

**NLG series**

# **Operating Instructions**

**MANN +  
HUMMEL**



## Contact Information

MANN+HUMMEL GMBH  
 Business Unit Industrial Filters

Brunckstr. 15,  
 D - 67346 Speyer  
 Germany

Telephone: + 49 6232 53 8265

Telefax: + 49 6232 53 8370

## Contents

<b>1. Preface</b> .....	<b>2</b>
<b>2. Safety</b> .....	<b>3</b>
2.1 Warnings and symbols .....	3
2.2 Intended use .....	3
<b>3. Functional description</b> .....	<b>3</b>
<b>4. Installation</b> .....	<b>4</b>
<b>5. Maintenance/repair</b> .....	<b>5</b>
5.1 Maintenance schedule .....	5
5.2 Maintaining the main element .....	6
5.3 Replacing the secondary element.....	7
5.4 Maintaining the dust discharge valve .....	8
<b>6. Storage of filter elements</b> .....	<b>8</b>
<b>7. Disposal of components</b> .....	<b>8</b>
<b>8. Troubleshooting</b> .....	<b>9</b>

## 1. Preface

These operating instructions should make it easier for personnel to familiarize themselves with the NLG series and to use it in the various application areas for which it was designed.

The operating instructions contain important information on operating the components safely, correctly and economically. These instructions must be followed in order to avoid danger, reduce repair costs and down times and increase the reliability and working life of your machine.

The instructions must be made accessible to every person working with the filter.

Furthermore, these instructions must be supplemented as necessary with the applicable national regulations regarding accident prevention and environmental protection (in particular the disposal of removed parts).

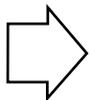
We reserve the right to make technical modifications to the filter and/or modify the content of these operating instructions.

## 2. Safety

### 2.1 Warning instructions and symbols



All instructions marked with this symbol must be observed closely in order to avoid damage to or the destruction of filter components.



This symbol indicates that special attention must be paid to these instructions in order to ensure trouble-free, economical operation.

### 2.2 Intended use

The filter may only be maintained by qualified, authorised personnel.

The filter is constructed to the state-of-the-art and in accordance with recognised safety specifications. However, the functional safety of downstream assemblies may be affected if:

- the filter is used incorrectly or for a purpose for which it was not intended,
- the operating conditions change,
- modifications are made without consulting the manufacturer
- necessary maintenance and repair work is not performed.

Use the filter only if in perfect condition and in accordance with the respective technical specifications, observing correct procedures regarding safety and danger, and in compliance with the operating instructions. In particular, malfunctions that may affect safety must be eliminated immediately.

The filter is designed exclusively for the mechanical filtration of air. Other applications, e.g. filtering aggressive, combustible and/or explosive materials is considered incorrect use. In this case, the manufacturer/supplier will reject all liability in event of resultant damage.

Intended use also includes observing operating instructions and complying with inspection and maintenance requirements.

It is imperative for the operator to check the filter regularly for externally visible signs of damage or faults (when servicing at the latest).

All labelling and identification marks on the filter must be legible at all times.

## 3. Functional description

The NLG series is a air cleaner designed for cleaning intake air induced by all types of machine (e.g. motors, compressors, fans). One and two-stage versions (Piclon) are available.

With a two-stage filter, the induced air is circulated in the filter housing by guide vanes. The centrifugal forces generated here force heavy dust particles outwards against the housing wall and discharge them via the dust discharge valve in the lower section of the housing (1st filter stage). This option is particularly suited to applications with high levels of dust.

The induced air is cleaned and reaches the air outlet spigot through the main element (second filtering stage) and the downstream secondary element (optional). The specified dimensions mean that the filter elements seal radially to the clean-air spigot on the housing.

With the one-stage filter (Pico), the induced air will be cleaned directly by the main element.

The radial seal offers the following advantages:

- minimal effort when assembling and disassembling
- low compression load on paper bellows
- main element requires assembly via lower section of housing
- length tolerances are balanced by overlapping of sealing surfaces

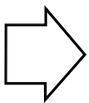
=> higher level of reliability with regard to dust entry prevention.

The optional secondary element available for all sizes prevents dirt particles from entering the motor during maintenance or operation with a main element damaged through improper handling. Secondary elements can be retrofitted at any time.

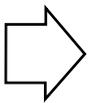
The lower housing section differs acc. to version:

1. With dust discharge valve for two-stage filters (Piclon).
2. With screening valve for one-stage filters (Pico) as a water extractor.

Wire clamp latches connect the lower housing section with the middle housing section.



The housing cover is screwed to the middle section. Do not untighten these screws.



As an option, seals can be installed on the non-filtered air side as hose-proof protection. However, only limited water passage is possible.

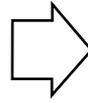
The intake neck can also be fitted with a rain cap as an option, for protection from rain or snow.

## 4. Installation



The customer-supplied bracket on the vehicle or the unit must be stable enough to take forces which are and to prevent relative motions of the fixing points to each other (for template, see filter drawing).

- Fasten the filter using the four M10 screws (torque: 22Nm).



For models with a dust discharge valve and a horizontal installation position, the dust discharge valve must point downwards ( $\pm 15^\circ$  deviation of "OBEN/TOP" mark is permitted); if necessary, remove lower housing section and refit in the required position.

## 5. Maintenance/repair



Only carry out cleaning, maintenance and repair work when the assembly is switched off (motor, compressor, fan, or similar). Never operate when the filter element has been removed.

### 5.1 Maintenance schedule

Component	Task	Maintenance time
Main element	Replace  (if the main element cannot be replaced, it can be cleaned if necessary, as described in Section 5.2.2)	As per the operating instructions for the respective devices or motors, after the maintenance indicator/switch has triggered or after 2 years at the latest
Secondary element (optional)	Replace	After maintenance has been performed on the main element 5 times or after 2 years at the latest
Dust discharge valve (if available)	Check for damage/function and clean	Depending on the dust concentration in the environment (e.g. daily if large amounts of dust)
Plastic housing	Check for damage and cracks	When performing maintenance on the filter
Maintenance display/switch (on clean air tube)	Check function <sup>1)</sup>	Annually

<sup>1)</sup> In order to attain the maximum permitted vacuum in the air intake system, reduce the size of the intake opening slowly while the motor is running by covering it (e.g. with a piece of card or a metal plate) until the maintenance indicator/switch triggers.

After the maintenance indicator has triggered, do **not** continue to reduce the size of the intake opening as this will cause damage.

After the test, reset the maintenance indicator by pressing the reset button.

## 5.2 Maintaining the main element

Only carry out maintenance on the main element when the maintenance indicator/switch has triggered or after 2 years at the latest and in accordance with the instructions from the device or motor manufacturer.

### 5.2.1 Removing the main element

- Release wire clamp latches and remove lower housing section (see Fig. 1).

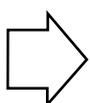


Figure 1: Removing lower housing section

- Pull main element downwards, turning slightly and remove completely from the inner seat (see Fig. 2).



Figure 2: Removing the main element

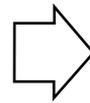


Carefully wipe the inside of housing with a damp cloth. Make sure that dust or dirt does not reach the clean-air end of the filter.

### 5.2.2 Cleaning the main element



Never wash, brush or knock the main element. Only blow it out in cases of emergency. However, no dust may touch the inner side of the main element.



In cases of emergency, the main element can be cleaned as described below. Because minimal damage is often very difficult to detect or cannot be detected at all, we always recommend using new elements to protect the motor or equipment. We cannot warranty cleaned elements.

- To clean the main element, fit a tube to a compressed-air gun the end of which is bent to approx. 90°. The tube must be long enough to reach the bottom of the main element. Carefully blow out the main element with dry compressed air (maximum 5 bar) by moving the tube up and down inside the main element until dust no longer escapes (see Fig. 3).



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

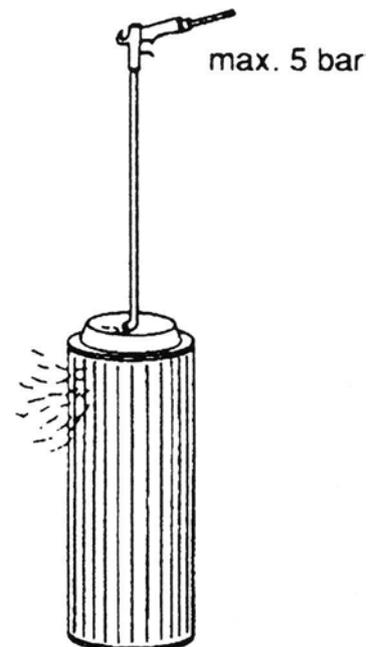
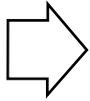


Figure 3: Cleaning the main element



Before refitting, check the paper bellows and the seals on the cleaned main element carefully for damage.



Inspect each fold in the paper bellows for tears and holes using a suitable torch (see Fig. 4). In order to be able to detect minor damage, the inspection should not be carried out in direct sunlight but e.g. in a darkened room.

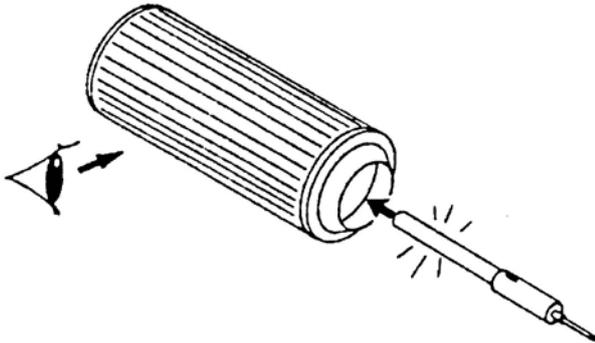


Figure 4: Inspecting the main element



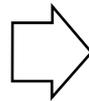
Main elements must be replaced after 2 years at the latest, irrespective of the operation duration. Damaged main elements should not be used under any circumstances. If in doubt, always fit a new main elements.

### 5.2.3 Fitting the main element

Only use original MANN+HUMMEL elements. Never fit elements with a metal outer casing.

- Carefully insert the main element into the housing open end first.
- Position lower housing section (observe position of the dust discharge valve, see also Section 4).
- Position the wire clamp latches in the groove on the flange on the middle housing section and tighten (same as Fig. 1 but in reverse).

## 5.3 Servicing the secondary element



The secondary element must be replaced every 5th maintenance session carried out on the main element, or after 2 years at the latest.

### 5.3.1 Removing the main element

See Section 5.2.1

### 5.3.2 Replacing the secondary element



The secondary element must not be cleaned and after removal should no longer be used.

- Unscrew the secondary element in a counterclockwise direction and remove it.
- Insert the secondary element and turn it in a clockwise direction until it is hand-tight (5 Nm) (see Fig. 5).



Figure 5: Installing the secondary element.

### 5.3.3 Fitting the main element

See Section 5.2.3

### 5.4 Maintaining the dust discharge valve

Dust discharge valves should be checked according to dust concentration in the surroundings and preferably daily at heavy dust occurrence. Remove any dust deposits by squeezing the valve (see Fig. 6). The valve must be free and should not strike anything. Replace damaged valves.

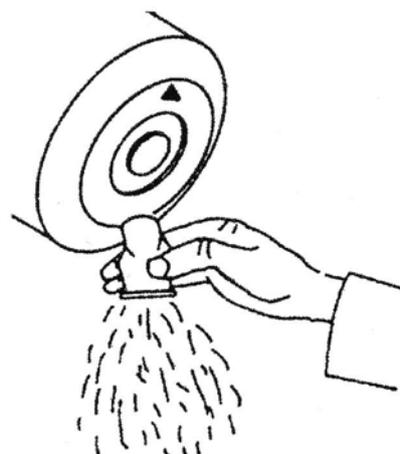
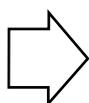


Figure 6: Draining the valve

### 6. Storage of filter elements



Protect stored filter elements from exposure to dust, moisture and damage. Store vertically, preferably in their original packaging.

It is practical to keep at least one replacement element in stock for each filter element required.

### 7. Disposal of components

Component	Material	Disposal
Main element	Filter paper Polyurethane foam PP-T20	Dispose of as per local regulations
Secondary element	Filter paper/fleece (depending on model) Polyurethane foam / glue PA 6 - GF 30	Dispose of as per local regulations
Housing cover	PP-GF30	Plastics recycling
Middle section of the housing	PP-GF30 + steel inserts	Plastics recycling
Lower section of housing	PP-GF30	Plastics recycling
Diffuser	PP	Plastics recycling
Wire clamp latches	Spring steel wire	Metal recycling
Screws	Steel	Metal recycling
Dust extraction valve	NBR	Rubber recycling
Screening valve	TPE-S	Plastics recycling

## 8. Troubleshooting

<b>Error/Fault</b>	<b>Cause</b>	<b>Elimination</b>
Dust build-up in lower section of housing	Dust discharge valve blocked or defective	Carry out maintenance on valve (see section 5.4), replace, if necessary
Dust on clean end downstream of filter	Lines and/or connections leaking on clean end downstream of filter	Remove dust carefully, seal lines and connections
Dust on clean-air end in and downstream of filter	Main element defective	Remove dust carefully, inspect main element and if necessary, replace together with secondary element (see section 5)
	Incorrect maintenance	Remove dust carefully, perform maintenance as per section 5
	Housing not closed correctly	Remove dust carefully, check main element, housing and connections for damage; replace if necessary and close housing correctly (see section 5)
	Wrong main and/or secondary element used	Remove dust carefully, insert original MANN+HUMMEL filter elements