

**MANN+HUMMEL**  
**IQORON 7, 10, 12, 14**

**MANN+**  
**HUMMEL**

## **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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## 1 Foreword

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

This 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 3-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.

Compare the part number on the delivery with that in our catalogue. Order the optional parts, if necessary.

### 3 Safety

#### 3.1 Warning labels and symbols



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 IQORON 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 IQORON 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 IQORON 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 IQORON has been exclusively designed for the mechanical filtration of air. An 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.

#### 3.3 Operating safety

The IQORON may only be serviced and operated by appropriately trained, authorized personnel.

The operator is obliged to inspect the IQORON once a week for visible signs of damage and defects. Any changes (including those in the operating behaviour) which could affect functional safety must be reported immediately.

All labels and identifications on the IQORON must be kept in legible condition.

### 4 Function Description

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

The air drawn in initially flows through the cyclone block (Pos. 3). The cyclone cells filter out 95% of the particulate matter. This pre-filtered particulate matter must be drawn off, e.g. by an ejector, at the dust discharge connection (Pos. 5). This pre-filtering process (filter stage 1) makes the IQORON particularly suitable for use in applications which involve large amounts of dust.

The cleaned air then flows through the main filter element (2nd filter stage Pos. 2) and downstream secondary element (option, Pos. 10) to the clean air connection (Pos. 8). The filter elements form a seal when assembled due to their shape. This shaping has the following advantages:

- minimal assembly and disassembly forces,
- defined contact forces for the seals,

- high level of protection against penetration by dust.

In addition to the clean air connection (Pos. 8), there is also an adapter (M10x1, Pos. 7) to connect a maintenance indicator or switch. The maintenance indicator/switch indicates when the vacuum produced by the suction has exceeded a prescribed value (e.g. +50 mbar). This means that the prescribed maximum filter flow resistance has been exceeded and the filter must be serviced.

The secondary element (Pos.10) protects the engine from penetration by dust during maintenance and, to a certain extent, during operation with a main filter element damaged through improper handling. A secondary element can be retrofitted on the IQORON at any time.



Operation with only a secondary element is not permitted and can lead to engine damage!

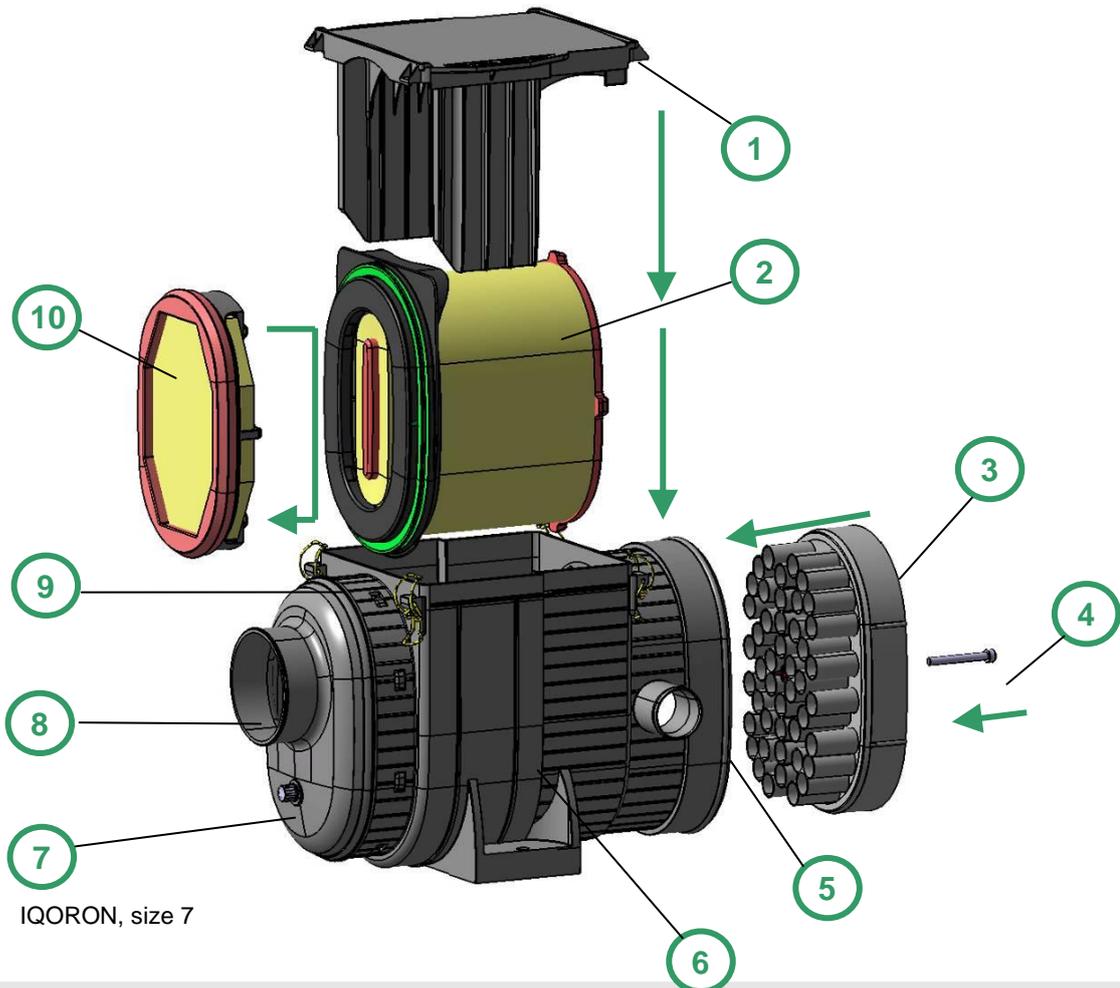


Fig. 1 IQORON, size 7

| Pos. | Name                      | Pos. | Name  |
|------|---------------------------|------|---|
| 1    | Lid                       | 6    | Housing                                     |
| 2    | Main filter element       | 7    | Connection for maintenance indicator/switch |
| 3    | Cyclone block             | 8    | Clean air connection                        |
| 4    | Allen screw               | 9    | Wire clamp fastener                         |
| 5    | Dust discharge connection | 10   | Secondary element                           |

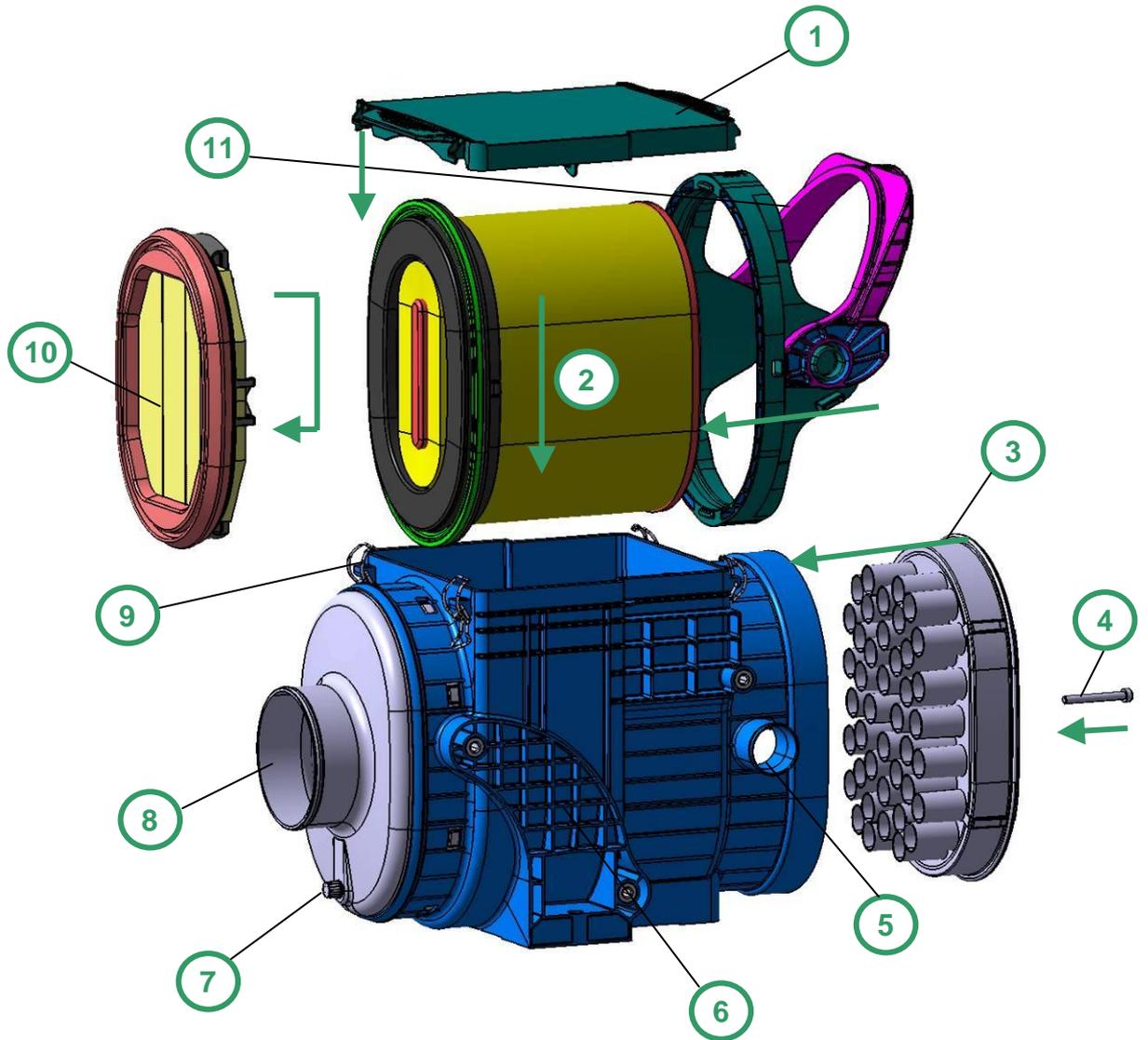


Fig. 2 IQORON size 10 (sizes 12 and 14 are comparable)

| Pos. | Name                      | Pos. | Name  |
|------|---------------------------|------|---|
| 1    | Lid                       | 7    | Connection for maintenance indicator/switch |
| 2    | Main filter element       | 8    | Clean air connection                        |
| 3    | Cyclone block             | 9    | Wire clamp fastener                         |
| 4    | Allen screw               | 10   | Secondary element                           |
| 5    | Dust discharge connection | 11   | Filter frame with locking bar               |
| 6    | Housing                   |      |   |

## 5 Installation

### 5.1 General information

Check that the scope of delivery is complete and that there are no signs of damage.

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

In order to maintain a high degree of pre-filtering and minimal soiling of the filter element by dust, thus ensuring a long service life of the filter and low levels of maintenance, take the following into account when choosing the installation location:

- Assemble the filter in a splashproof, low-dust area (e.g. not in the spraying range of wheels).
- There must be sufficient space to disassemble the elements and for inspection and maintenance work.



The clean air connection (Pos. 8) must be horizontal or point upwards so that no dirt can drop into the clean air lines during maintenance.

- The dust discharge connection (Pos. 5) should point downwards so that the pre-filtered dirt can be discharged.



In order to discharge the pre-filtered particulate matter reliably from the filter housing, the ejector or extractor fan must be set up so that at least 3.5 mbar vacuum is applied at the dust discharge connection (Pos. 5) when the engine is operating at a partial load and at least 9 mbar vacuum when operating at full-load.

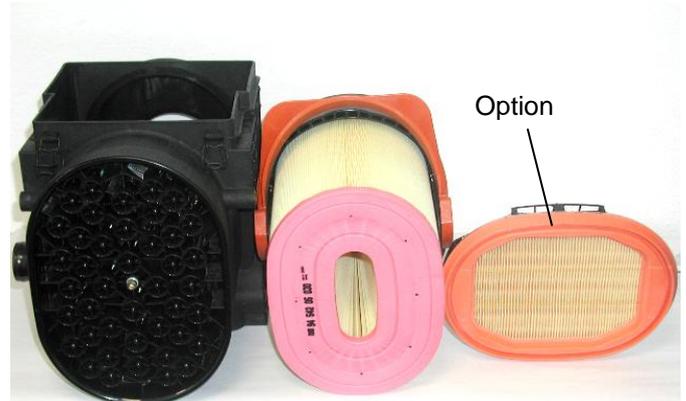


Fig. 3 Scope of delivery

### 5.2 Securing the filter

- Secure the IQORON on a stable base, where it will not be subject to vibration, using screws or stud bolts, washers and self-locking nuts (M8) (tightening torque 10 +/- 2 Nm). Depending on the version, threaded inserts M8 and/or fixation eyelets are provided on the filter for this purpose.
- Slide on the clean air and ejector hose and tighten in place with suitable hose clips taking care not to deform the connection.
- Screw the maintenance indicator or switch to the connecting thread (M10x1, Pos. 7) or seal the connection with a cap nut.

## 6 Maintenance



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 filter element                         | Change<br>(If it cannot be changed, the main filter element can be cleaned in emergencies as described in Section 6.2.2). | 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                           | Change  | After maintenance has been carried out 5 times on the main element or after 2 years at the latest.  |
| Pipe and clean air lines (connection hoses) | Check for damage/leaks  | Monthly and after repair work   |
| Line from air filter to ejector             | Check for damage/leaks  | Monthly and after repair work   |
| Cyclone block                               | Check for signs of damage and clean   | According to conditions of use and type of contamination.   |
| Plastic housing and holder                  | Check for signs of damage and cracks.   | During filter maintenance.  |
| Maintenance indicator/switch                | 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.

If leak tests must be carried out using higher pressure or vacuum levels, the maintenance indicator/switch must be disassembled for the period of the test and the connection on the filter sealed.

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

**6.1 Maintenance plan**

**6.2 Maintenance of the main filter element**



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

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



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

**6.2.1 Disassembling the main filter element**

- Unlock the wire clamp fasteners (Pos. 9) and remove the housing cover (Pos. 1).
- Remove the main filter element (Pos. 2) and dispose of it according to local regulations.
- Clean the inside of the housing, frame and lid thoroughly with a damp cloth. In the case of filters without a secondary element, pay particular attention here that no dust or dirt gets into the clean air side of the filter.
- Check all the parts for signs of damage and wear, replace them as necessary.

**IQORON series 10, 12 and 14:**

- Move the red clamping bar towards "Unlock" (refer to Fig. 4).
- Remove the frame (Pos. 11) together with the main filter element (Pos. 2).
- Remove the main filter element from the frame and dispose of it according to the local regulations.

**6.2.2 Cleaning the main filter element**

Never wash out or beat the main filter element.



When blowing clean, ensure no dust gets into the inside of the main filter element.



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.

- Clean the main filter element with compressed air (maximum 5 bar) carefully, applying the compressed air from the clean side (seal side) until no more dust development occurs. The tip of the compressed air gun must not touch the main filter element.

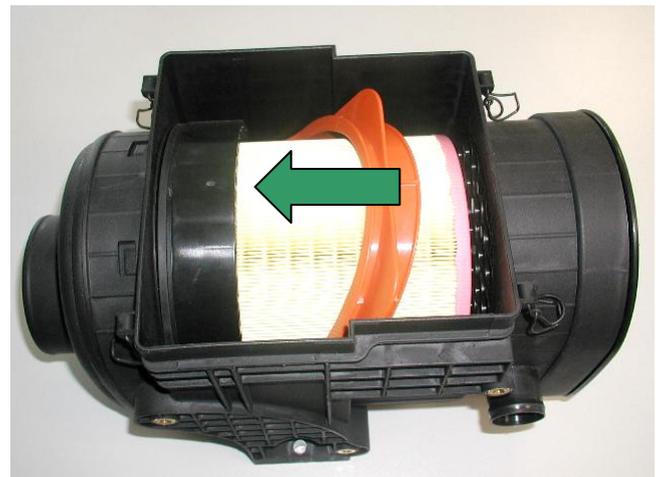


Fig. 4 Unlocking the main filter element frame

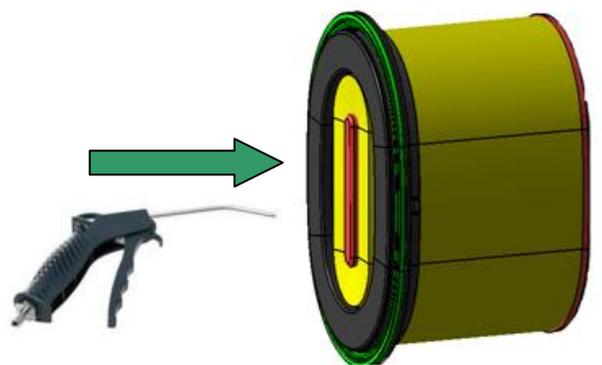


Fig. 5 Cleaning the IQORON main filter element (Fig. illustrates size 7)



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

### 6.2.3 Installing the main filter element



Only use original MANN+HUMMEL elements!

#### IQORON series 7:

- Install the main filter element in the housing.
- Set the lid guide rail on the housing and close the lid properly. This automatically fixes the main filter element and the presses the sealing surfaces together.

#### IQORON series 10, 12 and 14:

- Slide the new main filter element in the frame.
- Install the frame together with the main filter element in the housing.
- Move the red clamping bar fully towards "Lock" (refer to Fig. 7) and mount the lid.
- Fit the wire clamp fasteners in the slot in the flange on the housing and lock them.

### 6.3 Maintenance of the secondary element



The secondary element must be changed every 5th maintenance routine on the main filter element or after 2 years at the latest.

#### 6.3.1 Disassembling the main filter element

(Refer to Section 6.2.1)

#### 6.3.2 Changing the secondary element



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

- Pull the secondary element (Pos. 10) out using the handle.

- 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.
- Insert the new secondary element with the seal side at the front and slide onto the frame towards the clean side as far as possible.



Do not press on the paper bellows!

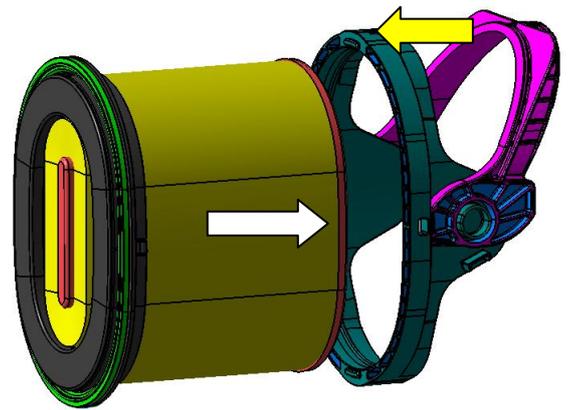


Fig. 6 Clamping bar, IQORON size 10 - 14

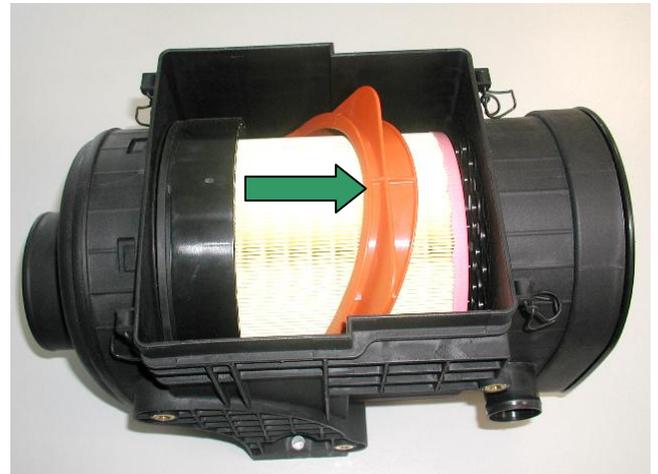


Fig. 7 Locking the clamping bar

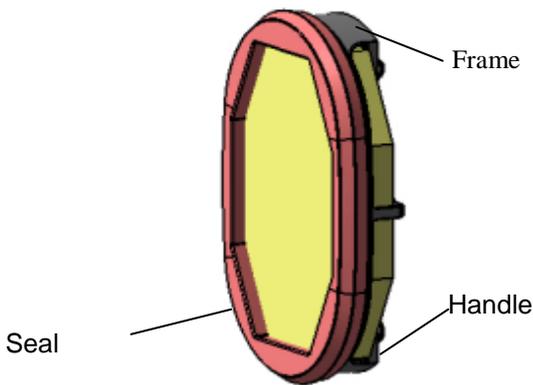


Fig. 8 Secondary element  
(Fig. illustrates size 7)

### 6.3.3 Installing the main filter element

(Refer to Section 6.2.3)

### 6.4 Maintenance of the cyclone block

Blocked cyclone cells (e.g. by blades of grass sucked up) have a lower level of efficiency. To ensure a long service life for the main filter element, check the cyclone block regularly and clean it as necessary.

**!** Be careful not to damage the cyclone cell.  
Do not use any hard or sharp-edged tools!

- Unscrew the central bolt (Allen screw a/f 5, Pos. 4).
- Pull out the cyclone block fully.

## 7 Storing Filter Elements

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

It is practical to keep at least one spare element in stock for each filter element used.

- Remove any foreign bodies and dust deposits from the cyclone block and inside the housing by hand or by means of a brush, for example.
- Loosen stubborn dust deposits on the cyclone block by soaking in a PA6-compatible cleaning agent and remove with a water jet.
- Blow the cyclone block dry to prevent new dust accumulating again.
- Slide the cyclone block in the housing.
- Screw in the Allen screw with washer (Ma = 6 +/- 2 Nm).
- Slide the inner housing section in the cyclone block housing.
- Screw in the hexagonal screw and washer (Ma = 6 +/- 2 Nm).

## 8 Troubleshooting

| Error/Fault  | Cause  | Solution  |
|--|--|---|
| Service life of main filter element unusually short  | Cyclone cells blocked or damaged   | Clean the cyclone block; change, if necessary (refer to Section 6.4)  |
|  | Ejector hose leak or kinked  | Seal the ejector hose, lay it as short as possible and without any sharp bends  |
|  | Too little vacuum at the dust discharge connection or unfavourable installation position | Check ejector setup and installation position, modify as necessary (refer to Section 5)   |
| 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 filter element defect   | Remove dust thoroughly, check main filter element and replace together with secondary element if necessary (refer to Section 6)                         |
|  | Incorrect maintenance  | Remove dust thoroughly, complete maintenance in accordance with Section 6   |
|  | Housing not sealed properly  | Remove dust thoroughly; check main filter element, housing and sealing for signs of damage; replace as necessary and seal properly (refer to Section 6) |
|  | 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 (refer to Section 6, Footnote: Maintenance Plan), replace as necessary and check again                               |
|  | Lines, housing and/or main filter element leak or damaged                                | Clean the clean side thoroughly, eliminate leaks, replace damaged parts   |
| Maintenance indicator/switch (option) always triggers  | Main filter element worn out   | Change main filter element (refer to Section 6)   |
|  | Secondary element worn out   | Change secondary element (refer to Section 6.3)   |
|  | Maintenance indicator/switch defect  | Replace maintenance indicator/switch  |

## 9 Disposing of Parts

| Component  | Material   | Disposal                                  |
|--|--|---|
| Main filter element                                    | Filter paper<br>Polyurethane foam                    | Dispose of according to local regulations |
| Frame  | PA 6 GF 30   | Plastics recycling center                 |
| Secondary element                                      | Filter paper<br>Polyurethane foam / Adhesive<br>PA 6 | Dispose of according to local regulations |
| Housing lid  | PA 6-GF30  | Plastics recycling center                 |
| Housing with wire clamp fasteners and threaded sockets | PA 6-GF30<br>Steel<br>Brass                          | Dispose of according to local regulations |
| Foam filter  | PA 6   | Plastics recycling center                 |
| Screw and washer                                       | Steel, galvanized                                    | Metal recycling center                    |

