

# MANN+HUMMEL ENTARON XD



## Installation and Maintenance Manual



## Contact information

This installation and maintenance manual is a component part of the scope of delivery. It must be kept in a safe place and remain with the equipment in the event of resale.

We reserve the right to make technical improvements to the products described in this installation and maintenance manual without notification.

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This installation and maintenance manual is not subject to an updating service.

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## Contents

<b>1</b>	<b>Foreword</b> .....	<b>2</b>
<b>2</b>	<b>Scope of Delivery</b> .....	<b>2</b>
<b>3</b>	<b>Safety</b> .....	<b>3</b>
3.1	Warning labels and symbols .....	3
3.2	Intended use.....	3
<b>4</b>	<b>Function Description</b> .....	<b>3</b>
<b>5</b>	<b>Installation</b> .....	<b>4</b>
5.1	General information .....	4
<b>6</b>	<b>Maintenance / Repair</b> .....	<b>5</b>
6.1	Maintenance of the main element .....	6
6.1.1	Disassembling the main filter element .....	6
6.1.2	Cleaning the main element .....	7
6.1.3	Installing the main element .....	8
6.2	Maintenance of the secondary element .....	9
6.2.1	Disassembling the main element .....	9
6.2.2	Changing the secondary element .....	9
6.2.3	Installing the main element .....	9
6.2.4	Maintenance of the dust discharge valve 10	
6.2.5	Storing Filter Elements.....	10
<b>7</b>	<b>Troubleshooting</b> .....	<b>11</b>
<b>8</b>	<b>Disposing of Parts</b> .....	<b>12</b>

## 1 Foreword

This installation and maintenance manual serves to help you become familiar with the ENTARON XD and its intended.

The installation and maintenance manual contains important information on operating the components safely, properly and economically. Observation of the manual helps avoid potential risks, reduce repair costs and downtimes as well as improve machine reliability and increase its service life.

The manual must be available to every person charged with working on the filter.

Where necessary, this manual must be supplemented by instructions containing existing national laws on accident prevention and environmental protection (particularly in respect of disposing of disassembled parts).

We reserve the right to make technical modifications to the filter and/or alter the content of this installation and maintenance manual without notification.

### Information for the operator:

The operator is responsible for the provision of working equipment complying with basic health and safety requirements in accordance with the Ordinance on Industrial Safety and Health. This also includes deploying the work equipment such that it is only used within the scope of its intended use. The operator can define individual maintenance and service plans and intervals in addition to those stipulated in the installation and maintenance manual.

## 2 Scope of Delivery

The delivery contains the 2-piece air filter housing with main filter element and dust discharge valve. The filter is delivered fully assembled.

The maintenance indicator and secondary filter element are optionally available and, therefore, not automatically supplied as a component part of the delivery.

### 3 Safety

#### 3.1 Warning labels and symbols



This symbol appears in all the sections of the manual in which your safety could be at risk. Failure to observe the information provided could put persons at risk.



This symbol appears in all the sections of the manual in which the information provided must be strictly observed to prevent damage or destruction of system parts.



This symbol appears in all the sections of the manual in which the information provided must be carefully observed to ensure trouble-free, economic operation.

#### 3.2 Intended use

The filter may only be maintained by appropriately trained, authorised personnel.

The ENTARON XD has been constructed according to state-of-the-art technology and accepted safety-related regulations. However, the functional safety of connected equipment can be at risk when:

- the ENTARON XD is used improperly,
- the operating conditions have changed,
- reconstructions have been made without prior consultation with the manufacturer,
- the necessary maintenance and repair work has been neglected.

The ENTARON XD may only be used when it is in a technically safe working condition and for its intended use, taking the relevant technical design, safety and risk aspects into account and observing the information in the installation and maintenance manual! Investigate faults (or have them investigated) immediately, particularly those which could impair safety!

The ENTARON XD has been exclusively designed for the mechanical filtration of air.

Any other use above or beyond this, such as filtering aggressive, combustible and/or explosive materials, is considered unintended use.

The manufacturer/supplier is not considered liable for damage resulting from unintended use.

Intended use also includes observing the information in the installation and maintenance manual and meeting all the inspection and maintenance conditions.

The operator is obliged to inspect the ENTARON XD once a week for visible signs of damage and defects and to report any changes (including those in the operating behaviour) which could affect functional safety immediately.

All labels and identifications on the ENTARON XD must be kept in a legible condition.

### 4 Function Description

The ENTARON XD is a two-stage dry air filter intended to clean the intake air of air aspirating machines of all types (e.g. engines, compressors, fans).

The intake air is circulated inside the filter housing by means of the tangentially arranged air intake spigot.

The centrifugal forces produced here force the heavy particulate matter outwards against the housing wall and discharge it via the dust discharge valve into the bottom housing section. This initial filtering process (1st filter stage) means that the ENTARON XD is particularly suited for applications involving higher concentrations of dust.

The cleaned air then flows through the main filter element (2nd filter stage) and downstream secondary element (option) to the air discharge spigot. As a result of their constructional dimensions, the filter elements represent a radial and axial seal to the housing air intake spigot. This sealing feature has the following advantages:

- minimal assembly and disassembly forces,
- minimal pressure exertion on the paper bellows,

- compulsory assembly of the secondary element via the main element,
- compulsory assembly of the main element via the bottom housing section.

The optional secondary element, available for all sizes, prevents particulate matter getting into the engine during maintenance or when operating the system with a main element damaged through improper handling. Secondary elements can be retrofitted at any time.

## 5 Installation

### 5.1 General information

Check that the scope of delivery (Fig. 1) is complete and that there are no signs of damage.

If parts of the delivery are damaged, please inform your sales partner.



The holder provided on the vehicle or device by the customer must be sufficiently stable in order to absorb the various forces which occur and prevent relative movements of the fixation points in relation to each other (for the hole pattern, refer to the filter diagram).

- Fix the filter with 4 screws M10 (tightening torque 22 Nm).



In the case of models with a dust discharge valve and horizontal installation position, the dust discharge valve must point downwards ( $\pm 15^\circ$  deviation from the "OBEN/TOP" mark (1) is permissible); if necessary, remove the bottom housing section (2) and turn it before reinstalling.

The maintenance indicator/switch, connected to the adapter, indicates when the vacuum produced by the suction has exceeded a prescribed value (e.g. -60 mbar). This means that the prescribed maximum filter flow resistance has been exceeded and the main filter element must be changed.

The wire clamp fasteners with locking caps fix the bottom housing section to the upper housing section.

The intake neck can be fitted with an optional rain cap to protect it from rainwater and snow.

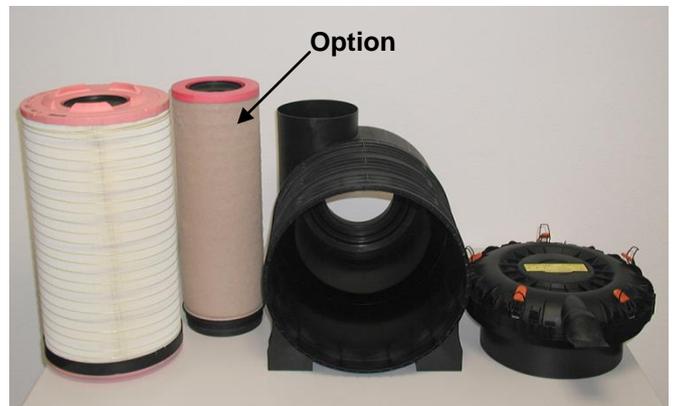


Fig. 1 Scope of delivery

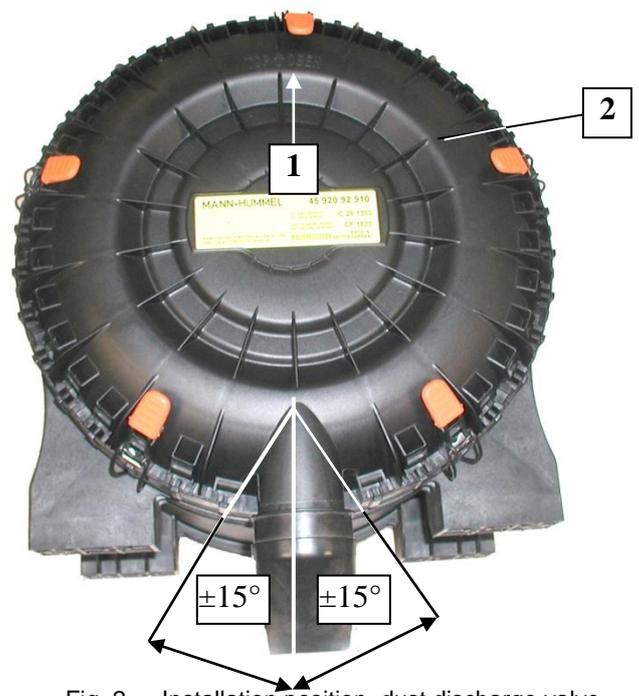


Fig. 2 Installation position, dust discharge valve

## 6 Maintenance / Repair

Cleaning, maintenance and repair work may only be carried out when the assembly is switched off (engine, compressor, fans, etc.).

Never start up with the filter element disassembled!

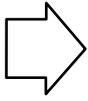
Component	Activity	Time for maintenance
Main element	Change (If it cannot be changed, the main filter element can be cleaned in emergencies as described in Chapter 6.1.2)	In accordance with the operating manual from the respective devices or engines, or after the maintenance indicator/switch has triggered or after 2 years at the latest.
Secondary element (option)	Change	After maintenance has been carried out 5 times on the main element or after 2 years at the latest.
Dust discharge valve	Check for signs of damage/the function, clean	According to local dust concentration (e.g. daily in the case of heavy accumulation of dust)
Plastic housing	Check for signs of damage and cracks.	During filter maintenance.
Maintenance indicator/switch (on clean air pipe)	Check the function <sup>1)</sup>	Annually

<sup>1)</sup> To achieve the maximum permissible vacuum in the air intake system, the intake opening must be reduced in size slowly by covering it (e.g. with a piece of carton or metal plate) while the engine is running until the maintenance indicator/switch is triggered.

The air intake opening must not be reduced further in size after the maintenance indicator/switch has been triggered to prevent any damage being caused.

Reset the maintenance indicator after the test by actuating the Reset button.

### 6.1 Maintenance of the main element



Maintenance of the main element (Pos. 2) need only be performed when the maintenance indicator/switch has been triggered, after 2 years at the latest or according to the device or engine manufacturer's instructions.

#### 6.1.1 Disassembling the main filter element

- Unlock the wire clamp fasteners (1) and engage in the lugs of the actuating cap (2) (so that the fastener does not fall between the housing and bottom housing section).
- Remove the bottom housing section.

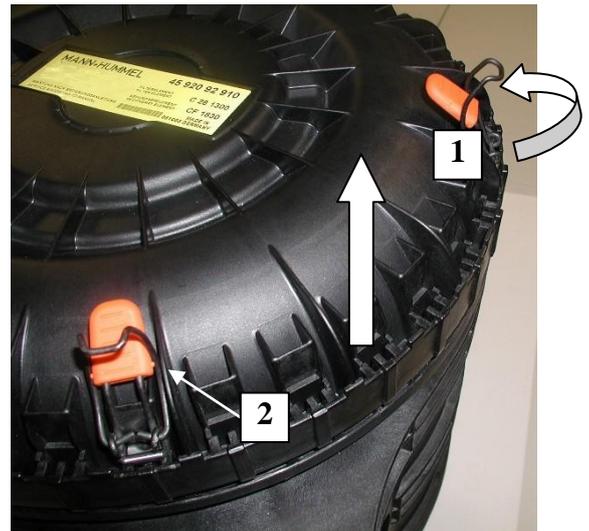
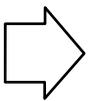


Fig. 3 Opening the wire clamp fasteners

- Pull the main filter element from the inner seal seat fully, tipping lightly to and fro (refer to Fig. 4).



Wipe the inside of the housing thoroughly with a damp cloth. Pay attention that no dust or dirt gets into the clean air side of the filter.



Fig. 4 Disassembling the main filter element

### 6.1.2 Cleaning the main element



Never wash, brush or beat the main filter element clean. **Only blow clean in emergencies**, paying attention that no dust gets into the inside of the main element.

The main element can be cleaned as described below in emergencies.

Since small defects are difficult to detect or cannot be detected, we recommend always installing new elements to protect engines or equipment!

We assume no liability for the suitability of cleaned elements.



To clean the main element, fit a tube (1), whose end is bent approx. 90°, on a compressed air gun (2). The tube must be sufficiently long to reach the bottom of the main element. Clean the main element with dry compressed air (**maximum 5 bar**) carefully by moving the tube up and down in the main element, blasting the air from the inside to the outside until there is no dust blown out (refer to Fig. 5).

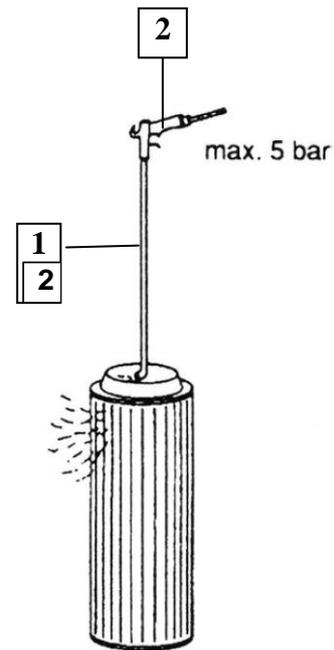


Fig. 5 Blowing the main filter element clean



The tip of the tube must not come into contact with the filter paper.



Prior to reinstallation, the cleaned main element must be checked thoroughly for signs of damage to the paper bellows and seals.



Check each fold of the paper bellows for cracks and holes using an appropriate inspection lamp (1) (refer to Fig. 6). In order that smaller damage is also detected, do not complete the inspection in direct sunlight but in a darkened room, for example.



Regardless of the number of operating hours, the main element must be changed after 2 years at the latest.

Never continue to use damaged main elements. In case of doubt, always install a new main element.

### 6.1.3 Installing the main element



Only use original MANN+HUMMEL elements! **Never** install elements with a metallic outer casing!

- Slide the main element in the housing, open side first.
- Mount the bottom housing section (observe the position of the dust discharge valve, also refer to Chapter 6.2.4).
- Insert the wire clamp fasteners in the slot of the flange on the housing (1) and tension, in succession, around the circumference.

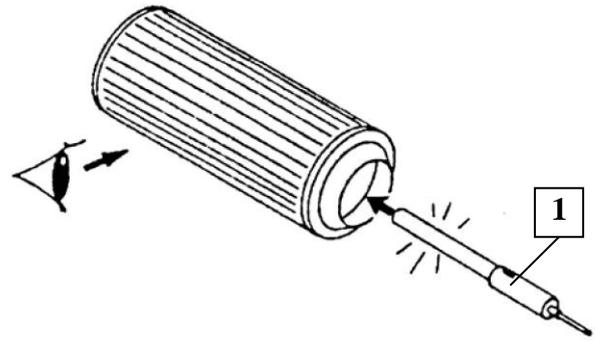


Fig. 6 Main filter element, visual inspection



Fig. 7 Close the wire clamp fasteners

## 6.2 Maintenance of the secondary element

The secondary element (available on option) must be changed every 3rd - 5th maintenance routine on the main element or after 2 years at the latest.

The secondary element must be changed at the service center. This should ensure that no dirt gets into the unit when changing the element.

### 6.2.1 Disassembling the main element

Refer to Chapter 6.1.1

### 6.2.2 Changing the secondary element

The secondary element must not be cleaned and not reused after being disassembled.

- Screw the secondary element (1) counterclockwise and pull out.
- Slide a new secondary element in and tighten by hand through screwing it clockwise (5 Nm) (refer to Fig. 8).



Fig. 8 Changing the secondary element

### 6.2.3 Installing the main element

Refer to Chapter 6.1.3

### 6.2.4 Maintenance of the dust discharge valve

The dust discharge valve (1) must be checked according to the dust concentration in the ambient environment (daily in the case of heavy dust accumulation). Any caked dust deposits must be removed by pressing the rubber lips on the valve together (refer to Fig. 9). The valve must be positioned in free space. It must not hit against anything. Damaged valves must be replaced.



Fig. 9 Cleaning the dust discharge valve



Fig. 10 Dust discharge valve

### 6.2.5 Storing Filter Elements

Protect filter elements in storage from exposure to dust, moisture and damage. It is preferable to keep them stored, standing, in their original packaging.

It is practical to keep at least one spare filter element in stock for each filter element used. The function of the stored filter element is only guaranteed up to 3 following purchase.

## 7 Troubleshooting

Error/Fault	Cause	Solution
Accumulation of dust in the bottom housing section	Dust discharge valve blocked or defect	Service the valve (refer to Chapter 6.2.4), change it if necessary
Dust on clean side downstream from filter	Leaks in lines and/or connections on clean side downstream from filter	Remove dust thoroughly, seal lines and connections
Dust on clean air side in or downstream from filter	Main element defect	Clean dust thoroughly, change main element and secondary element (refer to Chapters 6.1 and 6.2)
	Incorrect maintenance	Remove dust thoroughly, complete maintenance in accordance with Chapter 6.1.2
	Housing not sealed properly	Remove dust thoroughly; check main element, housing and sealing for signs of damage; change as necessary and seal properly (refer to Chapter 6.1.3)
	Incorrect main and/or secondary element installed	Remove dust thoroughly, install original MANN+HUMMEL filter element
Maintenance indicator/switch (option) is not triggered despite heavily soiled filter element	Maintenance indicator/switch defect	Check maintenance indicator/switch; change and check again
	Lines, housing and/or main element leak or damaged	Clean the clean side thoroughly, eliminate leaks, replace damaged parts
Maintenance indicator/switch (option) always triggers	Main element worn	Change main element (refer to Chapter 6.1)
	Secondary element worn out	Change secondary element (refer to Chapter 6.2)
	Maintenance indicator/switch defect	Replace maintenance indicator/switch

## 8 Disposing of Parts

Component	Material	Disposal
Main element	Filter paper Polyurethane foam / PP-T20	Dispose of according to local regulations
Secondary element	Filter paper / Fleece (according to model) Polyurethane foam / Adhesive PA 6-GF30	Dispose of according to local regulations
Housing lid	PP-GF30	Plastics recycling center
Housing	PP-GF30 and brass sockets	Plastics recycling center
Wire clamp fastener	Spring steel wire and PAG-GF30	Metal recycling center
Dust discharge valve	NBR	Rubber recycling center

