ARGO HYTOS
A Voith Company

Manual

Oil Service Unit

Ecoline UMPC2 045

Safety and operating instructions

Read safety and operating instructions before use.

Note: The indicated data only serve to describe the product.
Specifications regarding the use of this product are only examples and suggestions.
Catalog specifications are no guaranteed features.
The information given does not release the user from his / her own assessments and inspection.

Our products are subject to natural wear and aging process.

The picture on the title page shows a configuration example.
The delivered product may thus differ from the illustration.

Content

1. About this documentation

1.1 Applicability of the documentation

This documentation is applicable for the following product:

› Oil Service Unit UMPC2 045

This documentation is written for technicians, operators, service engineers and system operators.

This document contains important information for safe and appropriate assembly, transport, activation, operation, usage, servicing, dismantling and simple troubleshooting.

› Read this document completely and in particular Chapter 2, "Safety Instructions", before you work with the product.

1.2 Required and supplementary documentation

Do not commission the product until you have received the documentation marked with the book icon and before you have understood and complied with the information therein.

	Title	Document number	Document type
🕮	Data sheet	UMCP2_2203	

Table 1: Required and supplementary documentation

1.3 Presentation of information

So that this document can help you to work quickly and safely with your product, we use standardized safety instructions, symbols, terms and abbreviations. For better understanding, these are explained in the following sections.

1.3.1 Safety instructions

In this documentation, safety instructions are faced with a sequence of actions which would result in the danger of personal injury or damage to equipment. The measures described to avoid theses hazards must be observed.

Safety instructions are as follows:

⚠ SIGNAL WORD
Type and source of danger › Consequences of the danger › Escaping or averting the danger › Rescue (optional)

› Warning signal: draws attention to the danger
› Signal word: indicates the severity of the danger
› Type and source of danger: specifies the type and source of the danger
› Consequences: describes the consequences in the event of non-compliance
› Action: indicates how the danger can be avoided

Warning sign, signal word	Meaning
⚠ DANGER	Indicates a dangerous situation which results in death or serious injury if not avoided.
⚠ WARNING	Indicates a dangerous situation which may result in death or serious bodily injury if not avoided.
⚠ CAUTION	Indicates a dangerous situation which may result in light to moderate injury if not avoided.
NOTE	Indicates property damage: The product or surrounding could be damaged.

Table 2: Hazard classes according to ANSI Z536.6-2006

1.3.2 Symbols

The following symbols indicate notes which are not safety-relevant but increase the intelligibility of the documentation.

Symbols	Meaning
	If this information is not observed, the product cannot optimally be used or operated.
>	Singular, independent action step / instruction
1. 2. 3.	Numbered instruction The numbers indicate that the action steps follow one another.
	This symbol indicates danger to equipment, material and environment.
	This symbol indicates the risk of personal injury (minor injury).
	This symbol indicates the risk of personal injury (death, serious bodily injury).
	This symbol specifies that protective gloves should be worn.
	This symbol specifies that safety shoes should be worn.
	This symbol specifies that protective goggles should be worn.
	This symbol specifies that the unit should be disconnected from the power supply.

Table 3: Meaning of symbols

1.3.3 Terms

In this documentation the following terms are used:

Term	Meaning

Table 4: Terms

1.3.4 Abbreviations

In this documentation the following abbreviations are used:

Term	Meaning
UMPC	Pumping unit with condition monitoring

Table 5: Abbreviations

2.1 About this chapter

This product was manufactured according to the generally recognized standards of engineering. Nevertheless, there is a danger of injury or damage if you do not observe this chapter and the safety instructions in this documentation.

› Read this document thoroughly and completely before working with the product.
› Retain this document and ensure that it is available for all users at all times.
› Always include the necessary documentation when passing the equipment along to a third party.

2.2 Intended use

This product is a hydraulic component.
You may use the product for the following:

› for filtration of hydraulic fluids in the bypass flow on machines and systems, taking account of the technical data.
› for filtration of hydraulic fluids during filling of machines and plants, taking into account the technical data
› for pumping of hydraulic fluids (e.g. waste oil, filter element is bypassed), taking into account the technical data
› for monitoring the oil cleanliness in the bypass flow during cleaning or filling of machines and plants

This product is intended for professional use only and not for private use.
"Intended use" also includes that you have completely read and understood this documentation, in particular Chapter 2 "Safety Instructions".

2.3 Improper use

Any other use than the intended use described, is improper and inadmissible.
If unsuitable products are installed or used in safety-related applications, unintended operating states may occur in the application, which may cause personal injury and / or property damage.
Therefore only use this product in safety-related applications if this use is explicitly specified and permitted in the product documentation, e.g. in explosion protection areas or in safety-related parts of a control system (functional safety).
ARGO-HYTOS Polska assumes no liability for damages resulting from improper use. The risks associated with improper use are solely with the user.

2.4 Reasonable forseeable misuse

The delivery of the following media is forbidden:

› others than listed in Chapter 18.1 "Technical data"

especially:

› flammable liquids such as petrol or thinner (explosion hazard)
› foodstuffs
› sludge and sediment

The operator alone is liable for damages resulting from improper use.

2.5 Qualification of personnel

The operations described in this document require fundamental knowledge of mechanics and hydraulics as well as knowledge of the appropriate technical terms. In order to ensure safe use, these operations may therefore only be carried out by a correspondingly skilled worker or an instructed person under the guidance of a skilled worker.
A skilled worker is someone who can - based on his / her technical education, knowledge and experience as well as knowledge of the respective regulations of the jobs assigned to him / her - recognize possible dangers and ensure appropriate safety measures.
A skilled worker must observe the relevant technical regulations.

2.6 General safety instructions

› Observe the valid regulations for accident prevention and environmental protection.
› Observe the safety regulations and requirements of the country in which the product is used / applied.
› Only use ARGO-HYTOS products that are in technically perfect condition.
› Observe all instructions on the product.
› People who assemble, operate, disassemble or maintain ARGO-HYTOS products may not do so under the influence of alcohol, other drugs or medications that affect the responsiveness.
› Only use manufacturer-approved accessories and spare parts, in order to prevent personal danger due to unsuitable spare parts.
› Observe the technical data and ambient specifications specified in the product documentation.
› If unsuitable products are used or installed in safety-relevant applications, unintended operating states may occur in the application, which can cause personal injury and / or material damage. Therefore only use the product in safety-relevant applications if this use is explicitly specified and permitted in the product documentation.
› You may only put the product into operation, when it has been established that the final product (e.g. a machine or system), into which the ARGO-HYTOS products have been installed, complies with the country-specific regulations, safety regulations and standards of the application.

2.7 Product and technology related safety instructions

CAUTION

Leaked hydraulic oil

Environmental hazard / risk of slipping.

› In case of spills, cover the oil-covered surface immediately with an oil-binding medium.
› Then immediately dispose of the oil-binding medium according to the national environmental regulations.

Ignition hazard

Risk of electrostatic charge by poorly conducting hydraulic fluid.

› If the electrical conductivity of the hydraulic fluid is not known, please contact the manufacturer of the hydraulic fluid.

Risk of burns

Contact temperatures according to DIN EN563 (3) and DIN EN13202 (4) may be exceeded during operation.

› Allow the off-line filter unit to cool down before touching it.

For prevention of material damage and product damage

CAUTION

Danger due to improper handling

Property damage

› The off-line filter unit may only be used in accordance with Section 2.2, “Intended use”.

Leakage or spillage of hydraulic fluid

Environmental pollution and ground water contamination.

› Use oil binding agents in order to bind leaked hydraulic oil.

Risk of burns

Contact temperatures according to DIN EN563 (3) and DIN EN13202 (4) may be exceeded during operation.

› Allow the off-line filter unit to cool down before touching it.

Contamination due to fluids and foreign bodies

Premature wear, malfunction, risk of damage, property damage.

› Ensure cleanliness during installation in order to prevent foreign bodies, such as welding beads or metal chips, from entering the hydraulic lines, leading to premature wear or malfunction.
› Make sure that connections, hydraulic lines and attachment parts (e.g. gauges) are free from dirt and chips.
› Prior to commissioning, check that all hydraulic and mechanical connections are connected and tight, and that all gaskets and seals of the plug connectors are correctly assembled and undamaged.
› For removal of lubricants and other contaminants, use residue-free industrial wipes.
› Make sure that all connections, hydraulic lines and attachment parts are clean.
› Ensure that no contaminants enter when closing the connections.
› Make sure that no detergents enter the hydraulic system.
› Do not use cotton waste or faying cleaning rags for cleaning.
› Do not use hemp as sealing agent.

Improper cleaning

Premature wear, malfunction, risk of damage, property damage.

› Close all openings with appropriate protective fittings to prevent penetration of detergents.
› Do not use aggressive cleaning agents for cleaning. Clean the product with a suitable cleaning fluid.
› Do not use a high-pressure cleaner.
› Do not use compressed air to clean function interfaces such as seal areas.

4. Scope of delivery

This package includes:

› 1 Oil Service Unit UMPC2 045

› 1 Operating manual

5.1 Component overview

Fig.1: Component overview

Touch display
The touch display is a control panel for steering the unit and visualizing the results. The control menu is described in chapter 9.

Printer
The built-in printer is an optional accessory which is used for printing of measurement reports.

Ball valve
The 3-way ball valve allows to determine whether the oil cleanliness monitoring is to be performed before or after the filter.

Safety button
The purpose of an emergency button is to stop the unit quickly when there is a risk of injury or the workflow must be stopped.

Hose holder
On both sides of the unit there are hose holders onto which the pressure hoses (suction and pressure side) can be wound for better transport in case of non-use.

Cable holder
On the front of the unit there is a cable holder, onto which the 230V or 400V power cable can be wound for better transport in case of non-use.

Pump drive / electric motor
The pump unit driven by an electric motor is responsible for media conveyance.

Transport rack

The transport rack is equipped with two wheels. This hand truck enables the unit to be transported without difficulty even to inaccessible / narrow areas.

Filter cover

The filter cover closes the filter housing and serves, inter alia, for venting.

Filter housing with filter element

The filter housing contains the replaceable filter elements.

Changing the filter elements is described in "11.2 Changing the filter element" on page 34.

Suction hose

The suction hose is used to transfer the fluid from outside to the oil service unit.

Return hose

The return hose is used to transfer the fluid from the oil service unit to the outside.

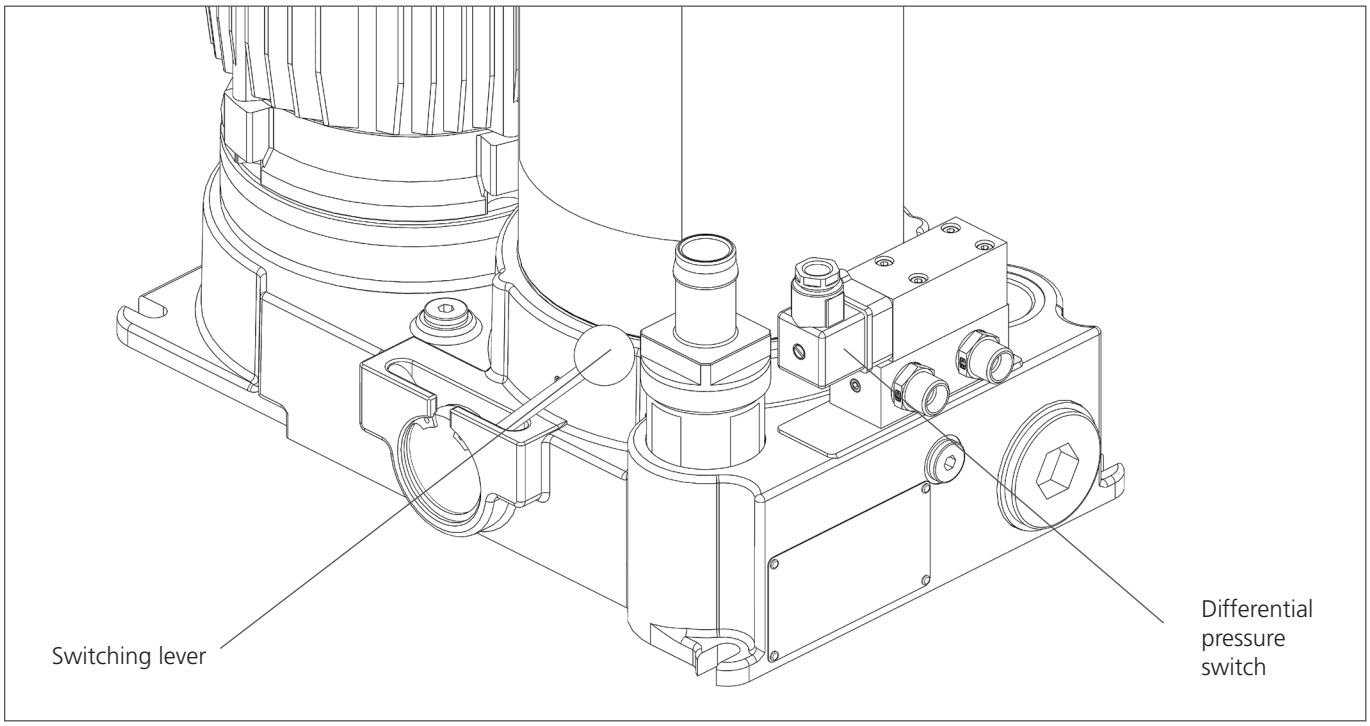


Fig.2: Component overview 2 (transport rack removed)

Switching lever

This lever is used to switch the unit from "pumping" mode to "filtering".

Differential pressure switch

This switch monitors the pressure of the medium before and after the filter.

So if the pressure difference is too high (due to a dirty filter element), there will be an indication for the user on the main screen - see also chapter 9.12.

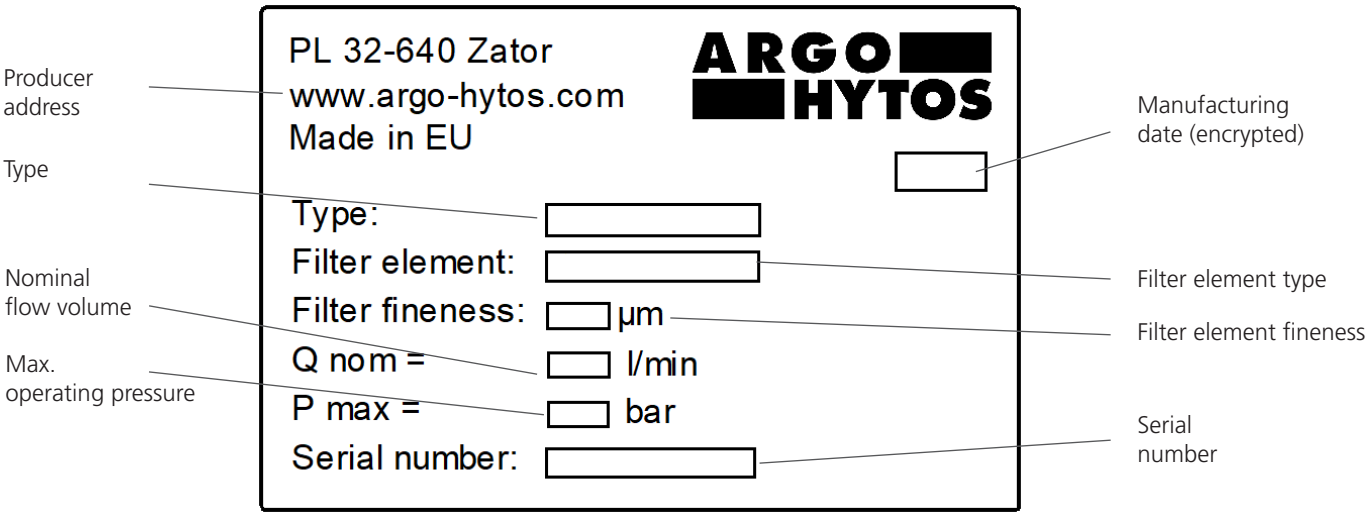


Fig.3: Nameplate

6.1 Transport

The unit should be transported horizontally as there is always a certain amount of oil inside the filter unit (in the filter as well as in the pump), which will leak out during other transport and lead to soiling.
Observe the notes in Chapter 2 "Safety instructions".
Ensure that the unit is in a safe position (tipping hazard).
To prevent the leakage of residual oil, seal hoses at the open connections before transport.
During transport, secure the suction hose and the pressure hose in the brackets provided for this purpose in order to avoid possible leakage of residual oil.

Fig. 4: Transport rack

The unit is mounted on a transport rack with two wheels.
This hand truck enables the unit to be transported without difficulty (weight: ~95 kg) even to inaccessible / narrow areas.
For transport, the unit can be rolled over the wheels by pushing the handle (see arrow) and transported to the destination.

6.2 Storage

The UMPC2 045 filter unit should be stored in a confined space to protect it from humidity and condensation.

DANGER	
	**Risk of injury** **Danger of chemical reactions** Chemical substances in the immediate vicinity of the filter unit can react and lead to the destruction of the device and to injuries to persons in the immediate vicinity of the device. › Storage in the immediate vicinity of chemically active substances such as acids, alkalis, salts, organic solvents and rechargeable batteries is prohibited.

The ambient temperature during storage of the filter unit UMPC 045 should be between +0 °C and +50 °C at a maximum humidity of 80%.
Before storage over a period of more than 6 months, the device should be filled with oil in order to preserve it against corrosion.

WARNING

Risk of functional impairment
Faulty power supply

› Always consider the country-specific regulations.

Let - prior to commissioning - an electrician check whether:

› the mains voltage matches with the voltage specified on the type plate of the motor,
› the power source has appropriately been secured (16 A),
› the cross-section is of sufficient size,
› cable and connection to the power source are in perfect condition.

The following steps are to be followed in detail:

› connect the 230V (or 400V) voltage plug to the local power supply.

8.1 After switching on the motor-pump unit

› Check the filter unit for leaks.
› Check that the device is properly vented.

8.2 In case of power failure

In order to prevent unintentional starting of the unit, always switch off and unplug the unit.

8.3 Venting

To bleed the unit, carefully loosen the screw (2) on the ventilating valve (1). Clean the oil which will escape during the venting process. Tighten the screw (2) on the ventilating valve (1)

NOTE	
	Do NOT leave the unscrewed ventilating valve - there is a risk of oil spillage through opened ventilating valve.

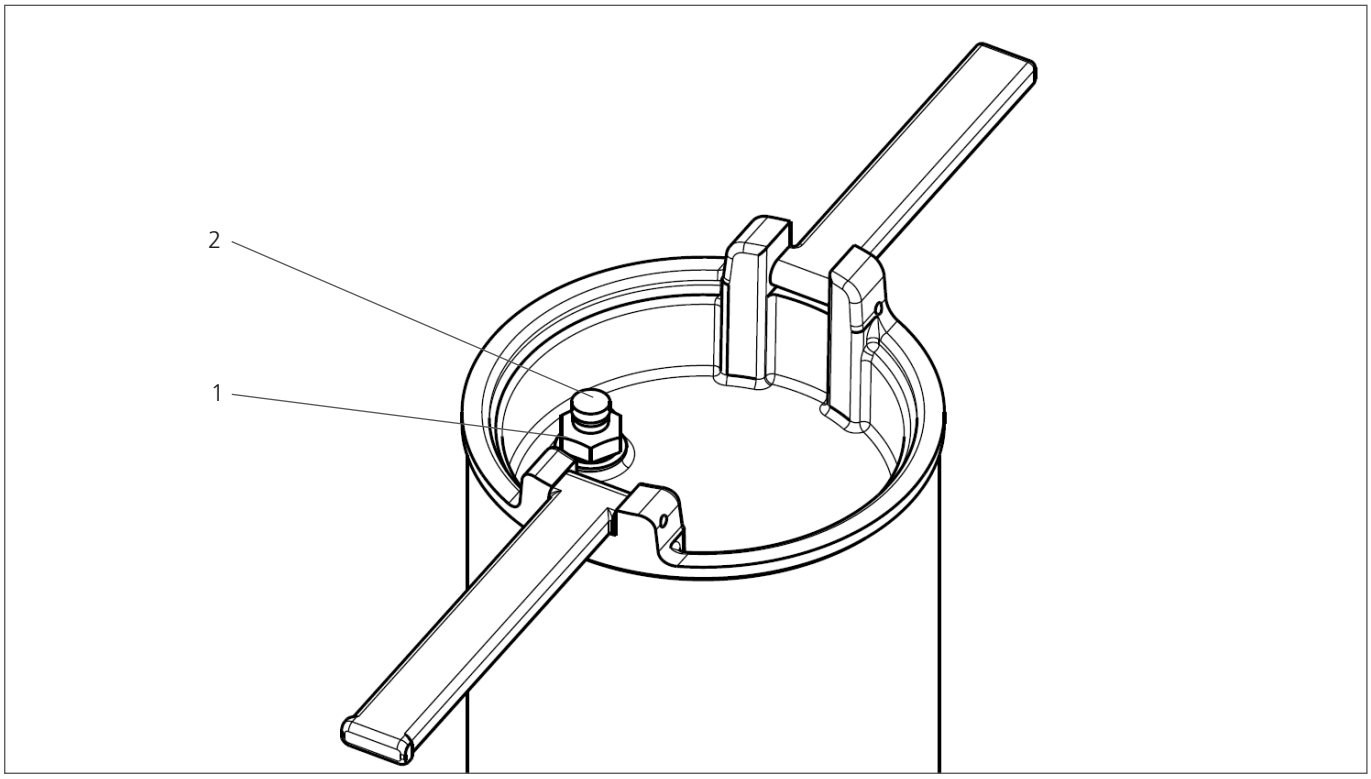


Fig.5: Venting

9. Menu structure and functions

The home screen of the touch display is shown in Fig. 6 By clicking on the appropriate field / icon, it is possible to activate the given function or to go to the next screen with submenu. This chapter provides a description of the individual submenus and functions included in the steering algorithm.
There are two navigation buttons for switching between the screens of the display:

back to the previous screen

back to the home screen

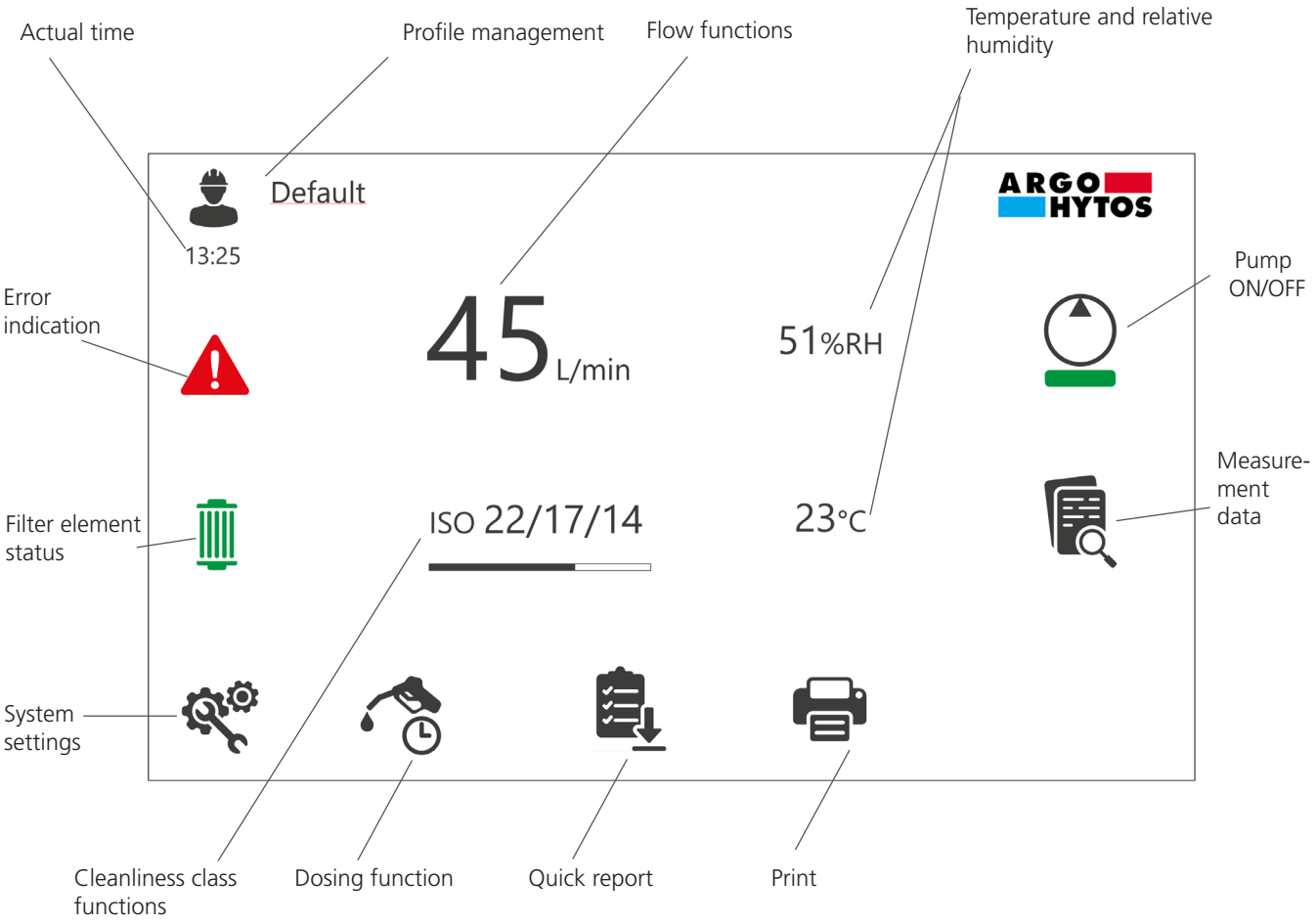


Fig.6: Start screen

9.1 Pump ON/OFF

Field for switching-on and off the motor-pump unit. The bar below the pump symbol changes its color from green into red when the motor pump unit is running.

NOTE	
	To stop the unit quickly in case of risk of injury, the safety button must be used. After the device has been switched off with the safety button, the system requires some time (approx. 15-20 seconds) to be ready to be switched on again. The time counter that appears on the pump symbol indicates the remaining time until the system is ready for activation.

9.2 Actual time

Non-clickable field.
Shows the current time. The correct time can be set under the "System settings" button - see chapter 9.11.

9.3 Profile management

Through this field there is a possibility to activate, view and / or edit single profiles.
The UMPC2 unit may be used for servicing of many systems which require completely different parameters and device settings. Changing of working conditions does not result in the loss of the defined parameters. Operator can save the current settings in the individual profile. Profiles can be defined for different customers, machines, working stations etc. Each profile consists of a name and a set of individual settings. In the first step, the user gets to the "Profile selection" screen - Figure 7.1. In this screen, the selected profile can be activated. The "View" button displays the profile editing screen - see Figure 7.2.
There is a default profile defined by the manufacturer. The name and settings of this profile cannot be changed.

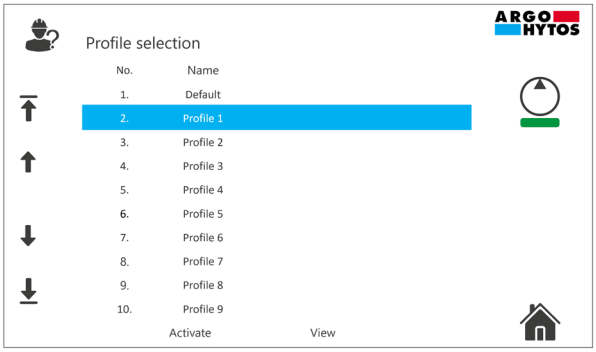


Fig. 7.1: Profile selection screen

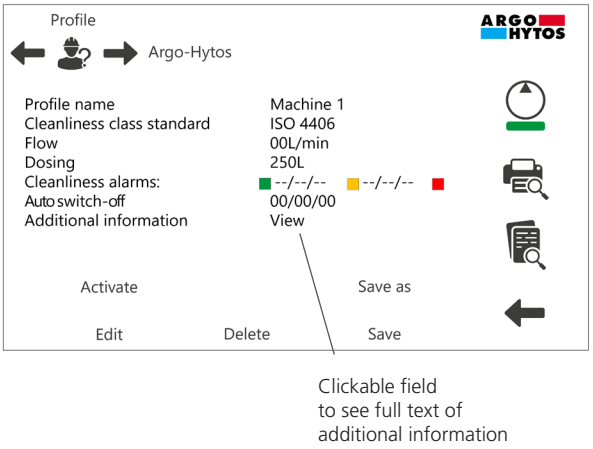


Fig. 7.2: Profile edition screen

NOTE	
	The operator can temporarily change all settings of the UMPC2. In doing so, the settings of the selected profile are not changed until the changes are saved with the SAVE key. The settings of the DEFAULT profile cannot be changed.

In the "Profile" screen there are two additional buttons described below.

By clicking on this icon the printout / report preview is displayed. For more information about print / report settings see chapter 9.11.1.

By clicking on this icon the "General data memory" is displayed. This button is also available in the home screen. Each profile has its own general data memory. For more information see chapter 9.7.1.

9.4 Flow functions

Clickable field with the submenu showed in the Fig. 8.

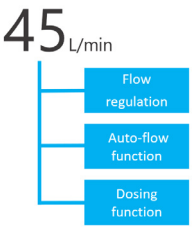


Fig. 8: Submenu of flow functions

9.4.1 Flow regulation

Through this field there is a possibility to regulate the flow in the range of 20 -70 l/min.

NOTE	
	For flow regulation, the viscosity of hydraulic fluid must be taken into consideration. Compare the permissible viscosity range of the device with the viscosity / temperature diagram which is available after clicking on the icon ⓘ in the flow regulation screen. See the Fig. 9.

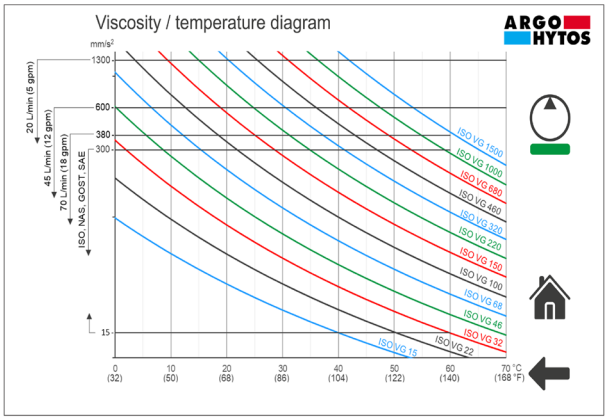


Fig. 9: Screen with viscosity / temperature diagram

9.4.2 Auto flow (AF) function

Function can be activated by clicking in the "Auto-Flow" field showed in the Fig. 10.

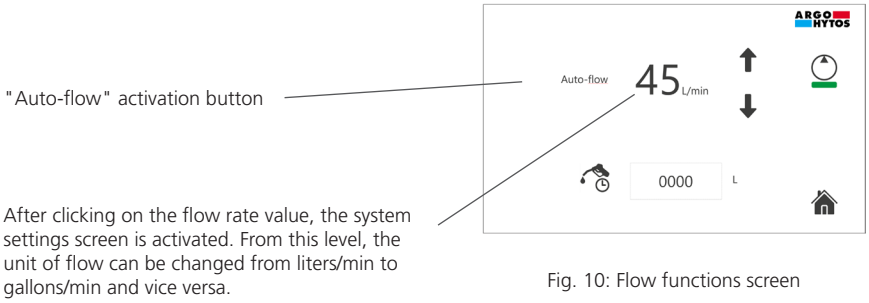


Fig. 10: Flow functions screen

The combination of letters AF with green bar is displayed in the home screen as an indication that the Auto-flow function is active, see Fig.11.

Fig. 11: Auto-Flow function active

When the AF function is active, the flow of the UPMC2 unit is automatically reduced. The signal to activate the flow reduction comes from the electrical clogging indicator. After detecting a certain pressure drop across the filter element, the flow rate is reduced by approximately 5 l/min. For example, the initially defined flow of 50 l/min is reduced to approx. 45 l/min.
Working in this mode allows optimal utilization of the filter element. The dirt-holding capacity of 45 l/min defined for the nominal flow rate is relatively larger at the reduced flow rate (pressure drop is lower at the smaller flow rate). So even if there is a signal from the clogging indicator at a flow rate of 60 or 50 l/min, this signal may not be active at a flow rate of 20 l/min. Oil filtration can be continued with the same filter element.

9.4.3 Dosing function

With this function the operator can define the amount of oil to be transferred. To set a dose of oil, click on the field for volume definition showed in Fig.12. The keyboard will be activated and the required value can be entered.

Fig. 12: Dosing function settings

After clicking on the icon  the function is activated. The green bar is displayed under the "Dosing" icon and two counters are activated. The first counter, the "volume counter", shows the actual amount of transferred oil versus the pre-set value. The second counter, the "time counter" shows the time remaining until the pump is stopped. When the pre-set volume is reached, the pump of the UMPC2 is stopped automatically.
Current settings of this function can be permanently saved in the selected profile - see chapter 9.3.

NOTE	
	When working with the dosing function, the following sequence is recommended: Set the dosing value -> activate the function -> activate the pump.

NOTE	
	The actual values can differ by approx. 3 % from the values set with the dosing function. If the dosing function is activated for the unit with filter element but without oil filling, approximately 10 liters of oil are required to fill the internal volume of the unit. This should be taken into account when setting the dosing quantity.

9.5 Temperature and relative humidity results

Displays the current results of the temperature and relative humidity of the oil. If you click on one of these fields, the results will be displayed in the form of charts. A separate submenu for managing the diagrams is shown in Fig.13.

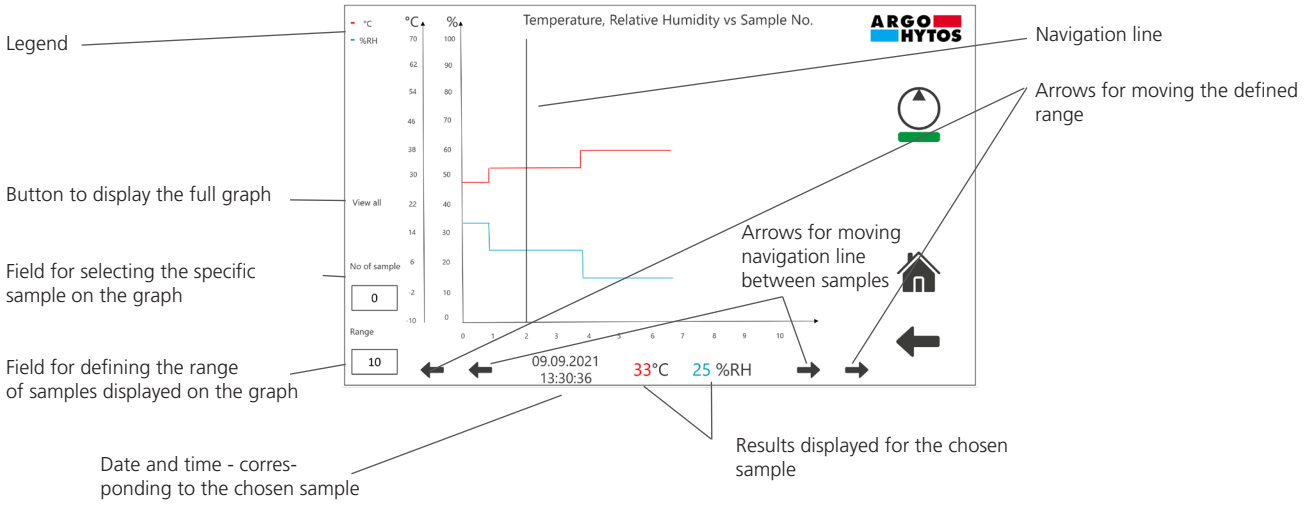


Fig 13: Graphical representation of results.

9.6 Cleanliness class functions

Field that shows the current degree of contamination of the fluid, having the submenu shown in Fig. 14.
The individual parts of the submenu are described in this chapter.

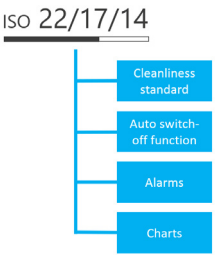


Fig. 14: Submenu of cleanliness class functions

9.6.1 Cleanliness standard

The operator can choose the following cleanliness standards: ISO 4406:1999, NAS 1638, SAE AS4059 and GOST 17216.

9.6.2 Auto switch-off (AS) function

When the preset cleanliness class (or better) is reached (three times in a row), the motor-pump unit of the UMPC2 is automatically switched off. The desired degree of contamination for switching off the motor-pump is set by clicking on the field shown in Fig. 15.
The function is activated by clicking on the "Automatic switch-off" field.

NOTE	
	Recommended cleanliness classes for selected hydraulic components are available after clicking on the icon ⓘ in the cleanliness class screen - see Fig. 15.

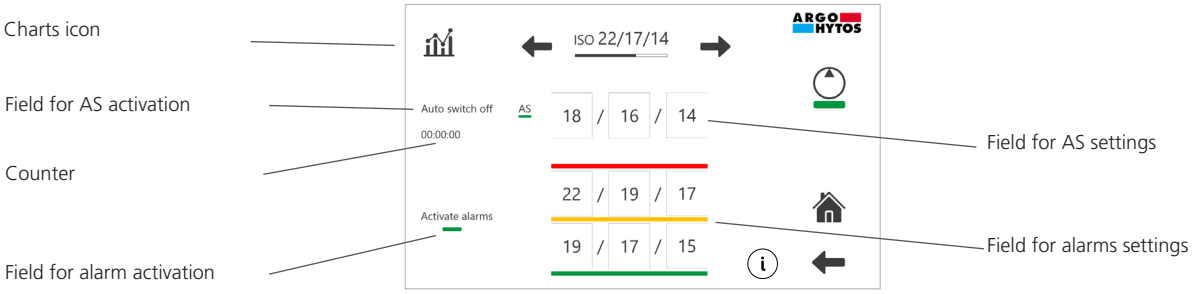


Fig. 15: Cleanliness class settings and functions

As an indication that the function is active, the letter combination AS is displayed with a green bar next to the cleanliness class field on the start screen.
The counter shown in Fig. 15 measures the time from the moment the AS is activated until the motor-pump unit is switched off.
When the AS function is activated, the defined cleanliness class for switch-off can be stored in the selected profile - see chapter 9.3.

9.6.3 Alarms

This is an additional function for displaying the current state of oil cleanliness. The settings of this function are made in the field shown in Fig. 15. The operator sets the upper and lower limits for the cleanliness alarms and activates the function by clicking on the "Activate alarms" field.
When the function is activated, the following alarms can be displayed on the home screen:

- RED alarm is displayed when the current cleanliness class is equal or above the upper defined limit. For three-digit standards (for example ISO 4406 or SAE AS4059) the RED alarm is displayed when at least one part of the code is equal or above the upper defined limit.

- YELLOW alarm is displayed when the cleanliness class is between the lower and the upper defined limit. For three-digit standards (for example ISO 4406 or SAE AS4059) the YELLOW alarm is displayed when all parts of the code are below the upper defined limit and at least one part of the code is equal or above the lower defined limit.

- GREEN alarm is displayed when the cleanliness class is below the lower defined limit. For three-digit standards (for example ISO 4406 or SAE AS4059) the GREEN alarm is displayed only when all parts of the code are below the lower defined limit.

The alarms described above are displayed in the form of a red, yellow or green frame that appears around the cleanliness class field on the home screen - see Table 6. In the table, examples have been provided for ISO 4406 and NAS 1638 standards. For other cleanliness standards, the same rules for activating alarms apply.

Standard	Pre-set values for alarms	Current result and displayed alarm
ISO 4406:1999	21 / 19 / 16 16 / 14 / 11	ISO 22/18/15 ISO 15/13/12 ISO 15/13/10
NAS 1638	10 5	NAS 11 NAS 6 NAS 4

Table. 6: Examples of cleanliness alarms

9.6.4 Charts

By clicking on the icon , the results of the cleanliness class are presented in the form of diagrams.
A separate submenu for managing cleanliness graphs appears analogous to the menu for temperature and humidity graphs described in Fig. 13 in Chapter 9.5.

9.7 Measurement data

The results collected by the particle monitor and the humidity sensor are stored in the internal memory. The filter unit has two types of measurement data: a general data memory and a quick report memory.

9.7.1 General data memory

Access to the "General data memory" screen is possible after clicking on the icon on the home screen. This button is also available in the "Profile management" screen. The results are displayed in the form of a table, see Fig.16.
Each profile has its own general data memory. Using the navigation arrows, the operator selects the given profile to display the data. In the case of the general data memory, the frequency of data recording depends on the settings of the measurement and pause time in the system settings - see chapter. 9.11 The results are saved automatically at the defined intervals. The data are sorted from the oldest to the newest results. The table stores the most recent 300 results for the operator's reference review.

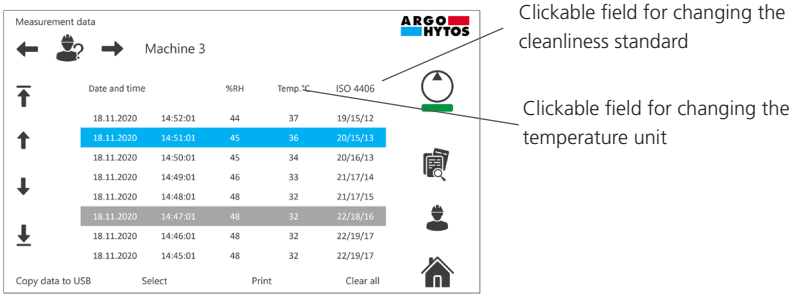


Fig. 16: General data memory

The entire measurement history is stored in the internal memory of the device. Using the "Copy data to USB" field, this data can be saved to a USB memory stick in a CSV file. Only the following formats are supported by the USB memory device: FAT12, FAT16, FAT32. In addition, it is possible to select and print a single line (only for versions with built-in printer and with active profile).

9.7.2 Quick reports memory

Access to the "Quick data memory" is possible after clicking on the icon  available in the "General data memory" screen. The results are displayed in the form of a table which is identical to the general data memory table.
The only difference between these two types of storage is the moment of data saving. In case of quick reports, the data recording is triggered manually by the operator. Only selected data packages are saved in the table, regardless of the settings of the measurement and pause time in the system settings.

Quick reports are generated after clicking on the icon  in the home screen, see also chapter 9.9. Reports are sorted from the oldest to the newest. The table stores the most recent 300 reports for the operator's reference review. Each profile has its own quick reports memory. Using the navigation arrows, the operator selects the given profile to display the data.

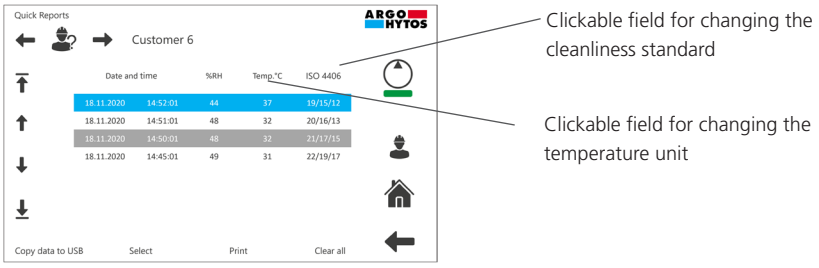


Fig. 17: Quick reports memory

The submenu at the bottom of the screen gives the possibility to copy data to a USB-stick or to clear the table. Data are copied to the external memory in the form of a txt. file. An example of a single quick report is shown in Fig. 18.

Fig. 18: Example of a quick report

Additionally, there is the possibility to select and print a single report (only in versions with built-in printer and for active profiles).

9.8 Printing of results

Measurement results can be printed after clicking on the "Print" icon  in the home screen (possible only for versions with built-in printer).
The printing of selected data is also possible from the level of the General data memory and Quick report memory - see chapter 9.7.
A printout example is shown in Fig. 9. The settings for printout / quick reports are made in the System settings - see chapter 9.11.

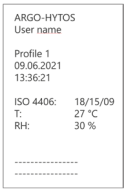


Fig. 19: Example of a printout

9.9 Quick reports

The measurement results can be saved in the internal memory by clicking on the "Quick report" icon on the home screen. Each "click" generates a separate report which is stored in the Quick report memory - see also chapter 9.7.2. Regardless of the quick reports, the system also stores the complete measurement data - see chapter 9.7.1.

9.10 Dosing function

Dosing function settings are available by clicking on the icon on the home screen. Access to this screen is also available via the "Flow functions" submenu - for detailed description see chapter 9.4.

9.11 System settings

Field for basic system settings. This chapter contains a more detailed description of some parts of the submenu presented in Fig.20.1. The screen for system settings is presented in Fig. 20.2.

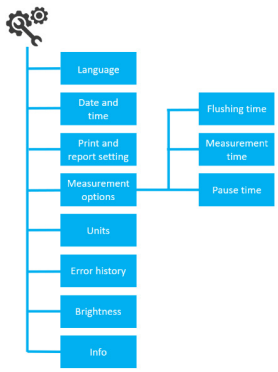


Fig. 20.1: System settings submenu

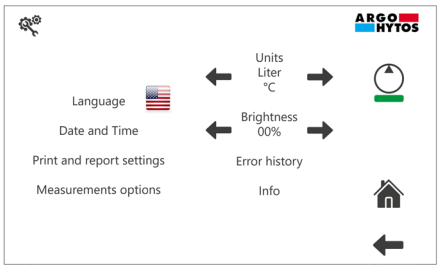


Fig. 20.2: System settings screen

9.11.1 Print and report settings

An example of a quick report printout is shown in Fig. 21.1.
Some parts of the printout / report can be changed by the user - these are the fields marked in green in Fig. 21.1. The settings are made in the screen shown in Fig. 21.2. Any text can be entered in the "Title 1" and/or "Title 2" field.
In addition, the operator can select whether the relative humidity and the temperature are to be displayed in the printout / report.
The settings described apply to all printouts / reports, regardless of the profile selected.

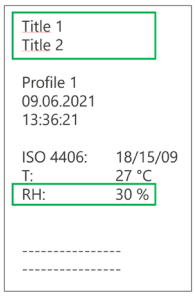


Fig. 21.1: Print and report preview

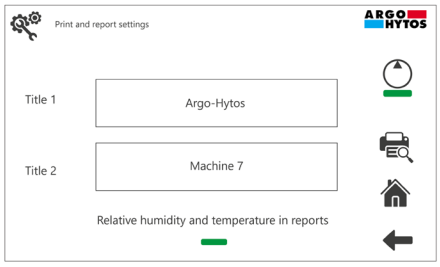


Fig. 21.2: Screen for print and report settings

By clicking on the icon , the printout / report preview is displayed.

9.11.2 Measurement options

In this level the measurement options of the OPCom Particle Monitor can be set.

NOTE	
	Inaccurate results **Erroneous measurements** The measured values from the first few minutes should not be taken into account as the particle monitor is initializing and the hydraulic circuit has to stabilize (air bubbles, flushing, etc.).

To avoid misinterpretation of the results, the minimum value to enter for the flushing time is 2 minutes. After starting the pump unit or after operation in the pumping-over mode, the system is flushed for minimum 2 minutes and the results are not displayed. During this time, the message "Flushing" is displayed on the main screen - see Fig. 22.

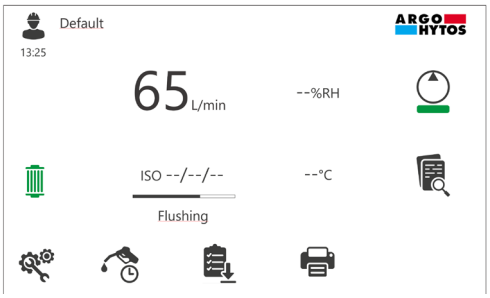


Fig. 22: Flushing message on the home screen

The minimum value to enter for the measurement time is 1 minute. There is no lower limit to be set for the pause time.

9.11.3 Errors and warnings history

An active error in the system is indicated by the icon displayed on the home screen.

An active warning is indicated by the icon displayed on the home screen.
The operator can see the entire error and warning history or show only active errors (red color). A description of the warning / error codes is available after clicking on the "Error code" field.

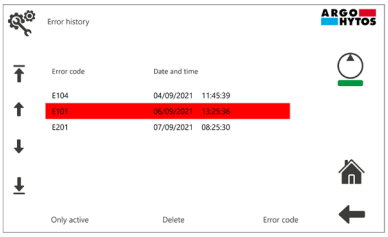


Fig. 23: Error and warning history

9.11.4 Info

Apart from information such as the serial number or the compilation version, there is a field on the "Info" screen that informs about the expiration date of the sensor calibration. There is also an operating hours counter that shows the total operating time of the electric motor.

9.12 Filter element status

When the filter element is clogged, the color of the icon  changes from green to red. By clicking on this symbol, the operator can view the list of possible filter elements. The currently installed element is highlighted in blue - see Fig. 24. After installing another type of element, the correct code must be selected from the given list.

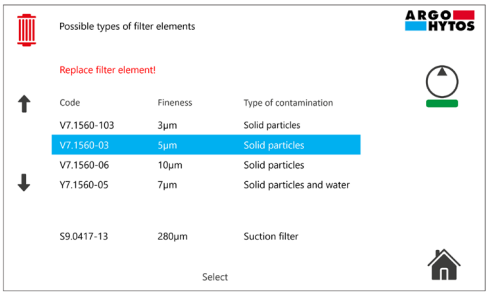


Fig. 24: Filter elements screen

9.13 Error or warning indication

The icon  is displayed only when there is an active error in the system.

The icon  is displayed only when there is an active warning in the system.

For more information see chapter 9.11.3.

CAUTION

Exposure to spilled oil

Injury / risk of slipping

› If oil leaks, the oil-covered area must be shut of immediately and covered with an oil binding medium (risk of slipping).

Static charge

Sparking

› There is a risk of static charge when using poorly conducting hydraulic or lubricating oils. In this case, please consult the manufacturer.

NOTE

Inaccurate results

Erroneous measurements

› The measured values from the first few minutes should not be taken into account as the particle counter is initializing and the hydraulic circuit has to stabilize (air bubbles, flushing, etc.).

› The filter unit has a suction protection strainer on the suction side, which must be serviced regularly. A missing protective strainer can lead to the destruction of the pump. (Order No. see spare part list)

› The manufacturer does not accept liability in case of the removal of the protective screen.

› An exact determination of the cleanliness class is possible in a viscosity range of 15 mm^2/s to 250 mm^2/s.

Operation	Position "lever"	Position "3-way ball valve"	Comment
Filtering when refilling	"Filtering"		see 10.1
Filtering in the bypass circuit	"Filtering"		see 10.2
Pumping	"Pumping without filtration"		see 10.3
Monitoring the oil cleanliness when filling	"Filtering"	Particle counting filling	see 10.4
Monitoring the oil cleanliness during cleaning	"Filtering"	Particle counting cleaning	see 10.5

10.1 Filtering of hydraulic fluids when refilling

1. Connect the filter unit to a power source.
2. Insert the suction lance / suction pipe into the oil barrel.
3. Place the discharge pipe in a container (e.g. hydraulic tank).

NOTE
Incorrect insertion of the discharge pipe › Ensure that the discharge pipe is below the liquid surface.

4. Move the lever to the "Filtering" position.

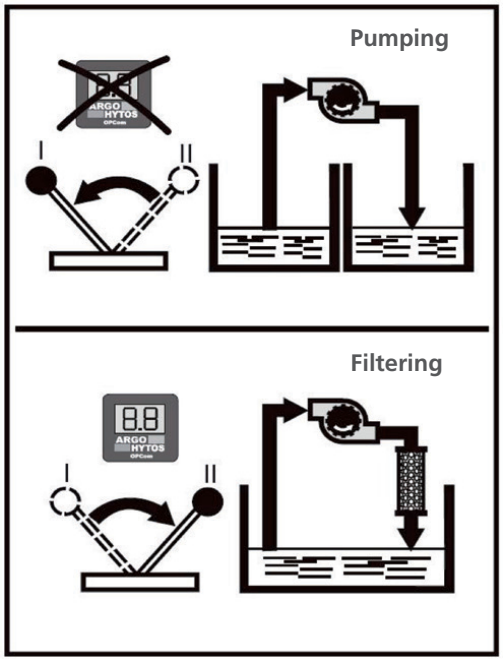


Fig. 25: Lever pumping / filtering

5. Switch on the motor-pump unit.
6. Check the oil flow for a possible insufficient insertion depth of the suction pipe in the oil tank.

NOTE
› At the beginning of the filtration, filling of the filter unit may take several seconds.

7. Monitor the filling level at the machine or system and switch off the filter unit at the circuit breaker after having reached the desired fill level.

NOTE
› In the version of the device with the variable flow range the operator can use the dosing function to define the amount of oil to be transferred. See the description of this function in chapter 16.4.3.

8. Fix the suction lance / suction pipe and the discharge pipe to the corresponding brackets at the filter unit.

10.2 Filtering of liquids in the bypass flow

1. Connect the filter unit to a power source.
2. Insert the suction lance / suction pipe into the tank of the machine or system (e.g. hydraulic tank).
3. Place the discharge pipe into the machine or system container (e.g. hydraulic tank).

NOTE	
	› At the beginning of the filtration, filling of the filter unit may take several seconds.

4. Move the lever to the "Filtering" position.

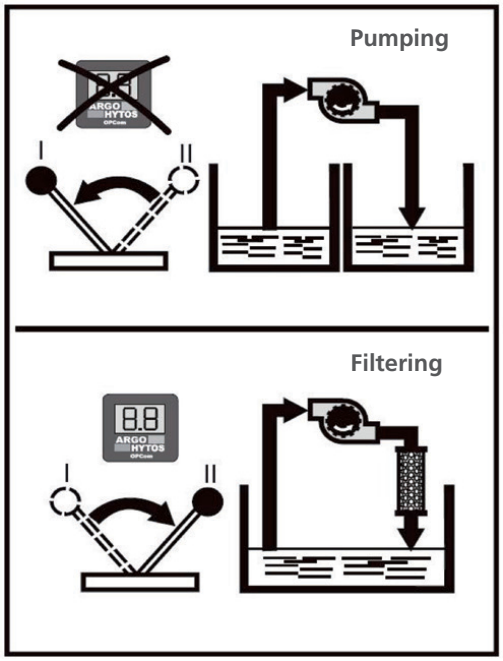


Fig. 26: Lever pumping / filtering

5. Switch on the motor-pump unit.
6. Check the oil flow for a possible insufficient insertion depth of the suction pipe in the oil tank.
7. After completion of the filtration, pull the suction lance / suction tube out of the container of the machine or system (e.g. hydraulic tank) and suck air for max. 30 seconds. Thus, the residual oil from the filter housing and the lines above the oil level is fed back into the container of the machine or system via the discharge pipe.
8. Move the lever to the "Pumping" position.
9. Switch off the motor-pump unit
10. Fix the suction lance / suction pipe and the discharge pipe to the corresponding brackets at the filter unit.

NOTE	
	Achieving the maximum cleaning performance › In order to avoid a short circuit of the oil flow, the distance between the suction and the pressure connection should be as large as possible. **Falsification of results** › Make sure that the device is properly vented. › An exact determination of the cleanliness class is possible in a viscosity range of 15 mm^2/s to 250 mm^2/s.

10.3 Pumping of hydraulic fluids (e.g. waste oil, filter is bypassed)

1. Connect the filter unit to a power source.
2. Insert the suction lance / suction pipe into the tank of the machine or system (e.g. hydraulic tank).
3. Place the discharge pipe into the container (e.g. empty oil barrel).
4. Move the lever to the "Pumping" position.

NOTE
› At "Pumping" position the monitoring of oil parameters is not possible. In the home screen there is a message "Pumping without filtration" - see Fig. 16.1.

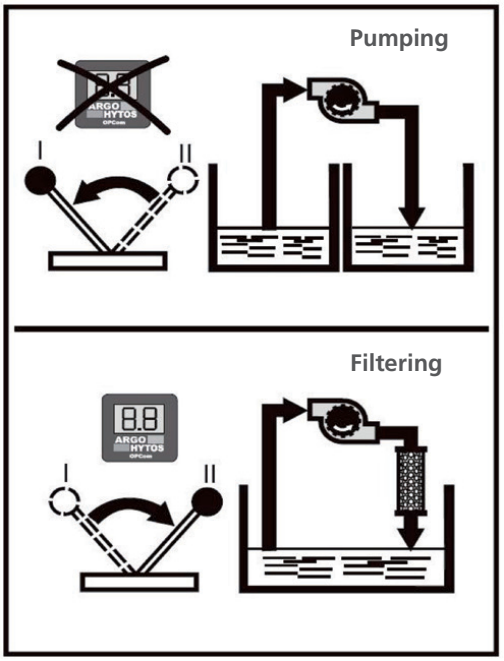


Fig. 27: Lever pumping / filtering

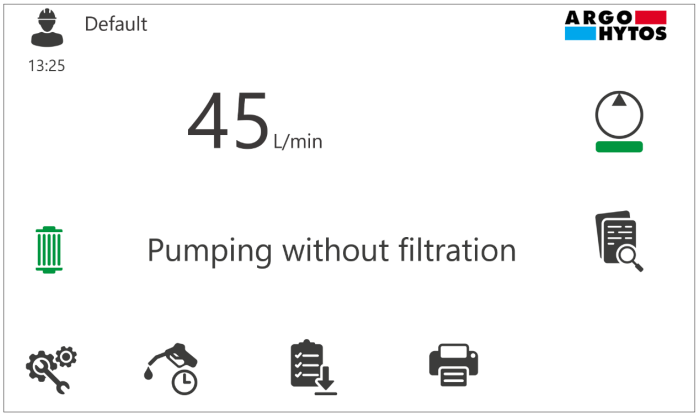


Fig. 27.1: Main screen in the "Pumping" position of the lever

5. Switch on the motor-pump unit.
6. Check the oil flow (observe sufficient immersion depth of the suction lance in the hydraulic fluid).

NOTE
› At the beginning of the pumping process, filling of the filter unit may take several seconds.

7. Monitor the process.
8. After the machine or system has been completely emptied, switch off the motor-pump unit.
9. Fix the suction lance / suction pipe and the discharge pipe to the corresponding brackets at the filter unit.

10.4 Monitoring the oil cleanliness when filling machines and systems

1. Connect the filter unit to a power source.
2. Insert the suction lance / suction pipe into the tank of the machine or system (e.g. hydraulic tank).
3. Place the discharge pipe into the machine or system container (e.g. hydraulic tank).

NOTE	
	› At the beginning of the filtration, filling of the filter unit may take several seconds.

4. Move the lever to the "Filtering" position.

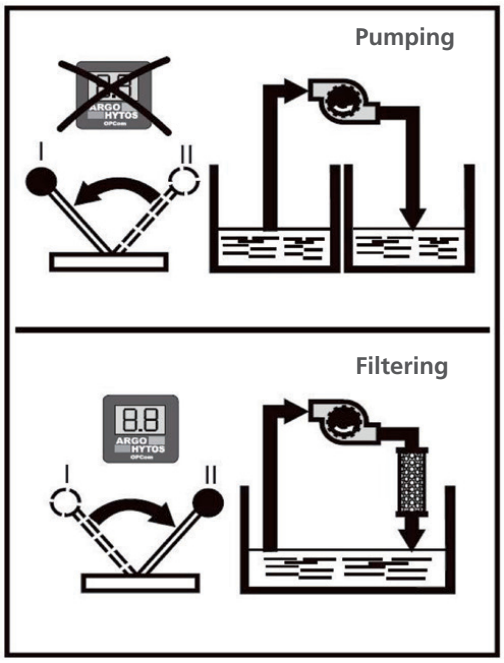
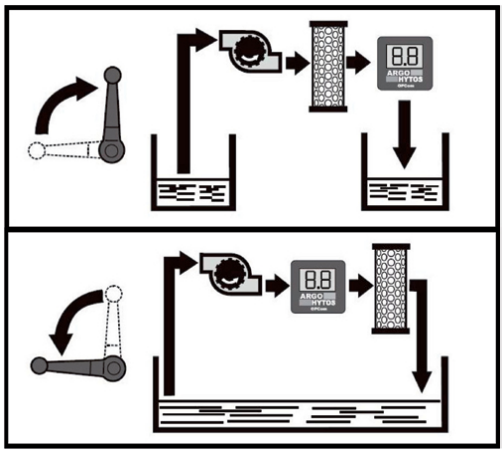


Fig. 28: Lever pumping / filtering

5. Set the three-way valve to the vertical position

Particle Counting "Filling" (AFTER filter)



Particle Counting "Cleaning" (BEFORE filter)

Fig. 29: Three-way valve

6. Switch on the motor-pump unit and let it operate for few minutes. (Initialization of the particle counter and ventilation of the system).
7. Monitor the operation.
8. After the process has been finished, switch off the motor-pump unit.
9. Fix the suction lance / suction pipe and the discharge pipe to the corresponding brackets at the filter unit.

NOTE	
	› No particle counting is possible with the "pumping" lever position. › Make absolutely sure that the unit is completely vented. Air bubbles can falsify the measurement results! › Make absolutely sure that the specified media temperatures of max. 80 °C are observed. › Incorrect viscosities can falsify the measurement results! › An exact determination of the cleanliness class is possible in a viscosity range of 15 mm^2/s to 250 mm^2/s.

10.5 Monitoring the oil cleanliness when cleaning machines and systems in the bypass flow

1. Connect the filter unit to a power source.
2. Insert the suction lance / suction pipe into the oil barrel (e.g. fresh oil).
3. Place the discharge pipe into the machine or system container (e.g. hydraulic tank).

NOTE	
	› At the beginning of the filtration, filling of the filter unit may take several seconds.

4. Move the lever to the "Filtering" position.

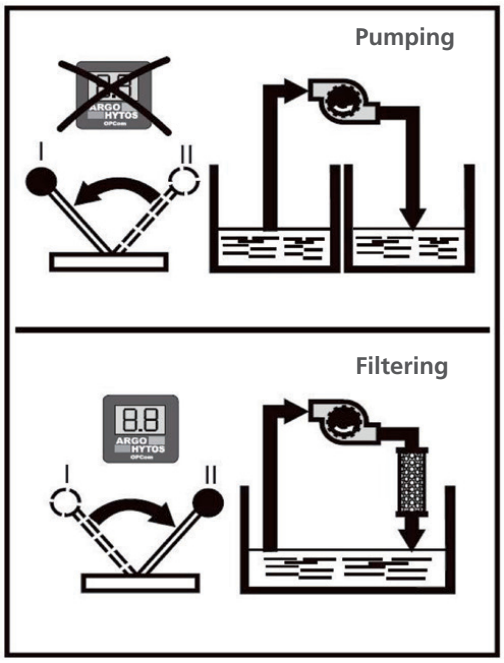
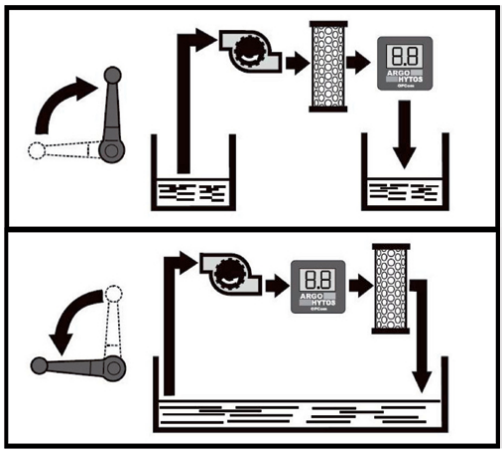


Fig. 30: Lever pumping / filtering

5. Set the three-way valve to the vertical position

Particle Counting "Filling" (AFTER filter)



Particle Counting "Cleaning" (BEFORE filter)

Fig. 31: Three-way valve

6. Switch on the motor-pump unit and let it operate for few minutes. (Initialization of the particle counter and ventilation of the system).
7. Monitor the operation.
8. After the process has been finished, switch off the motor-pump unit.
9. Move the lever to the "Pumping" position.
10. Fix the suction lance / suction pipe and the discharge pipe to the corresponding brackets on the filter unit.

DANGER

Danger to life

Risk of electric shock

› During repair work, turn off the unit and pull the mains plug.

CAUTION

Hydraulic oil spills

Environmental hazard / risk of slipping

› Before maintenance and repair work, completely drain the unit.
› In case of spills, cover the oil-covered surface immediately with an oil-binding medium.
› Then immediately dispose of the oil-binding medium according to the national environmental regulations.

Ignition hazard

Risk of electrostatic charge by poorly conducting hydraulic fluid.

› If the electrical conductivity of the hydraulic fluid is not known, please contact the manufacturer of the hydraulic fluid.

Risk of burns

Contact temperatures according to DIN EN563 (3) and DIN EN13202 (4) may be exceeded during operation.

› Allow the filter to cool down before touching it.

NOTE

Impaired function by dirt ingress into the pump.

The function of the filter unit is no longer guaranteed.

› During repair work, all parts coming in contact with the hydraulic medium, must be kept free of dirt and chips.

11.1 Maintenance overview

Except from the filter element and the suction strainer, the filter unit is maintenance-free.

Maintenance work	Maintenance interval
Checking / changing the filter element	Once the clogging indicator responds at a permissible viscosity.

11.2 Changing the filter element

1. Pump the filter element empty (see Chapter 10.2 "Filtering of liquids in the bypass flow", point 7).
2. Disconnect the off-line filter unit from the power supply and, if necessary, pull the mains plug.

CAUTION

Risk of burns

Contact temperatures according to DIN EN563 (3) and DIN EN13202 (4) may be exceeded during operation.

› Allow the filter unit to cool down before touching it.

NOTE

Compatible filter elements are listed in this manual and also in the corresponding screen of the touch display - see Chapter 9, Fig. 24.

11.3 Removing filter element

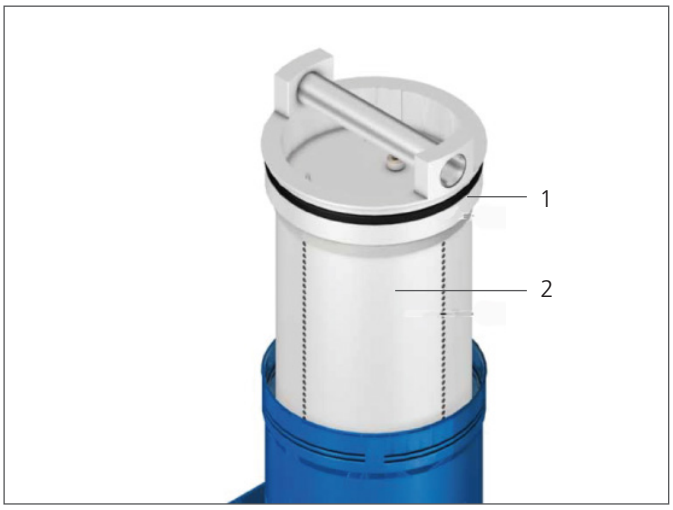


Fig. 32: Removing the filter element

1. Turn the housing cover (1) counterclockwise.
2. Carefully remove the cover (1) with the filter element (2) from the filter tube.
   (The filter element is attached to the cover.
   Let the draining oil drip off into the housing.)

11.3.1 Removing the filter element from the cover

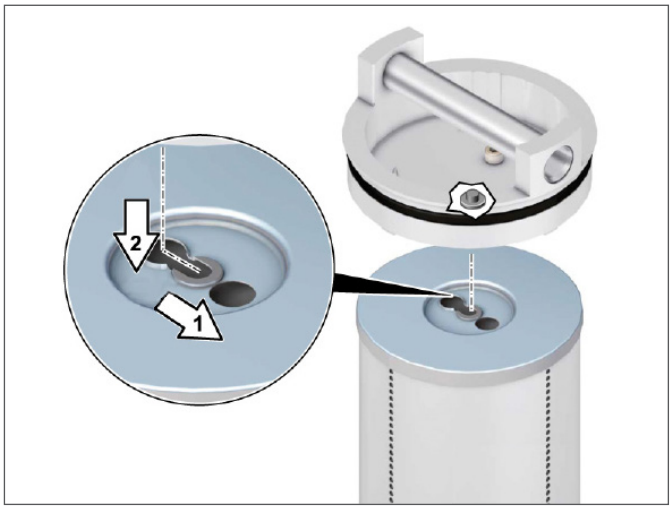


Fig. 33: Removing the filter element from the cover

1. Push the filter element at the cover in arrow direction 1 and remove it in arrow direction 2.
2. Dispose of the filter element according to the national environmental legislation
   (Waste code: Oil filter 16 01 07).

11.3.2 Attaching the filter element

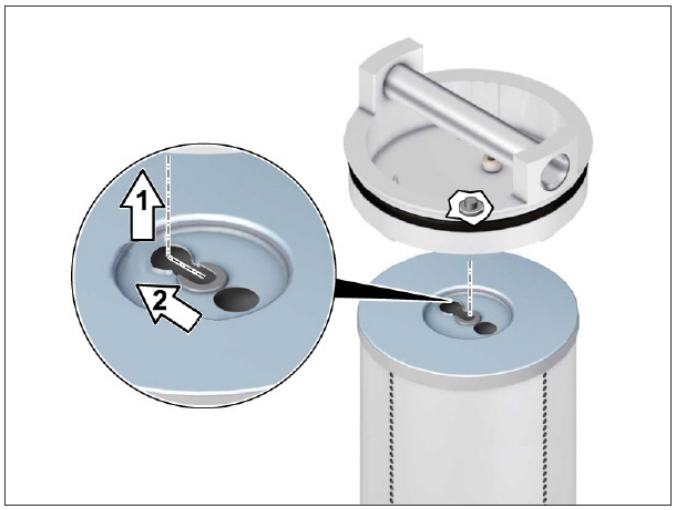


Fig. 34: Attaching the filter element

1. Check the filter element type number.
   Does the laser inscription on the filter element match with the indications on the type plate or in the operating manual?
2. Attach the filter element in arrow direction 1 and lock it in arrow direction 2.

11.3.3 Installing the filter element

Fig. 35: Installing the filter element

1. When changing the filter element, always replace the O-ring in the cover (supplied with the filter element) (O-ring Order No. N007.1175, included with replacement filter elements).
2. Carefully insert the cover (1) with the filter element (2) into the filter tube.
3. Screw in the cover manually until it stops. A gap between the cover and the filter tube may remain visible.

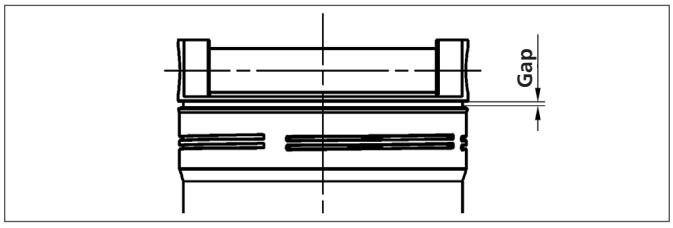


Fig. 36: Gap at the filter cover

NOTE

ARGO-HYTOS offers you a comprehensive service package for the repair of the filter unit UMPC 045.

› Repairs to the filter unit UMPC 045 may only be carried out by the manufacturer or his authorized dealers and branches. No warranty is given for self-made repairs.

11.4 Checking / changing the suction filter element (pump protection filter)

11.4.1 Removing the suction filter

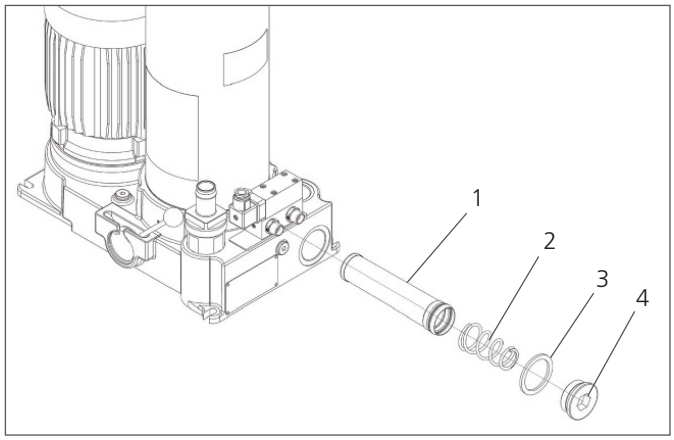


Fig. 37: Removing the suction filter

1. Provide a drip tray for residual oil and the contaminated filter element.
2. Open the locking screw (4) with an Allen key AF 22.
3. Remove the contaminated element (1) with the spring (2) by pulling it slightly out of the housing.
4. Dispose of the suction filter element in an environmentally friendly manner (Waste code: Oil filter 16 01 07).

11.4.2 Installing the suction filter

1. Always replace the sealing ring (3) after each change of the suction filter element.
2. Carefully insert the suction filter element (1) with the spring (2) into the pump block.
3. Screw in the locking screw (4) and tighten it with a torque of 25 ± 2.5 Nm.
4. Check the locking screw for tightness after commissioning and tighten it if necessary.

NOTE

When the filter element is changed, oil accidentally spilled onto components of the filter and pumping unit can create the appearance of a leak.

› As far as possible - remove any residual oil from the device!

11.5 Checking / cleaning OPCom protective filters

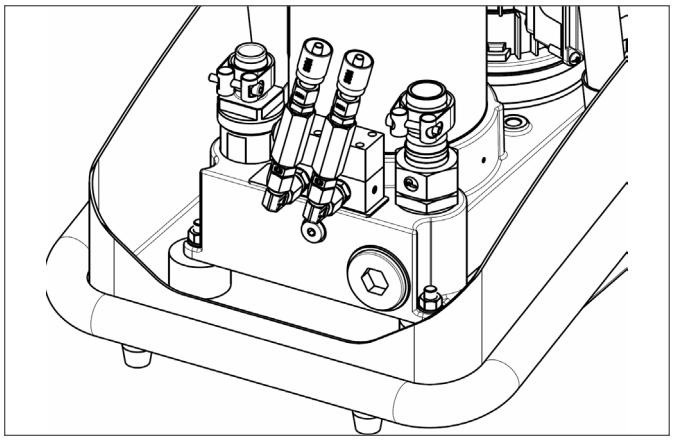


Fig. 38: Removing screen filters

1. Provide a drip tray for residual oil and the contaminated filter element.
2. Unscrew both filters (1), (2)
3. Clean filters using cleaning agent and compressed air. If necessary install new filters (order no. 15077600)
4. Install filter to the system

12.Decommissioning

The filter unit UMPC2 045 is a component which does not have to be taken out of service.
Therefore, the chapter in this manual does not contain any information.

13. Disassembly

This chapter does not contain any information for your device.

14.1 Environmental protection

Careless disposal of the filter unit UMPC2 045 and the pressurized fluid can lead to environmental pollution.
Therefore, dispose of the filter unit and the pressure fluid according to the national regulations of your country.
Dispose of pressure fluid residues according to the relevant safety data sheets for these pressure fluids.

15. Extension and conversion

Do not modify the UMPC2 045 filter unit.

NOTE	
	The warranty of ARGO-HYTOS applies to the delivered configuration and extensions, which were taken into account during configuration. The warranty expires after a conversion or extension that goes beyond the conversions or extensions described here.

Unauthorized conversions or extensions, which are not described in this chapter, make the CE marking invalid.

16.1 Basic procedure

- You should also be systematic and targeted under time pressure.
  Random, unsupervised dismantling and adjustment of setting values can lead to the fact, that the original cause of the fault cannot be detected anymore.
- Get an overview on the function of the unit in connection with the overall system.
- Try to find out whether the product has provided the required function in the overall system before the error occurred.
- Try to record changes to the overall system in which the unit is installed:
- Have the operating conditions or the area of application of the unit been changed?
- Have modifications (e.g. conversions) or repairs been carried out at the overall system (device / unit, electrics, control) or at the product? If so, which modifications?
- Has the product or the device been operated correctly?
- How does the fault tend to show?
- Get a clear impression about the cause of trouble. Possibly consult the direct operator.

If you cannot correct the error, please contact one of the contact addresses listed under www.argo-hytos.com.

Error	Reason	Measure
E-motor can not be switched on during commissioning	› E-cable or plug defective	› Have the cables disconnected by qualified personnel
	› Missing mains voltage	› Establish power supply / activate electrical fuse
	› Motor defective	› Replace motor (repair at manufacturer)
	› Pump defective	› Replace pump (repair at manufacturer)
	› Frequency inverter defective	› Replace inverter (repair at manufacturer)
	› Too high viscosity (medium)	› Heat medium, decrease the flow setting
E-motor switches off during operation	› Filter element contaminated	› Replace filter element
	› Suction strainer contaminated	› Replace the suction strainer
	› Viscosity too high	› Heat medium or decrease the flow setting
	› Suction height too great	› Adjust suction height
	› Leakage on the suction side	› Replace the suction hose or seal the connection points (retighten them)
	› Wear of the pump	› Replace pump (repair at manufacturer)
Too loud operating noise	› Filter element contaminated	› Replace filter element
	› Suction strainer contaminated	› Replace the suction strainer
	› Viscosity too high	› Heat medium or decrease the flow setting
	› Suction height too great	› Adjust suction height
	› Leakage on the suction side	› Replace the suction hose or seal the connection points (retighten them)
	› Filter unit is mounted on a vibration-sensitive base (sheet metal)	› Improve your local conditions
Pump does not suck	› Leakage on the suction side	› Replace the suction hose or seal the connection points (retighten them)
	› Sealing plug of the screen element is leaking	› Check / replace sealing ring, check tightening torque
	› Unit is pumped empty (when refilling)	› Prime the unit (0.5 l to 3 l)
Cleanliness classes displayed on the screen do not change during cleaning	› Max. dirt capacity of the filter element is reached	› Replace filter element
	› Leakage at the suction hose, falsification of the measurement results by free air in the oil (air bubbles)	› Check the suction connection, if necessary, tighten the hose clips / check the oil for foaming or air bubbles and eliminate the cause. If the cause cannot be eliminated, take the oil sample and have it evaluated in the laboratory. Vent the filter unit
	› Rotary valve on lever position "Pumping"	› No particle counting is possible with the lever position "Pumping"
Cleanliness classes displayed on the screen become poorer during cleaning	› Max. dirt capacity of the filter element is reached	› Replace filter element
	› Leakage at the suction hose, falsification of the measurement results by free air in the oil (air bubbles)	› Check the suction connection, if necessary, tighten the hose clips / check the oil for foaming or air bubbles and eliminate the cause. If the cause cannot be eliminated, take the oil sample and have it evaluated in the laboratory. Vent the filter unit
	› Rotary valve on lever position "Pumping"	› No particle counting is possible with the lever position "Pumping"
Displayed cleanliness classes are not plausible	› Viscosity range below or exceeded. Particle counter is supplied with too little or too much oil	› Adjust the fluid temperature (also see operating conditions)
	› Rotary valve on lever position "Pumping"	› No particle counting is possible with the lever position "Pumping"
After cleaning for high cleanliness classes no further improvement (e.g. order number 10 at 4, 6 and 14 µm).	› Set measuring time is too short	› Observe the defined limit values for oils with cleanliness classes according to ISO 4406. Upper limit value: 24 (for 4, 6 and 14 µm) Lower limit value: 10 (for 4, 6 and 14 µm)

Table 7: Error description

17.1 Dimension drawing

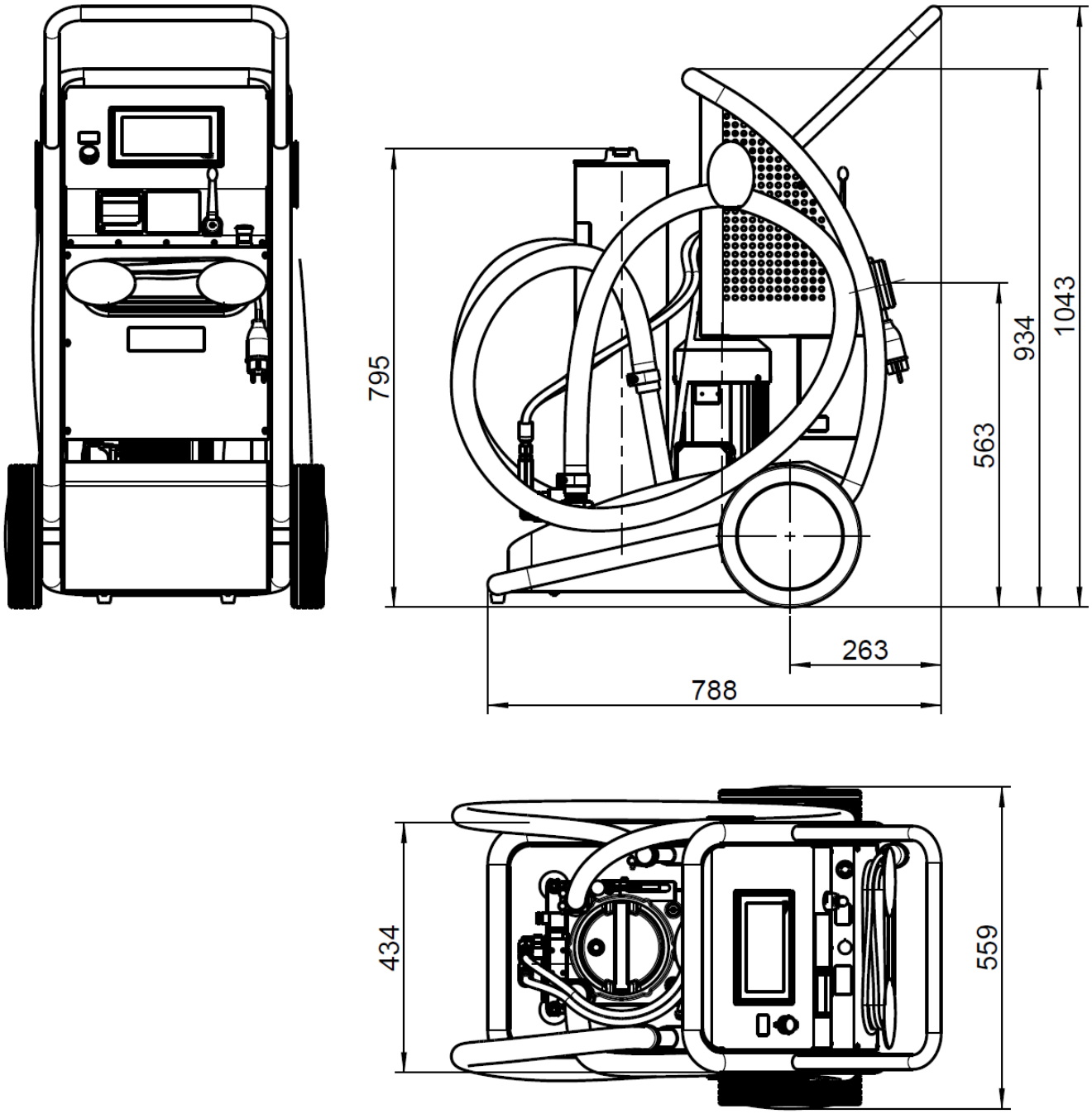


Fig. 39: Dimension drawing

17.2 Technical data

Nominal flow	l/min l/min	45 for versions with fixed flow 20-70 for versions with variable flow
Pressure relief valve	bar	6 ± 0.5
Pressure holding valve	bar	2.5 ± 0.5
Max. operating pressure	bar	7
Filter element		V7.1560-103 ß3(c) ≥ 200 V7.1560-03 ß5(c) ≥ 200 V7.1560-06 ß10(c) ≥ 200 Y7.1560-07 ß7(c) ≥ 200 (removing free water and solid particles)
Clogging indicator		Electrical clogging indicator DG 042 p = 2.0 ± 0.3 bar
Suction side		Connection G ¼" with hose DN 32 and suction lance (when replacing the suction hose only use a spiral hose)
Pressure side		Connection G1"with hose DN 25 and pressure lance
Suction strainer		S9.0417-13 screen element 280 µm
Electric drive		1-Phase alternating current motor 230 V; 50 Hz; 1.1 kW; n = 1,500 min^{-1}; BG 90 3-Phase AC motor 400 / 460 V; 50 / 60 Hz; 1.1 kW; n = 1,500 / 1,800 min^{-1}; BG 90
Weight	kg	approx. 95
Sound power level	db(A) max.	max. 73 (Under operating conditions permissible for continuous operation) max. 78 (Under operating conditions permissible for short-term operation)
Dimensions	l x w x h	786 x 564 x 1,045

Table 8: Technical data

17.3 Operating conditions

CAUTION

Risk of burns

Contact temperatures according to DIN EN563 (3) and DIN EN13202 (4) may be exceeded during operation.

› Allow the filter unit to cool down before touching it.

NOTE

Variable viscose behavior

› Viscosities of a medium are always temperature-dependent.

Viscosity range, continuous operation	mm²/s (flow 20 l/min / 5.3 gpm) mm²/s (flow 45 l/min / 11.9 gpm) mm²/s (flow 70 l/min / 18.5 gpm)	15 - 1100 15 - 600 15 - 400 (An exact determination of the cleanliness class is possible in a viscosity range of 15 mm²/s to 250 mm²/s.)
Permissible temperature range	Hydraulic fluid °C Surroundings °C	10 ... 65 0 ... 50
Permissible suction heights	m (max.) first use m (max.) operating condition	2 6
Media resistance		Hydraulic fluids based on mineral oil, rapeseed oils and synthetic esters.
Mains fuses		230 V, 50 Hz, 16 A 400/460 V, 50/60 Hz, 16 A
Working position		standing

Table 9: Operating conditions

17.4 Hydraulic circuit diagram

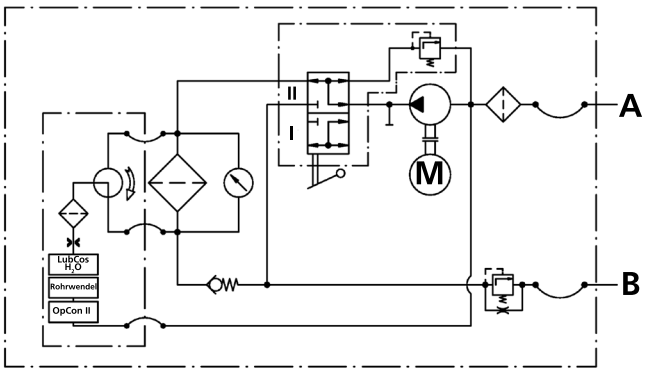


Fig. 40: Hydraulic diagram UMPC2 with fixed flow

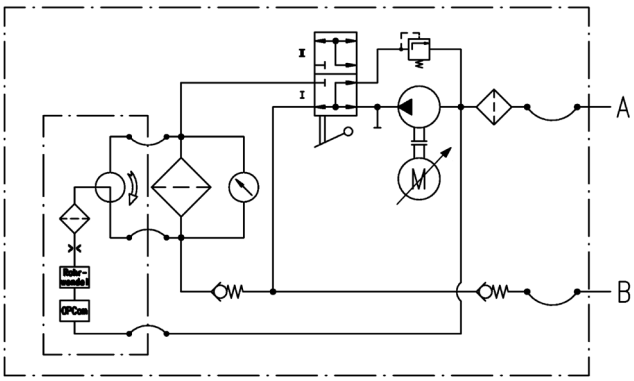


Fig. 41: Hydraulic diagram UMPC2 with variable flow

18.1 Declaration of conformity

EC Declaration of Conformity

We, the company,

ARGO-HYTOS Polska sp. z o.o.
Władysława Grabskiego 27
32-640 Zator, Poland,

declare on our sole responsibility that the products in the model series

Mobile filter unit UMPC2 045

to which this declaration pertains are in conformity with the following directives:

Directive 2006/42/EC (Machinery Directive)
Directive 2014/30/UE (EMC Directive)

Conformity with the directives is assured through compliance with the following standards:
EN 809:1998+A1:2009/AC:2010
Pumps and pump units for liquids -Common safety requirements

EN 60204-1:2018
Safety of machinery -- Electrical equipment of machines -- Part 1: General requirements

Zator, 12.11.2021

Arkadiusz Noworyta
AHPL Generaldirektor

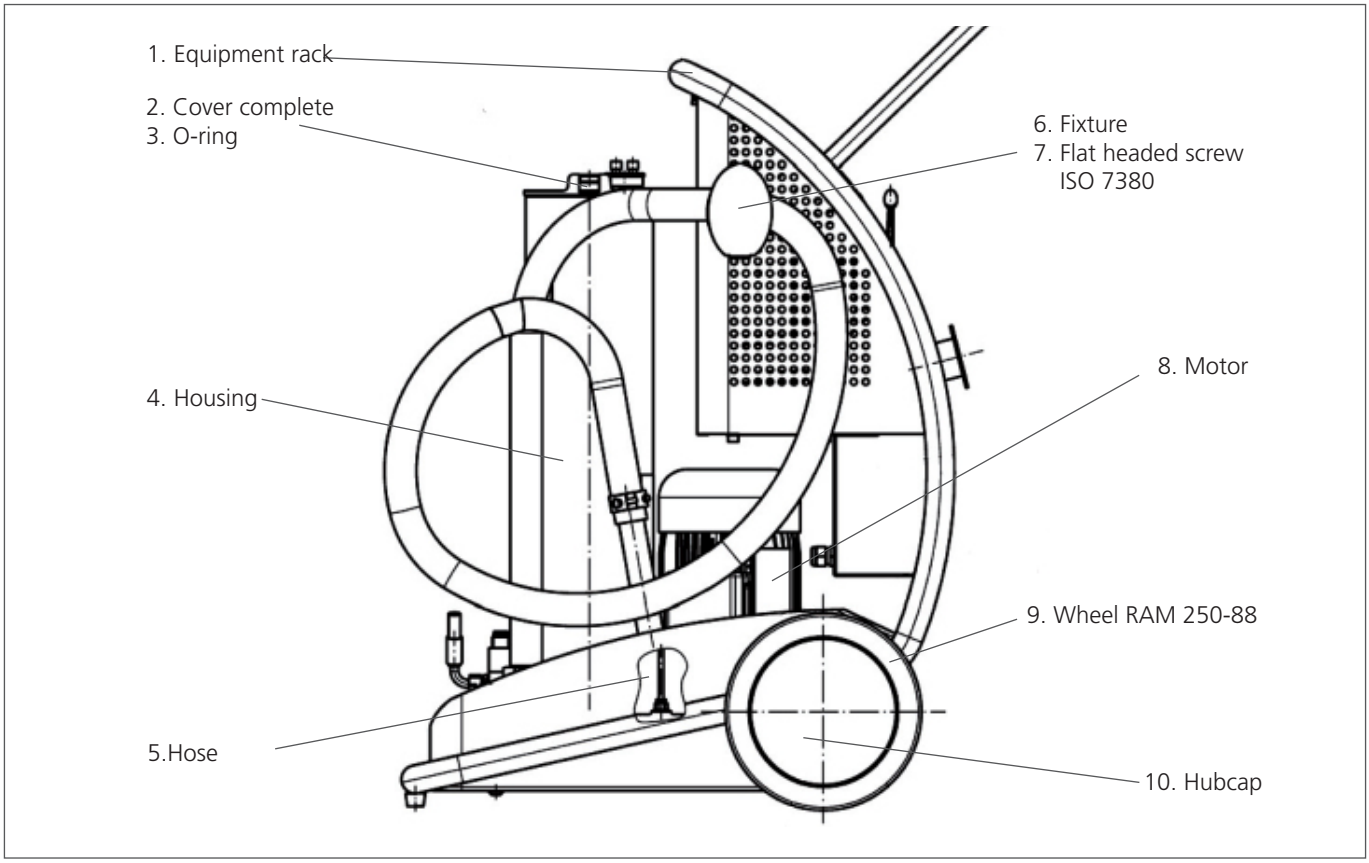


Fig. 42: Spare parts drawing 1

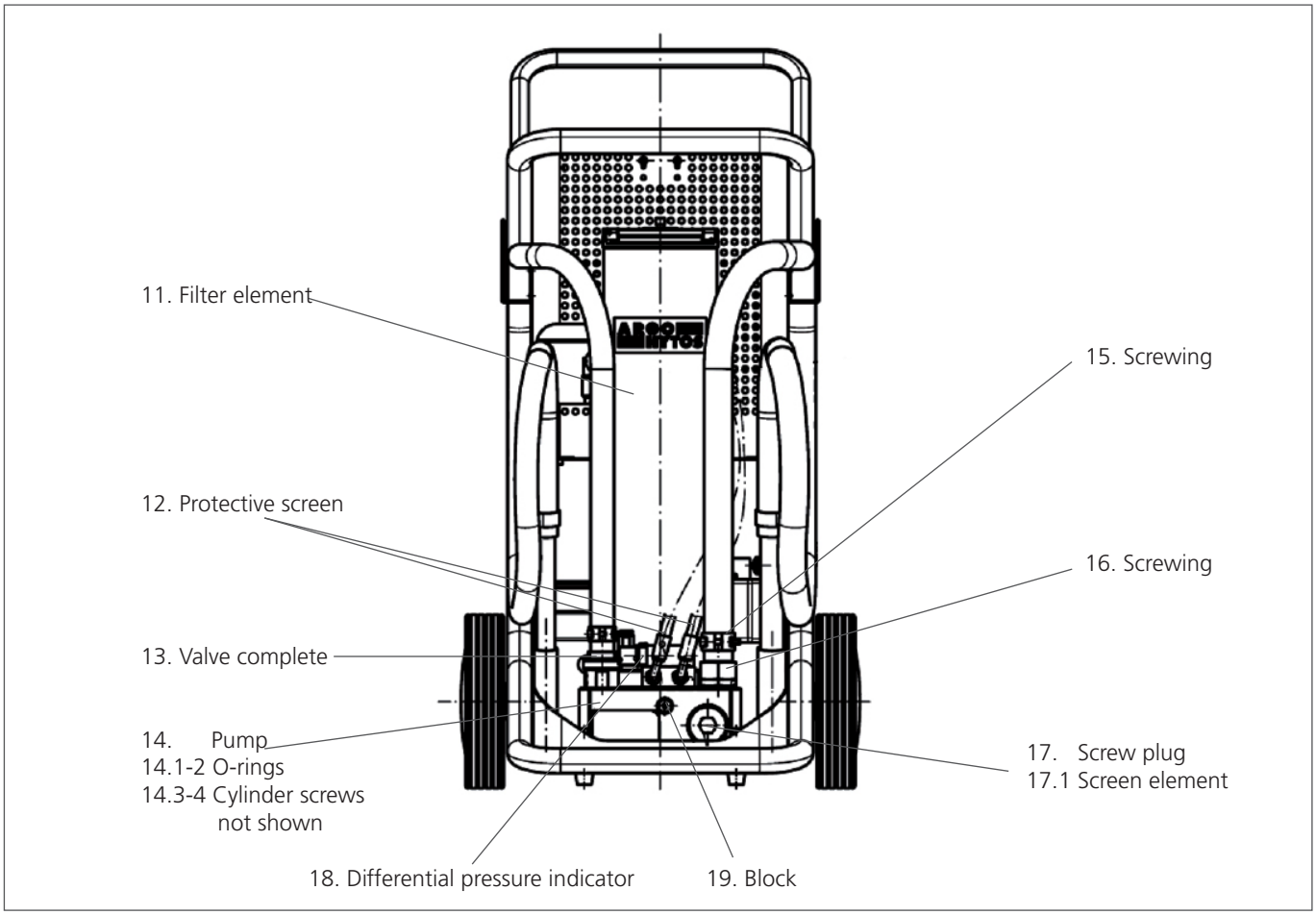


Fig. 43: Spare parts drawing 2

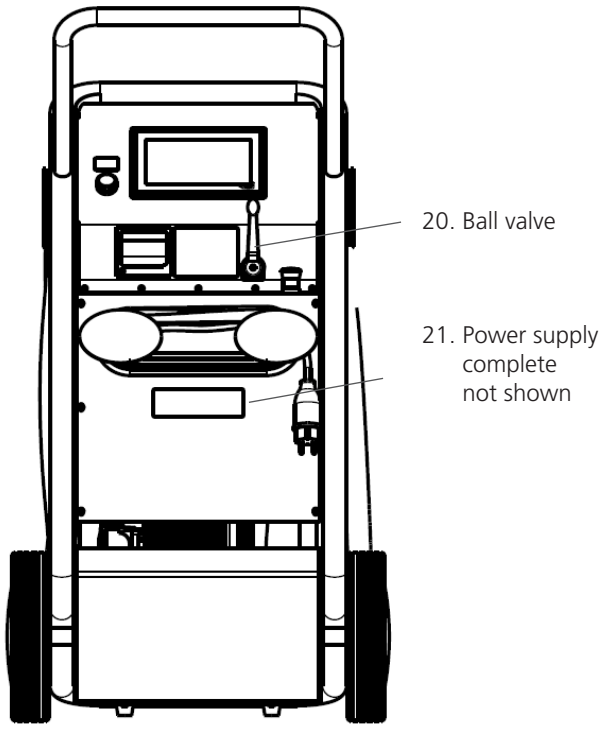


Fig. 44: Spare parts drawing 3

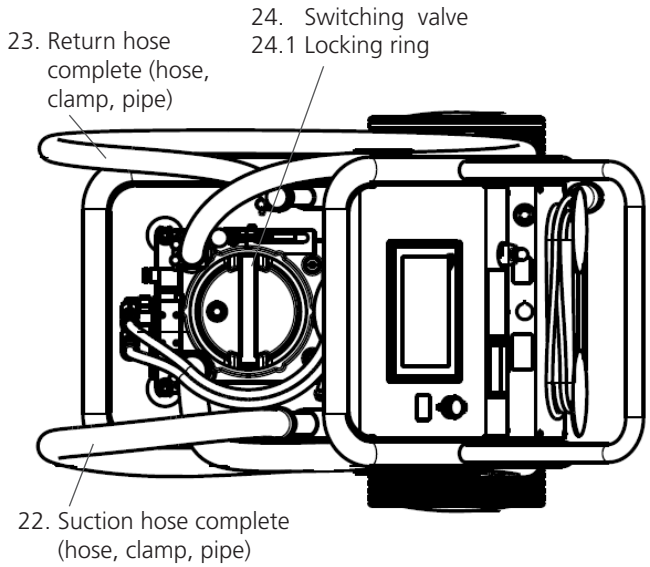


Fig.45: Spare parts drawing 4

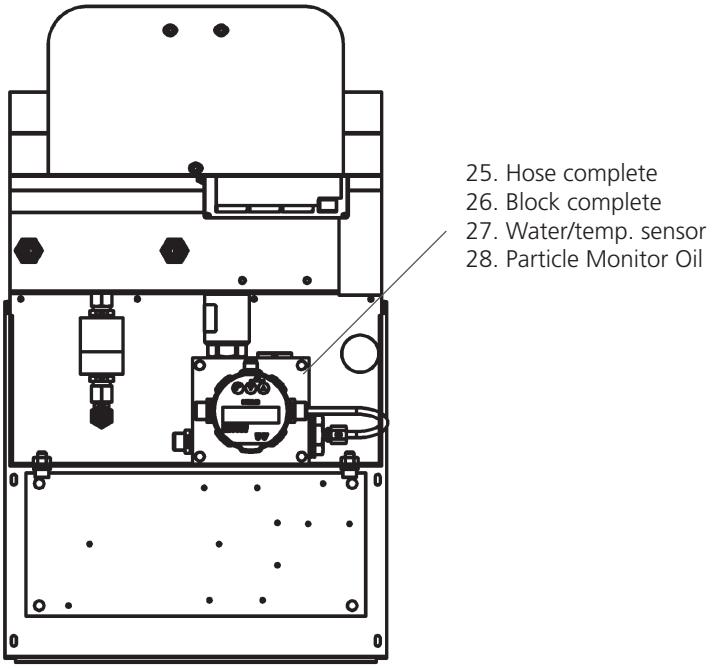


Fig. 46: Spare parts drawing 5

Nr.	Designation	Pieces	Order No.	Comment
1	Equipment rack	1	UMPC2 0001	
2	Cover complete	1	UMPC2 0009	
3	O-ring	1	N007.1455	NBR
4	Housing	1	FNA 045.0103	
5	Hose	2	17505401	
6	Fixture	2	UM 045.0758	
7	Flat headed screw ISO 7380	4	13674300	
8	Motor	1	33592200 42437900	1x230 VAC 3x400 VAC
9	Wheel RAM 250-88	2	UM 045.0710	
10	Hubcap	2	UM 045.0711	
10	Hose	1	17422700	
11	Filter element	1	V7.1560-103	3 µm (c)
12	Protective screen	2	15077600	
13	Valve complete	1	17711200	
14	Pump	1	FNA 045.1900	incl. Pos. 14.1 + 14.2
14.1	O-ring	1	N007.1123	NBR
14.2	O-ring	1	N007.1023-1	FKM
14.3	Cylinder screw ISO 4762	4	13356000	M8x50, not shown
14.4	Cylinder screw ISO 4762	4	13532100	M8x70, not shown
15	Fitting	1	29253700	GE35LREDOMDCF
16	Hose fitting	1	17256800	DKOL 35L 31
17	Screw plug	1	27135100	
17.1	Screen element	1	S9.0417-13	
18	Differential pressure indicator	1	DG 041-44	
19	Block	1	15140501	
20	Ball valve	1	FA 016.0725	
21	Power supply complete	1	31168900	
22	Suction hose	1	UM 045.0751 o. Z.	
23	Return hose	1	UM 045.0750 o. Z.	
24	Switching valve	1	17008401	
25	Hose complete	1	31982900	
26	Block complete	1	33564300.	
27	Water / temperature sensor	1	SCSO 100-1010.	
28	Particle Monitor	1	OPCom II SPCO 300-1000	

Table 10: Spare parts list

ARGO HYTOS
A Voith Company

International

ARGO-HYTOS worldwide

Benelux	ARGO-HYTOS B.V.	info.benelux@argo-hytos.com
Brazil	ARGO-HYTOS Fluid Power Systems Ltda.	info.br@argo-hytos.com
China	ARGO-HYTOS Fluid Power Systems	info.cn@argo-hytos.com
Czech Republic	ARGO-HYTOS s.r.o	info.cz@argo-hytos.com
	ARGO-HYTOS Protech s.r.o	info.protech@argo-hytos.com
France	ARGO-HYTOS SAS	info.fr@argo-hytos.com
Germany	ARGO-HYTOS GMBH	info.de@argo-hytos.com
Great Britain	ARGO-HYTOS Ltd.	info.uk@argo-hytos.com
Hong Kong	ARGO-HYTOS Hong Kong Ltd.	info.hk@argo-hytos.com
India	ARGO-HYTOS PVT. LTD.	info.in@argo-hytos.com
Italy	ARGO-HYTOS S.r.l.	info.it@argo-hytos.com
Poland	ARGO-HYTOS Polska spz o.o.	info.pl@argo-hytos.com
Russia	ARGO-HYTOS LLC	info.ru@argo-hytos.com
Sweden	ARGO-HYTOS Nordic AB	info.se@argo-hytos.com
Turkey	ARGO-HYTOS Hidrolik Ekip. San. ve Tic. Ltd. Şti.	info.tr@argo-hytos.com
USA	ARGO-HYTOS Inc.	info.us@argo-hytos.com