



ABSORPTION TECHNOLOGY
FILTRATION TECHNOLOGY
ENVIRONMENT TECHNOLOGY

USA CATALOG



















TBH EXHAUST- AND
FILTRATION TECHNOLOGY



TRIPLE PROTECTION
FOR PEOPLE, ENVIRONMENT AND MACHINES



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TRIPLE PROTECTION FOR PEOPLE, ENVIRONMENT AND MACHINES



Principal office and
production location
at Straubenhardt
in the Black Forest

Produced in the Black Forest - distributed worldwide

It applies to Hidden Champions, that they are not in the limelight.
Even if they belong to the leading enterprises of their line of business.

This also applies to us, TBH. Seen alone geographically we operate in secrecy. In the northern part of the **Black Forest**, at the location Straubenhardt, we design and produce in an area of 2000 m², exhaust- and filtration systems for **triple protection** for people, environment and machines. With that, we support you with the creation of future-oriented, **pollutant free workstations**.

3 SPECIFIC REASONS FOR FUTURE-ORIENTED. POLLUTANT FREE WORKSTATIONS:

- Protection of health at work >>> less labor loss due to sick leaves, instead motivated employees
- none particulate matter and emissions into the air >>> protection for you and future generations
- long-term maintenance of value for your machinery >>> less down time and higher productivity

Various uses in industry and medicine

Our modular product range covers the various requirements out of the industrial and medical area.

- Laser-Emission
- Soldering vapor
- Oil- and emulsion vapor,
- Solvent- and gluing vapors
- Dust emissions
- Medical combustion products
- Pharmacies, lab, aesthetic applications



All TBH units
 comply with
 international and national
 quality standards

The compact dimensions of our systems allow an unobtrusive and trouble-free integration at the respective location - whether **mobile** or **stationary**.

Our business activities are complete by custom-designed solutions.

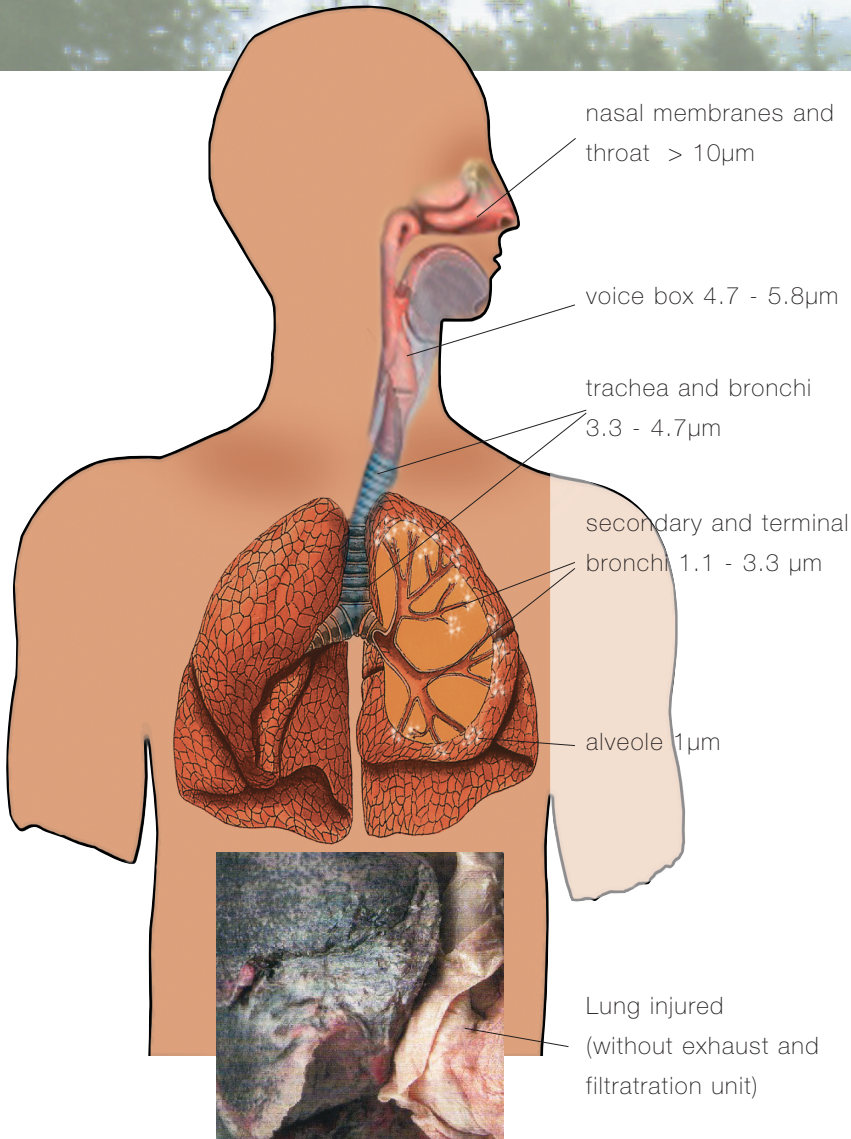
Please contact us, we like to consult.

APPLICATION AREAS

- Electronic industry
- Electrical industry
- Plastic processing
- Metal processing
- Precision engineering industry
- Skilled craft business
- Print- and paper industry
- Restorer
- Surgery
- Pharmaceutical industry
- Pharmacies
- Laboratory
- Hospitals



**TRIPLE PROTECTION
FOR PEOPLE, ENVIRONMENT AND MACHINES**



Why we have to use exhaust and filtration units?

It has been proven, that dust particles can influence the working output and can cause health damages, e.g.

- ▶ tracheitis
- ▶ damage of lung function and tissue
- ▶ asthma and allergic reactions
- ▶ destruction of the self cleaning ability of the lungs, disturbances of the lung function, lung cancer.

DANGEROUS AEROSOLS*

are caused by production processes like milling, drilling, cutting, soldering and engraving. The particle size is given in micrometers. ($\mu\text{m} = 1/1000 \text{ mm}$).

dust = particle size 1 - 10µm

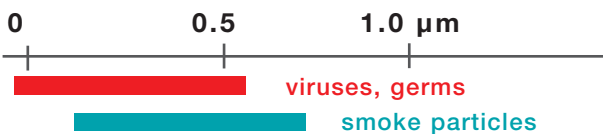
- ▶ hovering, firm particles in the atmosphere

Smoke - Particle size < 1µm

- ▶ particles originating from insufficient burning, vaporization or oxidation of firm materials

mist

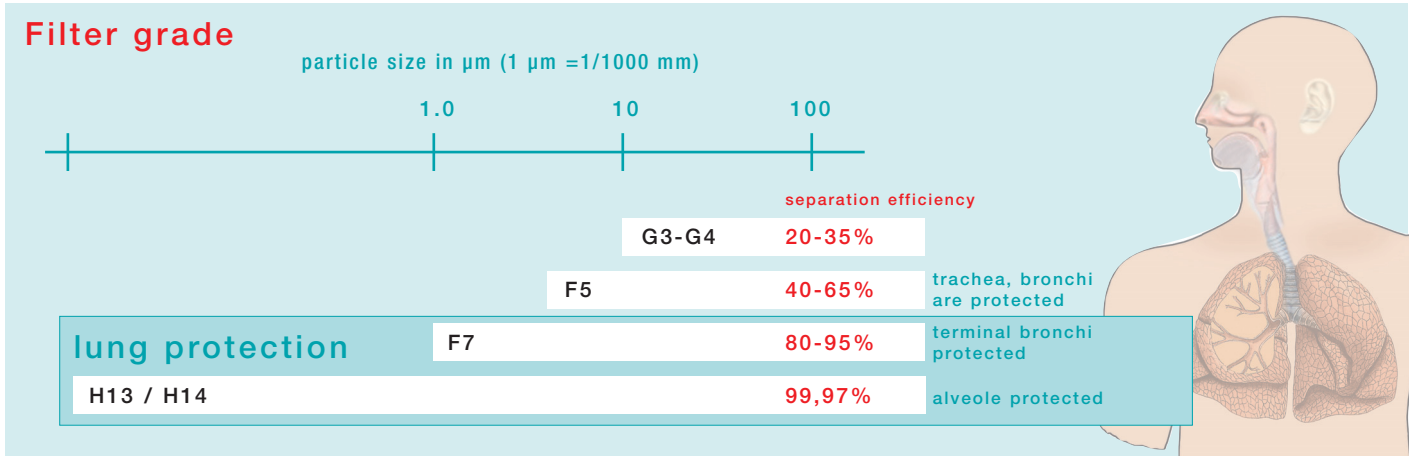
- ▶ drops in the atmosphere originating from processes like condensation, boiling and spraying



IMPORTANT!

The dangerous particles have a size of < 1µm and are inhaled by the lungs!

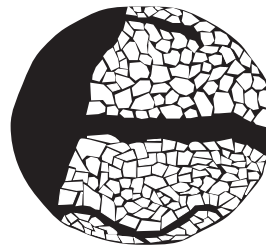
*Aerosols (general term) are particulate material consists dust, smoke and mist.



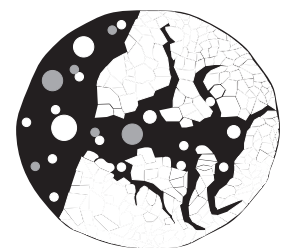
What type of filters are required to get a healthy environment?

To eliminate gaseous harmful and unpleasant substances which occur during various working processes it is suggested to use activated carbon filters. Activated carbon is made from coal, peat etc. By forming fine pores and capillary systems the surface is up to 1500m^2 , per gram of activated carbon. The outcome of this is an excellent separation rate and high adsorption capacity, which results in a long lifetime.

ADSORPTION BEHAVIOUR OF ACTIVATED CARBON



pore structure



pore distribution

WHICH MAINTENANCE WORK IS REQUIRED?

Provided you have a filtration unit which is the correct dimension and depending on the volume of dust, the following intervals apply:

prefilter	2 - 8 weeks
particle filter	4 - 8 months
activated carbon filter	6 - 12 months

adsorption ability of various substances, see technical appendix

IMPORTANT!
 Without regular
 exchange of filters
 there is no protection
 for your health!



TRIPLE PROTECTION FOR PEOPLE, ENVIRONMENT AND MACHINES



APPLICATION RANGE

Adhesive and moist dust, laser emissions, soldering vapor, solvent- and gluing vapors

FUNCTIONAL PRINCIPLE:

The air containing pollutant will be collected by the collection equipment (hood, hose) and conducted via the flexible hose or pipe to the filtration unit. There, the pollutant particles will be collected by multistage filters in accordance to their filter classes. Filter units, which are equipped with a molecular sieve (activated carbon), can adsorb to a large extent the gaseous pollutants. Afterwards the purified air can be returned back to the working room or depending on the application, be conducted to the outside with an exhaust pipe.

STANDARDS

RL 89/336/EWG Electromagnetic Compatibility

RL 72/23/EWG Low Voltage Directive

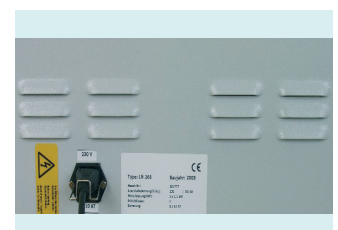
RL 89/292/EWG Machinery Directive



easy replacement of the filters by removing the top cover



contamination free replacement of the filters



Bypass cooling for turbine and electronic parts; longer MTBF for the most important components

Exhaust- and Filtration System LN-Series

Our modularity keeps you flexible and will save you money

FILTER MODULES

The different filter modules allows a simple and individual adaptation to your application. Also after you gain experience, or if you change the used material and other kind of particles are generated, you can change or upgrade the filter system. That saves you significant money.

EASY REPLACEMENT OF FILTERS

The free access from the top allows an easy and almost contamination free replacement of the filters.

HEPA FILTRATION

All TBH filters are tested. The HEPA filter removes particles above 0.3 microns and 95% down to 0.01 microns. Pure clean air returned to the workplace. The large filter surfaces of the pre-filter and HEPA filter leads to very long filter saturation time.

ACTIVATED CARBON

Special pre-treated activated carbon guarantees the adsorption of the different hazardous gases and odor molecules.

HIGH PRESSURE TURBINE/MOTOR

The high pressure turbine pulls air also through partially blocked filters. This increases the filter life even further and reduces your operation costs.

POWERFUL ELECTRONIC FEATURES BUILT IN AND KEEP YOU SAFE

Filter change indicators and alarm signal

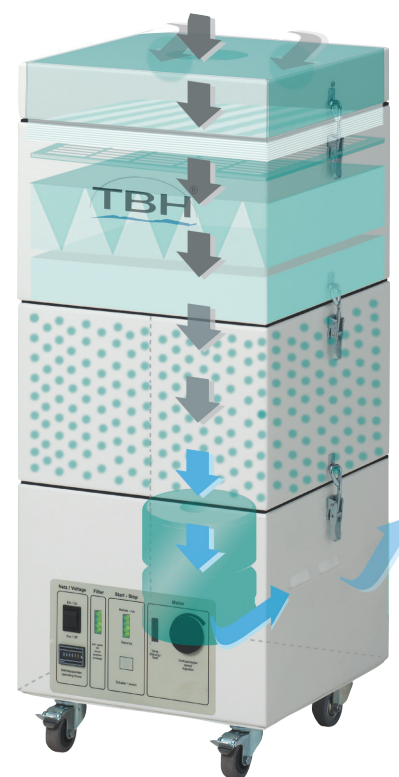
Filter monitoring, warning at a filter saturation level of 80%,

Failure indicator of the turbine/motor

Adjustable air speed

Flow control system keeps the extraction power at the level you set

SUB-D Interface for remote-control of all main functions.



TRIPLE PROTECTION
FOR PEOPLE, ENVIRONMENT AND MACHINES



Exhaust- and Filtration Systems LN 230

APPLICATION RANGE

- adhesive and moist dust
- laser emissions
- soldering vapor
- solvent- and gluing vapors

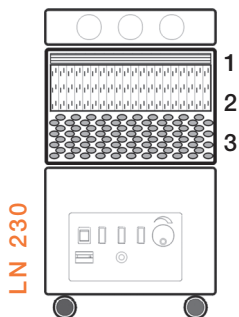
ASSISTANCE

Please do not hesitate to contact us or your local TBH representative.
 Additional application support at www.tbh-online.com

TECHNICAL DATA	UNIT		LN 230		LN 230 M		LN 230 TM	
air flow (free blow)	m³/h	cfm	320	188	320	188	320	188
effective air flow	m³/h	cfm	30 - 280	18 -165	30 - 280	18 -165	30 - 280	18 -165
max. static pressure	Pa	inH2O	21000	84.3	21000	84.3	21000	84.3
voltage/frequency	V/Hz		230 or 120 V / 50-60 Hz					
motor power	kW		1.1		1.1		1.1	
protection class			1		1		1	
motor and drive system			brushless motor					
noise level	db (A)		approx. 62		approx. 62		approx. 62	
noise level	db (A)		with sound absorber approx. -7					
serial interface	Sub-D		25-pin		25-pin		25-pin	
weight	Kg	lbs	40	80	40	80	40	80
dimensions (HXWXD)	mm		700X350X350		1020X350X350		1250X350X350	
dimensions (HXWXD)	inch		27.55X13.77X13.77		40.15X13.77X13.77		49.21X13.77X13.77	
intake socket N/D 50	quantity		2		2		2	
intake socket N/D 80	quantity		1		1		1	
intake socket N/D 100	quantity		1		1		1	

FILTER-CONFIGURATION

AI-Filter (G3)	-	✓	✓
Pre-Filter (F5)	✓	✓	-
Bag Filter (F5)	-	-	✓
MP-TEC Filter (F7)	-	✓	✓
Particle Filter (H13)	✓	✓	✓
Activated carbon	5 kg/11.02 lbs	5 kg/11.02 lbs	5 kg/11.02 lbs



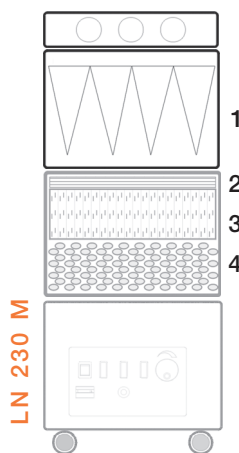
Description	Article-No.
LN 230 120 V 50/60 Hz	90002
LN 230 230 V 50/60 Hz	on request

REPLACEMENT FILTER

Pre-Filter	12950	1
Particle Filter	10013	2
Activated carbon	10004	3

SCOPE OF SUPPLY:

Complete unit with the interior filter accessories, line cord,
 4 castors for mobile use, electronic control, Colour light grey



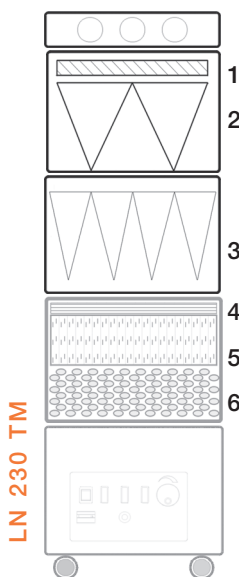
Description	Article-No.
LN 230 120 V 50/60 Hz	90002
LN 230 230 V 50/60 Hz	on request

ADDITIONAL MODULES

M-Module	13344
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REPLACEMENT FILTER

MP-TEC	13333	1
Pre-Filter	12950	2
Particle Filter	10013	3
Activated carbon	10004	4



Description	Article-No.
LN 230 120 V 50/60 Hz	90002
LN 230 230 V 50/60 Hz	on request

ADDITIONAL MODULES

T-Module	12938
M-Module	13344

REPLACEMENT FILTER

AI-Filter	12164	1
Bag Filter	12738	2
MP-TEC	13333	3
Pre-Filter	12950	4
Particle Filter	10013	5
Activated carbon	10004	6

Important information and accessories

Electronic control,
 block diagram
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Drawings
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Accessories LN-series
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Genrel accessories
 see Page 28

Technical appendix
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TRIPLE PROTECTION
FOR PEOPLE, ENVIRONMENT AND MACHINES



Exhaust- and Filtration Systems LN 260

APPLICATION RANGE

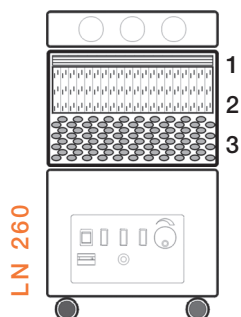
- adhesive and moist dust
- laser emissions
- soldering vapor
- solvent- and gluing vapors

ASSISTANCE

Please do not hesitate to contact us or your local TBH representative.
 Additional application support at www.tbh-online.com

TECHNICAL DATA	UNIT	LN 260		LN 260 M		LN 260 TM	
air flow (free blow)	m³/h cfm	320	188	320	188	320	188
effective air flow	m³/h cfm	30 - 280	18 -165	30 - 280	18 -165	30 - 280	18 -165
max. static pressure	Pa inH2O	21000	84.3	21000	84.3	21000	84.3
voltage/frequency	V/Hz	230 or 120 V / 50-60 Hz					
motor power	kW	1.1		1.1		1.1	
protection class		1		1		1	
motor and drive system		brushless motor					
noise level	db (A)	approx. 60		approx. 60		approx. 60	
noise level	db (A)	with sound absorber approx. -7					
serial interface	Sub-D	25-pin		25-pin		25-pin	
weight	Kg lbs	70	154	90	198	110	242
dimensions (HXWXD)	mm	740X350X655		1100X350X655		1370X350X655	
dimensions (HXWXD)	inch	29.13X13.77X25.78		43.30X13.77X25.78		53.93X13.77X25.78	
intake socket N/D 50	quantity	2		2		2	
intake socket N/D 80	quantity	1		1		1	
intake socket N/D 125	quantity	1		1		1	

FILTER-CONFIGURATION			
AI-Filter (G3)		-	✓
Pre-Filter (F5)		✓	✓
Bag Filter (F5)		-	✓
MP-TEC Filter (F7)		-	✓
Particle Filter (H13)		✓	✓
Activated carbon		13kg/28.65 lbs	13kg/28.65 lbs



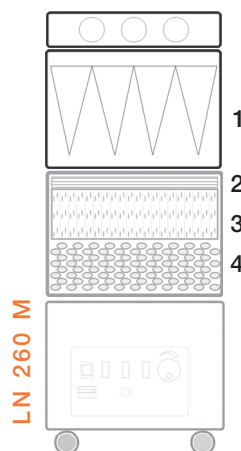
Description	Article-No.
LN 260 120 V 50/60 Hz	90035
LN 260 230 V 50/60 Hz	on request

REPLACEMENT FILTER

Pre-Filter	12980	1
Particle Filter	10009	2
Activated carbon	10046	3

SCOPE OF SUPPLY:

Complete unit with the interior filter accessories, line cord,
 4 castors for mobile use, electronic control, Colour light grey



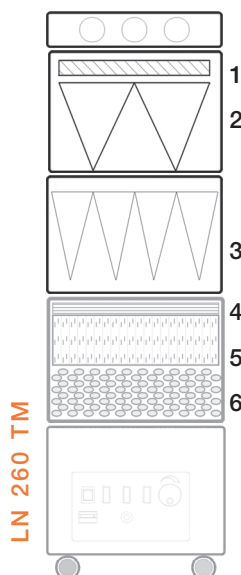
Description	Article-No.
LN 260 120 V 50/60 Hz	90035
LN 260 230 V 50/60 Hz	on request

ADDITIONAL MODULES

M-Module	13313
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REPLACEMENT FILTER

MP-TEC	13310	1
Pre-Filter	12980	2
Particle Filter	10009	3
Activated carbon	10046	4



Description	Article-No.
LN 260 120 V 50/60 Hz	90035
LN 260 230 V 50/60 Hz	on request

ADDITIONAL MODULES

T-Module	12739
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M-Module	13313
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REPLACEMENT FILTER

Al-Filter	12748	1
Bag Filter	12740	2
MP-TEC	13310	3
Pre-Filter	12980	4
Particle Filter	10009	5
Activated carbon	10046	6

Important information and accessories

Electronic control,
 block diagram
 see Page 29-35

Drawings
 see Page 36-41

Accessories LN-series
 see Page 16-17

Genrel accessories
 see Page 28

Technical appendix
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TRIPLE PROTECTION
FOR PEOPLE, ENVIRONMENT AND MACHINES



Exhaust- and Filtration Systems LN 500

APPLICATION RANGE

- adhesive and moist dust
- laser emissions
- soldering vapor
- solvent- and gluing vapors

ASSISTANCE

Please do not hesitate to contact us or your local TBH representative.
 Additional application support at www.tbh-online.com

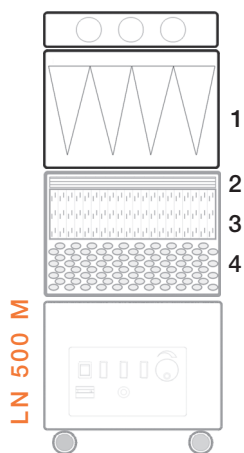
TECHNICAL DATA	UNIT		LN 500 M		LN 500 TM		
air flow (free blow)	m³/h	cfm	1400	824	1400	824	
effective air flow	m³/h	cfm	50 - 800	29 -470	50 - 800	29 -470	
max. static pressure	Pa	inH2O	2700	10.85	2700	10.85	
voltage/frequency	V/Hz		230 or 120 V / 50-60 Hz				
motor power	kW		1.1		1.1		
protection class			1		1		
motor and drive system			brushless motor				
noise level	db (A)		approx. 60		approx. 60		
noise level	db (A)		with sound absorber approx. -7				
serial interface	Sub-D		25-pin		25-pin		
weight	Kg	lbs	100	220	110	242	
dimensions (HXWXD)	mm		1105X350X655		1375X350X655		
dimensions (HXWXD)	inch		43.50X13.77X25.78		54.13X13.77X25.78		
intake socket N/D 50	quantity		3		3		
intake socket N/D 100	quantity		2		2		
intake socket N/D 160	quantity		1		1		

FILTER-CONFIGURATION

AI-Filter (G3)	✓	✓	
Pre-Filter (F5)	✓	-	
Bag Filter (F5)	-	✓	
MP-TEC Filter (F7)	✓	✓	
Particle Filter (H13)	✓	✓	
Activated carbon	13kg/28.65 lbs		

SCOPE OF SUPPLY:

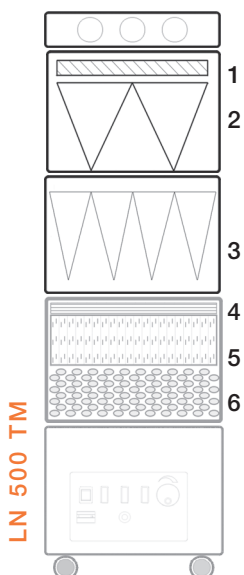
Complete unit with the interior filter accessories, line cord,
4 castors for mobile use, electronic control, Colour light grey



Description	Article-No.
LN 500 M 120 V 50/60 Hz	90123
LN 500 M 230 V 50/60 Hz	on request

REPLACEMENT FILTER

MP-TEC	13310	1
Pre-Filter	12980	2
Particle Filter	10009	3
Activated carbon	10046	4



Description	Article-No.
LN 500 M 120 V 50/60 Hz	90123
LN 500 M 230 V 50/60 Hz	on request

ADDITIONAL MODULES

T-Module	12739
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REPLACEMENT FILTER

AI-Filter	12748	1
Bag Filter	12740	2
MP-TEC	13310	3
Pre-Filter	12980	4
Particle Filter	10009	5
Activated carbon	10046	6

Important information and accessories

Electronic control,
block diagram
see Page 29-35

Drawings
see Page 36-41

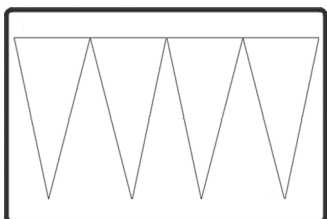
Accessories LN-series
see Page 16-17

Genrel accessories
see Page 28

Technical appendix
see Page 42-48

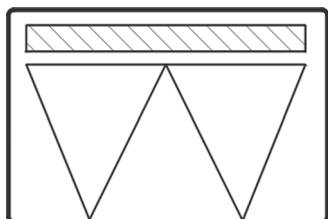
Accessories LN-Series

LN-Standard filter configuration upgrade



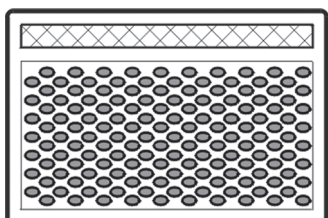
Filter configuration	Model	Article-No.
MP-TEC - Filter (F7) M-MODULE	LN 220/230	13344
	LN 260	13313
	LN 500	13313

FILTER HOUSING MODULE T AS UPGRADE SET - **BAG FILTER**



Filter configuration	Model	Article-No.
AI-Filter (G3) BAG filter (F6)	LN 220/230	12938
	LN 260	12739
	LN 500	12739

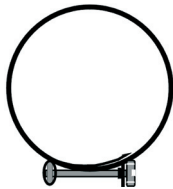
FILTER HOUSING MODULE AS UPGRADE SET - **ACTIVATED CARBON**



Model	Prefilter	Activated carbon ltr/kg	Article-No.
LN 220/230	F5	18/9	12114
LN 260	F5	45/23	12112
LN 500	F5	45/23	12112

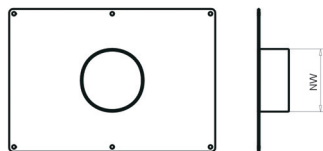
Accessories LN-Series

AIR INLET - FLEXIBLE CONNECTION HOSES



Description	N/D (mm/inch)	Length (m/ft)	Article-No.
hose set with connecting piece	50 / 1.96	2.5/8.20	10008
		5.0/16.40	10010
		10.0/32.80	10033
hose set with nipple and hose clip	80 / 3.14	2.5/8.20	13179
		5.0/16.40	13180
		10.0/32.80	13197
	100 / 3.93	2.5/8.20	13181
		5.0/16.40	13182
		10.0/32.80	13198
	125 / 4.92	2.5/8.20	13183
		5.0/16.40	13184
		10.0/32.80	13199
	160 / 6.29	2.5/8.20	13185
		5.0/16.40	13186
		10.0/32.80	13200

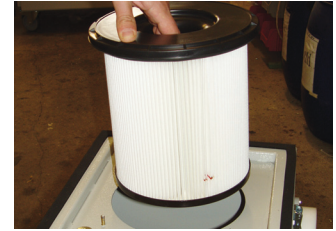
AIR OUTLET - CONNECTION PLATE



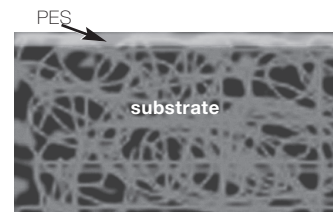
Description	Usage	N/D (mm/inch)	Article-No.
air outlet plate with nozzle, for conducting the air to the outside with the exhaust pipe	LN 220- 265	80/3.14	11709
		100/3.93	12839
		125/4.92	12232
	LN 500	160/6.29	12340

for flexible PVC/PU hoses and hose clips see general accessories

TRIPLE PROTECTION
FOR PEOPLE, ENVIRONMENT AND MACHINES



Cartridge Filter (PES)



Composition of the standard filter cartridge

APPLICATION RANGE

dry dust as in the case of milling, drilling, grinding, laser process of non oily and non sticky material

FUNCTIONAL PRINCIPLE:

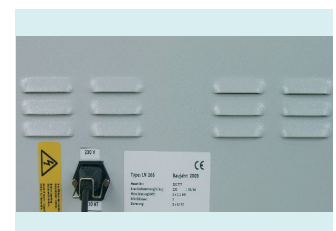
The air containing pollutant will be collected by the collection equipment (hood, hose) and conducted via the flexible hose or pipe to the filtration unit. There, the pollutant particles will be collected on a cleanable cartridge filter. The cleaning process of the cartridge filter can be done by hand with a compressed-air pistol or with the optional automatic dedusting module. The automatic dedusting intervals will be set by the electronic control unit. Depending on the model the dust particles will be collected in a dust drawer or dust container. Because of this it is possible to dispose the collected dust contamination free. Filter units, which are equipped with the optional molecular filter (activated carbon), can adsorb to a large extent the gaseous pollutants. Afterwards the purified air can returned back to the working room or depending on the application, be conducted to the outside with an exhaust pipe.



contamination free replacement of the filters by using the dust bag (included in delivery)

STANDARDS

- RL 89/336/EWG Electromagnetic Compatibility
- RL 72/23/EWG Low Voltage Directive
- RL 89/292/EWG Machinery Directive



Bypass cooling for turbine and electronic parts; longer MTBF for the most important components.

Exhaust- and Filtration System FP-Series

Our modularity keeps you flexible and will save you money

CLEANABLE CARTRIDGE FILTER:

High qualified micro fiber surface of the cartridge filter guarantees a long life for the filter and an efficient dedusting process.

EASY REPLACEMENT OF THE FILTERS

The free access from the top allows an easy and almost contamination free replacement of the filters.

HIGH PRESSURE TURBINE/MOTOR

The high pressure turbine pulls air also through partially blocked filters. That increases the filter life even further and reduces your operation costs.

AUTOMATIC DEDUSTING MODULE

The compressed air is blown out against the normal air stream through the filter material and is cleaning the cartridge filter. The dedusting time intervals are controlled by the electronic control unit.

OPTIONAL ACTIVATED CARBON MODUL

Special pre-treated activated carbon guarantees the adsorption of the different hazardous gases and odor molecules.

POWERFUL ELECTRONIC FEATURES BUILT IN AND HELP YOU SAVE

Filter change indicators and alarm signal
 Filter monitoring, pre-information at a filter saturation of 80%,
 Failure indicator of the turbine/motor
 Adjustable air speed
 Flow control system keeps the extraction power at the level you set
 SUB-D Interface for remote-control of all main functions



TRIPLE PROTECTION
FOR PEOPLE, ENVIRONMENT AND MACHINES



Exhaust- and Filtration System FP 150

APPLICATION RANGE

dry dust as in the case of milling, drilling, grinding, laser process of non oily and non sticky material

ASSISTANCE

Please do not hesitate to contact us or your local TBH representative. Additional application support at www.tbh-online.com

TECHNICAL DATA	UNIT	FP 150
air flow (free blow)	m ³ /h cfm	280 164
effective air flow	m ³ /h cfm	30-250 17-147
max. static pressure	Pa inH2O	20000 80.73
voltage	V	120/230
frequency	Hz	50-60
motor power	kW	1.1
protection class	1	1
motor and drive system	-	brushless motor
noise level	db(A)	approx. 64
noise level with noise reduction module	db(A)	approx. -7 (optional)
serial interface	Sub-D	25-pin
weight	Kg lbs	50 110
dimensions (HXWXD)	mm	960x350x350
dimensions (HXWXD)	inch	7.79X13.77X13.77
intake socket N/D 80	mm	2 x 80
automatic cleaning via air pressure		optional

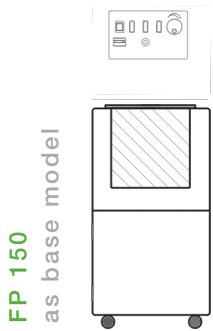
SCOPE OF SUPPLY:

Complete unit with the interior filter accessory, line cord, 4 castors for mobile use, position of the inlet socket as to be ordered **separately**.

Optional: activated carbon module / automatic cleaning module

FILTER-CONFIGURATION

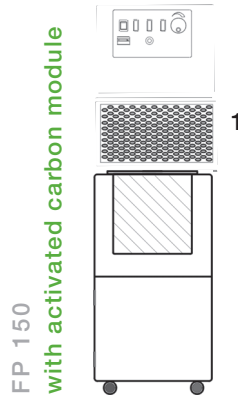
cartridge Filter(for dedusting) BIA C, K	✓
Activated carbon (optional)	5 kg/11.02 lbs



Description	Article-No.
FP 150 120 V 50/60 Hz	90121
FP 150 230 V 50/60 Hz	on request

REPLACEMENT FILTER

Cartridge filter	12564
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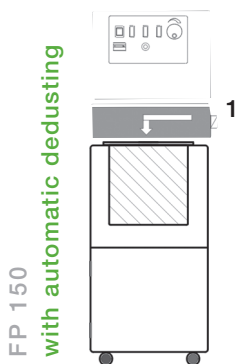
Description	Article-No.
-------------	-------------

ACCESSORIES

Activated carbon-module	11610	1
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REPLACEMENT FILTER

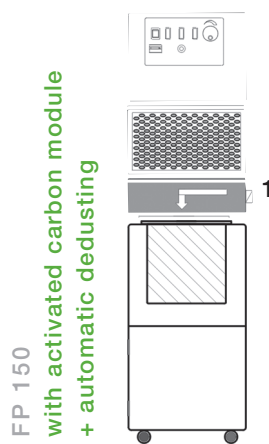
Activated carbon	13021
------------------	-------



Description	Article-No.
-------------	-------------

ACCESSORIES

Module: automatic dedusting	13496	1
pressure regulator	11783	



Important information and accessories

Electronic control,
 block diagram
 see Page 29-35

Drawings
 see Page 36-41

Accessories FP-series
 see Page 24

Genrel accessories
 see Page 28

Technical appendix
 see Page 42-48



*similar model

Cartridge Filter Pre-Separator **FPV 100**

APPLICATION RANGE

- for mechanical pre-separation of dry dust emissions
- used for extremely high dust amounts
- the Cartridge Filter Pre-Separator can be pre-connected to the models LN 220 / 230/ 260/ 265/ 500 and will reduce the filter maintenance intervals of the LN extraction systems to a minimum. Value/profit: Substantial reduction of the filter replacement costs.

FUNCTIONAL PRINCIPLE

The Cartridge Filter Pre-Separator will be pre-connected added to the intake- and Filtration systems of the LN-Series. The dusty air will be pre-filtered by a cartridge filter with the filter class M (H12). With that, the coarse and middle size particles will be separated. The cleaning process of the cartridge filter takes place by a handwheel. The dust particles will be collected in a dust container and can easily be disposed of.

SCOPE OF DELIVERY:

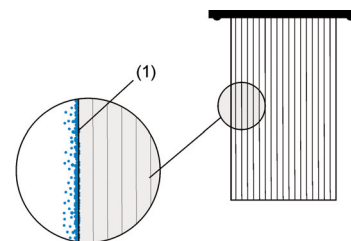
Complete unit with dust container and cartridge filter, colour gray, Cleaning process by handwheel, air inlet- and outlet- socket set has to be ordered **seperately**.

TECHNICAL DATA	UNIT	FPV 100
dimensions (HxWxD)	mm / inch	1290x450x450 / 50.78X17.71X17.71
cartridge filter	class	M (antistatic)
air inlet- and outlet- socket set		please order seperately
max. allowed air flow	m ³ /h / cfm	800 / 470
dust container	litre	10
Cleaning process		handwheel
Article-No. FPV-100		90045
Article-No. Replacement Cartridge filter		13329

air inlet/air outlet socket set					
N/D (mm/inch)	50/1.96	80/3.14	100/3.93	125/4.92	160/6.29
Article.-No.	13345	13346	13347	13348	13349

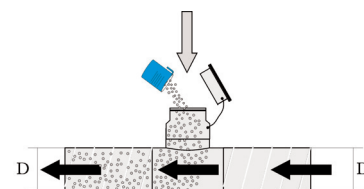
Pre-coating process for cartridge filter systems

When exhausting sticky dust emissions, cleanable filter cartridges can be only protected against sticking together by the use of pre-coating medium. Before exhausting the sticky dust particles, the pre-coating medium has to be filled in slowly into the exhaust tube or hose at the actual operation of the exhaust system. Thus the pre-coating powder spreads itself evenly at the cartridge filter and forms a protective layer (1) on the filter material. This protective layer prevents the filter pores to become quickly blocked or pasted up. This pre-coating process has to be repeated after each cleaning process. Cleanable cartridge filter systems can be therefore used also for exhaust- and filtration systems problematic materials. This solution should be preferred for high amounts of dust emissions instead of the saturation filters of the LN-Series.



Filler for the pre-coating material

DIAMETER(D)		UNIT		ARTICLE-NO.
80	3.14	mm	inch	13711
100	3.93	mm	inch	13712
125	4.92	mm	inch	13715
160	6.29	mm	inch	13713



Pre-Coating material - TBH-PRECOFIX 1000

The hydrophobic pre-coating material is powdery and prevents the cartridge filter to become blocked or pasted up.

- according to the current EEC Marking Obligation no labelling is required
- no hazardous material

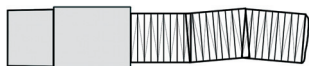
Proposed amount per m² filter surface = 5g or 5ml

Example: FP200 with a filter surface of 14m² = 70g or 70ml per pre-coating process

TBH-PRECOFIX 1000		ARTIKEL-NR.
5kg	11.02 lbs	13730

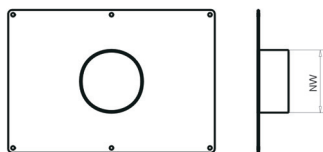
Accessories FP-Series

AIR INLET - FLEXIBLE CONNECTION HOSES



Description	N/D in mm / inch	Length (m/ft)	Article-No.
hose set with nipple, hose clip, sleeve 63 and reduction 80 to 63	63 / 2.48	2.5/8.20	13462
		5.0/16.40	13463
		10.0/32.80	13464
hose set with nipple and hose clip	80 / 3.14	2.5/8.20	13179
		5.0/16.40	13180
		10.0/32.80	13197

AIR OUTLET - CONNECTION PLATE



air outlet plate with nozzle, for conducting the air to the outside with the exhaust pipe.	N/D (mm/inch)	Article-No.
	100/3.93	11709
	125/4.92	12839

for flexible PVC/PU hoses and hose clips see general accessories



External remote control units for exhaust- and filtration systems

APPLICATION RANGE

For all systems of the series LN, GL, FP, FPM and OEN which have our new electronic display and interface functions. Please do not hesitate to call us.

Cable Remote Control Unit



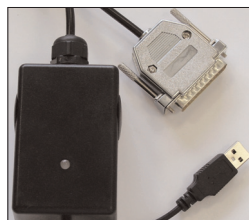
FUNCTIONS

- Display "filter blocked"
- Switch Run / Stand-by
- Infinitely adjustable speed controller
- Start position of the exhaust system: stand-by-mode

DESCRIPTION	ARTICLE-NO.
Cable Remote Control Unit	13771

SCOPE OF SUPPLY:
Remote control unit with 7m / 22ft cable

USB Remote Control Unit



FUNCTIONS

- Switch Run / Stand-by
- Start position of the exhaust system: stand-by-mode

DESCRIPTION	ARTICLE-NO.
USB Remote Control Unit	13830

SCOPE OF SUPPLY:
USB remote control unit with 7m / 22ft cable, Software (compatible for Microsoft Windows, no additional driver necessary)

Electrical Foot Switch



FUNCTIONS

- Switch Run / Stand-by
- Start position of the exhaust system: stand-by-mode

DESCRIPTION	ARTICLE-NO.
Electrical Foot Switch	13772

SCOPE OF SUPPLY:
Foot switch with 2m / 7ft cable

TRIPLE PROTECTION FOR PEOPLE, ENVIRONMENT AND MACHINES

Chip-Collector CC-SCB

APPLICATION RANGE

Reasonably priced exhaust- and filtration system for chips produced during the process of engraving, milling, drilling of the dry material

FEATURES - YOUR VALUE / PROFIT

- reasonably priced exhaust system
- low noise level
- 230V / 120V - switchable
- easy filter replacement

STANDARDS

RL 89/336/EWG Electromagnetic Compatibility

RL 72/23/EWG Low Voltage Directive

RL 89/292/EWG Machinery Directive



Chip-Colektor CC-SCB



easy replacement of filter

FUNCTIONAL PRINCIPLE:

The air containing dust particle and chips will be collected by the collection equipment (hood, hose) and conducted via the flexible hose or pipe to the filtration unit. There, the chips and dust particles will be collected by a special cleanable bag filter. Afterwards the purified air can be returned back to the working room.

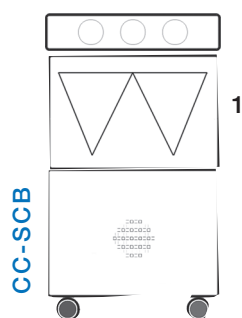


Exhaust- and Filtration Systems **Chip-Collector CC-SCB**

TECHNICAL DATA	UNIT		CC-SCB	
air flow (free blow)	m³/h	cfm	120	70
effective air flow	m³/h	cfm	80	47
max. static pressur	Pa	inH2O	13000	52.24
voltage (switchable)	V		120/230	
frequency	Hz		50/60	
power input	kW		0,3	
protection class			1	
motor and drive system			brushless motor	
noise level	db (A)		approx. 50	
weight	Kg	lbs	approx. 26 57	
dimensions (HXWXD)	mm		640x350x350	
dimensions (HXWXD)	inch		25.19X13.77X13.77	
intake socket N/D 50	quantity		1	
intake socket N/D 32	quantity		1	
intake socket N/D 12	quantity		2	

FILTER-CONFIGURATION

Bag filter		✓
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Description	Article-No.
CC-SCB 230/120 V 50/60 Hz	90081

REPLACEMENT FILTER

Bag filter	12607	1
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SCOPE OF SUPPLY:

Complete unit with the interior filter accessories, line cord, 4 castors for mobile use, electronic control, Colour Grey

Important information and accessories

Electronic control,
 block diagram
[see Page 29-35](#)

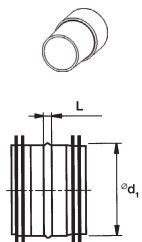
Drawings
[see Page 36-41](#)

Genrel accessories
[see Page 28](#)

Technical appendix
[see Page 42-48](#)

Accessories

Hose connection parts



DESCRIPTION	MM	INCH	ARTICLE-NO.
Hose connection	44	1.73	10005
Nipple for hose/tubes	80	3.14	10487
Nipple for hose/tubes	100	3.93	10490
Nipple for hose/tubes	125	4.92	10493
Nipple for hose/tubes	160	6.29	10469

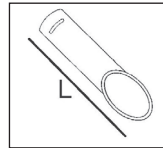
Miscellaneous Accessory parts

BRANCH 90°



160 mm/ 6.29 inch	N/D in mm/inch	
	Ø 100/3.93	Ø 125/4.92
	10702	10706

ALSIDENT ACCESSORIES SYSTEM 50

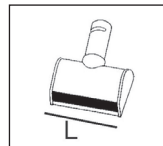


EXTRACTOR TUBE (ESD)	
Length	210 mm, 8.26 inch
Article-No.	10392

REDUCTION



125 mm/ 4.92 inch 160 mm/ 6.29 inch	N/D in mm/inch	
	Ø 100/3.93	Ø 125/4.92
	10592	-
	10586	10590



EXTRACTOR NOZZLE (ESD)	
Length	210 mm, 8.26 inch
Article-No.	10395

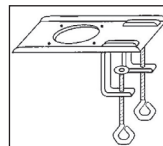
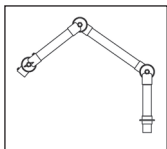


TABLE BRACKET	
Design	powder-coated (white)
Article-No.	10179

EXHAUST ARM SYSTEM 50 - TABLE MOUNTED (VERTICAL)



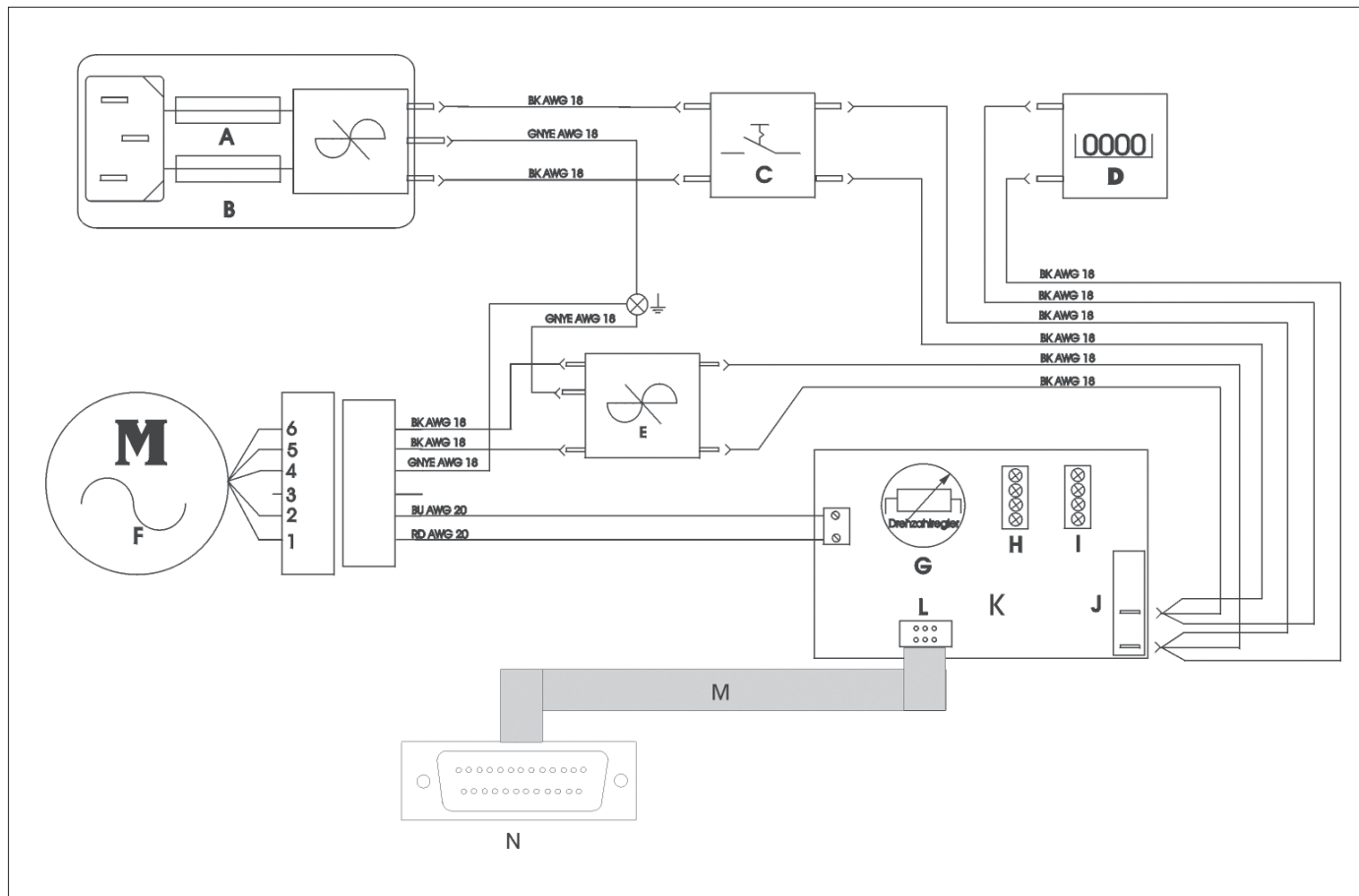
TECHNICAL DATA	UNIT	VALUE
Diameter	mm inch	50 1.96
Joints	quantity	3
Reach	mm inch	850 33.46
Design	-	(ESD) / AL chromated
Article-No.		10389
connecting sleeve for tubes N/D 44mm/1.73 inch		10339

Electronic control and interface description

LN-Series

Functions	LN 230	LN 260	LN 500	
infinitely adjustable speed controller	✓	✓	✓	
automatic readjustment of the air flow	✓	✓	✓	
optical advance warning at 80% filter saturation	✓	✓	✓	
optical display for filter blocked(shutdown of the device)	✓	✓	✓	
optical display for filter blocked	-	-	-	
operating hour meter	-	-	-	
real time operating hour meter	✓	✓	✓	
display for notice of malfunction	✓	✓	✓	
switch and display for start/stand-by modus	✓	✓	✓	
Serial Interface functions				
serial interface	Sub-D	Sub-D	Sub-D	
start/stop operation over interface	✓	✓	✓	
signal filter blocked	✓	✓	✓	
speed control over interface	✓	✓	✓	
notice of malfunction over interface	✓	✓	✓	

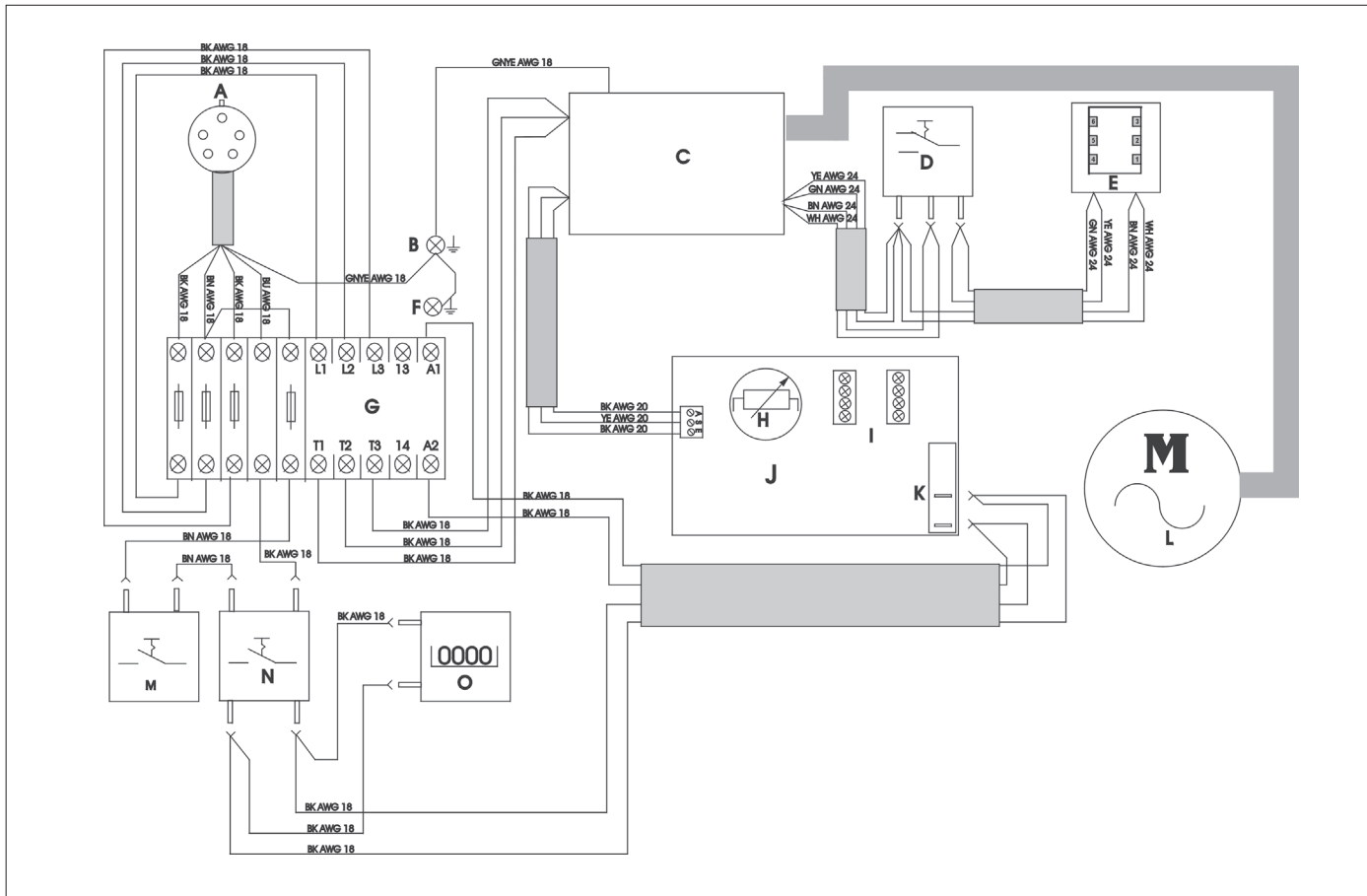
Block diagram - LN 230/260



Legend

- | | | |
|--------------------|------------------------------------|------------------------|
| A=Fuse | B=line filter (input) | C=mains switch |
| D=Hour meter | E=line filter | F=EC Turbine |
| G=speed controller | H=Display(Stand-by/Run) | I=Display(filter full) |
| J=mains connexion | K=printed circuit board | L=interface |
| M=ribbon cable | N=Control Interface (D-Sub 25pol.) | |

Block diagram - LN 500



Legend

A=Mains Supply

D=switch stand-by

G=Motor-Circuit switch

J=Electronic Control Board

M=Door Switch

B=Grounding - Motor house

E=Interface

H=speed controller

K=Mains Supply

N=On/Off-switch

C=Motor Control unit

F=Grounding Door

I=operating mode display

L=EC-Blower

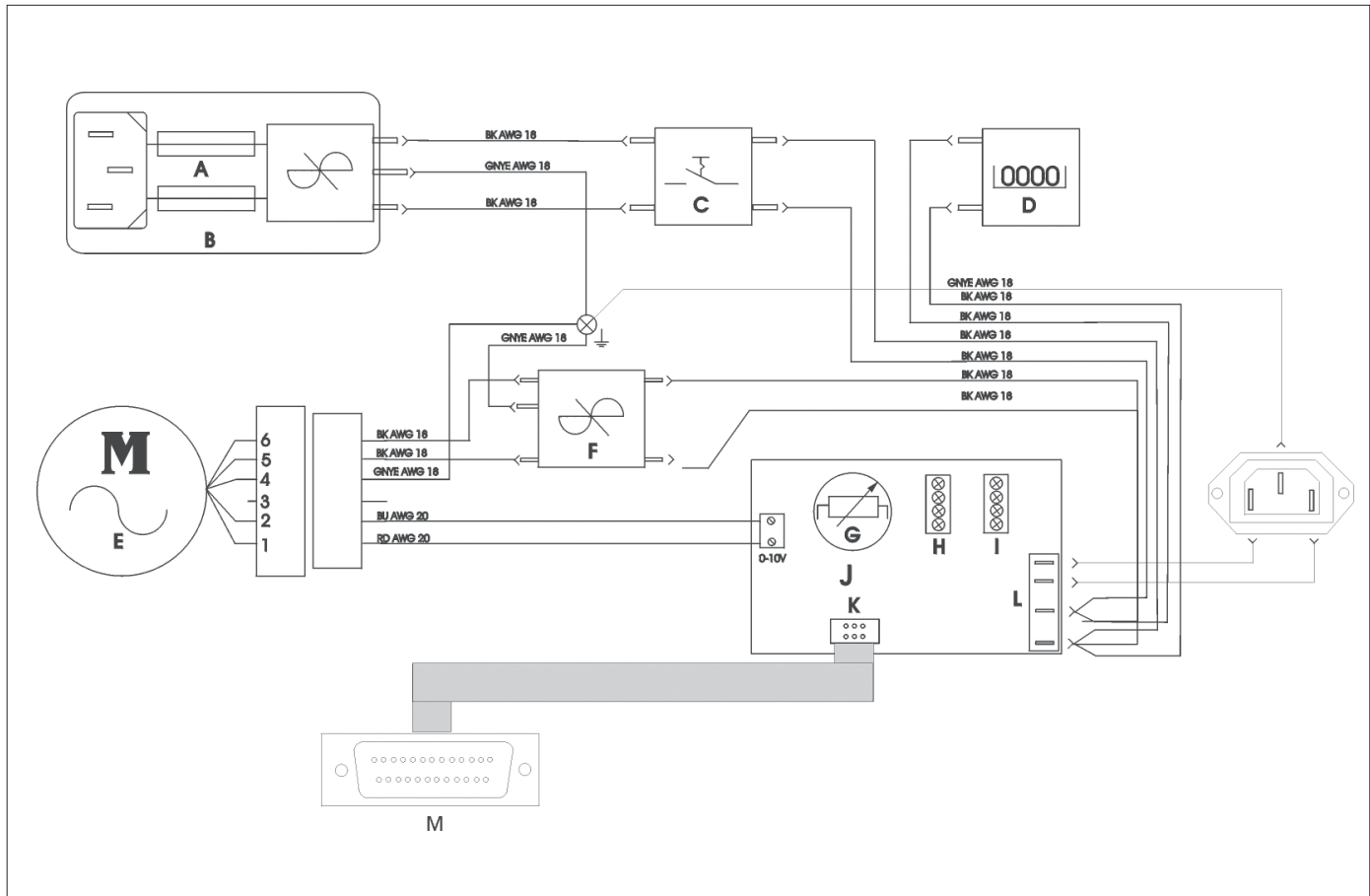
O=hour meter

Electronic control and interface description

FP-Series

Functions	FP 150	
automatic dedusting of filter	✓	
infinitely adjustable speed controller	✓	
automatic readjustment of the air flow	✓	
optical advance warning at 80% filter saturation	✓	
automatically setting of the cleaning interval	✓	
optical display for filter blocked(shutdown of the device)	✓	
optical display for filter blocked	-	
operating hour meter	-	
real time operating hour meter	✓	
display for notice of malfunction	✓	
display and switch for Start/Stand-by operation	✓	
Serial interface functions		
serial interface	Sub-D	
start/stop operation over interface	✓	
signal filter blocked	✓	
speed control over interface	✓	
notice of malfunction over interface	✓	

Block diagram - FP 150



Legend

A=Fuse

D=Hour meter

G=speed controller

J=Printed circuit board

M=Control interface (D-Sub 25pol.)

B=line filter (input)

E=EC-Turbine

H=Display(Stand-by/Run)

K=interface

C=Mains switch

F=line filter

I=Display(filter full)

L=mains connexion

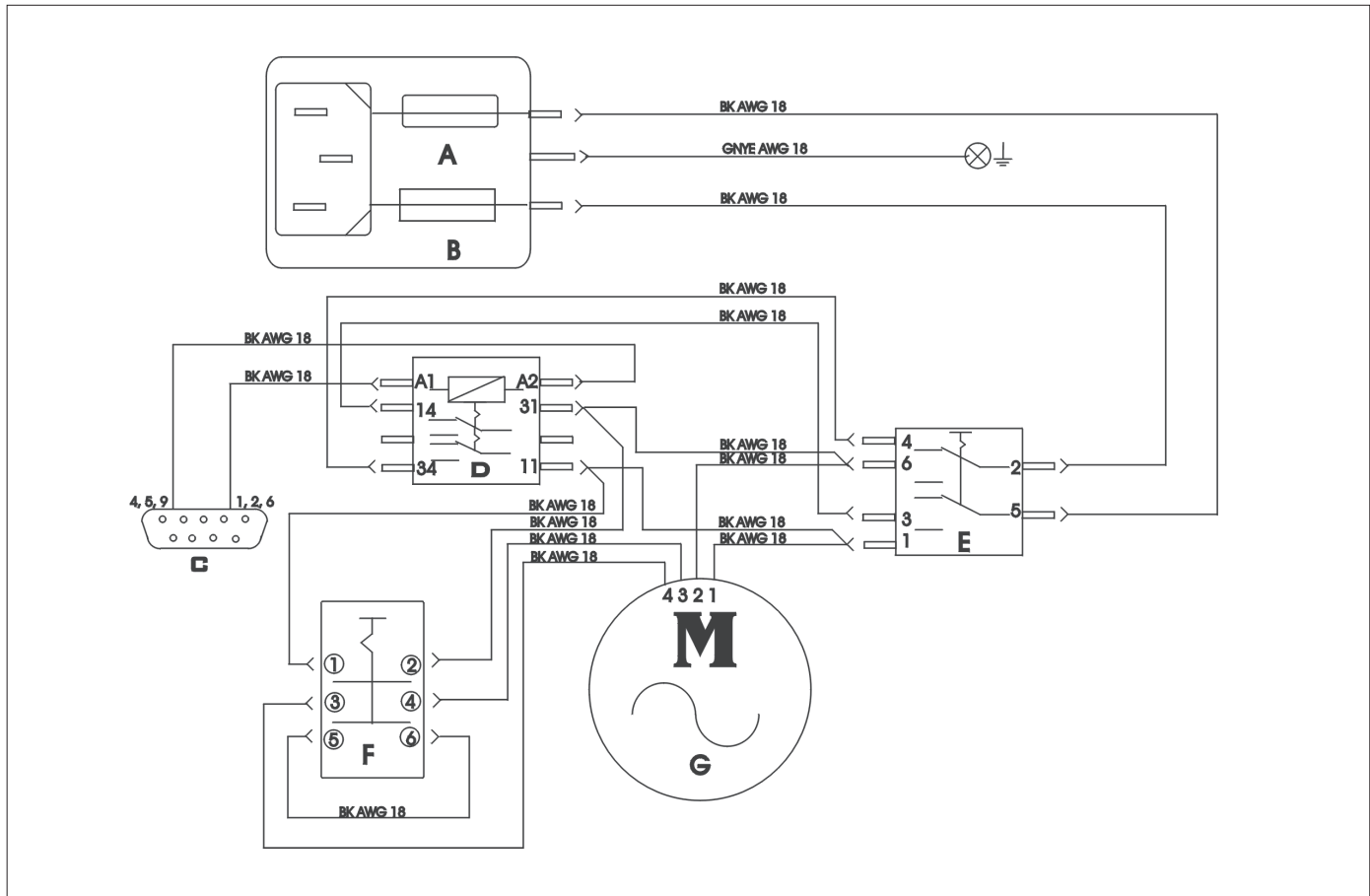


Electronic control and interface description

Chip Collector

Functions	Chip Collector	
infinitely adjustable speed controller	-	
automatic readjustment of the air flow	-	
optical advance warning at 80% filter saturation	-	
optical display for filter blocked(shutdown of the device)	-	
optical display for filter blocked	-	
operating hour meter	-	
real time operating hour meter	-	
display for notice of malfunction	-	
switch and display for start/stand-by modus	✓	
Serial Interface functions		
serial interface	Sub-D	
start/stop operation over interface	✓	
signal filter blocked	-	
speed control over interface	-	
notice of malfunction over interface	-	

Block diagram - Chip Collector



Legend

A=Fuse

D=switching relay

G=brush motor

B=power input

E=mains switch

C=Control Interface

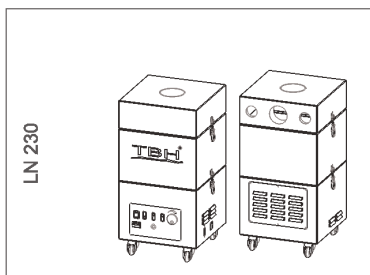
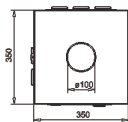
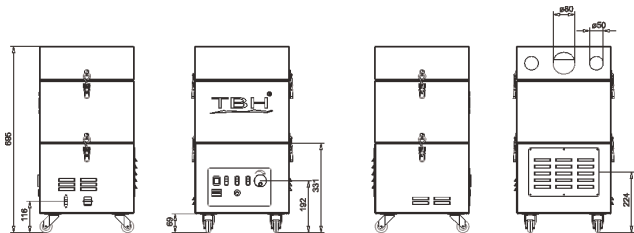
F=voltage converter

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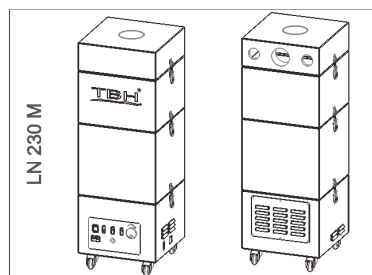
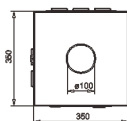
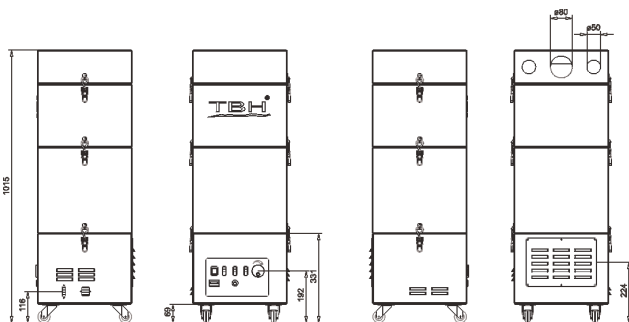


Drawings

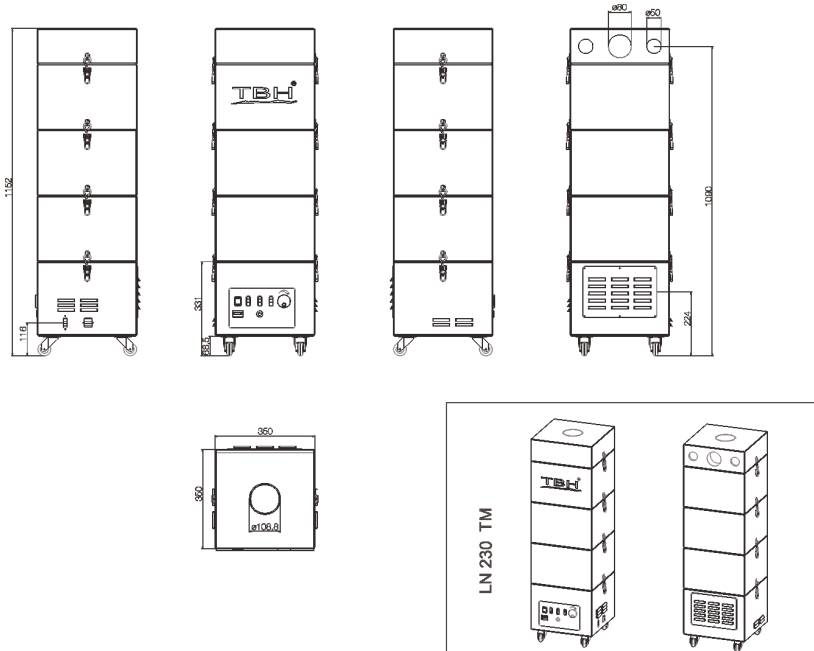
LN 230



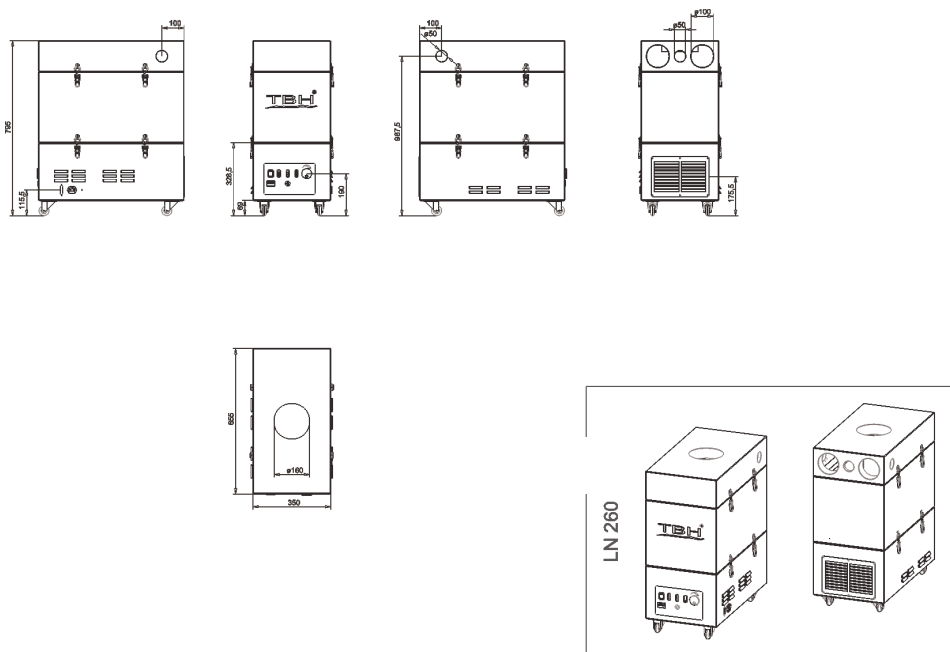
LN 230 M



LN 230 TM

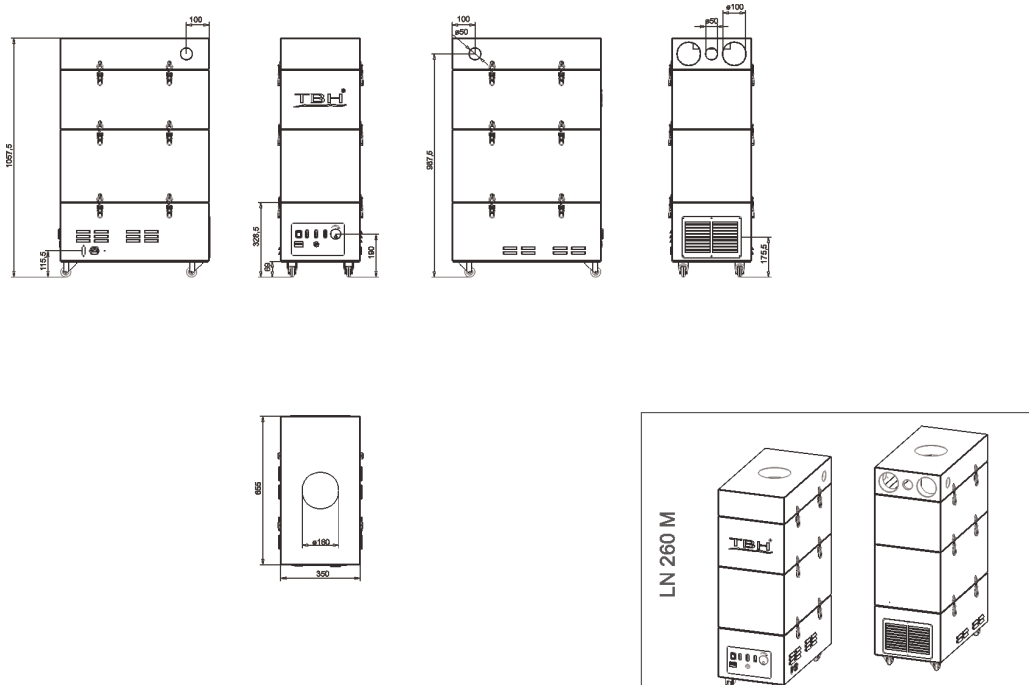


LN 260

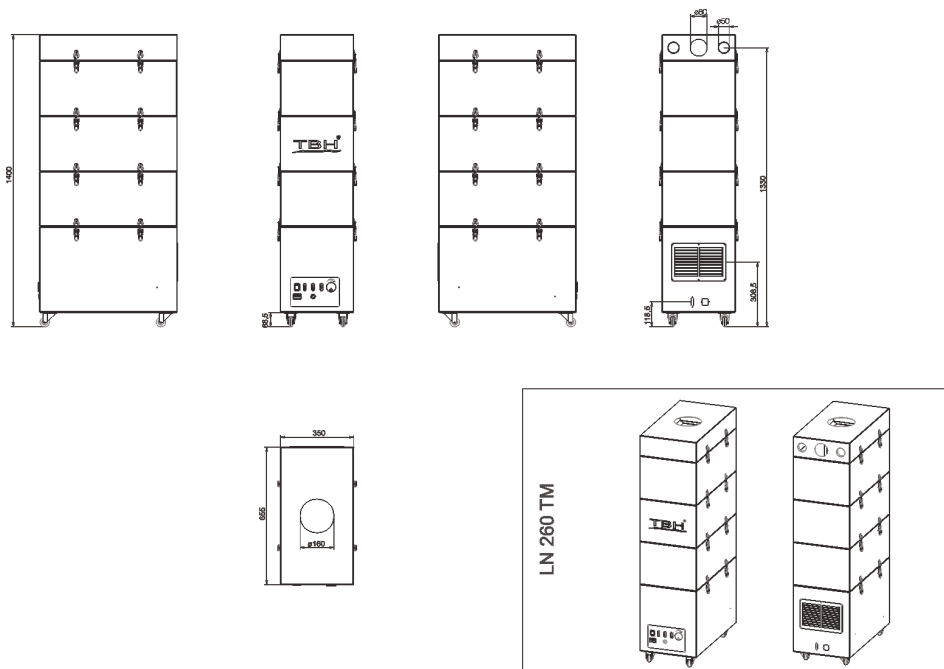


TRIPLE PROTECTION
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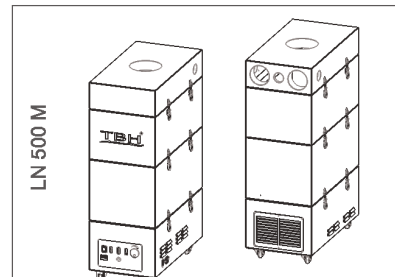
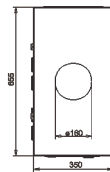
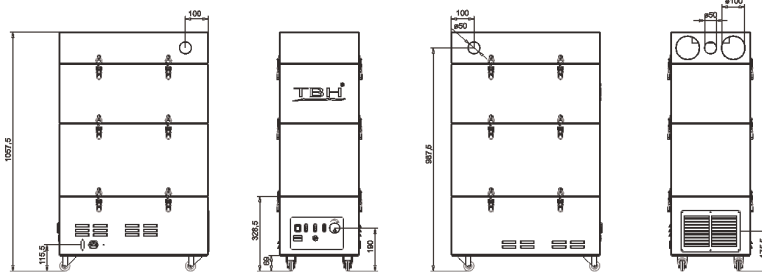
LN 260 M



LN 260 TM



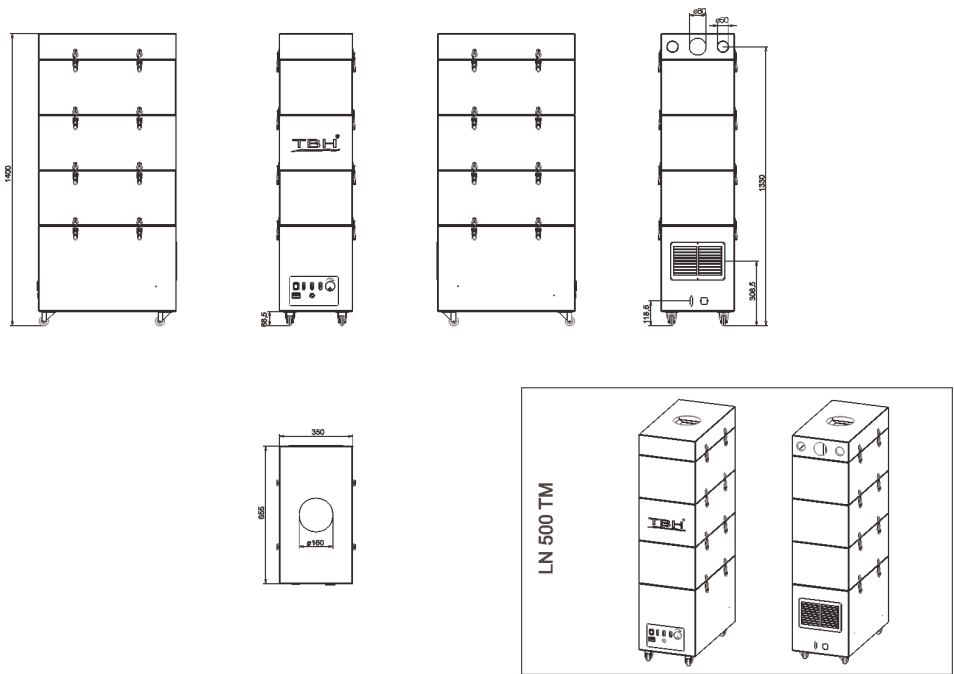
LN 500 M



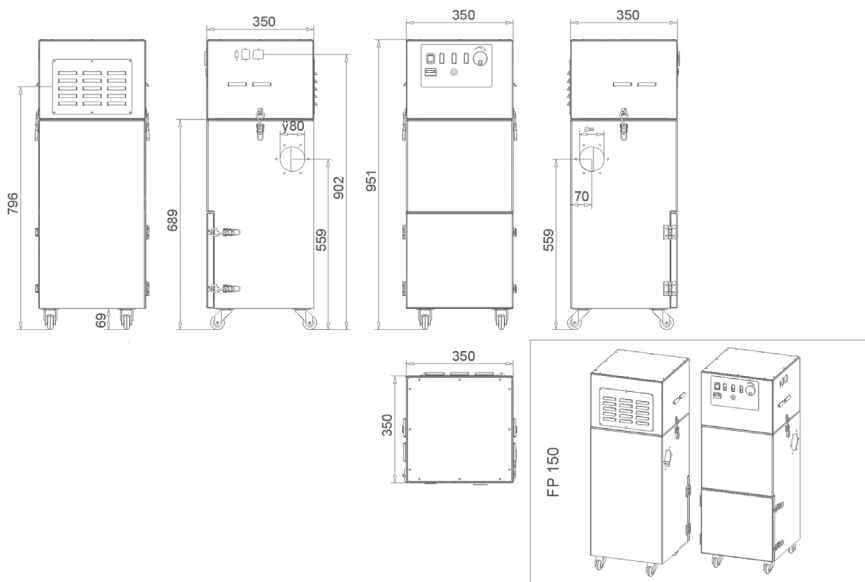
TRIPLE PROTECTION
FOR PEOPLE, ENVIRONMENT AND MACHINES



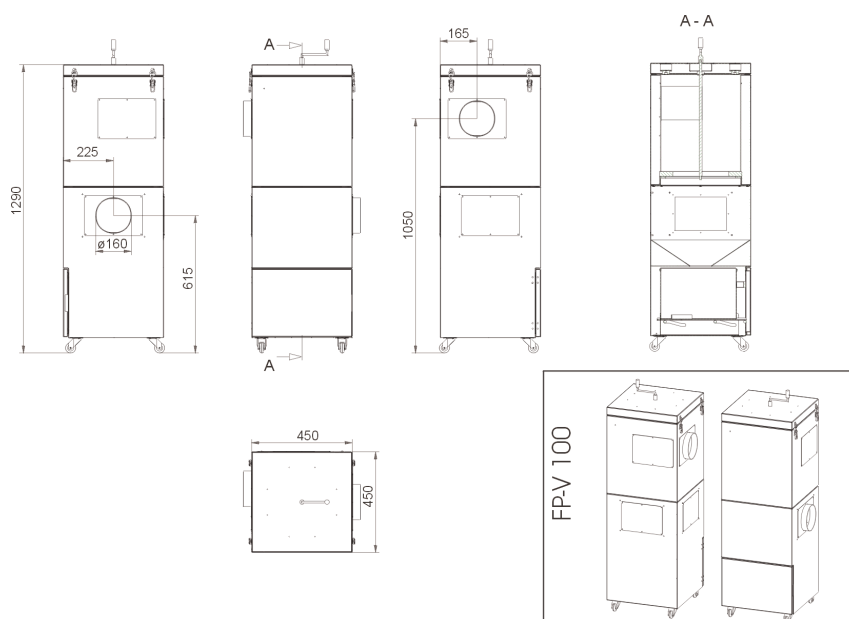
LN 500 TM



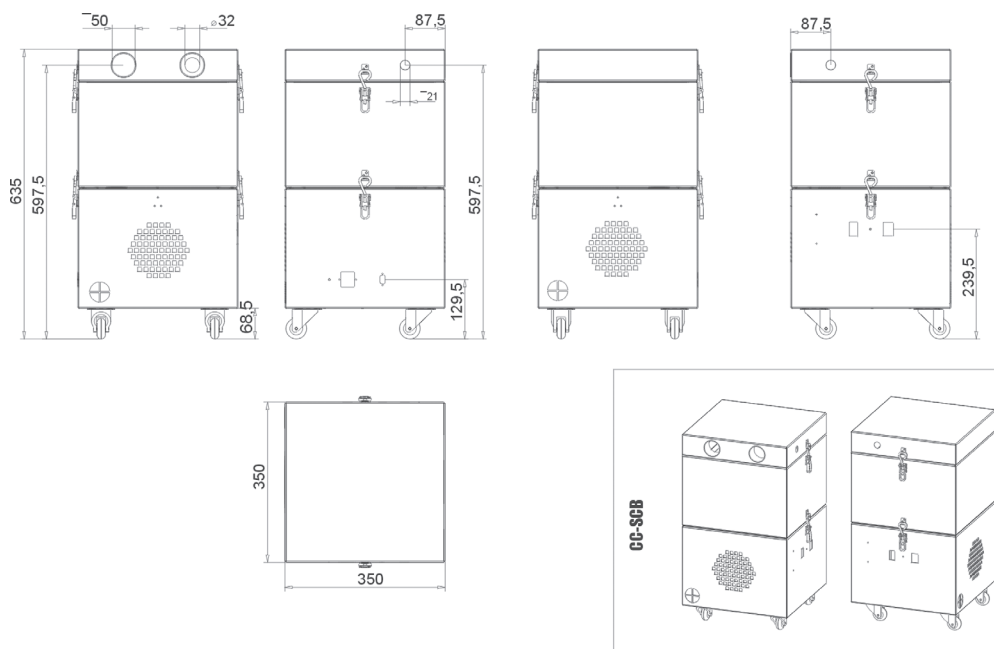
FP 150



FPV-100



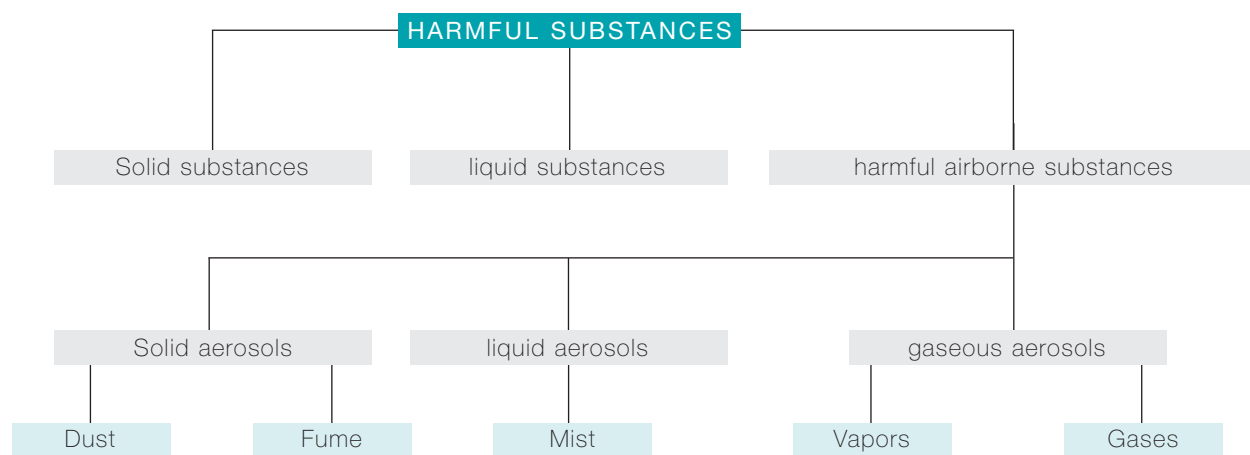
CC-SCB



Classification of harmful substances by manufacturing processes

CLASSIFICATION OF HARMFUL SUBSTANCES

The classification of harmful substances at workplaces can be defined as follows:



ATTENTION: SIDE EFFECTS ARE OFTEN UNKNOWN

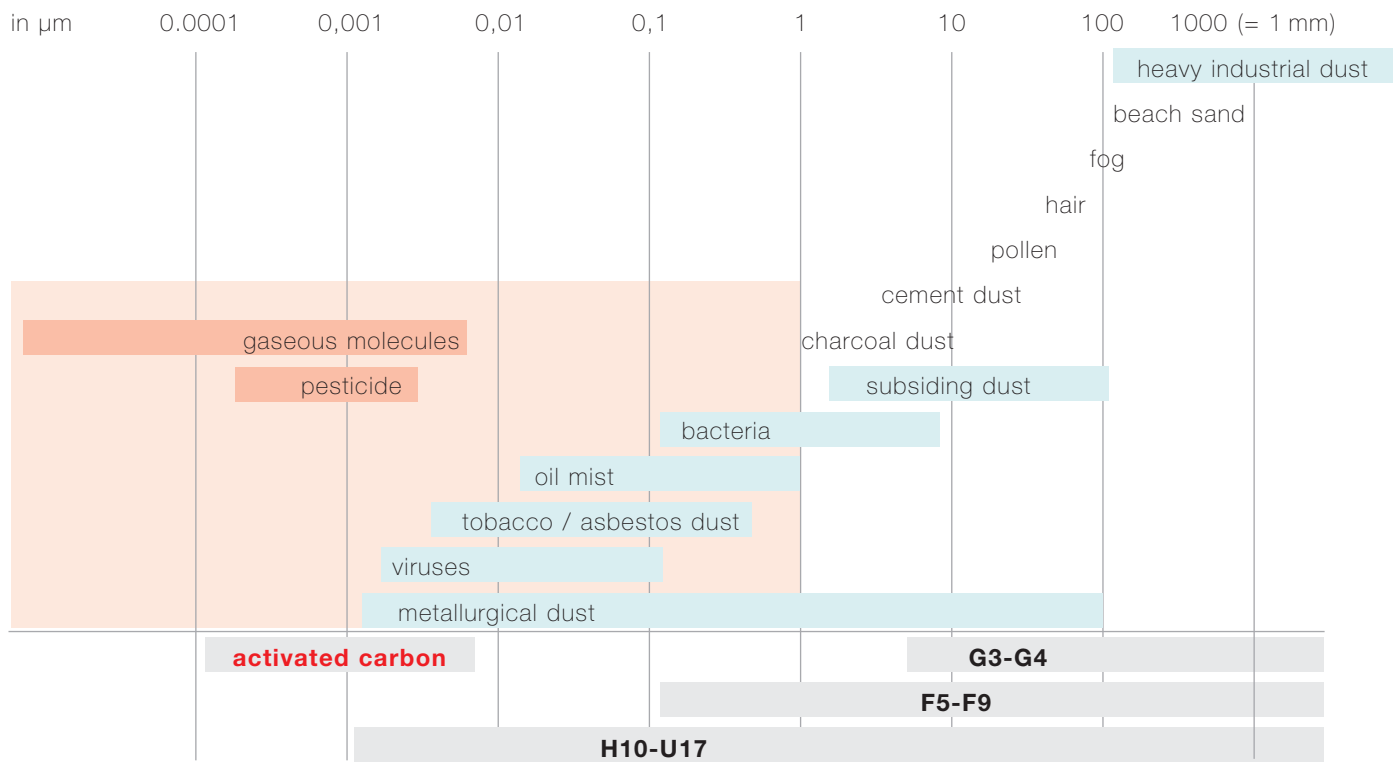
The substances used in an operating process cannot be known in many cases and we can only guess at the hazard. By supply of energy (for example flying sparks) or at combination with further substances it can form other substances that can for their part develop a detrimental effect.

DATABASES FOR HARMFUL SUBSTANCES

Analyses and long-standing examinations have led to a knowledge which is documented in the corresponding databases and today available over the Internet. We inform you about corresponding links at our Internet page www.tbh-online.com

Diagram of the particle sizes

scanning tunnel electron microscope scanning electron microscope optical microscope visible with the naked eye



Overview of the common filter classifications / standards

If we are talking in Europe about the classification of dust- and particular matter the norm EN779 is almost exclusively consulted. Particle filters, however, are evaluated by another procedure, this is described in the EN1822.

Depending on the standards the primary separation rate or the separation rate as a performance criterion is consulted at standard load. Following table sheet will show you the most common standards with their comparable classifications.

ACTUAL VALID STANDARDS			ALIED OR OTHER STANDARDS			
DIN EN 779	DIN EN 779	DIN EN 1822	ZH 1/487	US-MIL.-STD.	BS 3928	DIN EN 60335
Coarse dust filter Medium arrestance A Final pressure difference 250 [PA]	Fine dust filter Average efficiency E 0,4 [µm], Final pressure difference 450 [PA]	HEPA- und ULPA-Filter initial arrestance DEHS, MPPS, approx. 0,1-0,3 [µm]	Average passing rate D Quartz dust 90% 0,2 [µm]	Particlefilter initial arrestance A DOP 0,3 [µm]	Particle filter initial arrestance A NaCl 0,3 (0,6) [µm]	Particle filter passing rate D Paraffin oil 61% < 1 [µm]
A > 50 % G1			The specified values may vary strongly depending on the material			
A < 65 %						
A > 65 % G2						
A > 80 % G3						
A > 90 % G4						
	E > 40 % F5		D < 5 % U			
	E > 60 % F6		D < 1 % S			D < 1 % L
	E > 80 % F7		D < 0,5 % G			
	E > 90 % F8		D < 0,1 % C		A > 95 % EU 10	D < 0,1 % M
	E > 95 % F9	A (intergr.) > 85 % H 10		95 %	A > 99,9 % EU 11	
		A (intergr.) > 95 % H 11	D<0,05 % Paraffin oil 90% < 1 EM K 1, K 2	99,97 %	A > 99,97 % EU 12	
		A (intergr.) > 99,5 % H 12		99,99 %	A > 99,99 % EU 13	
		A (intergr.) > 99,95 % H 13				
		A (local) > 99,75 % A (intergr.) > 99,995 % H 14		99,999 %	A > 99,999 % EU 14	D < 0,005 % H
		A (local) > 99,975 % A (intergr.) > 99,9995 % U 15				
		A (local) > 99,9975 % A (intergr.) > 99,99995 % U 16				
		A (local) > 99,99975 % A (intergr.) > 99,999995 % U 17				
		A (local) > 99,9999 %				

Filter rating of ASHRAE

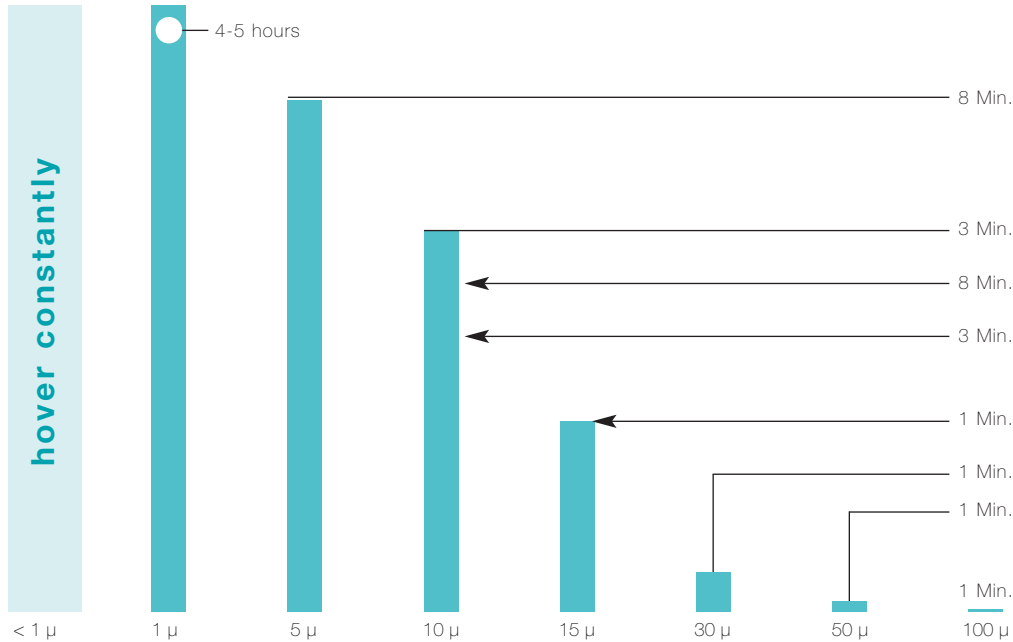
Two filter test methods are currently used in the USA. American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) Standard 52.1-1992, STANDARD 52.2-1999

ASHRAE 52.2				ASHRAE 52.1		Particle size range in μm	Applications
Particle size range				Test			
MERV	3 to 10 μm	1 to 3 μm	.3 to 1 μm	Arrestance	Dust spot		
1	<20%	-	-	<65%	<20%	>10	residential light pollen, dust mites
2	<20%	-	-	65-70%	<20%		
3	<20%	-	-	70-75%	<20%		
4	<20%	-	-	>75%	<20%		
5	20-35%	-	-	80-85%	<20%	3.0 - 10	industrial dust, molds, spores
6	35-50%	-	-	>90%	<20%		
7	50-70%	-	-	>90%	20-25%		
8	>70%	-	-	>95%	25-30%		
9	>85%	<50%	-	>95%	40-45%	1.0-3.0	industrial, Legionella, dust
10	>85%	50-65%	-	>95%	50-55%		
11	>85%	65-80%	-	>98%	60-65%		
12	>90%	>80%	-	>98%	70-75%		
13	>90%	>90%	<75%	>98%	80-95%	0.3-1.0	hospitals, smoke, removal, bacteria
14	>90%	>90%	75-85%	>98%	90-95%		
15	>90%	>90%	85-95%	>98%	~95%		
16	>95%	>95%	>95%	>98%	>95%		



Average settling time of the particle

(room height with 1,0m)



The diagram of the particle sizes shows on the basis of different examples which particle diameter can be created by different manufacturing processes. The highlighted zone in red characterizes those particles which can expand into the alveole of the lungs. The accompanying graphic clarifies how long the particles, depending on their size, are hovering in the air - average settling time of the particles at a room height of 1 meter.

Harmful gas table concerning the adsorption ability of activated carbon

LIST OF HARMFUL SUBSTANCES

acetic acid	1	decay smells	1	mysol	1	uric acid	1
Acetone	2	dichlorobenzene	1	Decane	1	valeric acid	1
acetylaldehyde	3	dichlorethylene	1	naphta(gasoline)	1	vinegar	1
Acrylic Acid	1	dichloropropane	1	naphtalene	1	vinyl chloride	1
Acrysäurenitril	1	diesel	1	nicotine	1	xylene	1
aggressive gases	4	diethyl ketone	2	nitric acid	2		
alcohol	2	dimethyl sulfate	1	nitrobenzene	1		
alcohol smells	2	dimethylaniline	1	nitroethane	1		
amines	3	dioxane	2	nitrogen oxide	3		
ammonia	3	ethanetiol	2	nitroglycerine	1		
aniline	1	ether	4	nitropropane	1		
antiseptic materials	1	ethylacetate	1	nonane	1		
arolein	2	ethylacrylate	1	octane	1		
asphalt smells	1	ethylene	4	ozone	1		
benzene	1	ethylene chlorohydrin	1	palmitic acid	1		
Dichloroethylether	1	ethylene dichloride	1	pentanal	1		
body odors	1	ethylene oxide	3	pesticides	1		
bromethane	1	fertilisers	1	petrol	1		
bromine	1	fish smells	1	phenol	1		
burning smells	2	formaldehyde	4	phosgene	2		
butadiene	2	formic acid	2	propane	3		
butane	3	fruits storing	1	propanol	2		
butanol	1	glue steams	1	propionic acid	1		
butanone	1	grease oil and fat	1	pyridine	1		
buthylene	2	haloalkane	2	quicksilver steams	3		
butyl acetate	1	heptane	1	radioactive materials	4		
butyl ether	2	hexane	2	resins	1		
butyraldehyde	2	hospital smells	1	ropyl ether	1		
camphor	1	hydrocyanic acid	4	rubber	2		
carbon dioxide	3	hydrogen	4	silicon ethyl connections	3		
carbon monoxide	4	hydrogen bromide	3	slaughterhouse smells	2		
chloretane	2	hydrogen chloride	2	smells from paper coating	1		
chlormethyl ether	2	hydrogen fluoride	3	smoke	2		
chlornitrosopropane	1	hydrosulfide	2	styrol	1		
chloro propane	1	isopentyl acetate	1	sulfur dioxide	3		
chlorobenzene	1	isopropanol	2	sulfur trioxide	2		
chloroform	1	isopropyl acetate	1	sulfurcarbons	2		
chloromethylpropane	1	isopropyl ether	1	sulfuric	1		
citrus fruits	2	kitchen smells	1	sulfurwater	2		
clarification plant smells	1	lacquer steams	1	tar	1		
cleaner	1	lactic acid	1	tetrachloroethylene	1		
comestible smells	1	liquid combustibles	1	thiols	1		
creatine	1	menthol	2	toxic gases	1		
cresols	1	methane	4	trichlorethan	1		
cyclohexane	1	methanol	2	trichlorethylene	1		
cyclohexanol	1	methyl acetate	2	trichloronitromethane	1		
cyclohexanone	1	methyl butanol	1	terpentine	1		
cyclohexene	1	methyl chloride	2	urea	1		

legend capacity index
 1 = absorbing capacity
 2 = satisfactory adsorption
 3 = average adsorption (the adsorption is low, but under certain circumstances it can be satisfied)
 4 = low adsorption: the adsorption is very low therefore the results with activated carbon are not to your satisfaction.
 Please ask us concerning the use in such cases

Conversion tables

SPEED

1 m/s = 3,6 km/h 1 km/h = 0,278 m/s 1 ft/mm = 0,00508 m/s 1 m/s = 196,85 ft/mm

LENGTH

1 mile = 1,609 km 1 km = 0,621 miles 1 yd = 0,914 m 1 m = 1,09 yd
 1 ft = 0,305 m 1 m = 3,28 ft 1 in = 25,4 mm 1 mm = 0,039 in
 1 mm = 1.000 µm 1 µm = 0,001 mm 1 µm = 1.000 nm 1 nm = 0,001 µm

SURFACE

1 ft² = 0,0929 m² 1 m² = 10,8 ft² 1 in² = 6,45 cm² 1 cm² = 0,155 in²

VOLUME

1 ft³ = 0,0283 m³ 1 m³ = 35,3 ft³ 1 ft³ = 28,3 liter

AIR FLOW

1 cfm = 0,472,10-3 m³/s 1 m³/s = 3 600 m³/h 1 m³/h = 0,278,10-3 m³/s
 1 cfm = 1,699 m³/h

MASS

1 lb = 0,454 kg 1 kg = 2,20 lbs 1 oz = 28,3 g 1 g = 0,0352 oz

FORCE

1 kgf = 9,80665 N 1 N = 0,102 kgf 1 lbraf = 4,45 N 1 N = 0,225 lbf

PRESSURE

1 mmCE = 9,81 Pa 1 Pa = 0,102 kgf 1 kPa = pz 1 kPa = 10,2 g/cm²
 1 kg/cm² = 0,980665 bar 1 bar = 1,02 kg/cm² 1 kg/m² = 98,0665 kPa 1 kPa = 0,00987 atm
 1 psi = 6,89 kPa 1 bar = 101325 Pa 1 atm = 101,325 kPa 1 mb = 100 Pa
 1 mmCE = 1 kg/m² 1kPa = 0,145 psi 1 Pa = 1 N/m² 1 in w, g, = 254 Pa

ENERGY

1 kgm = 9,80665 J 1 J = 0,102 kgm 1 cal = 4,184 J 1 J = 0,239 cal
 1 kWh = 3,6 MJ 1 MJ = 0,278 kWh 1 Btu = 1,055 kJ 1 J = 0,945,10-3 Btu

POWER

1 CV = 0,736 1 kW = 1,36 CV 1 kcal/h = 1,16 W 1 W = 0,860 kcal/h
 1 Btu/h = 0,292 W 1 W = 3,42 Btu/h

TEMPERATURE CALCULATION FORMULA

0 °C = 32 °F 0 °F = -17,8 °C
 °F = (9/5) x °C + 32 °C = (5/9) x °F - 17,8

TEMPERATURE CONVERSION TABLE

°F.....°C	°F.....°C	°F.....°C	°F.....°C
0 -17,8	30 -1,1	50 10,0	80 26,7
10 -12,2	32 0	60 15,6	90 32,2
20 -6,7	40 4,4	70 21,1	100 37,8



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