TFS SERIES

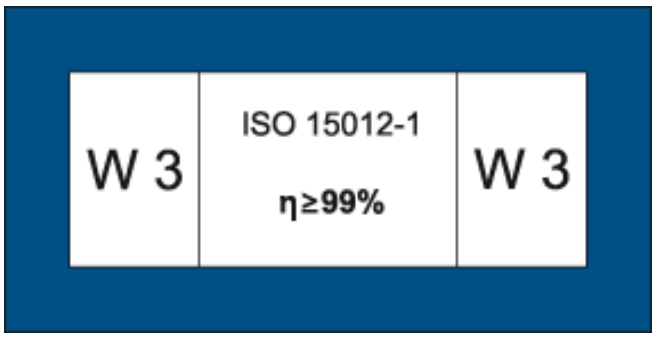
FILTER / EXTRACTION / ENVIRONMENTAL // TECHNOLOGY

HUMANS / ENVIRONMENT / MACHINERY

TFS series

Assurance in occupational and health safety

Welding fumes and dusts from related processes are easily handled by this system. The Institute for Occupational Safety and Health (IFA) has specifically tested them in accordance with DIN ISO 15012-1 (2013) and 15012-4 (2016). It fulfils the protection level for safe extraction and filtering required by the TRGS 528 Directive. High safety requirements are thus met. Smoke, vapours or dusts with particles in the micrometer range are safely filtered out of the air. Awarded W3 and the DGUV seal, the system offers triple protection for humans, environment and machinery, and is accordingly listed on the "IFA positive list".



Application-dependent motor selection

In order to ensure the optimal suitability of the filter and extraction system for the respective application, the TBH product range offers various motor concepts to choose from. In this way, it is possible to optimally adapt the design of the system to the conditions given on site - for example:

- Short or long extraction lines,
- Large or small line cross-sections,
- Coarse or fine particles,
- Single-spot or multi-spot extraction,
- Noise-sensitive environment or industrial production hall

HUMANS / ENVIRONMENT / MACHINERY

Low-contamination filter changing

The system is used in the area of laser marking. It is also ideal for laser engraving and other applications with medium or high dust levels. For the TFS series, the filters used were specially optimized with regard to handling and system service life. For this, the SafeLine filter developed is accommodated in an enclosed housing that can be easily closed off when chang- ing the filter. Thus, it effectively protects the user from the filtrate contained in it. The design allows heavy particles to settle at the bottom of the filter without putting load on the filter surface. The enormous filter surface and the simultaneously optimal inflow of the filter packs results in long service life. Filter changing easily takes place via the front door of the system. SafeLine and particle filters are separate filters in a common clamping system of the TFS series. However, they can be changed separately. The filter changing is tool-free and requires only a few minutes. The activated carbon/ BAC filter is located above the two saturation filters and can be changed separately as required. The individual filter monitoring allows for optimal maintenance planning, keeping the filter costs respectively low.

Double adsorption power

Active carbon

BAC granulate

Active carbon/BAC

The adsorption of the gaseous substances takes place with activated carbon (physical adsorption) and BAC granulate (chemical adsorption).
In addition, they take up a very broad spectrum of gases and odours.

-> Neutralization through chemical bonding with the reaction substance applied to the substrate material.

Draws off every harmful particle

Pollutants do not stand a chance

- Low-contamination dust disposal
- Molecular sieve against gaseous pollutants
- Piping / Flexible hose / Extraction arm
- Air-recirculation or exhaust-air pipe

Special filter concept

Easy handling and prolonged service time

- Simple operation
- H14 particle filter for more safety
- Separation of ultrafine particles
- Return of purified air possible
- Optimized contact times with gas-filter granulate

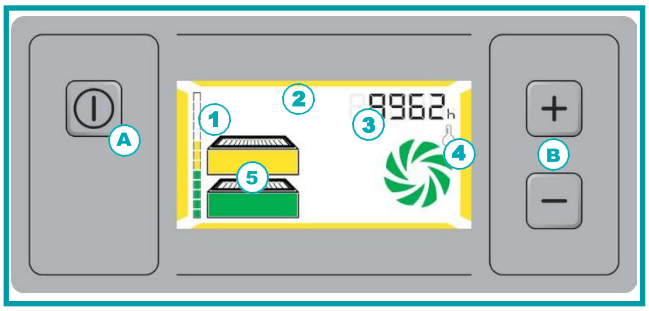
Further information on the series

Scan QR code:

HUMANS / ENVIRONMENT / MACHINERY

Inspiring checking

Always full control over the system



- A - Start / Stop button
- B - Manual power control
- 1 - Saturated filter notification
- 2 - System status indication
- 3 - Power-setting indication/ Hour meter
- 4 - Temperature and turbine-status indication
- 5 - Filter-statusindication

Sub-D 25 interface

External control of the system

Illustration similar

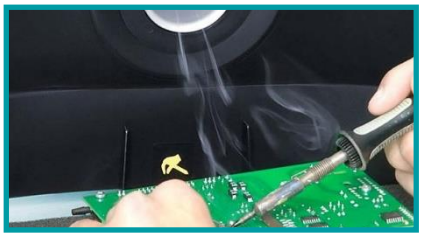
Powerful control unit

- Start / Stop button
- "Filter full" pre-warning stage (75 %)
- Group-error output
  (speed, temperature, "filter full" 100 %)
- External power control
- Parameterization access for activating special functions
- Message cache
- Digital interface (RS232)

Applications

Laser technology

Lasers are used for processing metals, woods and plastics. Due to this versatility, companies are intensively involved in laser technology. This not only increases efficiency, but also creates unwanted by-products, regardless of type and performance. TBH systems ensure safe extraction of fine dust and laser fumes.

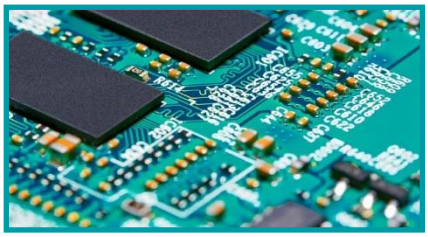


Soldering

Soldering connects two different materials by melting. Tin solder being used releases additives that have harmful effects on the respiratory organs. Depending on the soldering application (manual or automated), a suitable filter and extraction system must therefore be used.

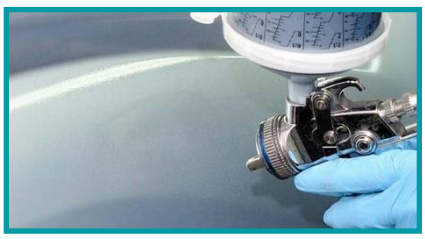
Welding/Grinding/Cutting

Welding, grinding and cutting processes result in very fine particles from the surfaces being worked. These dangerous substances settle in the lungs and can lead to permanent inability of the respective employ- ee to work. To prevent this from happening, welding fumes must be effi- ciently extracted. This is demanded by the legal authorities in TRGS528. TBH GmbH therefore offers a large number of systems with W3 / DGUV approval.



Electronics

Manufacturers of electronic products work with small or tiny elements. Highly-toxic materials such as arsenic or phosphorus are often used to modify the properties of semiconducting substances. Solvents are used for removing contaminants on microchips; these pollute the environment and are harmful for employees.



Work processes with vapours/gases

Gases are much more difficult to separate than solid particles. Due to their chemical structure, they can pass through most filters without any problems. Special filters are required to extract gases correctly and reliably.

Plastics processing

Almost every industry today processes plastics. TBH systems are exactly the right solution for the safe extraction and filtration of grinding dusts and vapours that occur during the processing of plastics. Be convinced by our quality.

Textile processing

Clothing can lose small lint and thread particles. These are so light that they can hover in the air of enclosures, and any motion continuously whirls them up. A high concentration of these airborne fibres is present particularly in the processing of textiles. There are also chemicals used for dyeing clothing, which are usually harmful to health and therefore need to be extracted

Technical glass

Glass production results in great heat. The high temperatures required for melting glass cause gases containing large quantities of environmental- ly-hazardous substances to rise. In the course of the acid polishing, the hot or cold final layer releases tin or titanium chlorides, such as hydrofluo- ric acid and sulphuric acid. These substances must be drawn off, as they are harmful to one's health.

Refilling work, packaging processes, feeding and conveying processes

When materials are moved from one place to another, such as during packaging or transportation, this process can cause particles to be re- leased. Especially since they are not visible to the human eye, the risk should not be underestimated. Particles can develop from turbulences. TBH filter and extraction systems safely remove these particles from the ambient air.

Technical data TFS 500

Illustration similar

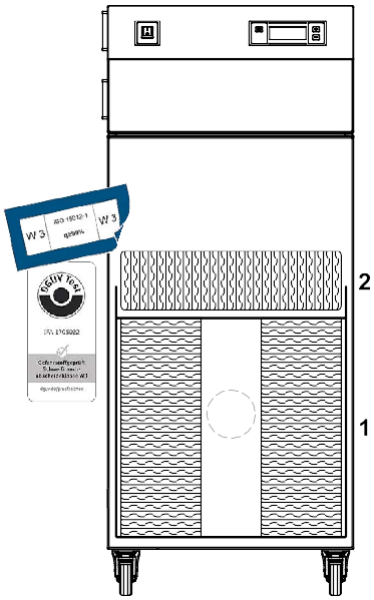
Delivery scope:

- Completely mounted
- 4 castors for mobile use
- Power cord

TECHNICAL DATA	UNIT	TFS 500 STANDARD	TFS 500 PLUS
Air flow rate with free air delivery	m³/h	max. 700	max. 700
Effective air flow rate	m³/h	50-550	50-550
Max. static pressure	Pa	15000	15000
Voltage	V	120/230	120/230
Frequency	Hz	50/60	50/60
Motor output	kW	1.8	1.8
Class of protection	-	1	1
Drive type	-	Continuous running	
Sound level	db(A)	30%-100% : 44-65	30%-100% : 44-65
Serial interface	Sub-D	25-pin	25-pin
Weight	kg	approx. 120	approx. 150
Dimensions (HxWxD)	mm	1300x540x730	1300x540x730
Intake sleeve NW 125	Quantity	1	1
Exhaust sleeve NW 160	Quantity	1	1
Color (housing)	RAL	7035	7035
Color (of lid)	RAL	7037	7037

FILTER CONFIGURATION			
	Pre-filter F9	✓	✓
	Particle filter H14	✓	✓
A	Activated carbon/BAC filter	-	50 liters

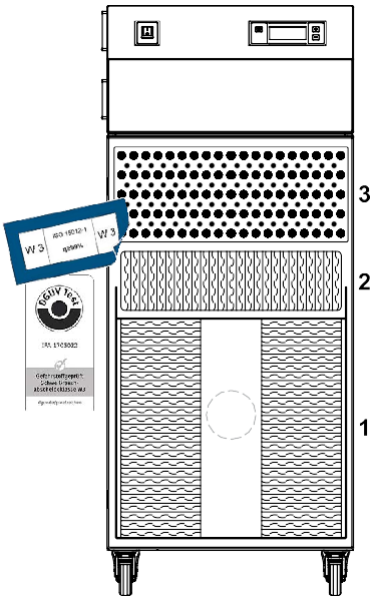
Orderring data TFS 500



TFS 500 STANDARD

DESIGNATION	ART. NO.
TFS 500 230V 50/60 Hz	90428
TFS 500 120V 50/60 Hz	90430

SPARE FILTER		
SafeLine filter	16196	**1**
Particle filter	16175	**2**
activated carbon/ BAC filter	-	



TFS 500 PLUS

DESIGNATION	ART. NO.
TFS 500 Plus 230V 50/60 Hz	90429
TFS 500 Plus 120V 50/60 Hz	90431

SPARE FILTER		
SafeLine filter	16196	**1**
Particle filter	16175	**2**
Active carbon filter/ BAC filter	16191	**3**

Note:

For operation intended as a "W3" system, a signal module including volume-flow monitoring must be used or equivalent functions provided by the customer. For any questions, please contact your sales partner.

Technical data TFS 1000

Illustration similar

Delivery scope:

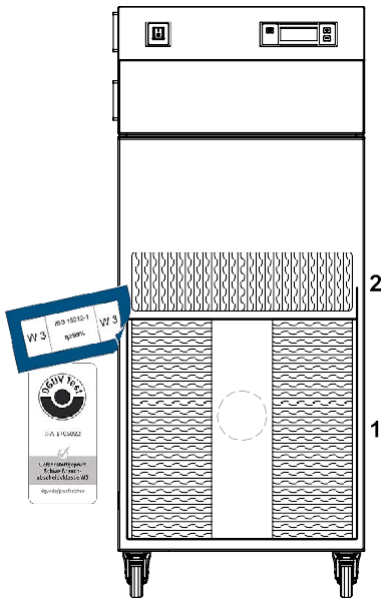
- Completely mounted
- 4 castors for mobile use
- Power cord

TECHNICAL DATA	UNIT	TFS 1000 STANDARD	TFS 1000 PLUS
Air flow rate with free air delivery	m³/h	max. 1000	max. 1000
Effective air flow rate	m³/h	200-850	200-850
Max. static pressure	Pa	3700	3700
Voltage	V	120/230	120/230
Frequency	Hz	50/60	50/60
Motor output	kW	1.4	1.4
Class of protection	-	1	1
Drive type	-	Continuous running	
Sound level	db(A)	30%-100% : 44-68	30%-100% : 44-68
Serial interface	Sub-D	25-pin	25-pin
Weight	kg	approx. 120	approx. 150
Dimensions (HxWxD)	mm	1300x540x730	1300x540x730
Intake sleeve NW 125	Quantity	1	1
Exhaust sleeve NW 160	Quantity	1	1
Color (housing)	RAL	7035	7035
Color (of lid)	RAL	7037	7037

FILTER CONFIGURATION			
	Pre-filter F9	✓	✓
	Particle filter H14	✓	✓
A	Activated carbon/BAC filter	-	50 liters

HUMANS / ENVIRONMENT / MACHINERY

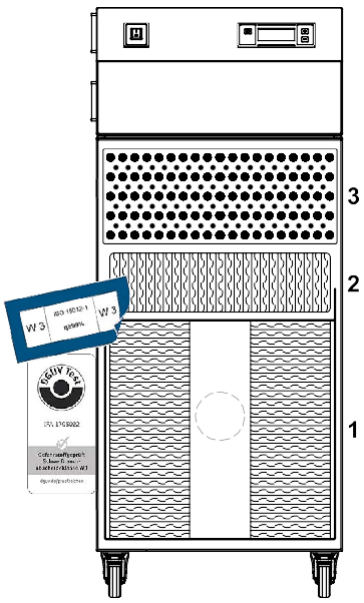
Orderring data TFS 1000



TFS 1000 STANDARD

DESIGNATION	ART. NO.
TFS 1000 230V 50/60 Hz	90415
TFS 1000 120V 50/60 Hz	90417

SPARE FILTER		
SafeLine filter	16196	**1**
Particle filter	16175	**2**
activated carbon/ BAC filter	-	



TFS 1000 PLUS

DESIGNATION	ART. NO.
TFS 1000 Plus 230V 50/60 Hz	90416
TFS 1000 Plus 120V 50/60 Hz	90418

SPARE FILTER		
SafeLine filter	16196	**1**
Particle filter	16175	**2**
activated carbon/ BAC filter	16191	**3**

Note:

For operation intended as a "W3" system, a signal module including volume-flow monitoring must be used or equivalent functions provided by the customer. For any questions, please contact your sales partner.

Electrical control system

FUNCTION	TFS 500 / 1000 STANDARD	TFS 500 / 1000 PLUS
Manual output control	✓	✓
Start / Stop button	✓	✓
Indication of filter status, SafeLine filter	✓	✓
Indication of filter status, particle filter	✓	✓
Indication of system status *	✓	✓
"Filter full" indication of system (unit switches off)*	✓	✓
Indication of power setting/hour meter	✓	✓
Indication of temperature and turbine error	✓	✓

INTERFACE FUNCTION		
Indication „Filter full“	✓	✓
Start / Stop button	✓	✓
External power control	✓	✓
Indication speed OK	✓	✓
Indication temperature error	✓	✓
Indication group error	✓	✓
Error memory	✓	✓
Programming access	✓	✓

* Measurement of all filters installed in the extraction system together

Accessories

USB CONNECTION

USE	DESIGNATION	CABLE LENGTH	ART. NO.
TFS 500 / 1000	USB connection cable	1.5 meters	16455

DELIVERY SCOPE: Connection cable(incl. software)

CABLE REMOTE CONTROL

USE	DESIGNATION	CABLE LENGTH	ART. NO.
TFS 500 / 1000	Cable remote control	7 meters	16477

FUNKTIONS:

- Indication „Filter saturated“
- Start / Stop button
- Speed control
- Switch-on status of the system: Standby operation

DELIVERY SCOPE: Remote control (incl. cable)

HUMANS / ENVIRONMENT / MACHINERY

Harting option

HARTING MAINS CONNECTION

USE	DESIGNATION	ART. NO.
TFS 500 / 1000 (230V)	Mains connection Harting option	17036

INTERFACE HARTING

USE	DESIGNATION	ART. NO.
TFS 500 / 1000	Interface Harting option	15719

USB CONNECTION HARTING

USE	DESIGNATION	CABLE LENGTH	ART. NO.
TFS 500 / 1000	USB connection cable Harting	1.5 meters	16466

DELIVERY SCOPE: Connection cable (incl. software)

ELECTRIC FOOT SWITCH

USE	DESIGNATION	CABLE LENGTH	ART. NO.
TFS 500 / 1000	Electric foot switch	2 meters	16369

FUNKTIONS:

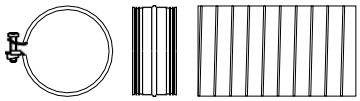
- Start / Stop button
- Switch-on status of the system: Standby operation

DELIVERY SCOPE: Foot switch (incl. cable)

FLOW-RATE MONITORING DEVICE

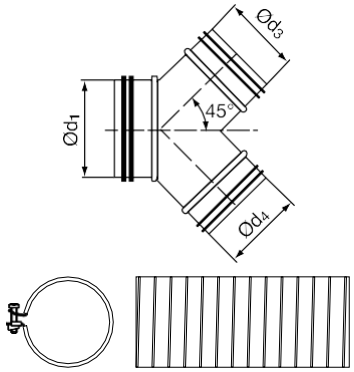
USE	Ø d (mm)	ART. NO.
TFS 500 / 1000	80	16642
TFS 500 / 1000	100	16643
TFS 500 / 1000	125	16644
TFS 500 / 1000	160	16762

Accessories



AIR INLET - flexible connection hoses

DESIGNATION	NW (mm)	LENGTH (m)	ART. NO.
Hose set with red.	125/100	2.5	16580
		5.0	16581
Hose set with nipple and hose clamps	125	2.5	13183
		5.0	13184
	160	2.5	13185
		5.0	13186



DISTRIBUTOR SET

Consisting of: 1x distributor, 2x hose, 4x wire hose clamp

USE	Ø d_1 (mm)	Ø d_2 (mm)	Ø d_4 (mm)	ART. NO.
TFS 500 / 1000	125	100	100	16281

SIGNAL MODULE

USE	ART. NO.
TFS 500 / 1000	16621
TFS 500 / 1000	16767*

* Signal module with input for volume-flow monitoring (suitable for "W3" systems)

Accessories

FILTER-RUPTURE MONITORING DEVICE

USE	ø d (mm)	ART. NO.
TFS 500 / 1000	100	16651
TFS 500 / 1000	160	16652
TFS 500 / 1000	250	16653

SPARK EXTINGUISHER (Use in piping)

USE	AIR VOLUME	Ø d (mm)	ART. NO.
TFS 500	300-600 m³/h	80	16766
TFS 500 / 1000	600-1000 m³/h	125	16695

ATEX approval to EN1834

Installation: Depending on the application and size, the spark extinguishers can be installed on the wall or on a worktable using a special holder (incl. magnets, included in delivery scope) or with pipe clamps (please order separately).

Illustration similar

EXTRACTION ARM SYSTEM 75 AL

USE	DESIGNATION	ART. NO.
TFS 500	Extraction arm system 75-AL (L=1200 mm)	17055*

* Mounted on right side as standard, optional left mounting; please contact your sales partner. Detection element not included in delivery scope, please order separately.

Illustration similar

EXTRACTION ARM SYSTEM 100 AL

USE	DESIGNATION	ART. NO.
TFS 500 / 1000	Extraction arm system 100-AL (L=1200 mm)	16698*

* Mounted on right side as standard, optional left mounting; please contact your sales partner. Detection element not included in delivery scope, please order separately.

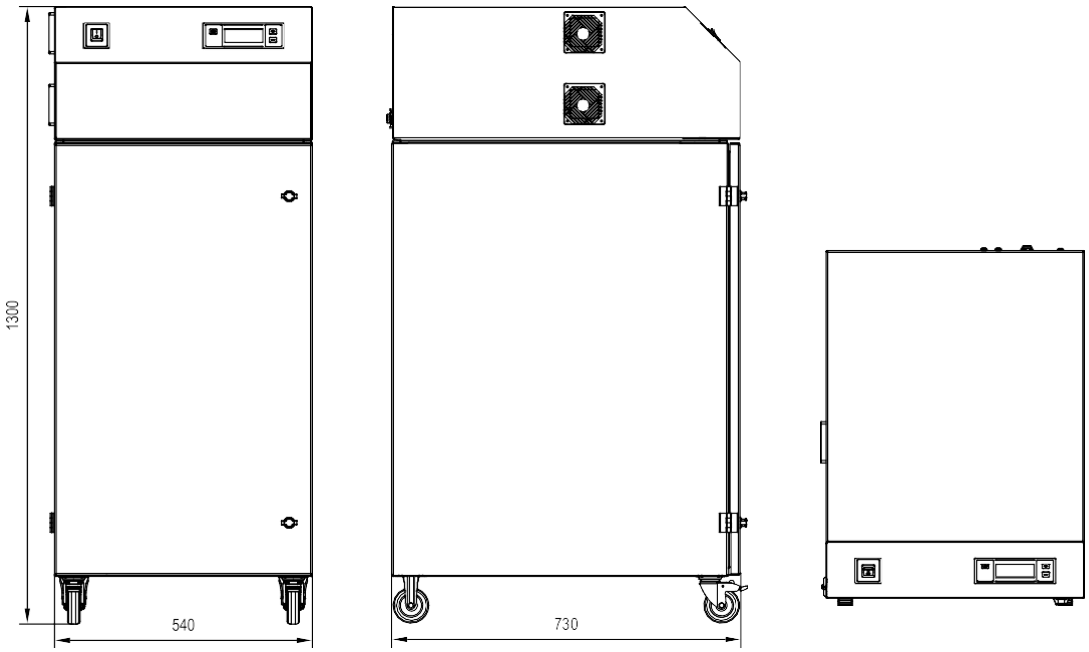
Illustration similar

EXTRACTION ARM SYSTEM 75 AL - SPARK EXTINGUISHER

USE	DESIGNATION	ART. NO.
TFS 500	Extraction arm system 75-AL (L=1200 mm), spark extinguisher NW80**	17056*

* Mounted on right side as standard. Mounting on the left optionally selectable; please contact your sales partner.
Detection element not included in delivery scope, please order separately.
**** ATEX approval EN 1834**

Technical drawings



TFS 500 / 1000 STANDARD

HUMANS / ENVIRONMENT / MACHINERY

FILTER / EXTRACTION / ENVIRONMENTAL // TECHNOLOGY

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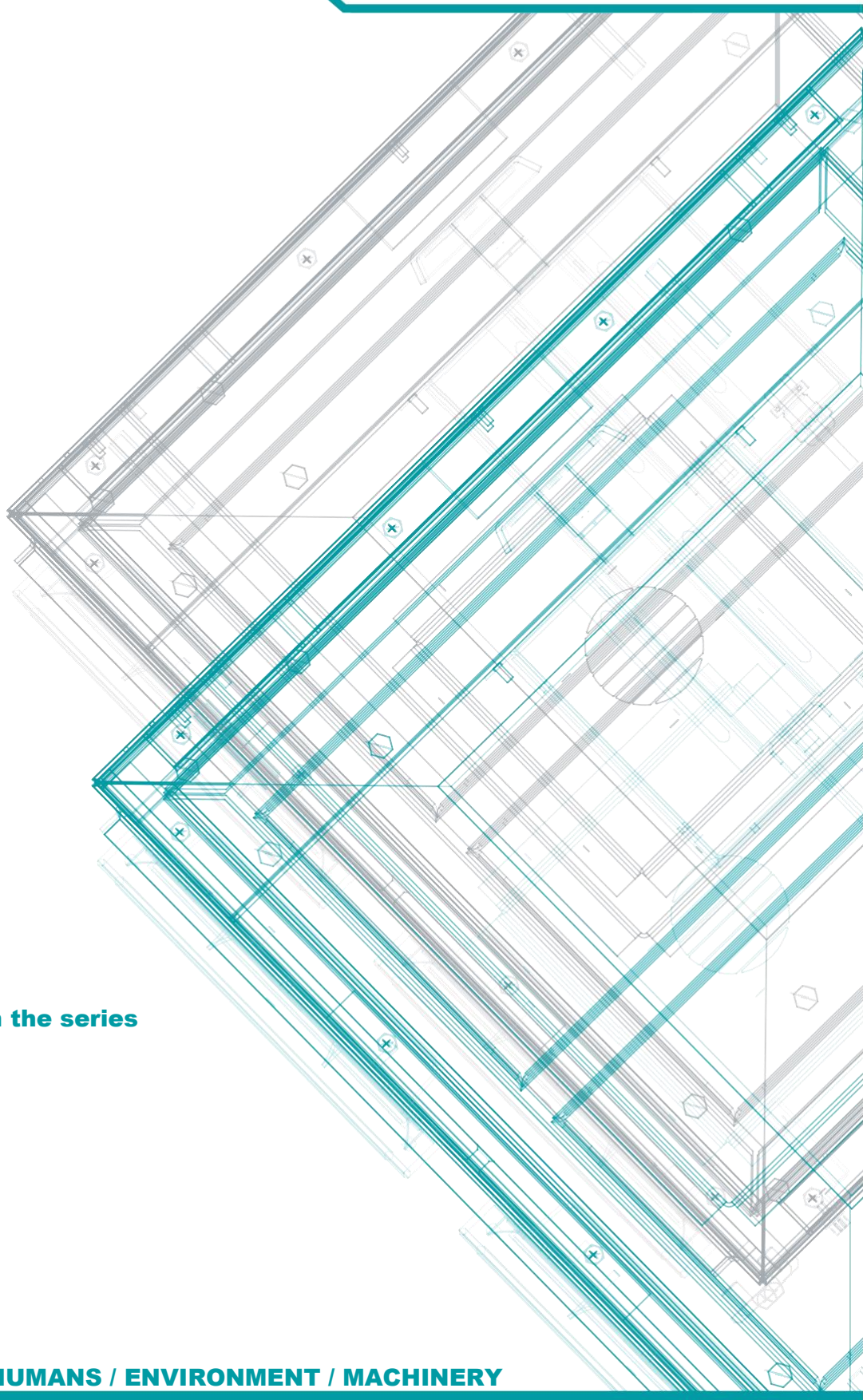


Further information on the series

HUMANS / ENVIRONMENT / MACHINERY

TBH®

LN 600 SERIES

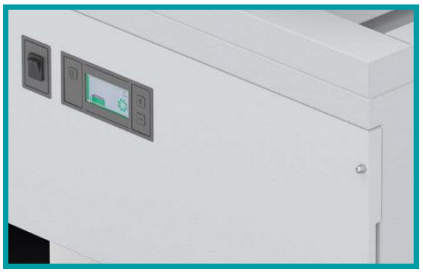
FILTER / EXTRACTION / ENVIRONMENTAL // TECHNOLOGY

LN 600 series

Application-dependent filter equipment

Depending on the process, the compact and modular design ensures that the filter equipment is adapted to the respective process at the factory. The use of high-performance turbines enables decentralized system arrangement and reliable extraction even over long distances. The LN series effectively filters vapours and gases from the air, especially for soldering work, laser processing and sticky and moist dusts.

Application-dependent motor selection



TBH offers a selection of different motor concepts in its product range to ensure the optimum suitability of the filter and extraction system for the respective application. This enables the system to be ideally adapted to the conditions on site, for example through:

- Short or long extraction lines,
- Large or small line cross-sections,
- Coarse or fine particles,
- single-spot or multi-spot extraction,
- noise-sensitive environment,
- industrial production hall.

HUMANS / ENVIRONMENT / MACHINERY

Low-contamination filter changing

Once the filter is saturated, the user can individually remove it from the system and exchange it without touching the other fil- ters. TBH has optimized the "ZS" and "ZSA" filter equipment of the LN 600 series with regard to handling and system service life. The SafeLine filter developed for this purpose is in an enclosed housing that can be easily closed off when changing the filter. Thus, the user is effectively protected against the filtrate contained in it. Due to the special filter design,

heavy particles settle at the bottom of the filter without loading the filter surface. The optimum inflow of the filter packs and the enormous filter surface ensure long service life. The filter equipment includes particle filters (H14), which effectively separate ultrafine particles to 99.995 % according to DIN EN 1822 and thus allow the cleaned air to be returned to the work area. The filters are especially designed for high safety standards in laser welding.

Double adsorption power

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Active carbon/BAC

The adsorption of the gaseous substances takes place with activated carbon (physical adsorption) and BAC granulate (chemical adsorption).
In addition, they take up a very broad spectrum of gases and odours.

-> Neutralization through chemical bonding with the reaction substance applied to the substrate material.

Draws off every harmful particle

Pollutants do not stand a chance

- Low-contamination dust disposal
- Molecular sieve against gaseous pollutants
- Piping / Flexible hose / Extraction arm
- Air-recirculation or exhaust-air pipe

High air flow rate

For powerful extraction

Illustration similar

- Specially developed for applications where high air flow is required for extraction, e.g. from large laser systems.
- Can be used as a central system for multi-user extraction
- Reliable extraction over longer distances possible due to smaller cross-sections

Inspiring checking

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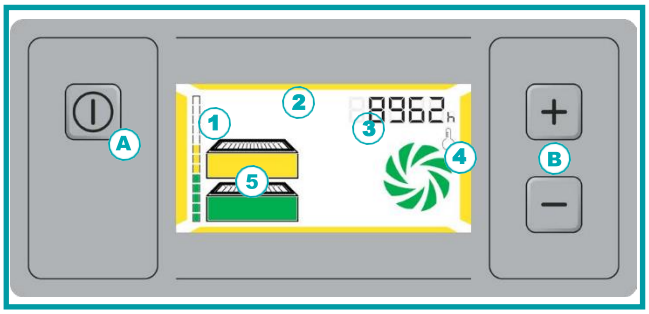

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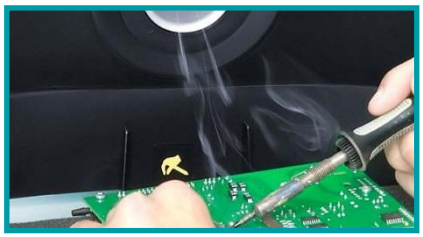

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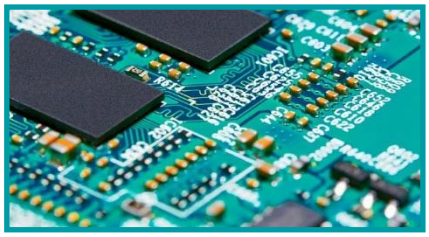

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When materials are moved from one place to another, such as during packaging or transportation, this process can cause particles to be released. Especially since they are not visible to the human eye, the risk should not be underestimated. Particles can develop from turbulences. TBH filter and extraction systems safely remove these particles from the ambient air.

Textile processing

Clothing can lose small lint and thread particles. These are so light that they can hover in the air of enclosures, and any motion continuously whirls them up. A high concentration of these airborne fibres is present particularly in the processing of textiles. There are also chemicals used for dyeing clothing, which are usually harmful to health and therefore need to be extracted

HUMANS / ENVIRONMENT / MACHINERY

Technical data LN 610

Illustration similar

Delivery scope:

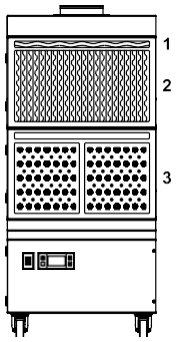
- Fully mounted (incl. individual filter equipment
- 4 castors for mobile use (filter equipment standard, A, ZS)
- Base stands (suitable for forklift trucks) - Filter equipment ZSA)
- Power cord

TECHNICAL DATA	UNIT	STANDARD	A	ZS	ZSA
Air volume flow with free air delivery	m³/h	max. 2000	max. 2000	max. 2000	max. 2000
Effective air flow rate	m³/h	300-1500	300-1500	300-1500	300-1300
Max. static pressure	Pa	5500	5500	5500	5500
Voltage	V	400*	400*	400*	400*
Frequency	Hz	50/60	50/60	50/60	50/60
Motor output	kW	3.0	3.0	3.0	3.0
Class of protection	-	1	1	1	1
Drive type	-	Continuous running			
Sound level	db(A)	approx. 68	approx. 68	approx. 68	approx. 68
Serial interface	Sub-D	25-pin	25-pin	25-pin	25-pin
Weight	kg	approx. 280	approx. 190	approx. 210	approx. 300
Dimensions (HxWxD)	mm	1530x700x777	1100x700x777	1600x700x777	1800x700x777
Intake sleeve NW 200	-	Standard	Standard	Standard	Standard
Exhaust sleeve NW 250	-	Standard	Standard	Standard	Standard
Color	RAL	7035	7035	7035	7035

*400V (3P+N)

FILTER CONFIGURATION					
	Pre-filter mat M5 (ISO_{ePM10} > 50%)	✓	✓	-	-
Z	Z+ $F9_{ePM2,5}$ (ISO ePM > 65%)	-	-	✓	✓
S	Particle filter	(H13)	-	(H14)	(H14)
A	activated carbon/BAC filter	2x 60 liters	2x 60 liters	-	2x 26 liters

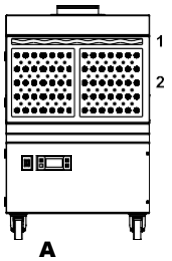
Orderring data LN 610



STANDARD

DESIGNATION	ART. NO.
LN 610 400V 50/60 Hz	90033

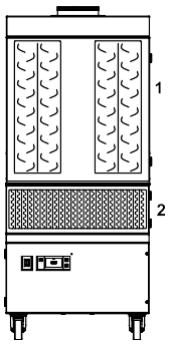
SPARE FILTER		
Pre-filter mat	12257	**1**
SafeLine filter	-	
Particle filter	12258	**2**
2x activated carbon/ BAC filter	13190	**3**



A

DESIGNATION	ART. NO.
LN 610 400V 50/60 Hz	90047

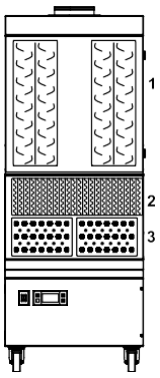
SPARE FILTER		
Pre-filter mat	12257	**1**
SafeLine filter	-	
Particle filter	-	
2x activated carbon/ BAC filter	13190	**2**



ZS

DESIGNATION	ART. NO.
LN 610 400V 50/60 Hz	90455

SPARE FILTER		
Pre-filter mat	-	
SafeLine filter	16871	**1**
Particle filter	15951	**2**
2x activated carbon/ BAC filter	-	



ZSA

DESIGNATION	ART. NO.
LN 610 400V 50/60 Hz	90453

SPARE FILTER		
Pre-filter mat	-	
SafeLine filter	16871	**1**
Particle filter	15951	**2**
2x activated carbon/ BAC filter	14517	**3**

Technical data LN 615

Illustration similar

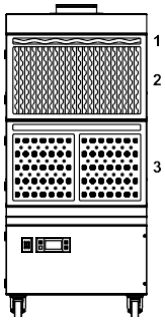
Delivery scope:

- Fully mounted (incl. individual filter equipment
- 4 castors for mobile use (filter equipment standard, A, ZS)
- Base stands (suitable for forklift trucks) - Filter equipment ZSA)
- Power cord

TECHNICAL DATA	UNIT	STANDARD	A	ZS	ZSA
Air volume flow with free air delivery	m³/h	max. 700	max. 700	max. 700	max. 700
Effective air flow rate	m³/h	100-550	100-550	100-550	100-500
Max. static pressure	Pa	15000	15000	15000	15000
Voltage	V	230	230	230	230
Frequency	Hz	50/60	50/60	50/60	50/60
Motor output	kW	1.8	1.8	1.8	1.8
Class of protection	-	1	1	1	1
Drive type	-	Continuous running			
Sound level	db(A)	approx. 68	approx. 68	approx. 68	approx. 68
Serial interface	Sub-D	25-pin	25-pin	25-pin	25-pin
Weight	kg	approx. 280	approx. 190	approx. 210	approx. 300
Dimensions (HxWxD)	mm	1530x700x777	1100x700x777	1600x700x777	1800x700x777
Intake sleeve NW 80	-	Standard	Standard	Standard	Standard
Exhaust sleeve NW 250	-	Standard	Standard	Standard	Standard
Color	RAL	7035	7035	7035	7035

FILTER CONFIGURATION					
	Pre-filter mat M5 (ISO ePM > 50%)	✓	✓	-	-
Z	Z+ F9 (ISO ePM > 65%)	-	-	✓	✓
S	Particle filter	(H13)	-	(H14)	(H14)
A	activated carbon/BAC filter	2x 60 liters	2x 60 liters	-	2x 26 liters

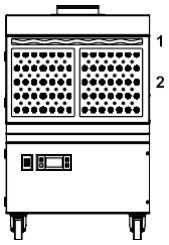
Orderring data LN 615



STANDARD

DESIGNATION	ART. NO.
LN 615 230V 50/60 Hz	90257

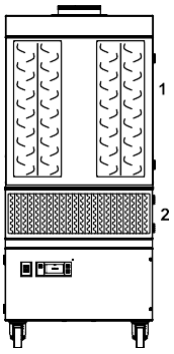
SPARE FILTER		
Pre-filter mat	12257	**1**
SafeLine filter	-	
Particle filter	12258	**2**
2x activated carbon/ BAC filter	13190	**3**



A

DESIGNATION	ART. NO.
LN 615 230V 50/60 Hz	90256

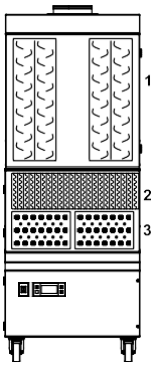
SPARE FILTER		
Pre-filter mat	12257	**1**
SafeLine filter	-	
Particle filter	-	
2x activated carbon/ BAC filter	13190	**2**



ZS

DESIGNATION	ART. NO.
LN 615 230V 50/60 Hz	90456

SPARE FILTER		
Pre-filter mat	-	
SafeLine filter	16871	**1**
Particle filter	15951	**2**
2x activated carbon/ BAC filter	-	



ZSA

DESIGNATION	ART. NO.
LN 615 230V 50/60 Hz	90454

SPARE FILTER		
Pre-filter mat	-	
SafeLine filter	16871	**1**
Particle filter	15951	**2**
2x activated carbon/ BAC filter	14517	**3**

Electronic control system

FUNCTION	LN 610	LN 615
Start / Stop button	✓	✓
Manual output control	✓	✓
Saturated filter notification (complete system)	✓	✓
Filter status indication SafeLine filter*	✓	✓
Filter status indication particle filter	✓	✓
Visual and audible indication of filter saturation	✓	✓
Indication of system status	✓	✓
Indication of power setting/hour meter	✓	✓
Indication of temperature and turbine error	✓	✓

*depending on system

INTERFACE FUNCTION		
Interface	Sub-D	Sub-D
Start / Stop button		✓
Pre-warning, filter saturated to 75 %	✓	✓
Group-error output (speed, temperature, "filter full"100%)	✓	✓
External power control	✓	✓
Message cache	✓	✓
Parameterization access for activating special functions	✓	✓

Accessories

USB CONNECTION

USE	DESIGNATION	CABLE LENGTH	ART. NO.
LN 610 / 615	USB connection cable	1.5 meters	16455

DELIVERY SCOPE: Connection cable (incl. software)

HUMANS / ENVIRONMENT / MACHINERY

Harting option

HARTING MAINS CONNECTION

USE	DESIGNATION	ART. NO.
LN 610 / 615	Mains connection Harting option	17036

INTERFACE HARTING

USE	DESIGNATION	ART. NO.
LN 610 / 615	Interface Harting option	15719

USB CONNECTION HARTING

USE	DESIGNATION	CABLE LENGTH	ART. NO.
LN 610 / 615	USB connection cable Harting	1.5 meters	16466

DELIVERY SCOPE: Connection cable (incl. software)

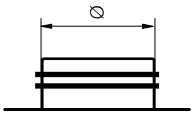
ACTIVATED CARBON/BAC SEPARATOR

USE	DESIGNATION	ART. NO.
LN 610 / 615	Activated carbon/BAC separator	90461

Is connected downstream of the filter and extraction system

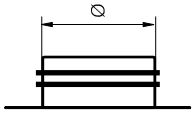
- Optimum inflow and contact time
- 150 l activated carbon/BAC filter for longer service life
- Reduction of pressure losses / Increase of system performance

Accessories



INTAKE SOCKET

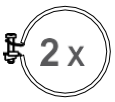
USE	DESIGNATION	ART. NO.
LN 610	Flared collar/flange 1 x NW 200	Standard
	Flared collar/flange 1 x NW 160	16538
LN 615	Flared collar/flange 1 x NW 80	Standard
	Flared collar/flange 1 x NW 100	16539

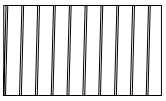


DISCHARGE SOCKET

USE	DESIGNATION	ART. NO.
LN 610 / LN 615	Exhaust sleeve NW 250	Standard

* Connection plate with socket for specific air discharge via hose





AIR INLET - flexible connection hoses

Hose set with 2 hose clamps

USE	NW (mm)	LENGTH (m)	ART. NO.
LN 615	80	5.0	16655
		10.0	16656
	100	5.0	16443
		10.0	16444
LN 610	160	5.0	13213
		10.0	13214
	200	5.0	13215
		10.0	13216

For further connecting hoses, spiral ducts and pipe connectors, please refer to the TBH accessories catalog or contact the TBH service.

SIGNAL MODULE

USE	ART. NO.
LN610 / LN 615	16621

SPARK EXTINGUISHER (Use in piping)

USE	AIR VOLUME	Ø d (mm)	ART. NO.
LN 615	300-600 m³/h	80	16766

ATEX approval according to EN 1834

Installation: Depending on the application and size, the spark extinguishers can be installed on the wall or on a worktable using a special holder (included in delivery scope) or with pipe clamps (please order separately).

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Accessories

FLOW-RATE MONITORING DEVICE

USE	Ø d (mm)	ART. NO.
LN 610 / LN 615	80	16642
LN 610 / LN 615	100	16643
LN 610 / LN 615	125	16644
LN 610 / LN 615	160	16762
LN 610 / LN 615	200	16661

FILTER-RUPTURE MONITORING DEVICE

USE	Ø d (mm)	ART. NO.
LN 610 / LN 615	100	16651
LN 610 / LN 615	160	16652
LN 610 / LN 615	250	16653

CABLE REMOTE CONTROL

FUNKTIONS:

"Filter full indication"

- Start / Stop button
- Speed control
- Switch-on status of the system: Standby operation

USE	DESIGNATION	CABLE LENGTH	ART. NO.
LN 610 / 615	Cable remote control	7 meters	16477

DELIVERY SCOPE: Remote control (incl. cable)

ELECTRIC FOOT SWITCH

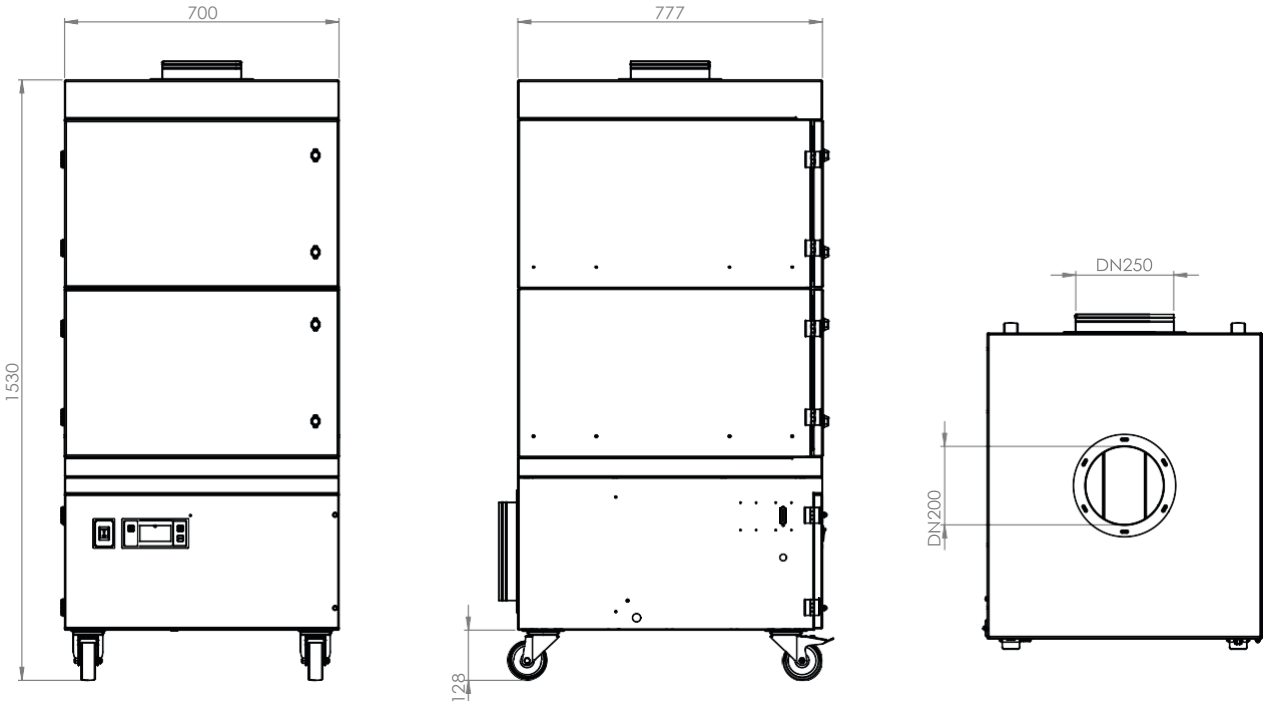
FUNKTIONS:

- Start / Stop button
- Switch-on status of the system: Standby operation

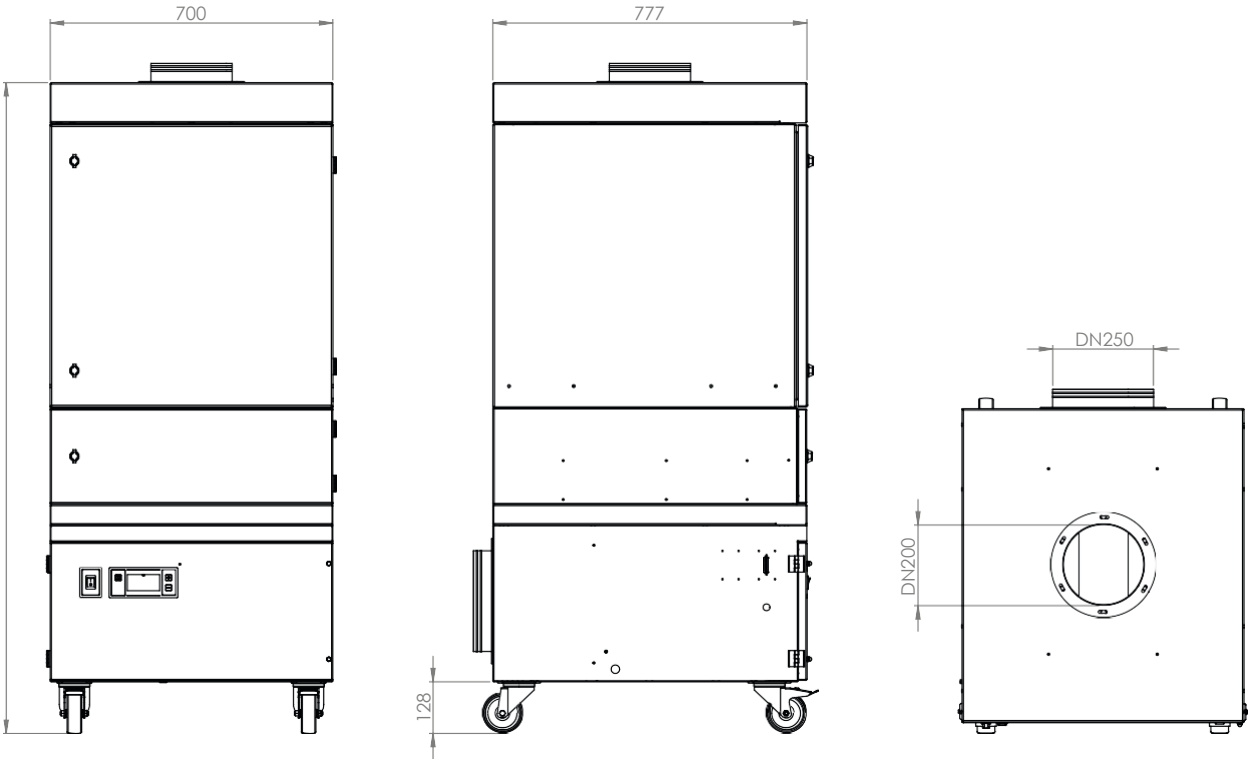
USE	DESIGNATION	CABLE LENGTH	ART. NO.
LN 610 / 615	Electric foot switch	2 meters	16369

DELIVERY SCOPE: Foot switch (incl. cable)

Technical drawings



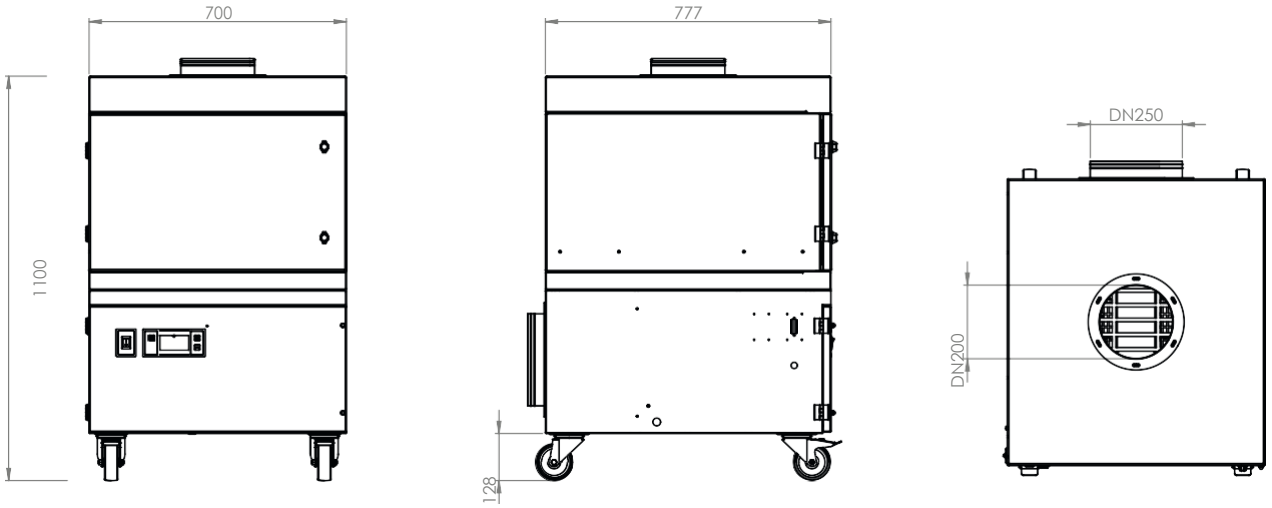
LN 610



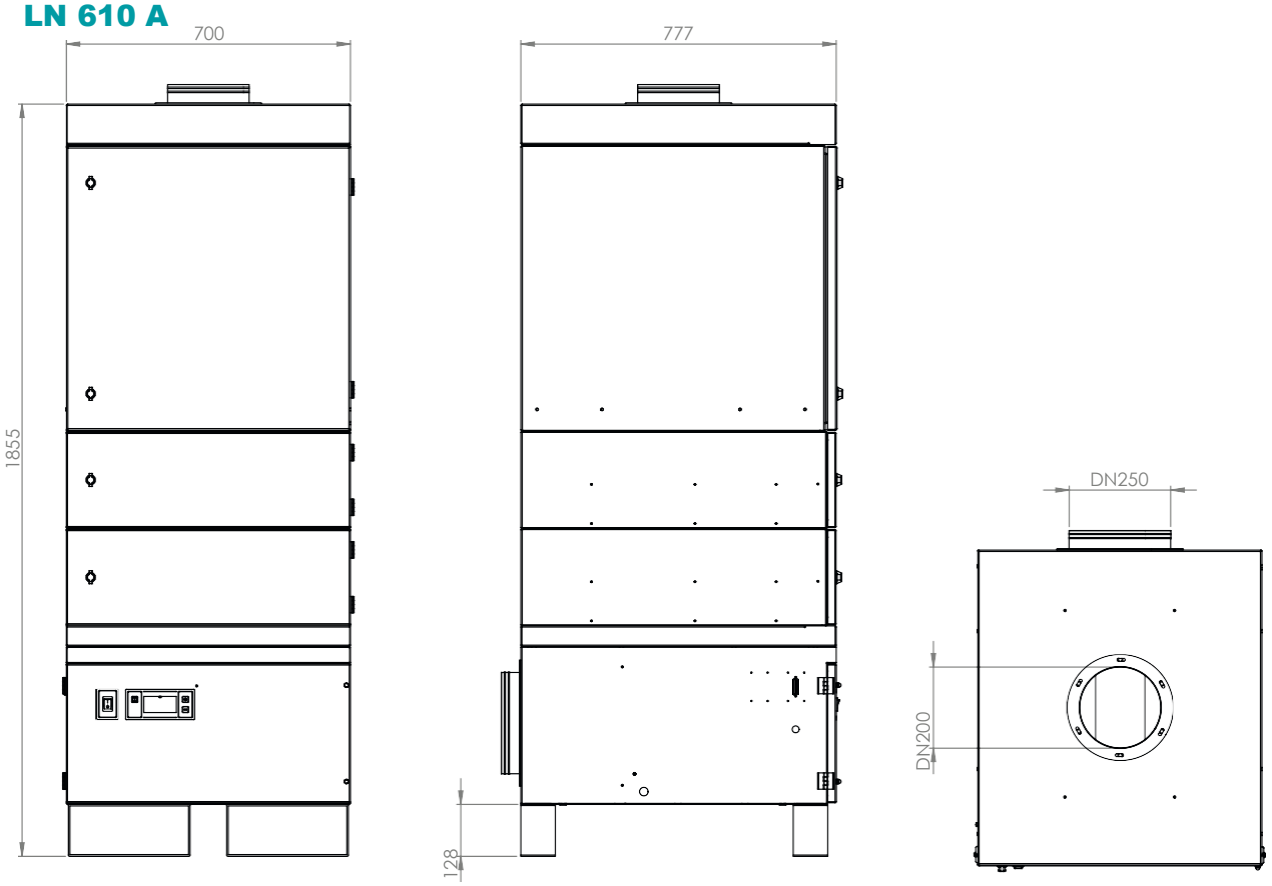
LN 610 ZS

HUMANS / ENVIRONMENT / MACHINERY

Technical drawings



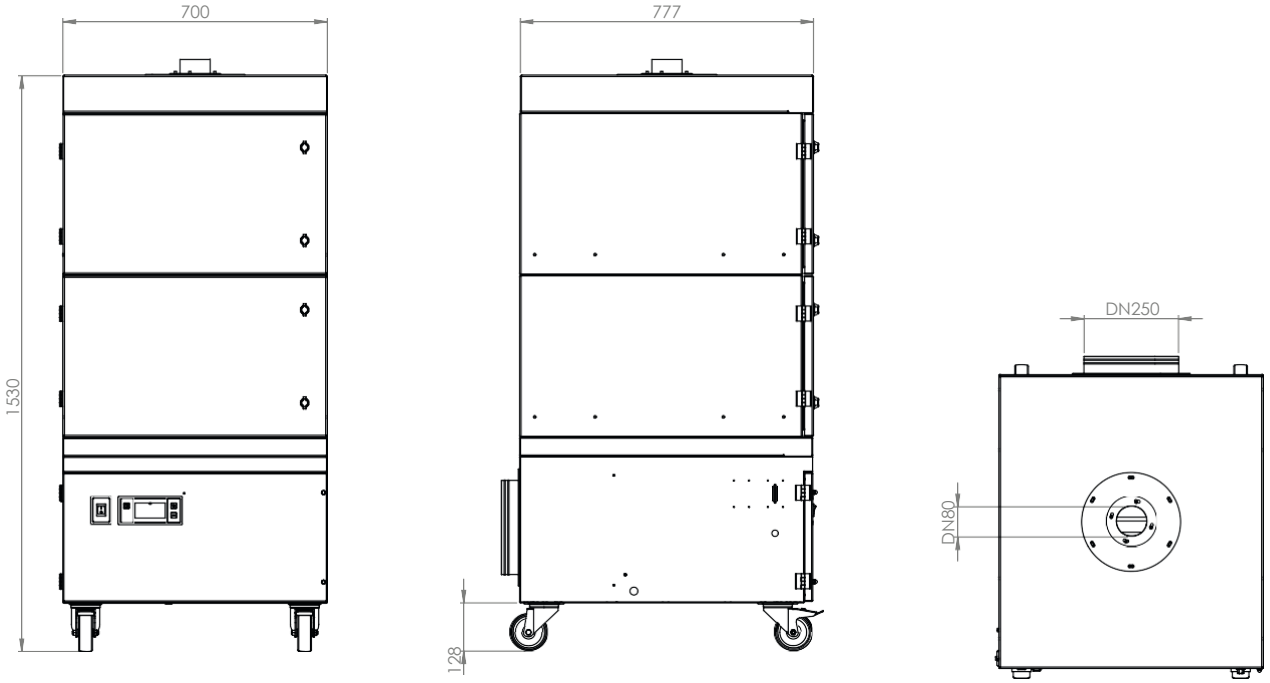
LN 610 A



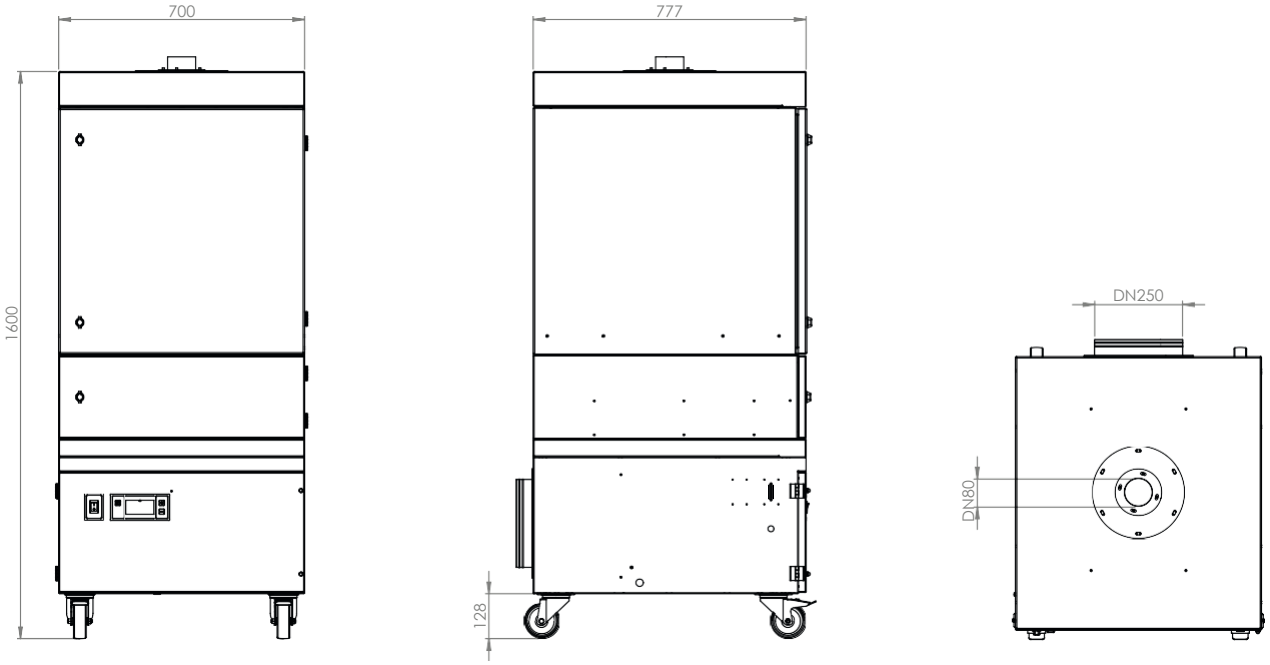
LN 610 ZSA

HUMANS / ENVIRONMENT / MACHINERY

Technical drawings



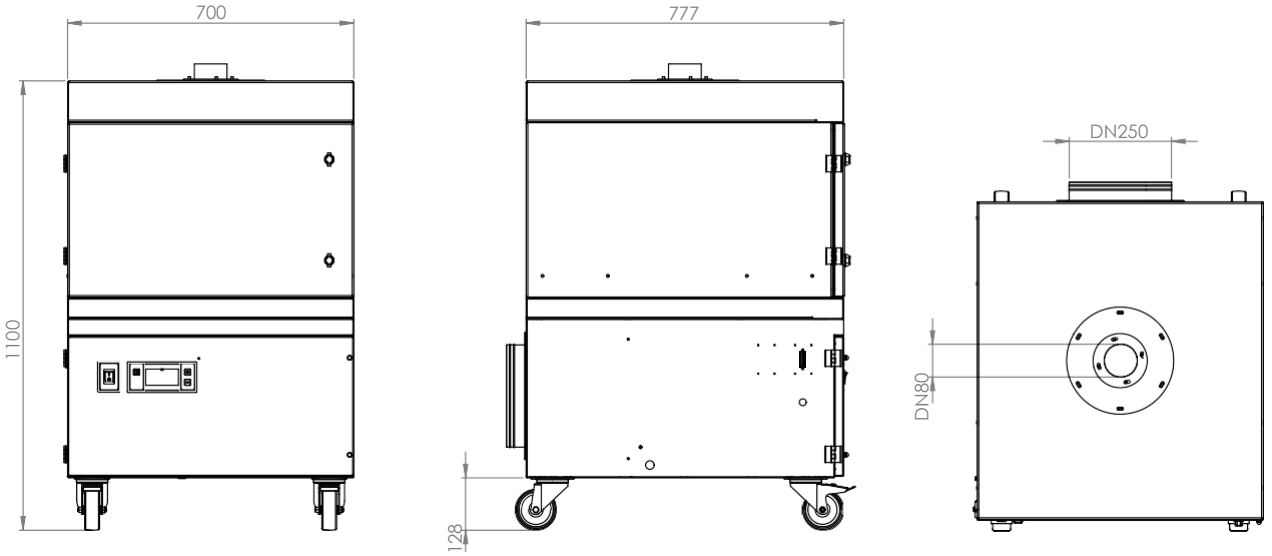
LN 615



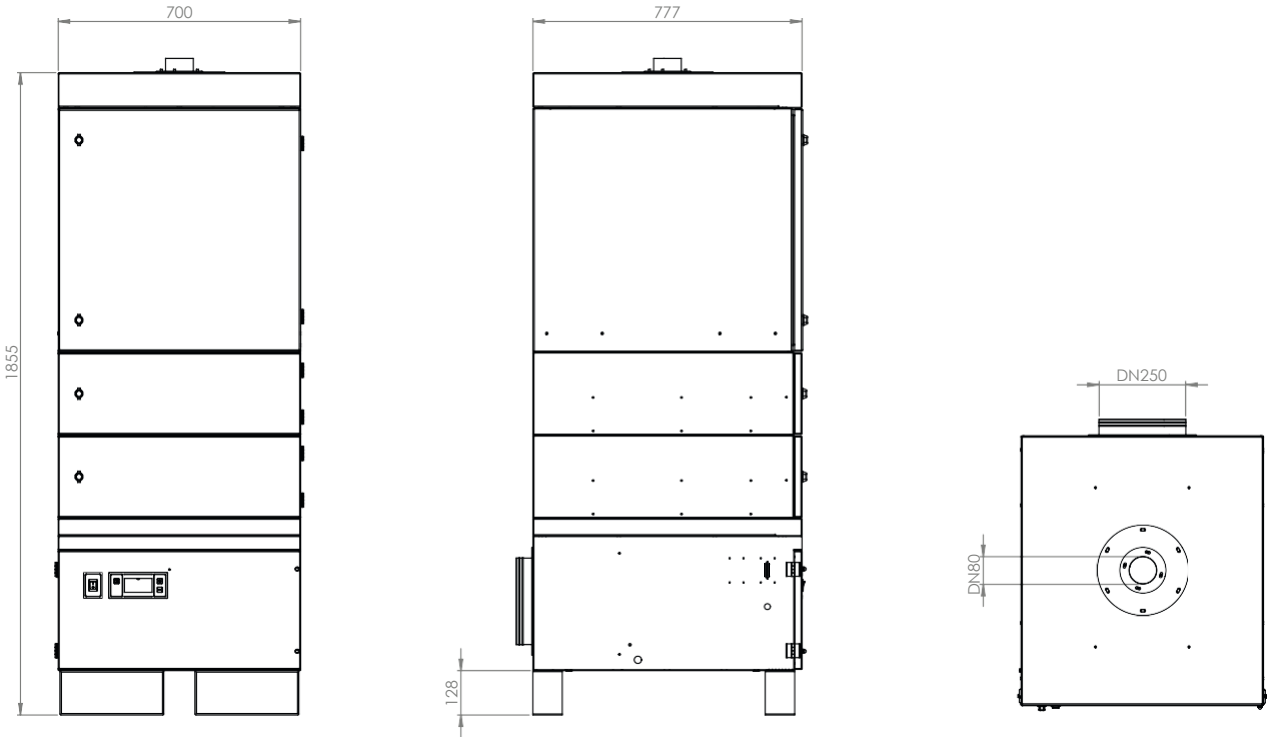
LN 615 ZS

HUMANS / ENVIRONMENT / MACHINERY

Technical drawings



LN 615 A



LN 615 ZSA

TBH®

FILTER / EXTRACTION / ENVIRONMENTAL // TECHNOLOGY

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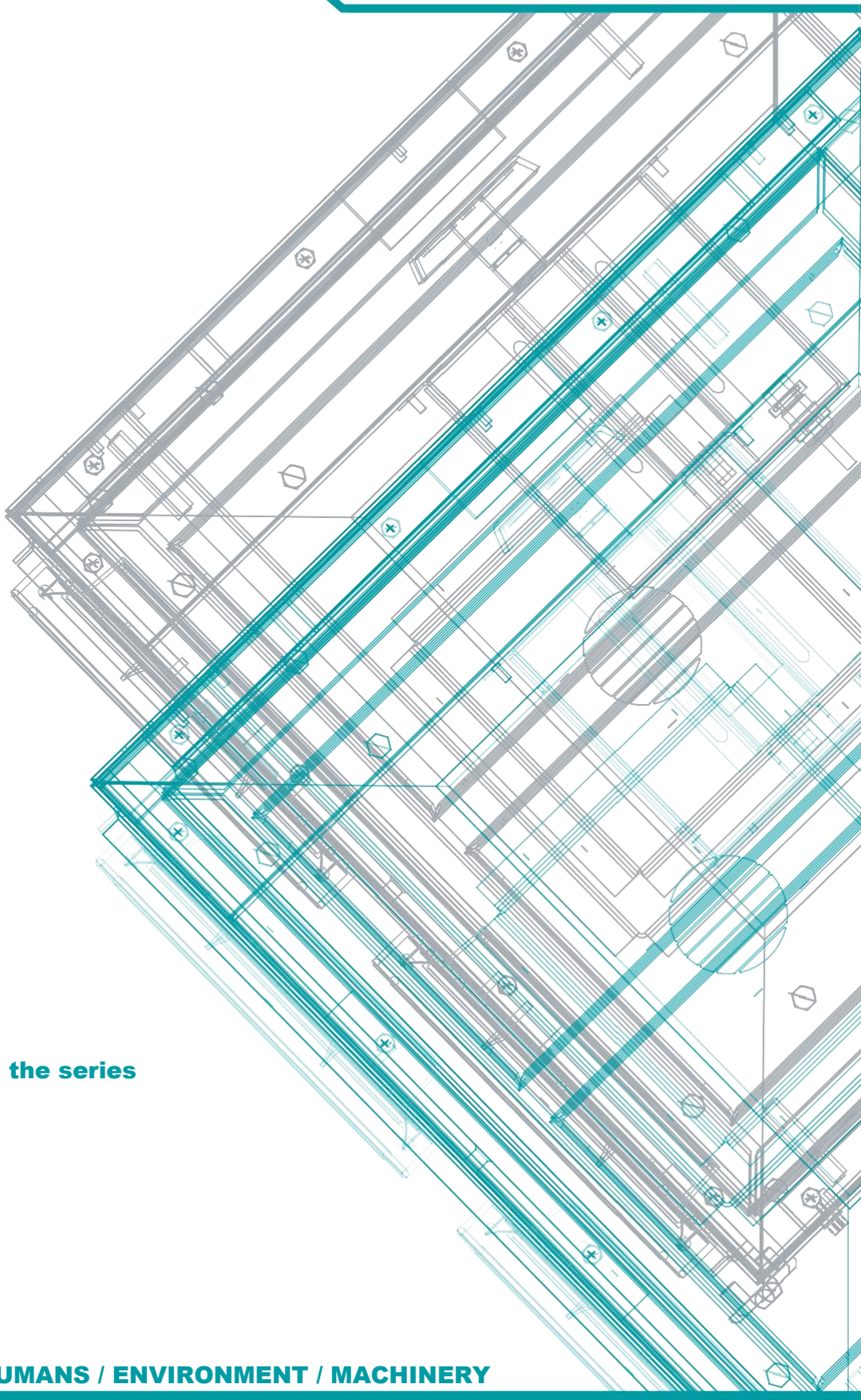


Further information on the series

HUMANS / ENVIRONMENT / MACHINERY

TBH®

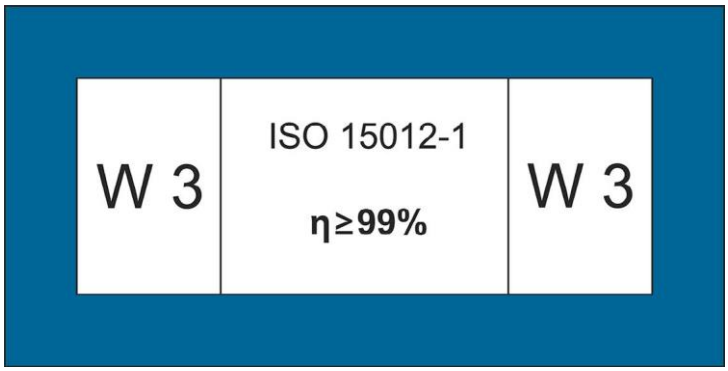
BF SERIES

FILTER / EXTRACTION / ENVIRONMENTAL // TECHNOLOGY

BF Series

Assurance in occupational and health safety

Welding fumes and dusts from related processes are easily handled by this system. The Institute for Occupational Safety and Health (IFA) has specifically tested them in accordance with DIN ISO 15012-1 (2013) and 15012-4 (2016). It fulfils the protection level for safe extraction and filtering required by the TRGS 528 Directive. High safety requirements are thus met. Smoke, vapours or dusts with particles in the micrometer range are safely filtered out of the air. Awarded W3 and the DGUV seal, the system offers triple protection for humans, environment and machinery, and is accordingly listed on the "IFA positive list".



Powerful motor

BF 9 / BF 100 / BF 200 / BF 1000 / BF 1200

- Electronically-commutated motors for full power and less energy consumption
- Wide-range input 100 – 240 V
- Brushless motor; suitable for continuous operation
- Permanent magnet rotor
- Electronic control for optimum motor characteristic curve and operating point

Best value - Entry-level model

As a compact basic model, the Basic Filtration, or BF series for short, contains all the essential functions of a filter and extraction system. The systems of the BF series can be equipped with various filter concepts. Here, TBH's proven modular design, with its many advantages, is used.

The differential-pressure indicator can be used to monitor the saturation filter. All systems of the BF series are equipped with a particularly ener- gy-saving blower, high vacuum and powerful con- trol unit.

Double adsorption power

The adsorption of the gaseous substances takes place with activated carbon (physical adsorption) and BAC granulate (chemical adsorption).
In addition, they take up a very broad spectrum of gases and odours.

-> Neutralization through chemical bonding with the reaction substance applied to the substrate material.

Energy-saving and quiet

BF 5 / BF 10

- Low energy costs, environmentally friendly
- Noise-reducing blower
- Suitable for operation in noise-sensitive environments
- Energy savings to 65%

HUMANS / ENVIRONMENT / MACHINERY

Draws off every harmful particle

Pollutants do not stand a chance

- Low-contamination dust disposal
- Molecular sieve against gaseous pollutants
- Piping / Flexible hose / Extraction arm
- Air-recirculation or exhaust-air pipe

Modular and flexible

Individually combinable to several processes

- Various filters combinable
- Adaptable to different processes and applications
- Numerous accessories available for ideal extraction

Tool-free filter changing

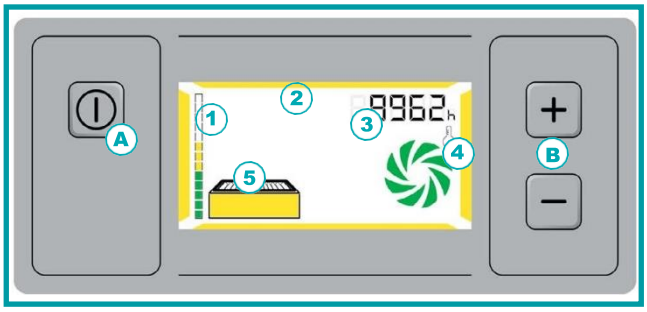
Simple filter removal

- Swift and smooth changing
- No special knowledge required
- Easy handling
- No tools required
- Time-saving

HUMANS / ENVIRONMENT / MACHINERY

Inspiring checking

Always full control over the system



- A - Start / Stop button
- B - Manual power control
- 1 - Saturated filter notification
- 2 - System status indication
- 3 - Power-setting indication/ Hour meter
- 4 - Temperature and turbine-status indication
- 5 - Filter-statusindication

Sub-D 25 interface

External control of the system

Illustration similar

Basic control unit

- Start / Stop button
- "Filter full" pre-warning stage (75 %)

Further information on the series

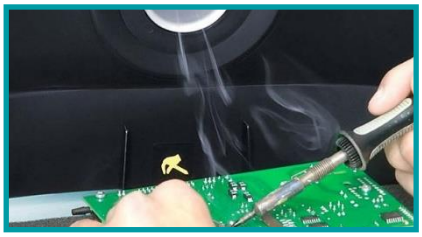
Scan QR code:

HUMANS / ENVIRONMENT / MACHINERY

Applications

Laser technology

Lasers are used for processing metals, woods and plastics. Due to this versatility, companies are intensively involved in laser technology. This not only increases efficiency, but also creates unwanted by-products, regardless of type and performance. TBH systems ensure safe extraction of fine dust and laser fumes.

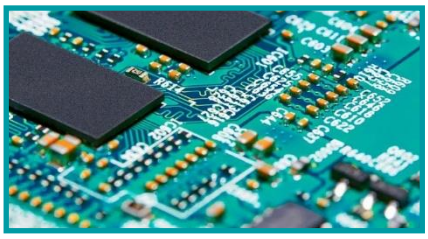


Soldering

Soldering connects two different materials by melting. Tin solder being used releases additives that have harmful effects on the respiratory organs. Depending on the soldering application (manual or automated), a suitable filter and extraction system must therefore be used.

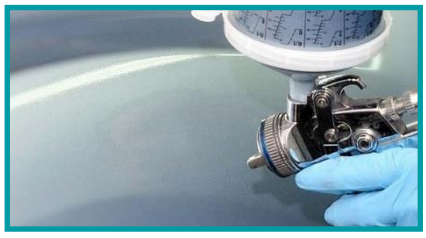
Welding/Grinding/Cutting

Welding, grinding and cutting processes result in very fine parti- cles from the surfaces being worked. These dangerous substances settle in the lungs and can lead to permanent inability of the re- spective employee to work. To prevent this from happening, weld- ing fumes must be efficiently extracted. This is demanded by the legal authorities in TRGS528. TBH GmbH therefore offers a large number of systems with W3 / DGUV approval.



Electronics

Manufacturers of electronic products work with small or tiny elements. Highly-toxic materials such as arsenic or phosphorus are often used to modify the properties of semiconducting substances. Solvents are used for removing contaminants on microchips; these pollute the environment and are harmful for employees.



Work processes with vapours/gases

Gases are much more difficult to separate than solid particles. Due to their chemical structure, they can pass through most filters without any problems. Special filters are required to extract gases correctly and reliably.

HUMANS / ENVIRONMENT / MACHINERY

Plastics processing

Almost every industry today processes plastics. TBH systems are exactly the right solution for the safe extraction and filtration of grinding dusts and vapours that occur during the processing of plastics. Be convinced by our quality.

Technical glass

Glass production results in great heat. The high temperatures required for melting glass cause gases containing large quantities of environmentally-hazardous substances to rise. In the course of the acid polishing, the hot or cold final layer releases tin or titani- um chlorides, such as hydrofluoric acid and sulphuric acid. These substances must be drawn off, as they are harmful to one's health.

Refilling work, packaging processes, feeding and conveying processes

When materials are moved from one place to another, such as during packaging or transportation, this process can cause particles to be released. Especially since they are not visible to the human eye, the risk should not be underestimated. Particles can develop from turbulences. TBH filter and extraction systems safely remove these particles from the ambient air.

Textile processing

Clothing can lose small lint and thread particles. These are so light that they can hover in the air of enclosures, and any motion continuously whirls them up. A high concentration of these airborne fibres is present particularly in the processing of textiles. There are also chemicals used for dyeing clothing, which are usually harmful to health and therefore need to be extracted.

Technical data BF 5

Illustration similar

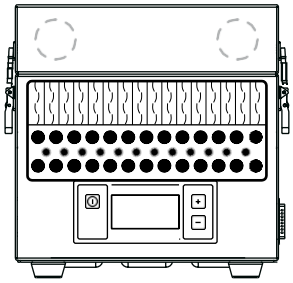
Delivery scope:

- Fully mounted (incl. filter-system legs)
- Filter equipment
- Power cord

TECHNICAL DATA	UNIT	STANDARD	A
Air volume flow with free air delivery	m³/h	max. 130	max. 130
Effective air flow rate	m³/h	20-100	20-100
Max. static pressure	Pa	1900	1900
Voltage	V	100-260	100-260
Frequency	Hz	50/60	50/60
Motor output	kW	0.04	0.04
Class of protection	-	1	1
Drive type	-	Continuous running	Continuous running
Sound level	db(A)	approx. 58	approx. 58
Serial interface	Sub-D	25-pin	25-pin
Weight	kg	17	17
Dimensions (HxWxD)	mm	315x300x300	315x300x300
Intake sleeve NW 50	Quantity	2	2
Color (housing)	RAL	7035	7035
Color (of lid)	RAL	7037	7037

FILTER CONFIGURATION			
	2-stage filter (particle filter H13 + activated carbon filter)	✓	-
A	Activated carbon filter	-	5.5 liters

Orderring data BF 5



1

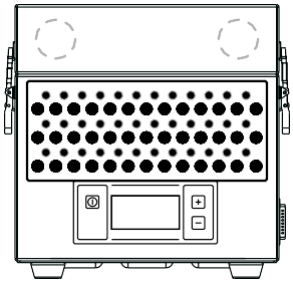
STANDARD

DESIGNATION	ART. NO.
BF 5 100-260V 50/60 Hz	90344

SPARE FILTER		
2-stage filter (particle filter + activated carbon filter)	15119	1
Activated carbon filter	-	

COVER UNITS	
Cover with extraction arm - System 50 (850 mm length, 3 joints)	15357*
Cover with extraction arm - Flex system 50 (900 mm length, 2 joints)	15354*
Cover with extraction arm - Flex system 50 (600 mm length, without joints)	15355*
System cover with center socket, NW 80	15356*

* factory-side



1

A

DESIGNATION	ART. NO.
BF 5 100-260V 50/60Hz	90421

SPARE FILTER		
2-stage filter (particle filter + activated carbon filter)	-	
Activated carbon filter	15715	1

Technical data BF 9

Illustration similar

Delivery scope:

- BASIC control unit*
- Fully mounted (incl. casters for mobile use)
- Filter equipment
- Power cord

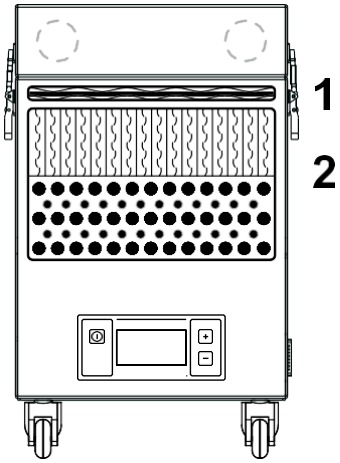
* Entry level unit, has functions as other systems of the BF series, but without motor monitoring.

TECHNICAL DATA	UNIT	BF 9
Air volume flow with free air delivery	m³/h	max. 220
Effective air flow rate	m³/h	20-200
Max. static pressure	Pa	14000
Voltage	V	230/120
Frequency	Hz	50/60
Motor output	kW	0.7
Class of protection	-	1
Drive type	-	Carbon running
Sound level	db(A)	approx. 64
Serial interface	Sub-D	25-pin
Weight	kg	24
Dimensions (HxWxD)	mm	510x300x300
Intake sleeve NW 50	Quantity	2
Color (housing)	RAL	7035
Color (of lid)	RAL	7037

FILTER CONFIGURATION		
	Pre-filter mat M5 ($ISO_{10}ePM$ > 50%)	✓
	2-stage filter (particle filter H13 + activated carbon filter)	✓

HUMANS / ENVIRONMENT / MACHINERY

Order data BF 9



BF 9

DESIGNATION	ART. NO.
BF 9 230V 50/60 Hz	90385
BF 9 120V 50/60 Hz	90386

SPARE FILTER		
Pre-filter mat	11141	1
2-stage filter (particle filter + activated carbon filter)	11140	2

COVER UNITS	
Cover with extraction arm - System 50 (850 mm length, 3 joints)	15357*
Cover with extraction arm - Flex system 50 (900 mm length, 2 joints)	15354*
Cover with extraction arm - Flex system 50 (600 mm length, without joints)	15355*
System cover with center socket, NW 80	15356*

* factory-side

Technical data BF 10

Illustration similar

Delivery scope:

- Fully mounted (incl. casters for mobile use)
- Filter equipment
- Power cord

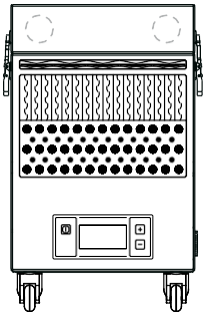
TECHNICAL DATA	UNIT	STANDARD	A	ZA
Air volume flow with free air delivery	m³/h	max. 250	max. 250	max. 250
Effective air flow rate	m³/h	20-200	20-200	20-200
Max. static pressure	Pa	6000	6000	6000
Voltage	V	100-240	100-240	100-240
Frequency	Hz	50/60	50/60	50/60
Motor output	kW	0.6	0.6	0.6
Class of protection	-	1	1	1
Drive type	-	Continuous running	Continuous running	Continuous running
Sound level	db(A)	approx. 62	approx. 62	approx. 62
Serial interface	Sub-D	25-pin	25-pin	25-pin
Weight	kg	24	24	24
Dimensions (HxWxD)	mm	510x300x300	510x300x300	510x300x300
Intake sleeve NW 50	Quantity	2	2	2
Color (housing)	RAL	7035	7035	7035
Color (of lid)	RAL	7037	7037	7037

FILTER CONFIGURATION				
	Pre-filter mat M5 ($ISO\ ePM_{10} > 50\%$)	✓	-	-
Z	Z-line filter M6 ($ISO\ ePM_{2.5}\ 50\text{-}65\%$, $ePM_{10} > 60\%$)	-	-	✓
	2-stage filter (particle filter H13 + activated carbon filter)	✓	-	✓
A	Activated carbon filter	-	12 liters	-

* slightly reduced particle filter/activated carbon filter compared to standard version due to additional Z-line filter

HUMANS / ENVIRONMENT / MACHINERY

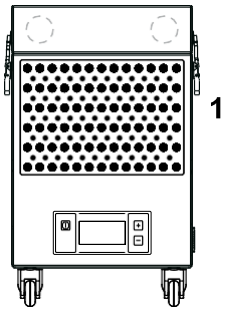
Orderring data BF 10



STANDARD

DESIGNATION	ART. NO.
BF 10 100-240V 50/60 Hz	90362

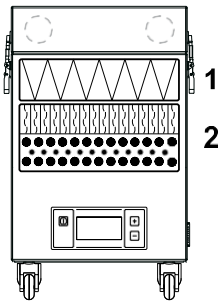
SPARE FILTER		
Pre-filter mat	11141	1
Z-line filter	-	
2-stage filter (particle filter + activated carbon filter)	11140	2
Activated carbon filter	-	



A

DESIGNATION	ART. NO.
BF 10 100-240V 50/60 Hz	90420

SPARE FILTER		
Pre-filter mat	-	
Z-line filter	-	
2-stage filter (particle filter + activated carbon filter)	-	
Activated carbon filter	11143	1



ZA

DESIGNATION	ART. NO.
BF 10 100-240V 50/60 Hz	90396

SPARE FILTER		
Pre-filter mat	-	
Z-line filter	15976	1
2-stage filter (particle filter + activated carbon filter)	15119	2
Activated carbon filter	-	

COVER UNITS	
Cover with extraction arm - System 50 (850 mm length, 3 joints)	15357*
Cover with extraction arm - Flex system 50 (900 mm length, 2 joints)	15354*
Cover with extraction arm - Flex system 50 (600 mm length, without joints)	15355*
System cover with center socket, NW 80	15356*

* factory-side

Technical data BF 100R/ BF 200R

Illustration similar

Delivery scope:

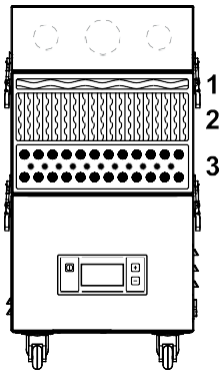
- Fully mounted (incl. casters for mobile use)
- Filter equipment
- Power cord

TECHNICAL DATA	UNIT	BF 100R	BF 200R
Air volume flow with free air delivery	m³/h	max. 280	max. 280
Effective air flow rate	m³/h	30-230	30-230
Max. static pressure	Pa	11000	11000
Voltage	V	230/120	230/120
Frequency	Hz	50/60	50/60
Motor output	kW	1.1	1.1
Class of protection	-	1	1
Drive type	-	Continuous running	Continuous running
Sound level	db(A)	approx. 62	approx. 62
Serial interface	Sub-D	25-pin	25-pin
Weight	kg	approx. 40	approx. 55
Dimensions (HxWxD)	mm	700x350xx350	1025x350x350
Intake sleeve NW 50	Quantity	2	2
Intake sleeve NW 80	Quantity	1	1
Color (housing)	RAL	7035	7035
Color (of lid)	RAL	7037	7037

FILTER CONFIGURATION		
Pre-filter mat M5 ($_{10}$ISO ePM > 50%)	✓	-
Z-LinepanelPlus-Filter F7 ($_{1}$ISO ePM 50-65%, ePM $_{2,5}$65-80%, ePM > $_{10}$85%)	-	✓
Particle filter H13	✓	✓
Activated carbon/BAC filter	10 liters	18 liters

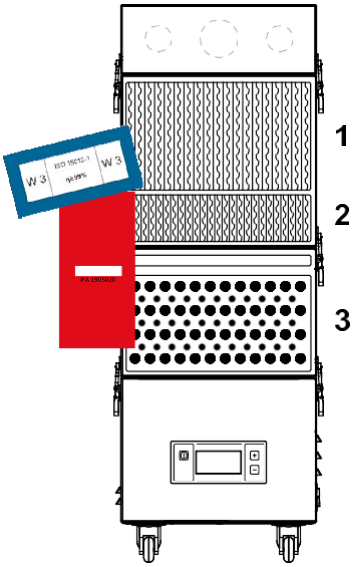
HUMANS / ENVIRONMENT / MACHINERY

Ordering data BF 100R/ BF 200R



BF 100R

DESIGNATION	ART. NO.
BF 100R 100-240V 50/60 Hz	90302



BF 200R

DESIGNATION	ART. NO.
BF 200R 100-240V 50/60 Hz	90306*

* more on W3, see catalog page 2

SPARE FILTER		
Pre-filter mat	10040	1
Z-LinepanelPlus-Filter	-	
Particle filter	10013	2
Activated carbon/ BAC filter	10004	3

SPARE FILTER		
Pre-filter mat	-	
Z-LinepanelPlus-Filter	16199	1
Particle filter	10013	2
Activated carbon/ BAC filter	10007	3

Technical data
BF 1000R/BF 1200R

Illustration similar

Delivery scope:

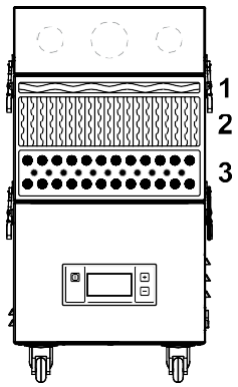
- Fully mounted (incl. casters for mobile use)
- Filter equipment
- Power cord

TECHNICAL DATA	UNIT	BF 1000R	BF 1200R
Air volume flow with free air delivery	m³/h	max. 280	max. 280
Effective air flow rate	m³/h	30-230	30-230
Max. static pressure	Pa	11000	11000
Voltage	V	100-240	100-240
Frequency	Hz	50/60	50/60
Motor output	kW	1.1	1.1
Class of protection	-	1	1
Drive type	-	Continuous running	Continuous running
Sound level	db(A)	approx. 60	approx. 60
Serial interface	Sub-D	25-pin	25-pin
Weight	kg	approx. 70	approx. 90
Dimensions (HxWxD)	mm	750x350x655	1105x350x655
Intake sleeve NW 50	Quantity	2	2
Intake sleeve NW 80	Quantity	1	1
Color (housing)	RAL	7035	7035
Color (of lid)	RAL	7037	7037

FILTER CONFIGURATION		
Pre-filter mat M5 ($_{10}$ISO ePM > 50%)	✓	-
Z-LinepanelPlus-Filter F7 ($_{1}$ISO ePM 50-65%, ePM $_{2,5}$65-80%, ePM > $_{10}$85%)	-	✓
Particle filter H13	✓	✓
Activated carbon/BAC filter	25 liters	45 liters

HUMANS / ENVIRONMENT / MACHINERY

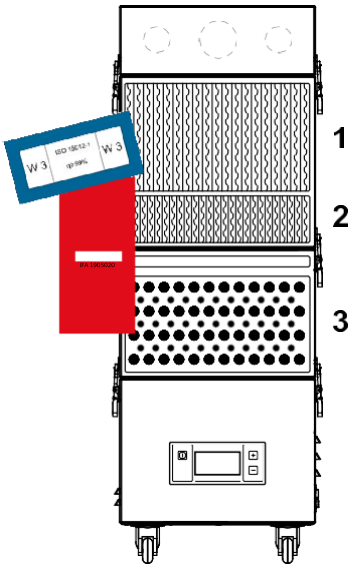
Ordering data BF 1000R/ BF 1200R



BF 1000R

DESIGNATION	ART. NO.
BF 1000R 100-240V 50/60Hz	90310

SPARE FILTER		
Pre-filter mat	10001	1
Z-LinepanelPlus-Filter	-	
Particle filter	10009	2
Activated carbon/ BAC filter	10046	3



BF 1200R

DESIGNATION	ART. NO.
BF 1200R 100-240V 50/60Hz	90314

* more on W3, see catalog page 2

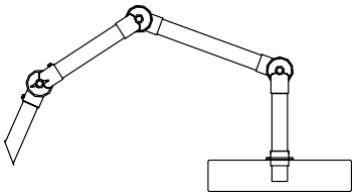
SPARE FILTER		
Pre-filter mat	-	
Z-LinepanelPlus-Filter	16360	1
Particle filter	10009	2
Activated carbon/ BAC filter	12052	3

Electronic control system

FUNCTION	BF 5	BF 9 / BF 10	BF 100R / BF 200R	BF 1000R / BF 1200R
Start / Stop button	✓	✓ / ✓	✓	✓
Manual output control	✓	✓ / ✓	✓	✓
Saturated filter notification (complete system)	✓	✓ / ✓	✓	✓
Indication of filter status	✓	✓ / ✓	✓	✓
Indication of system status	✓	✓ / ✓	✓	✓
Indication of power setting/hour meter	✓	✓ / ✓	✓	✓
Indication of temperature and turbine error	✓	- / ✓	✓	✓

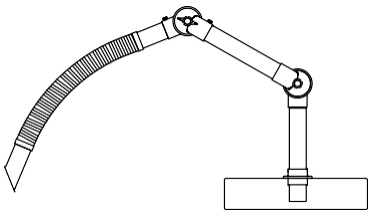
INTERFACE FUNCTION	BF 5	BF 9 / BF 10	BF 100R / BF 200R	BF 1000R / BF 1200R
Interface	Sub-D	Sub-D	Sub-D	Sub-D
Start / Stop button	✓	✓	✓	✓
Pre-warning, filter saturated to 75 %	✓	✓	✓	✓
Pre-selection Start/Stop at system start	✓	✓	✓	✓

Accessories



USE	DESIGNATION	ART. NO.
BF 5 / BF 9 / BF 10	Cover with extraction arm - System 50 850 mm length, 3 joints	15392*

Retrofitting to existing system

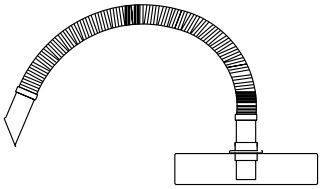


USE	DESIGNATION	ART. NO.
BF 5 / BF 9 / BF 10	Cover with extraction arm - Flex system 50 900 mm length, 2 joints	15393*

Retrofitting to existing system

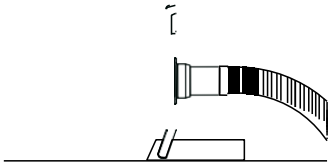
HUMANS / ENVIRONMENT / MACHINERY

Accessories

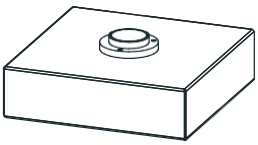


USE	DESIGNATION	ART. NO.
BF 5 / BF 9 / BF 10	Cover with extraction arm - Flex system 50 600 mm length, without joints	15394*

* Retrofitting to existing system



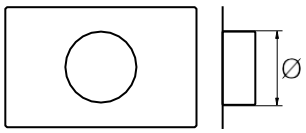
USE	DESIGNATION	ART. NO.
BF 5 / BF 9 / BF 10	Flat screen Kit SYSTEM 50, with extraction hose, length 1.25 m	15397



USE	DESIGNATION	ART. NO.
BF 9 / BF 10	System cover with center socket, NW 80	15395*

* Retrofitting to existing system

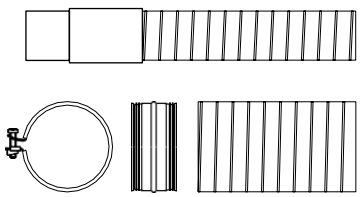
USE	DESIGNATION	ART. NO.
BF 5 / BF 9 / BF 10	Electric foot switch	16369
BF 100R / BF 200R		
BF 1000R / BF 1200R		



AIR OUTLET PLATE*

USE	NW (mm)	ART. NO.
BF 100R / BF 200R	80	11709
BF 1000R / BF 1200R		
BF 100R / BF 200R	100	12839
BF 1000R / BF 1200R		
BF 100R / BF 200R	125	12232
BF 1000R / BF 1200R		

* Connection plate with socket for specific air discharge via hose

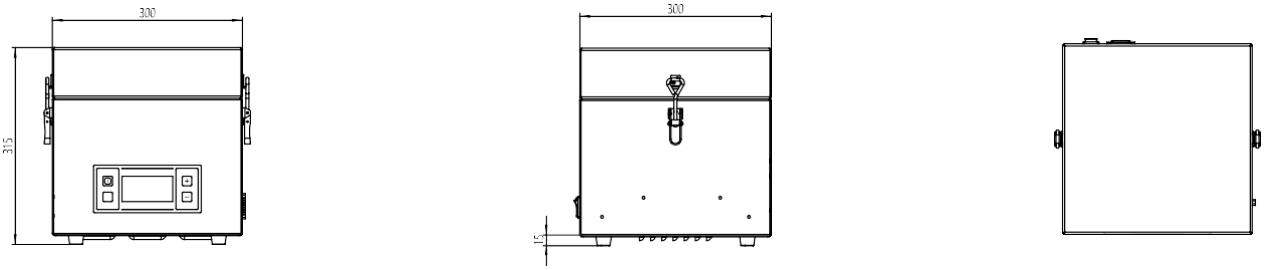


AIR INLET - flexible connection hoses

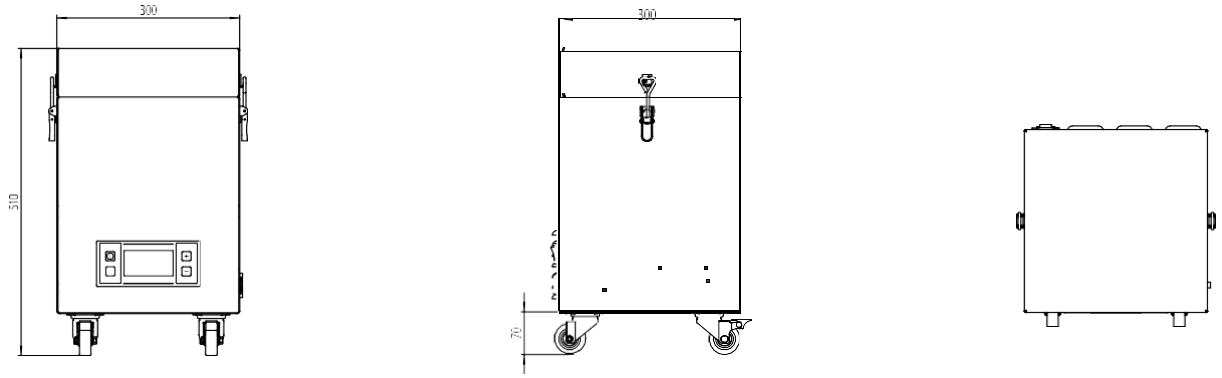
DESIGNATION	NW (mm)	LENGTH (m)	ART. NO.
Hose set with connecting sleeve	50	2.5	10008
		5.0	10010
Hose set with nipple and hose clamps	80	2.5	13179
		5.0	13180
		10.0	13197

HUMANS / ENVIRONMENT / MACHINERY

Technical drawings

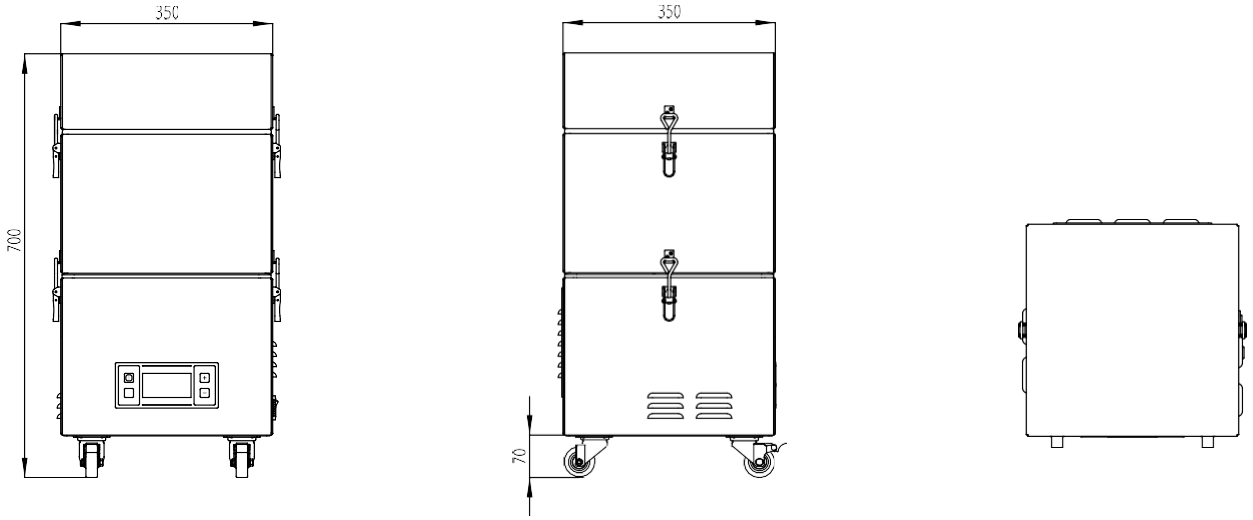


BF 5

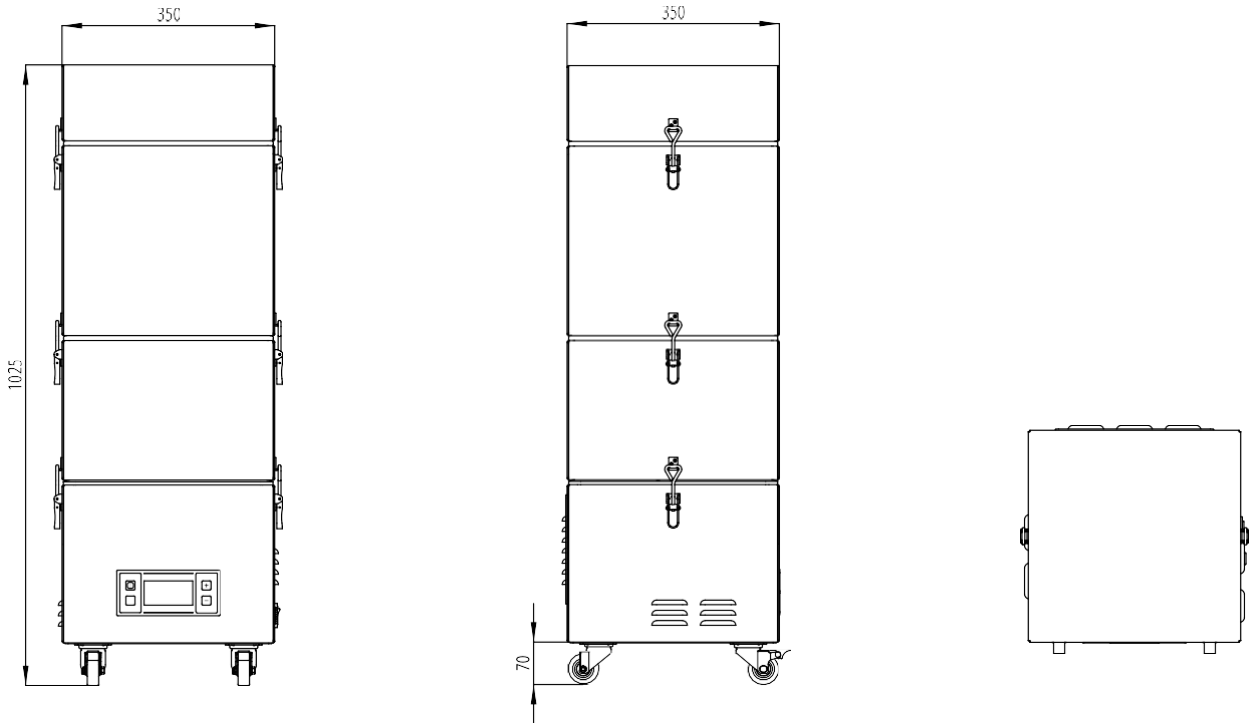


BF 9 / BF 10

Technical drawings

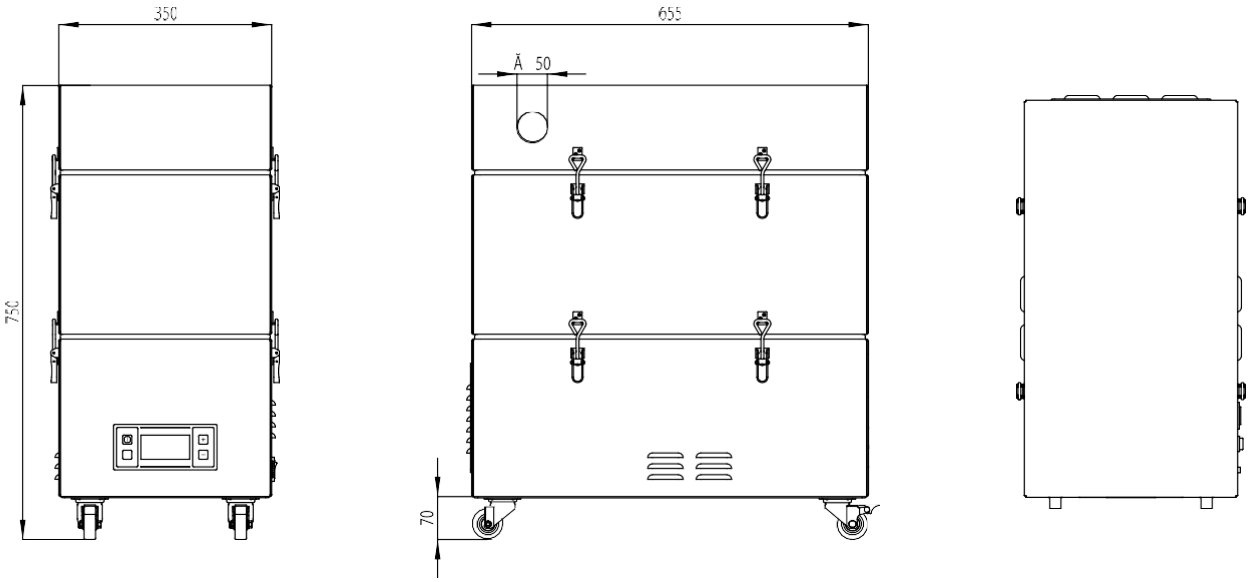


BF 100 R

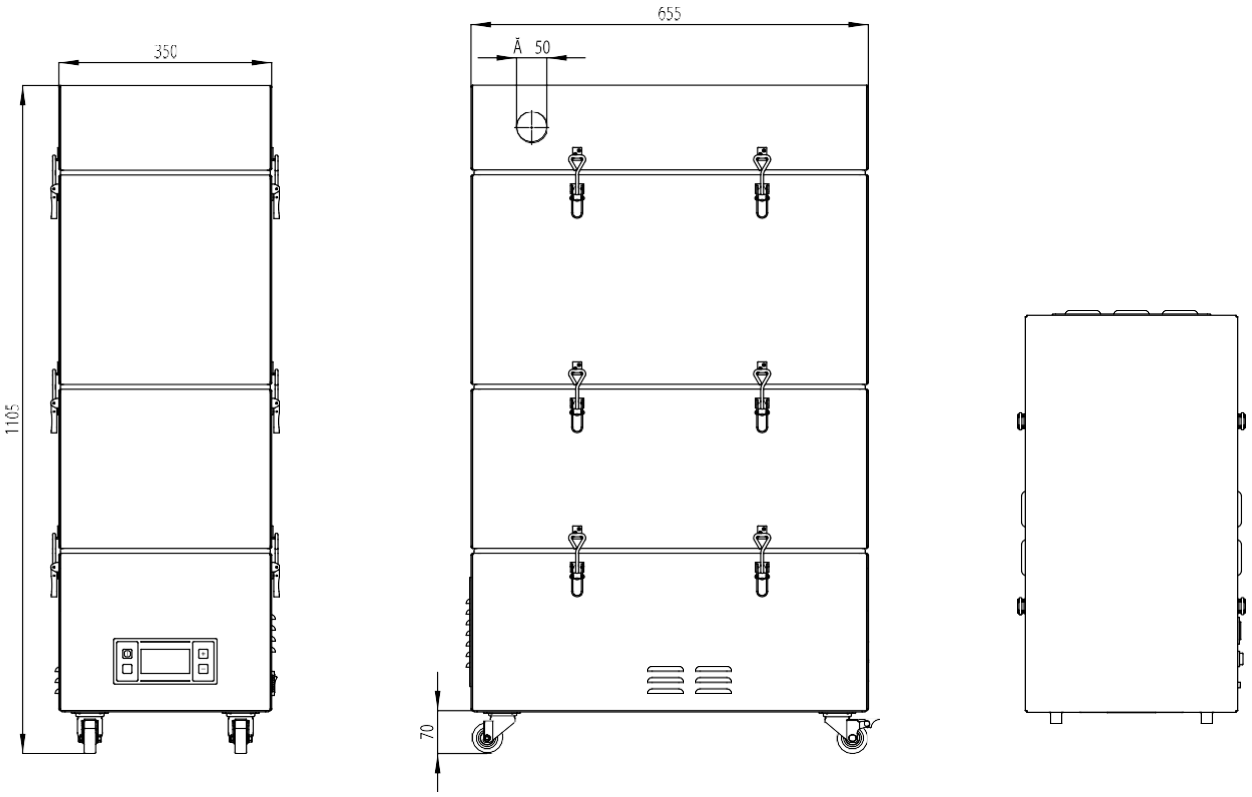


BF 200 R

Technical drawings



BF 1000 R



BF 1200 R

Notes:

TBH®

FILTER / EXTRACTION / ENVIRONMENTAL // TECHNOLOGY

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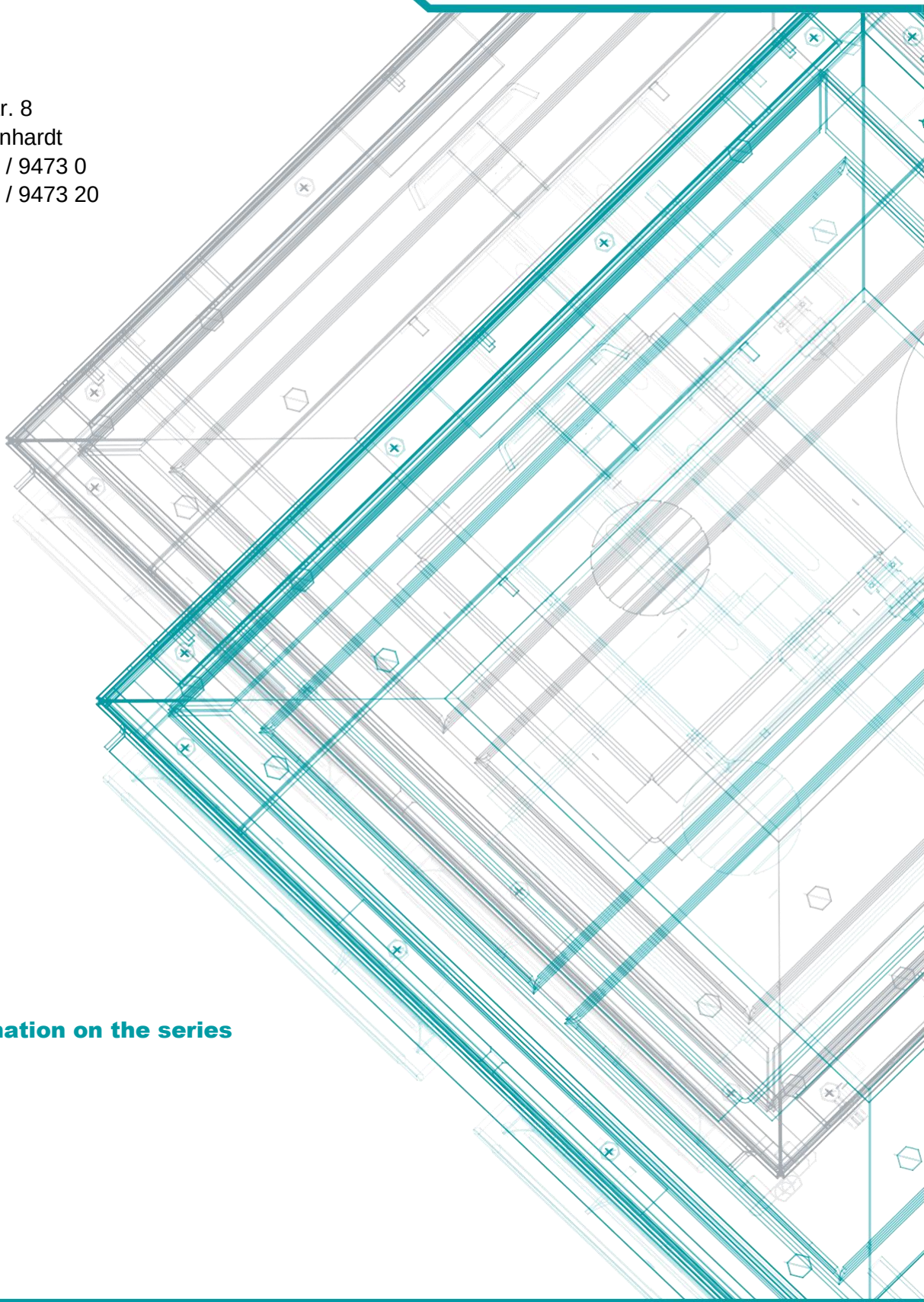

Further information on the series

HUMANS / ENVIRONMENT / MACHINERY

Notes: