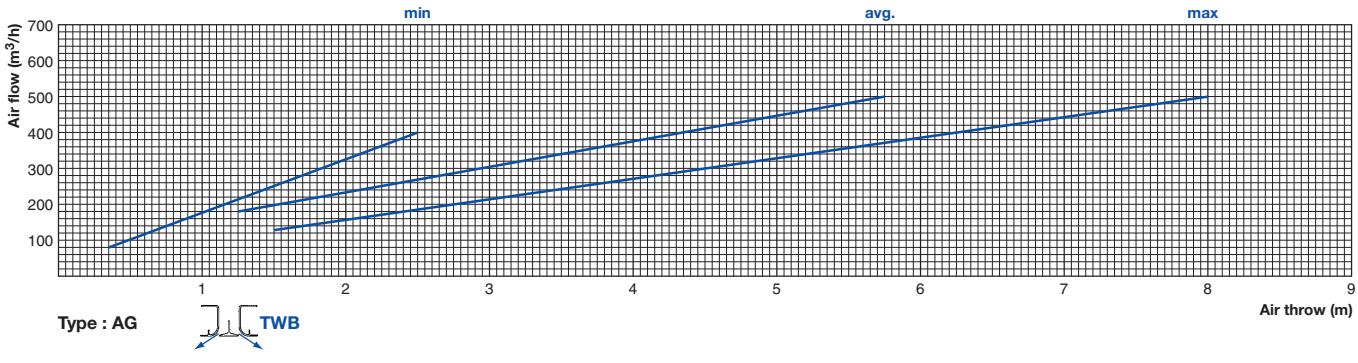
All dimensions are in millimetres.



Air inlet Connection / Diffuser		AG
1500 mm	ø159	35BD1500AG03EB
	ø199	35BD1500AG03FB

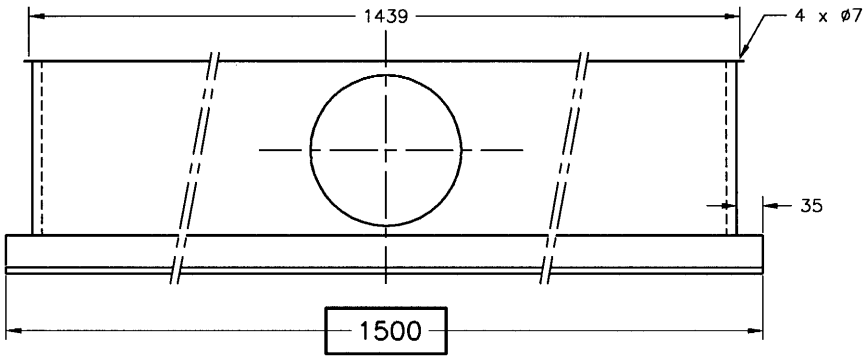
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)													
						63		125		250		500		1000		2000		NR	
m³/h	l/s	m³/h	l/s	Ø 159	Ø 199														
150	42	170	48	4	3	–	–	–	–	32	31	26	24	15	15	–	–	<20	<20
240	66	255	71	9	8	–	–	–	–	39	36	31	29	25	23	19	12	25	21
270	75	310	86	19	17	–	–	43	39	42	40	35	32	28	28	24	21	28	26
330	92	400	111	26	24	–	–	47	42	45	42	42	38	33	34	30	30	34	30
360	100	450	125	39	32	–	–	53	46	52	46	46	43	41	50	35	36	39	46

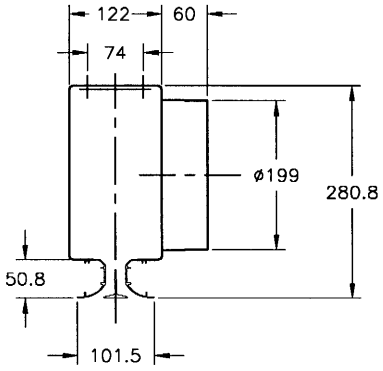
The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection. The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply or return air 2 slot *1500 mm*

All dimensions are in millimetres.





Air inlet Connection / Diffuser		AH	AH	AH
1500 mm	ø199	35BD1500AH03FB	35BD1500AH13FB	35BD1500AH23FB

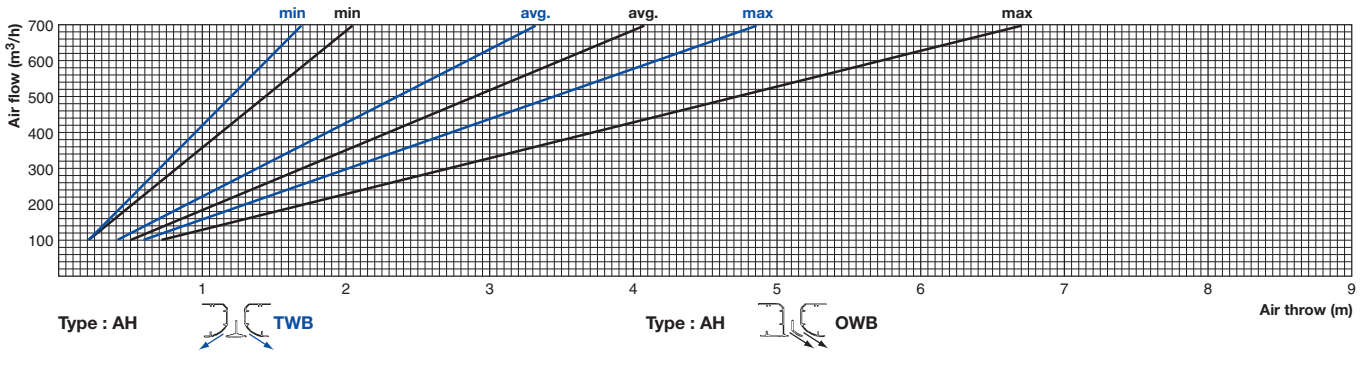
Type: AH, two-way blow

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
280	77	340	95	13	-	-	29	25	16	-	<20
400	111	510	142	29	-	-	39	38	31	23	30
460	127	600	167	49	-	47	46	41	37	34	34

Type: AH, one-way blow

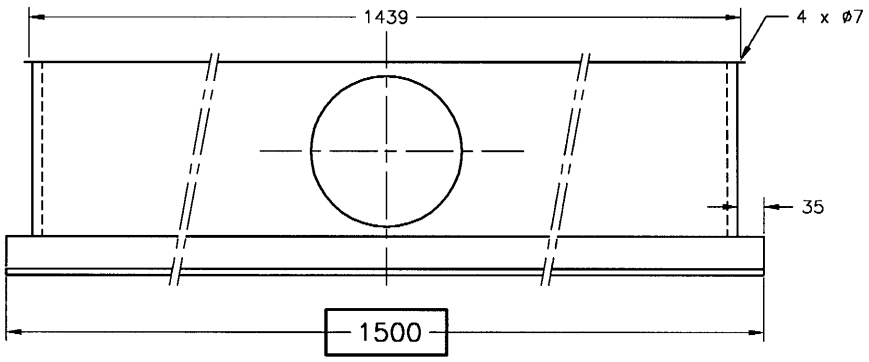
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
280	77	340	95	14	-	-	29	25	16	-	<20
400	111	510	142	29	-	-	39	38	31	23	30
460	127	600	167	49	-	49	46	44	36	34	36

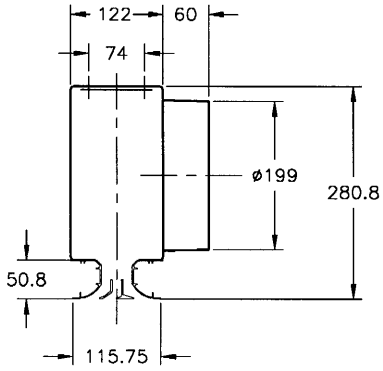
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply or return air 3 slot *1500 mm*

All dimensions are in millimetres.

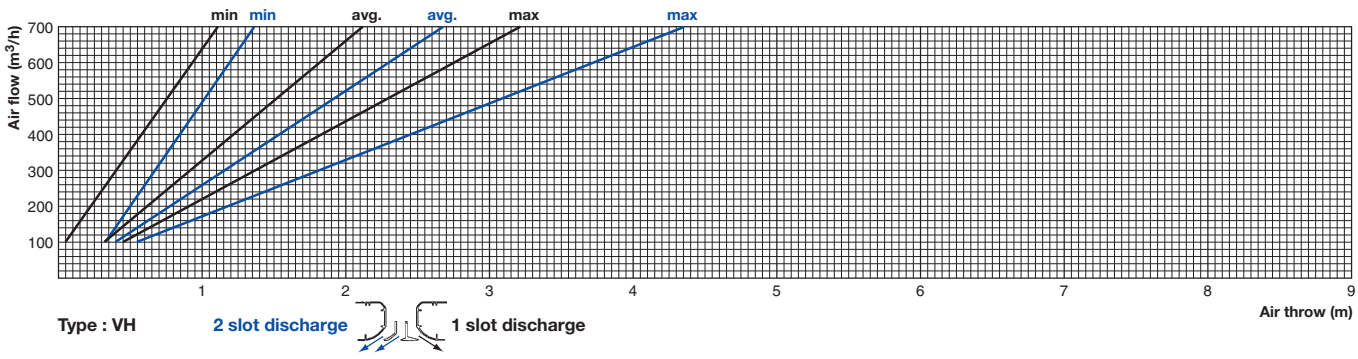


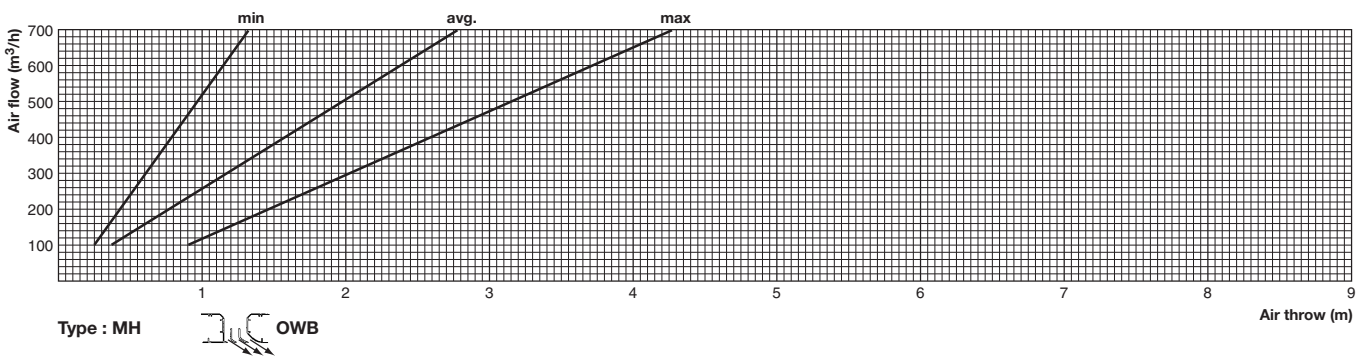


Air inlet Connection / Diffuser		VH	VH	MH	MH
1500 mm	ø199	35BD1500VH13FB	35BD1500VH23FB	35BD1500MH13FB	35BD1500MH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
340	94	340	94	10	29	31	30	20	-	-	20
380	105	500	140	21	34	39	40	35	20	-	27
500	141	600	167	38	45	47	49	43	34	24	35

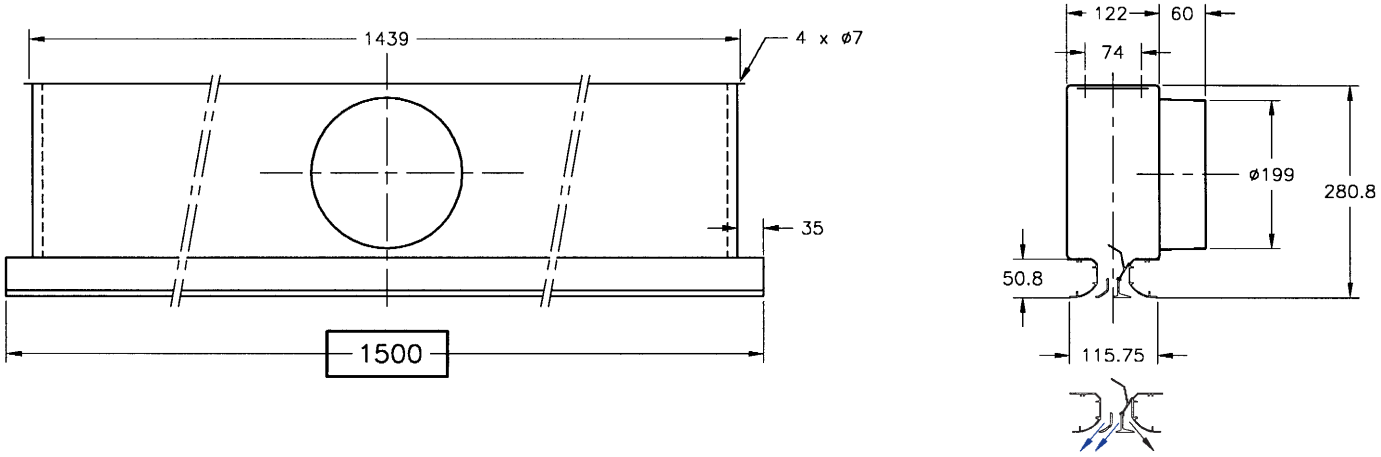
The NR values are based upon a room attenuation of 4 dB for each frequency band.

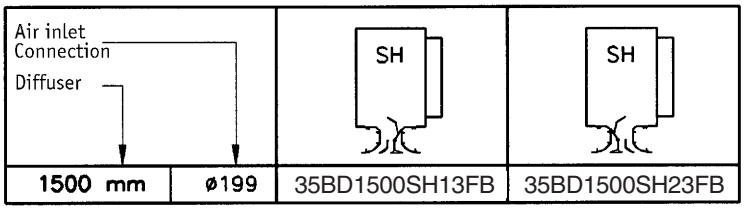




Moduboot supply air Optimix® 3 slot 1500 mm

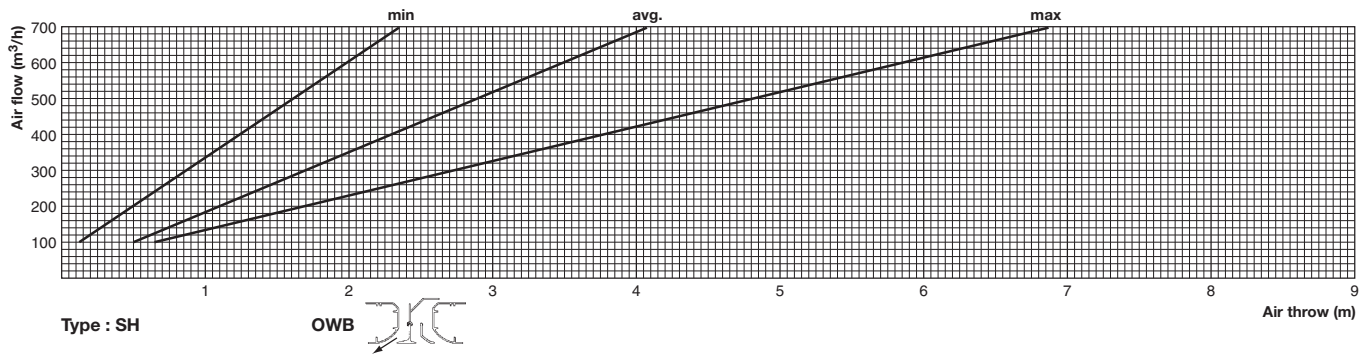
All dimensions are in millimetres.

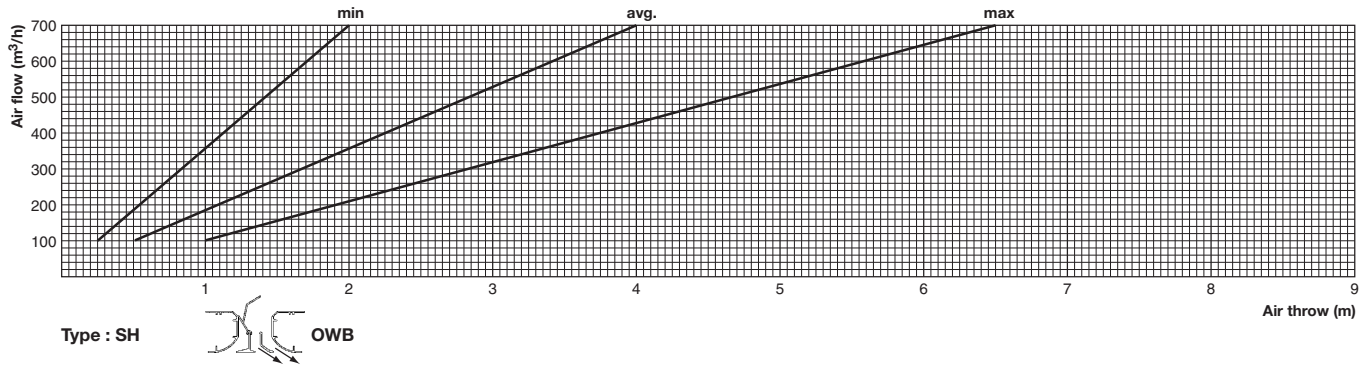




	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	340	94	12	-	-	31	28	19	-	<20
	510	141	24	-	47	47	42	37	29	34
	600	167	38	-	49	49	43	40	36	36
Warm	170	47	14	-	-	30	26	18	14	<20
	255	71	29	-	-	40	35	32	25	28
	340	94	51	-	48	48	42	39	36	35

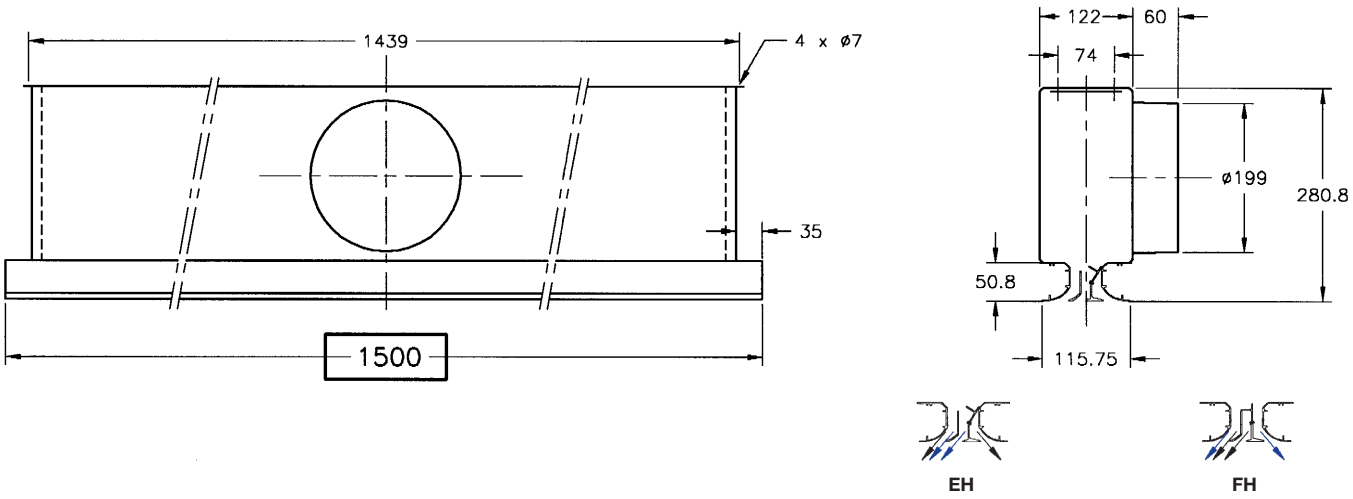
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply air Optimix® 3 slot 1500 mm

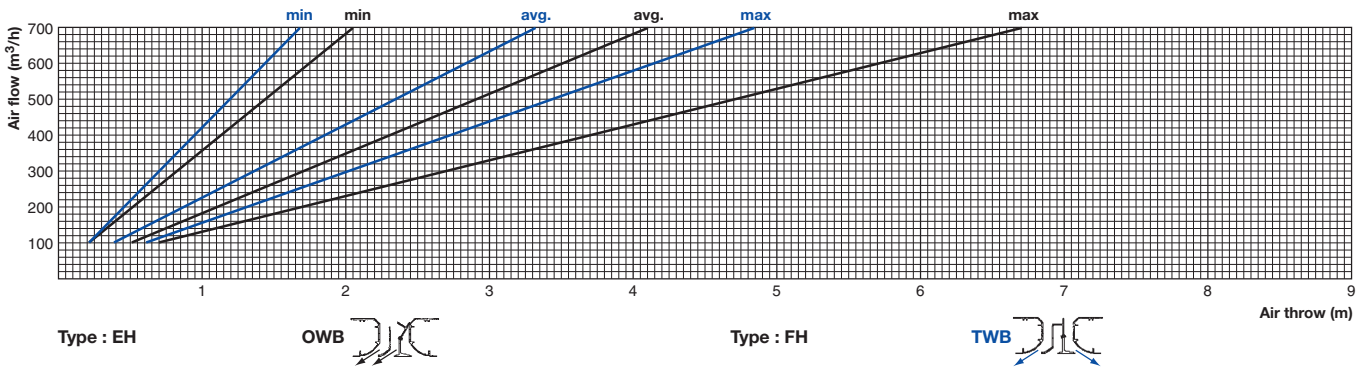
All dimensions are in millimetres.



Air inlet Connection / Diffuser		EH	EH	FH	FH
1500 mm	ø199	35BD1500EH13FB	35BD1500EH23FB	35BD1500FH13FB	35BD1500FH23FB

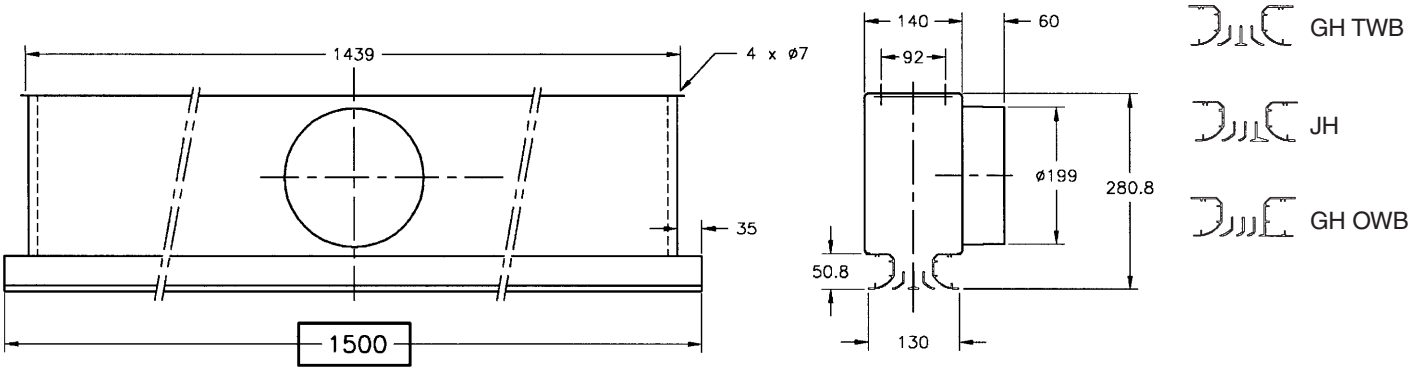
	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	340	94	12	-	37	37	33	25	14	25
	510	140	23	-	45	40	40	36	30	32
	600	167	38	-	48	48	42	39	36	35
Warm	340	94	12	-	37	37	33	25	14	25
	500	140	23	-	45	40	40	36	30	32
	600	167	38	-	48	48	42	39	36	35

The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply or return air 4 slot 1500 mm

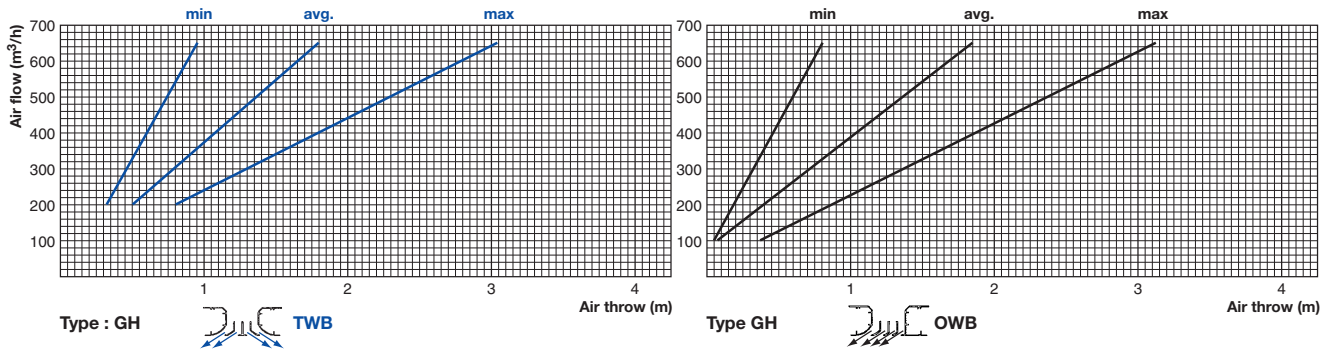
All dimensions are in millimetres.

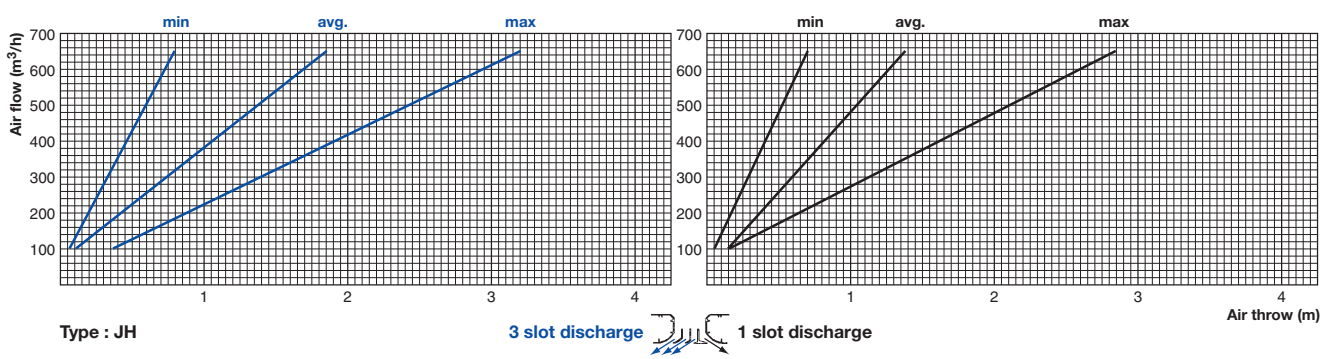


Air inlet Connection / Diffuser		GH	JH	JH	GH	GH
1500 mm	ø199	35BD1500GH03FB	35BD1500JH13FB	35BD1500JH23FB	35BD1500GH13FB	35BD1500GH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
200	55	200	55	1	44	25	20	_	_	_	<20
300	83	350	97	5	48	42	28	15	14	8	<20
410	114	500	139	15	51	42	43	40	31	24	32
530	147	600	167	24	40	44	45	40	30	26	32

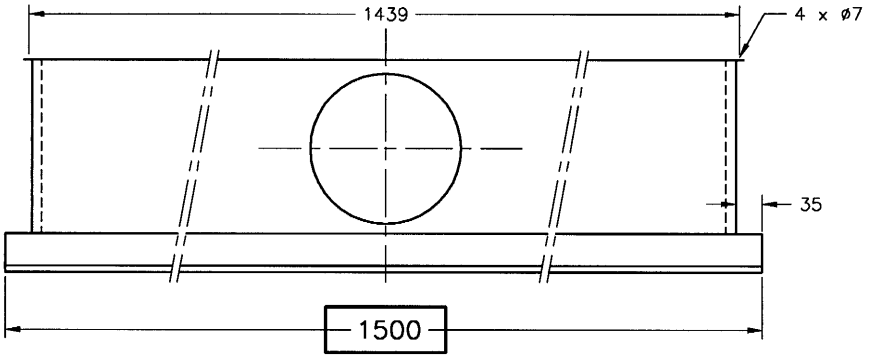
The NR values are based upon a room attenuation of 4 dB for each frequency band.

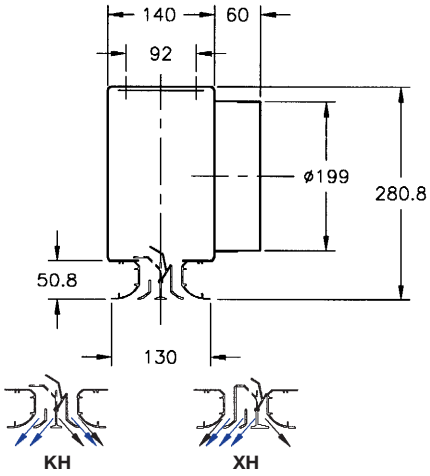




Moduboot supply air Optimix® 4 slot 1500 mm

All dimensions are in millimetres.

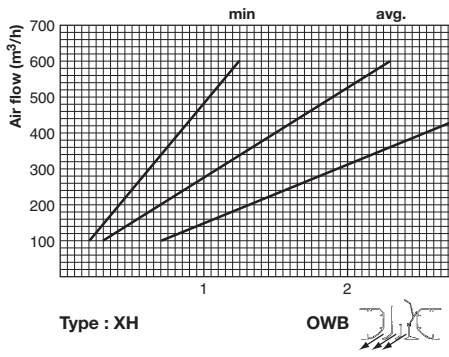


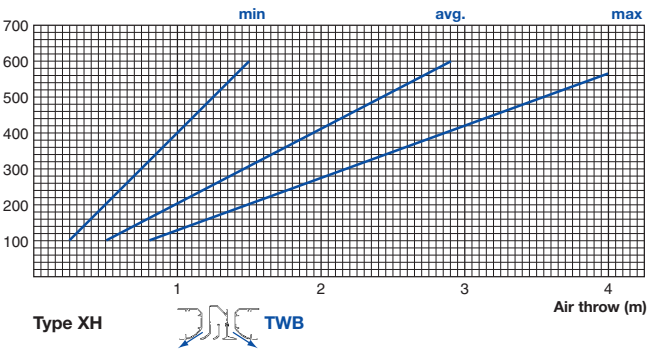


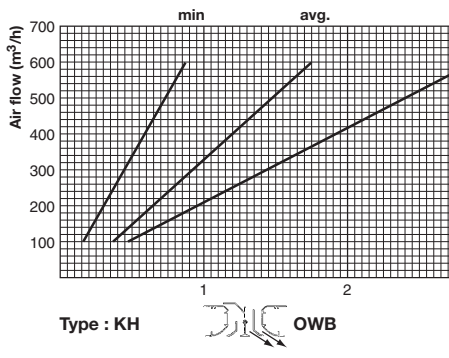
Air inlet Connection / Diffuser		KH	KH	XH	XH
1500 mm	ø199	35BD1500KH13FB	35BD1500KH23FB	35BD1500XH13FB	35BD1500XH23FB

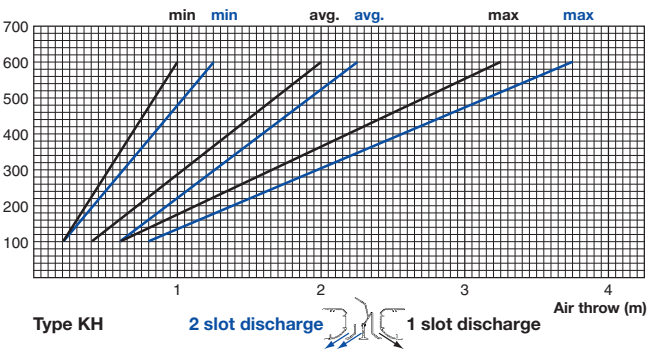
	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	42	1	20	24	22	12	14	-	<20
	350	97	11	35	34	35	26	14	-	20
	500	139	20	39	37	41	35	28	22	27
	600	167	33	43	47	48	42	36	31	34
Warm	100	28	2	-	24	24	15	17	10	<20
	230	64	14	47	42	44	38	30	21	30
	330	92	22	49	46	44	44	40	33	36

The NR values are based upon a room attenuation of 4 dB for each frequency band.



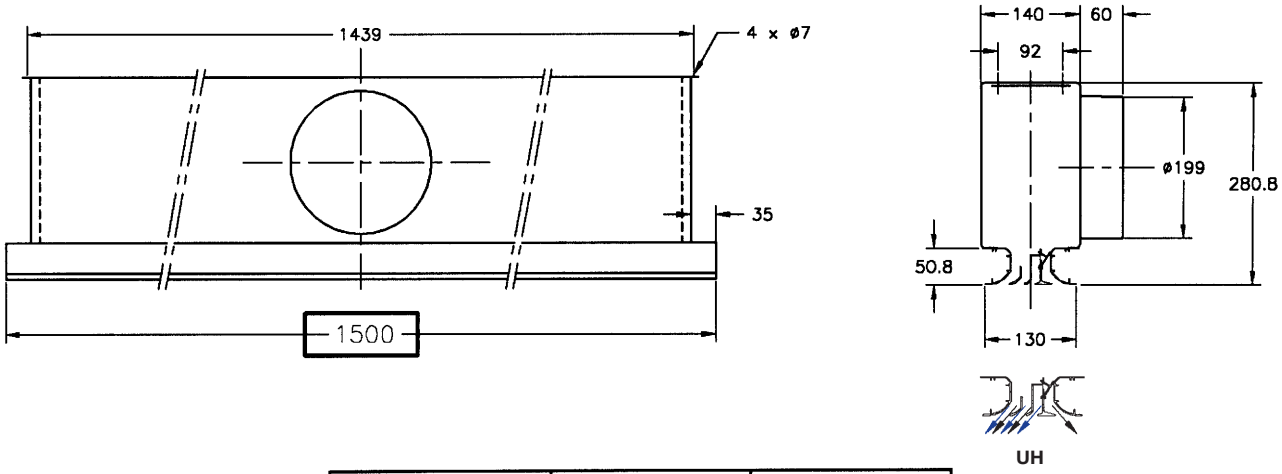






Moduboot supply air Optimix® 4 slot — 1500 mm

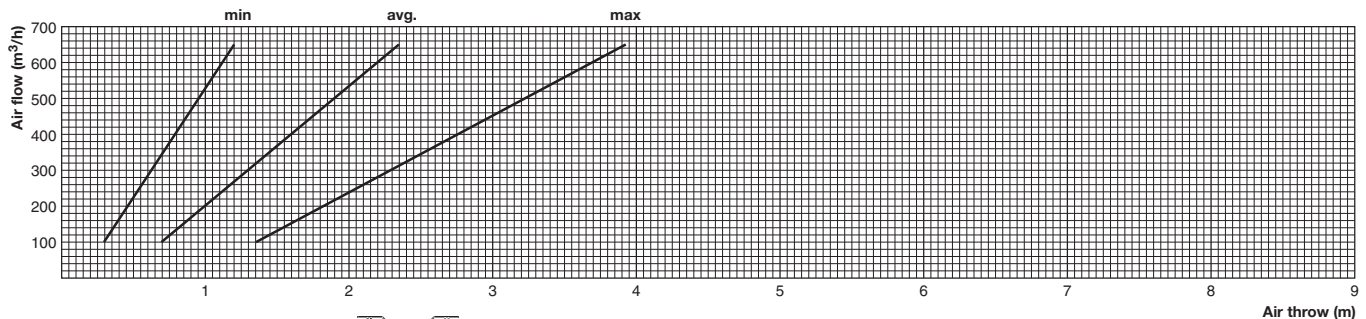
All dimensions are in millimetres.

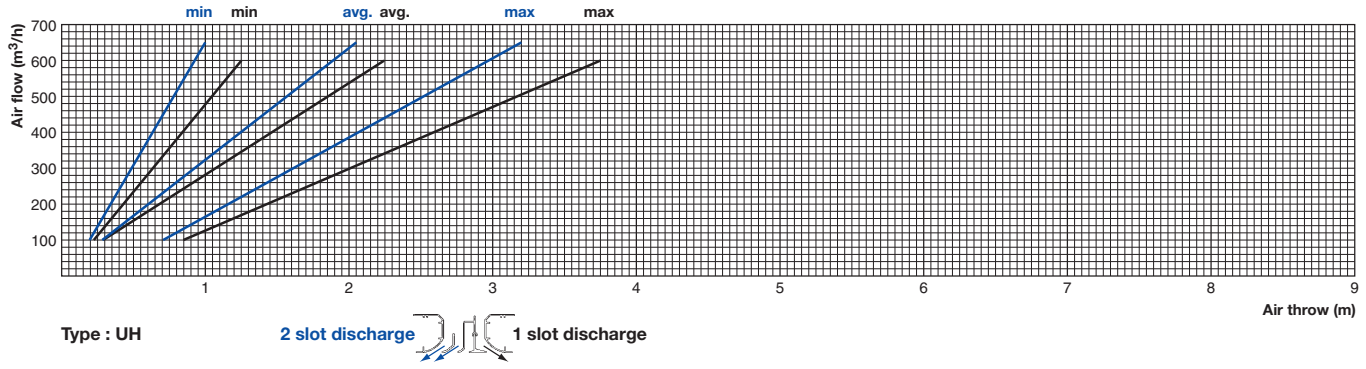


Air inlet Connection / Diffuser		UH	UH
1500 mm	ø199	35BD1500UH13FB	35BD1500UH23FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	42	1	20	24	22	12	14	-	<20
	350	97	11	35	34	35	26	14	-	20
	500	139	20	39	37	41	35	28	22	27
	600	167	33	43	47	48	42	36	31	34
Warm	150	42	2	-	24	24	15	17	10	14
	350	97	14	47	42	44	38	30	21	30
	500	139	22	49	46	44	44	40	33	36

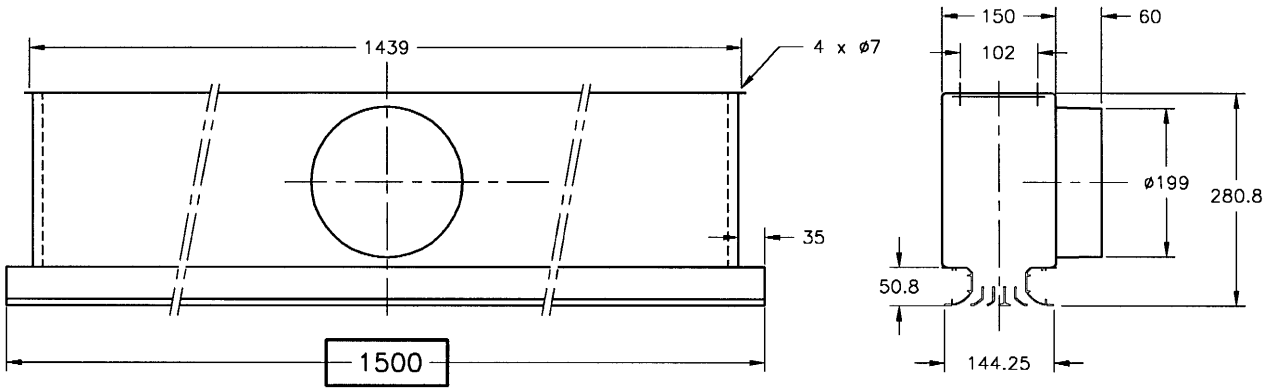
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply or return air 5 slot 1500 mm

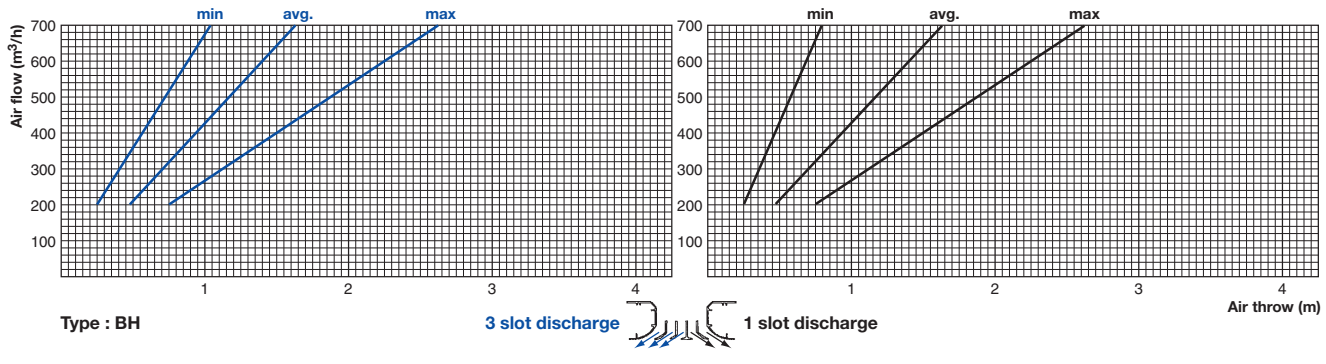
All dimensions are in millimetres.

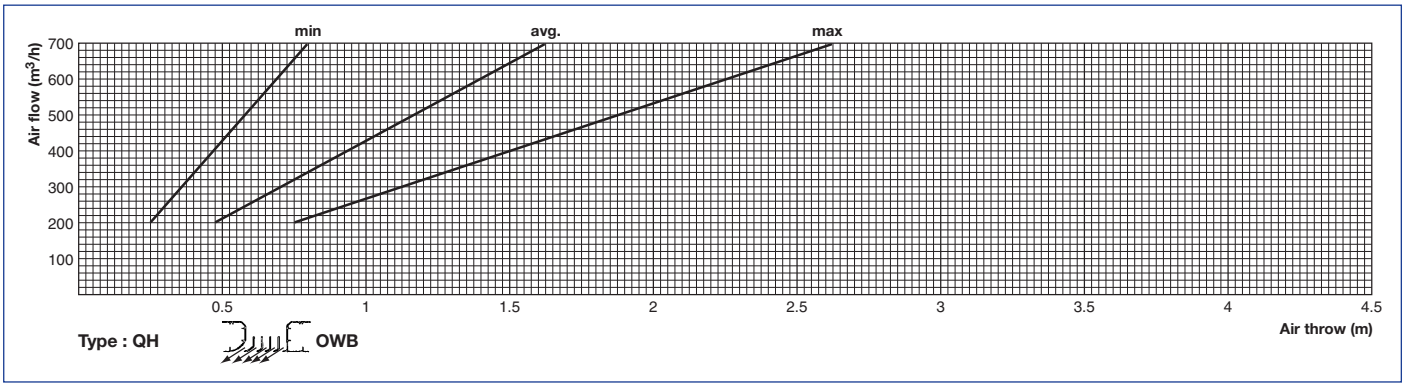


Air inlet Connection / Diffuser		BH	BH	QH	QH
1500 mm	ø199	35BD1500BH13FB	35BD1500BH23FB	35BD1500QH13FB	35BD1500QH23FB

RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
300	83	340	94	5	29	27	26	20	22	18	18
360	100	400	111	11	38	39	40	32	28	27	26
450	125	650	180	22	40	41	42	36	23	14	28
530	147	700	194	30	45	46	48	40	33	24	34

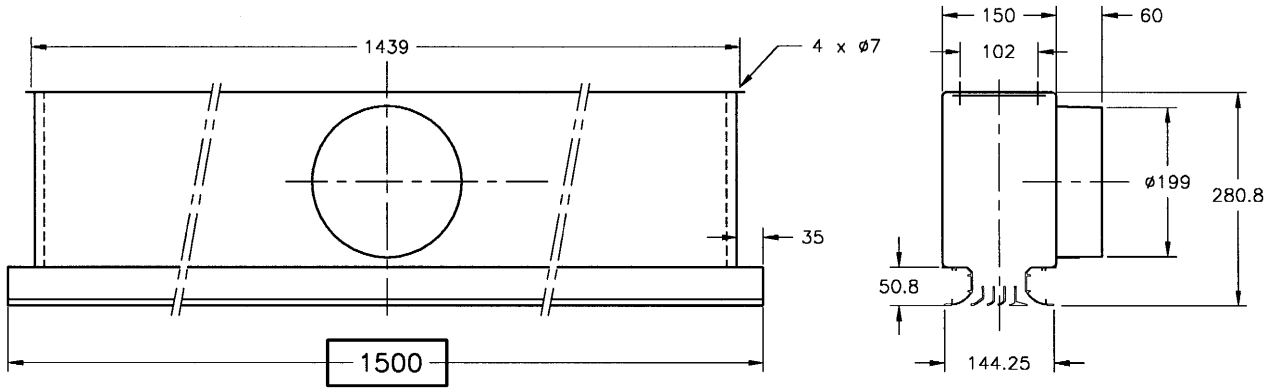
The NR values are based upon a room attenuation of 4 dB for each frequency band.

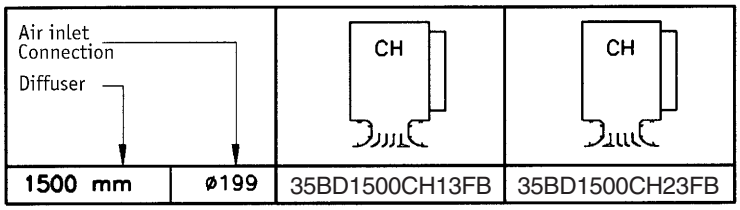




Moduboot supply or return air 5 slot *1500 mm*

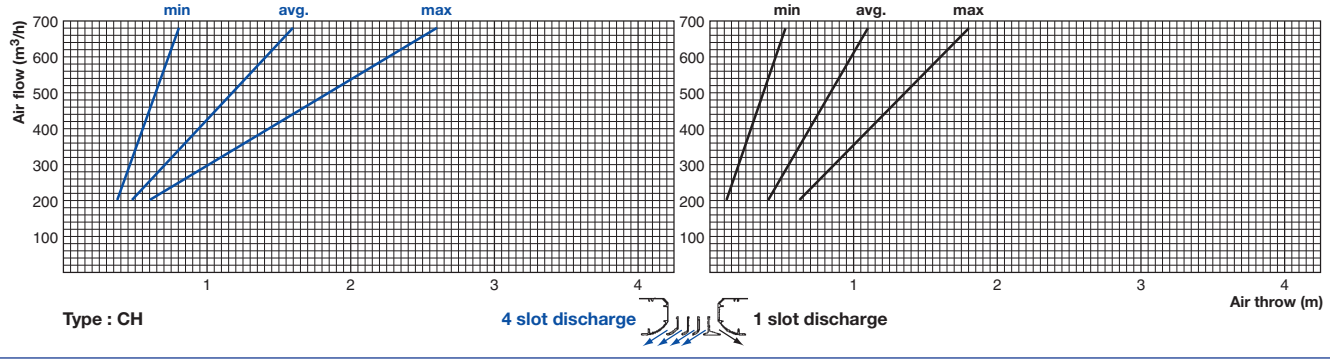
All dimensions are in millimetres.





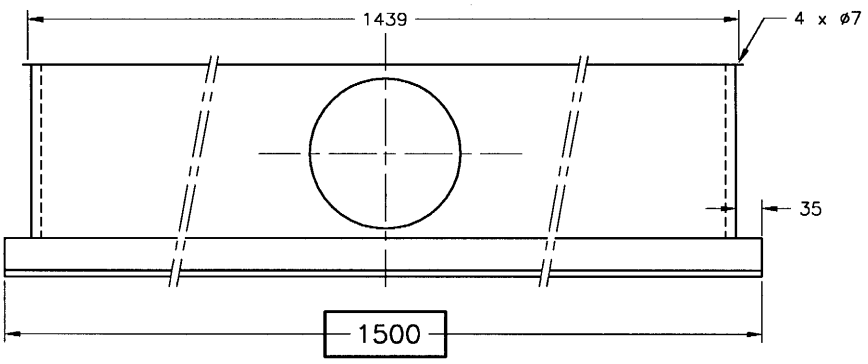
RETURN Air Flow		SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
300	83	340	94	5	29	27	26	20	22	18	18
360	100	400	111	11	38	39	40	32	28	21	26
450	125	500	140	22	40	41	42	36	23	14	28
530	147	680	190	30	45	46	48	40	33	24	34

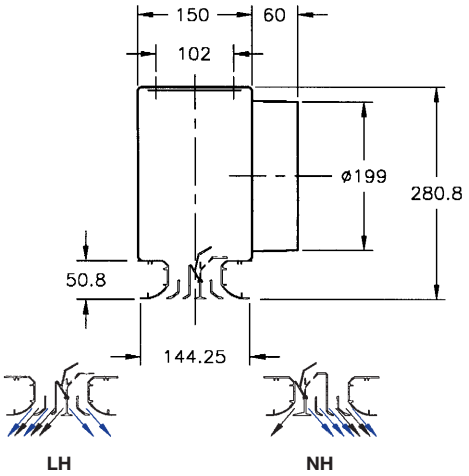
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply air Optimix® 5 slot 1500 mm

All dimensions are in millimetres.

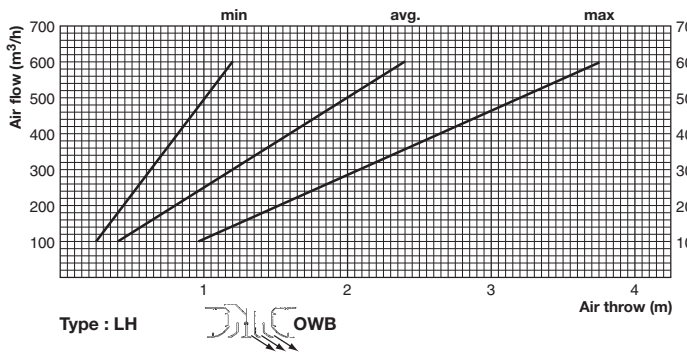


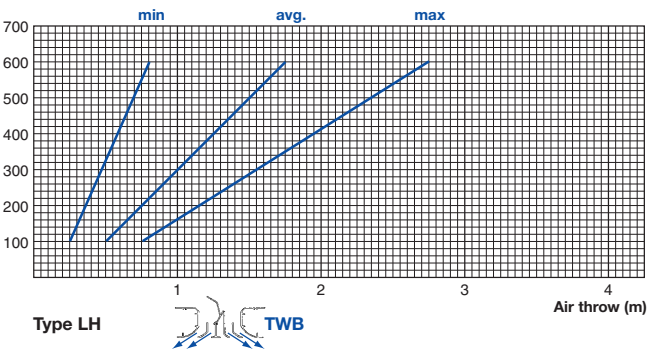


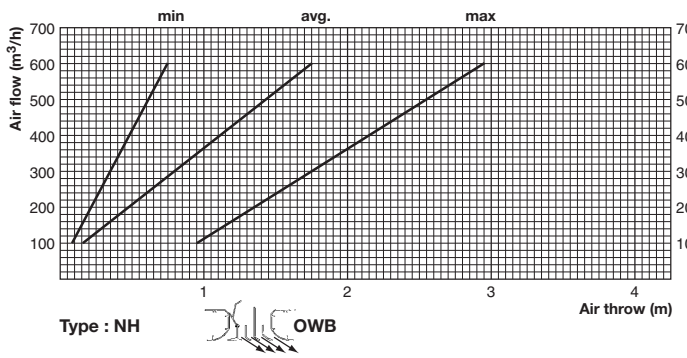
Air inlet Connection / Diffuser		LH	LH	NH	NH
1500 mm	ø199	35BD1500LH13FB	35BD1500LH23FB	35BD1500NH13FB	35BD1500NH23FB

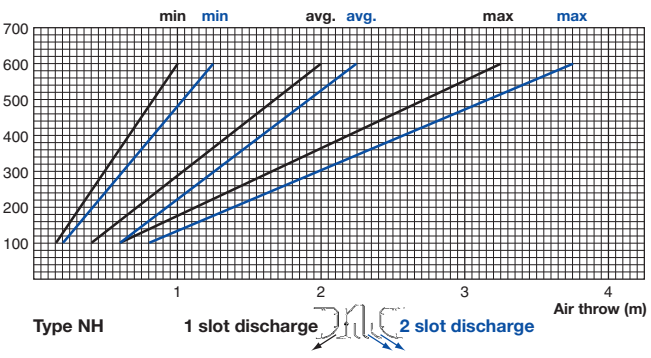
	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	240	67	6	27	27	30	21	12	-	15
	330	92	15	35	37	39	33	30	25	26
	500	140	25	38	49	43	39	32	26	31
	650	180	37	51	47	49	45	40	33	37
Warm	170	47	1	20	21	20	10	20	12	16
	350	97	10	28	31	35	25	21	15	20
	450	125	17	40	42	39	38	34	29	30

The NR values are based upon a room attenuation of 4 dB for each frequency band.



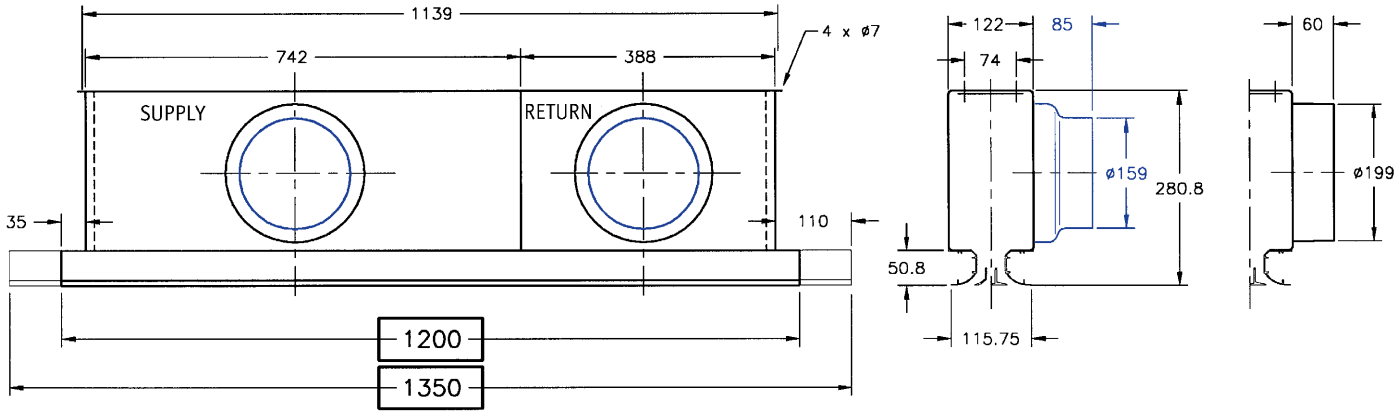






Moduboot supply/return air 3 slot 1200-1350 mm

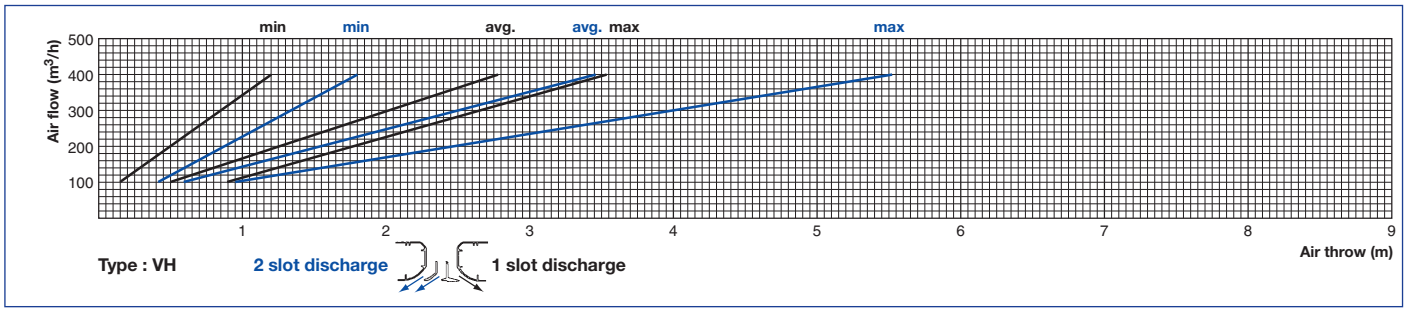
All dimensions are in millimetres.

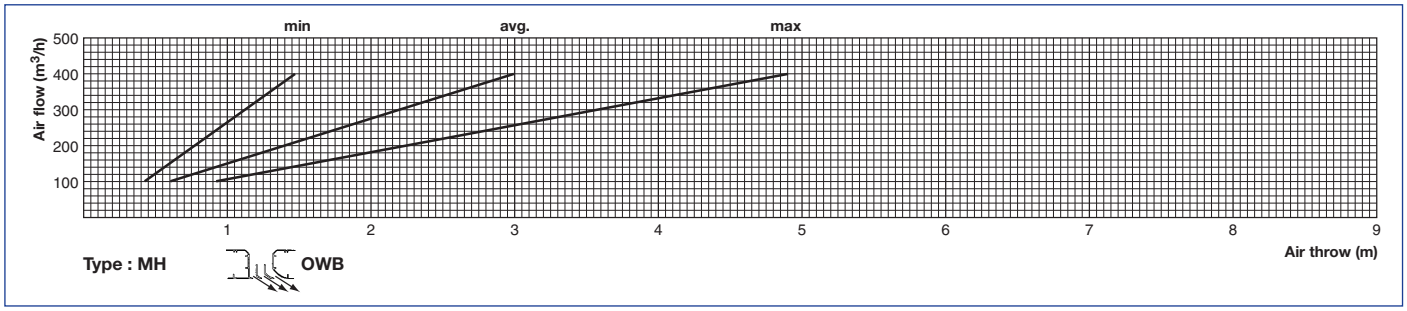


Air inlet Connection / Diffuser			VH	VH	MH	MH
SUPPLY/RETURN	1200	ø159	35SR1200VH13EB	35SR1200VH23EB	35SR1200MH13EB	35SR1200MH23EB
		ø199	35SR1200VH13FB	35SR1200VH23FB	35SR1200MH13FB	35SR1200MH23FB
	1350	ø159	35SR1350VH13EB	35SR1350VH23EB	35SR1350MH13EB	35SR1350MH23EB
		ø199	35SR1350VH13FB	35SR1350VH23FB	35SR1350MH13FB	35SR1350MH23FB
RETURN/SUPPLY	1200	ø159	35SR1200VH43EB	35SR1200VH53EB	35SR1200MH43EB	35SR1200MH53EB
		ø199	35SR1200VH43FB	35SR1200VH53FB	35SR1200MH43FB	35SR1200MH53FB
	1350	ø159	35SR1350VH43EB	35SR1350VH53EB	35SR1350MH43EB	35SR1350MH53EB
		ø199	35SR1350VH43FB	35SR1350VH53FB	35SR1350MH43FB	35SR1350MH53FB

SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)													
m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
150	41	30	22	36	35	45	43	37	34	24	23	14	13	5	7	22	20
250	70	72	55	40	40	44	44	55	52	37	35	28	26	20	18	42	39
350	97	134	117	44	44	46	45	60	57	44	42	35	34	27	27	47	44

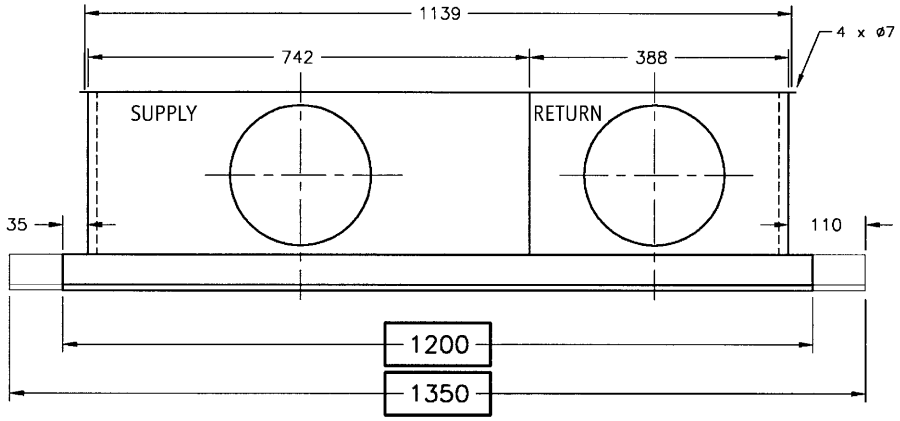
The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection.
The NR values are based upon a room attenuation of 4 dB for each frequency band.

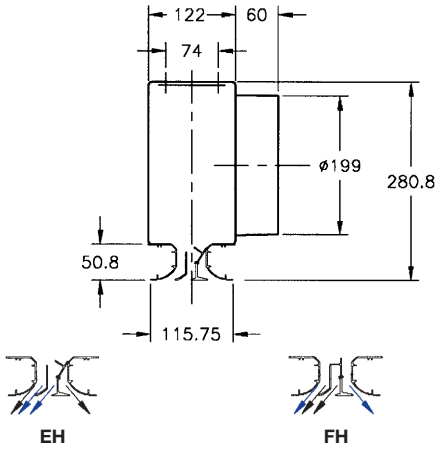




Moduboot supply/return air Optimix® 3 slot *1200-1350 mm*

All dimensions are in millimetres.

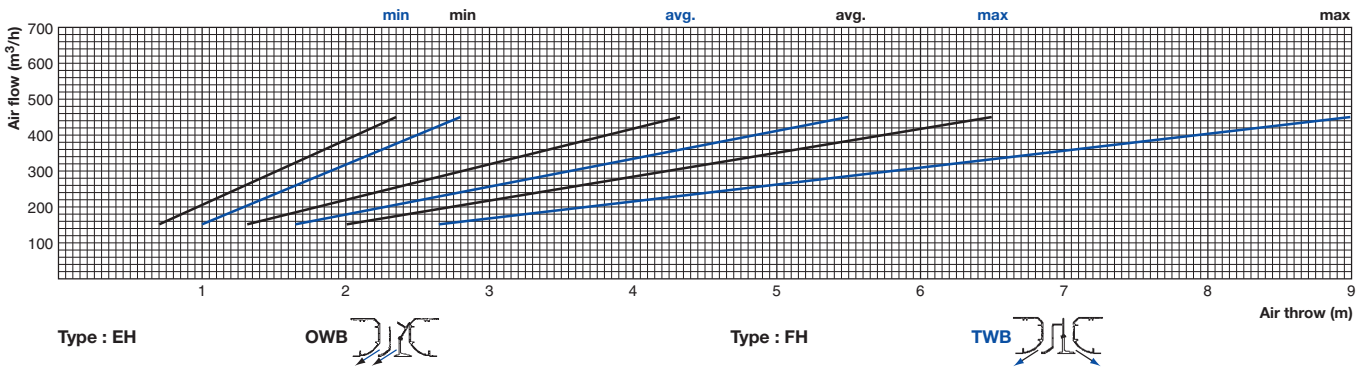




Air inlet Connection / Diffuser			EH	EH	FH	FH
SUPPLY/RETURN	1200 mm	ø199	35SR1200EH13FB	35SR1200EH23FB	35SR1200FH12FB	35SR1200FH23FB
	1350 mm	ø199	35SR1350EH13FB	35SR1350EH23FB	35SR1350FH13FB	35SR1350FH23FB
RETURN/SUPPLY	1200 mm	ø199	35SR1200EH43FB	35SR1200EH53FB	35SR1200FH43FB	35SR1200FH53FB
	1350 mm	ø199	35SR1350EH43FB	35SR1350EH53FB	35SR1350FH43FB	35SR1350FH53FB

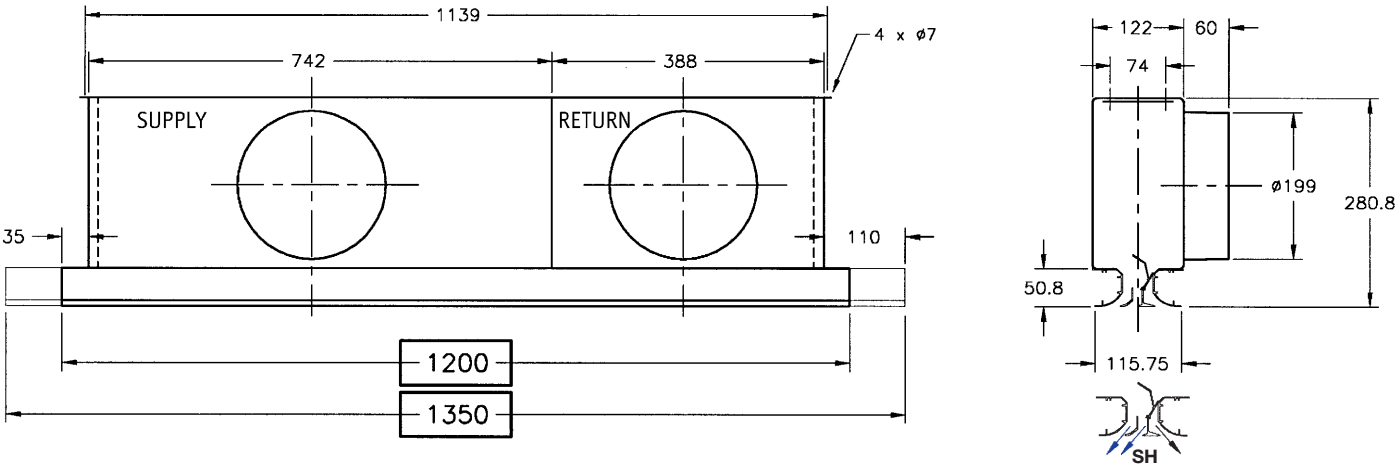
	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	41	32	33	43	36	25	14	-	21
	200	55	55	39	44	44	32	23	12	30
	300	83	103	41	42	52	39	31	24	39
Warm	150	41	32	33	43	36	25	14	-	21
	200	55	55	39	44	44	32	23	12	30
	300	83	103	41	43	52	39	31	24	39

The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air Optimix® 3 slot *1200-1350 mm*

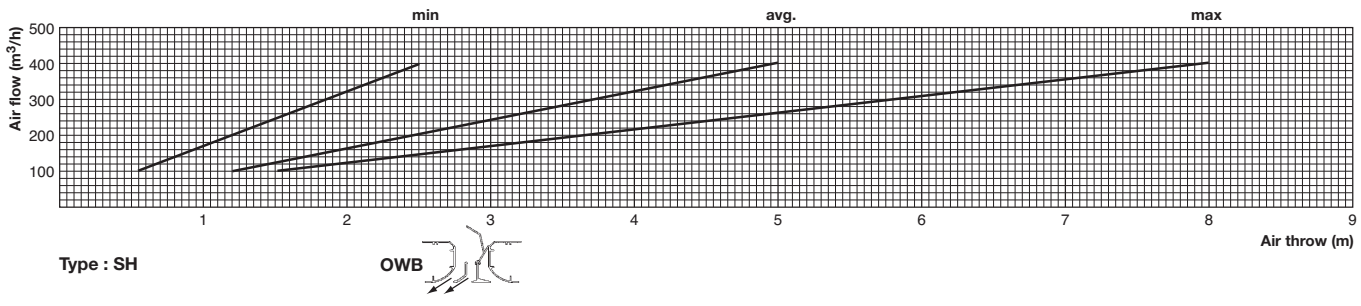
All dimensions are in millimetres.

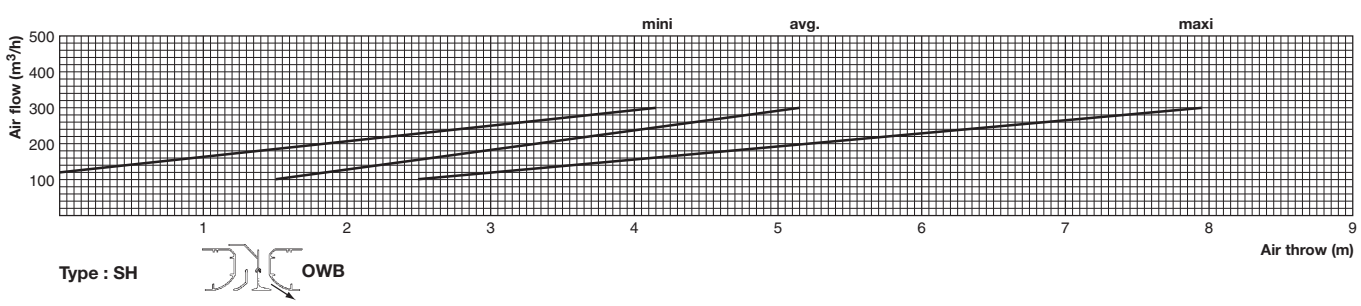


Air inlet Connection / Diffuser			SH	SH		SH	SH
SUPPLY/RETURN	1200	ø199	35SR1200SH13FB	35SR1200SH23FB	RETURN/SUPPLY	35SR1200SH43FB	35SR1200SH53FB
	1350	ø199	35SR1350SH13FB	35SR1350SH23FB		35SR1350SH43FB	35SR1350SH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	41	32	33	43	35	25	14	5	20
	200	55	55	39	45	44	32	23	12	30
	300	83	103	41	44	52	39	31	24	39
Warm	150	41	55	37	44	39	36	31	25	28
	200	55	91	38	45	45	39	37	32	33
	250	70	138	40	46	53	43	42	39	40

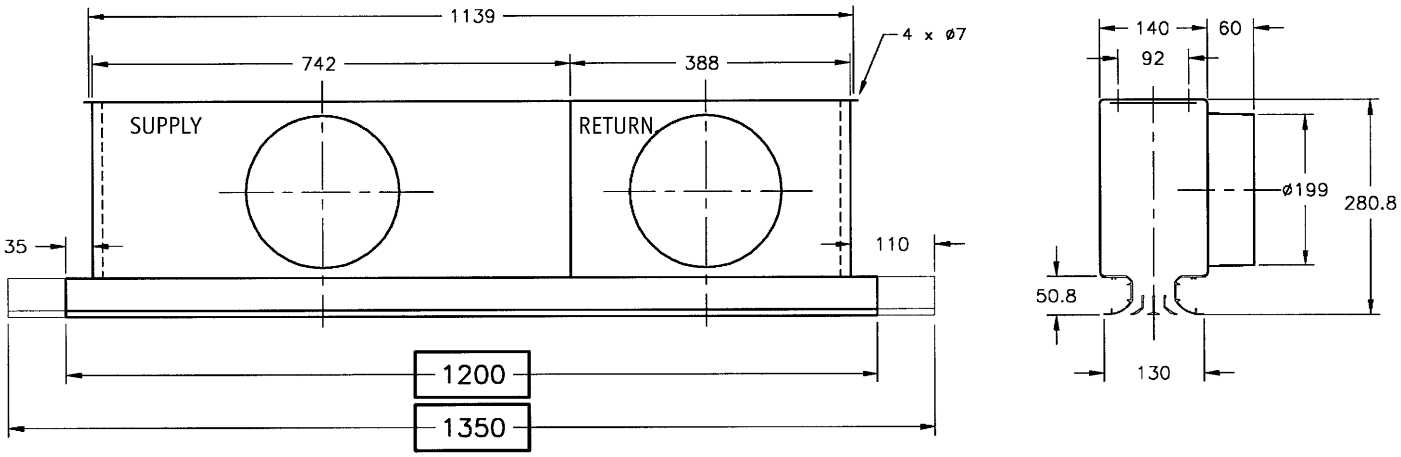
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air 4 slot 1200-1350 mm

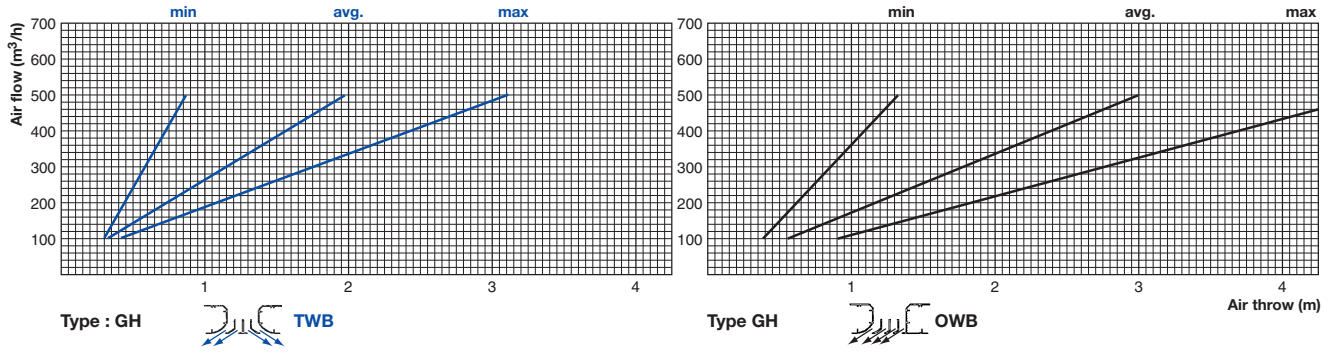
All dimensions are in millimetres.



Air inlet Connection / Diffuser		GH	GH	GH
SUPPLY/RETURN	1200			
	ø199	35SR1200GH03FB	35SR1200GH13FB	35SR1200GH23FB
	1350			
	ø199	35SR1350GH03FB	35SR1350GH13FB	35SR1350GH23FB
RETURN/SUPPLY	1200			
	ø199	35SR1200GH33FB	35SR1200GH43FB	35SR1200GH53FB
	1350			
	ø199	35SR1350GH33FB	35SR1350GH43FB	35SR1350GH53FB

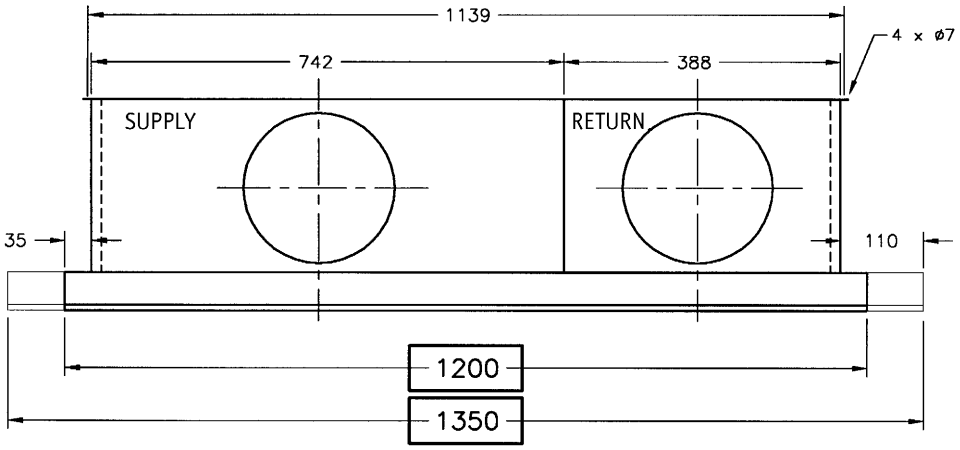
SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
200	55	27	32	41	35	27	15	5	20
300	83	56	38	42	46	37	27	16	32
400	110	95	41	44	51	40	33	24	37

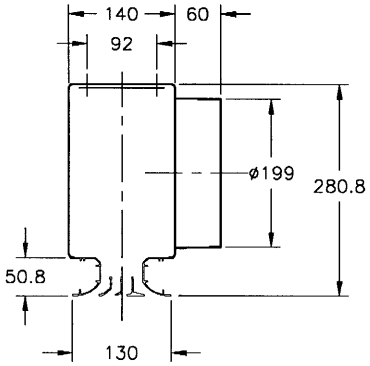
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air 4 slot 1200-1350 mm

All dimensions are in millimetres.

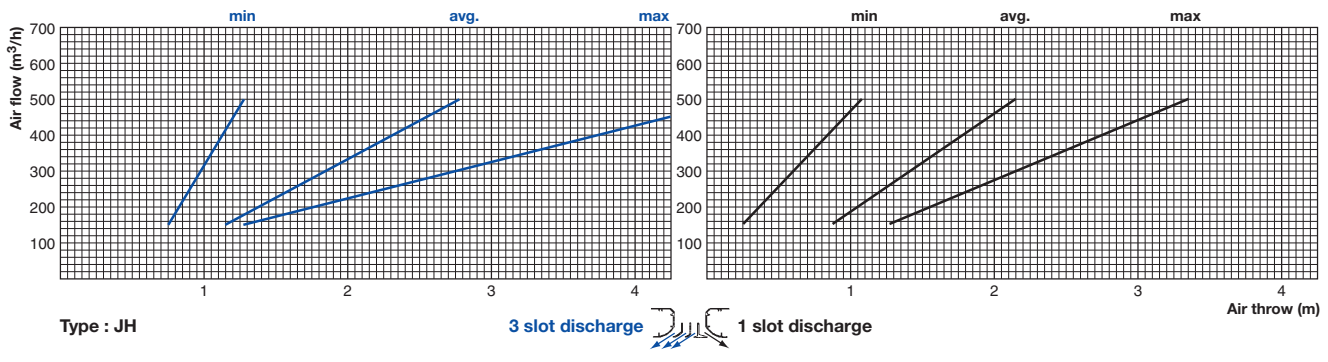




Air inlet Connection / Diffuser			JH	JH		JH	JH
SUPPLY/RETURN	1200	ø199	35SR1200JH13FB	35SR1200JH23FB	RETURN/SUPPLY	35SR1200JH43FB	35SR1200JH53FB
	1350	ø199	35SR1350JH13FB	35SR1350JH23FB		35SR1350JH43FB	35SR1350JH53FB

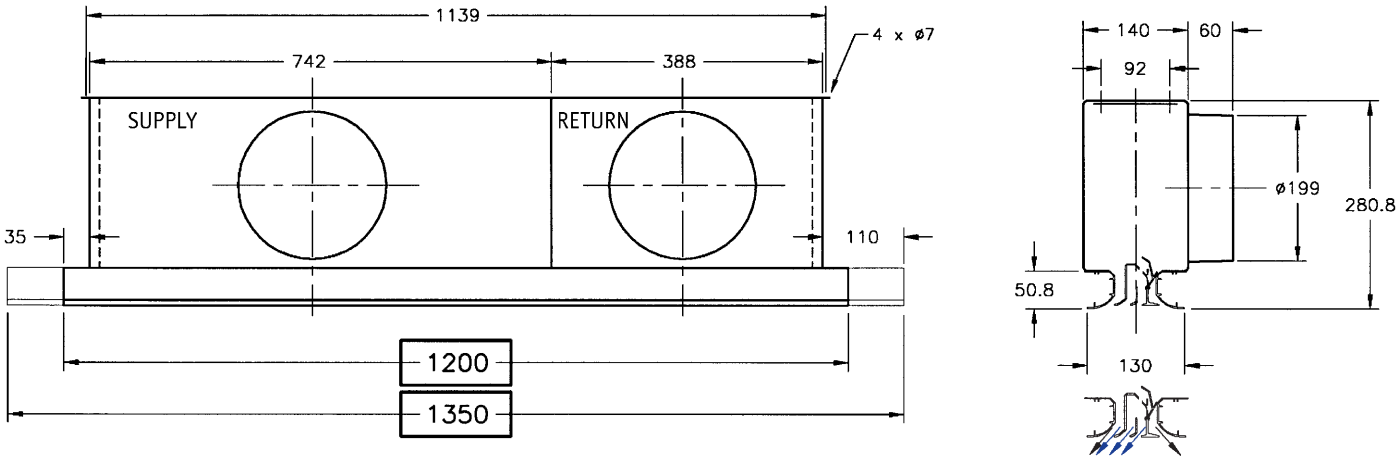
SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
200	55	27	32	41	35	27	15	5	20
300	83	56	38	42	46	37	27	16	32
400	110	95	41	44	51	40	33	24	37

The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air Optimix® 4 slot 1200-1350 mm

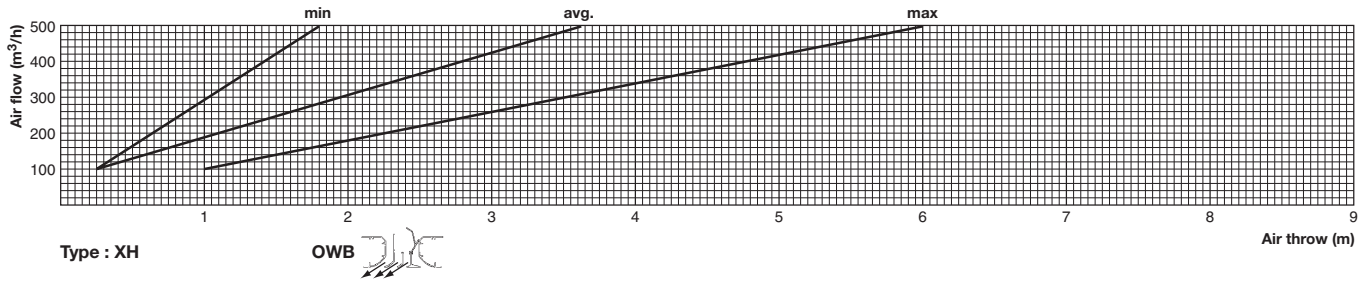
All dimensions are in millimetres.

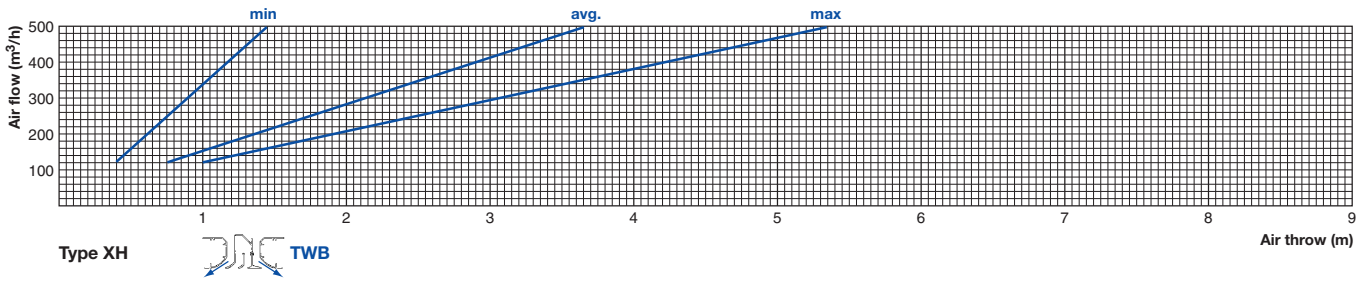


Air inlet Connection / Diffuser			XH	XH
SUPPLY/RETURN	1200 mm	ø199	35SR1200XH13FB	35SR1200XH23FB
	1350 mm	ø199	35SR1350XH13FB	35SR1350XH23FB
RETURN/SUPPLY	1200 mm	ø199	35SR1200XH43FB	35SR1200XH53FB
	1350 mm	ø199	35SR1350XH43FB	35SR1350XH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	41	5	32	38	32	20	15	5	<20
	250	70	50	40	42	43	36	32	17	29
	350	97	90	41	44	50	41	35	27	36
Warm	150	41	13	32	39	34	25	16	5	19
	200	55	43	37	44	44	33	23	16	30
	300	83	91	41	43	52	39	31	24	39

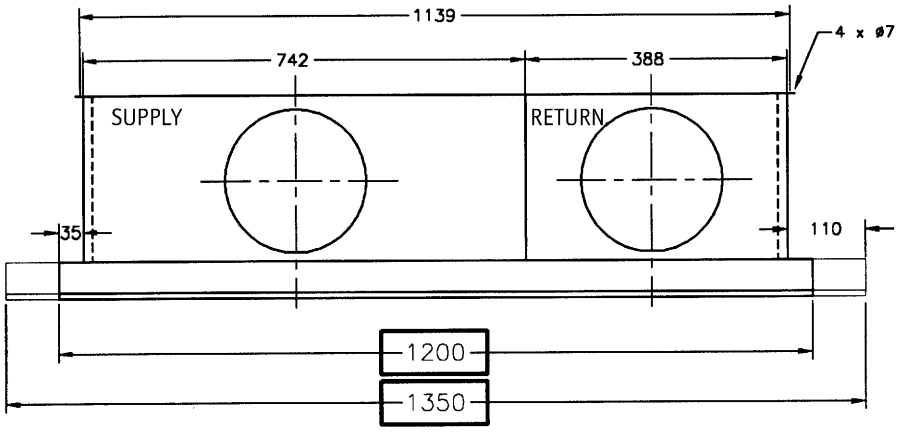
The NR values are based upon a room attenuation of 4 dB for each frequency band.

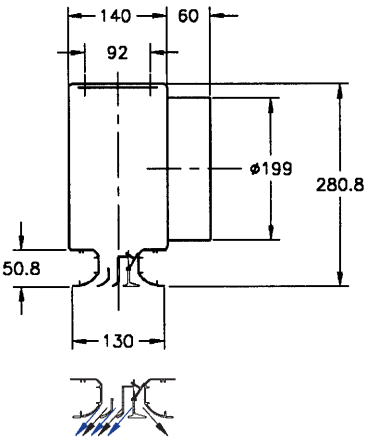




Moduboot supply/return air Optimix® 4 slot 1200-1350 mm

All dimensions are in millimetres.

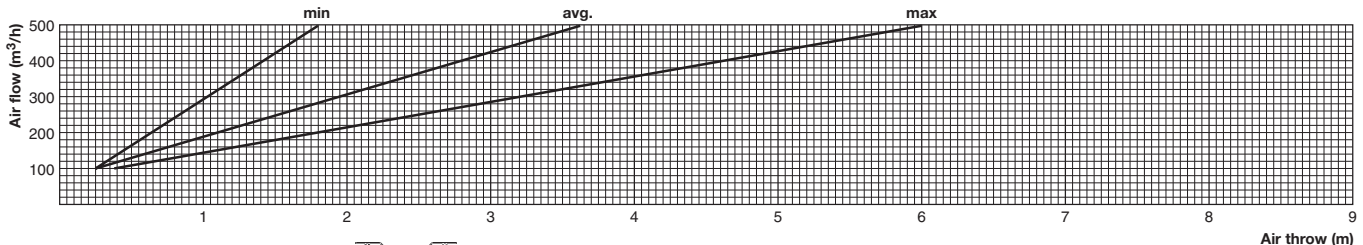




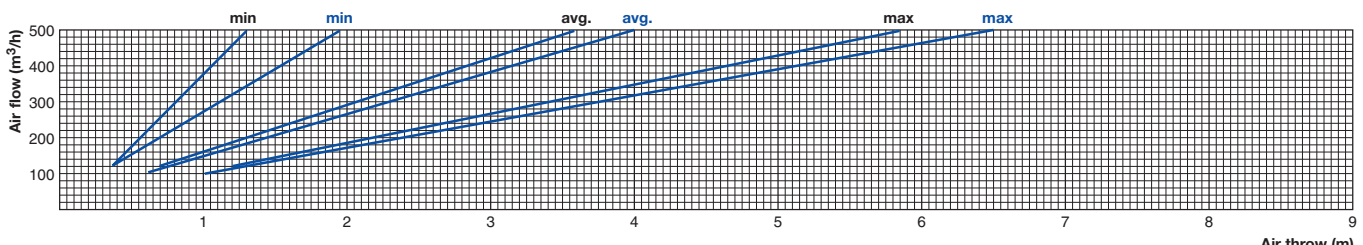
Air inlet Connection / Diffuser			UH	UH
SUPPLY/RETURN	1200 mm	ø199	35SR1200UH13FB	35SR1200UH23FB
	1350 mm	ø199	35SR1350UH13FB	35SR1350UH23FB
RETURN/SUPPLY	1200 mm	ø199	35SR1200UH43FB	35SR1200UH53FB
	1350 mm	ø199	35SR1350UH43FB	35SR1350UH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	41	5	32	38	32	20	15	5	17
	250	70	50	40	42	43	36	32	17	29
	350	97	90	41	44	50	41	35	27	36
Warm	150	41	13	32	39	34	25	16	5	19
	200	55	43	37	42	39	33	27	16	25
	300	83	91	39	43	48	40	36	29	34

The NR values are based upon a room attenuation of 4 dB for each frequency band.



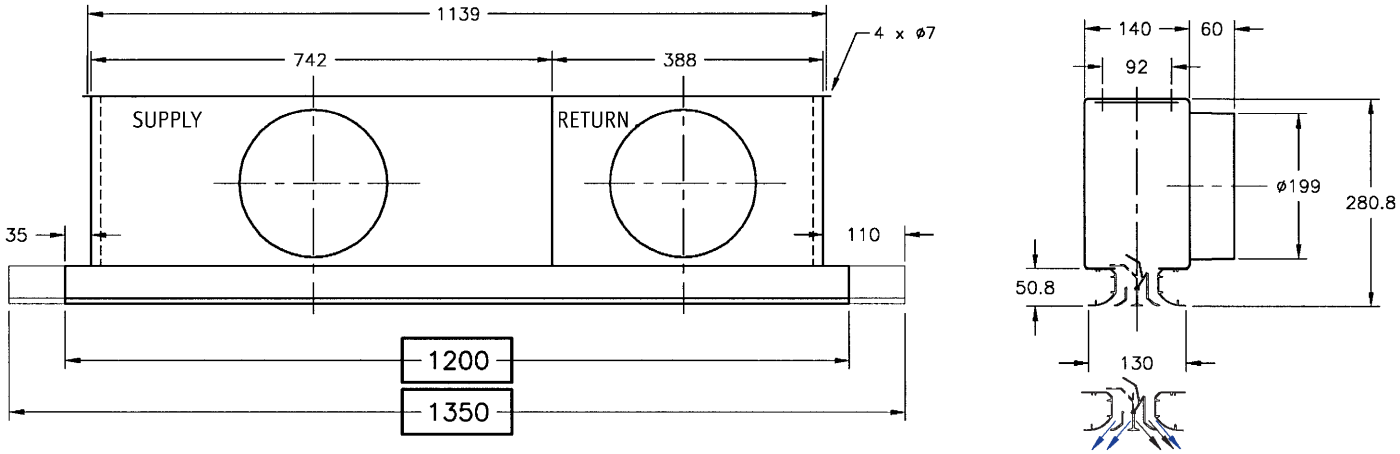
Type : UH OWB



Type : UH 2 slot discharge 1 slot discharge

Moduboot supply/return air Optimix® 4 slot 1200-1350 mm

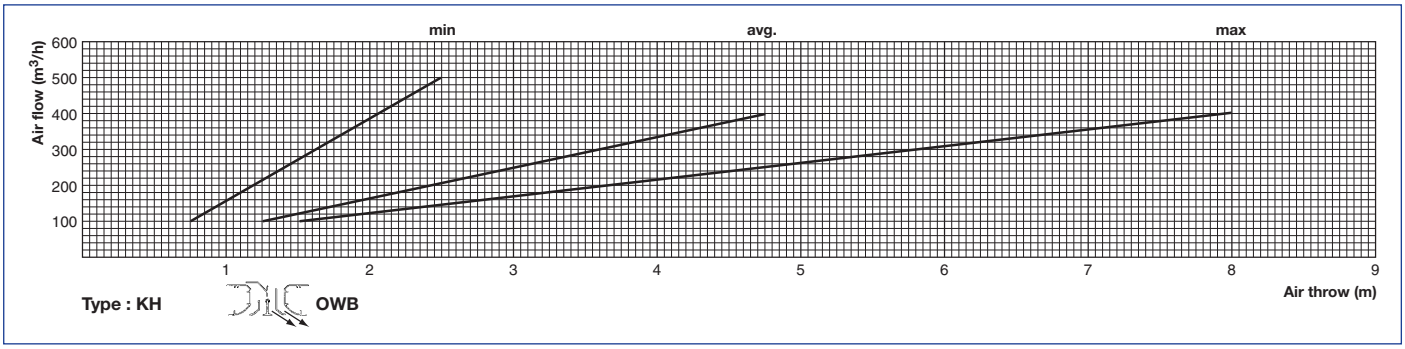
All dimensions are in millimetres.

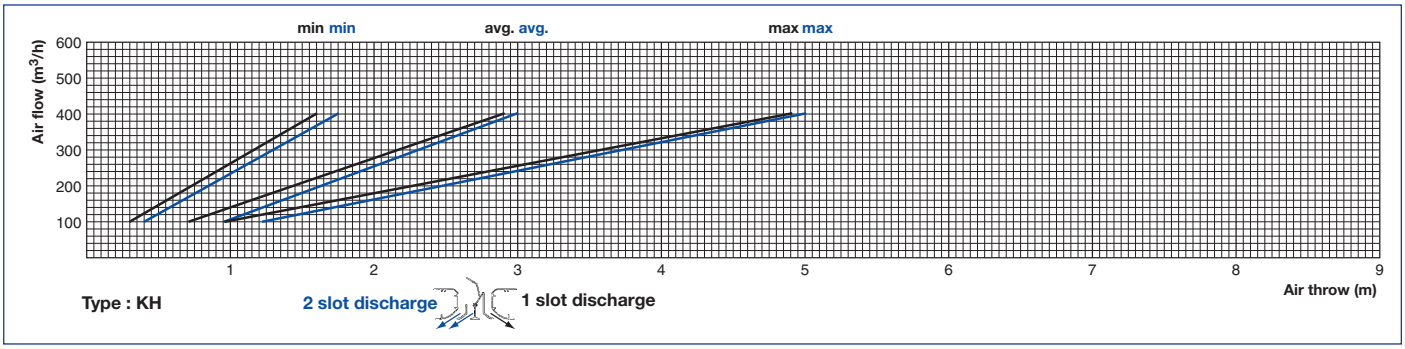


Air inlet Connection / Diffuser		KH	KH		KH	KH
SUPPLY/RETURN	1200 ø199	35SR1200KH13FB	35SR1200KH23FB	RETURN/SUPPLY	35SR1200KH43FB	35SR1200KH53FB
	1350 ø199	35SR1350KH13FB	35SR1350KH23FB		35SR1350KH43FB	35SR1350KH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	41	5	32	38	32	20	15	5	17
	250	70	50	40	42	43	36	32	17	29
	350	97	90	41	44	50	41	35	27	36
Warm	150	41	13	32	39	34	25	16	5	19
	200	55	43	37	44	44	33	23	16	30
	300	83	91	41	43	52	39	31	24	39

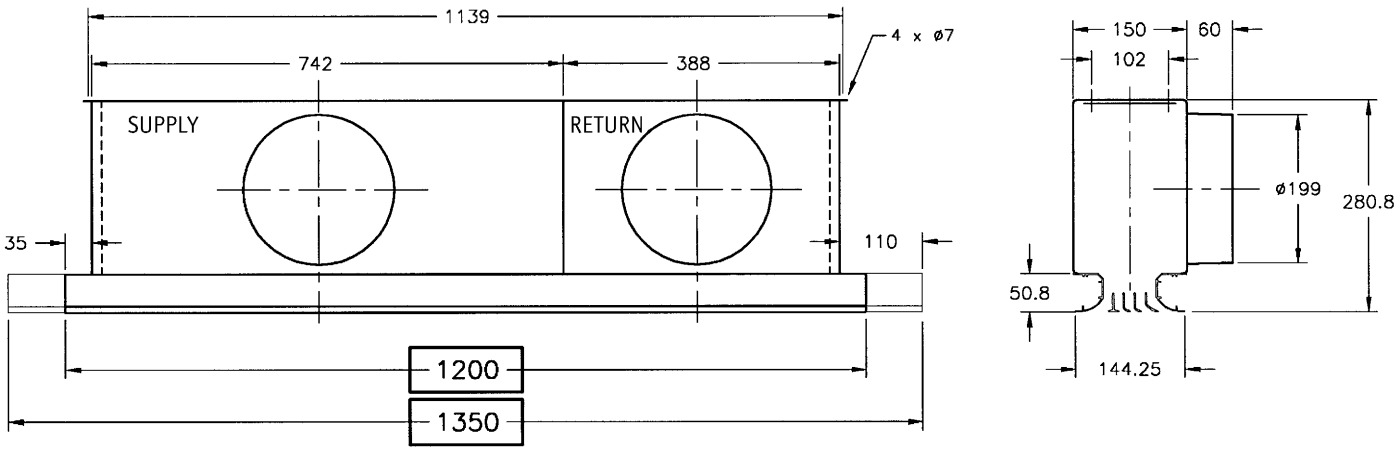
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air 5 slot 1200-1350 mm

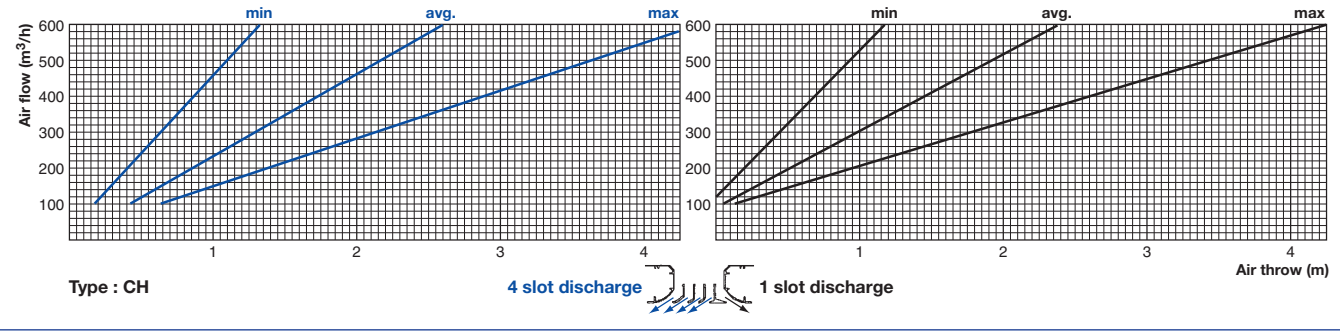
All dimensions are in millimetres.

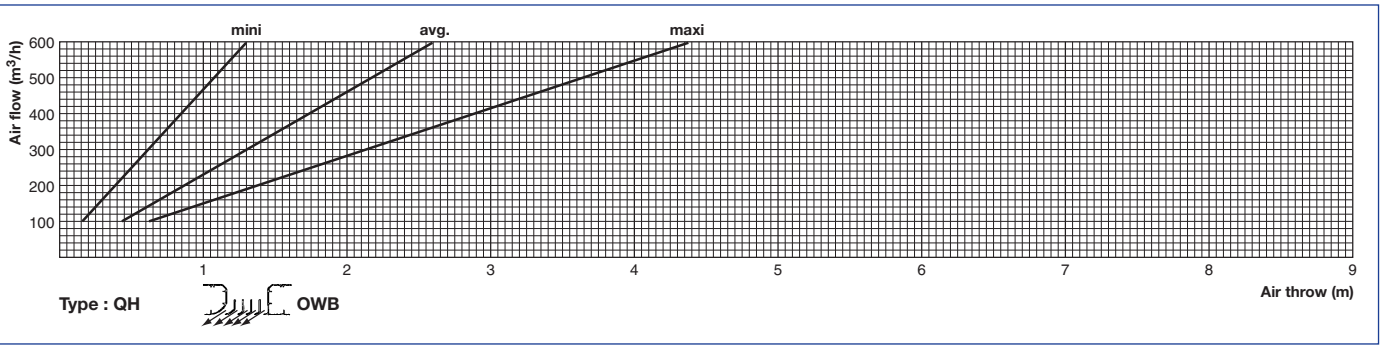


Air inlet Connection / Diffuser			CH	CH	QH	QH
SUPPLY/RETURN	1200	ø199	35SR1200CH13FB	35SR1200CH23FB	35SR1200QH13FB	35SR1200QH23FB
	1350	ø199	35SR1350CH13FB	35SR1350CH23FB	35SR1350QH13FB	35SR1350QH23FB
RETURN/SUPPLY	1200	ø199	35SR1200CH43FB	35SR1200CH53FB	35SR1200QH43FB	35SR1200QH53FB
	1350	ø199	35SR1350CH43FB	35SR1350CH53FB	35SR1350QH43FB	35SR1350QH53FB

SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
300	83	37	34	39	38	26	22	5	23
400	110	59	37	43	48	37	31	18	34
500	139	92	41	45	52	41	35	23	39

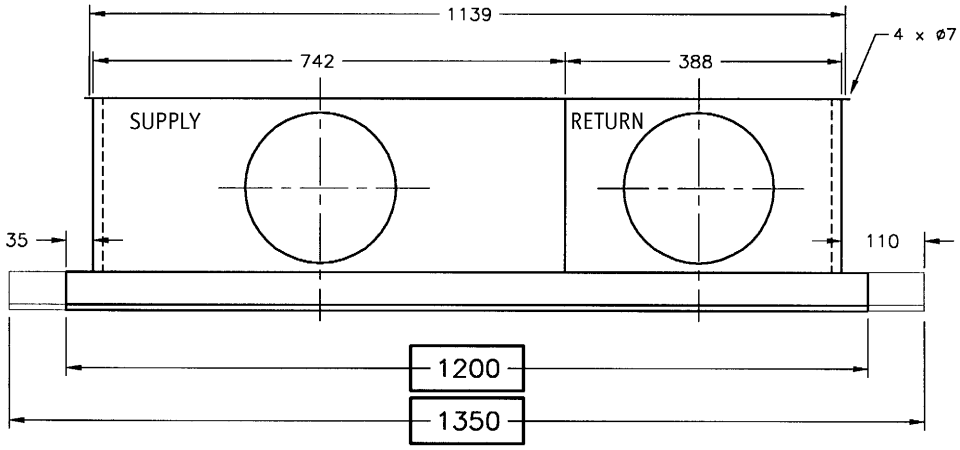
The NR values are based upon a room attenuation of 4 dB for each frequency band.

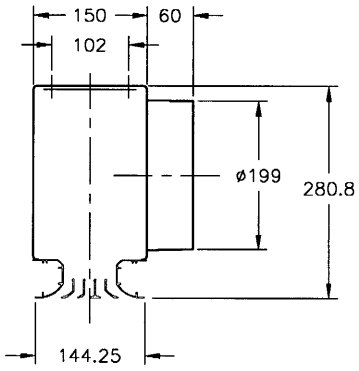




Moduboot supply/return air 5 slot 1200-1350 mm

All dimensions are in millimetres.

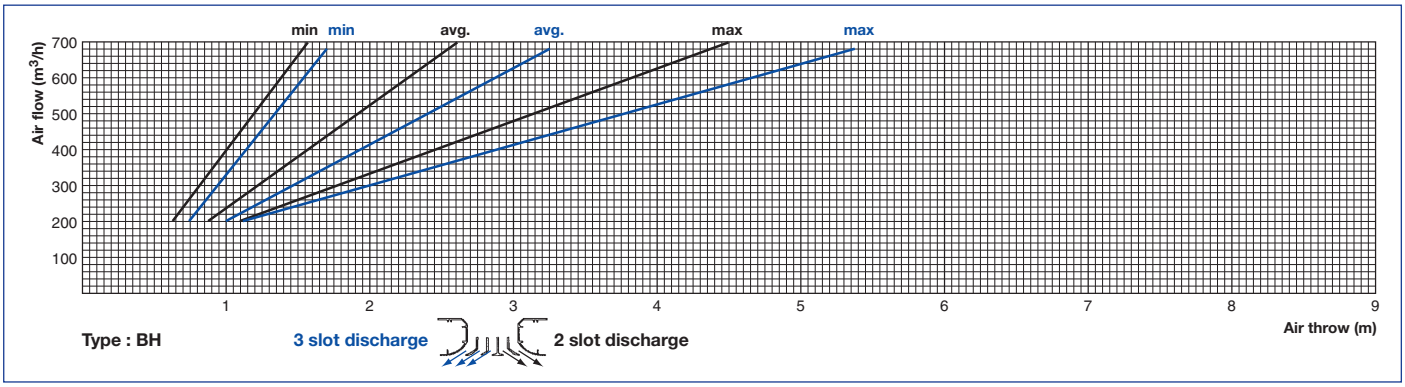




Air inlet Connection / Diffuser			BH	BH		BH	BH
SUPPLY/RETURN	1200	ø199	35SR1200BH13FB	35SR1200BH23FB	RETURN/SUPPLY	35SR1200BH43FB	35SR1200BH53FB
	1350	ø199	35SR1350BH13FB	35SR1350BH23FB		35SR1350BH43FB	35SR1350BH53FB

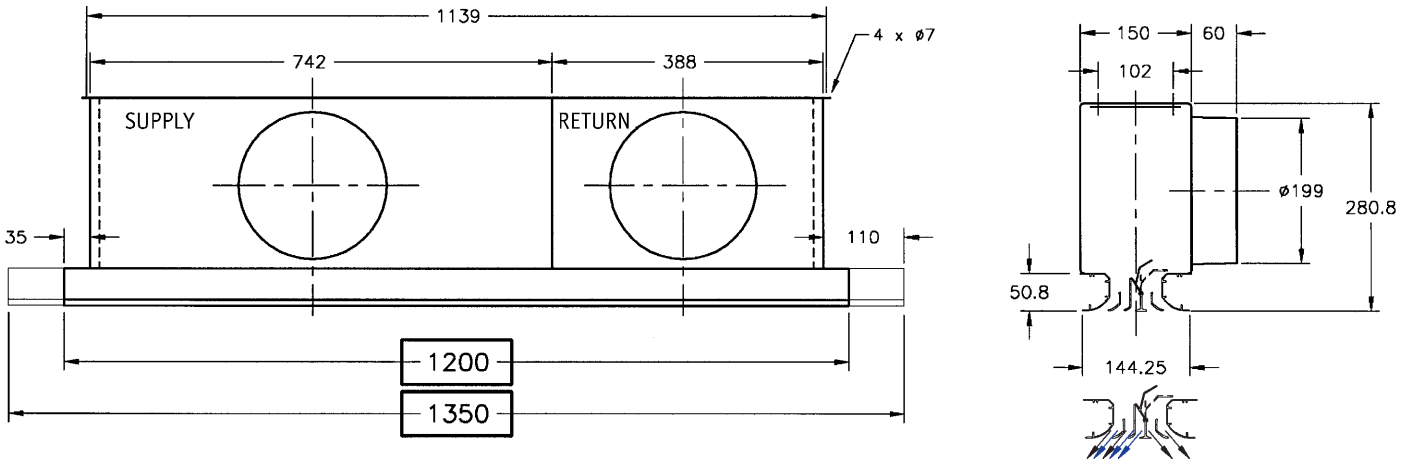
SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
300	83	37	34	39	38	26	22	5	23
400	110	59	37	43	48	37	31	18	34
500	139	92	41	45	52	41	35	23	39

The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air Optimix® 5 slot *1200-1350 mm*

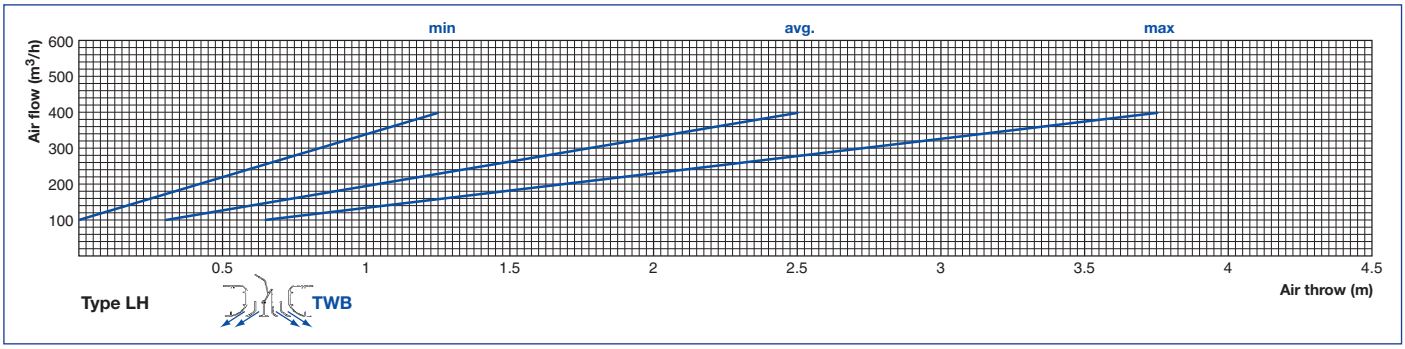
All dimensions are in millimetres.

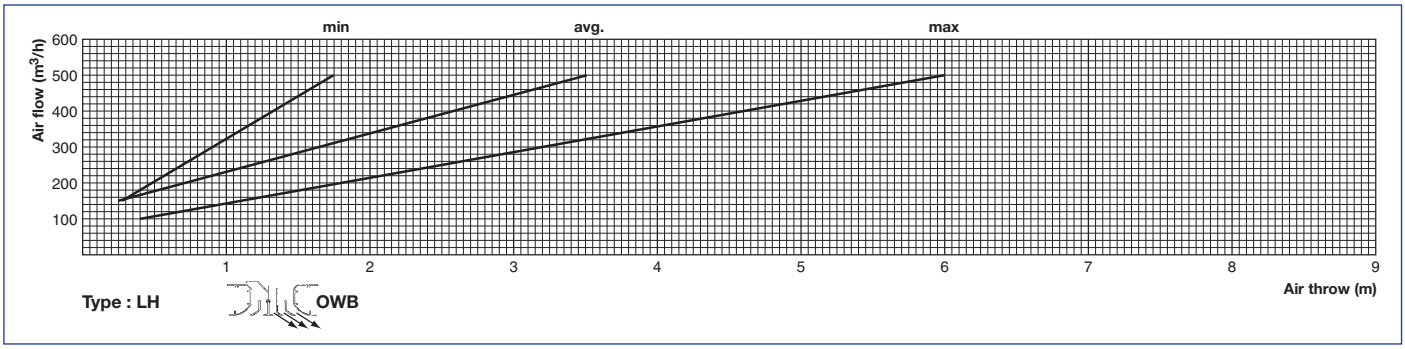


Air inlet Connection / Diffuser			LH	LH		LH	LH
SUPPLY/RETURN	1200	ø199	35SR1200LH13FB	35SR1200LH23FB	RETURN/SUPPLY	35SR1200LH43FB	35SR1200LH53FB
	1350	ø199	35SR1350LH13FB	35SR1350LH23FB		35SR1350LH43FB	35SR1350LH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	200	55	11	28	39	29	17	9	3	15
	300	83	30	36	41	39	30	21	7	25
	400	113	62	40	43	49	37	30	19	35
Warm	150	41	16	28	31	26	15	9	4	14
	250	70	38	40	42	43	36	32	17	29
	350	97	64	41	44	50	41	35	27	36

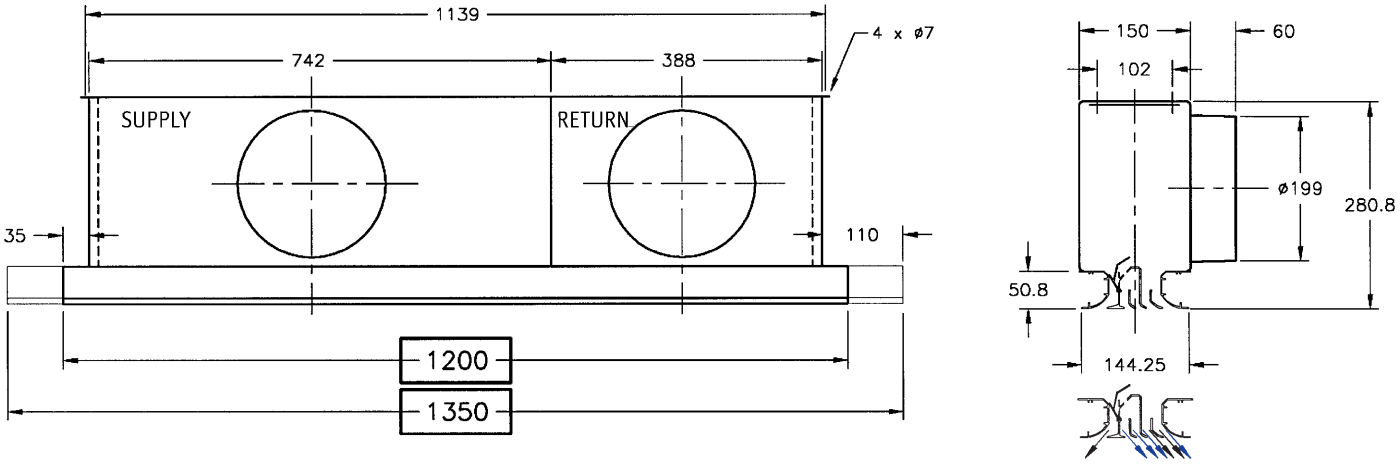
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air Optimix® 5 slot 1200-1350 mm

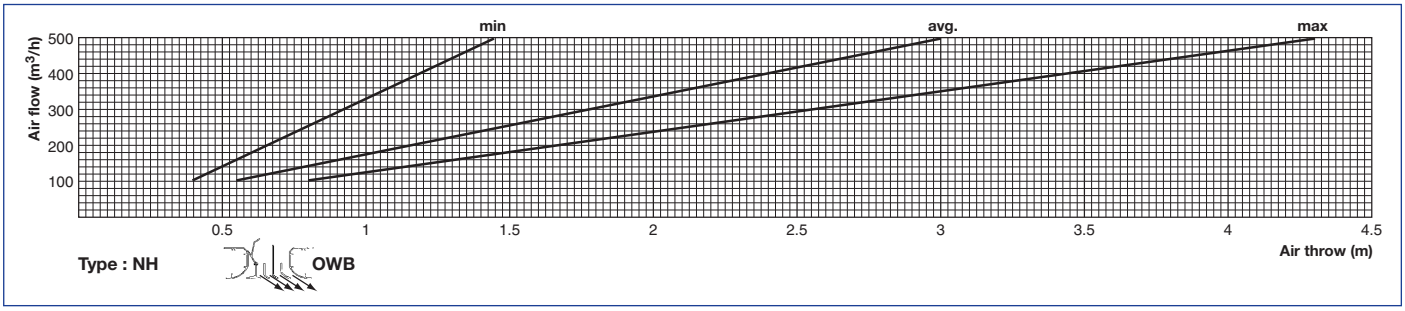
All dimensions are in millimetres.

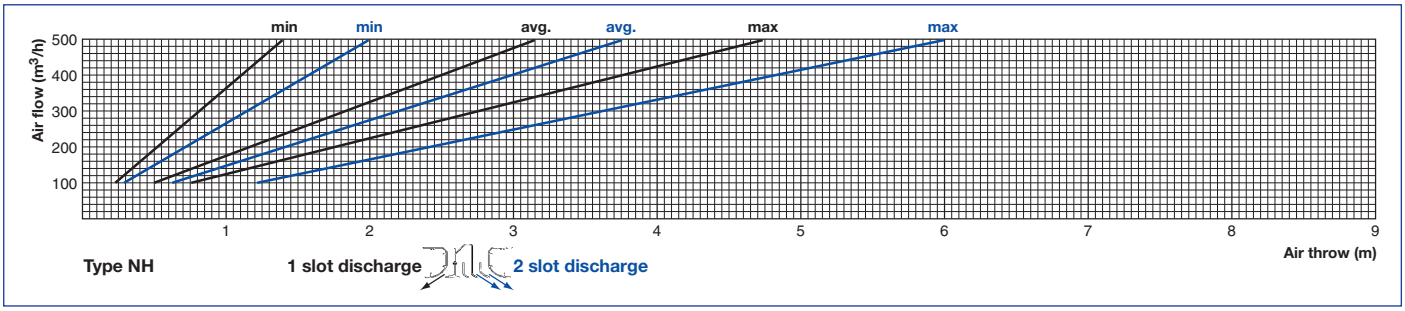


Air inlet Connection / Diffuser			NH	NH		NH	NH
SUPPLY/RETURN	1200	ø199	35SR1200NH13FB	35SR1200NH23FB	RETURN/SUPPLY	35SR1200NH43FB	35SR1200NH53FB
	1350	ø199	35SR1350NH13FB	35SR1350NH23FB		35SR1350NH43FB	35SR1350NH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	200	55	11	28	39	29	17	9	3	15
	300	83	30	36	41	39	30	21	7	25
	400	110	62	40	43	49	37	30	19	35
Warm	150	41	16	28	31	26	15	9	4	14
	250	70	38	40	42	43	36	32	17	29
	350	97	64	41	44	50	41	35	27	36

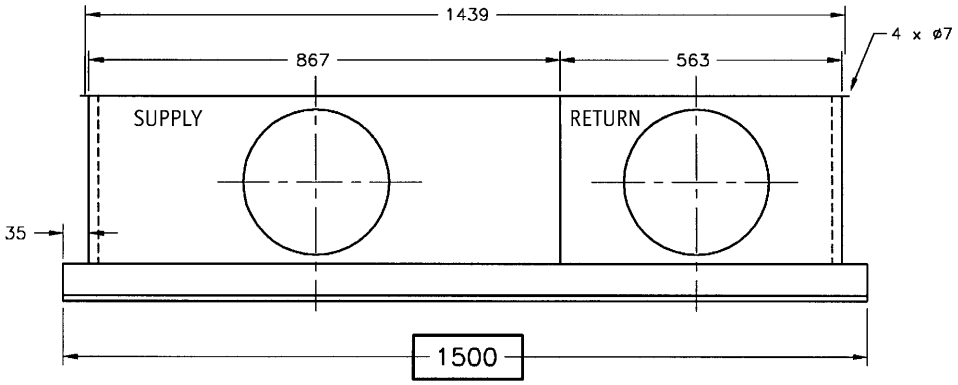
The NR values are based upon a room attenuation of 4 dB for each frequency band.

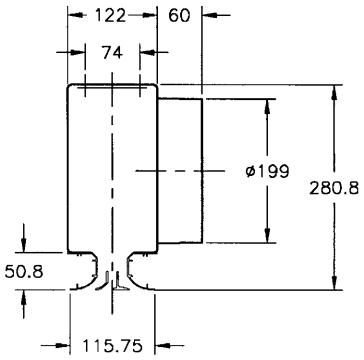




Moduboot supply/return air 3 slot 1500 mm

All dimensions are in millimetres.

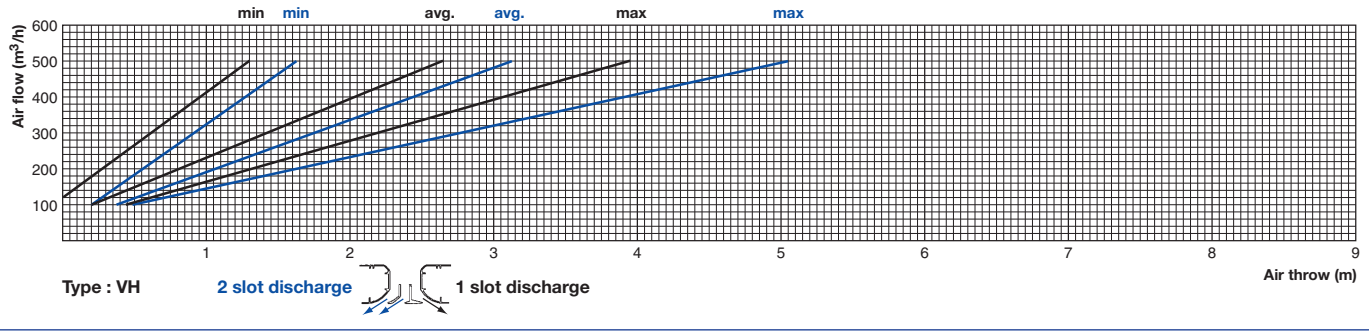


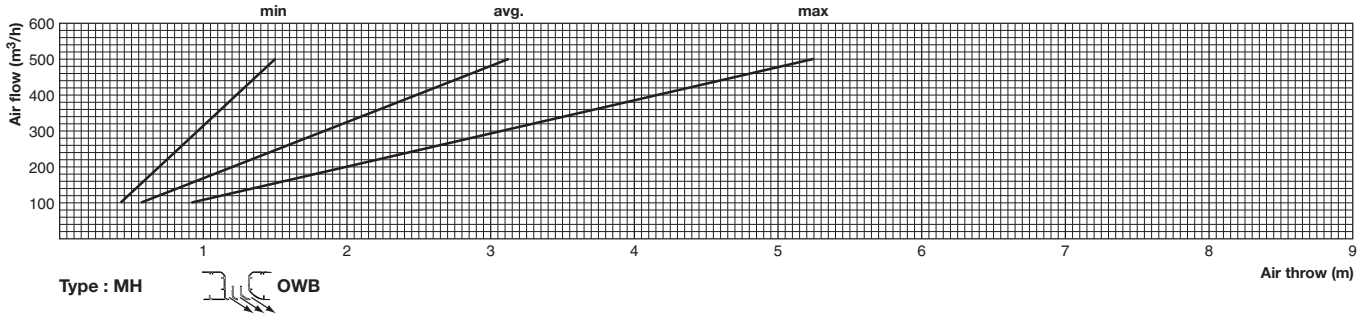


Air inlet Connection / Diffuser			VH	VH	MH	MH
SUPPLY/RETURN	1500	ø199	35SR1500VH13FB	35SR1500VH23FB	35SR1500MH13FB	35SR1500MH23FB
RETURN/SUPPLY	1500	ø199	35SR1500VH43FB	35SR1500VH53FB	35SR1500MH43FB	35SR1500MH53FB

SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
200	55	28	36	43	37	26	15	5	22
300	83	56	39	45	53	36	27	18	40
400	110	107	43	45	56	41	33	26	43

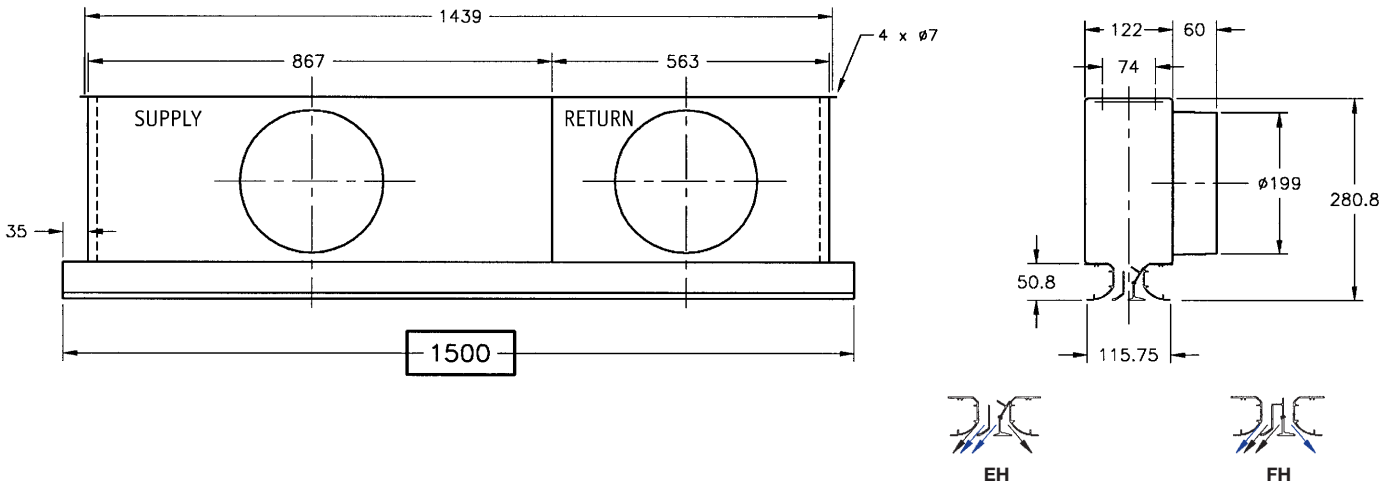
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air Optimix® 3 slot *1500 mm*

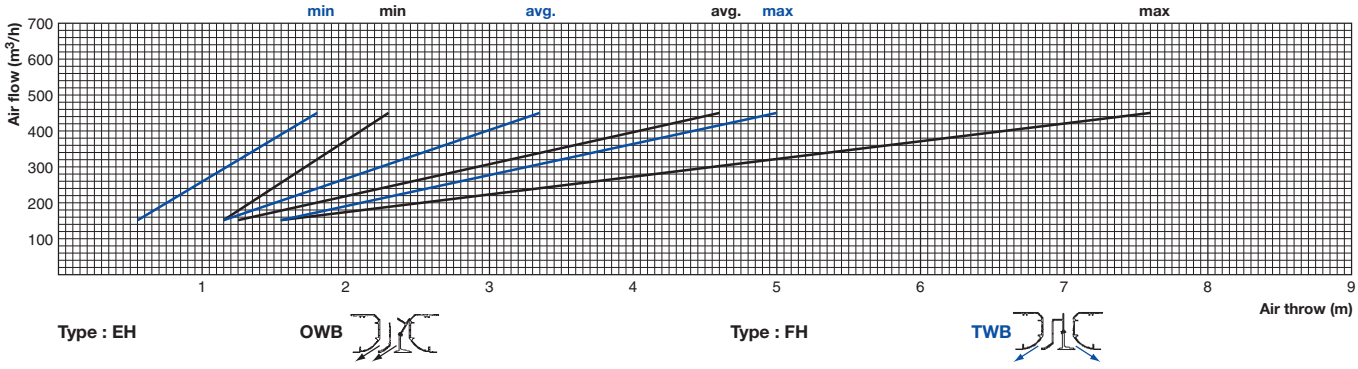
All dimensions are in millimetres.



Air inlet / Connection / Diffuser			EH	EH	FH	FH
SUPPLY/RETURN	1500 mm	ø199	35SR1500EH13FB	35SR1500EH23FB	35SR1500FH13FB	35SR1500FH23FB
RETURN/SUPPLY	1500 mm	ø199	35SR1500EH43FB	35SR1500EH53FB	35SR1500FH43FB	35SR1500FH53FB

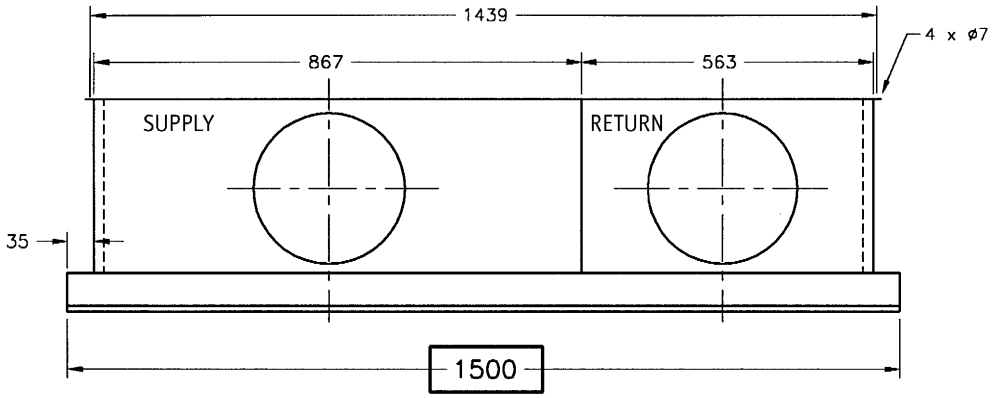
	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	41	18	37	43	37	32	25	15	24
	250	70	53	40	48	46	35	26	15	32
	350	97	96	41	43	52	39	31	24	39
Warm	150	41	18	37	43	37	32	25	15	24
	250	70	53	40	48	46	35	26	15	32
	350	97	96	41	43	52	39	31	24	39

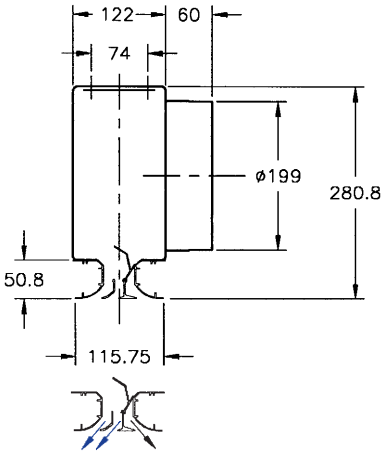
The NR values are based upon a room attenuation of 4 dB for each frequency band.

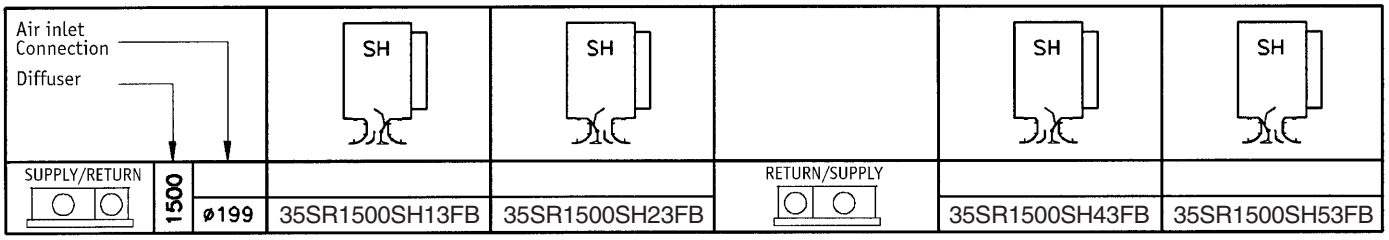


Moduboot supply/return air Optimix® 3 slot *1500 mm*

All dimensions are in millimetres.

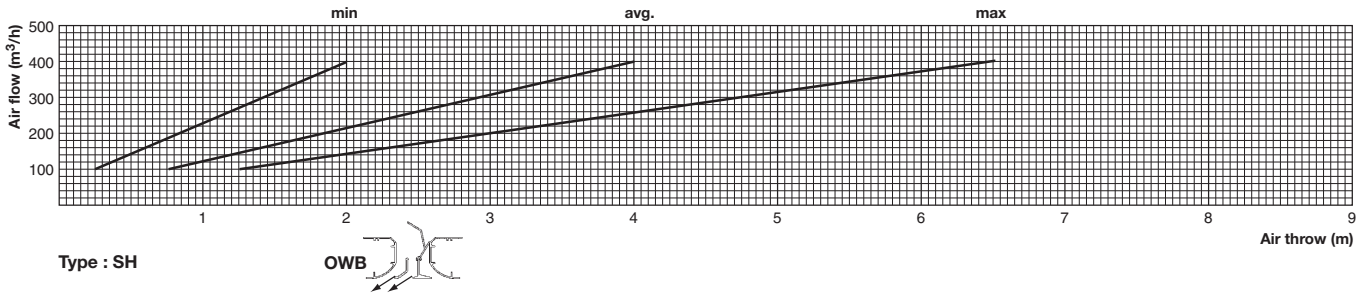


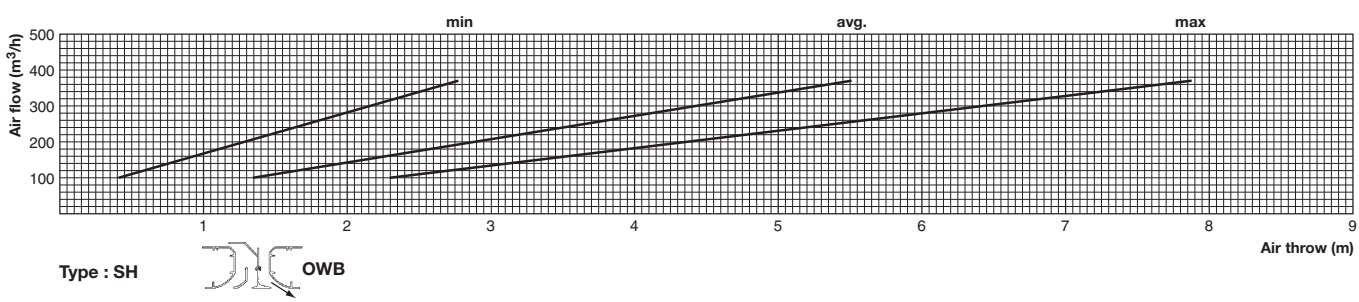




	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	150	41	18	34	42	34	20	9	2	19
	300	83	59	38	46	48	35	24	13	34
	360	100	96	43	46	56	42	33	25	43
Warm	150	41	33	37	43	38	32	25	15	24
	200	70	93	39	47	47	40	36	30	33
	300	83	129	45	48	54	43	40	36	41

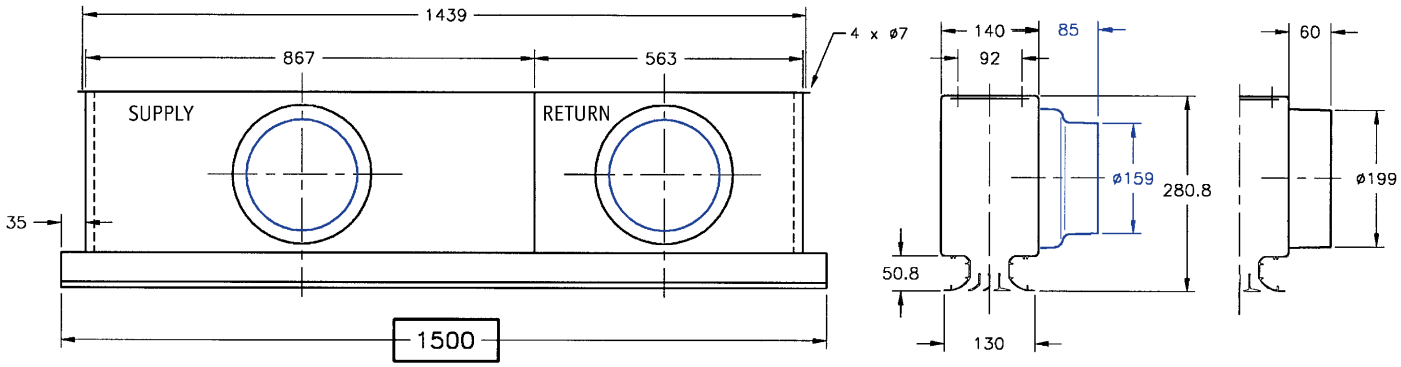
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air 4 slot 1500 mm

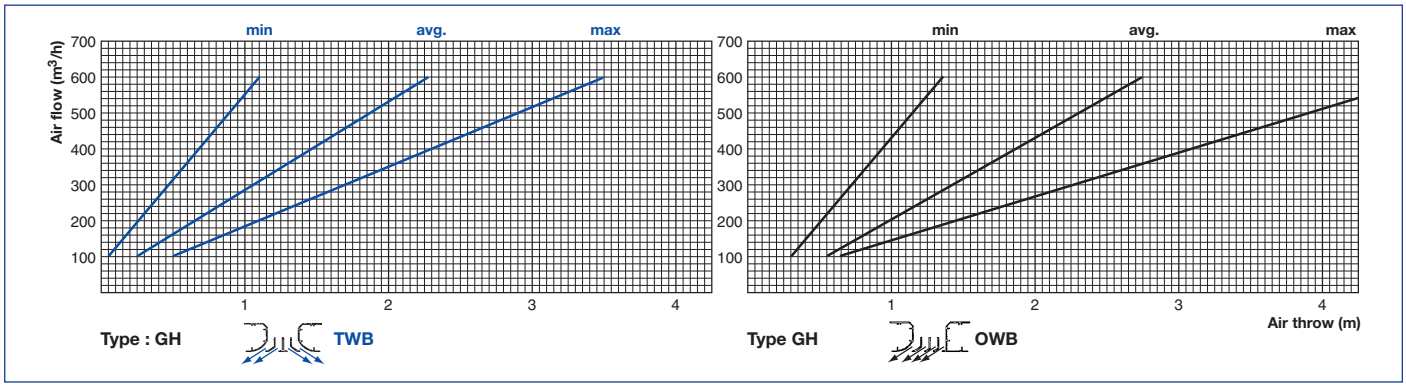
All dimensions are in millimetres.



Air inlet Connection / Diffuser			GH	GH	GH
SUPPLY/RETURN	1500	ø159	35SR1500GH03EB	35SR1500GH13EB	35SR1500GH23EB
		ø199	35SR1500GH03FB	35SR1500GH13FB	35SR1500GH23FB
RETURN/SUPPLY	1500	ø159	35SR1500GH33EB	35SR1500GH43EB	35SR1500GH53EB
		ø199	35SR1500GH33FB	35SR1500GH43FB	35SR1500GH53FB

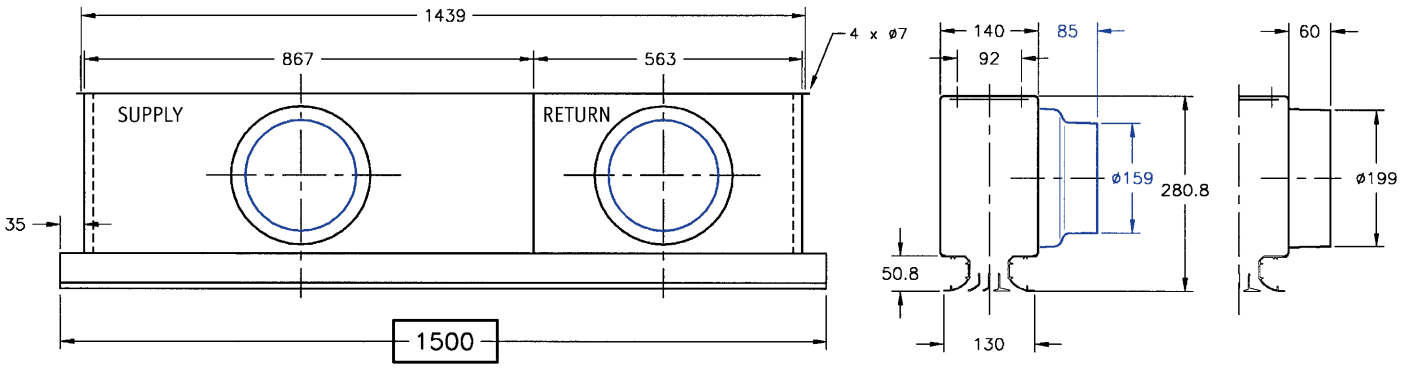
SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)													
m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
300	83	56	48	34	33	42	40	41	40	30	31	22	22	10	11	27	26
400	110	85	72	39	39	44	43	49	44	36	36	29	29	19	20	35	30
500	139	122	106	42	41	45	45	53	51	39	39	33	33	24	25	40	37

The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection.
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air 4 slot *1500 mm*

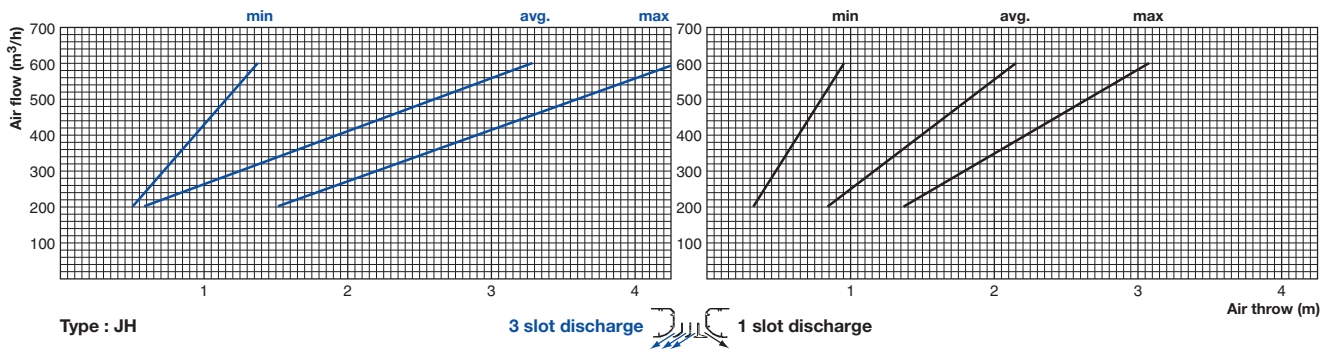
All dimensions are in millimetres.



Air inlet Connection / Diffuser			JH	JH		JH	JH
SUPPLY/RETURN	1500	ø159	35SR1500JH13EB	35SR1500JH23EB	RETURN/SUPPLY	35SR1500JH43EB	35SR1500JH53EB
		ø199	35SR1500JH13FB	35SR1500JH23FB		35SR1500JH43FB	35SR1500JH53FB

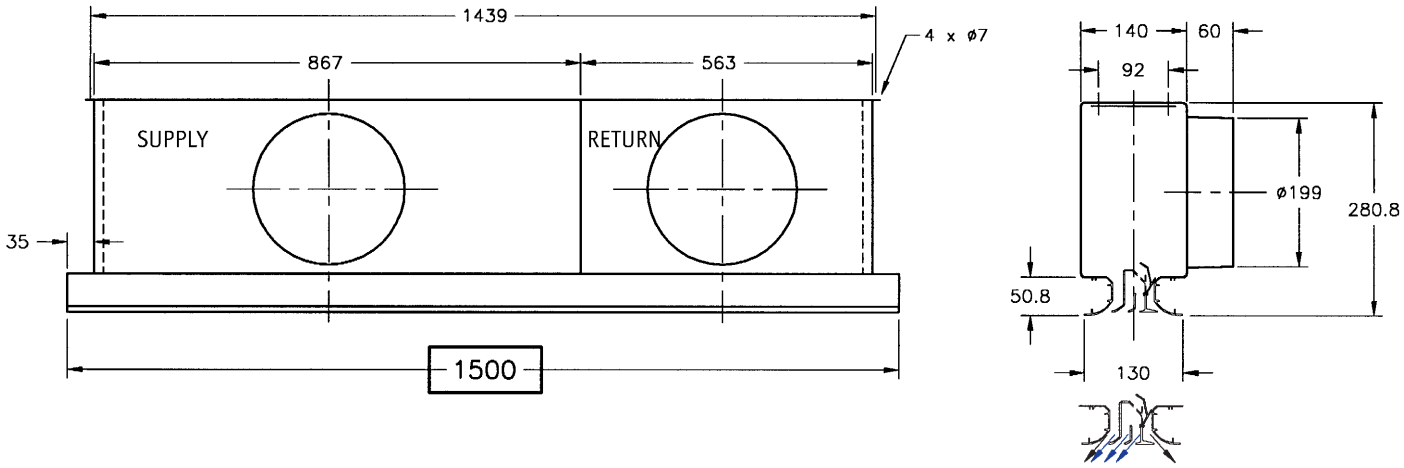
SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)													
m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
300	83	56	48	34	33	42	40	41	40	30	31	22	22	10	11	27	26
400	110	85	72	39	39	44	43	49	44	36	36	29	29	19	20	35	30
500	139	122	106	42	41	45	45	53	51	39	39	33	33	24	25	40	37

The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection.
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air Optimix® 4 slot 1500 mm

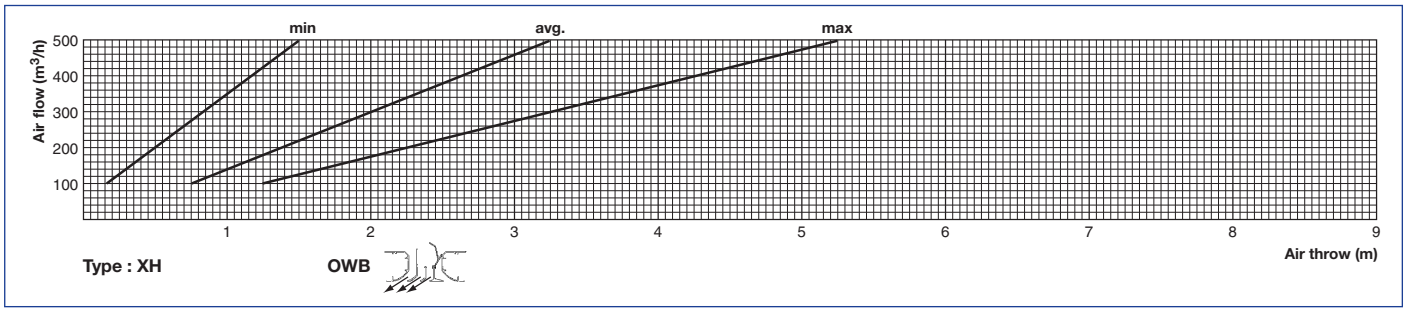
All dimensions are in millimetres.

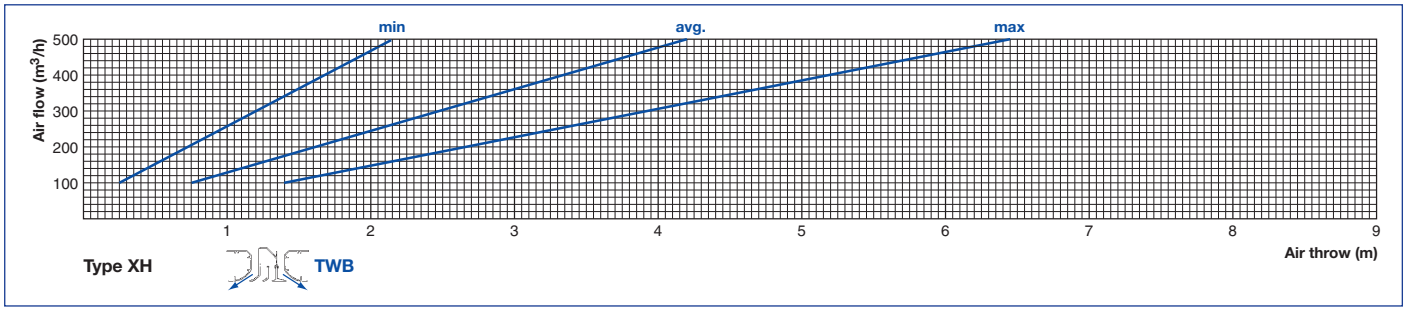


Air inlet Connection / Diffuser			XH	XH
SUPPLY/RETURN	1500 mm	ø199	35SR1500XH13FB	35SR1500XH23FB
RETURN/SUPPLY	1500 mm	ø199	35SR1500XH43FB	35SR1500XH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	200	55	21	33	39	34	23	15	5	19
	300	83	41	37	43	41	33	28	13	27
	400	111	80	39	44	49	38	32	23	35
Warm	150	41	14	28	33	29	20	13	5	14
	250	70	42	40	48	46	35	26	15	32
	350	97	78	41	43	52	39	31	24	39

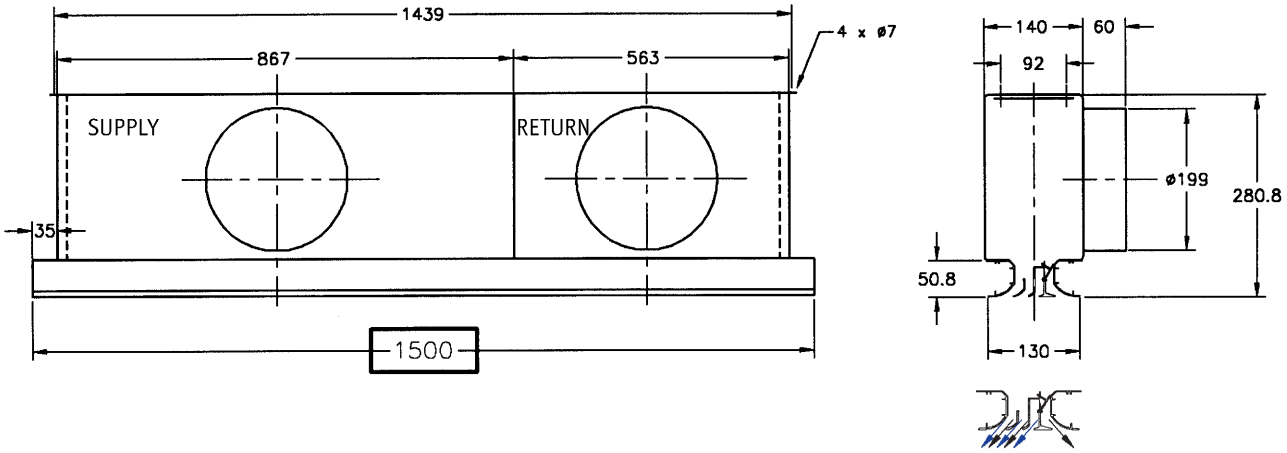
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air Optimix® 4 slot *1500 mm*

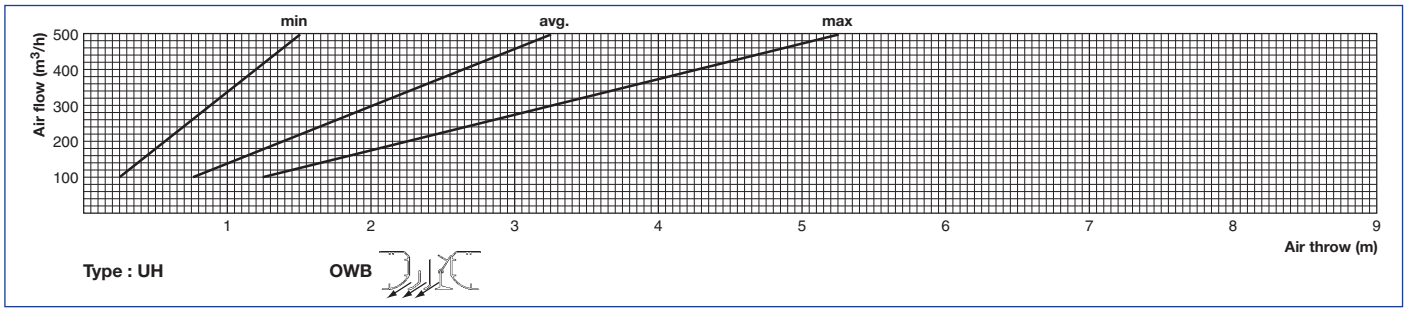
All dimensions are in millimetres.

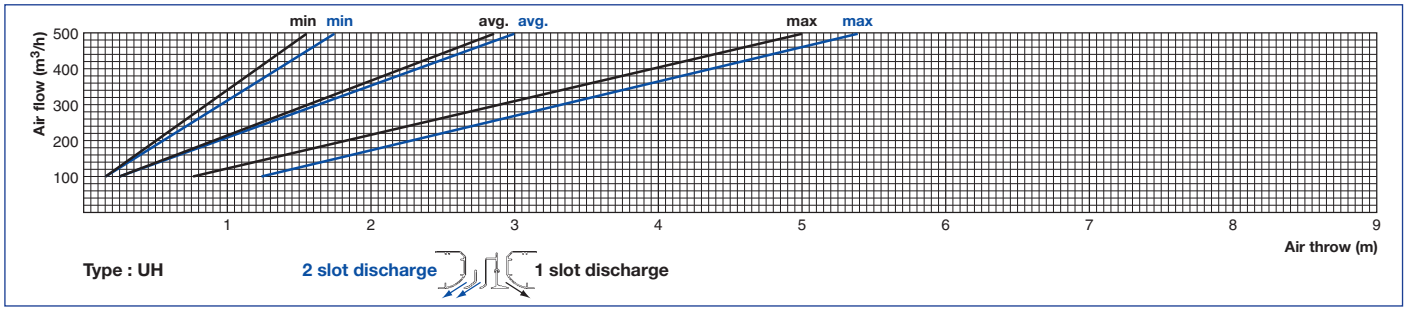


Air inlet Connection / Diffuser			UH	UH
SUPPLY/RETURN	1500 mm	ø199	35SR1500UH13FB	35SR1500UH23FB
RETURN/SUPPLY	1500 mm	ø199	35SR1500UH43FB	35SR1500UH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	200	55	21	33	39	34	23	15	5	19
	300	83	41	37	43	41	33	28	13	27
	400	111	80	39	44	49	38	32	23	35
Warm	150	41	14	28	33	29	20	13	5	14
	250	70	42	34	41	39	34	30	20	26
	350	97	78	39	45	48	40	37	30	34

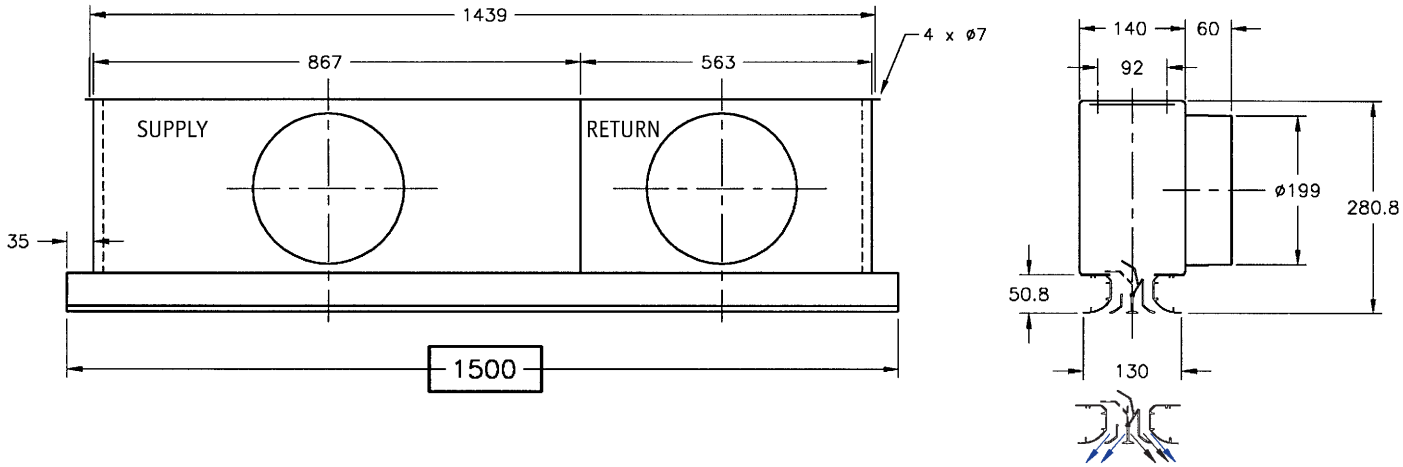
The NR values are based upon a room attenuation of 4 dB for each frequency band.

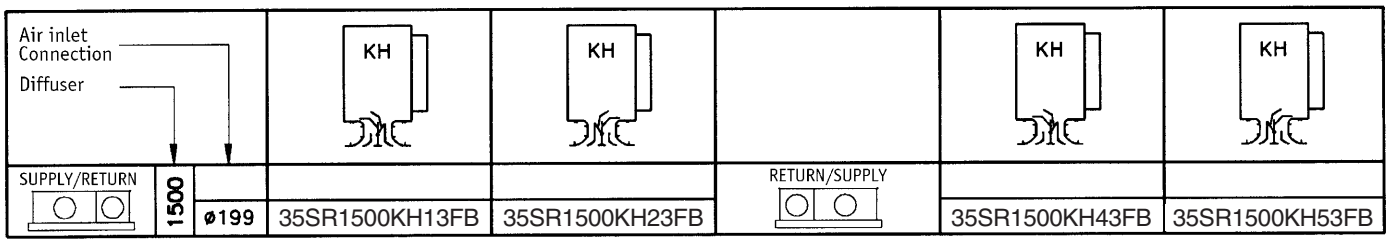




Moduboot supply/return air Optimix® 4 slot *1500 mm*

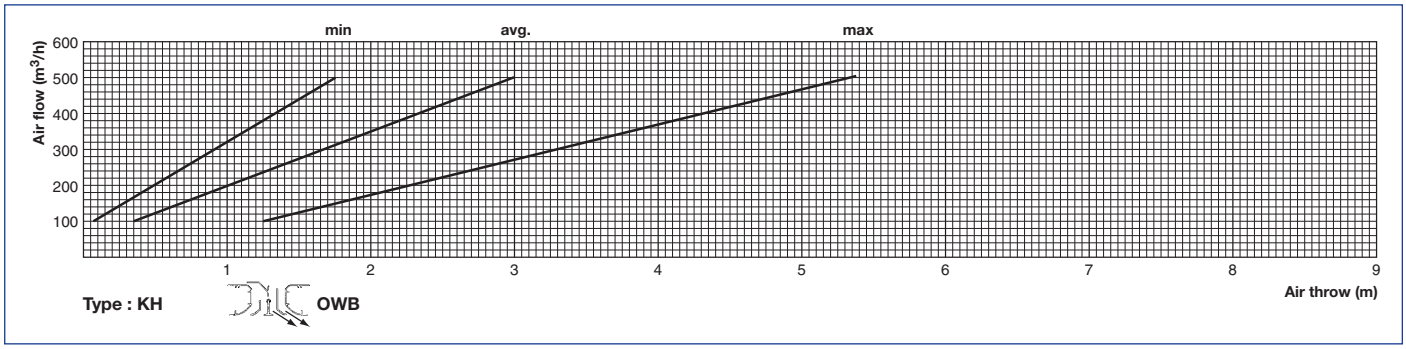
All dimensions are in millimetres.

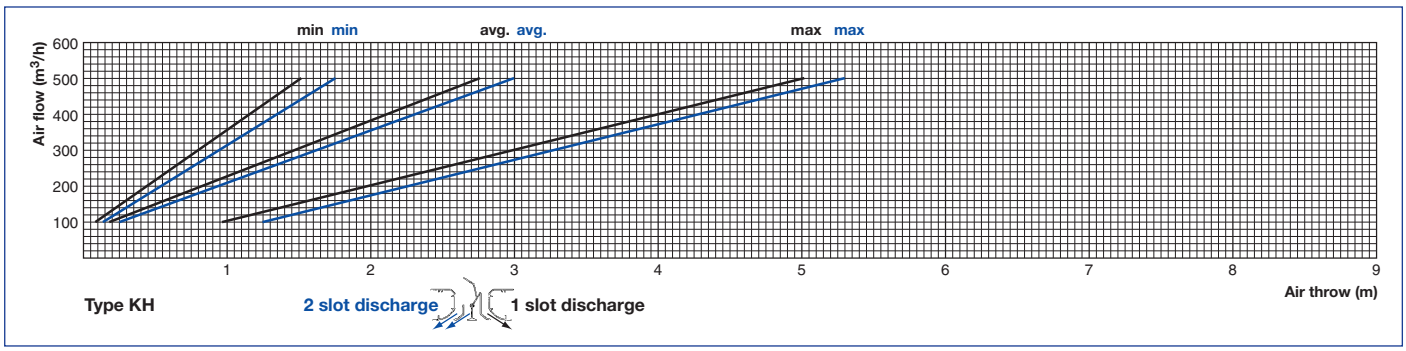




	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	200	55	21	33	39	34	23	15	5	19
Cold	300	83	41	38	43	41	33	28	13	27
Cold	400	111	80	39	44	49	38	32	23	35
Warm	150	41	14	28	33	29	20	13	5	14
Warm	250	70	42	40	48	46	35	26	15	32
Warm	350	97	78	41	43	52	39	31	24	39

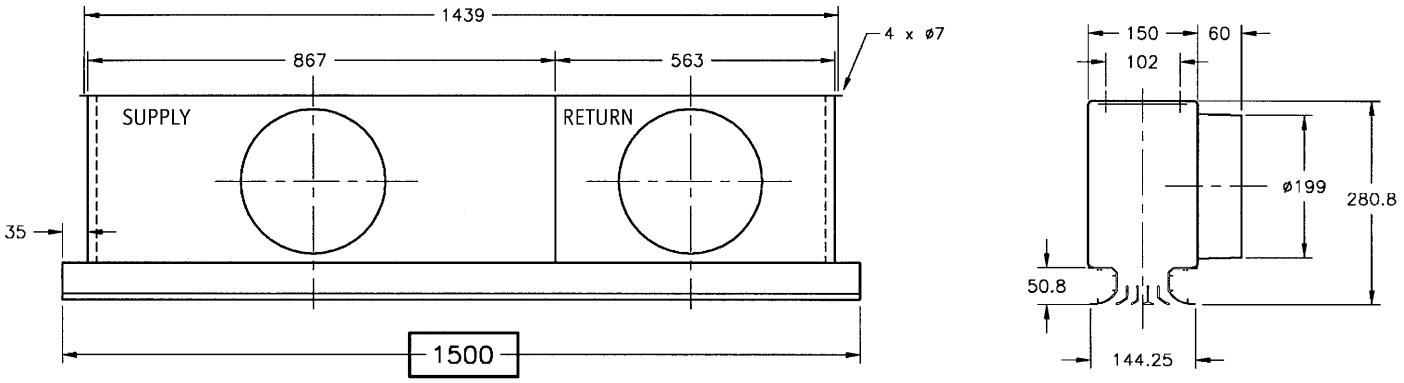
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air 5 slot 1500 mm

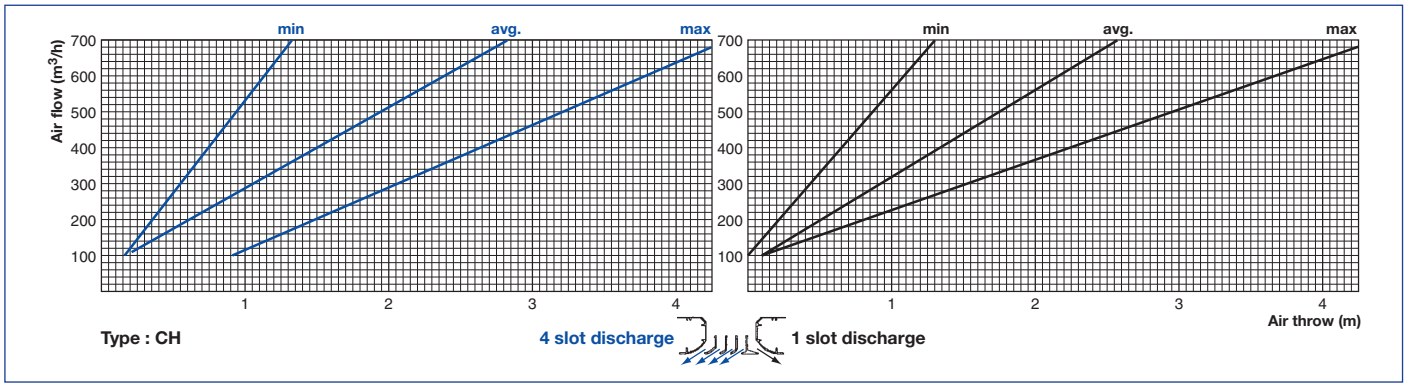
All dimensions are in millimetres.

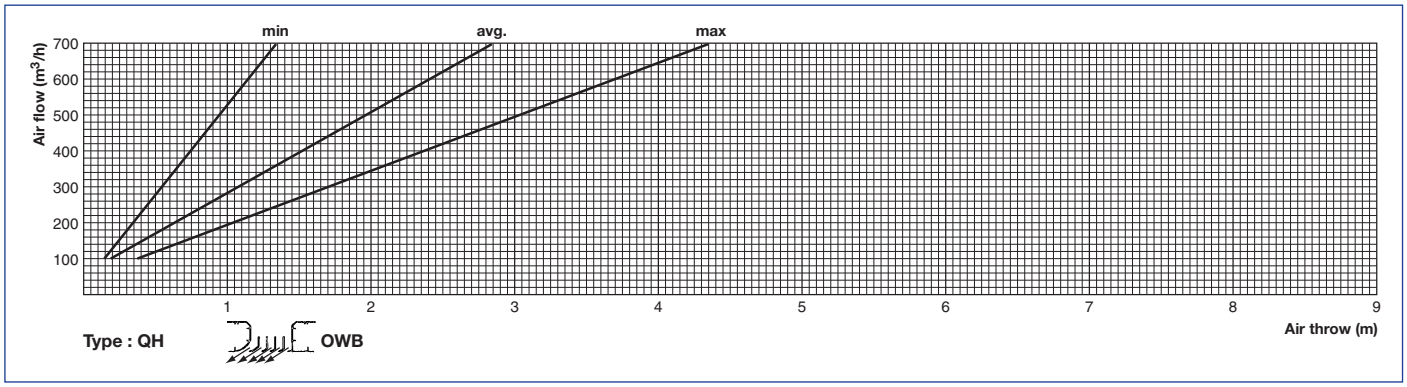


Air inlet Connection / Diffuser			CH	CH	QH	QH
SUPPLY/RETURN	1500	ø199	35SR1500CH13FB	35SR1500CH23FB	35SR1500QH13FB	35SR1500QH23FB
RETURN/SUPPLY	1500	ø199	35SR1500CH43FB	35SR1500CH53FB	35SR1500QH43FB	35SR1500QH53FB

SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
400	110	52	35	42	42	31	21	9	28
500	139	72	36	45	49	36	27	16	35
600	167	98	42	42	51	40	32	22	37

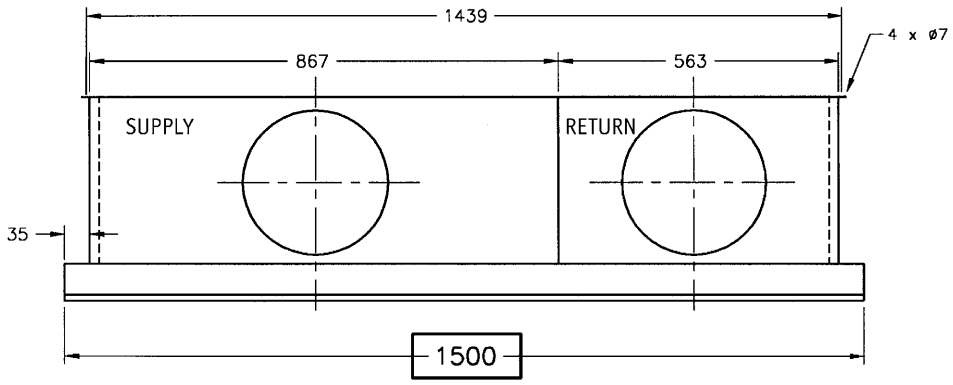
The NR values are based upon a room attenuation of 4 dB for each frequency band.

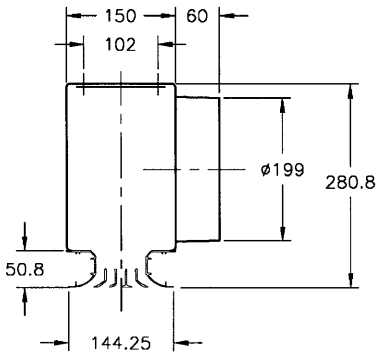


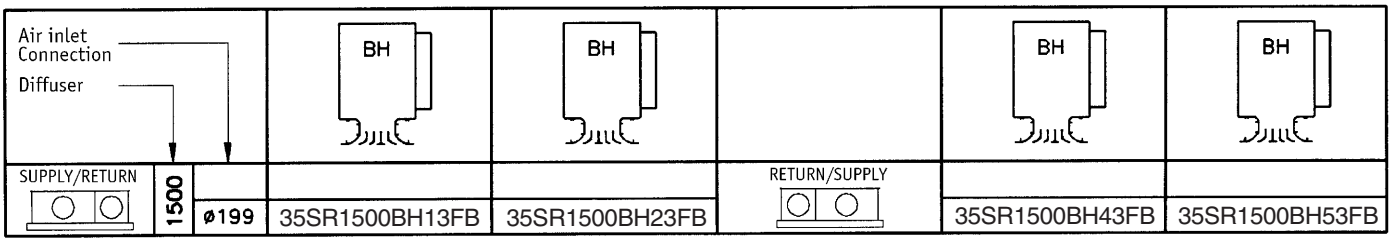


Moduboot supply/return air 5 slot 1500 mm

All dimensions are in millimetres.

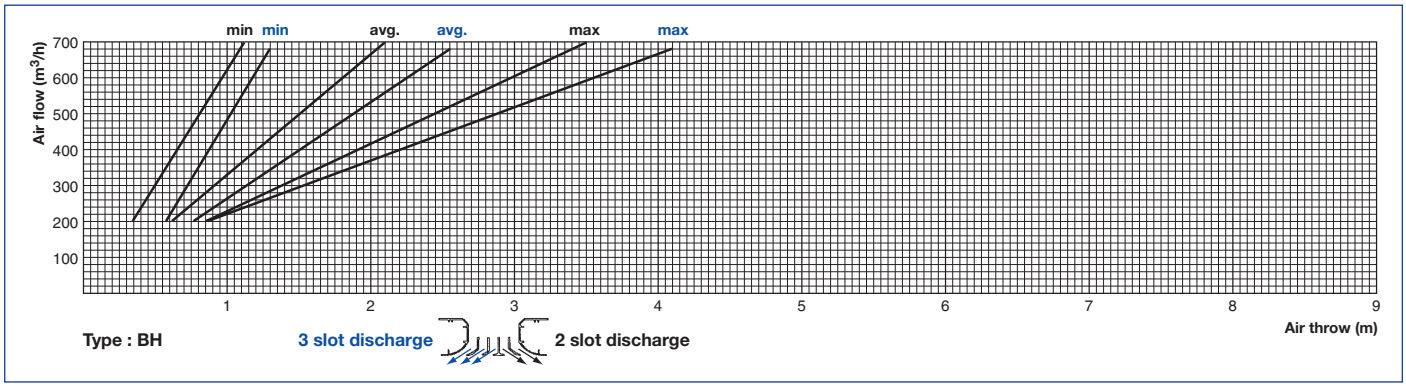






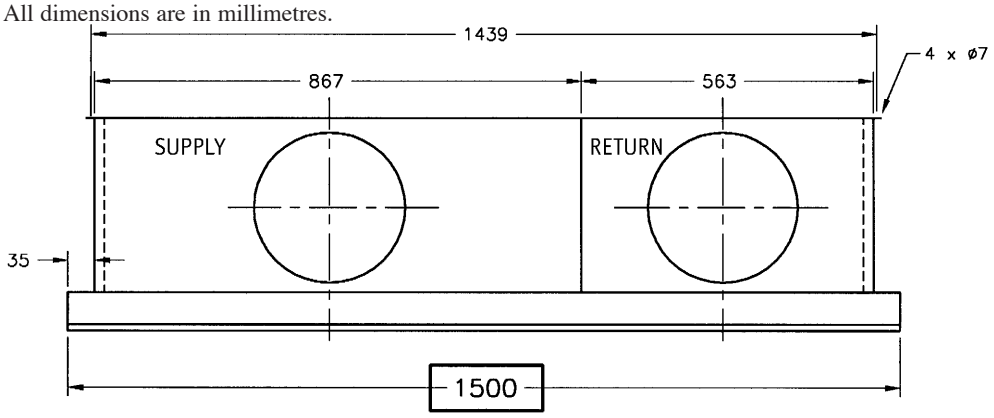
SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
400	110	52	35	42	42	31	21	9	28
500	139	72	36	45	49	36	27	16	35
600	167	98	42	42	51	40	32	22	37

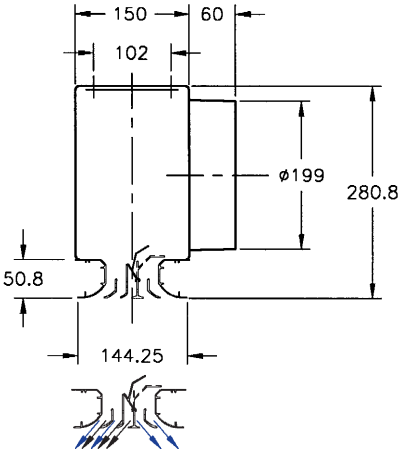
The NR values are based upon a room attenuation of 4 dB for each frequency band.

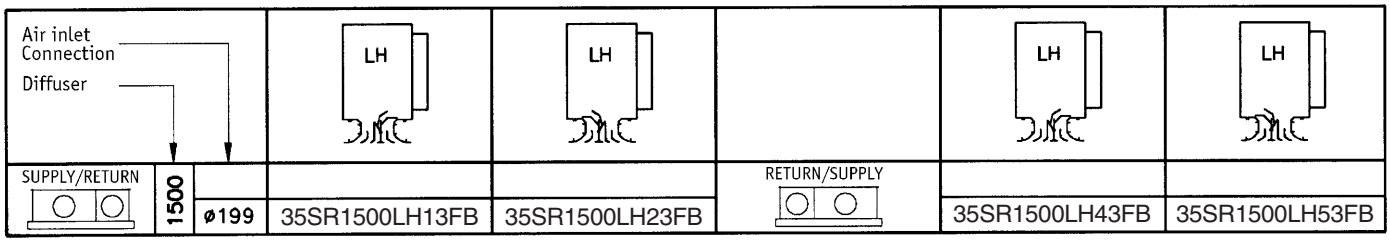


Moduboot supply/return air Optimix® 5 slot *1500 mm*

All dimensions are in millimetres.

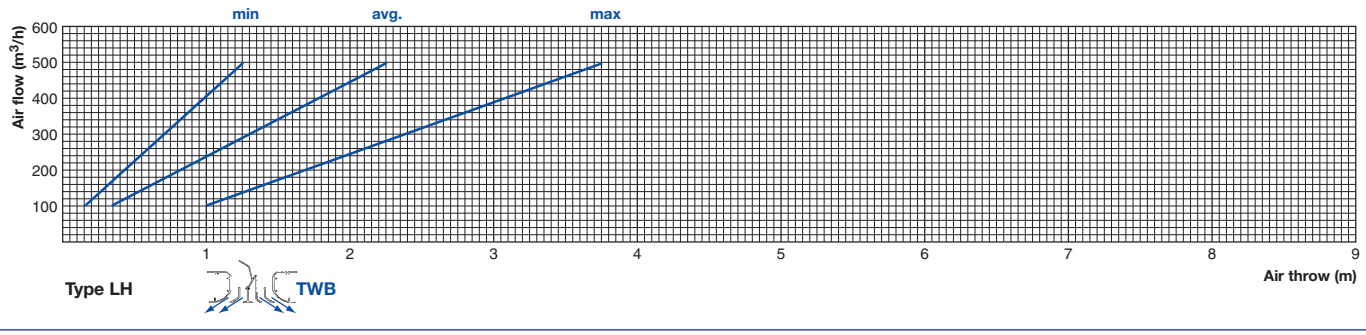


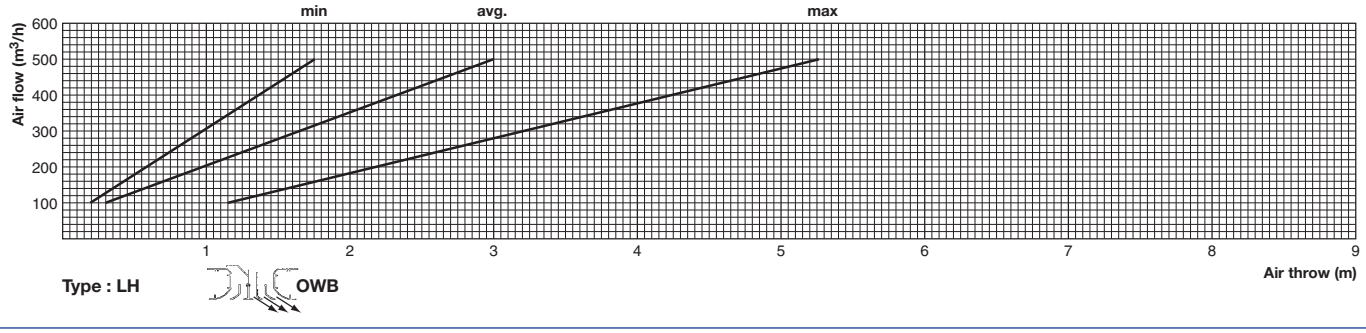




	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	300	83	32	29	42	35	25	12	3	20
	400	110	51	38	43	43	34	23	9	29
	500	139	73	39	45	49	38	28	17	35
Warm	200	55	20	28	38	29	18	10	5	14
	300	83	34	37	42	41	33	28	13	27
	400	110	56	40	44	49	38	32	23	35

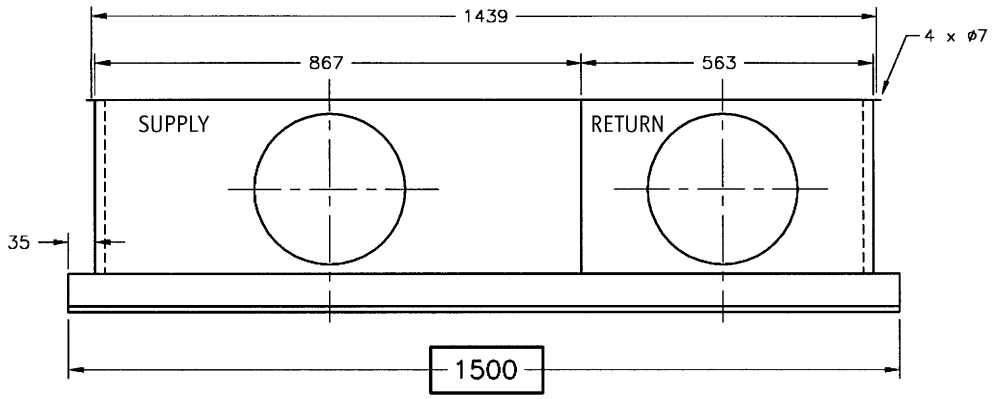
The NR values are based upon a room attenuation of 4 dB for each frequency band.

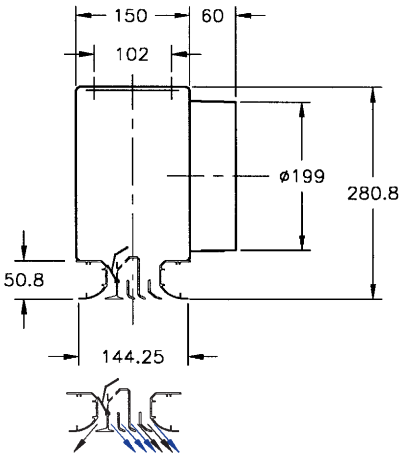


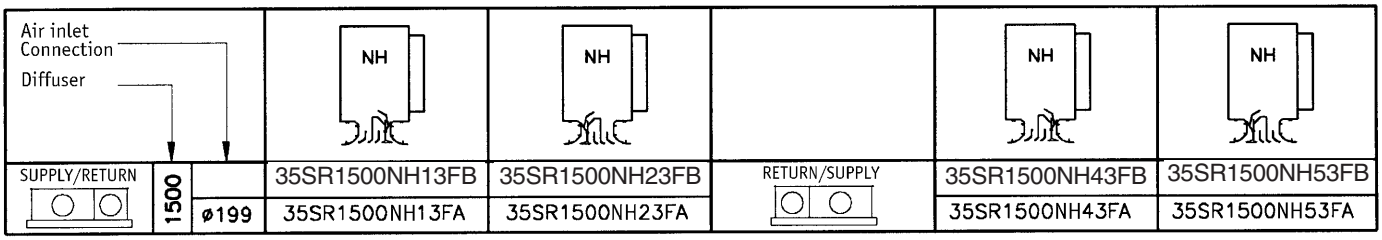


Moduboot supply/return air Optimix® 5 slot *1500 mm*

All dimensions are in millimetres.

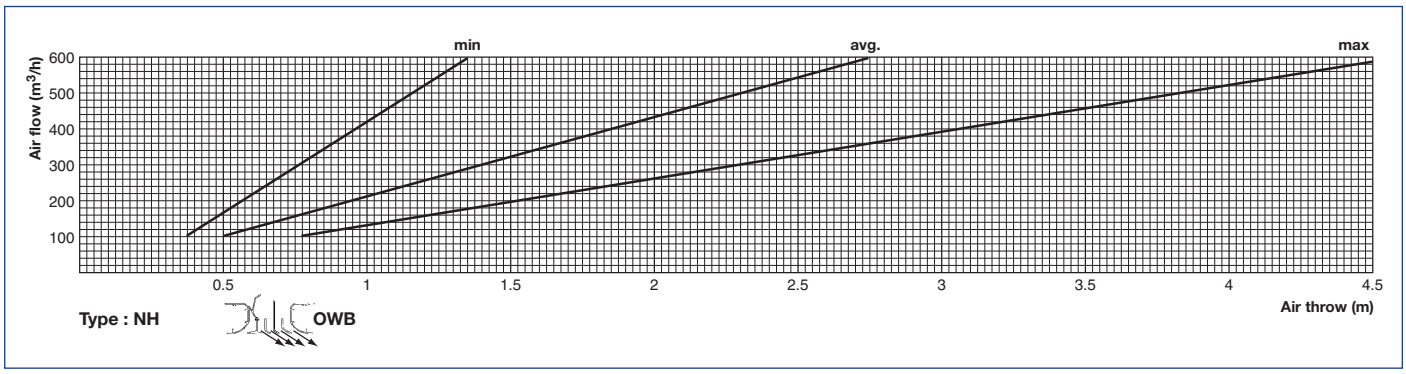


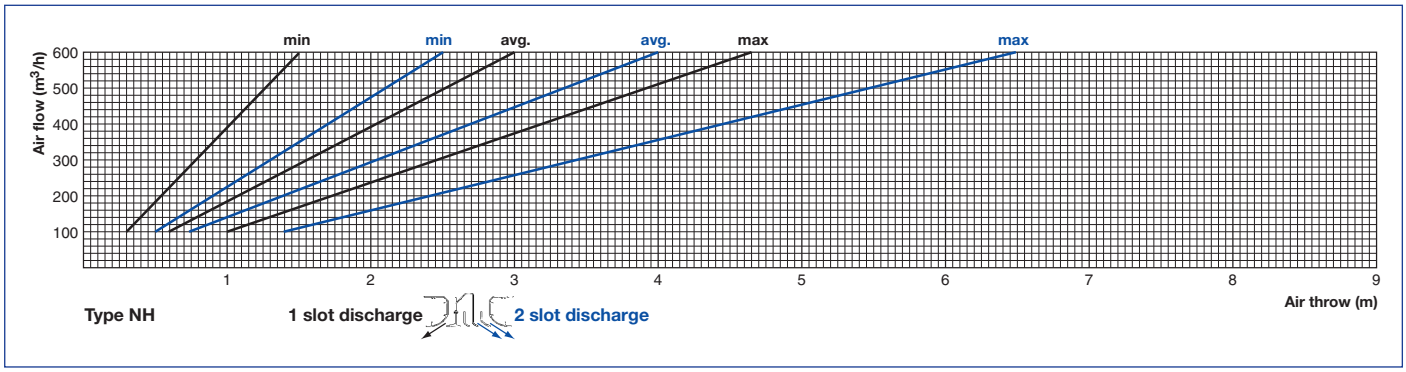




	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	300	83	32	29	42	35	25	12	3	20
	400	110	51	38	43	43	34	23	9	29
	500	139	73	39	45	49	38	28	17	35
Warm	200	55	20	28	38	29	18	10	5	14
	300	83	34	37	42	41	33	28	13	27
	400	110	56	40	44	49	38	32	23	35

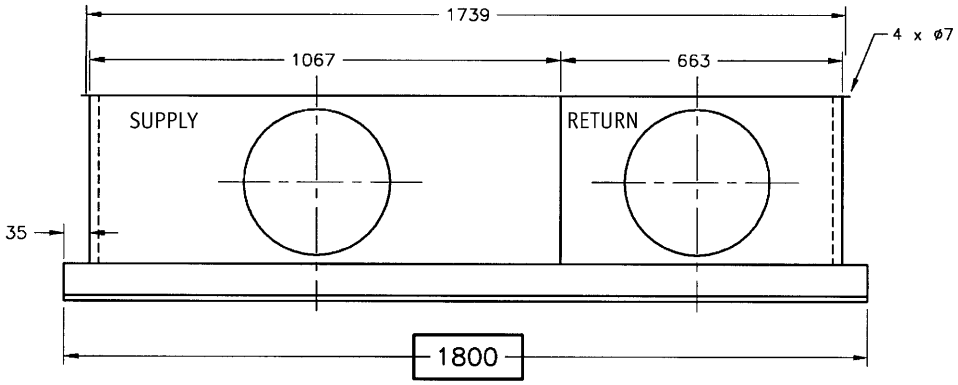
The NR values are based upon a room attenuation of 4 dB for each frequency band.

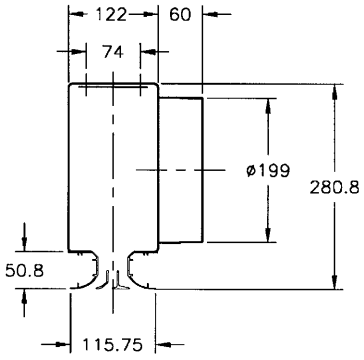




Moduboot supply/return air 3 slot *1800 mm*

All dimensions are in millimetres.

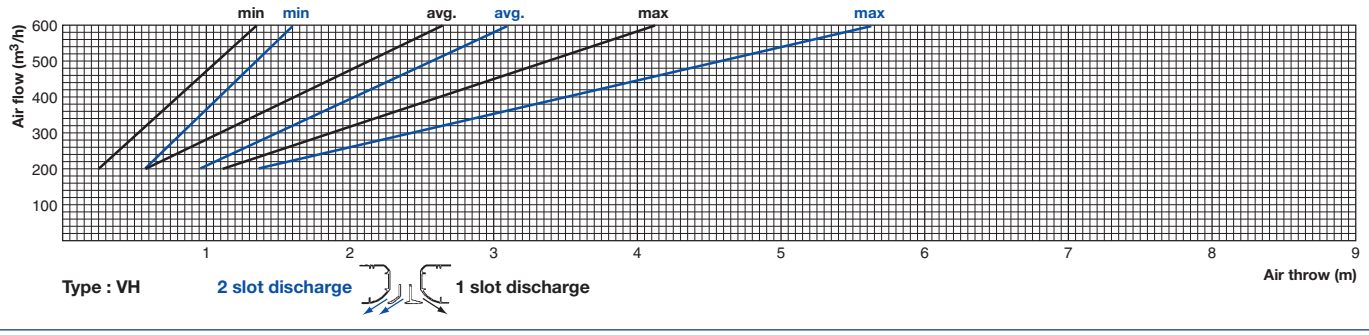


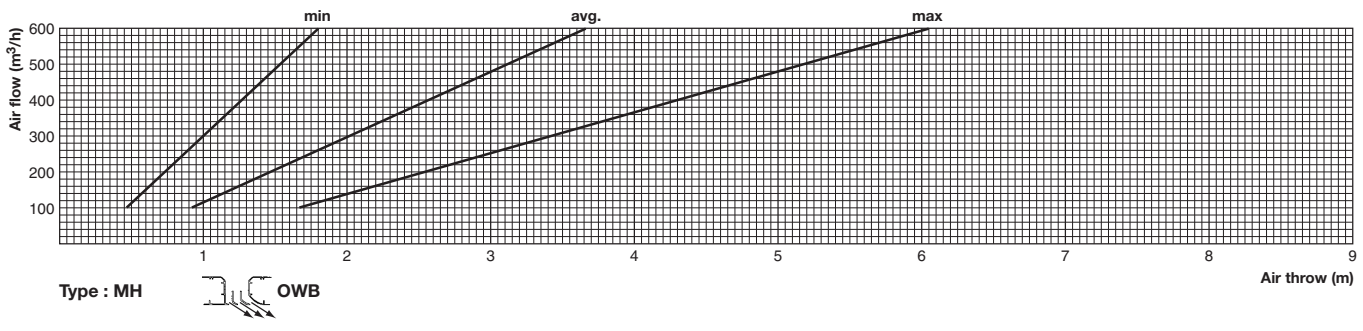


Air inlet Connection / Diffuser			VH	VH	MH	MH
SUPPLY/RETURN	1800	ø199	35SR1800VH13FB	35SR1800VH23FB	35SR1800MH13FB	35SR1800MH23FB
RETURN/SUPPLY	1800	ø199	35SR1800VH43FB	35SR1800VH53FB	35SR1800MH43FB	35SR1800MH53FB

SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
300	83	47	39	45	46	34	23	12	32
400	110	75	43	47	44	44	40	21	36
500	139	115	45	48	50	50	47	45	44

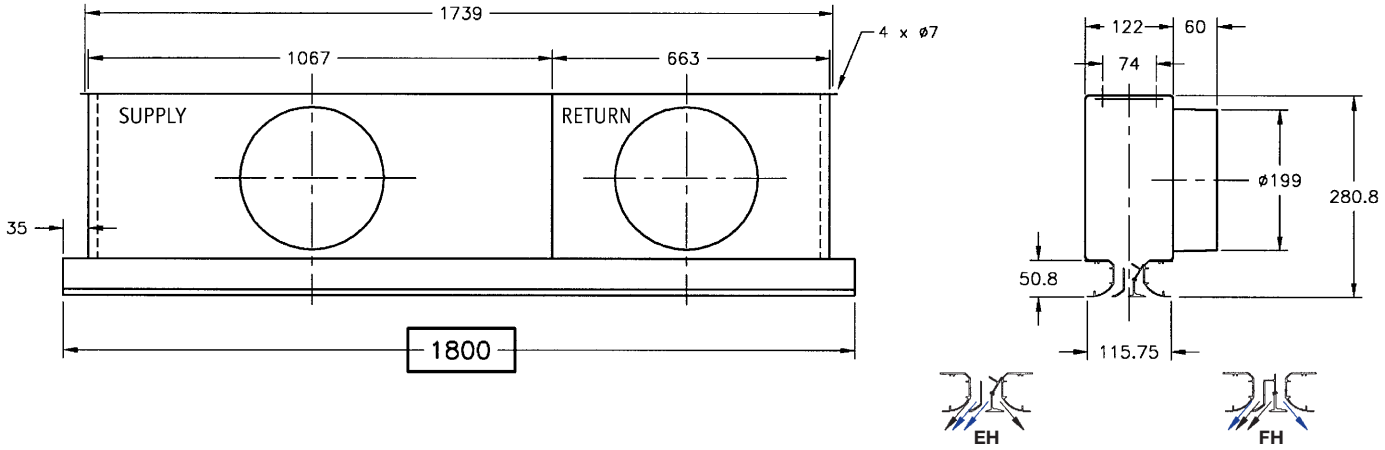
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air Optimix® 3 slot *1800 mm*

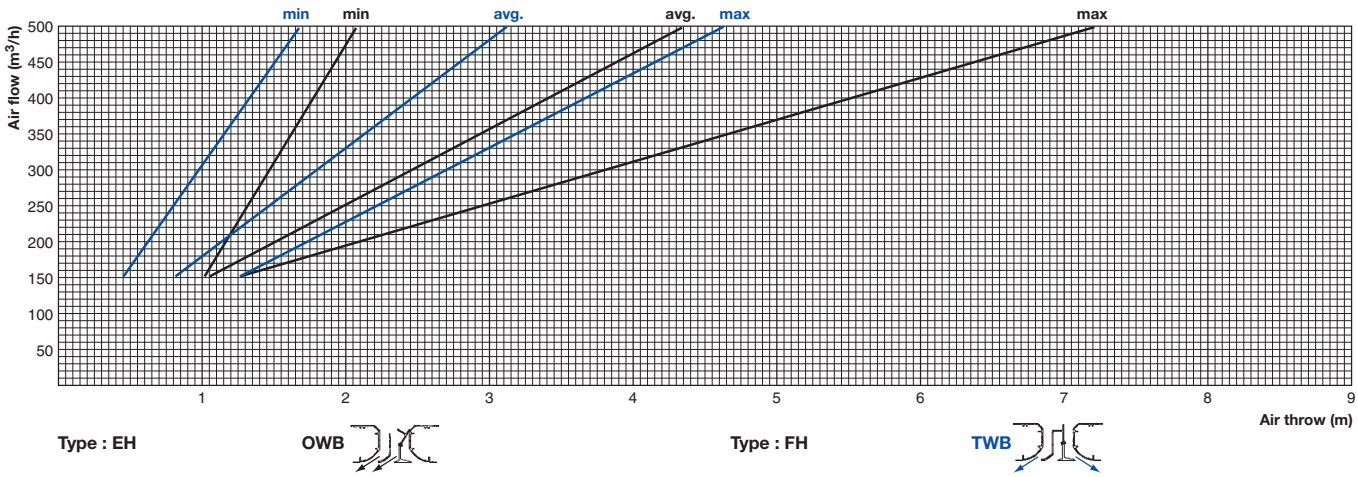
All dimensions are in millimetres.



Air inlet / Connection / Diffuser			EH	EH	FH	FH
SUPPLY/RETURN	1800 mm	ø199	35SR1800EH13FB	35SR1800EH23FB	35SR1800FH13FB	35SR1800FH23FB
RETURN/SUPPLY	1800 mm	ø199	35SR1800EH43FB	35SR1800EH53FB	35SR1800FH43FB	35SR1800FH53FB

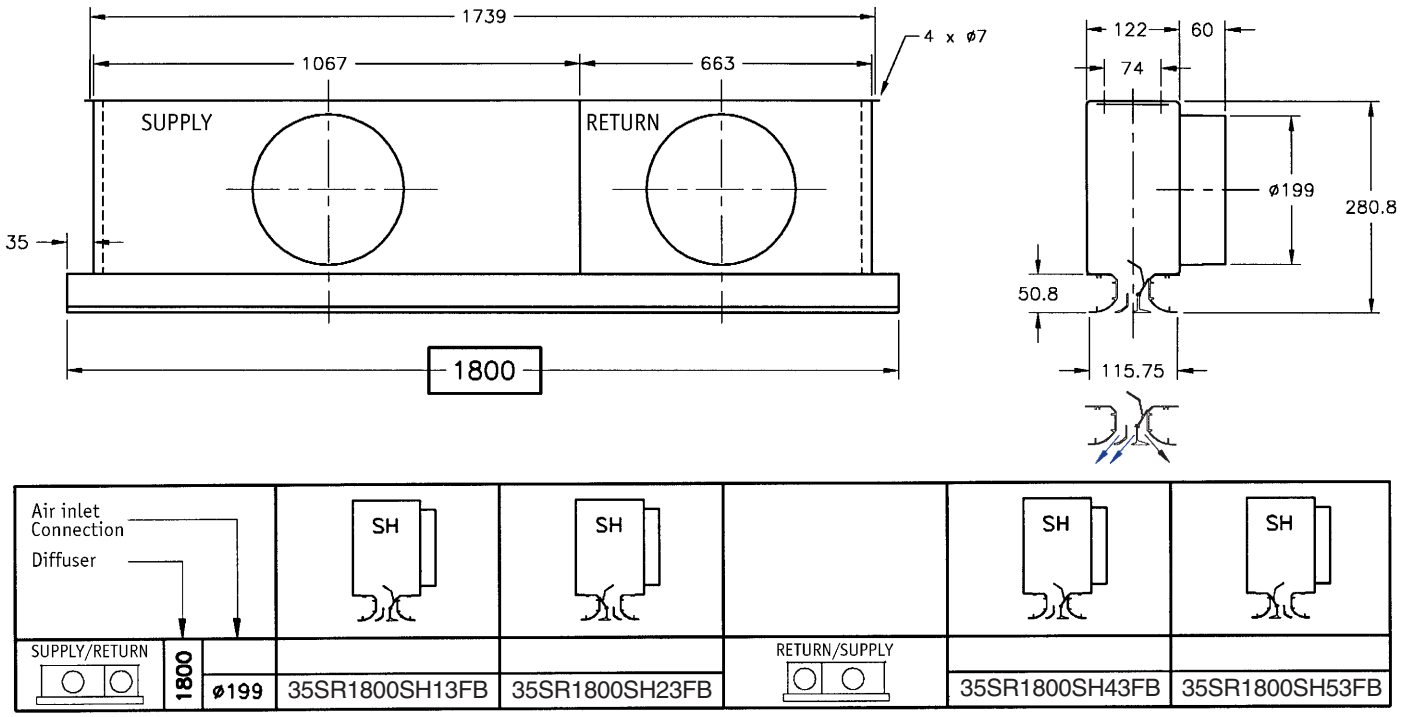
	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	200	55	30	37	43	38	25	13	-	23
	350	97	68	40	48	46	35	25	14	32
	450	125	114	44	49	57	42	33	25	44
Warm	200	55	30	37	43	38	25	13	-	23
	350	97	68	40	48	46	35	25	14	32
	450	125	114	44	49	57	42	33	25	44

The NR values are based upon a room attenuation of 4 dB for each frequency band.



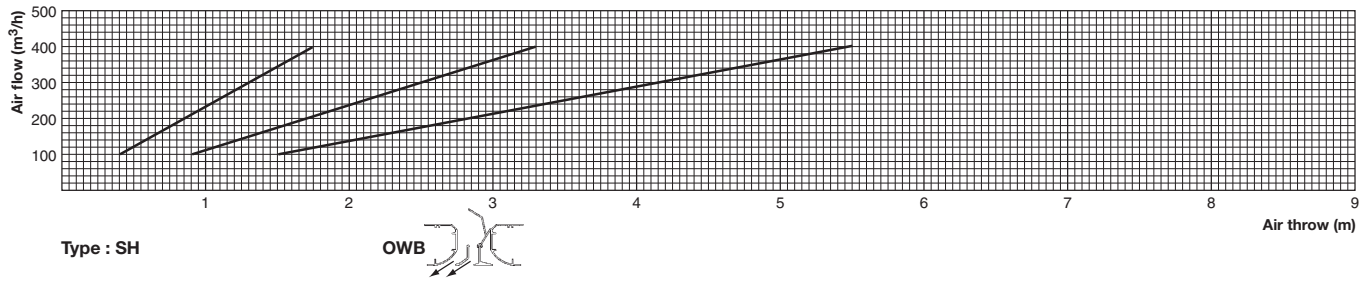
Moduboot supply/return air Optimix® 3 slot *1800 mm*

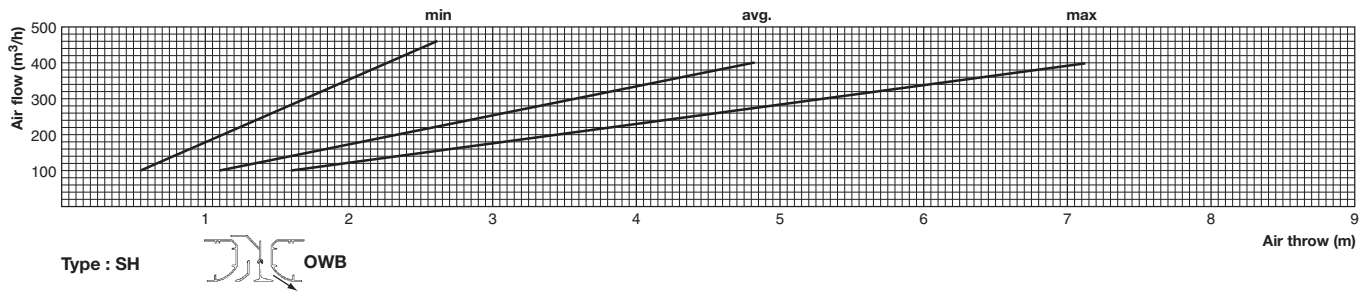
All dimensions are in millimetres.



	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	200	55	30	37	43	38	25	13	5	23
	350	97	71	41	48	46	35	25	14	32
	450	125	109	44	49	57	42	33	25	44
Warm	150	41	23	37	43	37	32	27	20	20
	250	70	72	-	43	48	44	38	30	31
	300	83	99	45	50	58	42	34	27	34

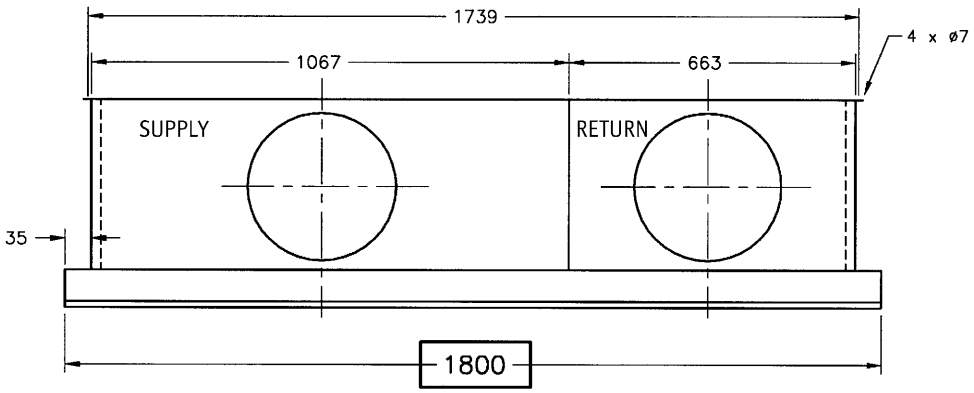
The NR values are based upon a room attenuation of 4 dB for each frequency band.

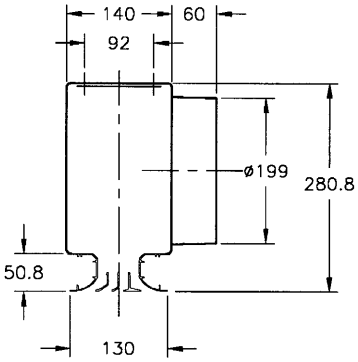




Moduboot supply/return air 4 slot *1800 mm*

All dimensions are in millimetres.

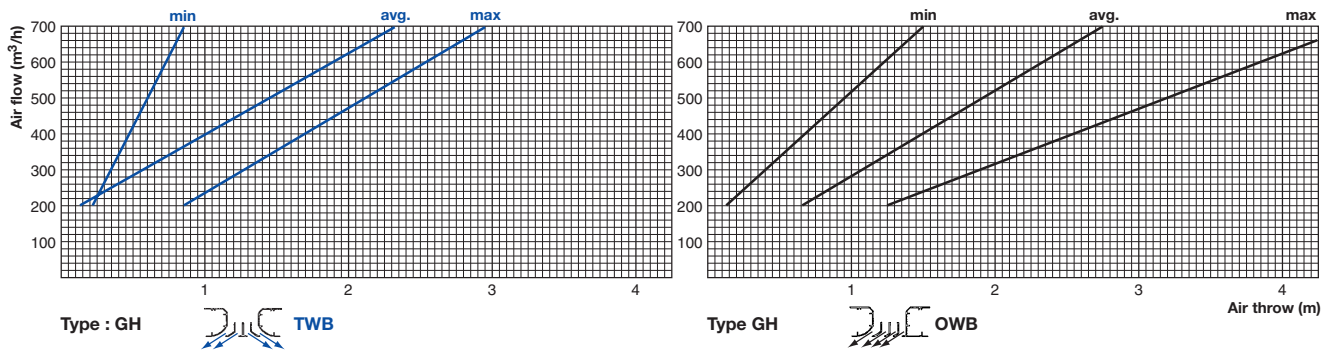




Air inlet Connection / Diffuser			GH	GH	GH
SUPPLY/RETURN	1800	ø199	35SR1800GH03FB	35SR1800GH13FB	35SR1800GH23FB
RETURN/SUPPLY	1800	ø199	35SR1800GH33FB	35SR1800GH43FB	35SR1800GH53FB

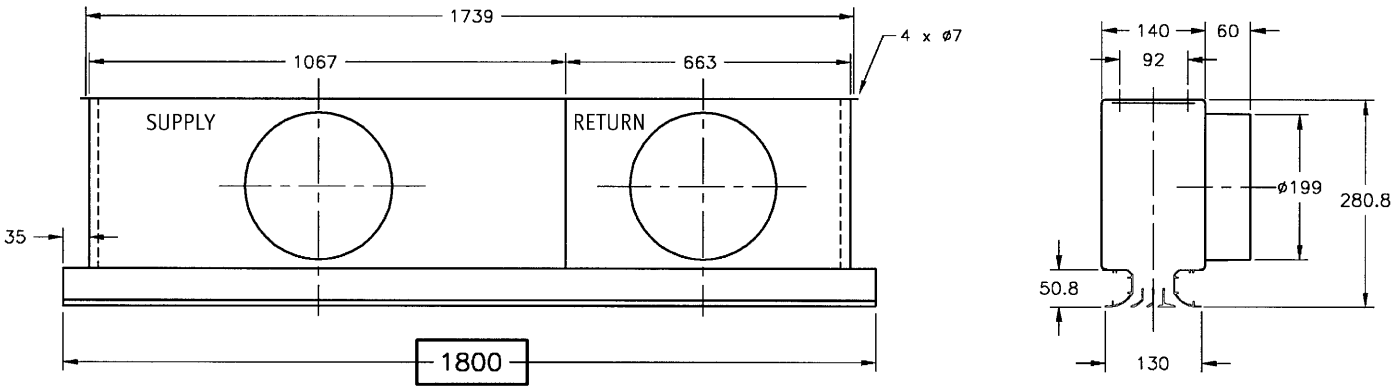
SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
400	110	56	37	42	45	34	23	11	31
500	139	79	40	44	49	38	29	18	35
600	167	112	44	46	53	42	34	24	40

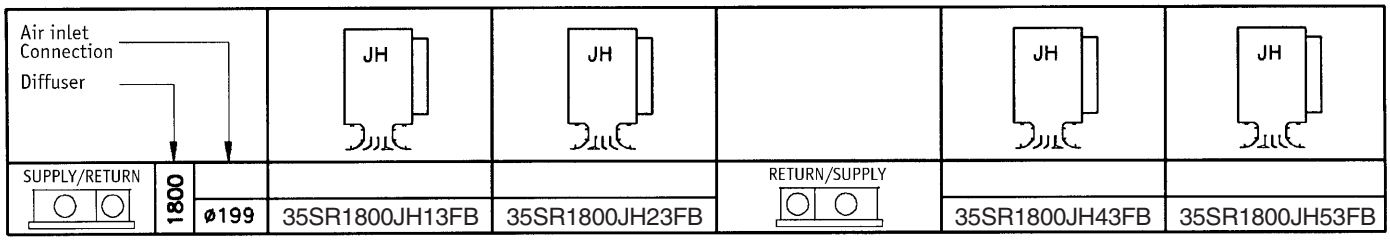
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air 4 slot 1800 mm

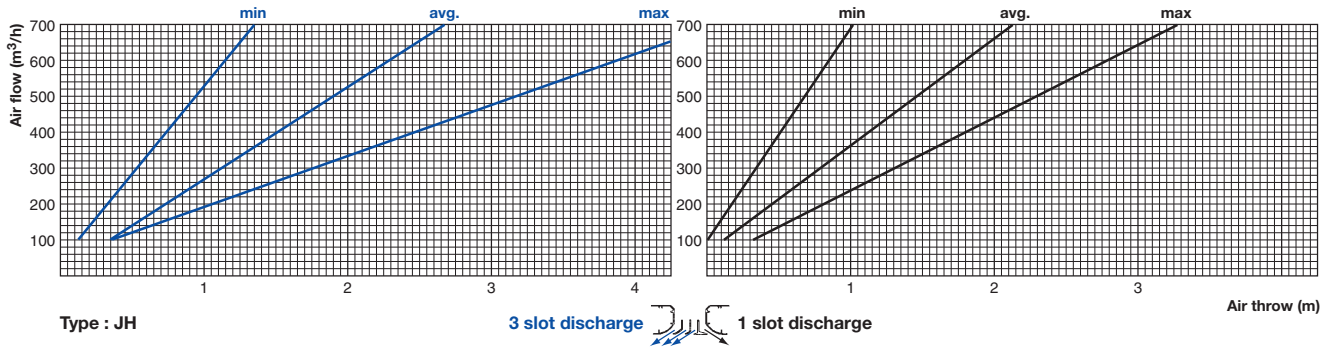
All dimensions are in millimetres.





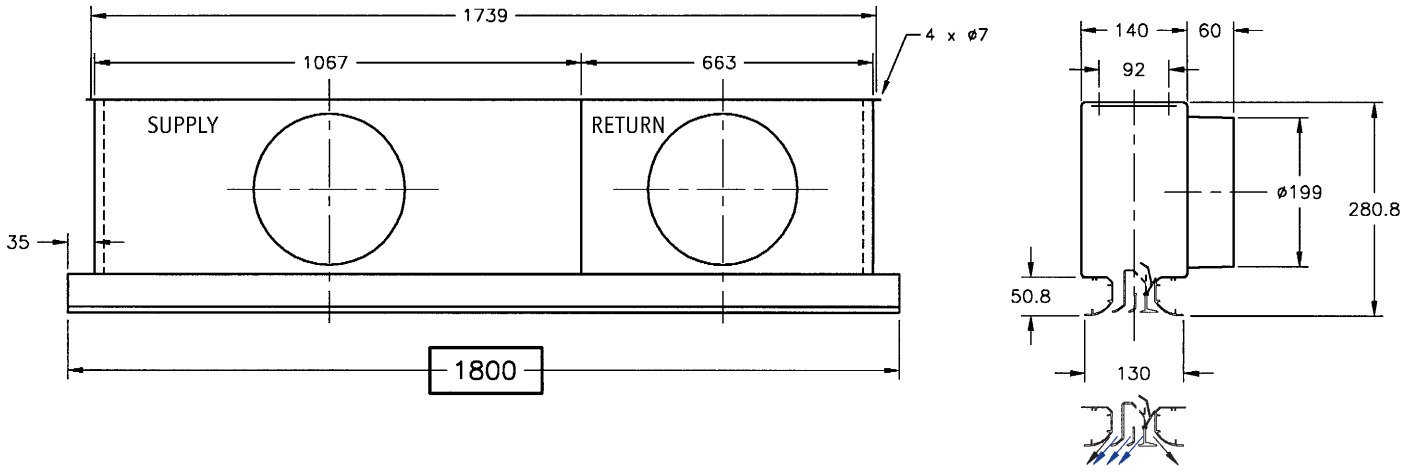
SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
m^3/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
400	110	56	37	42	45	34	23	11	31
500	139	79	40	44	49	38	29	18	35
600	167	112	44	46	53	42	34	24	40

The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air Optimix® 4 slot *1800 mm*

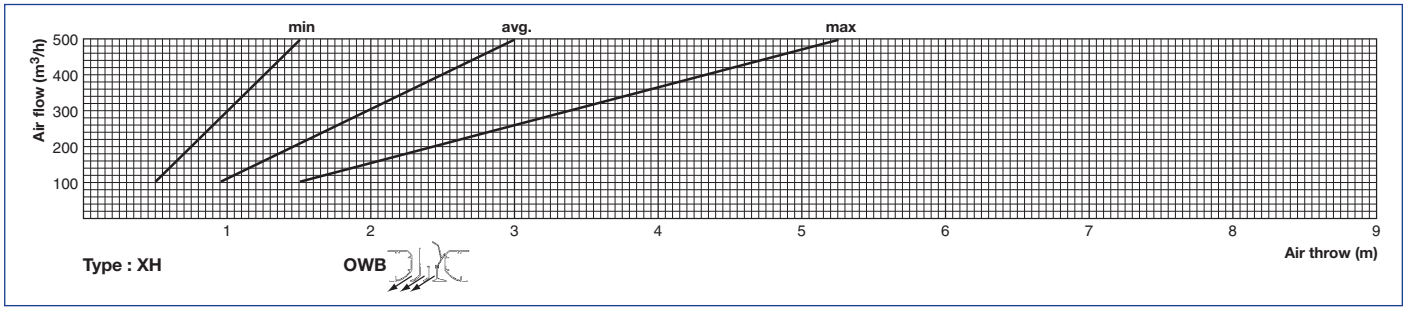
All dimensions are in millimetres.

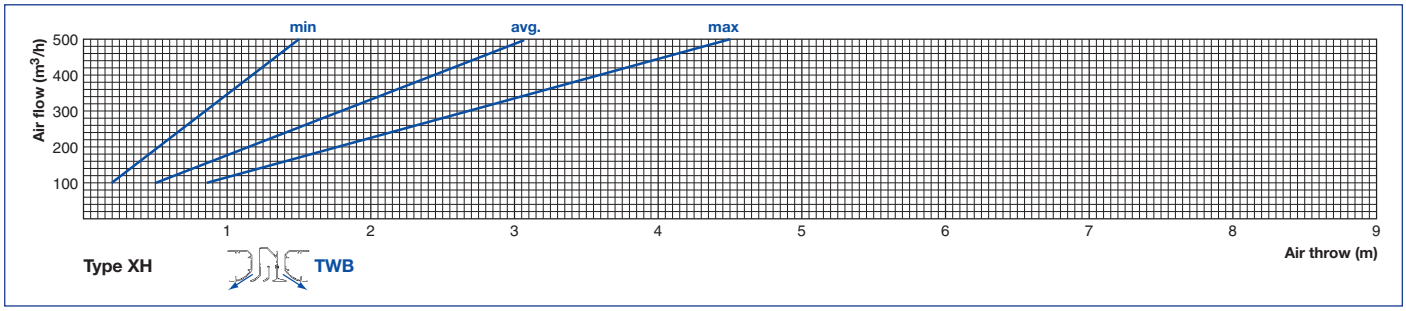


Air inlet Connection / Diffuser			XH	XH
SUPPLY/RETURN	1800 mm	ø199	35SR1800XH13FB	35SR1800XH23FB
RETURN/SUPPLY	1800 mm	ø199	35SR1800XH43FB	35SR1800XH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	300	83	34	35	42	39	28	15	6	25
	400	110	56	39	44	47	36	24	11	33
	500	139	88	42	45	51	40	30	19	37
Warm	200	55	24	34	36	32	21	7	7	17
	300	83	47	40	48	46	35	25	14	32
	400	110	79	44	49	57	42	33	25	44

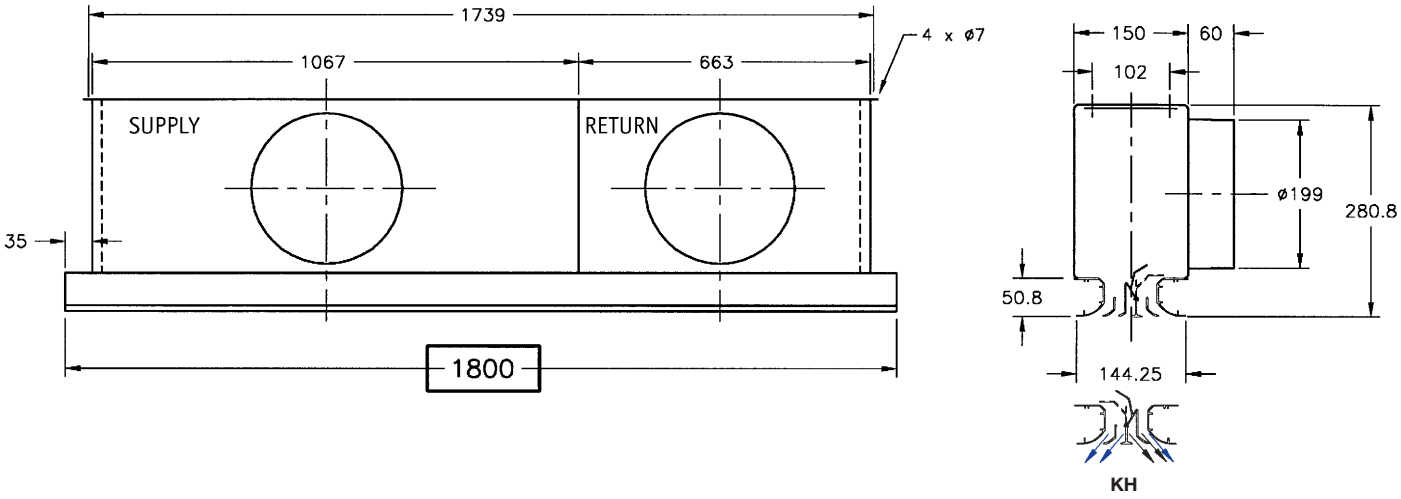
The NR values are based upon a room attenuation of 4 dB for each frequency band.

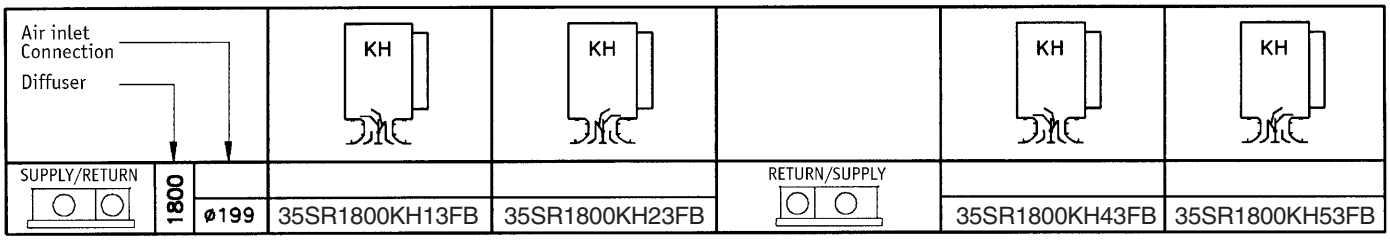




Moduboot supply/return air Optimix® 4 slot *1800 mm*

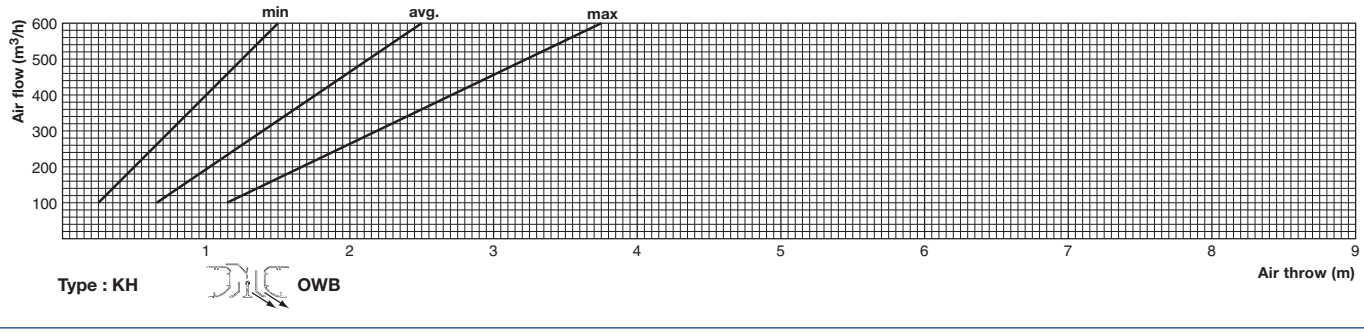
All dimensions are in millimetres.

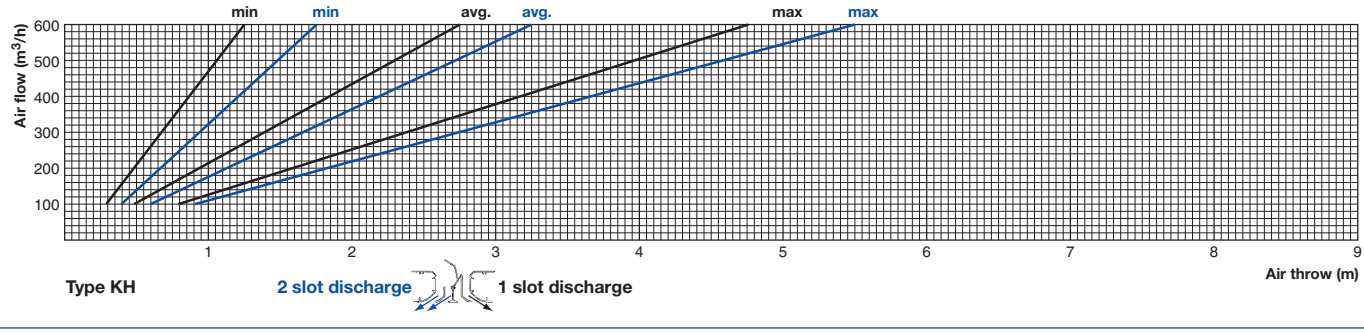




	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	300	83	34	35	42	39	28	15	6	25
	400	110	56	39	44	47	36	24	11	33
	500	139	88	42	45	51	40	30	19	37
Warm	200	55	24	34	36	32	21	17	7	17
	300	83	47	40	48	46	35	25	14	32
	400	110	79	44	49	57	42	33	25	44

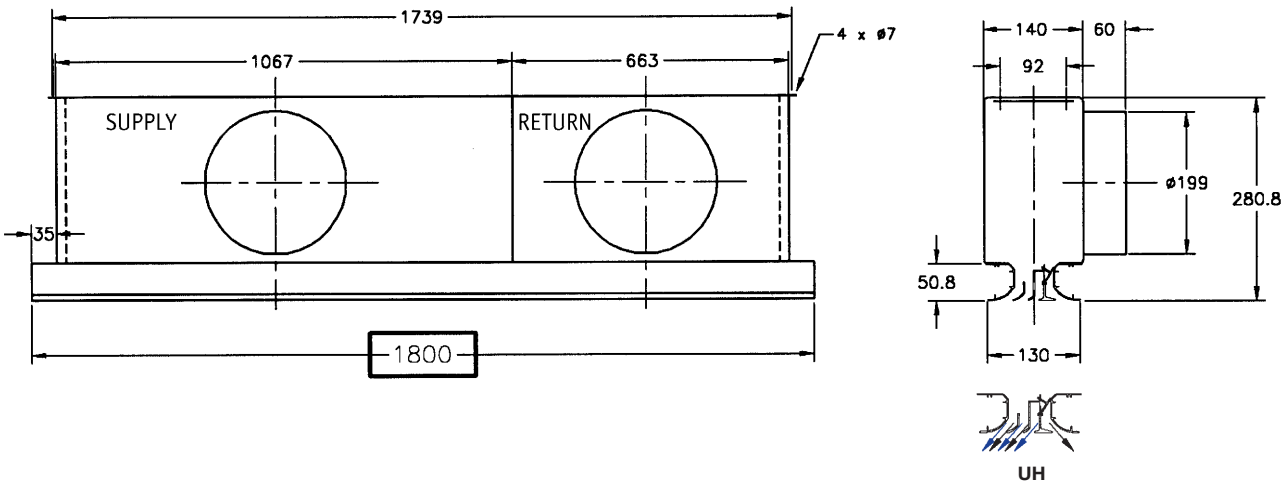
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air Optimix® 4 slot 1800 mm

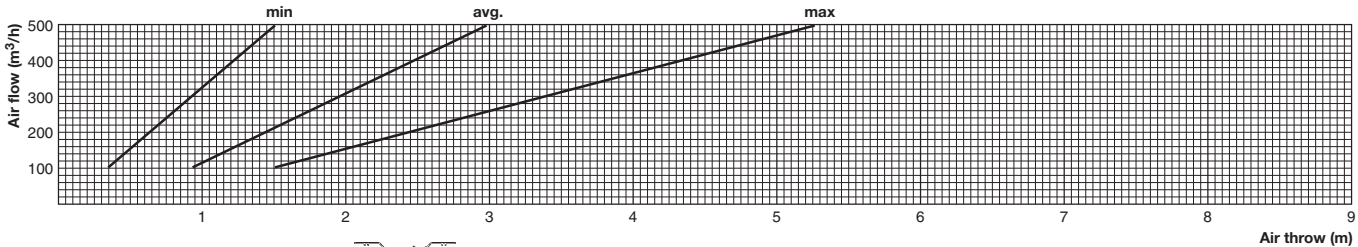
All dimensions are in millimetres.

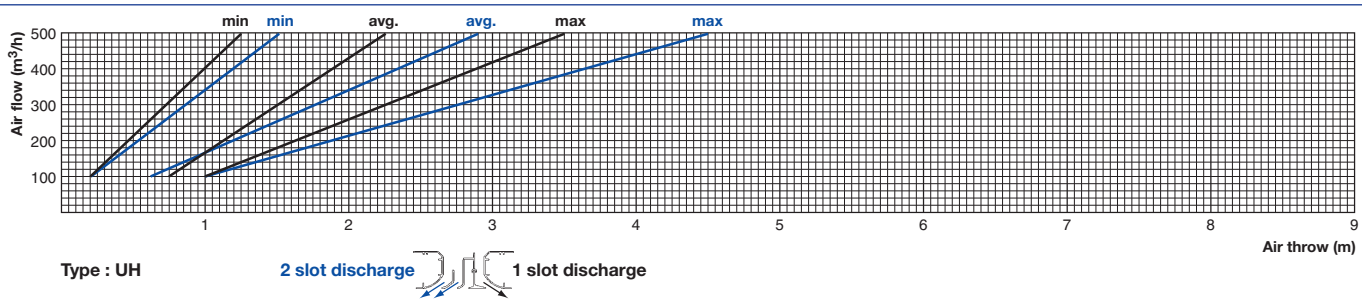


Air inlet Connection / Diffuser			UH	UH
SUPPLY/RETURN	1800 mm	ø199	35SR1800UH13FB	35SR1800UH23FB
RETURN/SUPPLY	1800 mm	ø199	35SR1800UH43FB	35SR1800UH53FB

	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	300	83	34	35	42	39	28	15	6	25
	400	110	56	39	44	47	36	24	11	33
	500	139	88	42	45	51	40	30	19	37
Warm	200	55	24	34	36	32	21	7	7	17
	300	83	47	37	42	40	31	22	17	26
	400	110	79	41	45	48	38	31	22	34

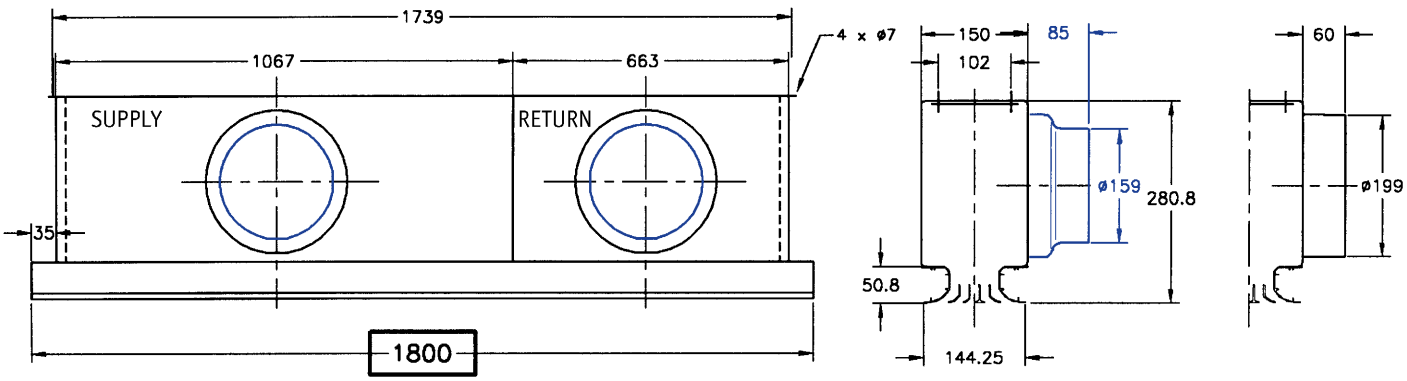
The NR values are based upon a room attenuation of 4 dB for each frequency band.





Moduboot supply/return air 5 slot — 1800 mm

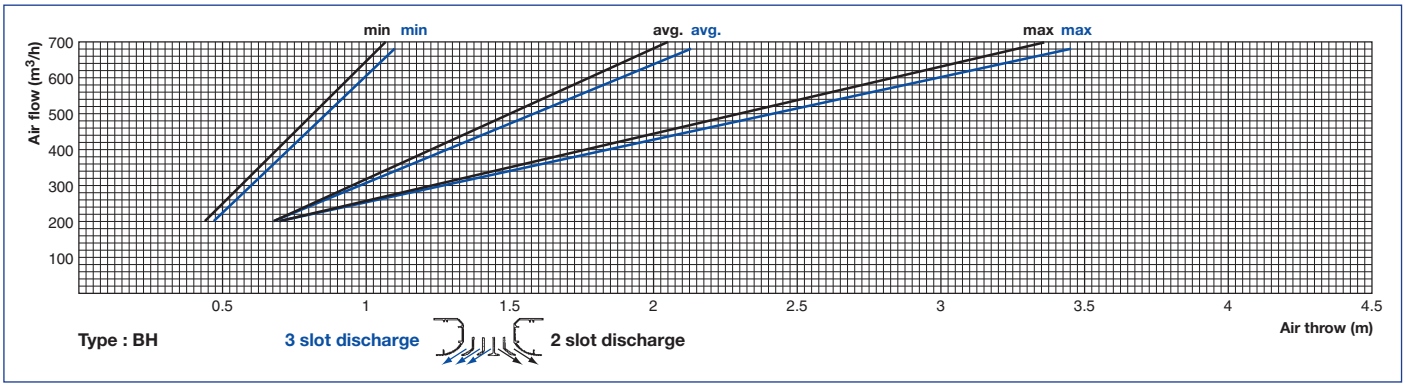
All dimensions are in millimetres.



Air inlet Connection / Diffuser			BH	BH		BH	BH
SUPPLY/RETURN	1800	ø159	35SR1800BH13EB	35SR1800BH23EB	RETURN/SUPPLY	35SR1800BH43EB	35SR1800BH53EB
		ø199	35SR1800BH13FB	35SR1800BH23FB		35SR1800BH43FB	35SR1800BH53FB

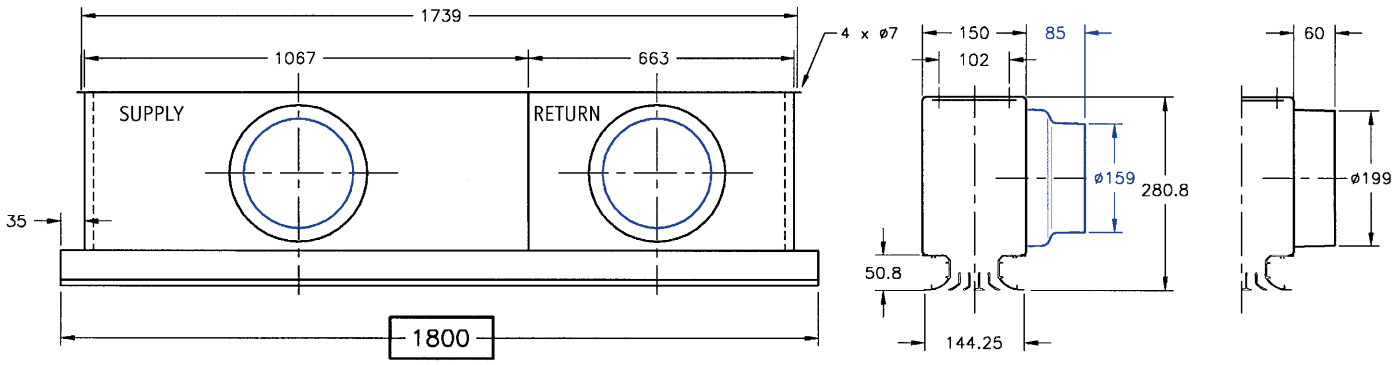
SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)											
m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
500	139	74	55	40	34	44	42	44	43	34	33	24	22	11	10	30	29
600	167	107	80	41	40	47	45	48	47	36	37	27	27	16	16	34	33
700	195	142	109	44	43	48	46	53	52	42	40	33	32	23	22	40	39

The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection.
The NR values are based upon a room attenuation of 4 dB for each frequency band.



Moduboot supply/return air 5 slot 1800 mm

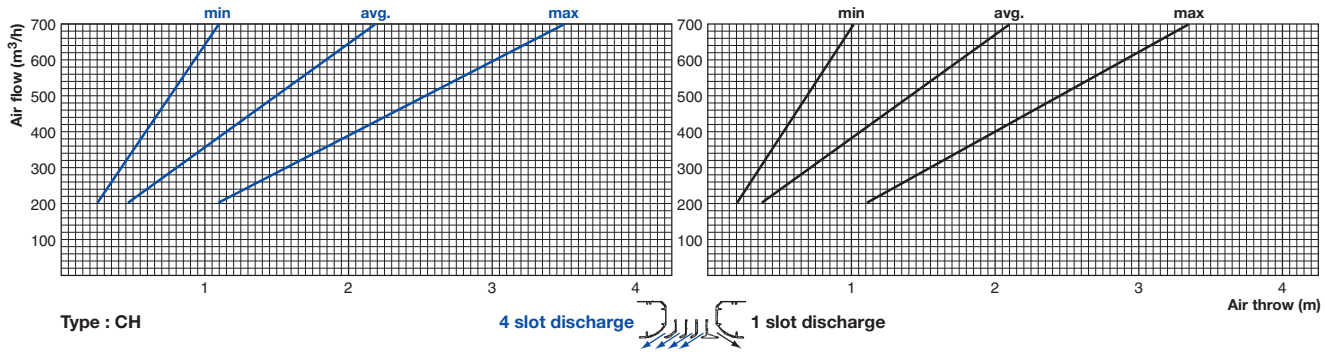
All dimensions are in millimetres.

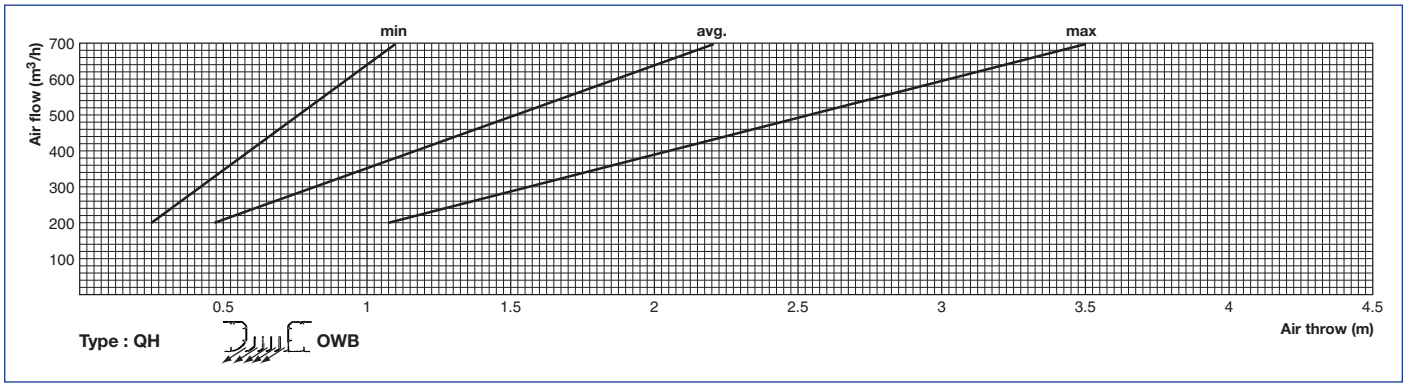


Air inlet Connection / Diffuser			CH	CH	QH	QH
SUPPLY/RETURN	1800	ø159	35SR1800CH13EB	35SR1800CH23EB	35SR1800QH13EB	35SR1800QH23EB
		ø199	35SR1800CH13FB	35SR1800CH23FB	35SR1800QH13FB	35SR1800QH23FB
RETURN/SUPPLY	1800	ø159	35SR1800CH43EB	35SR1800CH53EB	35SR1800QH43EB	35SR1800QH53EB
		ø199	35SR1800CH43FB	35SR1800CH53FB	35SR1800QH43FB	35SR1800QH53FB

SUPPLY Air Flow		Air Pressure Drop (Pa)		Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)											
m³/h	l/s	Ø 159	Ø 199	63		125		250		500		1000		2000		NR	
500	139	74	55	40	34	44	42	44	43	34	33	24	22	11	10	30	29
600	167	107	80	41	40	47	45	48	47	36	37	27	27	16	16	34	33
700	195	142	109	44	43	48	46	53	52	42	40	33	32	23	22	40	39

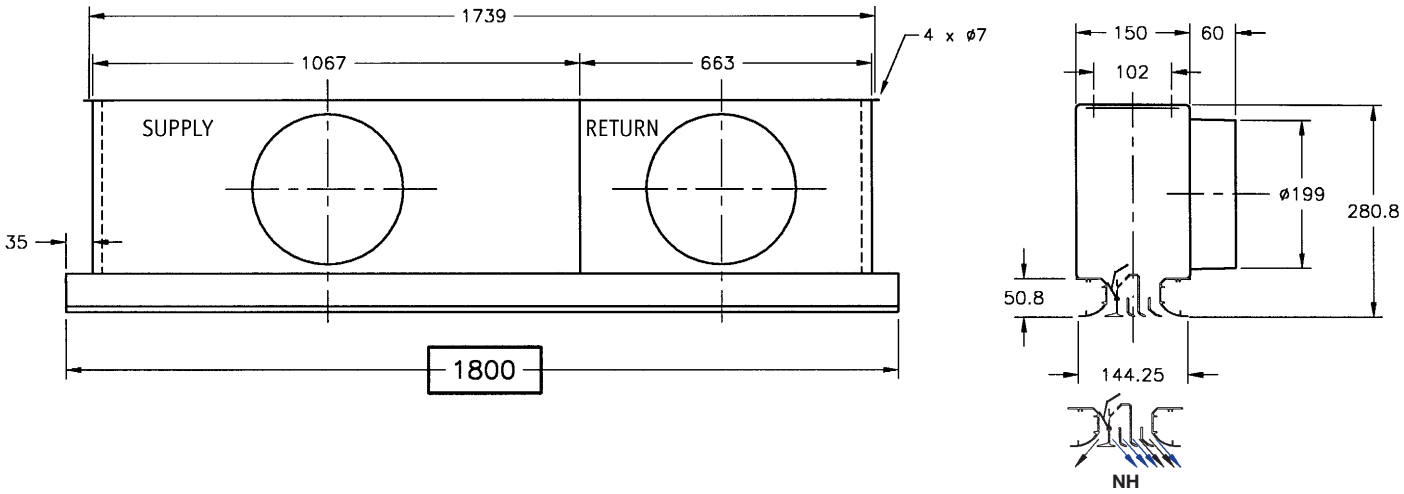
The sound power levels in BLUE are for a Ø 159 mm air inlet connection, and those in BLACK for a Ø 199 mm air inlet connection.
The NR values are based upon a room attenuation of 4 dB for each frequency band.

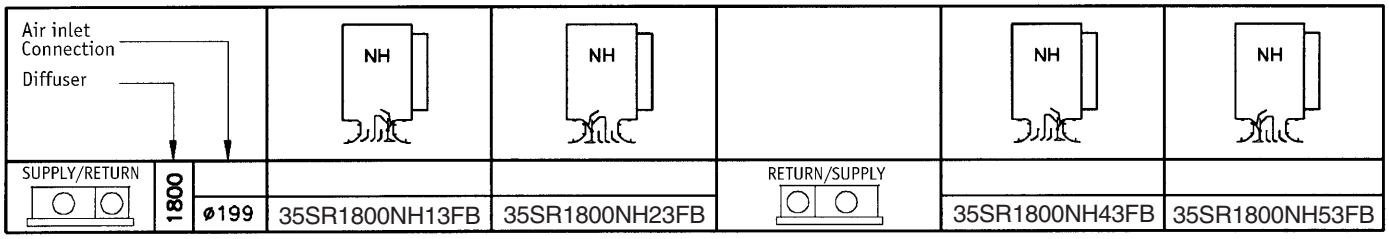




Moduboot supply/return air Optimix® 5 slot *1800 mm*

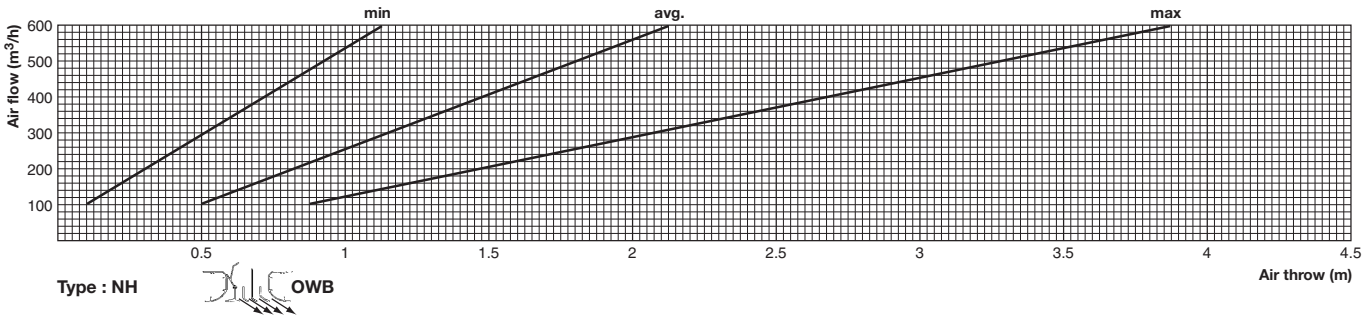
All dimensions are in millimetres.

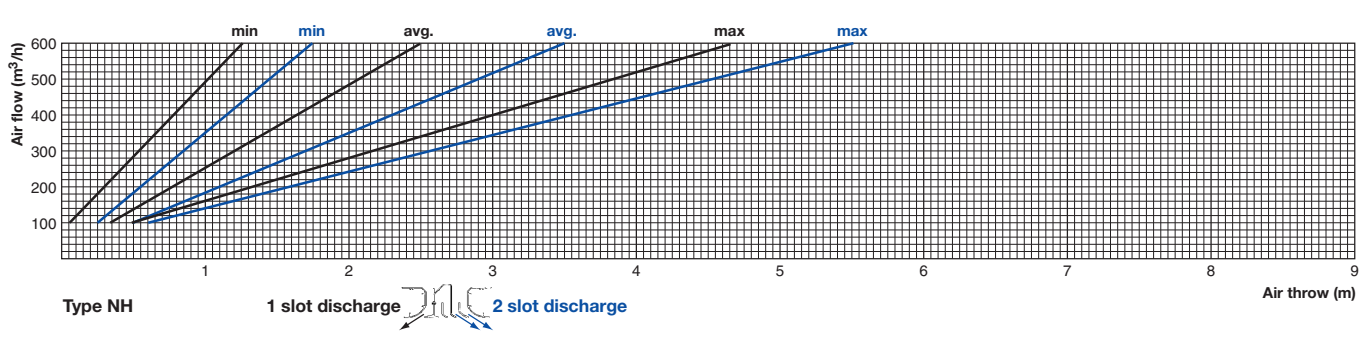




	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	400	110	39	33	41	39	29	18	5	25
	500	139	57	35	44	43	34	24	11	29
	600	167	83	40	47	50	38	30	20	36
Warm	300	83	30	35	42	39	28	15	12	25
	400	110	49	39	44	47	36	24	11	33
	500	139	73	42	45	51	40	30	19	37

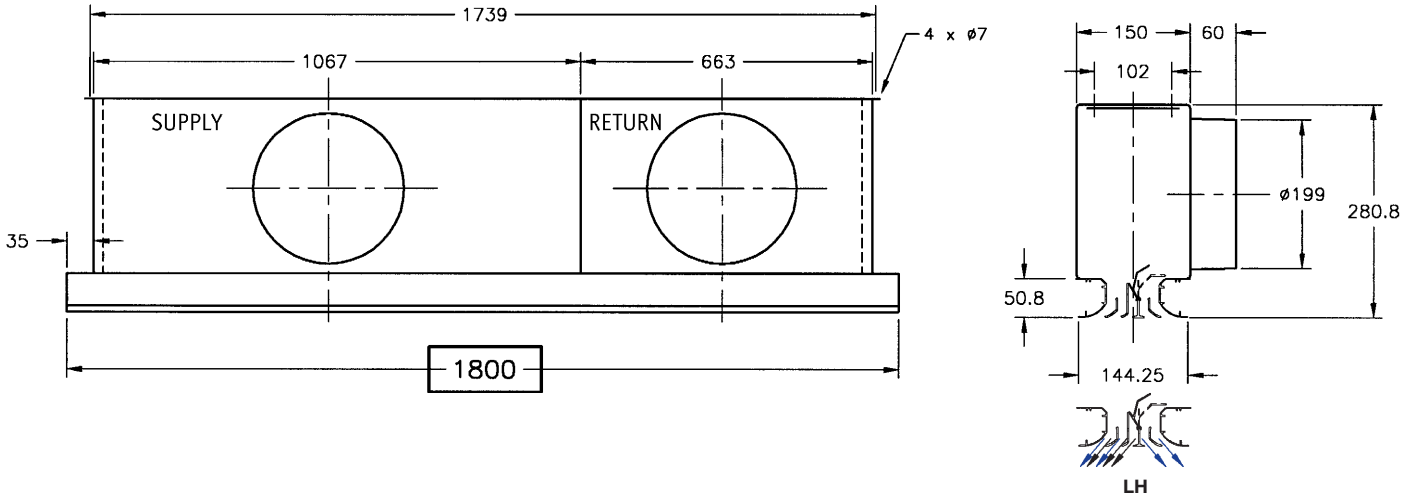
The NR values are based upon a room attenuation of 4 dB for each frequency band.

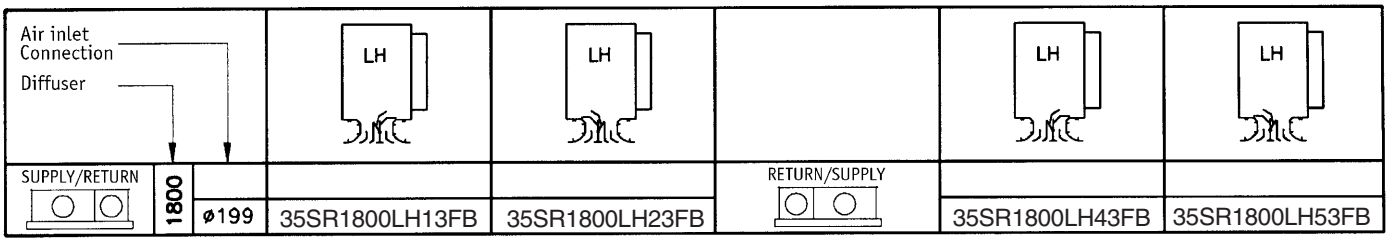




Moduboot supply/return air Optimix® 5 slot *1800 mm*

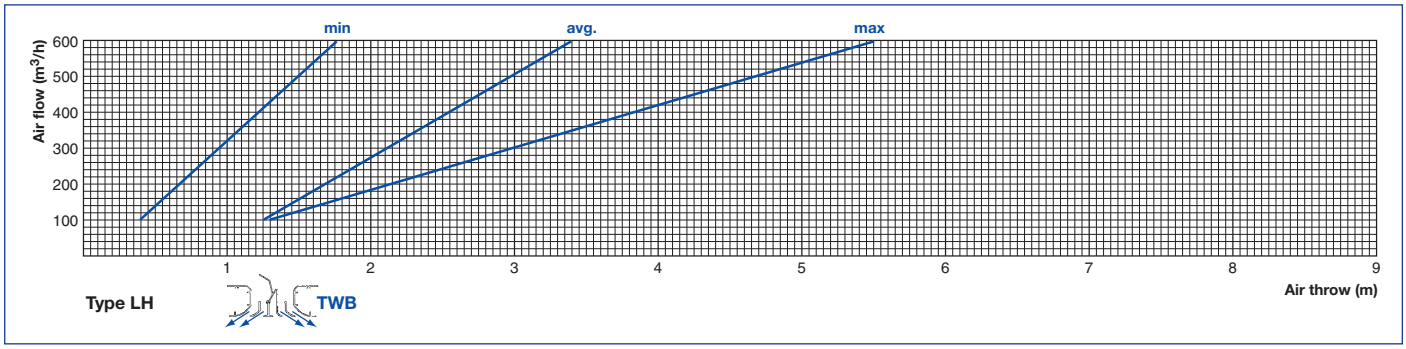
All dimensions are in millimetres.

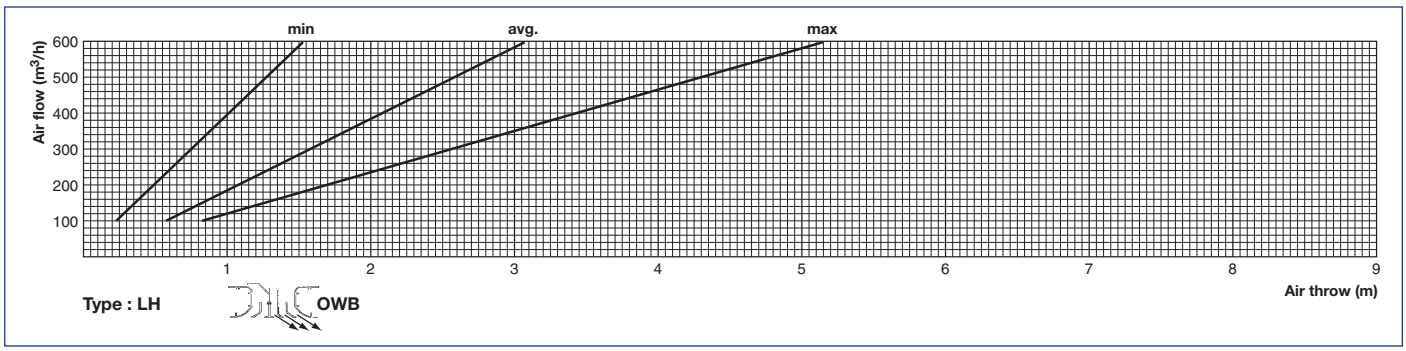




	SUPPLY Air Flow		Air Pressure Drop (Pa)	Sound Power – (dB at 10^{-12} W) Frequency Band – (Hz)						
	m³/h	l/s	Ø 199	63	125	250	500	1000	2000	NR
Cold	400	110	39	33	41	39	29	18	5	25
	500	139	57	35	44	43	34	24	11	29
	600	167	83	40	47	50	38	30	20	36
Warm	300	83	30	35	42	39	28	15	21	25
	400	110	49	39	44	47	36	24	11	33
	500	139	73	42	45	59	40	30	19	37

The NR values are based upon a room attenuation of 4 dB for each frequency band.





9 - ACCESSORIES

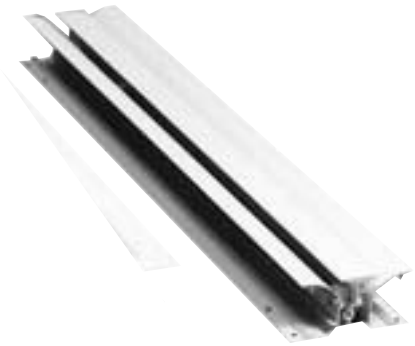
Sufficient accessories should be selected in accordance with the layout drawings in order to allow the installation of the Moduboots in the false ceiling.

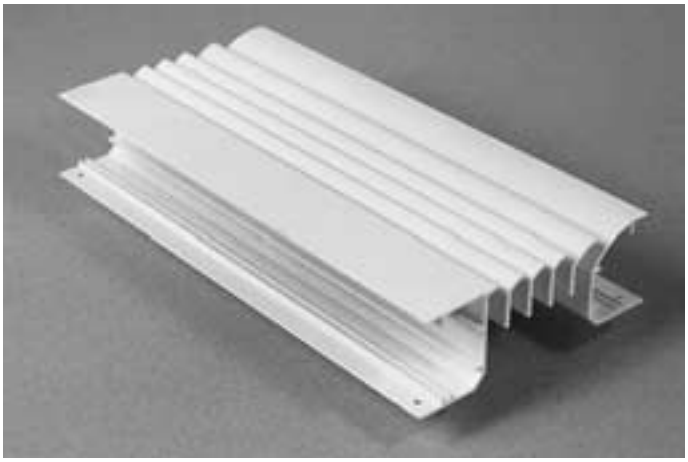
In addition to return air or dummy diffusers, suspension accessories such as T-bar mounting brackets, screw eye hangers and diffuser alignment channels should be supplied in sufficient quantities in order assure a trouble free installation of the Moduboots.

9.1 - Return air diffusers

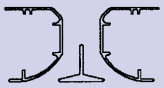
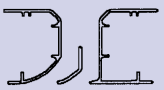
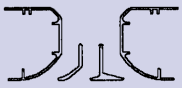
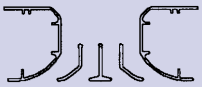
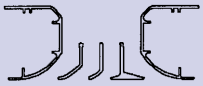
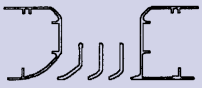
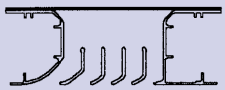
These diffusers have an identical appearance to the Moduboots as installed in the false ceiling (supplied in boxes of 6 lengths).

Remember the mounting accessories.

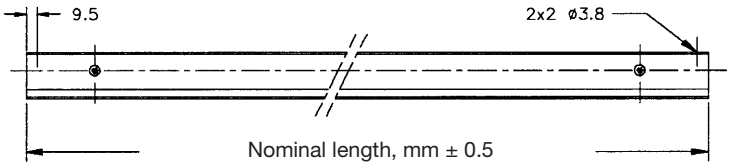




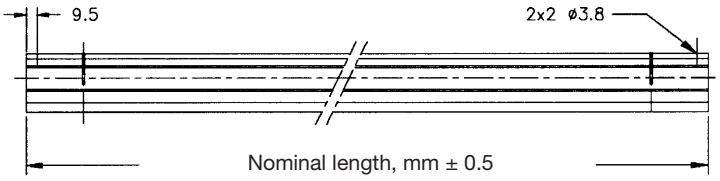
Return air diffusers

	Part N°	Description	Length mm
	37AG900922PA 37AG900822PA 37AG900022PA	Return air diffuser **AG : 2-slot** TWB	600 1200 1500
	37AG900942PA 37AG900902PA 37AG900882PA	Return air diffuser **AG : 2-slot** OWB	600 1200 1500
	35BD0600AHBB6B	Return air diffuser **AH : 2-slot** TWB	600
	35BD1200AHBB6B		1200
	35BD1350AHBB6B		1350
	35BD1500AHBB6B		1500
	35BD1800AHBB6B		1800
	35BD0600AHMB6B	Return air diffuser **AH : 2-slot** OWB	600
	35BD1200AHMB6B		1200
	35BD1350AHMB6B		1350
	35BD1500AHMB6B		1500
	35BD1800AHMB6B		1800
	35BD0600VHBB6B	Return air diffuser **VH : 3-slot** TWB	600
	35BD1200VHBB6B		1200
	35BD1350VHBB6B		1350
	35BD1500VHBB6B		1500
	35BD1800VHBB6B		1800
	35BD0600MHMB6B	Return air diffuser **MH : 3-slot** OWB	600
	35BD1200MHMB6B		1200
	35BD1350MHMB6B		1350
	35BD1500MHMB6B		1500
	35BD1800MHMB6B		1800
	35BD0600GHBB6B	Return air diffuser **GH : 4-slot** TWB	600
	35BD1200GHBB6B		1200
	35BD1350GHBB6B		1350
	35BD1500GHBB6B		1500
	35BD1800GHBB6B		1800
	35BD0600JHBB6B	Return air diffuser **JH : 4-slot** TWB	600
	35BD1200JHBB6B		1200
	35BD1350JHBB6B		1350
	35BD1500JHBB6B		1500
	35BD1800JHBB6B		1800
	35BD0600GHMB6B	Return air diffuser **GH : 4-slot** OWB	600
	35BD1200GHMB6B		1200
	35BD1350GHMB6B		1350
	35BD1500GHMB6B		1500
	35BD1800GHMB6B		1800
	35BD0600BHBB6B	Return air diffuser **BH : 5-slot** TWB	600
	35BD1200BHBB6B		1200
	35BD1350BHBB6B		1350
	35BD1500BHBB6B		1500
	35BD1800BHBB6B		1800
	35BD0600CHBB6B	Return air diffuser **CH : 5-slot** TWB	600
	35BD1200CHBB6B		1200
	35BD1350CHBB6B		1350
	35BD1500CHBB6B		1500
	35BD1800CHMB6B		1800
	35BD0600QHMB6B	Return air diffuser **QH : 5-slot** OWB	600
	35BD1200QHMB6B		1200
	35BD1350QHMB6B		1350
	35BD1500QHMB6B		1500
	35BD1800QHMB6B		1800

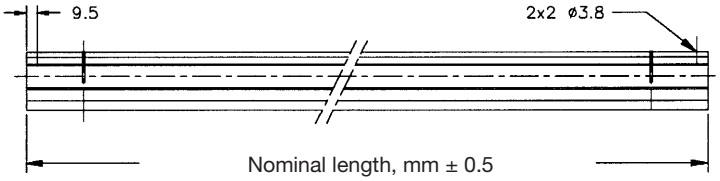
Return air diffuser, AG, 2 slot



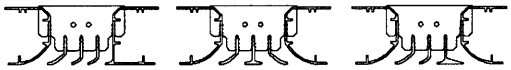
Return air diffuser, AH, 2 slot

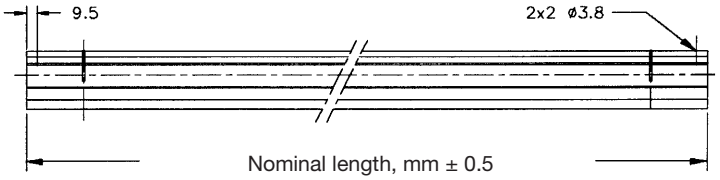


Return air diffuser, MV MH, 3 slot

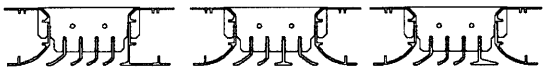


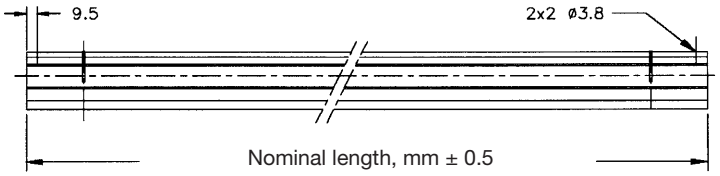
Return air diffuser, GH JH, 4 slot





Return air diffuser, QH BH CH, 5 slot

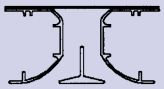
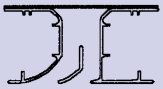
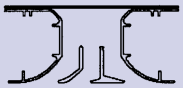
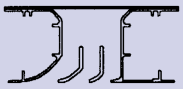
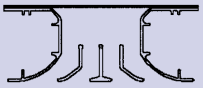
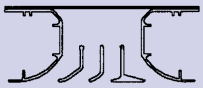
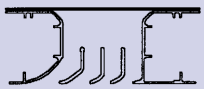
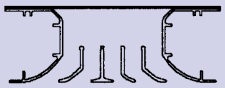
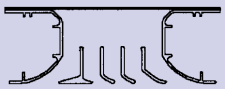
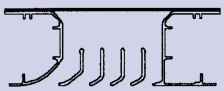




9.2 - Dummy Diffuser

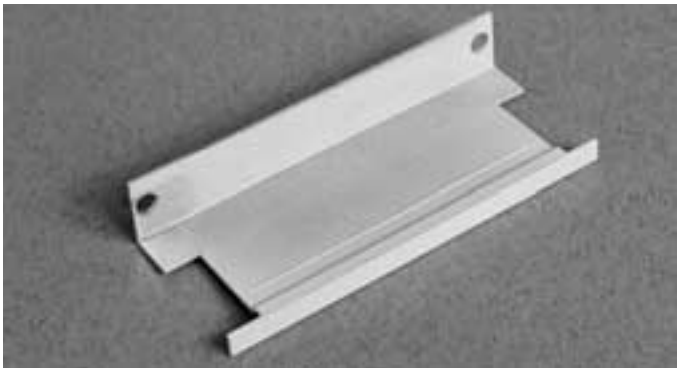
Dummy diffusers are made from return air diffusers, for which the return air path is blanked off using a strip of self adhesive aluminium tape (supplied in boxes of 6 lengths).

Remember the mounting accessories.

	Part N°	Description	Length mm
	37AG901192PA	Dummy diffuser **AG : 2-slot** TWB	600
	37AG901082PA		1200
	37AG901102PA		1500
	37AG901172PA	Dummy diffuser **AG : 2-slot** OWB	600
	37AG901132PA		1200
	37AG901152PA		1500
	35BD0600AHBA6B	Dummy diffuser **AH : 2-slot** TWB	600
	35BD1200AHBA6B		1200
	35BD1350AHBA6B		1350
	35BD1500AHBA6B		1500
	35BD1800AHBA6B		1800
	35BD0600AHMA6B	Dummy diffuser **AH : 2-slot** OWB	600
	35BD1200AHMA6B		1200
	35BD1350AHMA6B		1350
	35BD1500AHMA6B		1500
	35BD1800AHMA6B		1800
	35BD0600VHBA6B	Dummy diffuser **VH : 3-slot** TWB	600
	35BD1200VHBA6B		1200
	35BD1350VHBA6B		1350
	35BD1500VHBA6B		1500
	35BD1800VHBA6B		1800
	35BD0600MHMA6B	Dummy diffuser **MH : 3-slot** OWB	600
	35BD1200MHMA6B		1200
	35BD1350MHMA6B		1350
	35BD1500MHMA6B		1500
	35BD1800MHMA6B		1800
	35BD0600GHBA6B	Dummy diffuser **GH : 4-slot** TWB	600
	35BD1200GHBA6B		1200
	35BD1350GHBA6B		1350
	35BD1500GHBA6B		1500
	35BD1800GHBA6B		1800
	35BD0600JHBA6B	Dummy diffuser **JH : 4-slot** TWB	600
	35BD1200JHBA6B		1200
	35BD1350JHBA6B		1350
	35BD1500JHBA6B		1500
	35BD1800JHBA6B		1800
	35BD0600GHMA6B	Dummy diffuser **GH : 4-slot** OWB	600
	35BD1200GHMA6B		1200
	35BD1350GHMA6B		1350
	35BD1500GHMA6B		1500
	35BD1800GHMA6B		1800
	35BD0600BHBA6B	Dummy diffuser **BH : 5-slot** TWB	600
	35BD1200BHBA6B		1200
	35BD1350BHBA6B		1350
	35BD1500BHBA6B		1500
	35BD1800BHBA6B		1800
	35BD0600CHBA6B	Dummy diffuser **CH : 5-slot** TWB	600
	35BD1200CHBA6B		1200
	35BD1350CHBA6B		1350
	35BD1500CHBA6B		1500
	35BD1800CHBA6B		1800
	35BD0600QHMA6B	Dummy diffuser **QH : 5-slot** OWB	600
	35BD1200QHMA6B		1200
	35BD1350QHMA6B		1350
	35BD1500QHMA6B		1500
	35BD1800QHMA6B		1800

9.3 - Installation accessories

9.3.1 - Diffuser end trim strips



The 24 mm painted diffuser end trim strips provide a neat finish to the diffuser ends for non-continuous diffuser or plaster ceiling installations (other trim strip dimensions are available, contact your Carrier representative for details).

The diffuser end trims are made from extruded aluminium and finished in white (RAL 9010, 30 % gloss factor), and may be factory fitted: (see ordering codes) or supplied loose. When supplied separately the mounting screws are also supplied.

Diffuser type	End trim reference		
	Pack of 2	Pack of 10	Pack of 50
AG 2-slot	35BD931272MA	35BD931282MA	35BD931292MA
AH 2-slot	35BD931152MA	35BD931162MA	35BD931172MA
3-slot	35BD931182MA	35BD931192MA	35BD931202MA
4-slot	35BD931212MA	35BD931222MA	35BD931232MA
5-slot	35BD931242MA	35BD931252MA	35BD931262MA

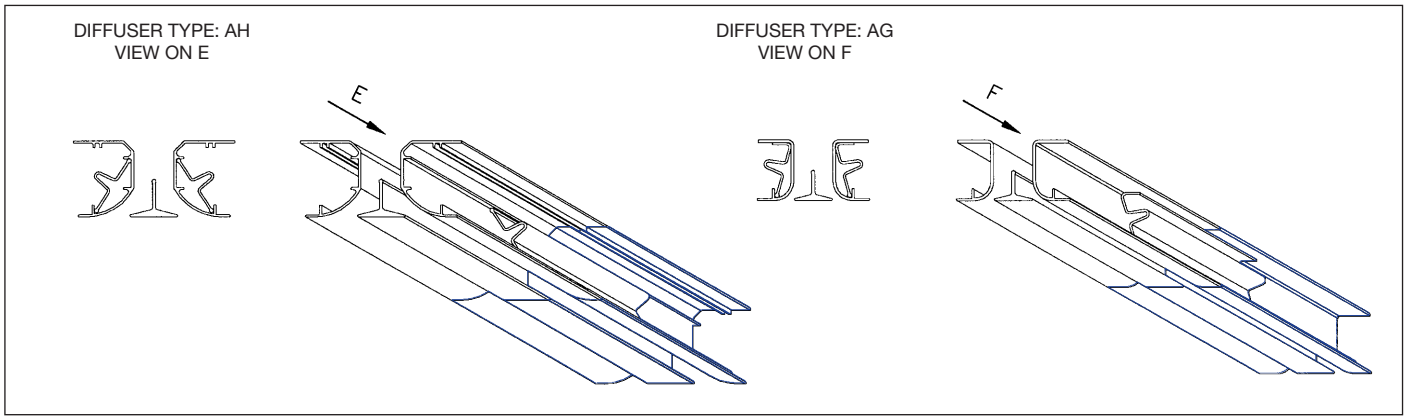
9.3.2- Diffuser alignment channels

Diffuser alignment channels are used to align adjacent Moduboot, return air and dummy diffusers arranged in continuous slot layout.

The channels slide onto the ends of each diffuser to assure both vertical and horizontal alignment. Two alignment channels are required for each joint (length 85 mm).

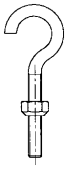
NOTE:
The diffuser alignment channels are designed for use with standard length diffusers (600, 1200, 1350, 1500, 1800 mm). For special diffusers of different lengths, these channels may be too long (contact your Carrier representative). The channels may be cut on site using an appropriate aluminium cutting saw.

Diffuser type	Diffuser alignment channel reference		
	Pack of 2	Pack of 10	Pack of 50
AG Type	35BD931452MA	35BD931462MA	35BD931472MA
All diffuser types except AG	35BD931002MA	35BD931012MA	35BD931022MA



Installation of diffuser alignment channels

9.3.3 - Mounting bracket

	Reference	Description	Diffuser type	Utilisation
	37AE900642C 37AH900012C 35BD900032M 35BD910292M 35BD910302M	T-bar mounting bracket pack of 24 T-bar mounting bracket pack of 24	AG 2 slot AH 2 slot 3 slot 4 slot 5 slot	Used to support Moduboots, dummy and return air diffusers from a 24 mm T-bar ceiling structure. The support slides into the diffuser end. ***Note: These supports should only be used with Moduboots with standard diffuser lengths. Contact your Carrier representative for non standard diffuser length applications.***
	35BD931352M 35BD931342M 35BD931332M	Hanger angle support bracket Pack of 50 Pack of 10 Pack of 50	Return air and dummy diffuser	Used to mount return air and dummy diffusers in a flat suspended ceiling. If the return air or dummy diffuser is located between two Moduboots to form a continuous layout then the return air or dummy diffuser may be supported using diffuser alignment channels.
	37AF 900 512 M	Hanger eye bolts (pack of 100)	All	Used for suspending all units (4 required per unit)

10 - SPECIAL APPLICATIONS

10.1 - Diffuser length

450 to 2400 mm

10.2 - Diffuser finish

- Special paint finishes in accordance with RAL paint shades or matches
- Special finishes, wood or stone effect
- Anodised aluminium finish, natural, champagne or bronze

NOTE:
Special diffusers are subject to feasibility and quantity. Please contact your Carrier representative.

RAL colour range diffuser

Diffuser with wood effect finish

Gold diffuser

10.3 - Plenum

The plenum dimensions: (height/length) have been designed taking into account the false ceiling void limiations and architectural constraints.

The inlet connection spigot size varies with each unit and may be provided with a balancing damper.

10.4 - Active diffuser length

When the unit maximum supply air flow of “standard” units exceeds the performance required (air throw, sound level), the active length can be modified to the length required, the performance being proportional the active length.

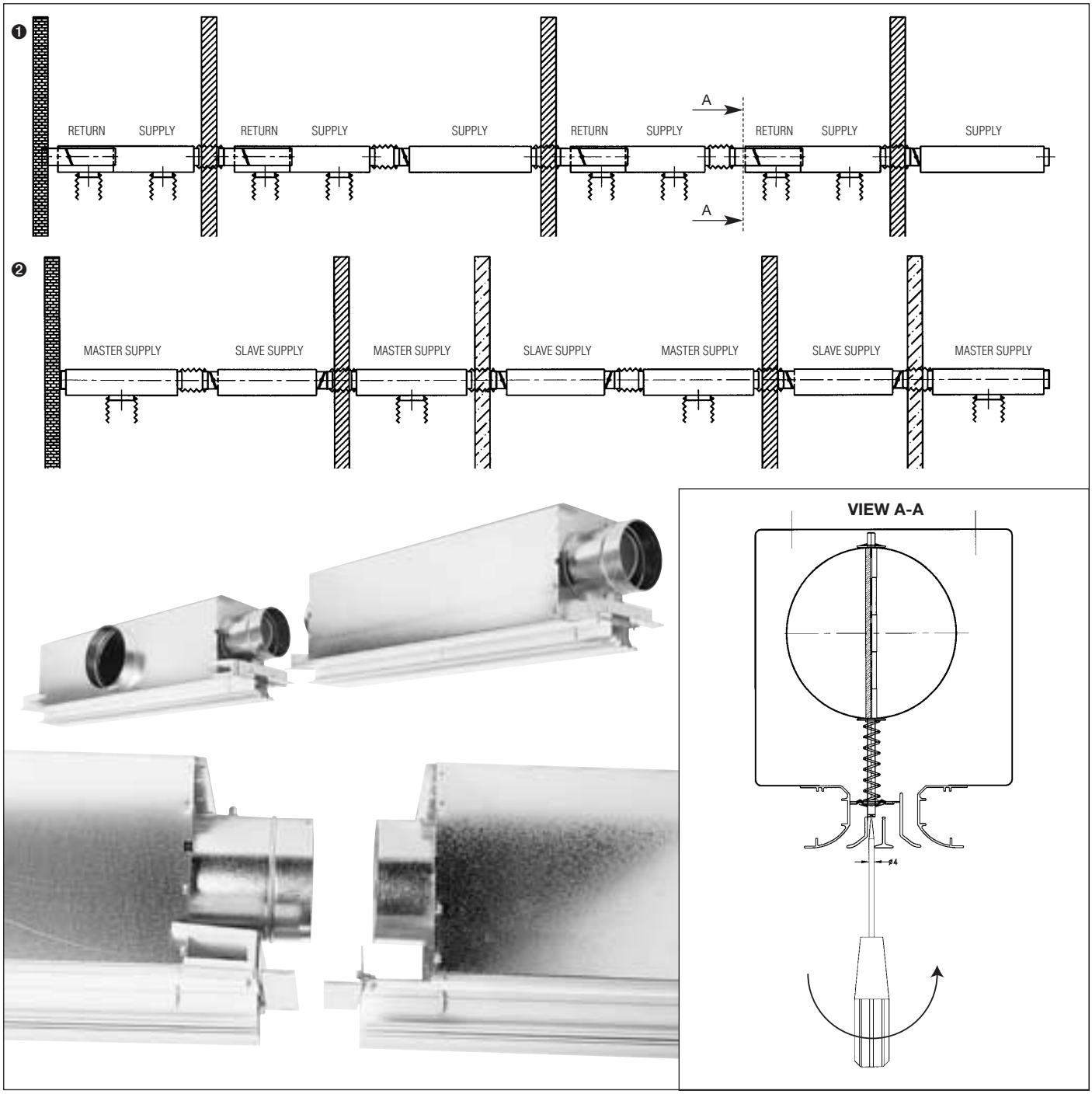
NOTE:
Unless otherwise stated, all these special applications have the same air throw, sound levels and air flow rates as standard units.

10.5 - Master/Slave arrangement

With special units, Carrier can provide the possibility of connecting Moduboots in series in order to allow for future partitioning.

The diffusers form a common line made up of either of a continuous run of supply/return diffusers (Fig.1 - ❶), or of a line of supply only units, the return air being by other means (Fig.1 - ❷)

In the master/slave configuration the boot diffusers are supplied with plenum end spigot connections fitted with isolating dampers. These allow different duct connection arrangements to be accommodated as a function of the partitioning layouts. Perforated sheet balancing plates incorporated into the plenum design ensure uniform air distribution for the master and slave diffusers.



11 - GUIDE SPECIFICATIONS

Supply and install

The Moduboot diffusers shall be selected in accordance with the required performance and architectural constraints (false ceiling type, appearance, etc...)

Based on the information shown on the drawings, sufficient accessories shall be supplied, to allow the base units to function properly. Additionally return air diffuser, dummy diffuser and diffuser end trim pieces shall be supplied as necessary. The accessories such as T-bar mounting brackets, hanger eye bolts and diffuser alignment channels shall be supplied in sufficient quantities to provide a complete installation.

Moduboot Plenum

Plenums shall be made from 6/10 mm galvanised sheet steel and internally lined with 13 mm medium density fibre wool (minimum 24 kg/m^3) which is protected with a neoprene skin to avoid any risk of erosion. This fibre wool provides both thermal and acoustical insulation.

Air Diffuser

The diffusers shall linear type with high induction rates. Diffusers shall be of extruded aluminium with a white oven baked epoxy paint finish (RAL 9010, 30% gloss factor) in accordance with the QUALICOAT standard.

Painted diffusers shall be protected by a pealable adhesive strip, to be removed after installation.

The high induction rate diffusers shall operate from 100 to 15 % of nominal air flow in both cooling and heating modes (for temperature differences of up to 14 K) without loss of air flow performance. This performance data shall be based upon laboratory tests and published catalogue data. For conditioned spaces of up to 3 m in height, the diffuser shall maintain the requested temperature to ± 1 K in the occupied zone, whilst maintaining the air velocity distribution below the values recommended by the main comfort standards in effect.

Carrier

Order No.: 13502-20, 03.2005 - Supersedes order No.: 13502-20, 02.2004.
Manufacturer reserves the right to change any product specification without notice.

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