

Plate gap-type filter Series 51 and 55

Maintenance and repair instructions



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Contents

1. Preface	2
2. Safety	3
2.1. Warnings and symbols.....	3
2.2. Use according to the regulations.....	3
2.3. Operational safety	3
3. Working principles	4
3.1. General points	4
3.2. Cleaning	4
3.3. Scraping dirt	4
4. Instruction to find malfunctions	5
5. Servicing/Corrective maintenance	6
5.1. General instructions.....	6
5.2. Service plan	6
5.3. Repair procedure	7
5.4. Removing filter insert and disassembly.....	8
6. Spare parts list	8
7. Tools required	8

Enclosure

Customer drawing

1. Preface

We reserve the right to make technical changes to the filter and/or changes to the contents of these maintenance and repair instructions.

MANN+HUMMEL GMBH is not liable for any technical errors or technical printing errors or omissions in these instructions. Furthermore, MANN+HUMMEL GMBH accepts no liability for damage relating either directly or indirectly to the supply, suitability or use of these instructions.

This document contains important instructions for safe, proper and economical operation of the MANN parts supplied. Following these instructions will help to avoid danger, reduce repair costs and downtimes, increase reliability and prolong the life of your MANN product.

The following maintenance and repair instructions are for the standard filter.

The instructions must be accessible to all persons charged with carrying out work on the MANN filter.

Furthermore, if necessary, these instructions must be supplemented to take into account existing accident prevention and environmental regulations (especially with regard to the disposal of parts) applicable in the country of use.

In addition to the instructions and the binding accident prevention regulations applicable in the country of use and on site, the generally recognised rules of sound engineering practice must be observed.

2. Safety

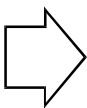
2.1 Warnings and symbols



Indicates all points in the manual affecting your personal safety. Non-observance of these instructions may endanger life and limb.



Indicates all points in this manual which must be followed closely in order to avoid damage to or destruction of part of the system.



Indicates what the user should pay close attention to in order to ensure trouble-free and economical operation of the equipment.

2.2 Use according to the regulations

The plate gap-type filter is manufactured in accordance with the latest state-of-the-art and complies with the generally recognised safety regulations. Nevertheless, when in use there could be a risk to life and limb of the user or third party or damage to the filter or other material assets

- if the plate gap-type filter is used improperly,
- if the operating conditions are changed,
- if changes or modifications not expressly approved by the manufacturer are made,
- if essential maintenance and repair work is not carried out.

Only use the plate gap-type filter if it is in perfect working order and if it is to be used in the manner intended in accordance with its technical design. In addition, observe all the safety instructions contained in this manual and heed all the warnings. In particular, faults which impair the safety of this equipment must be rectified immediately.

The plate gap-type filter is designed to filter by mechanical means mediums which have a high viscosity. Any other or additional use, such as, for example, the filtering of liquid foodstuffs or other semi-luxury items, and aggressive, inflammable and/or explosive mediums is not in accordance with the regulations. The filter manufacturer/supplier accepts no liability whatsoever for damages arising from such use. All the risk is carried solely by the user.

Use according to the regulations also includes observance of the instructions in the operating manual and compliance with the inspection and maintenance instructions.

The filter manufacturer accepts no liability **whatsoever** for any dangers arising from the medium to be filtered. This is especially valid for the processing of materials dangerous to human health or the environment. Regarding this the operating authority of the plate gap-type filter is responsible for providing the necessary safety equipment.

2.3 Operational safety

The gap type filter should only be serviced and used by trained and authorised personnel.

The use of working methods detrimental to the correct function of the plate gap-type filter is not allowed.

The operating authority is obliged to check the plate gap-type filter once per week for visible signs of damage or deficiency and to immediately notify the responsible service person of any changes (including changes observed during operation of the filter) which may reduce safety.

Unauthorised changes or modifications to the plate gap-type filter are generally not permitted for safety reasons and **will render the manufacturer's warranty null and void with immediate effect.**

When performing work affecting start-up, operation, modifications to conditions of use and methods of operation, maintenance, inspection and repair, the respective mandatory shutdown procedures in the operating manuals must be observed.

All labelling and identification markings on the gap filter must be maintained in a readable condition.

3. Working principles

3.1 General points

The plate gap-type filter system consists of a housing and filter insert with gap cleaner. The fluid to be filtered flows through the body of the filter from the outside to the inside.

Impurities larger than the gap width are filtered out and either sink to the housing bottom or with the passing of time form a filter cake which can be scraped off by turning the filter insert. Scraping of the gap tube can be carried out during normal operation.

3.2 Cleaning

The medium to be cleaned flows via the filter inlet into the housing and passes the filter body from outside to inside. All impurities present in the medium which are larger than the gap width are retained on the filter body surface. The coarse dirt particles either sink to the lower conical part of the housing or form a filter cake on the filter body exterior.

3.3 Dirt scraping

Turning the filter insert manually causes the filter body to rotate and pass by gap cleaners and the filter cake is scraped. The cake sinks into the lower part of the housing and when necessary is discharged via the sludge outlet valve (not on series 51 207 6X 021). To simplify the disposal of the solid particles filtered out, a drying valve may be optionally installed.

4. Instruction to find malfunctions



The filter insert should only be dismantled by trained service personnel, **otherwise the manufacturer's warranty is rendered null and void with immediate effect.**



The warranty is invalid if one or more of the following point leads to a filter breakdown:

- natural wear and tear;
- incompetent handling;
- **incompetent service or repair work carried out by unauthorised persons;**
- **Fitting errors during fitting and removal;**
- Modifications made without approval;
- Corrosion damage occurring during transport.

Malfunction/fault	Cause	Removal
Leak on housing cover	Cover seal damaged (pos. h, Fig page 7)	Replace O-Ring seal (see section 5.4).
Leak on shaft seal	Shaft seal damaged (pos. 10, customer drawing)	Post-adjust or replace shaft seal if necessary (see section 5.4).
Plate gap-type filter filters medium insufficiently (too much dirt remaining)	plate gap-type filter insert damaged	Take out plate gap-type filter insert and check for damage (see section 5.4) and if necessary completely replace.
Flow volume goes down and/or differential pressure rises steeply.	Filter body filled with dirt	Turn plate gap-type filter; check again and shorten turning intervals if necessary.
	Gap cleaner worn out	Take out gap filter insert, check for damage (see section 5.4) and if necessary replace completely.
	Too much sludge in plate gap-type filter	Let out sludge, clean filter insert and housing, shorten sludge discharge interval.
Gap filter insert cannot be turned	Too much sludge in gap filter	Let out sludge, clean filter insert and housing, shorten sludge discharge interval.
	Filter body and /or gap cleaner worn out	Take out gap filter insert, check for damage (see section 5.4) and if necessary replace completely.

5. Servicing/Corrective maintenance



During cleaning, servicing and repair work the customer's system must be switched off. Ensure the system is pressure-free. Make sure that the system cannot be accidentally switched on. Do not start the system if the filter element has been removed

5.1 General points

Servicing the MANN plate gap-type filter is usually limited to removing the accumulated dirt from the filter body. This can be carried out without a break in operation by turning the handle.



Only carry out cleaning and corrective maintenance when the system is switched off..

5.2 Service plan

System part	Action	Carried out by	Service interval
sludge outlet	allow sludge to discharge	trained personnel	daily ¹⁾
housing	check inside for deposits and clean if necessary	trained personnel	every 3 months ¹⁾
seal (O-ring) on housing	check and replace if necessary	trained personnel	every 3 months ¹⁾
gap filter insert	remove, check for damage and clean	trained personnel	every 3 months ¹⁾
shaft seal on filter head	check for leaks and post-adjust or replace if necessary	trained personnel	every 3 months ¹⁾
filter body	check for damage and load increase	trained personnel	every 3 months ¹⁾
gap cleaner	check condition and wear and tear	trained personnel	every 3 months ¹⁾

¹⁾ Service intervals must be adjusted to take into account dirt concentration levels, density and type of dirt. The higher the dirt concentration, the lower the dirt density and the more difficult the type of dirt, then the service intervals must be shortened accordingly, whereas a lower dirt concentration, high dirt density and less difficult type of dirt may mean the service intervals can be substantially extended.

5.3. Service procedure

To service turn filter body **(a)** by using handle **(b)** once or twice. The gap cleaner **(c)** removes the dirt. The dirt sinks down into the sludge compartment **(d)** of the filter housing and is discharged from time to time by unscrewing the outlet screw **(e)** (not on series 51 207 6X 021).



Cleaning is most effective when turning the filter packet is carried out immediately after the end of operation so that the scraped sludge can sink down into the sludge compartment **(d)** during the break in operation.

Remove heavily soiled filter inserts (see section 5.4), soak in detergent, and wash out.

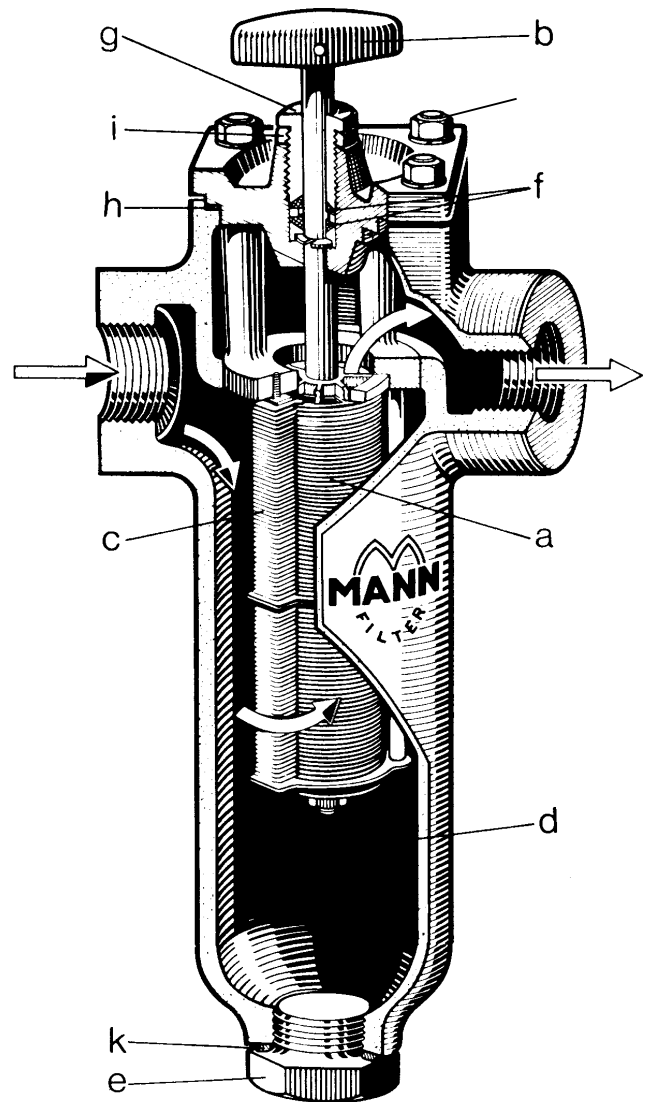
If gland **(f)** on filter cover leaks, then loosen packing gland counternut **(i)** and gently tighten the packing gland screw **(g)**.

The handle must remain operational, too much tightening can destroy the packing gland.

After that retighten the packing gland counternut.

Post-adjustment is not possible with models having an O-ring, shaft seal ring, or sliding ring seal.

When faults occur never use brute force to turn the handle. Damaged filter inserts, or those which are no longer possible to turn, must be replaced.



Section of a MANN gap filter

- a = filter body
- b = handle (or ratchet)
- c = gap cleaner or scraper
- d = sludge chamber
- e = outlet screw
- f = packing collar or O-ring
- g = packing collar screw
- h = housing seal
- i = packing collar counternut
- k = seal locking screws
- l = hex. nut

5.4 Removing the filter insert and disassembly

- Carefully open breather screw (see customer drawing, **only present with larger sizes**) 1 1/2 turns (the breather screw has drilled holes on the side).
- Mark the installation position of the filter insert relative to the housing (use breather screw as reference point).
- Remove hex. nuts (pos. l, drawing page 7) and carefully pull out filter insert from the top or remove the filter base downwards (according to the size).
- Check O-ring seal (pos. h, drawing page 7) for damage and renew if necessary

! **Plate gap filter inserts** can **not** be further disassembled and in case of damage or wear must be replaced.

6. Spare parts list

see attached customer drawing

7. Tools required

- Open ended spanner set, metric sizes 10 to 41 (accord. to filter size or type)
- Container with petroleum ether for cleaning or diesel
- Cleaning rags