



OPERATING INSTRUCTIONS

EN

Translation of the original instructions

IPF 40

Inlet particles filter

PFEIFFER  **VACUUM**

Table of contents

1	About this manual	3
1.1	Validity	3
1.1.1	Applicable documents	3
1.2	Conventions	3
1.2.1	Safety instructions	3
1.2.2	Pictographs	4
1.2.3	Instructions/Abbreviations used	4
2	Safety	4
2.1	Safety precautions	4
2.2	Protective equipment	4
2.3	Proper use	5
2.4	Improper use	5
3	Transport and storage	5
3.1	Storage	5
4	Product description	5
4.1	Product identification	5
4.1.1	Scope of delivery	6
4.2	Function	6
5	Installation	6
5.1	General	6
5.2	Assembly	6
5.2.1	Direction assembling on the pump	6
6	Operation	7
7	Maintenance / replacement	7
7.1	Precautions	7
7.2	Dismantling	8
7.3	Cleaning	8
7.4	Reassembly	9
8	Disposal	9
9	Service	9
10	Spare parts	11
11	Technical data and dimensions	12
	Declaration of incorporation of partly completed machinery	13

1 About this manual

1.1 Validity

This operating manual is for customers of Pfeiffer Vacuum. It describes the functioning of the designated product and provides the most important information for safe use of the unit. The description follows applicable EU guidelines. All information provided in this operating manual refers to the current state of the product's development. The documentation remains valid as long as the customer does not make any changes to the product.

Up-to-date operating instructions can also be downloaded from www.pfeiffer-vacuum.com.

This manual covers products with the following part numbers:

Part number	Description
111647	IPF 40 Inlet particles filter

1.1.1 Applicable documents

Operating instructions	Part number
Multi-stages Roots pumps dry and compact type ACP 40	112369*

*also available at www.pfeiffer-vacuum.com

1.2 Conventions

1.2.1 Safety instructions

Operating manual safety instructions Pfeiffer Vacuum are based on the UL, CSA, ANSI Z-535, SEMI S2, ISO 3864 and DIN 4844 certification standards. This document describes the following information and danger levels:

DANGER
Imminent danger Indicates an imminent hazardous situation that will result in death or serious injury.
WARNING
Possibly imminent danger Indicates an imminent hazardous situation that can result in death or serious injury.
CAUTION
Possibly imminent danger Indicates an imminent hazardous situation that can result in minor or moderate injury.
NOTICE
Command or note Command to perform an action or information about properties, the disregarding of which may result in damage to the product.

1.2.2 Pictographs



Warning of a displayed source of danger in connection with operation of the unit or equipment



Command to perform an action or task associated with a source of danger, the disregarding of which may result in serious accidents



Important information about the product or this document

1.2.3 Instructions/Abbreviations used

→ Work instruction: here you have to do something.

IPF : Inlet Particles Filter

▼ Inlet

▲ Exhaust

2 Safety

2.1 Safety precautions



Obligation to inform

Any person responsible for installing, using or maintaining the product must first read the security instructions in this operating manual and comply with them.

→ It is the operating customer's responsibility to protect all operators against the dangers associated with the product, with the media pumped and with the entire installation.

→ Comply with all safety and risk prevention instructions in accordance with local safety standards.

→ Regularly check compliance with all precautionary measures.

2.2 Protective equipment

In some situations, personal protective equipment must be worn when handling the vacuum pump and its components. The owner must provide operators with the necessary equipment. This equipment must be checked regularly and used in accordance with the supplier's recommendations.



DANGER

Health risk due to contact with toxic materials

The vacuum pump, pumping line components, and operating media may be contaminated with toxic, corrosive, reactive, or radioactive materials, depending on the process.

→ Wear appropriate safety equipment when pump is disconnected for maintenance, while it is being re-installed, and during filling and draining of operating media.

2.3 Proper use

- The inlet particles filter IPF 40 is used only with multi-stages Roots pumps for which it is compatible (see 1.1.1).
- The inlet particles filter IPF 40 installed at the inlet of multi-stages Roots pumps, model ACP 40.

It is designed for pumping on low-corrosive gases.

2.4 Improper use

Improper use will cause all claims for liability and warranties to be forfeited. Improper use is defined as usage for purposes deviating from those mentioned above, especially:

- connection to pumps and devices for which it is not intended,
- connection to devices uninsulated electrically,
- use of accessories or spare parts, which are not named in this manual
- use of the IPF 40 on pumping applications with flammable products such as oxygen, silane,
- microelectronic applications, LPCVD, LTO due to the incompatibility of the filter elements,
- use for applications:
 - drying,
 - freeze drying,
 - pumping condensable vapors,
 - impregnation with polymeric resins,
 - debubbling monomers.

3 Transport and storage

3.1 Storage

The filter element used in the inlet particles filter IPF 40 can absorb moisture.

If the new product must be stored:

- Store the product in a dry place in its original packaging.
- Store the product at storage temperatures (+5 / +65°C).
- Make sure that the filter element is not crushed during storage.

If the product was unpacked, used, or stored for a long period (> 1 year):

- Proceed to its maintenance by replacing the filter element (see 7).

4 Product description

4.1 Product identification

To correctly identify the product when communicating with Pfeiffer Vacuum, always have the information from the rating plate available.

4.1.1 Scope of delivery

Supplied with
1 centering ring DN40 ISO-KF*
1 O-ring DN40 ISO-KF NBR*
1 quick connect clamp DN40 ISO-KF*
1 operating instructions

* (see Pfeiffer Vacuum products catalogue)

4.2 Function

The inlet particles filter is installed on the inlet of a dry primary pump working on gases with dust or particles. It stops the particles with a diameter greater than 25 microns by protecting the pumping circuit, without causing appreciable pressure losses.

5 Installation

5.1 General

- Perform the installation on the pump stopped and off.
- Use the connection accessories supplied with the inlet particles filter.
- Use accessories on the inlet and exhaust lines whose materials and sealing properties are compatible with gases being used.
- Provide in the pumping line, accessories to isolate the pump from the vacuum and exhaust line, to make the maintenance easier (inlet and exhaust isolation valves, purges,...).
- Remove the blanking plates blocking the inlet and exhaust ports.

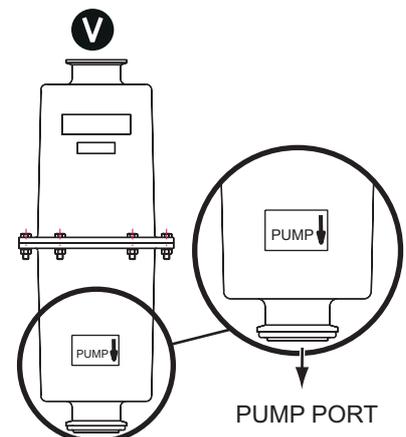
5.2 Assembly

The inlet particles filter IPF 40 is equipped with DN 25 ISO-KF nipple for adapting various piping elements (see Pfeiffer Vacuum product catalog).

The inlet particles filter is designed to operate on all pumping axes. Care must be taken not to create in the pumping line upstream of the filter a restriction or a low point capable of collecting by gravity the particles: this would reduce the pumping speed without blocking the filter element.

5.2.1 Direction assembling on the pump

- Install the inlet particles filter IPF 40 to the pump's inlet respecting the assembling direction (see label).
 - The side where the valve is visible must be installed on the pump and the other side must be connected to a chimney or an exhaust duct (see 10).



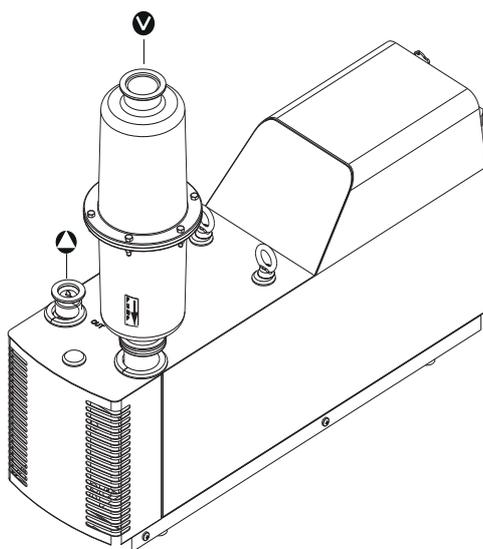


Fig. 1: Assembly on ACP 40

6 Operation

CAUTION

Do not reuse an IPF 40 that has been stored for a long period (> 1 year) without first performing maintenance on it and replacing its filter element.

Commissioning → Turn the pump on.

Filter element saturation A notable reduction in pumping speed indicates filter clogging. In this condition, the element filter (8) causes a pressure drop which varies according to the degree of contamination.

When the filter element is clogged, replace it (see 7).

Decommissioning

- Stop the pump.
- Bring the pump back to the atmospheric pressure and let the pump cool down.
- Make sure the exhaust pipe is not under pressure.

7 Maintenance / replacement

7.1 Precautions



NOTICE

Disclaimer of liability

Pfeiffer Vacuum accepts no liability for personal injury or material damage, losses or operating malfunctions due to improperly performed maintenance. The liability and warranty entitlement expires.



DANGER

Risk to the health in the event of contact with toxic substances

During pump disconnection, operator could be in contact with process residues on the exhaust that could cause severe injury or death.

→ Take the appropriate safety measures to prevent injury. Consult the department manager for instructions and safety information.

- Wear gloves, goggles, a respirator or other appropriate safety equipment.
- Sweep the installation with dry nitrogen before carrying out any work.
- Ventilate well the premises or work under an extract hood.
- Do not dispose of residues in the usual network. Call on a qualified agency for their destruction.
- Do not discard the used filter element in the usual network; seek a competent agency for its destruction.
- Set up the blanking plates at the inlet and exhaust of the pump (supplied with the product).

7.2 Dismantling

When the filter element is saturated, proceed to its change.

- Remove the accessorie IPF 40 from the pump, and disassemble it on a workbench.
- Loosen the 6 fasteners (8) (9) (10) by pressing manually on each end of the IPF 40 **(to avoid sudden release of the spring)**.
- Remove successively and in the order, the upper body (16), the O-ring (7), the spring (6), the valve (5) and O-ring (4), the filter element (2) with the flat ring (3) in the bottom of the lower body (1).

7.3 Cleaning

WARNING

A used filter element must not be cleaned. It must be systematically replaced with a new one.

→ Elastomer seals must always be replaced by new seals.

For pumps

references V8SHxxxxxx

Proceed as follows:

For pumps delivered with mineral oil, clean the parts with a solvent, mineral-based in accordance with the legislation in force, for example, the type **AXAREL**¹⁾, **CARE-CLEAN**²⁾, **PREMACLEAN**³⁾, **NAPHTESOL**⁴⁾.

- Clean when hot or cold (max. 45°C) by dipping or using a lintfree cloth.
- Vacuum dry in a ventilated heating chamber.

For pumps

references V8xxxxxxx

Proceed as follows:

For pumps delivered with synthetic oil (perfluorinate), clean the parts with a solvent type **GALDEN S 90**⁵⁾.

- Cold clean by dipping or with a lint-free cloth.
- Dry parts in the open air or with compressed air.

1) Registered trademark DUPONT DE NEMOURS
 2) Registered trademark CASTROL
 3) Registered trademark DOW
 4) Registered trademark NIPPON OIL CORPORATION
 5) Registered trademark MONTEDISON

7.4 Reassembly

- Install the flat ring (3) in the bottom of the lower body (1).
- Place the filter element (2) on the centering devices, bearing against the flat ring (3) in the lower body (1).
- Install the O-ring (4) on the valve (5) and install the assembly on the filter element (2), with the O-ring resting on the filter element.
- Install the spring (6) on the valve (5).
- Install the O-ring (7) in its groove.
- Position the upper body (16) on the lower body (1) and assemble with the fasteners (8) (9) (10).
- Tighten in cross with a torque of 4 N·m.
- Connect the IPF40 on the inlet of the ACP pump (using the supplied accessories) (see 5.2).

8 Disposal



WARNING

Environmental protection

The product or its components must be disposed of in accordance with the applicable regulations relating to environmental protection and human health, with a view to reducing natural resource waste and preventing pollution.

Our products contain various materials which must be recycled (see 10).

Take special care for:

- fluoroelastomers which may breakdown if they are subjected to high temperatures.
- components in contact with the products resulting from the processes which may have been contaminated.

9 Service

Pfeiffer Vacuum offers first-class customer service!

- On-Site maintenance for many products
- Overhaul/repair at the nearby Service Location
- Fast replacement with refurbished exchange products in mint condition
- Advice on the most cost-efficient and quickest solution

Detailed information, addresses and forms at: www.pfeiffer-vacuum.com (Service).

Overhaul and repair at the Pfeiffer Vacuum Service Center

The following general recommendations will ensure a fast, smooth servicing process:

- Fill out the "Service Request/Product Return" form and send it to your local Pfeiffer Vacuum Service contact.
- Include the confirmation on the service request from Pfeiffer Vacuum with your shipment.
- Fill out the declaration of contamination and include it in the shipment (mandatory!). The Declaration of contamination is valid for any product/device including a part exposed to vacuum.

- Dismantle all accessories and keep them.
- Close all the flange opening ports by using the original protective covers or metallic airtight blank flanges for contaminated devices.
- If possible, send the pump or unit in its original packaging.

Sending contaminated pumps or devices

No devices will be accepted if they are contaminated with micro-biological, explosive, or radioactive substances. "Hazardous substances" are substances and compounds in accordance with the hazardous goods regulations (current version).

- Neutralize the pump by flushing it with nitrogen or dry air.
- Close all openings airtight.
- Seal the pump or device in suitable protective film.
- Return the pump/device only in a suitable and sturdy transport container and send it in while following applicable transport conditions.

Pump or device returned without declaration of contamination form fully completed and/or not secured in suitable packaging will be decontaminated and/or returned at the shipper's expense.

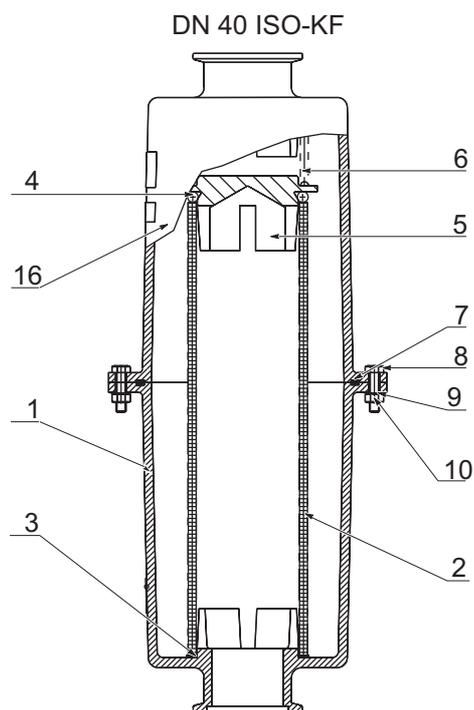
Exchange or repair

The factory operating parameters are always pre-set with exchange or repaired devices. If you use specific parameters for your application, you have to set these again.

Service orders

All service orders are carried out exclusively according to our general terms and conditions for the repair and maintenance, available on our website.

10 Spare parts



Side view IPF 40

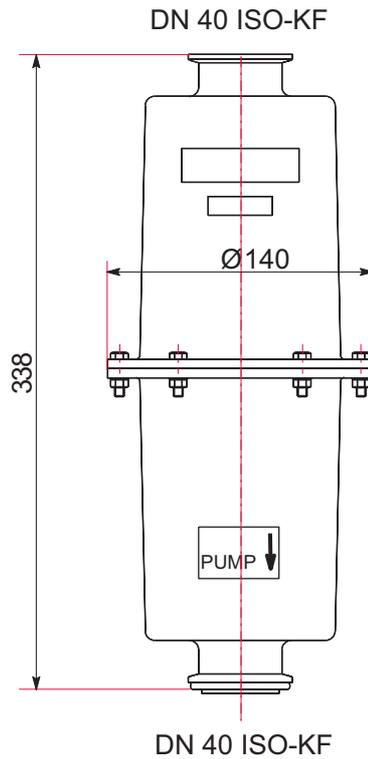
Item	Designation	Material	Quantity	P/N
1	Lower body	Aluminum	1	-
5	Valve	Aluminum	1	-
6	Spring	Steel	1	-
8	Screw	Steel	6	-
9	Washer	Steel	6	-
10	Nut	Steel	6	-
16	Upper body	Aluminum	1	-

Spare parts for each maintenance

2	Filter element	Glass microfibers + epoxy binder	1	111648
3	Flat ring	Elastomer NBR*	1	068446
4	O-ring	Elastomer NBR*	1	082131
7	O-ring	Elastomer NBR*	1	079248

(*) According to standard NFT 40-002

11 Technical data and dimensions



IPF 40

Weight	2 kg
Connection	DN 40 ISO-KF
Tightness max	$1 \cdot 10^{-7}$ hPa l/s
Maximum working pressure	1013 hPa
Maximum flow through IPF 40	10400 hPa l/s
Conductance (l/s)	13 if inlet pressure 10^{-1} hPa 28 if inlet pressure at 1 hPa
Filtration level	Original filter element from manufacturer. Trapping: 99.99% of particles, diameter greater than 25 microns.



Declaration of incorporation of partly completed machinery

We hereby declare that the product cited below satisfies all relevant provisions according to the following **EC directives**:

- **Machinery 2006/42/EC (Annex II, no. 1 A)**
- **Restriction of the use of certain Hazardous Substances 2011/65/EU**

This partly completed machinery must not be put into operation until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the **2006/42/EC Directive**.

We, authorized representatives undertake to transmit, in response to a reasoned request by national authorities, relevant information on the partly completed machinery.

The technical file is drawn up by Mr Frédéric ROUYEYRE, Pfeiffer Vacuum SAS, [simplified joint stock company], 98, avenue de Brogny · B.P. 2069, 74009 Annecy cedex.

IPF 40

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28/06/2016

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Benefit from our know-how and our portfolio of training opportunities!

We support you with your plant layout and provide first-class on-site service worldwide.

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