



Kobane Metal Limited

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To: ISHAK AKAN

57 LONDON ROAD

CONTRACTORS: Kobane Metal Limited

- **Scope of the work**

**We have considered and confirmed the following factors
for our fan for kitchen extract and ventilation
Systems;**

- Guidance on the Control of Odor and Noise from Commercial Kitchen Exhaust Systems by DEFRA January 2005.
- All works to be in accordance with the Ventilation Contractors Association (HVCA) guidance DWI72-Specification for Kitchen Ventilation System

The work's that are to be carried out are to corporate a new Stainless-Steel Kitchen Extract Canopy and Galvanized Steel Ventilation System to provide a minimum of 0.35 M/S velocity across the face of the

canopy or 40 Air Changes per hour, whichever is the greater.

The Specification

1. Canopy:

To be wall mounted unit with face mounted extracts to cater with the following emissions:

- * Smoke
- * Expanded air from the heat load surrounding the cooking device
- * Precipitation of moistures existing in the food into vapours state, primarily consisting of steam, grease and cooking odors.
- * Exhaust fumes from combustion appliances such as gas or charcoal.

Canopy is to be manufactured from type 304 stainless Steel with a thickness of 1.2 mm and dimensions are 8000mm Length front wall mounted canopy with filter banks running along the back edge, all corners are fully welded with drain taps fitted to the back-drain channel for cleaning purposes.

The canopy is to be of a formed and welded construction complete with: Heat and steam resistant Fluorescent Lights mounted in white powder coated box with Styropolyte Lens and Stainless-Steel Frame Stainless Steel Same Type Grease Filter housed in a triangulated Biter housing with sloping channels to grease collection cups.

2. Ductwork:

Ductwork is to be manufactured and installed to comply with the specification DW172 of HVCA Guide. Extract ductwork to be run internally from canopy through to the rear of the premises in rectangular ductwork, joints to be fully sealed and flanged type. The ductwork is to then transform to circular section externally and rise to high level roof and terminate at least one meter above roof level.

3. Carbon Filter System

This system will be fitted with two carbon filter block units to remove any oil or grease , and smells that will come from the kitchen and restraint canopy that are created in the cooking process.

4. Helios Fan

450 GBD/4 SINGLE PHASE

Recommendations for maintenance of odor control system include:

- **System employing fine filtration and**

- o carbon filtration. o Change fine filters every two weeks.
 - o Change carbon filters every 4 to 6 months.

Clean every 2-6 months

Considering the above advice, it is recommended that the following cleaning and maintenance schedule is observed based upon the described operations of the kitchen, which would be moderate use (6-12 hours a day).

Maintenance Task and Frequency

Extract
Duct

Clean 6
monthly

Fine
Filters

Change every 2 weeks

Carbon
filters

Change every 4 to 6 months

You will find all the specification about the Helios fine that
we have fitted to your premises on attached catalogue

Best Regards

Ferhat Ozkan

GigaBox centrifugal fans

GigaBoxes are real multi-functional options that offer almost unlimited flexibility in various applications.

Compact frame construction and assembly-friendly accessories make a variable and thus optimal adaptation possible by simply repositioning the casing panels to the structural conditions. With five or (with series T120) three possible discharge directions this gives design flexibility to suit all site conditions. All types have integrated crane hooks for easier positioning as standard.

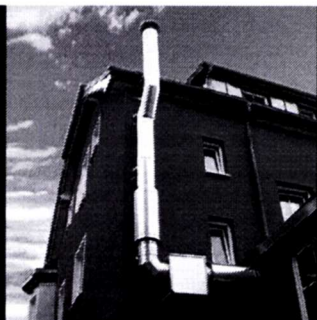
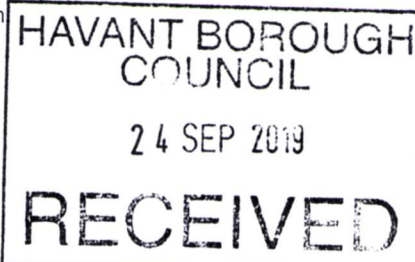
They are particularly suitable for medium to higher air flow volumes against high resistances in ventilation systems of every type. Furthermore, the new series GB.. T120 is suited for extraction of dirty, hot air up to 120° C. Altogether, 26 models are available with air flow volumes from 1400 to 19 000 m³/h for duct diameters 250 to 710 mm.

GigaBoxes from Helios are delivered complete with:

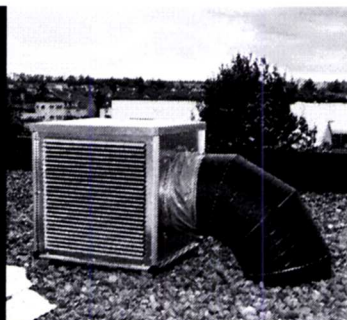
- Discharge adapter from square to circular ducted system for low-loss discharge

- Flexible sleeves to reduce vibration transmission and for the connection to ducts in the usual standard diameters.

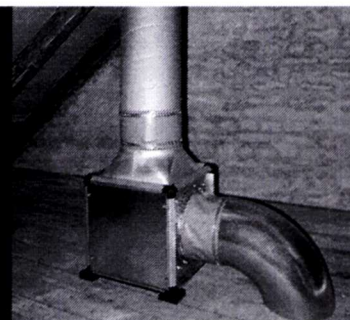
Backward curved high output centrifugal impeller guarantees an energy-efficient operation at low noise emission



Outdoor installation with wall bracket (accessories).



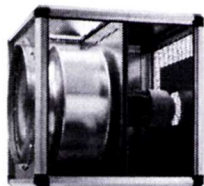
Roof installation with outdoor cover hood and external weather louvers (accessories).



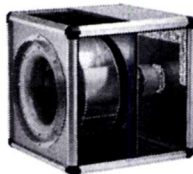
Installation in the attic with anti vibration mounts (accessories).

NEW!

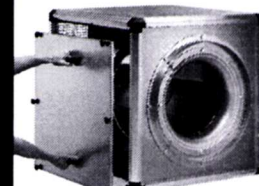
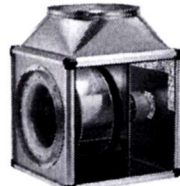
GigaBox for air flow temperatures up to max. 120° C.



GB.. T120: The motor which is located outside of the air flow is separated from the impeller through a temperature insulated partition panel. The motor-impeller-unit is removable without disassembly of the ducting.



Assembly of the discharge adapter for GB.. T120 with centrifugal discharge direction to the top or to the side.



GB.. T120 with simply removable inspection cover.

The double-walled, removeable 20 mm thick side panels are noise and temperature insulated with flame-retardant mineral wool.

This allows for a variable installation and simple inspection access. Extensive accessories like wall bracket, condensate collector incl. condensate spigot (for GB.. T120 included in delivery), external weather louvers to cover the exhaust opening, outdoor cover hood for protected outdoor installation ensure for the necessary flexibility on site.

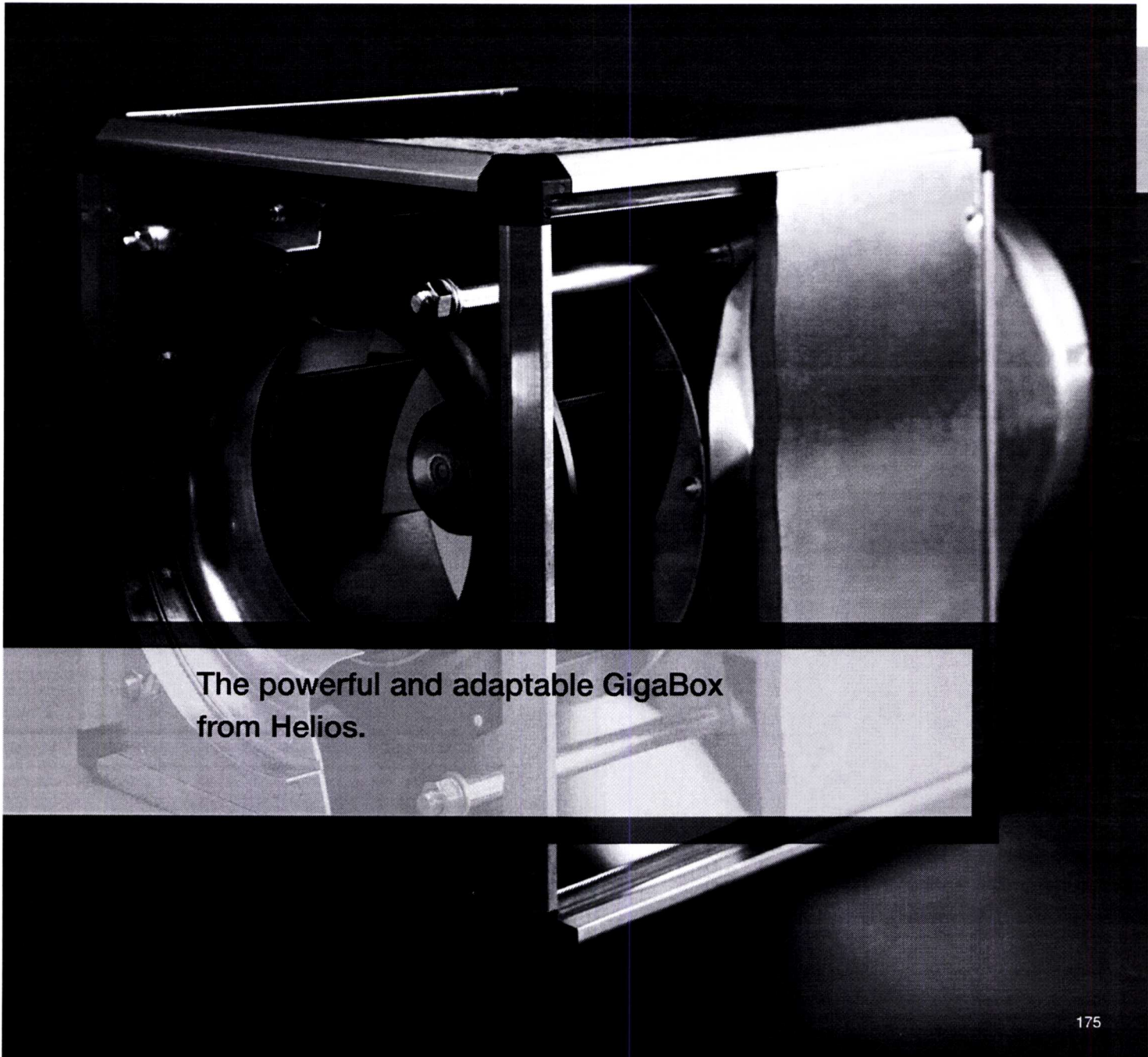
The T120 model impresses with outstanding benefits:

- Air flow temperature up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor-impeller-unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.

- Condensate collector with condensate spigot included in delivery.
- Accessory components suitable for use to max. 120° C.

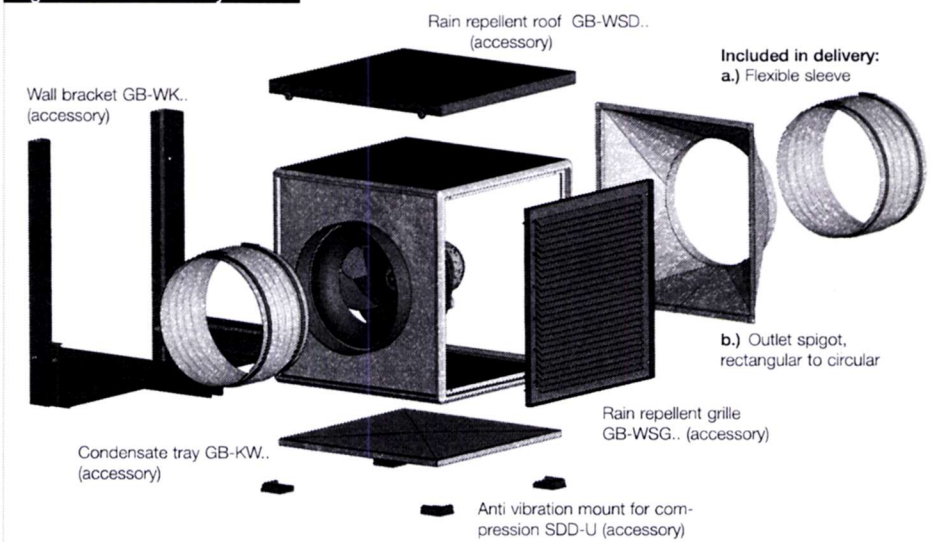
For applications with high air flow temperatures and/or steam/humidity present in the exhaust air, the GigaBox T120 is ideally suitable.

Ideal for application in exhaust air systems of process technology or in commercial kitchens.



**The powerful and adaptable GigaBox
from Helios.**

GigaBox and accessory



■ **Application**

Multifunctional fan box, suitable for medium to higher air flow volumes against high resistances in every type of ventilation system. The compact frame construction offers easy conversion of the outlet position. Together with a choice of ideal accessories make these units ideal for all applications.

The GB.. T120 types are suitable for the extraction of dirty, humid and hot air up to max. 120° C, i.e. as extract air fan in commercial kitchens and many applications of process technology.

■ **Casing**

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool.

Intake cone for ideal airflow, spigot and flexible connector for duct connection. With outlet adapter (from square to circular) on the exhaust side for low-loss discharge and flexible connector to reduce vibration transmission. The flexible connectors are supplied as standard and correspond to the max. permissible air flow temperature of +70 °C and/or +120 °C with the types GB.. T120. Lifting lugs are standard for using crane hooks.

With GB.. T120 the motor is located outside of the air flow. The thermally insulated partition panel is also the support plate for the motor and impeller unit and can be removed completely for inspection without removing the complete fan from the system.

■ **Speed control**

All types (except GBD 630/4 T120) are speed controllable by voltage reduction using a 5-step transformer controller or an electronic controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The performances of the speeds are given in the performance curve. 3-phase models are controllable with frequency inverters by installation of a sinusoidal filter (accessories) between inverter and motor. Type GBD 630/4 is only controllable by frequency inverter.

■ **Assembly**

□ **Assembly of types GB..**

Adaptable installation position and flexible assembly using the five possible discharge directions via the discharge adapter. Removable panels allow inspection access on all sides.

□ **Assembly of types GB.. T120**

Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Inspection cover with handle, for cleaning and maintenance simply remove. Lifting lugs are standard for using crane hooks. Vibration transmission to the building is minimised by anti vibration mounts (type SDD-U, accessories). Vibration transmission to the ducting is prevented by using the standard flexible connector supplied.

■ **Impeller**

Smooth running centrifugal impeller with backward curved polymer blades (size 250 from steel) on a galvanised steel back plate, direct driven. Size 500 and all GB.. T120 types with impellers from aluminium. These energy efficient impellers are low noise. Dynamically balanced assembled with the motor to DIN ISO 1940 Pt.1 – class 6.3 or 2.5.

■ **Motor**

IEC-standard motor or maintenance-free external rotor motor protected to IP 54 or 44. Thermal overload protection through built-in thermal contacts. Suitable for continuous operation S1. Insulation class F. Ball bearings are lubricated for life.

■ **Electrical connection**

Terminal box protection to IP 54.

■ **Air flow direction**

The air flow direction of centrifugal fans is not reversible, but can be set by positioning the fan to the required air flow direction. Furthermore the position can be set individually to constructional conditions through conversion of discharge adapter and panels. The correct motor rotation direction is marked through rotation arrows on the motor and has to be checked at start-up.

■ **Incorrect direction of rotation**

If the fan is operated in the incorrect direction of rotation the motor will overheat and the thermal contact will trip. Typical indication for this is a very low air flow combined with high noise levels and vibration.

■ **Ambient temperature**

The maximum permitted air flow temperature is given in the individual fan chart.

■ **Surrounding temperature**

From – 40° C to + 40° C.

Information	Pages
Design of systems, acoustic	12 on
General techn. information, speed control	17 on



Quick selection chart for GB.. and GB.. T120 Requirements for exhaust air systems in commercial kitchens

Type GB..	Sound press. Case breakout	Sound press. Intake	Air flow volume Vm³/s against static pressure												
	L _{PA} dB(A)	L _{PA} dB(A)	(ΔP _{stat}) in Pa												
	at 4 m	at 4 m	0	50	100	150	200	250	300	350	400	500	600	700	800
GBW 250/4	27	39	0.389	0.319	0.244	0.147									
GBW 315/4	29	41	0.414	0.361	0.300	0.236	0.153	0.042							
GBW 355/4	34	46	0.817	0.747	0.675	0.594	0.505	0.400	0.258						
GBD 355/4/4	34	46	0.836	0.772	0.711	0.638	0.577	0.492	0.367	0.089					
GBW 400/4	38	50	1.142	1.092	1.036	0.975	0.917	0.85	0.764	0.656	0.511				
GBD 400/4/4	38	50	1.097	1.031	0.961	0.889	0.811	0.725	0.628	0.469	0.114				
GBW 450/4	40	52	1.514	1.433	1.361	1.292	1.217	1.122	1.006	0.867	0.692	0.083			
GBD 450/4/4	40	52	1.514	1.431	1.344	1.256	1.161	1.061	0.947	0.822	0.664	0.083			
GBW 500/4	45	57	2.333	2.236	2.139	2.042	1.947	1.85	1.744	1.628	1.506	1.219	0.778	0.042	
GBD 500/4/4	44	57	2.458	2.367	2.278	2.189	2.097	2.006	1.903	1.789	1.664	1.369	0.947	0.014	
GBW 500/6	35	46	1.600	1.478	1.347	1.189	0.978	0.678	0.144						
GBD 500/4/4	44	57	3.497	3.397	3.300	3.203	3.106	3.011	2.911	2.811	2.706	2.461	2.142	1.731	1.144
GBD 560/6/6	35	48	2.400	2.261	2.114	1.953	1.767	1.539	1.239	0.767					
GBD 630/4/4	48	61	4.153	4.058	3.961	3.869	3.775	3.683	3.592	3.500	3.403	3.194	2.953	2.675	2.333
GBD 630/6/6	43	56	3.192	2.992	2.794	2.597	2.375	2.103	1.767	1.356	0.792				
GBD 710/6/6	46	59	5.194	4.989	4.783	4.564	4.333	4.083	3.811	3.511	3.178	2.333	0.753		
Type GB.. T120	L _{PA} dB(A)	L _{PA} dB(A)	(ΔP _{stat}) in Pa												
	at 4 m	at 4 m	0	50	100	150	200	250	300	350	400	500	600	700	800
GBW 355/4 T120	36	49	0.961	0.894	0.831	0.767	0.683	0.567	0.418	0.201					
GBD 355/4/4 T120	36	49	0.964	0.908	0.846	0.778	0.697	0.594	0.469	0.192					
GBW 400/4 T120	40	53	1.369	1.293	1.217	1.136	1.053	0.942	0.806	0.622	0.439				
GBD 400/4/4 T120	40	53	1.353	1.275	1.193	1.106	1.014	0.900	0.761	0.581	0.381				
GBW 450/4 T120	45	57	1.975	1.887	1.800	1.700	1.625	1.525	1.426	1.317	1.208	0.917	0.528		
GBD 450/4/4 T120	45	57	1.994	1.914	1.833	1.750	1.653	1.556	1.450	1.336	1.206	0.897	0.372		
GBW 500/4 T120	45	59	2.318	2.244	2.158	2.075	1.989	1.903	1.800	1.696	1.575	1.300	0.975	0.511	
GBD 500/4/4 T120	45	59	2.319	2.239	2.157	2.081	1.994	0.191	1.833	1.739	1.642	1.381	1.061	0.533	
GBD 560/4/4 T120	48	62	3.417	3.322	3.247	3.164	3.078	2.994	2.910	2.817	2.722	2.533	2.336	2.064	1.671
GBD 630/4 T120	53	67	3.928	3.867	3.803	3.742	3.667	3.594	3.533	3.469	3.397	3.242	3.097	2.908	2.703

GigaBox

Special application for GigaBox T120 – commercial kitchens

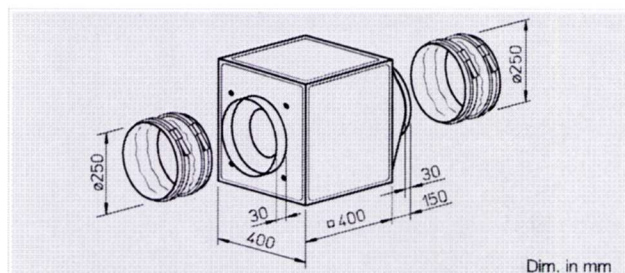
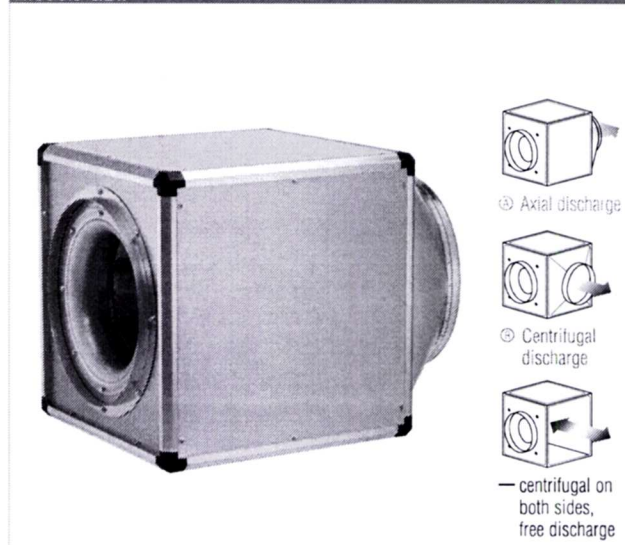
For the design of exhaust air systems in commercial kitchens the VDI 2052 (2006) "Ventilation equipment for kitchens – design, layout, approval" is applied. This follows for extract air fan:

- ☐ Fans of exhaust air systems must be designed and installed in such a way that they are easily accessible, can be easily controlled and cleaned.
They must be able to be switched off from the kitchen.
The motors must be located outside of the extract air flow.
Connected kitchen extraction hoods must separate solid and liquid components, if possible.
A backdraft into following units is to be prevented.

These specific requirements from the GigaBoxes GB.. T120 are fulfilled in an outstanding manner. Easily accessible casing and double-walled side panels make cleaning simple with grease dissolving agents and steam possible.

Requirements in excess thereof of kitchen extract air units and the appropriate fire protection can deviate country-specifically; these special requirements of the respective country, in which the unit is to be used, must be considered.

Models GB..



■ Specification

■ Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal airflow, spigot and flexible connector for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

■ Impeller

Smooth running backward curved centrifugal impeller highly efficient with blades from steel on galvanised steel disc, direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

■ Motor

Maintenance-free and speed controllable external rotor motor, protection to IP 44. With ball bearings and radio suppressed as standard.

■ Electrical connection

Terminal box fitted on the motor as standard, protection to IP 54.

■ Motor protection

Motors have thermal contacts wired in series with the windings which automatically reset.

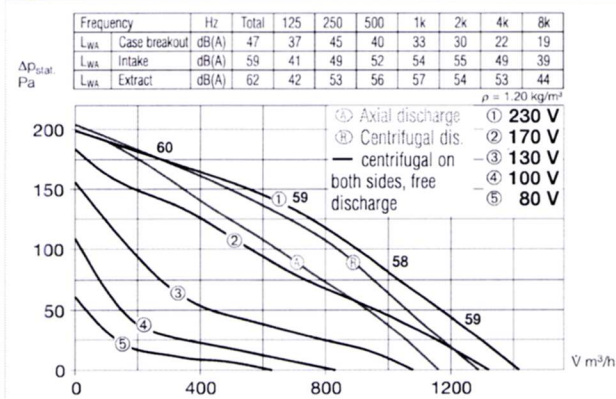
■ Speed control

Speed controllable through voltage reduction by 5 step transformer controller or electronic speed controller. The duties at different speeds are given in the performance curve.

■ Assembly

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter.

GBW 250/4



For wall mounting the wall bracket (accessories) has to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

■ Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:

- sound level case breakout
- sound level intake
- sound level exhaust

in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the case breakout level at 4 m (freefield conditions).

■ Accessories

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

Wall bracket for wall mounting.

GB-WK 250 Ref. No. 5625

External weather louvers to cover exhaust opening.

GB-WSG 250 Ref. No. 5637

Outdoor cover hood for outdoor installation.

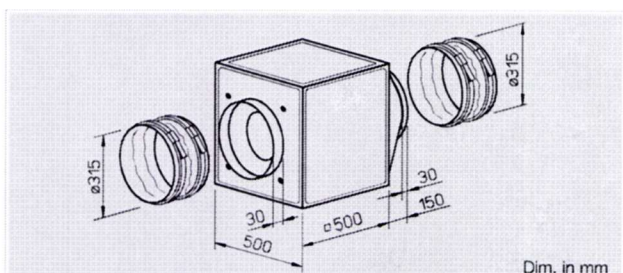
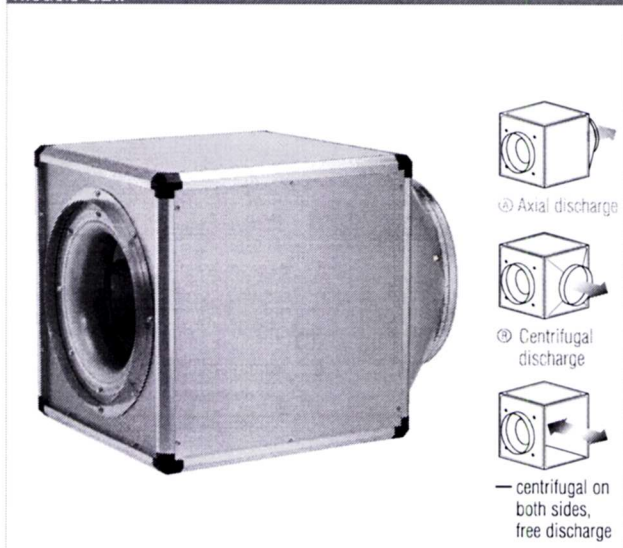
GB-WSD 250 Ref. No. 5746

Condensate collector with condensate spigot for pipe connection.

GB-KW 250 Ref. No. 5642

Information	Pages
Design of systems, acoustic	12 on
General techn. information, speed control	17 on
Accessory-Details	Pages
Speed controller and full motor protection unit	397 on

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller without motor protect. unit	Type	Ref. No.
		m^3/h	min^{-1}	dB(A) at 4 m	kW	A	A	No.	+°C	+°C	kg		
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 44													
GBW 250/4	5509	1400	1290	27	0.11	0.44	0.48	923	65	65	20	TSW 1.5	1495

Models GB..

■ Specification
■ Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulation and flame-retardant mineral wool. Intake cone for ideal airflow, spigot and flexible connector for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

■ Impeller

Smooth running centrifugal highly efficient impeller with backward curved blades from steel on galvanised steel disc, direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

■ Motor

Maintenance-free and speed controllable external rotor motor, protection to IP 44. With ball bearings and radio suppressed as standard.

■ Electrical connection

Terminal box fitted on the motor as standard, protection to IP 54.

■ Motor protection

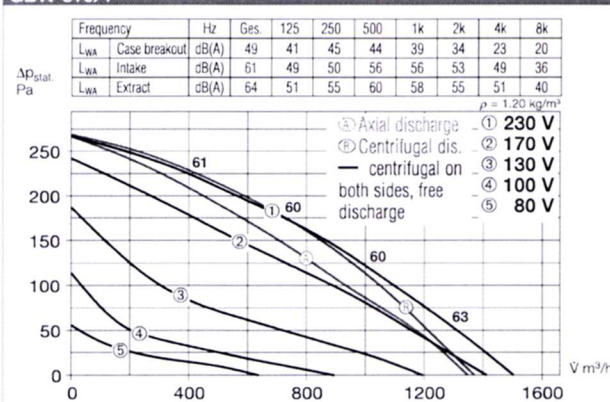
Motors have thermal contacts wired in series with the windings which automatically reset.

■ Speed control

Speed controllable through voltage reduction by 5 step transformer controller or electronic speed controller. Duties at different speeds are given in the performance curve.

■ Assembly

Arbitrary installation position and flexible assembly by five possible discharge directions via the

GBW 315/4

■ Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:

- sound level case breakout
- sound level intake
- sound level exhaust

in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the case breakout level at 4 m (freefield conditions).

■ Accessories

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

Wall bracket for wall mounting.

GB-WK 315 Ref. No. 5625

External weather louvers to cover exhaust opening

GB-WSG 315 Ref. No. 5638

Outdoor cover hood for outdoor installation.

GB-WSD 315 Ref. No. 5747

Condensate collector with condensate spigot for pipe connection.

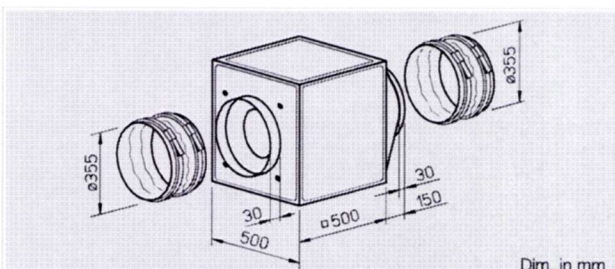
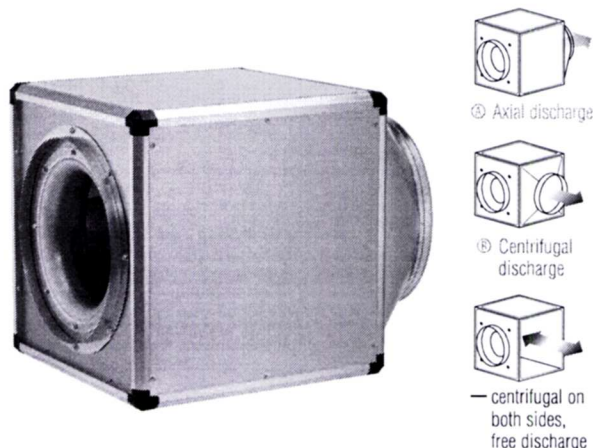
GB-KW 315 Ref. No. 5643

Information	Pages
Design of systems, acoustic	12 on
General techn. information, speed control	17 on
Accessory-Details	Pages
Speed controller and full motor protection unit	397 on

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller without motor protect. unit	
		m^3/h	min^{-1}	dB(A) at 4 m	kW	A	A	No.	+°C	+°C	kg	Type Ref. No.
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 44												
GBW 315/4	5510	1490	1325	29	0.135	0.58	0.60	923	55	55	31	TSW 1.5 1495

Models GB..

Arbitrary installation position and flexible assembly by five possible discharge directions.



Special features of type GB.. T120

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

Assembly of types GB.. T120

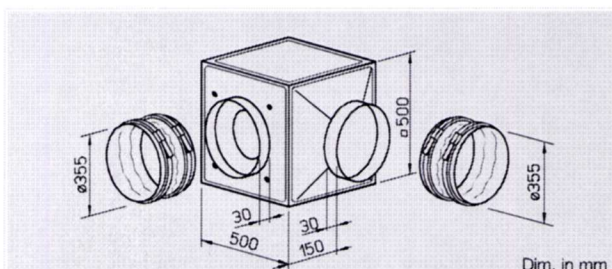
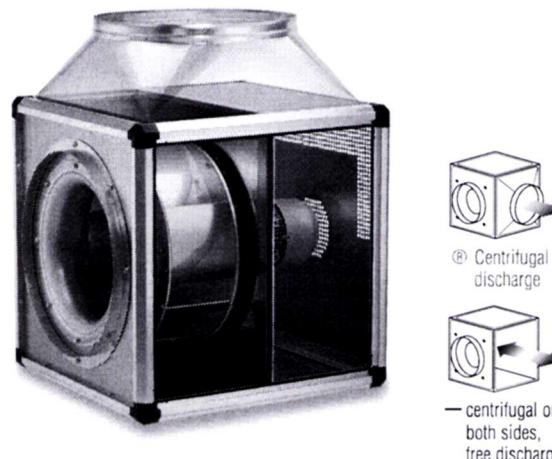
Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Feature

Assembly of types GB..
Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) have to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Models GB.. T120

Designed for moving dirty, humid and hot air up to max. 120° C.



Specification of both types

Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

Impeller

Smooth running backward curved centrifugal impeller highly efficient with polymer blades on galvanised steel disc (with GB.. T120 aluminium impeller), direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

Motor

Maintenance-free external rotor motor or IEC-standard motor protected to IP 44 or 54. With ball bearings and radio suppressed as standard.

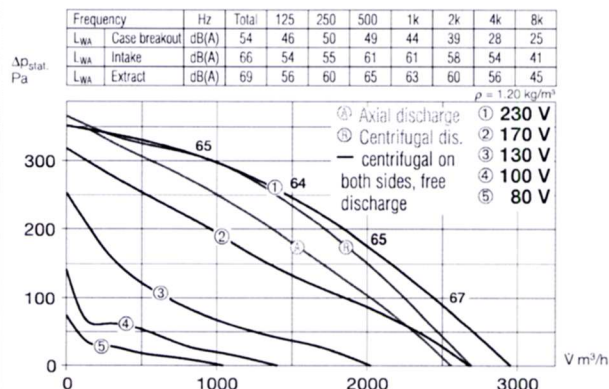
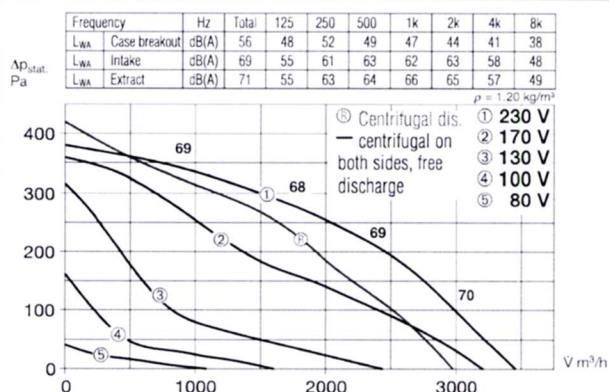
Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB.. T120 fitted on the motor support plate.

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller with motor protect. unit	Full motor protection unit using the thermal contacts
		V m ³ /h	min ⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	Type Ref. No.	Type Ref. No.
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54												
GBW 355/4	5511	2940	1325	34	0.29	1.30	1.40	864	60	60	MWS 1.5 1947	TSW 1.5 1495 MW ¹⁾ 1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 355/4/4	5512	2700/3010	1115/1355	34	0.20/0.30	0.35/0.70	0.70	867	55	55	RDS 1 1314	TSW 0.8 1500 M4 ²⁾ 1571
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54												
GBW 355/4 T120	5770	3460	1340	36	0.32	1.60	1.80	935	120	120	MWS 3 1948	TSW 3.0 1496 MW ¹⁾ 1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 355/4/4 T120	5771	2990/3470	1100/1360	36	0.22/0.33	0.40/0.80	0.80	947	120	120	RDS 1 1314	TSW 0.8 1500 M4 ²⁾ 1571

¹⁾ incl. operation switch

²⁾ incl. operation and 2 speed switch

GBW 355/4

GBW 355/4 T120

Motor protection

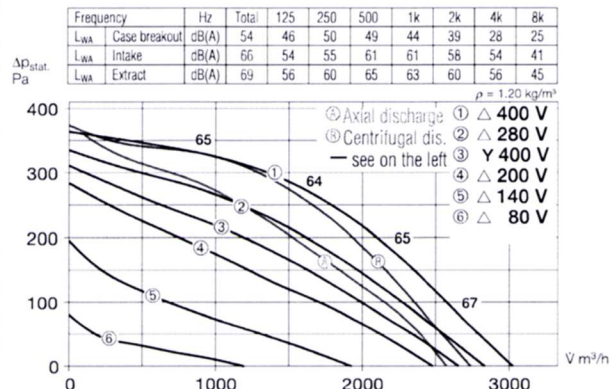
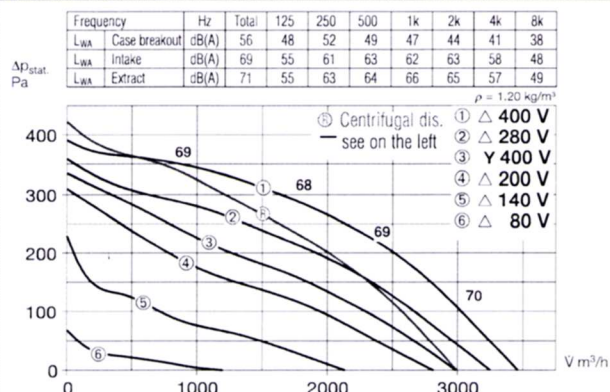
Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

Speed control

All types are speed controllable by voltage reduction using a transformer controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve.

Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:
 — sound level case breakout
 — sound level intake
 — sound level extract
 in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the case breakout level at 4 m (freefield conditions).

GBD 355/4/4

GBD 355/4/4 T120

Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

Wall bracket for wall mounting.

GB-WK 355 Ref. No. 5625

External weather louvers to cover exhaust opening.

GB-WSG 355 Ref. No. 5638

Outdoor cover hood for outdoor installation.

GB-WSD 355 Ref. No. 5747

On/Off and 2-speed switch for 3-phase star/delta motors.

DS 2 ³⁾ Ref. No. 1351

³⁾ full motor protection unit recommended:
 MD Ref. No. 5849

Specific accessories

for types GB..

Condensate collector with condensate spigot for pipe connection.
GB-KW 355 Ref. No. 5643

(Condensate collector with condensate spigot included in delivery with GB.. T120).

for types GB.. T120

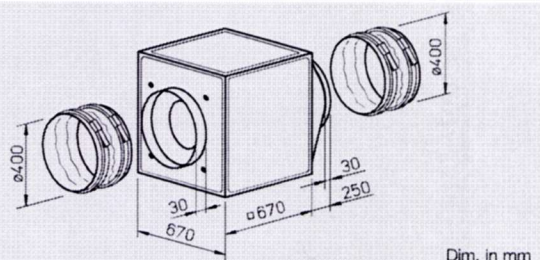
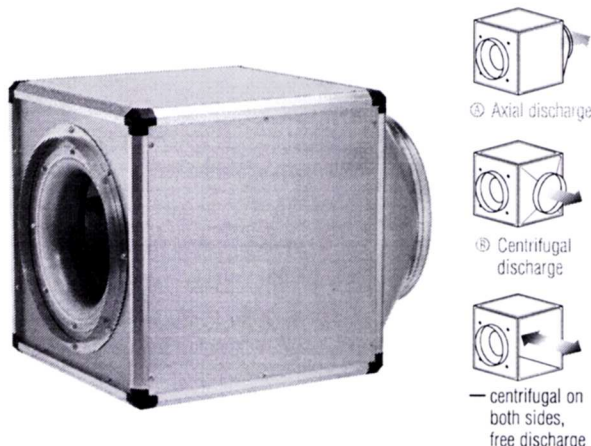
Rain drainage for outdoor installation (drill holes for rain drainage is already prepared).

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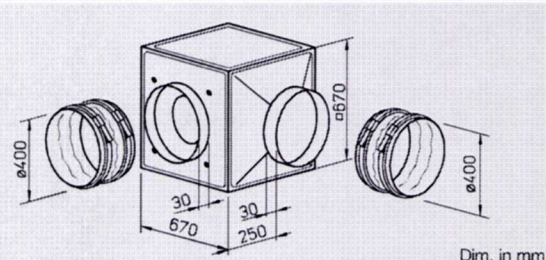
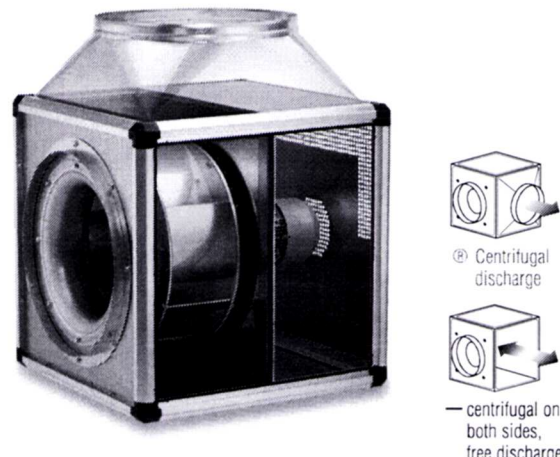
Models GB..

Arbitrary installation position and flexible assembly by five possible discharge directions.



Models GB.. T120

Designed for moving dirty, humid and hot air up to max. 120° C.



Special features of type GB.. T120

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

Assembly of types GB.. T120

Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Feature

Assembly of types GB..

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) has to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Specification of both types

Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square into circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

Impeller

Smooth running backward curved centrifugal impeller highly efficient with polymer blades on galvanised steel disc (with GB.. T120 aluminium impeller), direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

Motor

Maintenance-free external rotor motor or IEC-standard motor protected to IP 44 or 54. With ball bearings and radio suppressed as standard.

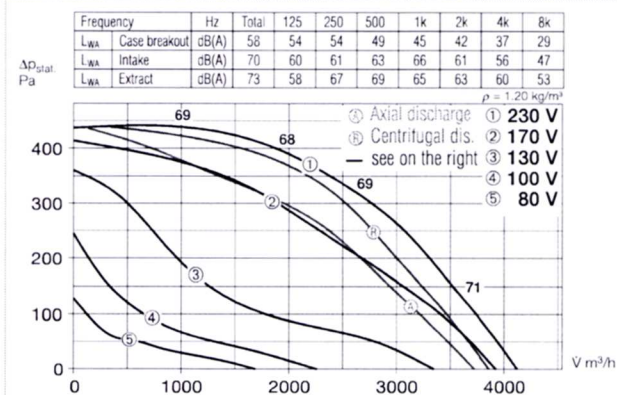
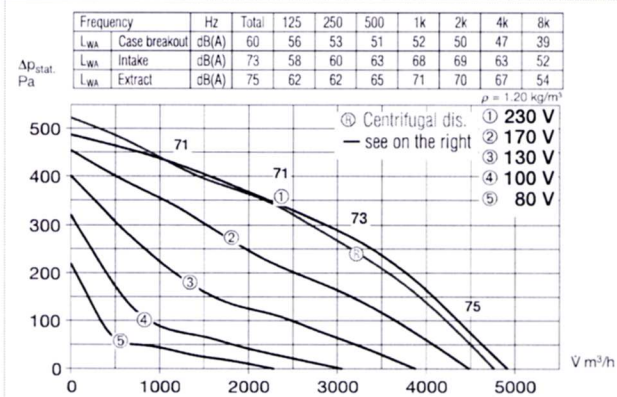
Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB.. T120 fitted on the motor support plate.

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller with motor protect. unit	Full motor protection unit using the thermal contacts
		V m ³ /h	min ⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	Type Ref. No.	Type Ref. No.
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54												
GBW 400/4	5513	4110	1360	38	0.53	2.40	2.80	864	50	50	MWS 3 1948	TSW 3.0 1496 MW ¹⁾ 1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 400/4/4	5514	3300/3950	910/1270	38	0.29/0.46	0.50/0.78	0.92	867	50	45	RDS 1 1314	TSW 1.5 1501 M4 ²⁾ 1571
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54												
GBW 400/4 T120	5772	4930	1280	40	0.54	2.50	2.50	935	120	100	MWS 3 1948	TSW 3.0 1496 MW ¹⁾ 1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 400/4/4 T120	5773	4010/4870	975/1255	40	0.29/0.48	0.50/1.10	1.10	947	120	120	RDS 2 1315	TSW 1.5 1501 M4 ²⁾ 1571

¹⁾ incl. operation switch

²⁾ incl. operation and 2 speed switch

GBW 400/4

GBW 400/4 T120

Motor protection

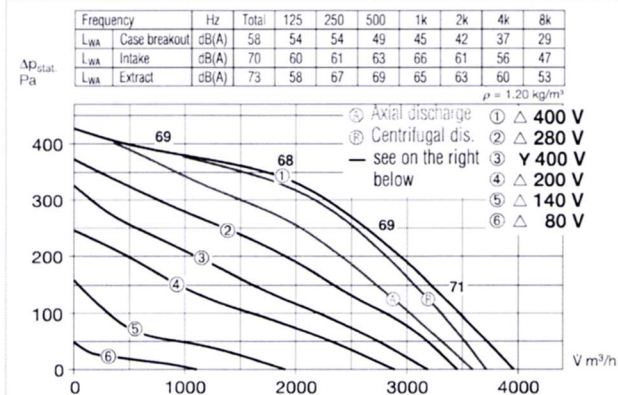
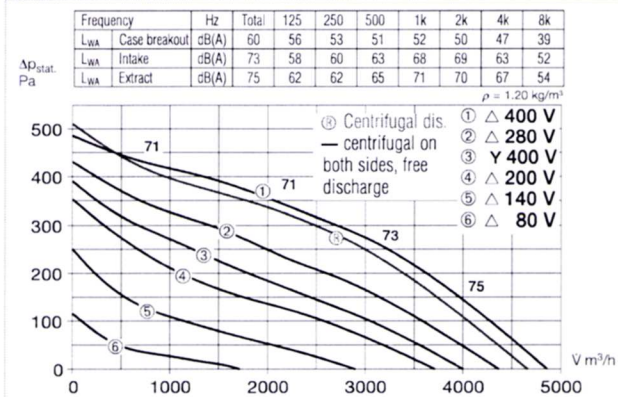
Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

Speed control

All types are speed controllable by voltage reduction using a transformer controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve.

Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:
 – sound level case breakout
 – sound level intake
 – sound level extract
 in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the case breakout level at 4 m (freefield conditions).

GBD 400/4

GBD 400/4 T120

Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

Wall bracket for wall mounting.

GB-WK 400 Ref. No. 5626

External weather louvers to cover exhaust opening.

GB-WSG 400 Ref. No. 5639

Outdoor cover hood for outdoor installation.

GB-WSD 400 Ref. No. 5748

On/Off and 2-speed switch for 3-phase star/delta motors.

DS 2 ³⁾ Ref. No. 1351

³⁾ full motor protection unit recommended:
 MD Ref. No. 5849

Specific accessories

for types GB..

Condensate collector with condensate spigot for pipe connection.

GB-KW 400 Ref. No. 5644

(Condensate collector with condensate spigot included in delivery with GB.. T120).

for types GB.. T120

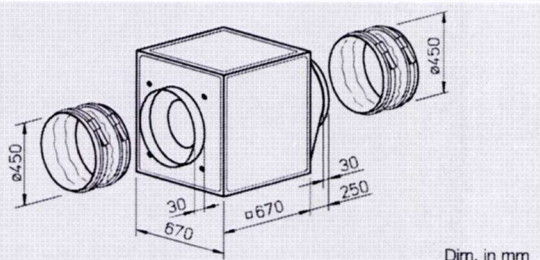
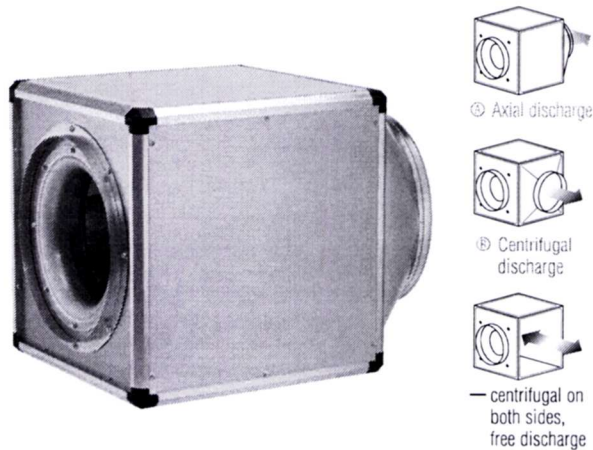
Rain drainage for outdoor installation (drill holes for rain drainage is already prepared).

GB-RA Ref. No. 9418

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Models GB..

Arbitrary installation position and flexible assembly by five possible discharge directions.

**Special features of type GB.. T120**

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

Assembly of types GB.. T120

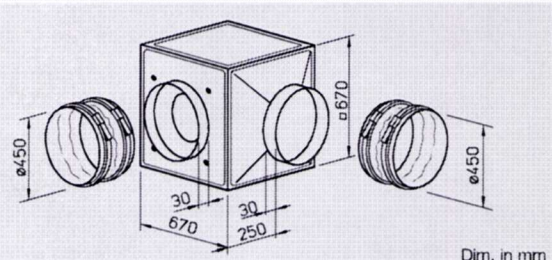
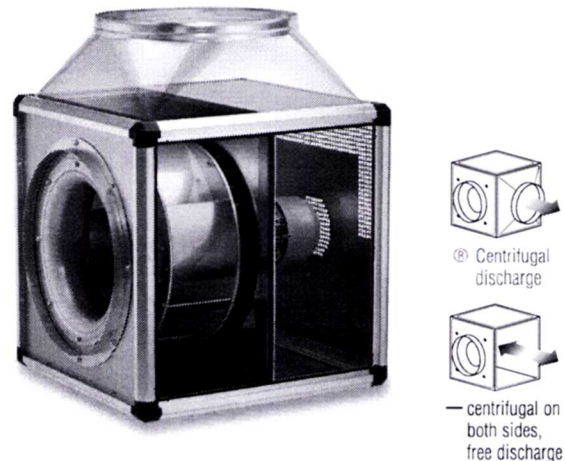
Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Feature

Assembly of types GB..
Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) has to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Models GB.. T120

Designed for moving dirty, humid and hot air up to max. 120° C.

**Specification of both types****Casing**

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature consulting and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

Impeller

Smooth running backward curved centrifugal impeller highly efficient with polymer blades on galvanised steel disc (with GB.. T120 aluminium impeller), direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

Motor

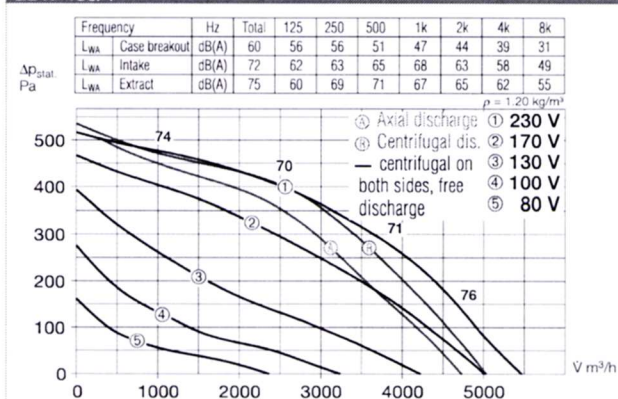
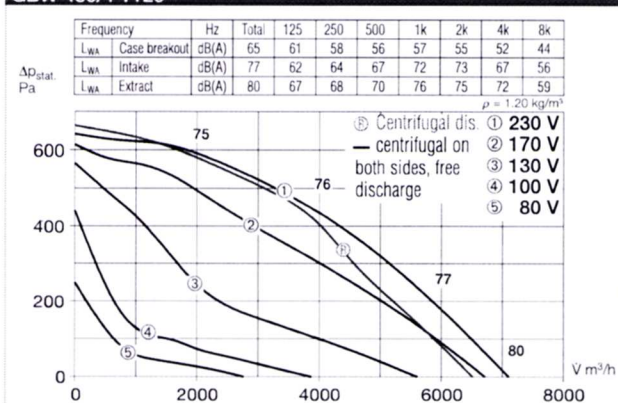
Maintenance-free external rotor motor or IEC-standard motor protected to IP 44 or 54. With ball bearings and radio suppressed as standard.

Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB.. T120 fitted on the motor support plate.

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller with motor protect. unit	Full motor protection unit using the thermal contacts
		V m³/h	min⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	Type Ref. No.	Type Ref. No.
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54												
GBW 450/4	5515	5450	1270	40	0.76	3.50	3.50	864	45	45	MWS 5 1949	TSW 5.0 1497 MW ¹⁾ 1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 450/4/4	5516	4350/5450	880/1240	40	0.36/0.67	0.70/1.30	1.30	867	55	55	RDS 2 1315	TSW 1.5 1501 M4 ²⁾ 1571
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54												
GBW 450/4 T120	5774	7110	1370	45	1.00	4.60	5.50	935	120	100	MWS 7.5 1950	TSW 7.5 1596 MW ¹⁾ 1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 450/4/4 T120	5775	6210/7180	1100/1350	45	0.65/0.90	1.10/1.60	1.80	947	120	110	RDS 2 1315	TSW 3.0 1502 M4 ²⁾ 1571

¹⁾ incl. operation switch²⁾ incl. operation and 2 speed switch

GBW 450/4

GBW 450/4 T120

Motor protection

Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

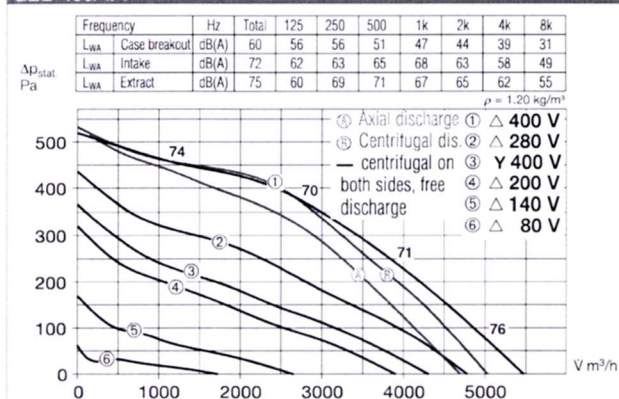
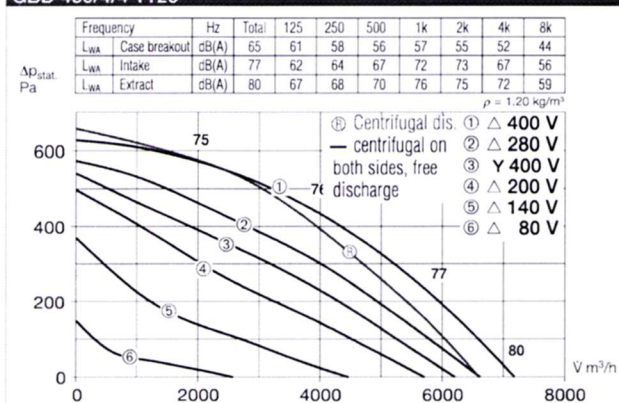
Speed control

All types are speed controllable by voltage reduction using a transformer controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve.

Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:

- sound level case breakout
 - sound level intake
 - sound level extract
- in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the
- case breakout level at 4 m (freefield conditions).

GBD 450/4/4

GBD 450/4/4 T120

Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

Wall bracket for wall mounting.

GB-WK 450 Ref. No. 5626

External weather louvers to cover exhaust opening.

GB-WSG 450 Ref. No. 5639

Outdoor cover hood for outdoor installation.

GB-WSD 450 Ref. No. 5748

On/Off and 2-speed switch for 3-phase star/delta motors.

DS 2 Ref. No. 1351

³⁾ full motor protection unit recommended:
MD Ref. No. 5849

Specific accessories

for types GB..

Condensate collector with condensate spigot for pipe connection.
GB-KW 450 Ref. No. 5644

(Condensate collector with condensate spigot included in delivery with GB.. T120).

for types GB.. T120

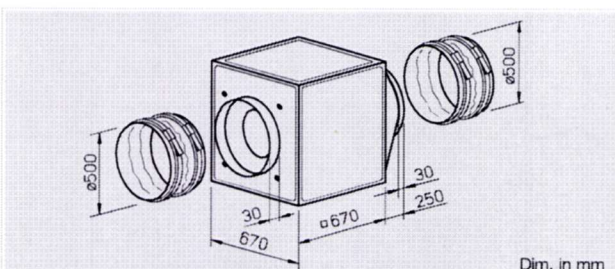
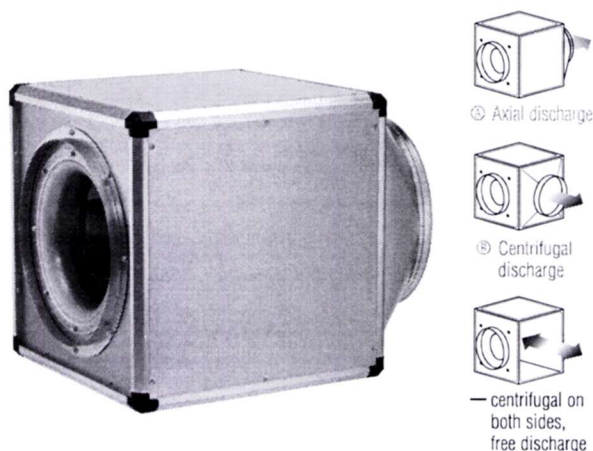
Rain drainage for outdoor installation (drill holes for rain drainage is already prepared).

GB-RA Ref. No. 9418

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Models GB..

Arbitrary installation position and flexible assembly by five possible discharge directions.



Special features of type GB.. T120

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

Assembly of types GB.. T120

Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

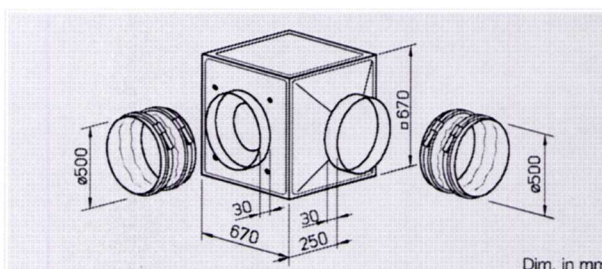
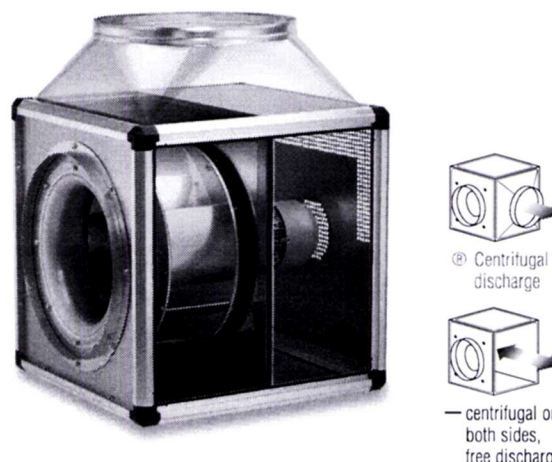
Feature

Assembly of types GB..

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) has to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Models GB.. T120

Designed for moving dirty, humid and hot air up to max. 120° C.



Specification of both types

Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

Impeller

Smooth running backward curved aluminium centrifugal impeller highly efficient and direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt. 1 – class 6.3.

Motor

Maintenance-free external rotor motor or IEC-standard motor protected to IP 44 or 54. With ball bearings and radio suppressed as standard.

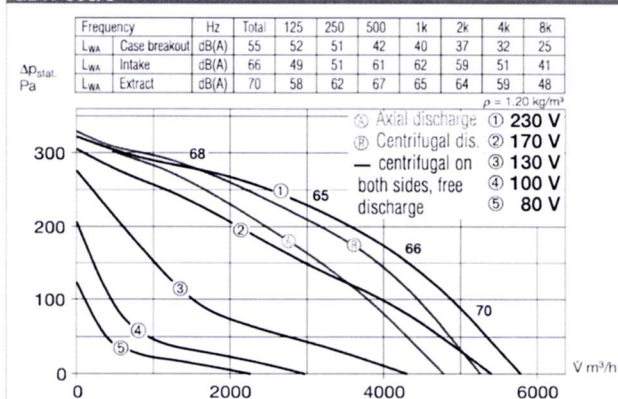
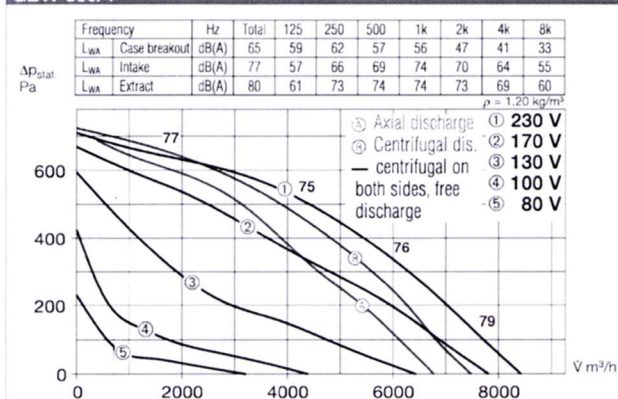
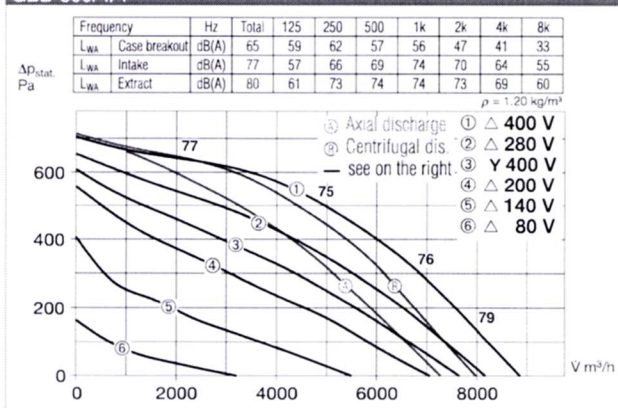
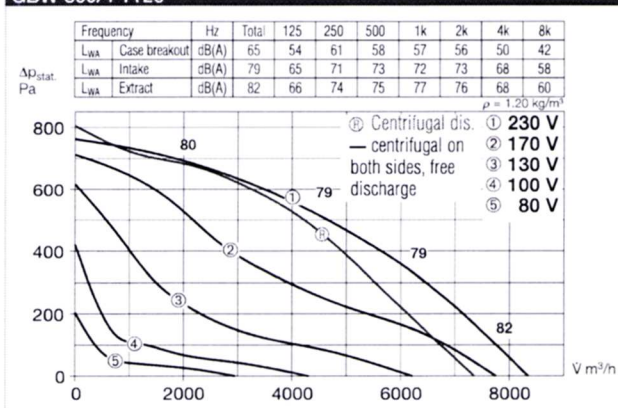
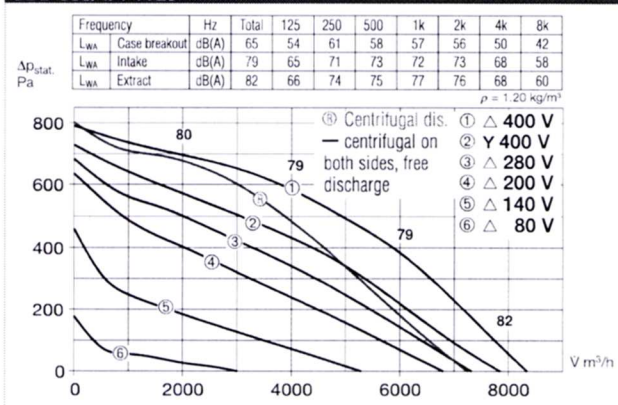
Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB.. T120 fitted on the motor support plate.

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller with motor protect. unit				Full motor protection unit using the thermal contacts		
		V m³/h	min⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	kg	Type	Ref. No.	Type	Ref. No.	Type	Ref. No.
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54																	
GBW 500/6	5519	5760	880	35	0.52	2.30	2.60	864	45	45	47	MWS 3	1948	TSW 3.0	1496	MW ¹⁾	1579
GBW 500/4	5517	8400	1350	45	1.38	6.40	8.20	865	65	55	61	MWS 10	1946	—	—	—	—
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54																	
GBD 500/4/4	5518	8000/8850	1075/1340	45	0.97/1.45	1.60/2.80	2.90	867	50	50	57	RDS 7	1578	TSD 5.5	1503	M4 ²⁾	1571
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54																	
GBW 500/4 T120	5776	8345	1340	45	1.40	6.1	7.0	301	120	100	75	MWS 10	1946	—	—	MW ¹⁾	1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54																	
GBD 500/4/4 T120	5777	7320/8350	1070/1365	45	1.07/1.50	1.80/3.00	3.0	947	120	110	75	RDS 4	1316	TSD 3.0	1502	M4 ²⁾	1571

¹⁾ incl. operation switch

²⁾ incl. operation and 2 speed switch

GBW 500/6

GBW 500/4

GBD 500/4/4

GBW 500/4 T120

GBD 500/4/4 T120

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Motor protection

Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

Speed control

All types are speed controllable by voltage reduction using a transformer controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve.

Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:
 - sound level case breakout
 - sound level intake
 - sound level extract
 in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the
 - case breakout level at 4 m (freefield conditions).

Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

Wall bracket for wall mounting.

GB-WK 500 Ref. No. 5626

External weather louvers to over exhaust opening.

GB-WSG 500 Ref. No. 5639

Outdoor cover hood for outdoor installation.

GB-WSD 500 Ref. No. 5748

On/Off and 2-speed switch for 3-phase star/delta motors.

DS 2 Ref. No. 1351

Specific accessories

for types GB..

Condensate collector with condensate spigot for pipe connection.
GB-KW 500 Ref. No. 5644

(Condensate collector with condensate spigot included in delivery with GB.. T120).

for types GB.. T120

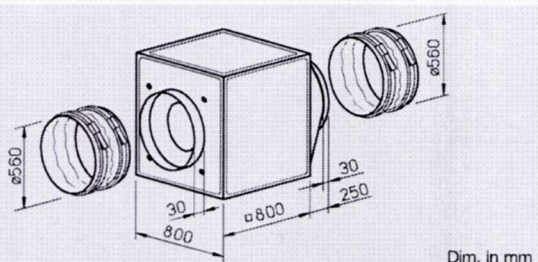
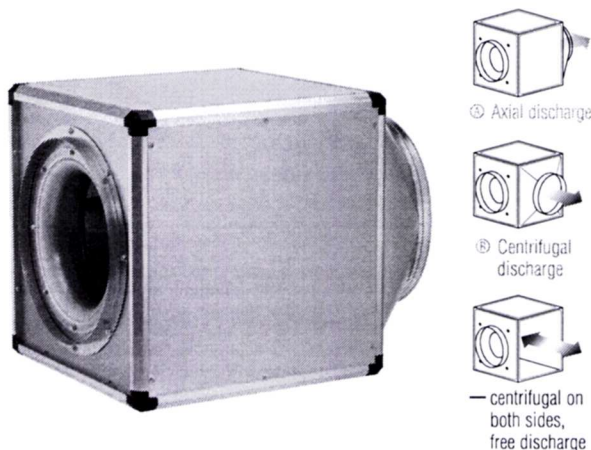
Rain drainage for outdoor installation (drill holes for rain drainage is already prepared).

GB-RA Ref. No. 9418

³⁾full motor protection unit recommended: MD Ref. No. 5849

Models GB..

Arbitrary installation position and flexible assembly by five possible discharge directions.



Special features of type GB.. T120

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

Assembly of types GB.. T120

Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

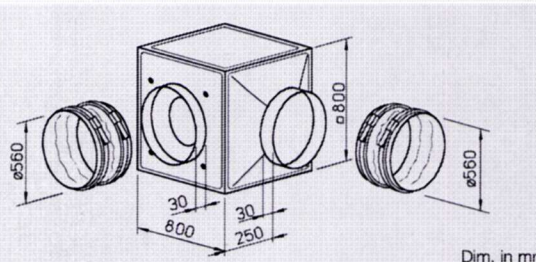
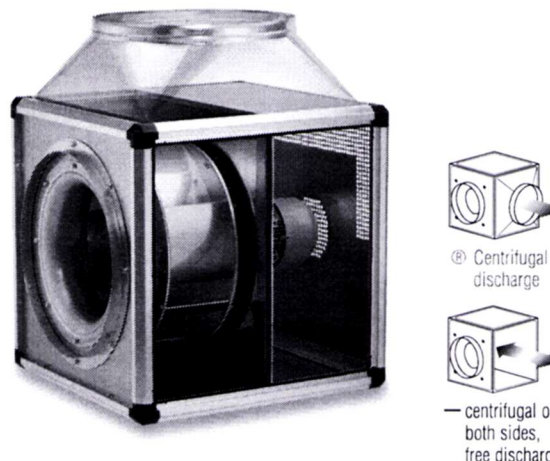
Feature

Assembly of types GB..

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) has to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Models GB.. T120

Designed for moving dirty, humid and hot air up to max. 120° C.



Specification of both types

Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

Impeller

Smooth running backward curved aluminium centrifugal impeller highly efficient and direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

Motor

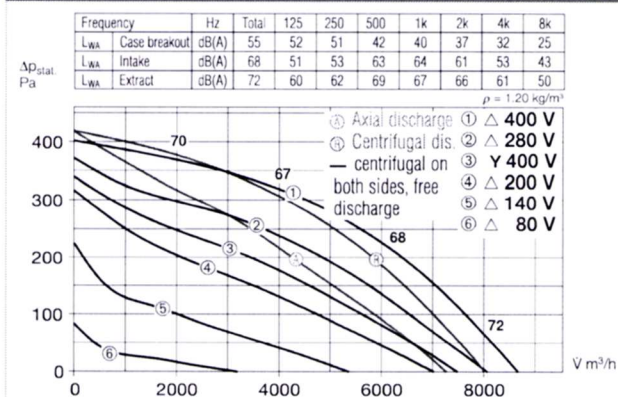
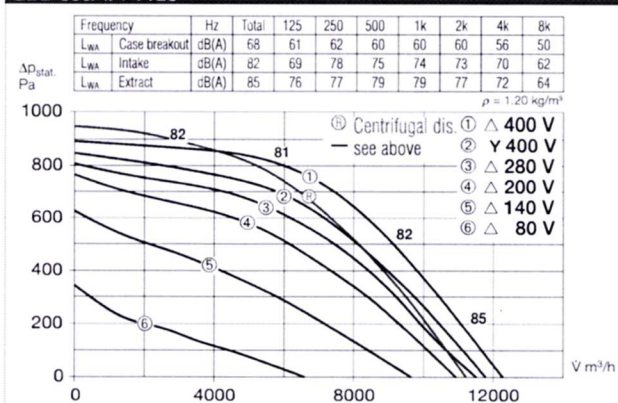
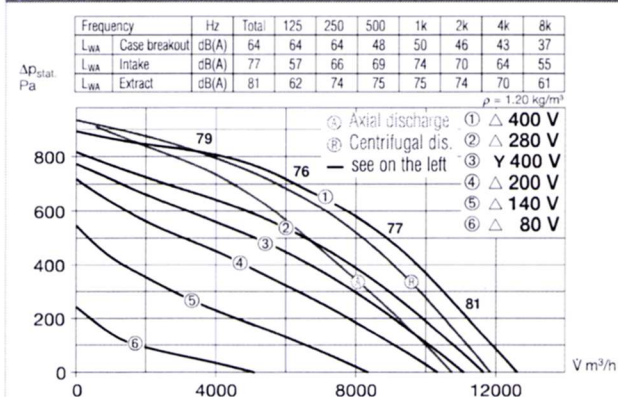
Maintenance-free external rotor motor or IEC-standard motor protected to IP 44 or 54. With ball bearings and radio suppressed as standard.

Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB.. T120 fitted on the motor support plate.

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller with motor protect. unit	Full motor protection unit using the thermal contacts
		V m³/h	min⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	Type Ref. No.	Type Ref. No.
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 560/6/6	5522	7800/8640	690/870	35	0.51/0.80	0.90/1.90	1.90	867	60	60	RDS 4 1316	TSD 3.0 1502 M4 ¹⁾ 1571
GBD 560/4/4	5521	11500/12590	1110/1350	44	1.70/2.50	2.80/4.80	4.90	867	55	45	RDS 7 1578	TSD 7.0 1504 M4 ¹⁾ 1571
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 560/4/4 T120	5778	11520/12300	1250/1400	48	1.85/2.50	3.20/6.80	6.80	520	120	120	RDS 7 1578	TSD 7.0 1504 M4 ¹⁾ 1571

¹⁾ incl. operation and 2 speed switch

GBD 560/6/6

GBD 560/4/4 T120

GBD 560/4/4

Motor protection

Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

Speed control

All types are speed controllable by voltage reduction using a transformer controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve.

Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:
 - sound level case breakout
 - sound level intake
 - sound level extract
 in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the case breakout level at 4 m (freefield conditions).

Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

Wall bracket for wall mounting.

GB-WK 560 Ref. No. 5626

External weather louvers to cover exhaust opening.

GB-WSG 560 Ref. No. 5640

Outdoor cover hood for outdoor installation.

GB-WSD 560 Ref. No. 5749

On/Off and 2-speed switch for 3-phase star/delta motors.

DS 2 Ref. No. 1351

²⁾full motor protection unit recommended:
 MD Ref. No. 5849

Specific accessories

☐ for types GB..

Condensate collector with condensate spigot for pipe connection.
GB-KW 560 Ref. No. 5645

(Condensate collector with condensate spigot included in delivery with GB.. T120).

☐ for types GB.. T120

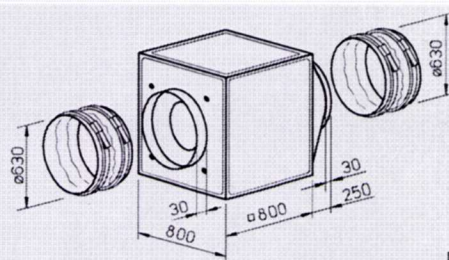
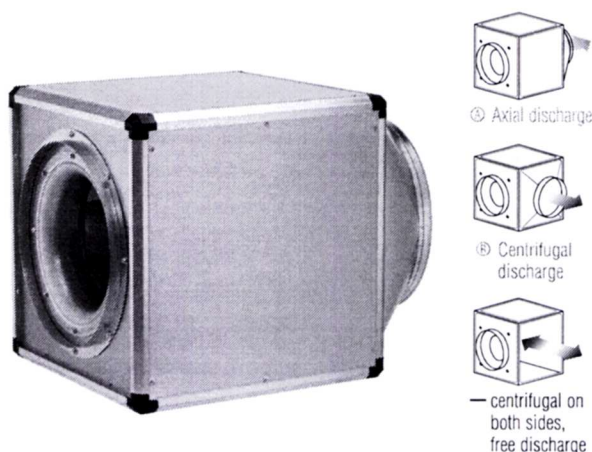
Rain drainage for outdoor installation (drill holes for rain drainage is already prepared).

GB-RA Ref. No. 9418

Information	Pages
Design of systems, acoustic	12 on
General techn. information, speed control	17 on
Accessory-Details	Pages
Speed controller and full motor protection unit	397 on

Models GB..

Arbitrary installation position and flexible assembly by five possible discharge directions.

**Special features of type GB.. T120**

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

Assembly of types GB.. T120

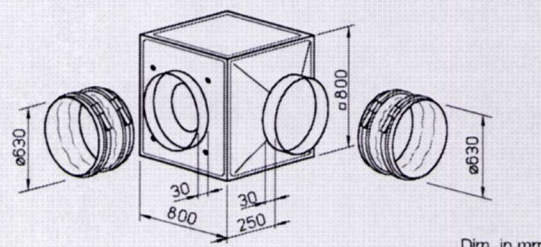
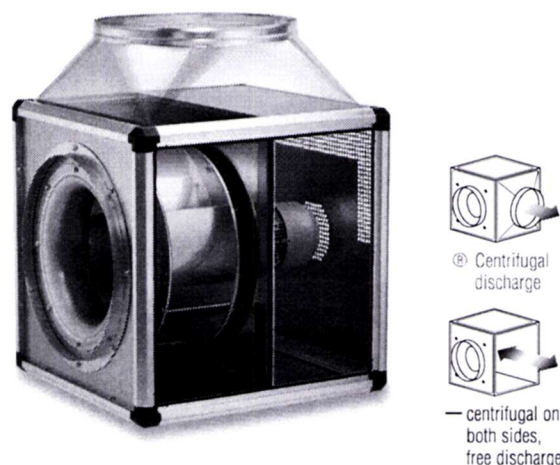
Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Feature**Assembly of types GB..**

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter. For wall mounting the wall bracket (accessories) has to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

Models GB.. T120

Designed for moving dirty, humid and hot air up to max. 120° C.

NEW!**Specification of both types****Casing**

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square into circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

Impeller

Smooth running backward curved aluminium centrifugal impeller highly efficient and direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

Motor

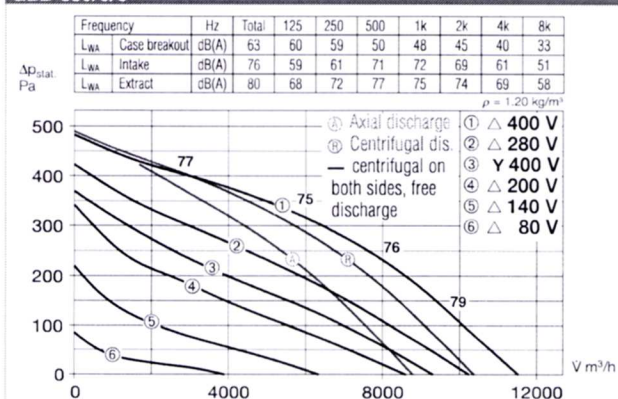
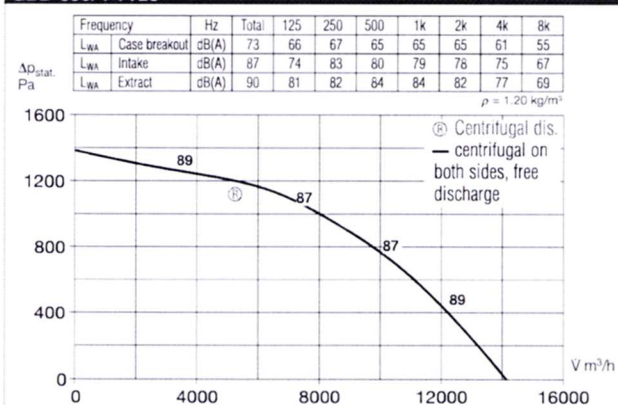
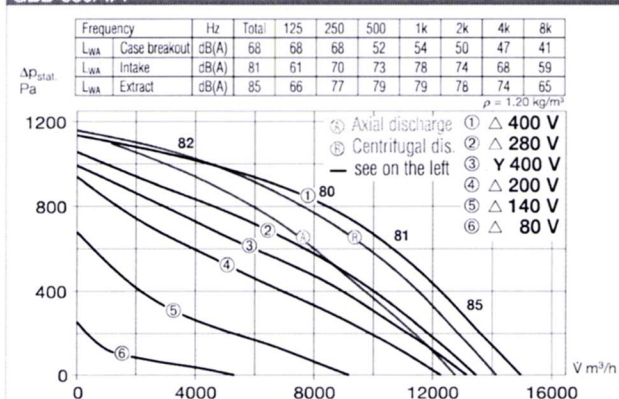
Maintenance-free external rotor motor or IEC-standard motor protected to IP 44 or 54. With ball bearings and radio suppressed as standard.

Electrical connection

Standard terminal box (IP 54) fitted on the motor; with GB.. T120 fitted on the motor support plate.

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current		Wiring diagram	Maximum air flow temperature full load		Nominal weight (net)	5 step transformer controller with motor protect. unit		Full motor protection unit using the thermal contacts			
		V m³/h	min⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	kg	Type	Ref. No.	Type	Ref. No.	Type	Ref. No.
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/△-wiring, protection to IP 54																	
GBD 630/6/6	5524	9700/11490	630/820	43	0.76/1.35	1.50/2.40	2.40	867	60	60	103	RDS 4	1316	TSD 5.5	1503	M4 ¹⁾	1571
GBD 630/4/4	5523	13500/14950	1120/1380	48	2.55/3.65	4.50/6.60	7.90	867	75	50	105	RDS 11	1332	TSD 11.0	1513	M4 ¹⁾	1571
3 Phase motor, 400 V / 3 ph. /, 50 Hz, protection to IP 54																	
frequency inverter / sinusoidal filter																	
GBD 630/4 T120	5779	14000	1445	53	4.40	8.10	—	776	120	120	131	FUG 12	6109 / FU-SF 16	6117	—	—	—

1) incl. operation and 2 speed switch

GBD 630/6/6

GBD 630/4 T120

GBD 630/4/4

Motor protection

Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

Speed control

All types (except GB 630/4 T120) are speed controllable by voltage reduction using a transformer controller. The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve. Type GBD 630/4 T120 is exclusively controllable by frequency inverter.

Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:
 - sound level case breakout
 - sound level intake
 - sound level extract
 in the tables above the performance curve. Beside, the sound power level (on intake) is stated over the rated characteristic curve. In the table below you can also find the case breakout level at 4 m (freefield conditions).

Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.
SDD-U Ref. No. 5627

Wall bracket for wall mounting.
GB-WK 630 Ref. No. 5626

External weather louvers to cover exhaust opening.
GB-WSG 630 Ref. No. 5640

Outdoor cover hood for outdoor installation.
GB-WSD 630 Ref. No. 5749

Information	Pages
Design of systems, acoustic	12 on
General techn. information, speed control	17 on
Accessory-Details	Pages
Speed controller and full motor protection unit	397 on

Specific accessories

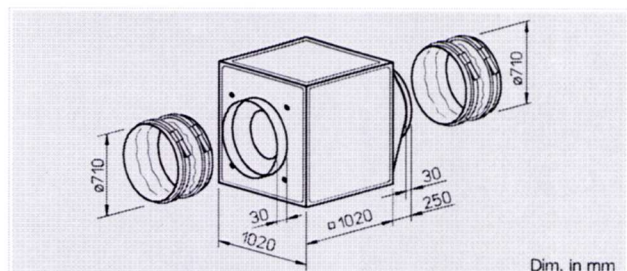
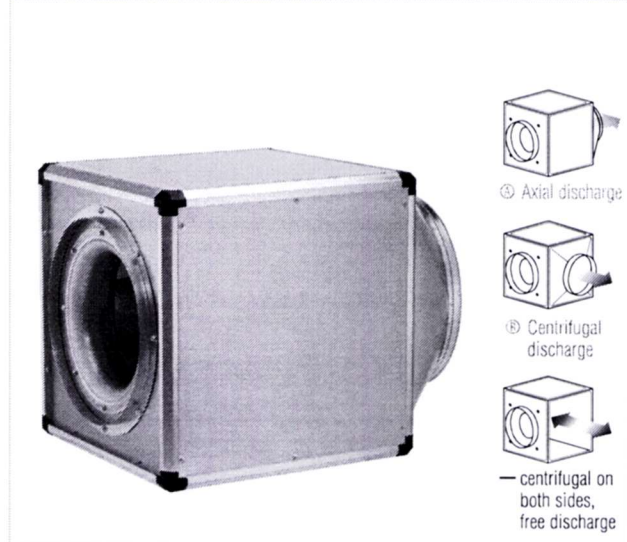
for types GB..
Condensate collector with condensate spigot for pipe connection.
GB-KW 630 Ref. No. 5645
 (Condensate collector with condensate spigot included in delivery with GB.. T120).

On/Off and 2-speed switch for 3-phase star/delta motors.
DS 2 Ref. No. 1351

for types GB.. T120
Rain drainage for outdoor installation (drill holes for rain drainage is already prepared).
GB-RA Ref. No. 9418

²⁾ full motor protection unit recommended:
 MD Ref. No. 5849

Models GB..



■ Specification

■ Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

■ Impeller

Smooth running backward curved aluminium centrifugal impeller highly efficient and direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

■ Motor

Maintenance-free and speed controllable external rotor motor, protection to IP 44. With ball bearings and radio suppressed as standard.

■ Electrical connection

Terminal box fitted on the motor as standard, protection to IP 54.

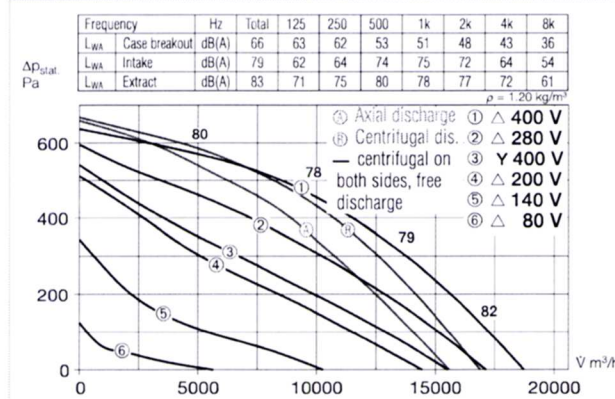
■ Motor protection

Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

■ Speed control

All models are speed controllable using a transformer controller for voltage reduction. The 3 ph.-models can also be operated on two speeds using a Y/Δ switch DS 2 or a full motor protection unit M4. The voltage steps are given in the performance curve.

GBD 710/6/6



■ Information Pages

Design of systems, acoustic 12 on
General techn. information, speed control 17 on

■ Accessory-Details Pages

Speed controller and full motor protection unit 397 on

■ Accessories

Anti vibration mounts for installation indoors. Set of 4.

SDD-U Ref. No. 5627

External weather louvers to cover exhaust opening.

GB-WSG 710 Ref. No. 5641

Outdoor cover hood for outdoor installation.

GB-WSD 710 Ref. No. 5750

Condensate collector with condensate spigot for pipe connection.

GB-KW 710 Ref. No. 5646

On/Off and 2-speed switch for 3-phase star/delta motors.

DS 2² Ref. No. 1351

Type	Ref. No.	Air flow volume (FID)	R.P.M.	Sound press. level case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature full load	Nominal weight (net)	5 step transformer controller with motor protect. unit	Full motor protection unit using the thermal contacts
		V m³/h	min⁻¹	dB(A) at 4 m	kW	A	A	Nr.	+°C	+°C	motor protect. unit	without motor protect. unit
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/Δ-wiring, protection to IP 54												
GBD 710/6/6	5525	16500/18700	690/890	46	1.55/2.45	2.90/4.70	4.70	867	50	50	RDS 7	TSD 7.0
											1578	1504
												M4¹⁾
												1571

¹⁾ incl. operation and 2 speed switch ²⁾ required full motor protection unit: model MD, Ref. No. 5849

AIRCLEAN

YOUR AIR FILTER MANUFACTURER

**Bays 2 & 3 Pattenden Lane, Marden,
Tonbridge, Kent, TN12 9QS**

sales@airclean.co.uk www.airclean.co.uk

HAVANT BOROUGH
COUNCIL

24 SEP 2019

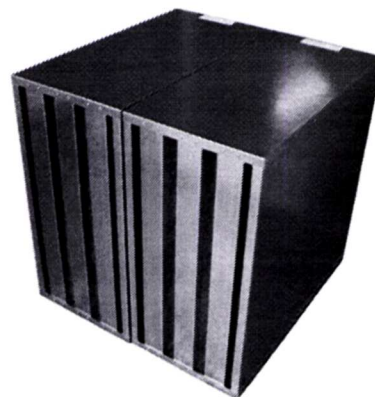
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Tel: 01622 832777

Fax: 01622 832507

Metal Cased Discarbs

The metal cased 'Discarb' cells have the highest carbon loading in our range, and have standard or heavy-duty carbon panels permanently sealed into a galvanised sheet steel casing. This construction gives a very strong unit capable of handling large air volumes or where conditions dictate, increased contact time. The advantage of this unit is that with panels sealed in, there is no possibility of air leakage. Also, these units can be manufactured to almost any reasonable size, the limiting factors being the overall weight for handling purposes and the size of individual panels. When the unit has finished its useful life it is discarded and replaced with a complete new cell.



Standard Duty Cells

Nominal Size	Actual Size mm	Number of	Carb.	Discarb	Airflow		Pressure
W x H x L	W x H x L	Panels	Weight	Weight	m ³ /s	cfm	Pa
12" x 12" x 12"	292 x 292 x 292	6	5 kg	9 kg	0.10	212	75
12" x 12" x 18"	292 x 292 x 445	6	8 kg	14 kg	0.15	318	95
12" x 12" x 24"	292 x 292 x 597	6	10 kg	18 kg	0.22	466	140
18" x 18" x 12"	445 x 445 x 292	8	10 kg	17 kg	0.21	445	55
18" x 18" x 18"	445 x 445 x 445	8	15 kg	25 kg	0.31	657	70
18" x 18" x 24"	445 x 445 x 597	8	21 kg	33 kg	0.41	868	105
24" x 24" x 12"	597 x 597 x 292	12	20 kg	31 kg	0.41	868	70
24" x 24" x 18"	597 x 597 x 445	12	31 kg	45 kg	0.61	1292	90
24" x 24" x 24"	597 x 597 x 597	12	42 kg	59 kg	0.81	1716	130
12" x 24" x 24"	298 x 597 x 597	6	21 kg	35 kg	0.40	847	130

Extra Duty Cells

Nominal Size	Actual Size	No. of	Carb.	Discarb	Airflow		Pressure
W x H x L	W x H x L	Panels	weight	weight	m ³ /s	cfm	Pa
12" x 12" x 12"	292 x 292 x 292	6	6 kg	10 kg	0.13	275	125
12" x 12" x 18"	292 x 292 x 445	6	9 kg	15 kg	0.20	424	175
12" x 12" x 24"	292 x 292 x 597	6	12 kg	20 kg	0.27	572	250
18" x 18" x 12"	445 x 445 x 292	8	12 kg	19 kg	0.30	635	95
18" x 18" x 18"	445 x 445 x 445	8	19 kg	28 kg	0.41	868	125
18" x 18" x 24"	445 x 445 x 597	8	25 kg	37 kg	0.54	1144	185
24" x 24" x 12"	597 x 597 x 292	12	25 kg	35 kg	0.54	1144	125
24" x 24" x 18"	597 x 597 x 445	12	38 kg	52 kg	0.80	1694	150
24" x 24" x 24"	597 x 597 x 597	12	51 kg	68 kg	1.06	2245	225
12" x 24" x 24"	298 x 597 x 597	6	26 kg	46 kg	0.53	1122	225

The company reserves the right to change the specifications without notice. E & OE.

Code AC6/2a Ref 03/13

AIRCLEAN

YOUR AIR FILTER MANUFACTURER

**Bays 2 & 3 Pattenden Lane, Marden,
Tonbridge, Kent, TN12 9QS**

**Tel:01622 832777
Fax:01622 832507**

sales@airclean.co.uk www.airclean.co.uk

Technical

The capacities shown are based on a dwell time of 0.1 seconds .

For contact times of 0.3 seconds, reduce rated airflow to 1/3rd, pressure drop will also reduce to 1/3rd.

Max Temperature 40 Deg C

Max Humidity 80% RH

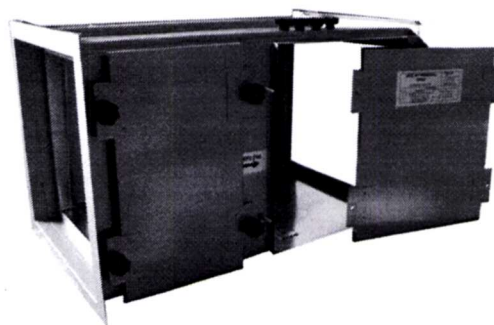
Non-standard sizes

Other sizes are available to suit individual requirements. Our Technical Department will be pleased to advise.

Holding Frames and Casings

For Activated Carbon housing solutions Airclean manufacture a range of Side Withdrawal Housings for industrial applications (See Section 8), and the Kitchavent Range specifically for commercial kitchen extract grease, smoke and odour control (See Section 11.).

Both these systems are heavy duty fully welded painted housings, and incorporate a specially designed clamping and sealing system to ensure minimal air bypass of the carbon filters, ensuring maximum efficiencies.



***Cylindrical & Splitter Silencers
For Fan Systems***

HAVANT BOROUGH
COUNCIL

24 SEP 2019

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FläktWoods

Cylindrical Silencers

Type B & C Silencers

Construction

Casings are of rolled, pre-galvanised sheet steel with spun end rings incorporating tapped inserts for fixing. Suitable fixing screws are provided with all steel silencers.

The absorbent material is acoustic grade mineral fibre with an erosion resistant facing. It is protected and contained by a pre-galvanised perforated steel sheet formed to match the fan diameter.

Cylindrical silencers shall be suitable for air pressures up to a maximum of 1000 Pa. For duct pressures in excess of 1000 Pa please enquire.

A Melinex Lining (variant code M) can be supplied for critically clean applications such as hospitals to ensure no fibre migration. The lining may also be used in moisture or grease laden conditions, such as kitchen extract systems where the material is used to stop the ingress of grease etc. into the acoustic media. The use of the lining also allows the silencers to be low pressure steam cleaned. Some reduction of attenuation due to the lining will be experienced.

Performances

Are derived from tests to BS848. Measurements of fan noise are made with and without the silencer in position. The difference between recorded levels is the dynamic (with airflow) attenuation or insertion loss of the silencer. Type B silencers may be directly coupled to both inlet and outlet flanges of the fan. When type C silencers are directly coupled to the fan flanges they are most effective on the outlet. A spacer duct of 1D length between the fan inlet flange and a type C silencer is necessary to ensure maximum performance. Note: C type silencers mounted close to a fan may effect the aerodynamic performance.

Size Range

Type B silencer bore diameters range from 280 mm to 2000 mm metric range, 6" to 75" imperial range in lengths equal to or twice the bore diameter (1D or 2D) 6" to 9.5" are available in 1.5 D lengths only. Pressure loss for type B silencers is the same as a plain duct.

Type C silencers have a centrally mounted absorbent pod in the airway

for increased attenuation. The pressure loss due to the pod is shown on the chart below.

The diameter range is 315 mm to 2000 mm metric range or 12" to 75" imperial range.

Fume Handling

Stainless Steel, PVC or Polypropylene construction is also available for corrosive atmospheres. Please send details of the application with the enquiry.

Marine Use

The construction of standard silencers has been proved satisfactory for use below decks on ships and oil rigs and a specially strengthened design is available for other locations, please enquire.

Temperature Range

Standard silencers are suitable for temperatures from -40°C to 200°C. When moisture resistant lining is used the continuous air handling temperature is limited to 80°C. Special treatments enable silencers to operate at temperatures up to 600°C. For smoke applications, please enquire.

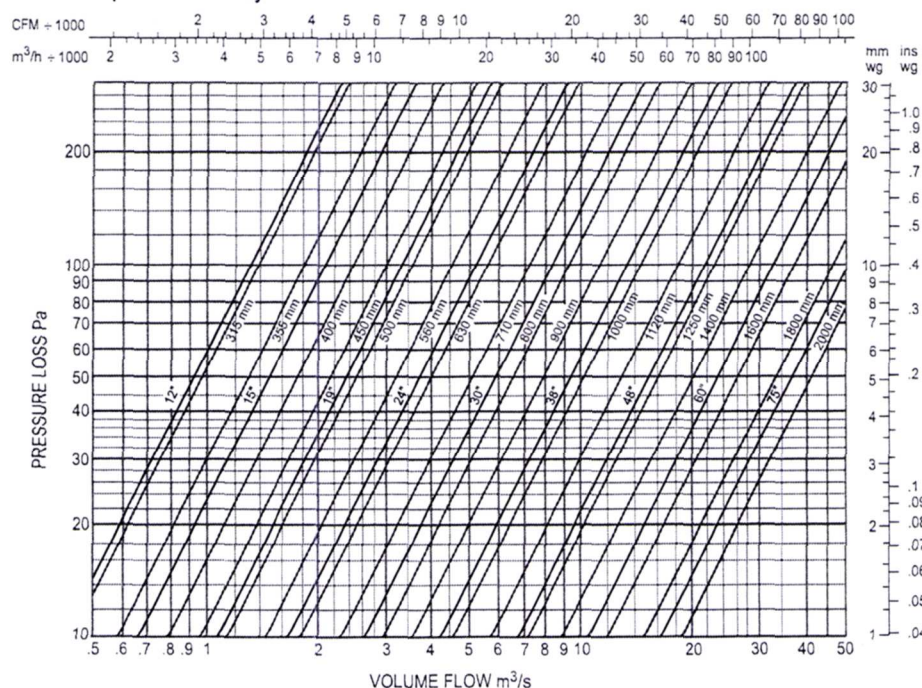
Finishes

Standard finish is galvanised zinc coating to BS2989 Z2. Other finishes including epoxy paint are available to special order.

Mounting

Galvanised steel mounting feet and matching flanges corresponding to those supplied for Aerofoil fans are available.

Resistance to Air Flow Type C Silencer



Cylindrical Silencers

Acoustic Performance

Type B Dynamic Attenuation

Imperial

Bore Dia. Ins (D)	Length	Octave-Band Mid Frequencies Hz							
		63	125	250	500	1K	2K	4K	8K
6	1.5D	0	0	1	6	12	9	10	7
7.5	1.5D	0	0	1	7	11	8	9	6
9.5	1.5D	0	0	2	7	11	7	7	6
12	1D	1	2	4	9	11	10	9	7
	2D	1	2	5	11	16	12	11	10
15	1D	2	3	5	10	13	11	9	8
	2D	3	4	7	14	18	15	11	12
19	1D	2	3	6	13	14	10	10	5
	2D	3	4	8	19	18	14	11	10
24	1D	3	5	7	15	13	8	9	8
	2D	4	6	9	19	14	13	12	
30	1D	3	5	8	16	12	9	9	8
	2D	4	6	10	19	15	12	11	10
38	1D	4	5	11	16	11	10	8	9
	2D	4	6	13	19	13	12	11	11
48	1D	4	6	12	17	10	9	8	7
	2D	5	7	14	19	14	11	11	9
60	1D	5	7	13	16	10	8	7	6
	2D	6	8	15	18	12	10	9	7

Metric

Bore Dia. mm (D)	Length	Octave-Band Mid Frequencies Hz							
		63	125	250	500	1K	2K	4K	8K
280	1D	1	1	2	8	11	8	8	7
	2D	1	2	4	10	13	10	10	9
315	1D	1	2	4	9	11	10	9	7
	2D	1	2	5	11	16	12	11	10
355	1D	1	2	4	10	12	10	9	7
	2D	2	3	6	13	17	14	11	11
400	1D	2	3	5	10	13	11	9	8
	2D	3	4	7	14	18	15	11	12
450	1D	2	3	6	12	13	11	10	6
	2D	3	4	8	17	18	15	11	11
500	1D	2	3	6	13	14	10	10	5
	2D	3	4	8	19	18	14	11	10
560	1D	2	4	7	14	14	9	10	7
	2D	3	5	9	19	18	14	12	11
630	1D	2	5	7	15	13	8	9	8
	2D	4	6	9	19	19	14	13	12
710	1D	3	5	7	15	13	9	9	8
	2D	4	6	9	19	17	13	12	11
800	1D	3	5	8	16	12	9	9	8
	2D	4	6	10	19	15	12	11	10
900	1D	3	5	10	17	13	11	10	8
	2D	4	6	12	19	15	12	11	10
1000	1D	4	5	11	16	11	10	8	9
	2D	4	6	13	19	14	12	11	11
1120	1D	4	5	11	17	11	9	8	8
	2D	4	6	13	19	14	12	11	8
1250	1D	4	6	12	17	10	9	8	7
	2D	4	6	14	19	14	11	11	9
1400	1D	4	6	12	16	10	8	7	6
	2D	4	7	14	18	13	10	10	8
1600	1D	4	7	12	16	10	8	7	6
	2D	4	8	15	18	12	10	9	7

Type C Dynamic Attenuation

Imperial

Bore Dia. Ins (D)	Length	Octave-Band Mid Frequencies Hz							
		63	125	250	500	1K	2K	4K	8K
12	1D	2	5	5	9	18	20	18	15
	2D	2	6	6	12	20	25	20	17
15	1D	2	6	6	10	19	24	20	17
	2D	3	7	8	14	29	29	23	18
19	1D	2	3	8	16	21	22	21	17
	2D	2	4	10	20	29	30	26	20
24	1D	3	5	8	16	19	14	16	12
	2D	5	6	10	19	29	25	21	20
30	1D	4	5	8	16	19	15	14	13
	2D	5	7	10	20	23	21	17	14
38	1D	5	5	11	18	19	14	14	14
	2D	5	6	13	26	24	20	18	16
48	1D	5	8	12	19	17	14	12	10
	2D	5	8	14	25	23	17	17	12
60	1D	5	8	13	17	16	13	11	8
	2D	6	10	17	21	20	17	14	9

Metric

Bore Dia. mm (D)	Length	Octave-Band Mid Frequencies Hz							
		63	125	250	500	1K	2K	4K	8K
315	1D	2	5	5	9	18	20	18	15
	2D	2	6	6	12	20	25	20	17
355	1D	2	5	6	9	18	22	19	16
	2D	2	6	7	13	25	27	21	17
400	1D	2	6	6	10	19	24	20	17
	2D	3	7	8	14	29	29	23	18
450	1D	2	4	7	13	20	23	22	17
	2D	2	5	9	16	29	29	21	20
500	1D	2	3	8	16	21	22	21	17
	2D	2	4	10	20	29	30	20	26
560	1D	3	5	8	16	20	18	19	15
	2D	4	5	10	20	29	28	21	23
630	1D	3	5	8	15	19	16	14	12
	2D	5	6	10	19	29	25	21	20
710	1D	3	5	8	15	19	15	14	12
	2D	5	6	10	20	26	23	18	17
800	1D	4	5	8	16	19	15	14	13
	2D	5	7	11	22	23	21	16	14
900	1D	4	5	9	17	19	15	14	13
	2D	5	7	12	24	23	21	16	15
1000	1D	5	5	11	18	19	15	14	13
	2D	5	7	13	26	24	20	16	16
1120	1D	5	7	11	19	18	14	13	12
	2D	5	8	13	25	23	18	16	13
1250	1D	5	8	12	19	17	14	12	10
	2D	5	8	14	25	17	17	17	12
1400	1D	5	8	12	18	16	13	11	9
	2D	5	9	15	23	22	17	15	10
1600	1D	5	8	13	17	16	13	11	8
	2D	6	10	17	21	20	17	14	9

For sizes above 60" or 1600 mm please enquire.

All performances are derived from tests to BS848.

For increased attenuation use Woods splitter silencers. Attenuation figures shown are typical in-situ Dynamic Performances. For critical applications, particularly high performance fan systems please consult Woods Acoustic Department.

Cylindrical Silencers

Dimensions & Weights

Imperial

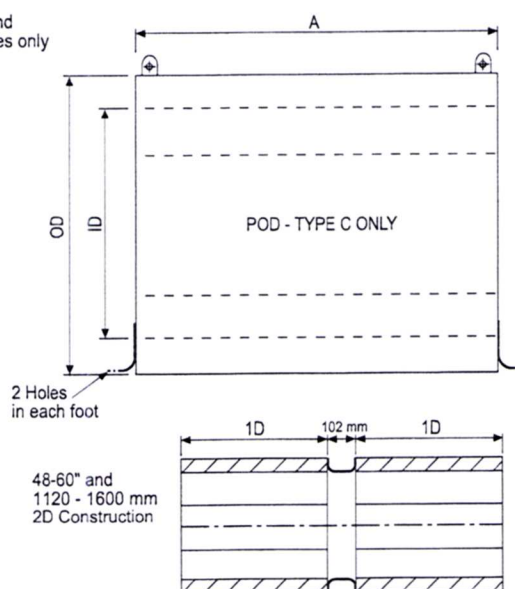
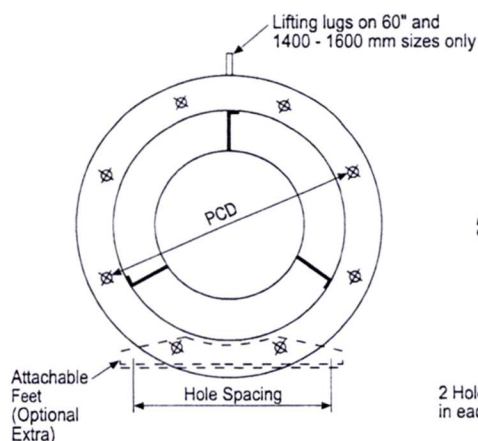
Ins.		Imperial - Dimensions (mm)							Weight kg				
Size (D)	OD	No of Holes	PCD	Thread	Mounting Foot Holes		A Length		B		C		
					Dia	Spacing	1D	2D	1D	2D	1D	2D	
6	210	4	184	M6	7	130	229*		2.7*		-		
7.5	248	4	216	M6	7	152	286*		3.6*		-		
9.5	298	4	273	M8	9	194	362*		5.0*		-		
12	416	8	349	M8	11	273	305	610	10	16	12	18	
15	492	8	425	M10	11	343	381	762	13	22	16	26	
19	645	8	541	M12	11	438	483	965	24	39	28	46	
24	773	12	668	M12	11	559	610	1219	34	57	39	67	
30	926	12	821	M12	14	711	762	1524	51	87	60	102	
38	1181	16	1035	M16	14	914	965	1930	79	149	94	172	
48	1450	20	1289	M16	14	1143	1219	2540	114	239	133	278	
60	1749	24	1626	M16	14	1422	1524	3150	250	529	282	563	

Metric

mm		Metric (mm)							Weight kg				
Size (D)	OD	No of Holes	PCD	Thread	Mounting Foot Holes		A Length		B		C		
					Dia	Spacing	1D	2D	1D	2D	1D	2D	
280	385	4	320	M8	10	230	280	560	9	14	-	-	
315	415	8	355	M8	10	265	315	630	10	17	13	19	
355	455	8	395	M8	10	305	355	710	12	20	15	24	
400	500	8	450	M10	10	350	400	800	15	25	18	30	
450	600	8	500	M10	10	400	450	900	20	33	24	39	
500	650	12	560	M10	10	450	500	1000	25	41	29	48	
560	710	12	620	M10	10	510	560	1120	30	50	35	58	
630	780	12	690	M10	12	580	630	1260	35	61	42	72	
710	860	16	770	M10	10	660	710	1420	44	76	53	90	
800	1000	16	860	M10	12	750	800	1600	55	96	66	116	
900	1100	16	970	M12	12	850	900	1800	70	129	84	150	
1000	1200	16	1070	M12	12	950	1000	2000	82	157	100	182	
1120	1320	20	1190	M12	16	1070	1120	2342	100	211	118	247	
1250	1450	20	1320	M12	16	1150	1250	2602	127	266	147	306	
1400	1600	20	1470	M12	16	1300	1400	2902	199	399	220	453	
1600	1800	24	1680	M16	16	1500	1600	3302	311	637	362	739	

Notes:

- 6" - 9.5" are 1.5D long
- For larger sizes please enquire



Packing Specification

Protective Boards screwed to ends.
Packed length is Silencer length plus 50 mm.
Packed width and height $\frac{1}{2}$ Silencer O.D.

Alternative crated packing

(at extra cost)

Typically:

Packed length is Silencer length plus 150 mm.
Packed section is square.
Side dimension is Silencer O.D. plus 200 mm.

Splitter Silencers

Types WS-WSY-WBS

- Choice of drilled RSA or cleat type flanges
- Higher attenuation patented bend type
- Galvanised steel construction
- Mineral fibre splitter infill
- Erosion resistant to airflow

Casing

Lock formed pre-galvanised steel sheet. Flanges of rolled steel angle hot dip galvanised drilled for duct connection or, formed flanges of pre-galvanised steel strip suitable for cleat fixing (Code WSY). Alternatively spigot ends can be provided, please enquire. All welded cases are available for duct pressures between 1000 and 3000 Pa (Variant code P).

Splitters

Frames are formed from pre-galvanised sheet steel. Absorbent material is resin bonded mineral fibre, in slab form with erosion resistant facing. A melinex lining (Variant Code M) can be supplied for critically clean applications, such as hospitals to ensure no fibre migration. The lining may also be used in moisture or grease laden conditions, such as kitchen extract systems where the material is used to stop the ingress of grease etc. into the acoustic media. The use of the lining also allows the silencer to be low pressure steam-cleaned. Some reduction in attenuation due to the lining will be experienced. Splitters are normally mounted vertically in casing. For horizontal splitters please enquire.

Performances

Data is derived from tests to BS4718 1971. Measurements of a noise source are made with and without the silencer in position. The difference between the recorded levels is the static (without airflow) attenuation or insertion loss of the silencer.

Standard widths (inside duct)					
Airway Width mm	No Modules				
	1	2	3	4	5
50	250	500	750	1000	1250
75	275	550	825	1100	1375
100	300	600	900	1200	1500
150	350	700	1050	1400	1750

- Optional moisture resistant lining
- Low resistance to airflow
- Various materials and constructions available
- Fully tested high temperature models available
- Fully metric range

Size Range

Standard heights (inside duct): 300-1500mm in 150mm increments. Standard lengths: 600-2400mm in 300mm increments. Larger silencers are supplied in sections to be fixed together on site. Silencers can be manufactured in dimensions to suit any applications, please discuss with acoustic department.

Fume Handling

For mildly corrosive atmosphere epoxy paint is available (Variant code K). Where this finish is not sufficiently corrosion resistant many sizes can be supplied constructed in PVC or polypropylene. Please enquire giving details of the application.

Temperature Range

WS, WSY, WBS	-40° to + 200° C
Melinex Lining (M)	-40° to + 80° C
High Temperature (T)	-40° to + 400° C
PVC	-40° max.
Polypropylene	-60° max.

Low Pressure Loss

Inlet and outlet fairings (Variant code L) fitted to the splitters reduce pressure losses by 25%. The silencer casing length is increased by 300mm to accommodate the fairings.

90° Bend Type Silencers

Type WBS is a modified splitter silencer with integral air turning vanes to keep pressure losses to a minimum.

Additional attenuation can be obtained (see table B) together with compactness in plant room layout.

Splitter Silencers

Selection of Type WS/WSY Silencers

Step No.

- 1) Calculate attenuation required preferably using the method detailed in Woods electronic selection programme 'Design for Sound' (See Woods Acoustic Group).
- 2) Use Table A to select the airway width and length of silencer.
- 3) Select width, height and pressure loss from the appropriate pressure loss chart Nos 1-4.
- 4) Check that the silencer airway velocity is low enough for required NC level

Example 1.

● Air volume flow rate = 1.42m ³ /s	Octave band mid freq. Hz:	63	125	250	500	1K	2K	4K	8K
● Required attenuation from calculation:		6	14	26	42	48	46	40	28
Select from table A-WS/100-1500		8	15	26	43	53	53	45	32

- The fan has 100 Pa static pressure available for silencer pressure loss.
- The NC level required is NC35 from which Table C limits the silencer airway velocity to 13m/s.
- From standard widths and heights a suitable WS/100 silencer would be 600 mm wide x 600 mm high.
- Pressure loss from chart 3 = 65Pa
- Silencer airway velocity = Volume Flow (m³/s)

No of A/W x AW width x Height
(metres)

$$= \frac{1.42 \text{ (m}^3\text{/s)}}{2 \times 0.1\text{m} \times 0.6\text{m}}$$

$$= 11.83 \text{ m/s}$$

- Silencer coding would be:-

	WS	100-1500-600-600
Type	_____	_____
Airway width	_____	_____
Silencer Length	_____	_____
Width	_____	_____
Height	_____	_____

For Bend Silencer selections please refer to Woods Acoustic Department

Splitter Silencers

Coding: Type WS/WSE Silencers

Code

WS Drilled Flanges (with Side Liners)
 WSY Cleat Flanges (with Side Liners)
 M Moisture Resistant Lining
 L Low Pressure Loss
 P High System Pressure
 K Fume Resistant
 C Perforated Linings
 CC Stainless Perforated Linings

Variant

Example

WSY LM/75-X-X-X
 Type _____
 Variants _____
 Airway _____
 Width mm _____
 Silencer _____
 Length mm _____
 Width mm _____
 Height mm _____

Coding: Type WBS Silencers

CODE WBS (H or V)
 Plus Variants
 as for type WS

H or V = Bend in Horizontal or Vertical Plane

Example

WBS (H) or (V) M/75-X-X-X-X
 Type _____
 Variants _____
 Airways _____
 Width mm _____
 Air Entry leg
 Dimension L_1 mm _____
 Air exit leg
 Dimension L_2 mm _____
 Silencer _____
 Width mm _____
 Height mm _____

Type WBSH

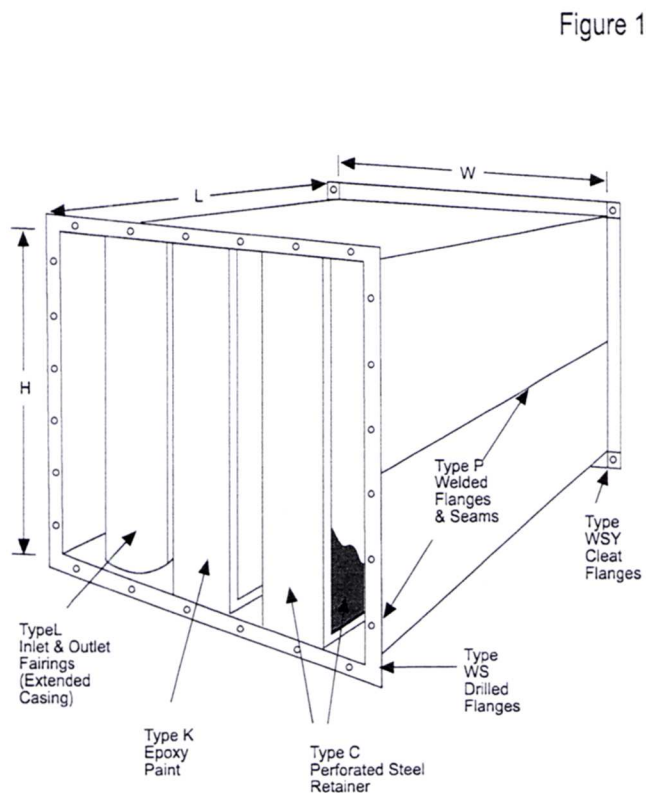
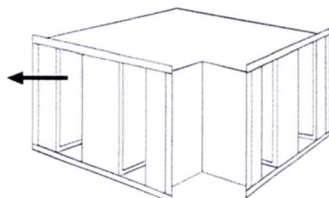


Figure 1

Type WBSV

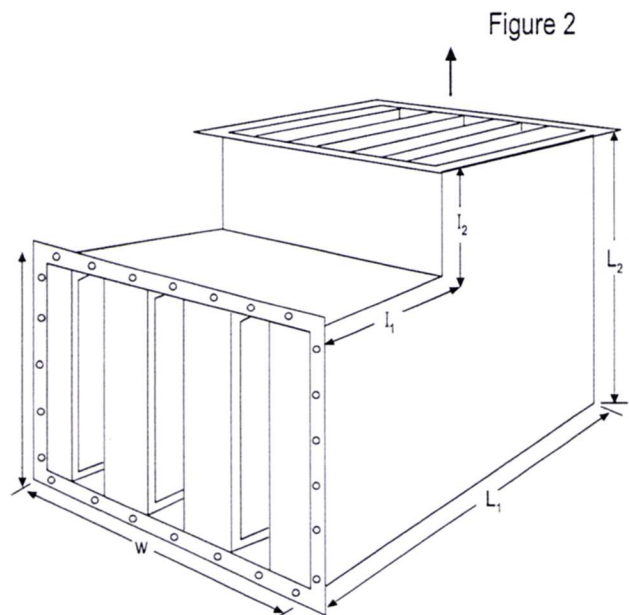


Figure 2

$L_1 + L_2$ Minimum Dimension 100mm
 (300mm fairings Type WBSHL)

Splitter Silencers

Performance

Type WS/WSY

Intermediate airway widths can be provided to suit individual requirements. Please enquire.

Care should be taken in use of 50mm

Airway Silencer. Perforated Linings are required on airways of 75mm or less. Please enquire.

The following airway velocities should not be exceeded for the ventilation space noise levels tabulated, in order to avoid possible noise regeneration in the silencer.

Airway Velocity=

$$\frac{\text{Volume Flow Rate m}^3/\text{s}}{\text{Number of Airways} \times \text{Airway Width} \times \text{Height (metres)}}$$

TABLE C

Velocity m/s	NC/NR Level
15	45-50
13	35-40
10	30

For special applications please enquire.

Table A

Airways mm	Length mm	Octave Band Mid Frequencies							
		Frequency Hz							
		63	125	250	500	1K	2K	4K	8K
50	600	6	12	22	31	40	40	40	30
	900	8	16	27	45	55	55	55	50
	1200	10	20	36	55	55	55	55	55
	1500	13	24	42	55	55	55	55	55
	1800	15	30	51	55	55	55	55	55
	2100	17	34	55	55	55	55	55	55
	2400	19	38	55	55	55	55	55	55
75	600	5	8	11	24	31	32	24	20
	900	6	11	19	34	45	45	39	28
	1200	7	14	26	46	55	55	52	38
	1500	9	17	30	48	55	55	55	42
	1800	10	20	34	50	55	55	55	46
	2100	12	23	40	55	55	55	55	55
	2400	13	24	45	55	55	55	55	55
100	600	4	7	11	21	31	29	21	20
	900	5	9	16	30	39	39	31	26
	1200	6	12	23	40	51	51	41	29
	1500	8	15	26	43	53	53	45	32
	1800	9	17	30	47	55	55	49	36
	2100	11	20	35	55	55	55	55	43
	2400	12	23	40	55	55	55	55	47
150	600	2	5	8	12	15	15	11	7
	900	3	6	11	20	25	25	15	8
	1200	4	7	15	26	33	33	19	11
	1500	5	9	18	33	41	41	24	13
	1800	6	11	22	39	49	49	29	16
	2100	7	13	26	45	55	55	34	19
	2400	8	15	30	52	55	55	39	21

Type WBS

The value of additional attenuation due to the mitred bend should be deducted from the attenuation required.

To obtain the attenuation, dimensions $L_2 + I_2$ must be equal or greater than 2.5 x height for Type WBSV or 2.5 width for Type WBSH.

Table B

Silencer Height for WBSV or width for WBSH	Additional Attenuation in Octave Bands Hz							
	Hz							
	63	125	250	500	1K	2K	4K	8K
300	0	0	2	8	6	3	3	3
450	0	1	5	7	4	3	3	3
600	0	2	8	6	0	3	3	3
750	0	3	8	5	0	3	3	3
900	0	5	7	4	0	3	3	3
1050	0	7	7	4	0	3	3	3
1200	1	8	6	4	0	3	3	3
1350	2	8	6	3	0	3	3	3
1500	3	8	5	3	0	3	3	3

Splitter Silencers

To aid selection, the charts 1-4 show the maximum pressure drop allowable to maintain the NC/NR levels required.

Chart 1 - Resistance to Air Flow Type WS/50

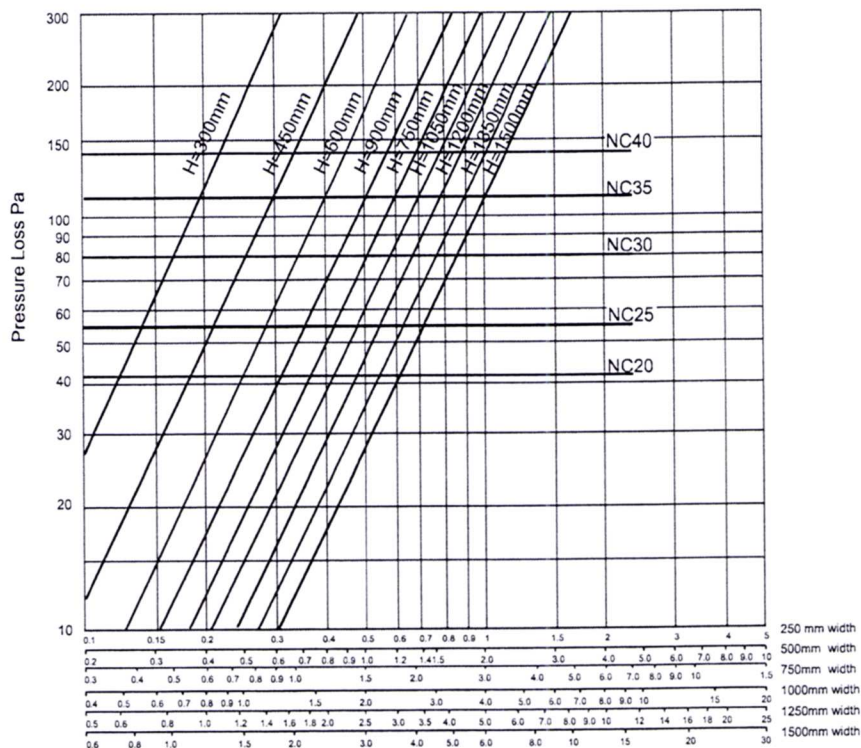
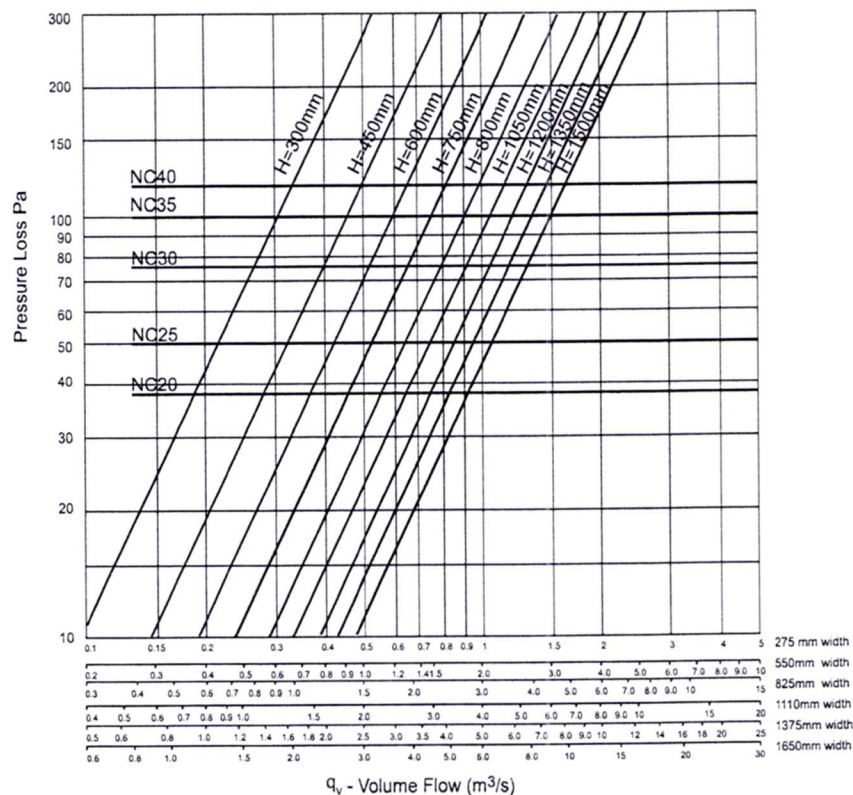


Chart 2 - Resistance to Air Flow Type WS/75



Note: Type WBS pressure loss is 30% higher. Type variant L pressure loss is 25% lower.

Splitter Silencers

Chart 3 - Resistance to Air Flow Type WS/100

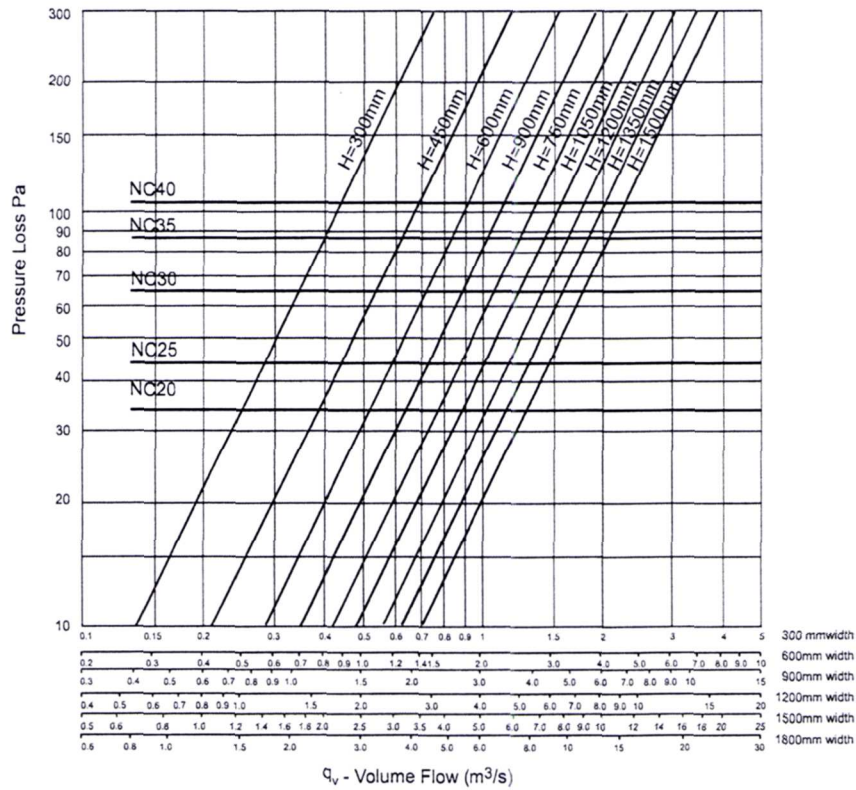
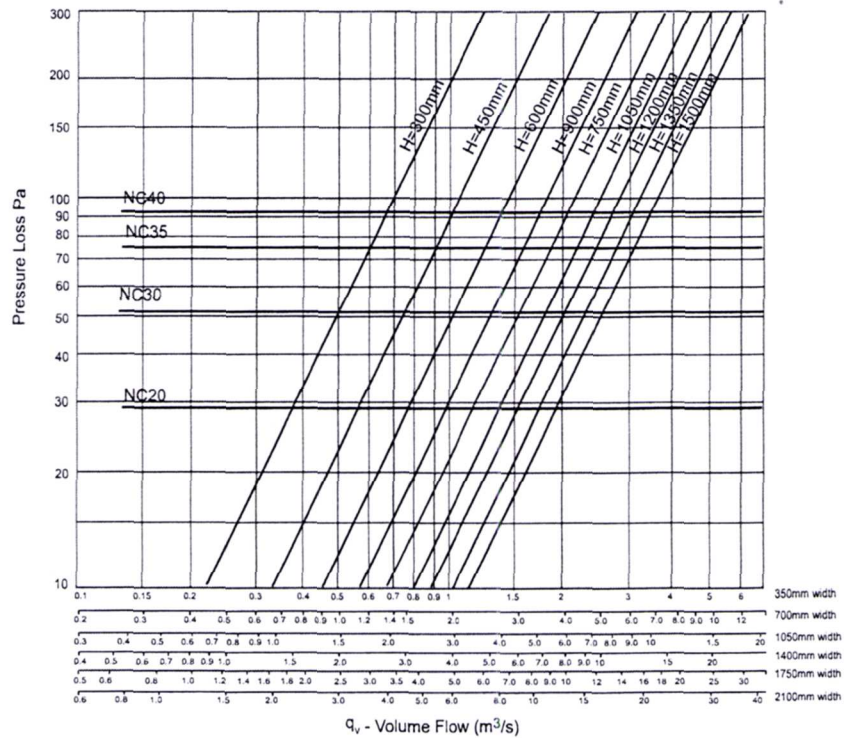


Chart 4 - Resistance to Air Flow Type WS/150



Note: Type WBS pressure loss is 30% higher. Type Variant - L pressure loss is 25% lower.

Splitter Silencers

Dimension & Weights

TYPE WS/WSE/150mm AIRWAY

Number of Modules	Height B mm	Approx. Weight in Kg for length below			
		900 mm	1200 mm	1500 mm	1800 mm
1	300	26	32	39	44
	450	32	39	48	55
	600	37	46	56	64
2	300	44	54	65	75
	450	51	62	79	91
	600	58	73	90	103
	750	70	86	106	120
	900	78	96	118	133
	1050	92	113	138	154
3	450	76	91	117	133
	600	85	106	131	149
	750	102	125	153	172
	900	112	137	168	189
	1050	121	149	184	207
	1200	130	161	199	223
	1350	156	184	222	253
	1500	170	205	243	282
4	600	106	133	166	189
	750	128	157	193	218
	900	140	171	212	239
	1050	150	185	230	260
	1200	160	199	249	280
	1350	192	235	294	331
	1500	203	247	313	353
5	900	168	206	255	288
	1050	179	223	277	312
	1200	191	239	298	336
	1350	230	281	353	399
	1500	242	296	375	423

Note; A and B are internal casing dimensions.

Dimension 'A' = (Airway width + 200) x No. of modules

Flange widths 'E' are as follows:

Longest side up to 900mm - flange width E = 40mm.

Longest side above 900mm - flange width E = 50mm.

Dimension 'J'

= Dim. 'B' = 50mm when dim. 'E' = 40mm

= Dim. 'B' = 60mm when dim. 'E' = 50mm

Dimension 'K'

= Dim. 'A' = 50mm when dim. 'E' = 40mm

= Dim. 'A' = 50mm when dim. 'E' = 50mm

Fixing hole pitches 'F' are in all cases 150mm, clearance holes for M10 screws. N must not be less than 50mm.

$$\text{Number of Modules} = \frac{\text{width}}{\text{Airway size} + 200\text{mm}}$$

Example: WS/100-900-600-600

$$\text{Number of Modules} = \frac{600}{100 + 200} = 2 \text{ Modules}$$

Other Acoustic Products

Type WSO (splitters only) can be tailored made to fit into builders work ducts and shafts.

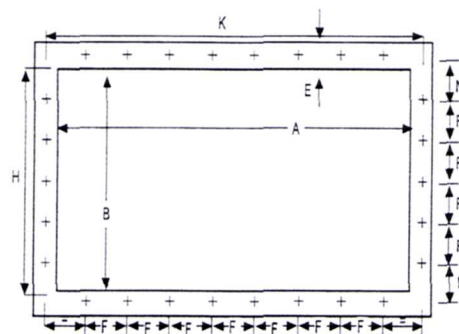
Roof unit silencers (Acoustic curbs)

Acoustic Louvers.

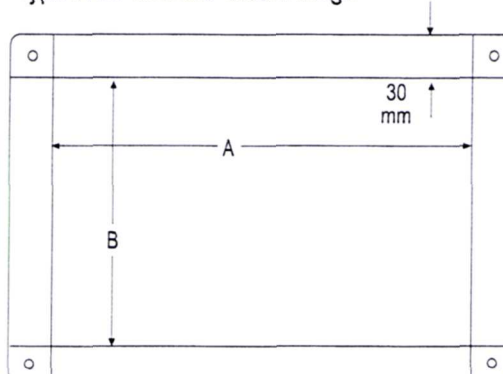
Acoustic Jackets for Fans.

Dimensions

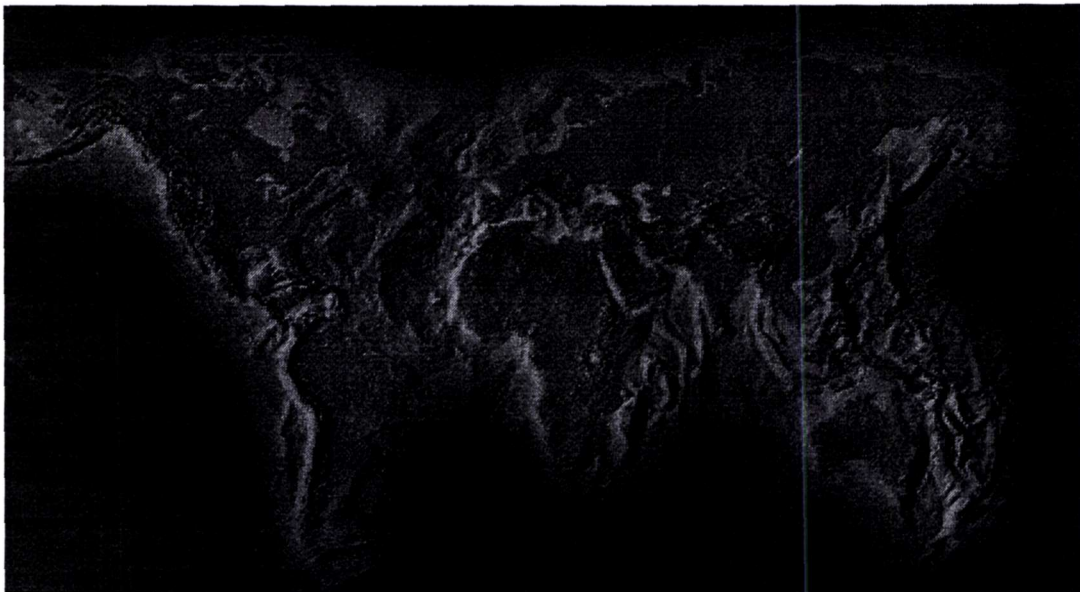
Types WS and WBS silencers



Type WSY Silencer Cleat Flange



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