



User Manual

Kinematic 200LM

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1 Manual Disclaimer

This Manual and its instructions and information do not purport to cover all details or variations of the device and do not claim to provide for every possible contingency met in connection with handling, installation, operation, or maintenance. Sumitomo Drive Technologies does not make any representations, warranties or guarantees, express or implied, as to the accuracy or completeness of the Manual. Users must be aware that updates and amendments will be made from time to time to the Manual. It is the user's responsibility to determine whether there have been any such updates or amendments. Neither Sumitomo Drive Technologies nor any of its directors, officers, employees or agents shall be liable in contract, tort or in any other manner whatsoever to any person for any loss, damage, injury, liability, cost or expense of any nature, including without limitation incidental, special, direct or consequential damages arising out of or in connection with the use of the Manual. The user and/or purchaser bears all risks. Should further information be desired or should particular problems arise which are not covered sufficiently for the users' and/or purchaser's purposes, the matter should be referred to in writing to Sumitomo Drive Technologies.



Warning: Read and understand all instructions and information prior to any handling including maintenance, installing or starting the device. Failure to follow instructions could lead to damage, serious injury, or death.

- Only qualified and trained personnel should be involved with the storage (including transport), commissioning, operation, installation (including removal), inspection, maintenance and repairs of this device.
- Make sure all your personnel and operators of this device have been professionally and adequately trained for safe working practices.
- Operators must wear adequate personal protective equipment.
- Ensure all international, EU, national and local safety regulations and codes are followed when handling, maintaining, installing (including all related actions) the device.
- Verify the compatibility of the device with the installation it is meant for.

2 About this document

2.1 Function of the document

The document is only applicable for the "Kinematic 200", from here on in the document referred to as the device.

The document is for approved users and gives the information that is necessary to do these tasks:

- Installation
- Commissioning
- Operation
- Maintenance

2.2 Language

The original instructions of this document are in English. All other language versions are translations of the original instructions.

If there is any doubt, the English version of the document is binding.

2.3 Illustrations

It is not always possible to show the configuration of your device as in the certified drawing. The illustrations in this document show a typical setup. They are for instruction or description only.

2.4 Use of steps, lists and titles in this document


- The steps in procedures have numbers (123) if the sequence is important.
- The lists and steps with bullets (•) are used if the sequence is not important.
- The lists with letters (abc) are used if the sequence is important.



2.5 How to use this document

Procedure

1. Make sure that you know the structure and the contents of the related documents.
2. Read the safety chapter and make sure that you know all the instructions Refer to chapter *Safety* on page 22.
3. Do the steps in the procedures fully and in the correct sequence.

2.6 Warnings, cautions and notes used in the document

Symbol	Type	Description
	Warning	If you do not follow the instruction, this can cause injury.

Symbol	Type	Description
	Caution	If you do not follow the instruction, this can cause damage to the device or to property.
	Note	A note gives more data.

2.7 Related documents

Document name	Target audience
User Manual LM2 Gears CMS	Approved users

2.8 Storage of this document and the related documents

This document and the related documents are a part of the device.

- Make sure that you keep the document and the related documents in a dry and clean location.
- Make sure that the document and the related documents are available to all personnel.

2.9 Abbreviations

Abbreviation	Description
S.D.T.	Sumitomo Drive Technologies
CMS	Condition Monitoring System

2.10 Customer support

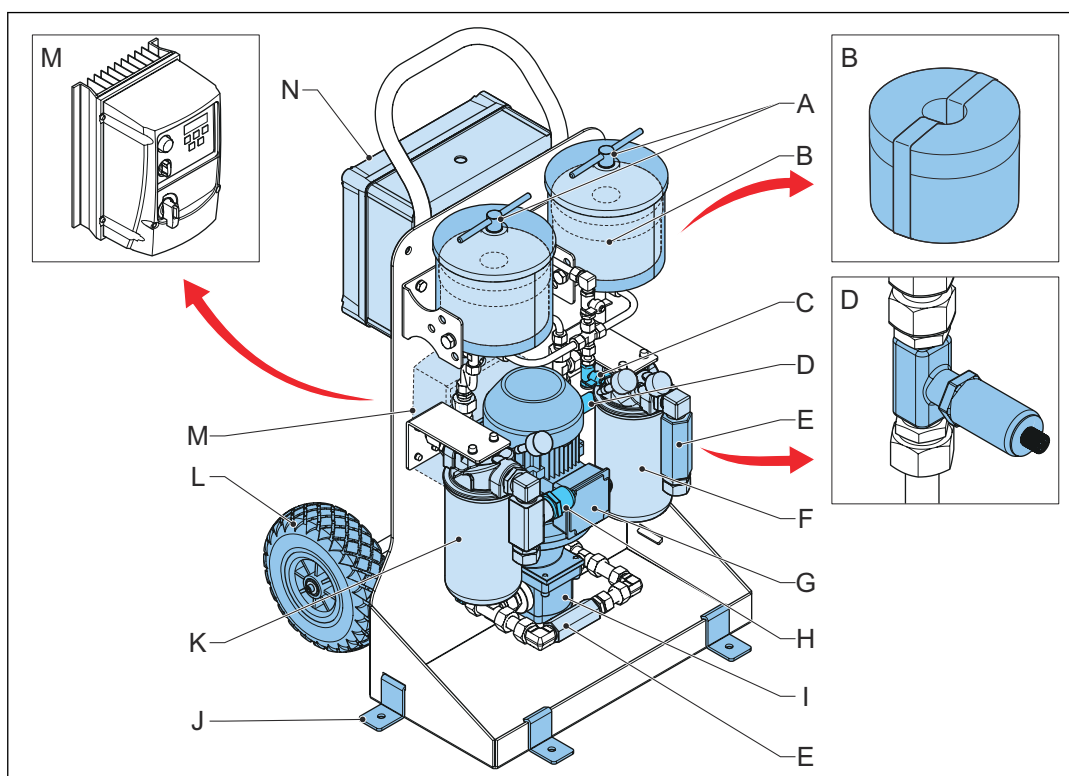
- If more information is necessary, speak to S.D.T.
- Give the serial number to S.D.T. Refer to the type plate.

3 Description

3.1 Intended use

Only use the device to move oil through a set of filters as specified in this document. Do not use the device for other applications.

3.2 Overview and function of the device

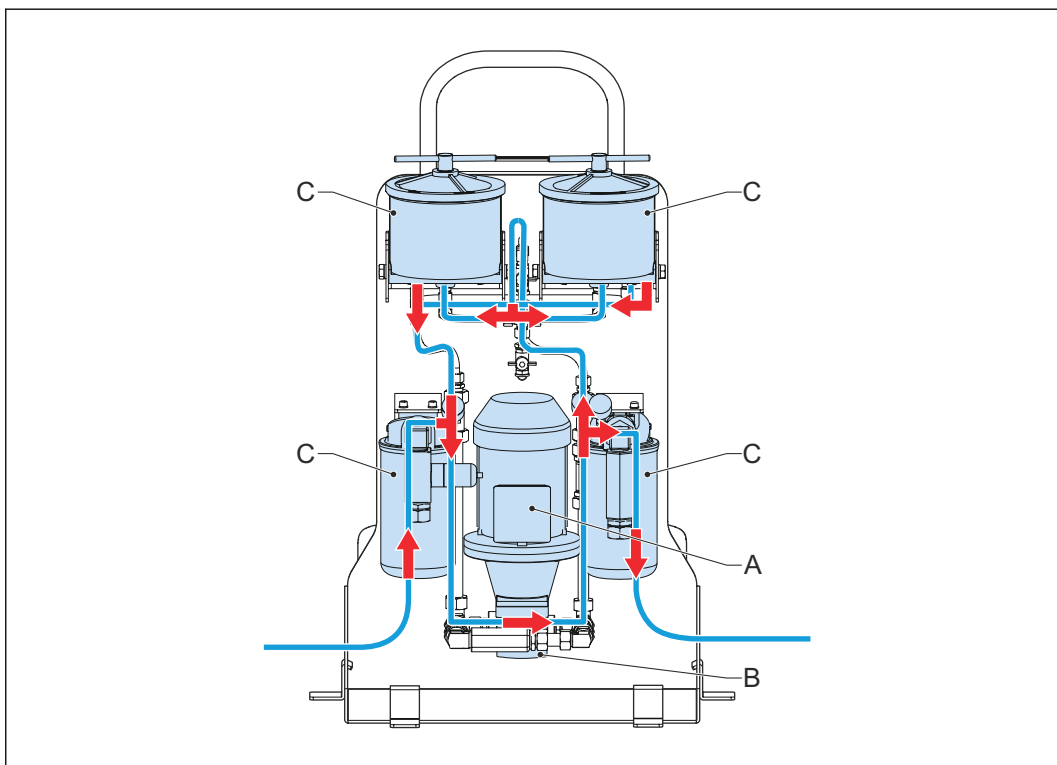


- A Housing of the depth filter (2x)
- B Depth filter (2x)
- C Drain valve
- D Water saturation - oil temperature sensor
- E Pressure relieve valve
- F Pressure filter
- G Electric motor
- H Wear-particle sensor
- I Oil pump
- J Mounting bracket
- K Suction filter
- L Wheel
- M Frequency drive

N LM2 Gears CMS

Part	Function
Housing of the depth filter	To prevent contamination of the depth filters.
Depth filter	To clean the oil. Refer to section Depth filter on page 12.
Drain valve	To drain the oil from the device.
Water saturation - oil temperature sensor	Refer to the user manual of the LM2 Gears CMS.
Pressure relieve valve	To release the pressure.
Pressure filter	To clean the oil. Refer to section Pressure filter on page 12.
Electric motor	To operate the oil pump.
Wear-particle sensor	Refer to the user manual of the LM2 Gears CMS.
Oil pump	To move the oil through the device.
Mounting bracket	To install the device.
Suction filter	To clean the oil. Refer to section Suction filter on page 12.
Wheel	To move the device.
Frequency drive	Refer to section Overview of the controls on page 20.
LM2 Gears CMS	Refer to the user manual of the LM2 Gears CMS.

3.3 Working principle



The electric motor (A) supplies electrical power to the oil pump (B). The oil pump moves the oil through the filters (C) to remove contamination, particles and water.

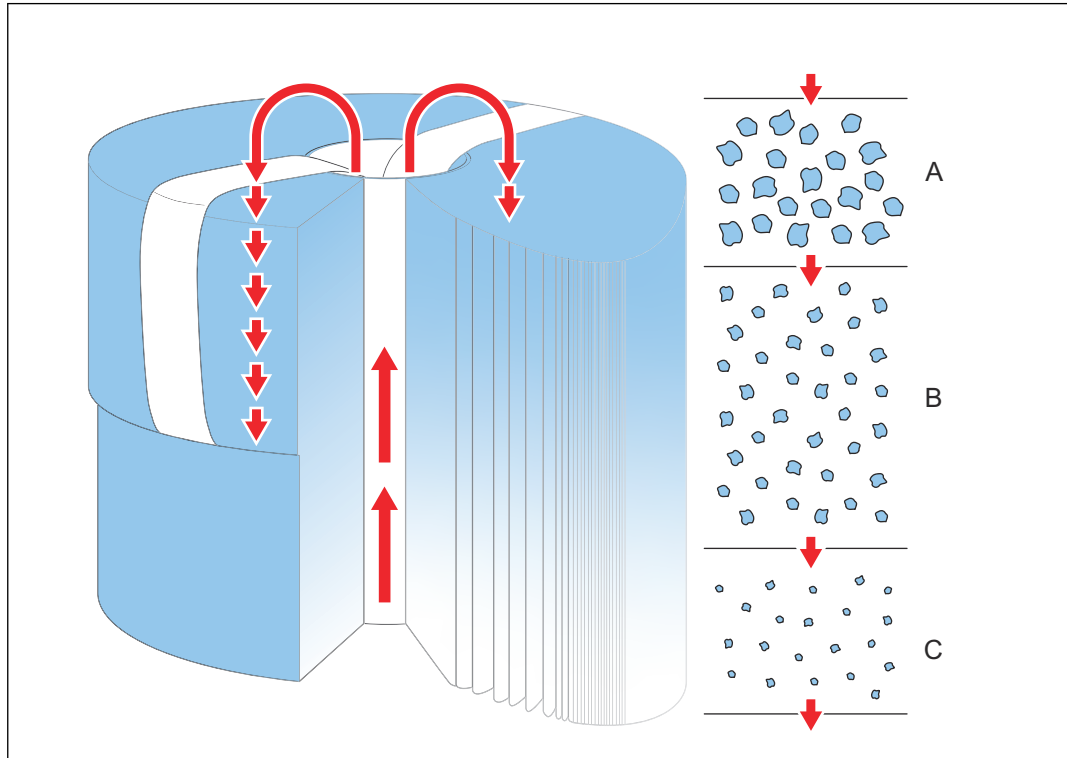


Note: When you do not use the device as a permanent filter, S.D.T. recommends that the time between the first and the second oil cleaning should not be more than 14 days.

After the second cleaning S.D.T. recommends that you use the device every two months or when an intermediate oil analysis shows contamination of the oil. For more information, get in contact with Sumitomo Drive Technologies.

3.4 Functional description of components

3.4.1 Depth filter



The depth filter removes water and varnish (sludge) from the oil.

The depth filter also removes particles from the oil:

- The top of the filter removes the biggest solid particles (A).
- The middle of the filter removes solid particles of moderate size (B).
- The bottom of the filter removes the smallest solid particles (C).

3.4.2 Suction filter

The suction filter removes the largest particles from the oil.

The suction filter has an internal bypass to prevent a failure of the pump. The oil continues to go through the pump when the suction filter is saturated.

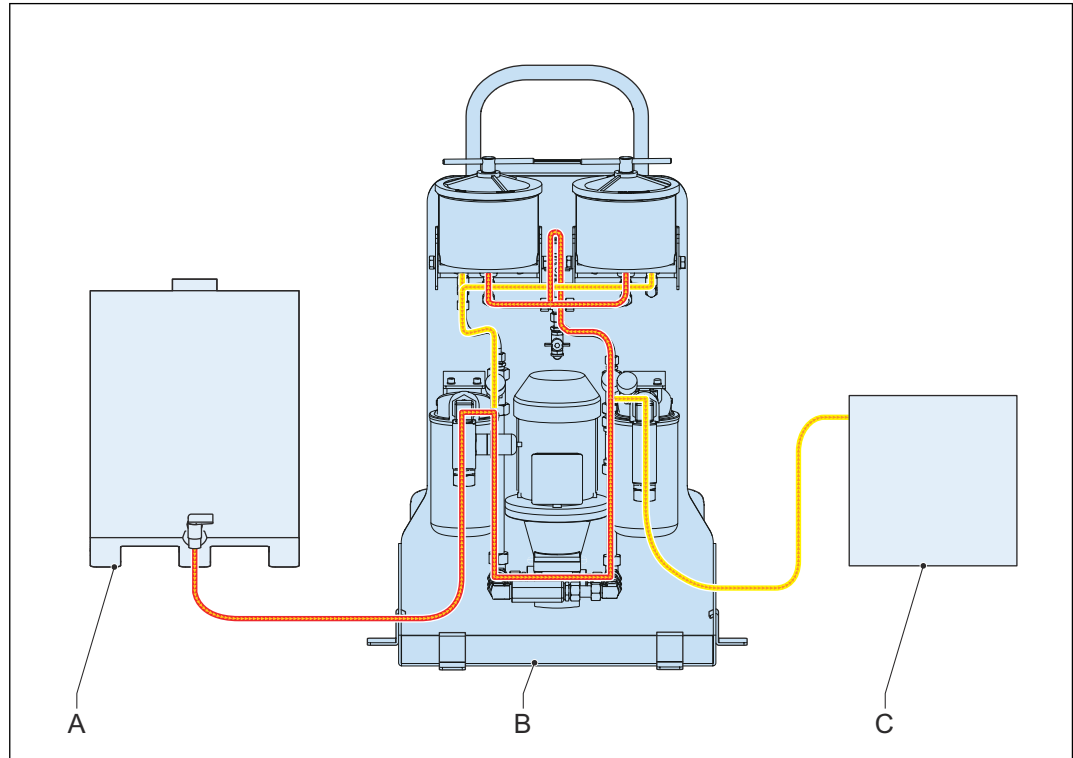
3.4.3 Pressure filter

The pressure filter removes small particles from the oil.

The pressure filter has an internal bypass to make sure that a heater or a cooler is supplied with oil when the pressure filter is saturated.

3.5 Applications

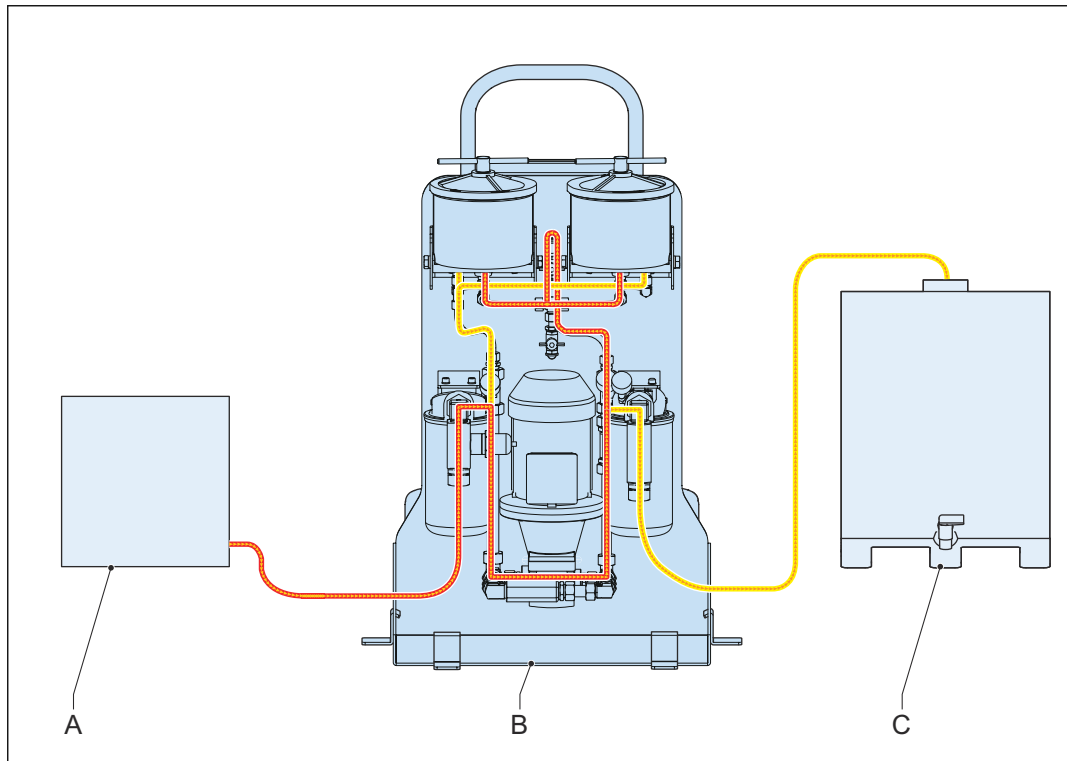
3.5.1 Filling



- A** Container
- B** Device
- C** Gear unit or hydraulic system

Oil from a container (A) goes through the device (B) to a gear unit or a hydraulic system (C).

3.5.2 Draining

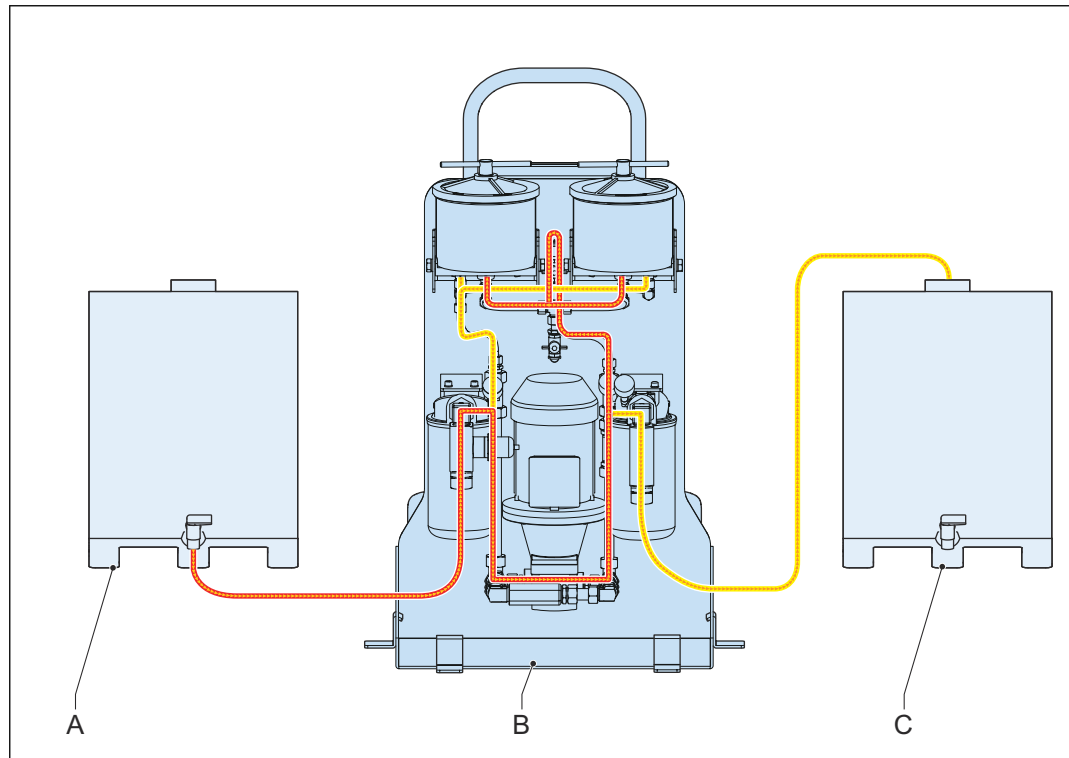


- A** Gear unit or hydraulic system
- B** Device
- C** Container

Oil from a gear unit or a hydraulic system (A) goes through the device (B) to a container (C).

The device removes oil from the gear unit or the hydraulic system. The container temporarily holds the oil.

3.5.3 Transfer



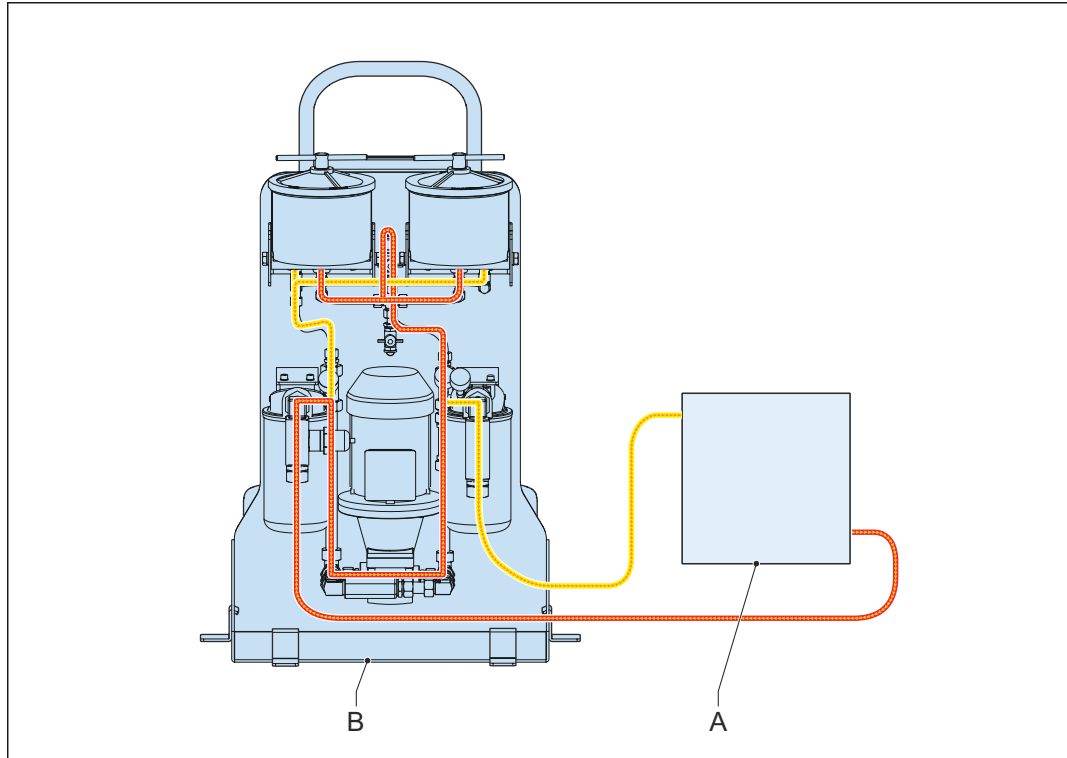
- A** Container
- B** Device
- C** Container

Oil from a container (A) goes through the device (B) to a different container (C).

Use transfer, for example:

- To move contaminated oil to a waste container.
- To move oil from one container to a different container.
- To clean contaminated oil from a container.

3.5.4 Bypass - permanent filter



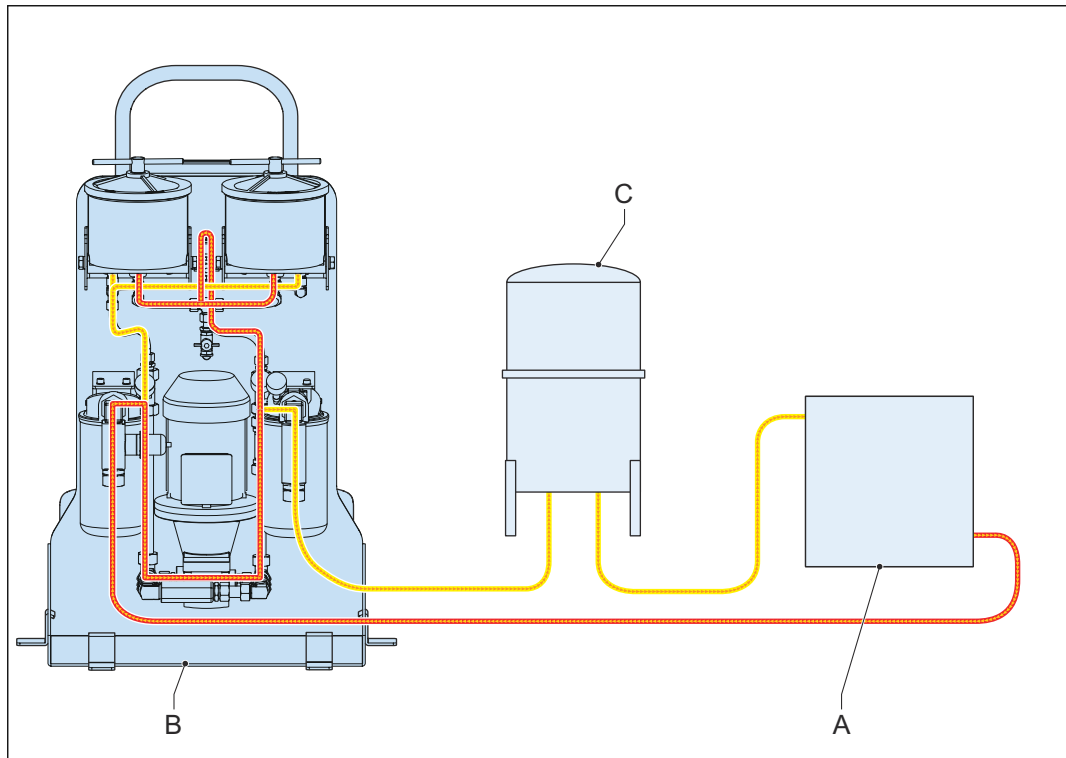
A Gear unit or hydraulic system

B Device

The device operates as a permanent filter in bypass.

Oil from a gear unit or a hydraulic system (A) goes through the device (B) and back to the gear unit or the hydraulic system.

3.5.5 Bypass - permanent filter for big or heavily contaminated systems

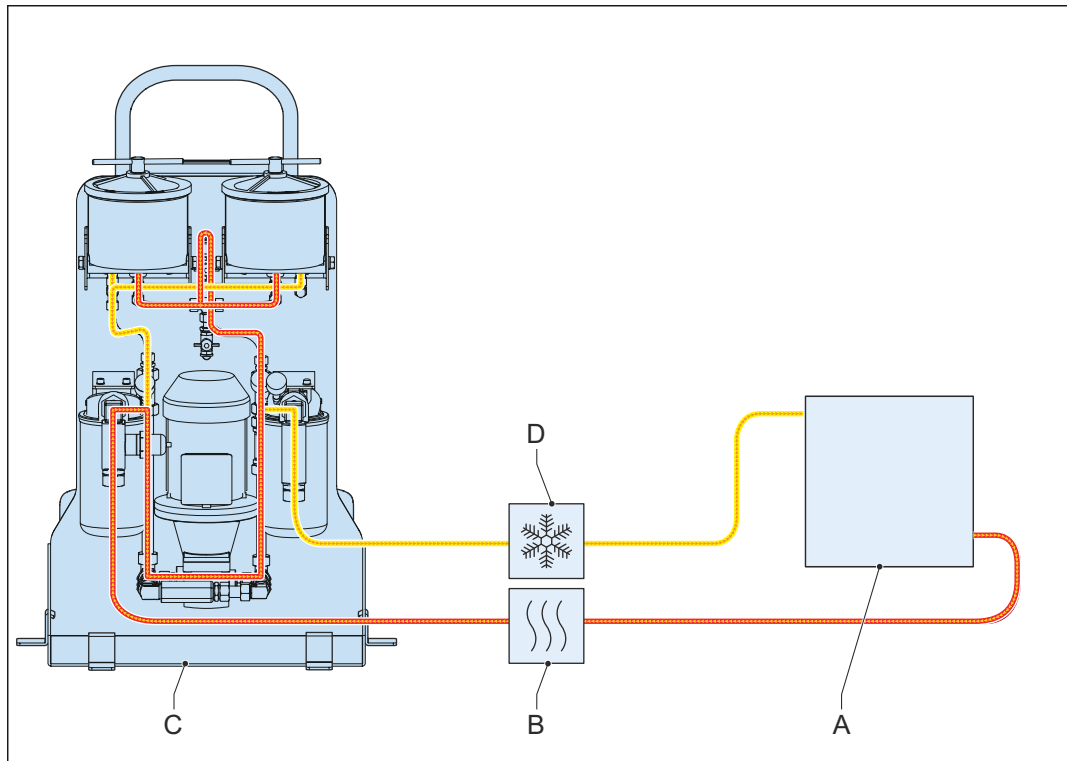


- A Gear unit or hydraulic system
- B Device
- C External filter housing with high capacity

The device operates as a bypass system. For big and heavily contaminated systems, an external high capacity filter can be added in the pressure line. The device does not control the external filter.

Oil from a gear unit or a hydraulic system (A) goes through the device (B) and the external filter (C) and back to the gear unit or the hydraulic system.

3.5.6 Bypass - cool and/or heat oil



- A Gear unit or hydraulic system
- B Heater
- C Device
- D Cooler

The device operates as a bypass system. To cool or heat the oil, external cooling or heating equipment can be added in the oil lines. The device does not control the cooling or heating equipment.

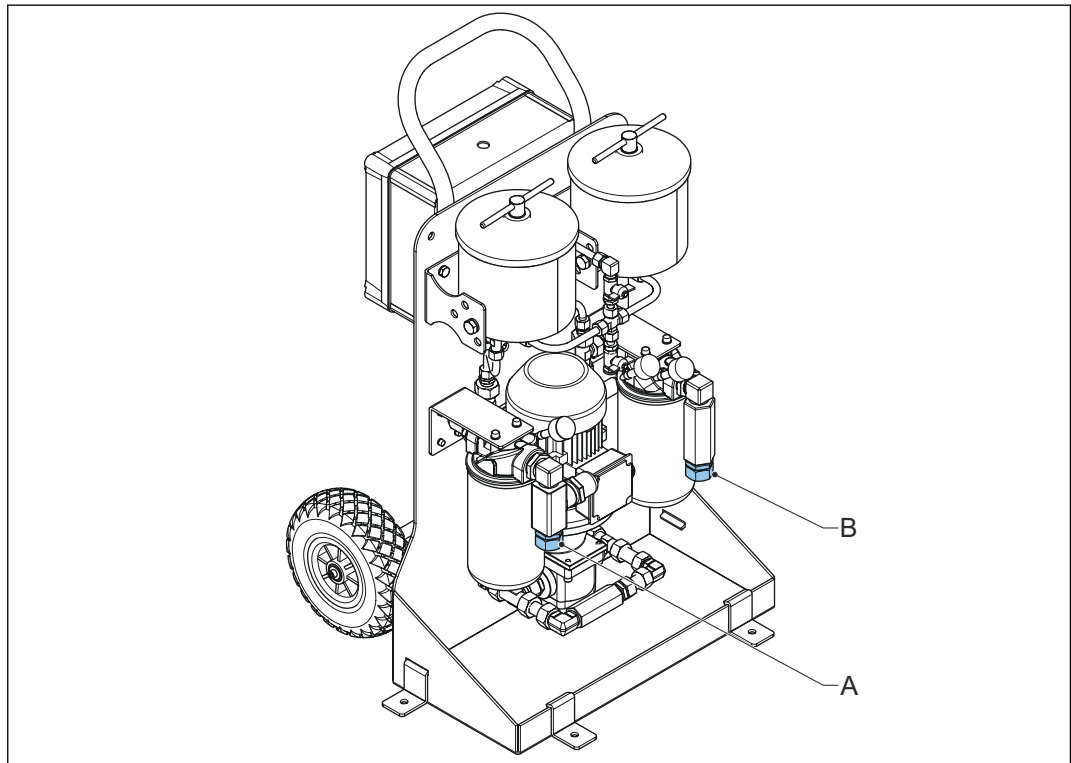
Cooler

Hot oil from a gear unit or a hydraulic system (A) goes through the cooler (D) when the oil goes back to the gear unit or the hydraulic system. The cooler decreases the temperature of the oil.

Heater

Cold oil from a gear unit or a hydraulic system (A) goes through the heater (B) when the oil goes to the device (C). The heater increases the temperature of the oil which makes it easier for the device to clean the oil.

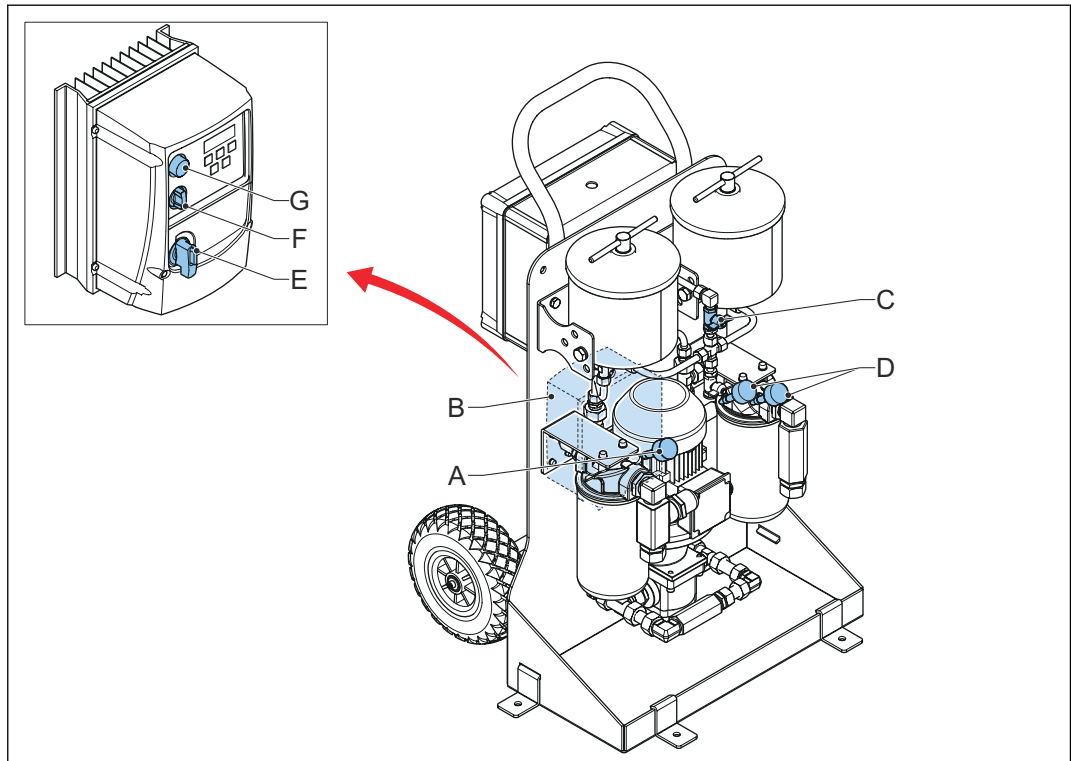
3.6 Overview of the connections



- A Oil inlet
- B Oil outlet

Connection	Function
Oil inlet	To let oil into the device from a container, a gear unit, or a hydraulic system
Oil outlet	To move oil from the device to a container, a gear unit, a hydraulic system, an external filter housing, or an air/oil cooler

3.7 Overview of the controls



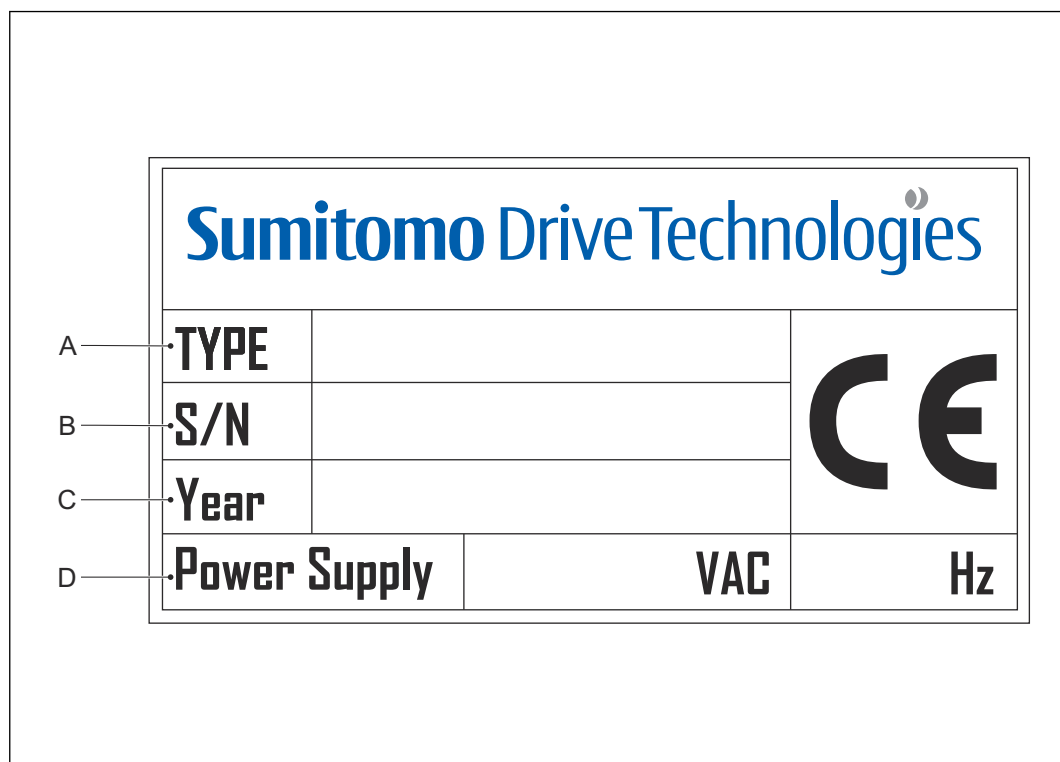
- A Manometer for the saturation of the suction filter
- B Frequency drive
- C On/off valve for the depth filters
- D Manometers for the saturation of the pressure filter
- E Main switch
- F On/off switch
- G Potentiometer

Control	Function
Manometer for the saturation of the suction filter	<p>To show the saturation of the suction filter.</p> <ul style="list-style-type: none"> • During correct operation, the indicator is in the green zone. • When the device starts, the indicator can be in the red/yellow zone for approximately 15 minutes. • When the indicator stays in the red zone, change the filter. Refer to section Change the suction filter or the pressure filter on page 40.
Frequency drive	<p>To energize or de-energize the device, to turn the device on or off, and to control the speed of the electric motor.</p>

Control	Function
On/off valve for the depth filters	To start or stop the flow of the oil to the depth filters.
Manometers for the saturation of the pressure filter	To show the saturation of the pressure filter. <ul style="list-style-type: none"> • During correct operation, the difference in pressure between the two manometers must be less than 1 bar. • When the difference in pressure is 1 bar or more, change the filter. Refer to section Change the suction filter or the pressure filter on page 40.
Main switch	To energize or de-energize the device.
On/off switch	To turn the device on or off.
Potentiometer	To control the speed of the electric motor.

3.8 Type plate

The type plate gives information about the device.



- A Device type
- B Serial number
- C Year of production
- D Device power supply

4 Safety

4.1 Restrictions



Warning: If you use the device in ways other than described in the related documents, this may result in injury, death, or property and equipment damage. Use the device only as described in the related documents.

S.D.T. cannot be held responsible for injuries or damages resulting from non-standard, unintended use of the device. The device is designed and intended only for the purpose described in the related documents.

Unintended use includes these actions:

- Making changes to the device that have not been recommended in the related documents.
- Use of parts that are not replacement parts or accessories from S.D.T.
- Use of materials or equipment that are inappropriate or incompatible with the device.
- Use of lubrication oil that is not indicated in the specifications in this document.
- Use of the device in a hazardous (explosive) environment where ATEX guidelines and other guidelines about explosion free conditions are applicable.
- Use of the device when it shows signs of damage.
- Allowing unapproved personnel to perform any task on or with the device.

4.2 Approved user

The term approved user is specified here as a person that fully knows the device and its safe operation. Approved users obey all related safety regulations and are approved to safely install, remove, operate, and do maintenance on the device.

It is the responsibility of the company that owns the system where the device and the gear unit or the hydraulic system are part of to make sure that all users of the device obey these requirements.

4.3 General safety instructions

- If a part of the device shows damage, do not use the device.
- When you do work on or with the device, obey all legislation and regulations that apply to safety and work requirements, that apply in the country and at the location where you do work on or with the device.
- Obey the safety instructions of the manufacturer of the lubrication oil. Refer to the material data sheets of the lubrication oil. Make sure that all personnel that use lubrication oil receive these safety instructions.
- De-energize the device before you do work on the device.
- When you do work on or with the device, the device must be on a stable surface.
- When you do work on or with the device, make sure that the complete area and the device are sufficiently lighted.

4.4 Safety instructions for installation

- Make sure that the personnel that lift the device are approved and obey state-of-the-art safety procedures and use state-of-the-art lifting equipment. For information on how to lift the device, refer to section [Lift the device](#) on page 26.
- Obey the European Directives 2006/42/EG and the local safety regulations and install guards and other safety equipment.
- Make sure that the motor that operates the device is de-energized. Make sure that the motor cannot be energized during the installation of the device parts.
- If safety devices are removed for installation or maintenance, make sure they are correctly installed again before you operate the device.
- Do not touch parts of the device that move.

4.5 Safety instructions for use with gear units

- Make sure that no oil can come out of the gear unit.



Note: S.D.T. recommends that you install a drain valve to make it easier to disconnect and connect the device.

- Use high-quality hoses with the correct internal diameter.



Note: S.D.T. supplies hoses with the device that obey the requirements of the gear unit or hydraulic system that you use. If you must use hoses with different specifications, speak to S.D.T.

- Obey the regulations that apply to the power connection.
- The device can be hot. If it is necessary to touch the device, wear protective clothing and safety gloves or make sure that its temperature is decreased sufficiently.

4.6 Safety instructions for use with hydraulic systems


- Before you use the device with a hydraulic system, make sure that the system is pressure-free and that no oil can come out of the system.
- Use high-quality hoses with the correct internal diameter.



Note: S.D.T. supplies hoses with the device that obey the requirements of the gear unit or hydraulic system that you use. If you must use hoses with different specifications, speak to S.D.T.

- Obey the regulations that apply to the power connection.
- The device can be hot. If it is necessary to touch the device, wear protective clothing and safety gloves or make sure that its temperature is decreased sufficiently.

4.7 Safety labels

Label	Description
	Risk of hot surface

4.8 Instructions in case of a fire



Warning: After a fire, protective clothing and respiratory equipment are mandatory to handle the device. The device can contain dangerous substances that cause injury when you touch or breathe them.

- Use a carbon dioxide extinguisher to extinguish a fire.



Warning:

- Use caution when you use a carbon dioxide extinguisher. Low temperatures of the nozzle can cause injury.
- Do not use a carbon dioxide extinguisher in small spaces. Injury or death can occur as a result of a low level of oxygen.
- In case of a large fire, call the emergency services.
- Do not start a device that has burn marks. Speak to S.D.T.

4.9 Warranty

The warranty clause of the general conditions of sale applies to devices used as per instructions contained in this document, including the related documents, and in any additional instruction leaflets supplied with the device insofar as the device operates within the service and rating conditions put forward in the order acknowledgment.

Non compliance with these instructions, injudicious choice of lubrication oil or a lack of maintenance will render warranty agreement invalid.

This warranty clause applies to all parts of the device with the exception of those parts which are subject to wear.

4.10 Disposal

- When you discard the device or the components of the device, obey the local environmental regulations.
- At the end of the service life of the device or the components of the device, try to recycle to prevent environmental pollution.



- Obey the local environmental regulations when you discard used oil. Do not put it on garden soil, wooded areas, in streams or in sewage drains.
- Remove spilled oil immediately.
- Sort metal and electrical components correctly. Make sure that these components are recycled.
- Obey the environmental regulations to discard materials that you cannot recycle.

5 Storage and transport

5.1 Storage

The storage period starts when the device is not used.

Before storage:

- Drain the oil from the device. Refer to section [Drain the oil from the device](#) on page 35.
- Change the filters.
 - To change a depth filter, refer to section [Change the depth filters](#) on page 39.
 - To change the suction filter, refer to section [Change the suction filter or the pressure filter](#) on page 40.
 - To change the pressure filter, refer to section [Change the suction filter or the pressure filter](#) on page 40.

During storage:

- The ambient conditions for storage must be correct. Refer to section [Ambient conditions during storage](#) on page 42.
- Prevent damage to and/or deformation of the device.

5.2 Off-site transport



Caution: Prevent vibration of the device. Vibration can cause damage to the components of the device.

- Move the device carefully to prevent damage to the device and its components.
- The device must be stable during transport.
- Secure the device to a surface to prevent unwanted movement of the device.

5.3 On-site transport



Warning: Let the device cool down before you lift the device. The device can be hot.



Caution:

- Remove the LM2 Gears CMS unit before you transport the device. The LM2 Gears CMS can fall from the device during transport.

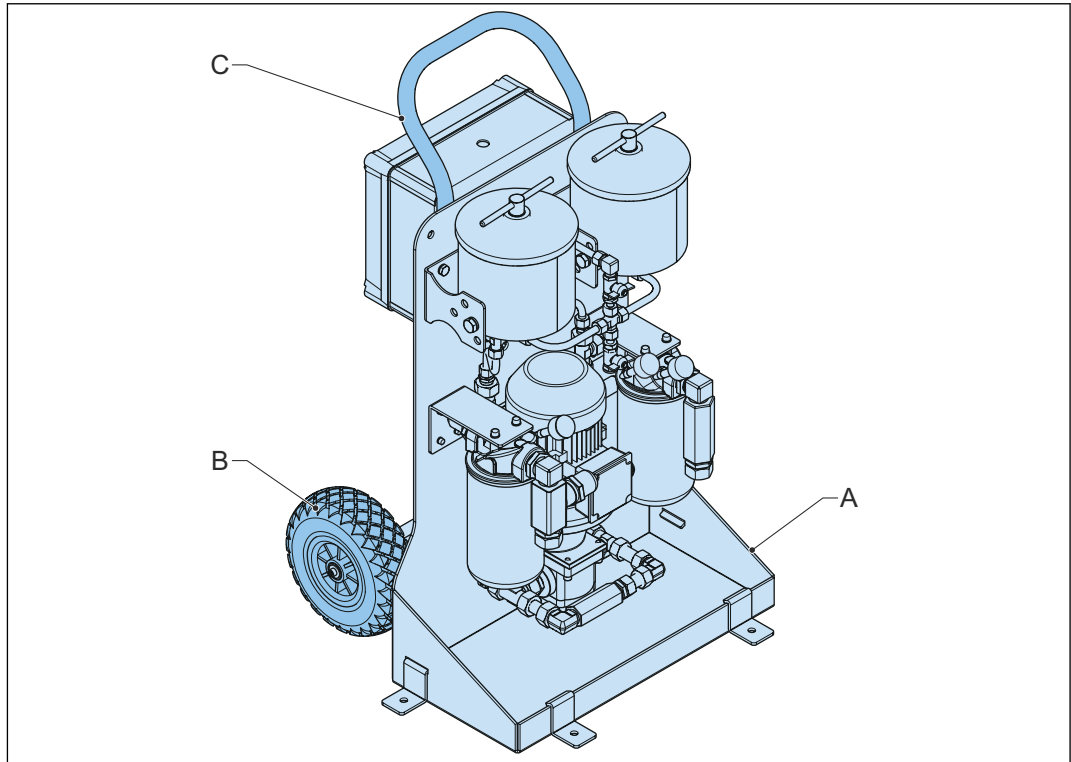


Note: The LM2 Gears CMS unit is installed with magnets.

- Only install the LM2 Gears CMS unit when the device is in its final operation position. To install the LM2 Gears CMS unit on the device, refer to the user manual of the LM2 Gears CMS.
- Only lift the device at the frame. If you lift the device at the components on the frame, damage to these components can occur.

5.3.1 On the wheels

Procedure



1. Move the device (A) on the wheels (B). Use the handle (C).

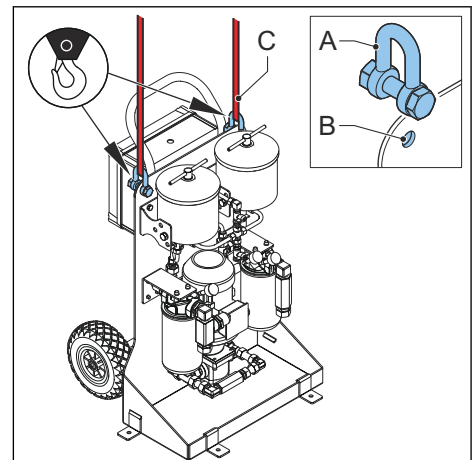
5.3.2 Lift the device



Caution: Do not attach the lifting straps to the housings of the depth filters. If you attach the lifting straps to the housings of the depth filters, damage to the device will occur.

Procedure

1. Install D-shackles (A) on the lifting points (B) of the device.
2. Attach lifting straps (C) to the D-shackles.
3. Attach the lifting straps to a crane or hoist.
4. Lift the device.



6 Installation

6.1 Installation - general instructions

- Put the device as close as possible to the gear unit or the hydraulic system.



Caution: Do not put the device above the oil level of the gear unit of the hydraulic system. This can cause under-pressure at the suction side of the pump.

- The device must be stable and easy to access.
- Use high-quality hoses that meet these requirements:
 - The hoses must be as short as possible.
 - The hoses must have the correct internal diameter.



Note: S.D.T. supplies hoses with the device that obey the requirements of the gear unit or hydraulic system that you use. If you must use hoses with different specifications, speak to S.D.T.

- Make sure that no oil can come out of the gear unit or the hydraulic system when you connect the device:
 - If the gear unit or hydraulic system has a drain valve, close the drain valve.
 - If the gear unit or hydraulic system does not have a drain valve, drain the oil from the gear unit or the hydraulic system. Do not discard the oil.
- Replace all the magnetic plugs on the gear unit or the hydraulic system with non-magnetic plugs.
- Only install the LM2 Gears CMS unit when the device is in its final operation position.

6.2 Remove the packaging material

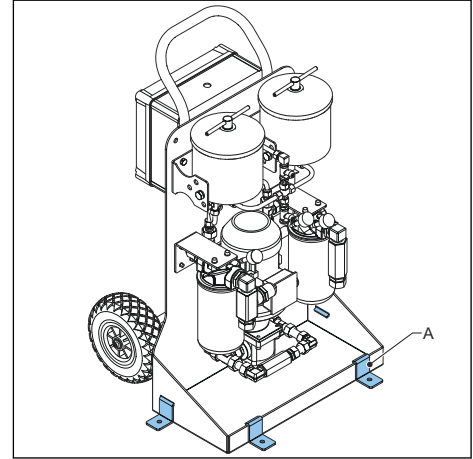
Procedure

1. Do a check for damage to the package.
2. If you see damage, speak to S.D.T. immediately.
3. Remove the packaging material.
4. Do a check for damage to the device.
5. If you see damage, speak to S.D.T. immediately.
6. Do a check if the device agrees with the shipping papers.
7. If the device does not agree with your order, speak to S.D.T. immediately.

6.3 Install the device

Procedure

1. Use the mounting brackets (A) to install the device.



6.4 Connect the device

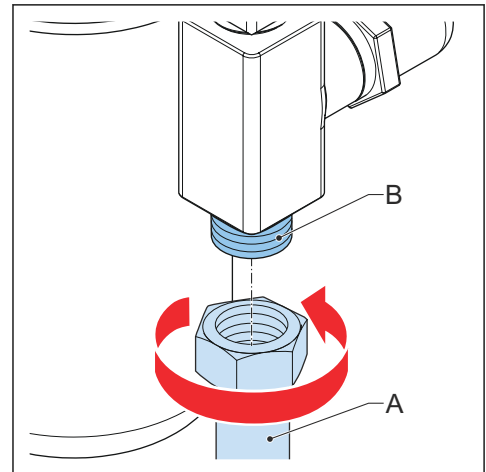


Note: Before you connect the device, refer to the general instructions in section [Use the device - general instructions](#) on page 31.

6.4.1 Connect the suction hose to the device

Procedure

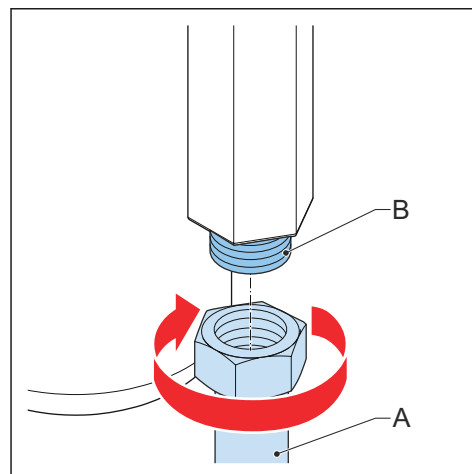
1. Connect the suction hose (A) to the oil inlet (B).
2. Connect the other side of the suction hose to the gear unit or the oil tank of the hydraulic system. Refer to section [Connect the suction hose to the gear unit or the hydraulic system](#) on page 29.



6.4.2 Connect the return hose to the device

Procedure

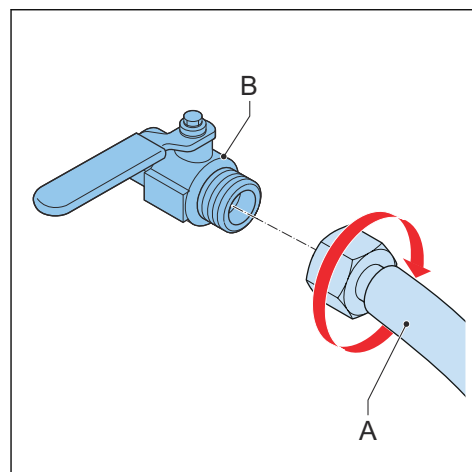
1. Connect the return hose (A) to the oil outlet (B).
2. Connect the other side of the return hose to the gear unit or the hydraulic system. Refer to section [Connect the return hose to the gear unit or the hydraulic system](#) on page 29.



6.4.3 Connect the suction hose to the gear unit or the hydraulic system

Procedure

1. Connect the suction hose (A) to the oil outlet (B).



6.4.4 Connect the return hose to the gear unit or the hydraulic system



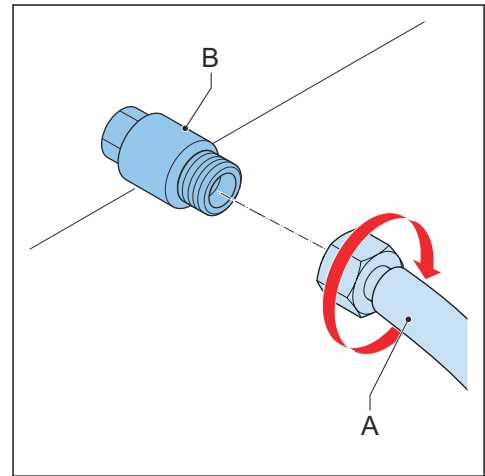
Warning: The return hose must be pressure-free before you connect the device to a gear unit or a hydraulic system. If the return hose is not pressure-free, injury or damage to the device can occur.



Note: The return inlet depends on the configuration of the gear unit and the options. The filling plug of the gear unit is used for the return inlet. If a breather is installed at that location, speak to S.D.T.

Procedure

1. Connect the return hose (A) to the oil inlet (B).



7 Commissioning

7.1 Use the device - general instructions

- The device must be stable and easy to access.
- The minimum oil capacity of the connecting gear unit or the hydraulic system must be sufficient. For information on the minimum oil capacity, refer to the manual of the gear unit or the hydraulic system.
- Fill the device with oil before you connect it to the gear unit of hydraulic system. For information on the oil capacity, refer to section *Device specifications* on page 42.
- The oil in the device must be of the same manufacturer, quality, and viscosity as the oil in the connecting gear unit or the hydraulic system. For information on the specifications of the oil, refer to section *Oil specifications* on page 43.
- Use high-quality hoses with the correct internal diameter. For information on the specifications of the hoses, refer to section *Hose specifications* on page 43.
- Open all valves in the suction lines and the return lines.
- Do a check on the oil level after connecting the device to a gear unit or a hydraulic system.
- Do a check on the oil level in the gear unit or the hydraulic system during a test run of the device.
- The connecting gear unit or the hydraulic system must be stopped when you start the device.
- Do a check for leakages and do a check on the oil level before you start the gear unit or the hydraulic system again.

7.2 Commissioning

Procedure

1. Open the on/off valve for the depth filters.
2. Energize the device. Refer to section *Energize the device* on page 33.
3. Start the device. Refer to section *Start the device* on page 33.

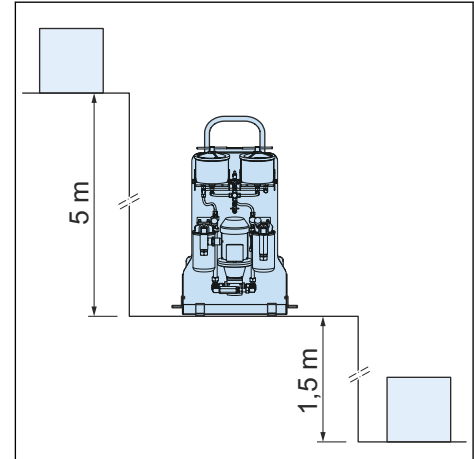
- Make sure that the oil flows through the device and into the gear unit or the hydraulic system.



Caution: If the oil does not flow through the device and into the gear unit or the hydraulic system within one minute, stop the device immediately. Speak to S.D.T.

- Let the device run for some minutes.
4. Stop the device. Refer to section *Stop the device* on page 34.
 5. Do a check on the oil level in the gear unit or the hydraulic system.
 6. Set the potentiometer to the highest value and keep an eye on the manometers.
 - The manometer for the suction filter must stay in green/yellow area.
 - The pressure on the manometers for the pressure filter must be less than 5 bar.

The commissioning is completed.

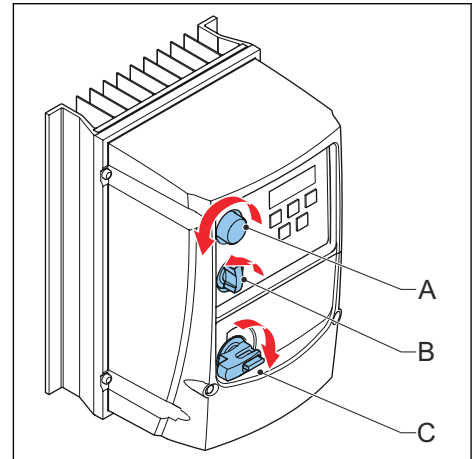


8 Operation

8.1 Energize the device

Procedure

1. Connect the device to the electrical grid.
2. Set the potentiometer (A) to the lowest setting.
3. Set the start/stop switch (B) to the stop position.
4. Set the main switch (C) to the "I" position.
The device is now energized.



8.2 Start the device



Note: Before you start the device for the first time, refer to the general instructions in section *Use the device - general instructions* on page 31.

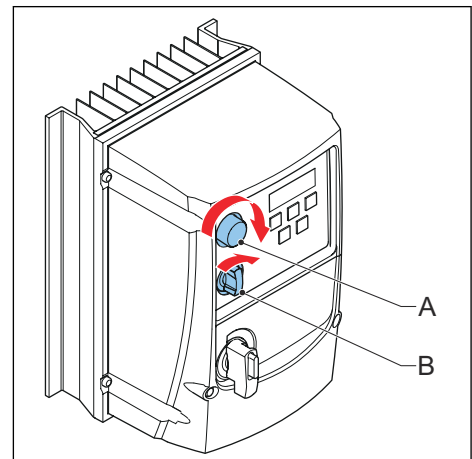
Procedure

1. Set the start/stop switch (B) to the start position.
The device starts.
2. Let the device run for some minutes.
3. Turn the potentiometer (A) clockwise to increase the flow speed of the oil.



Caution:

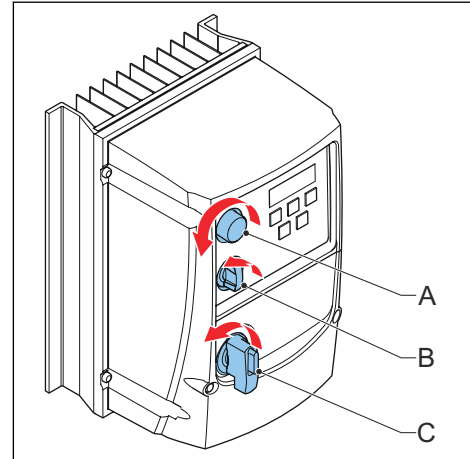
- Do not increase the flow speed of the oil until the manometer for the saturation of the suction filter is in the green zone.
- Make sure that the manometer for the saturation of the suction filter stays in the green zone.



8.3 Stop the device

Procedure

1. Set the potentiometer (A) to the lowest setting.
2. Set the start/stop switch (B) to the stop position.
The device stops.
3. Set the main switch (C) to the "O" position.
The device is de-energized.



8.4 Get an oil sample

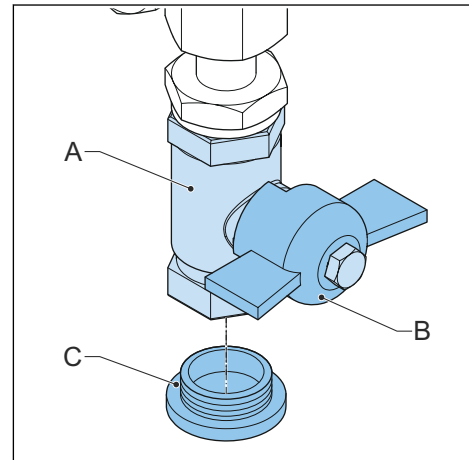


Note:

- The device and the gear unit or the hydraulic system must be in operation when you get an oil sample.
- Let the device run for a minimum of 30 minutes before you get an oil sample.
- Drain a minimum of 0.5 l of oil from the valve before you get an oil sample and discard this oil. The first 0.5 l of oil at the drain valve has a higher level of contamination.
- Use the correct container to get an oil sample and make sure that it is clean. An incorrect or dirty container causes contamination of the oil. For information on the equipment that you can use to get an oil sample, refer to section *Oil sample equipment* on page 44.
- Measure the quantity of oil that you drain from the device. This includes the quantity of the oil sample. Add the same quantity of new oil to the gear unit or the hydraulic system after you complete this task. Use the same oil as the oil in the gear unit or the hydraulic system.

Procedure

1. Hold a container below the drain valve (A).
2. Remove the cap (C).
3. Turn the handle (B) counterclockwise to open the drain valve.
4. Fill the container with oil.
Make sure that the flow of oil from the drain valve is constant.
5. Remove the container when it contains sufficient oil.
6. Turn the handle clockwise to close the drain valve.
7. Install the cap.



8.5 Drain the oil from the device

Procedure

1. Stop the device. Refer to section [Stop the device](#) on page 34.
2. Close the drain valve on the connecting gear unit, hydraulic system, or container.
3. Disconnect the suction hose from the drain valve of the gear unit, hydraulic system, or container.
4. Hold the suction hose up to make sure that no oil can flow out of the suction hose.
5. Start the device. Refer to section [Start the device](#) on page 33.

This removes the oil from the suction hose and the suction area of the device.



Caution: The oil level in the gear unit or the hydraulic system must not become too high.

6. Stop the device. Refer to section [Stop the device](#) on page 34.
7. Disconnect the return hose from the gear unit, hydraulic system, or container.
8. Seal the hoses with a plug and lay them on the ground.

9 Maintenance

9.1 General maintenance instructions

9.1.1 Limits

- If the maintenance task shows more than one limit, obey the limit that comes first.

9.1.2 Approved work and not approved work

- Do not do other maintenance than in the instructions in this document.
- Do not change or do repairs on the device without the written approval of S.D.T. If you do make changes or repairs without written approval, S.D.T. is not liable.
- Do the maintenance tasks that the maintenance schedule shows.
- Only replace parts with parts from S.D.T.
- If you cannot follow the instructions or if you think that an instruction is not available, speak to S.D.T.

9.2 Maintenance schedule

Item	Task	Limit	Instruction
Depth filters	Do a check on the depth filters	1 month	Refer to section <i>Do a check on a depth filter</i> on page 37
	Change a depth filter	<ul style="list-style-type: none"> • 3 months • Every oil change • When the filters are full of contamination 	Refer to section <i>Change the depth filters</i> on page 39
Suction filter	Do a functional check on the suction filter	<ul style="list-style-type: none"> • During operation • 1 month 	Refer to section <i>Do a functional check on the suction filter</i> on page 38
	Change the suction filter	<ul style="list-style-type: none"> • 6 months • Every oil change • When the manometer stays in the red zone when the oil in the device has the correct temperature 	Refer to section <i>Change the suction filter or the pressure filter</i> on page 40

Item	Task	Limit	Instruction
Pressure filter	Do a functional check on the pressure filter	<ul style="list-style-type: none"> During operation 1 month 	Refer to section <i>Do a functional check on the pressure filter</i> on page 38
	Change the pressure filter	<ul style="list-style-type: none"> 3 months Every oil change When the difference between the two manometers of the pressure filter is more than 1 bar 	Refer to section <i>Change the suction filter or the pressure filter</i> on page 40

9.3 Release pressure from the device

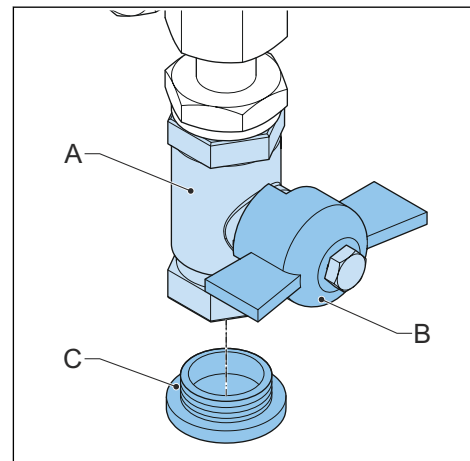


Note:

- You can read the pressure in the device on the manometers of the pressure filter.
- Measure the quantity of oil that you drain from the device. Add the same quantity of new oil to the gear unit or the hydraulic system after you complete the task. Use the same oil as the oil in the gear unit or the hydraulic system.

Procedure

- Hold a container below the drain valve (A).
- Remove the cap (C).
- Turn the handle (B) counterclockwise to open the drain valve.
- Let the oil drain from the drain valve. Keep an eye on the pressure on the manometers of the pressure filter.
- When the pressure on the manometers of the pressure filter reads 0 bar, turn the handle clockwise to close the drain valve.
- Install the cap.
- Discard the oil. Obey the local environmental regulations.



9.4 Do a check on a depth filter



Warning: The housing of a depth filter can be hot. To prevent injury, wear protective clothing and safety gloves.

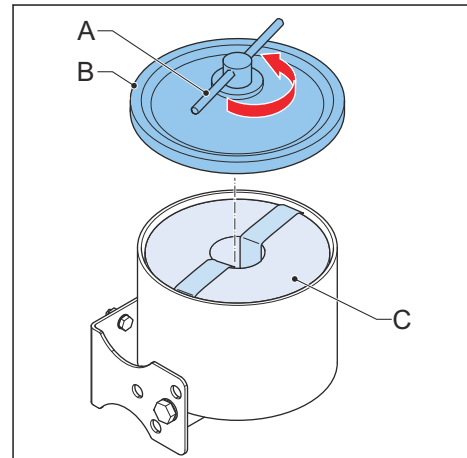


Note:

- Do a check on both the filters.
- Wind cleaning paper around the housing of the filter to keep the housing clean.

Procedure

1. Release pressure from the device. Refer to section [Release pressure from the device](#) on page 37.
2. Loosen the T-bolt (A).
3. Remove the cover (B).
4. Do a check on the filter (C).



- a) Do a check if the oil or the surface of the filter have contamination.
- b) Do a check if the surface of the filter has particle contamination.

A dark color or dark particles are signs of contamination. The surface can contain metal or rubber particles that are an indication for wear of components.

- c) Do a check if the height of the filter material is the same as the height of the central tube of the filter.

A change in height can be the result of water in the oil and/or too much pressure on the filter.

If there are signs of water contamination, use a blunt object to carefully push on the top of the filter. Easy deformation of the filter is an indication that the filter contains water.

If the layers have openings it can be a sign of water absorption.

5. If one or more of the above is applicable, change the depth filter. Refer to section [Change the depth filters](#) on page 39.

9.5 Do a functional check on the suction filter



Warning: The suction filter can be hot. To prevent injury, wear protective clothing and safety gloves.



Note: Do this check while the device is in operation for a minimum of 15 minutes.

Procedure

1. Read the manometer for the saturation of the suction filter when the oil is hot. If the indicator is in the yellow/red zone, change the suction filter. Refer to section [Change the suction filter or the pressure filter](#) on page 40.

9.6 Do a functional check on the pressure filter



Warning: The pressure filter can be hot. To prevent injury, wear protective clothing and safety gloves.



Note: Do this check while the device is in operation for a minimum of 15 minutes.

Procedure

1. Read the manometers for the saturation of the pressure filter when the oil is hot. If the difference between the two manometers is more than 1 bar, change the pressure filter. Refer to section [Change the suction filter or the pressure filter](#) on page 40.

9.7 Change the depth filters

9.7.1 Remove a depth filter



Warning: The housing of a depth filter can be hot. To prevent injury, wear protective clothing and safety gloves.



Note:

- Wind cleaning paper around the housing of the filter to keep the housing clean.
- Use the packaging of the new filter to discard the used filter.
- Change both the filters.

Procedure

1. Drain the oil from the depth filters.
 - a) Hold a container below the drain valve.
 - b) Open the drain valve.
 - c) Let the oil drain into the container.

2. Loosen the T-bolt (A).
3. Remove the cover (B).

More oil can flow from the drain valve. When no more oil comes out of the drain valve, close the drain valve and discard the oil. Obey the local environmental regulations.

4. Remove the seal ring (C).

Do a check on the seal ring to see if the seal ring has damage.

5. Pull the packaging (D) of the new filter over the housing (E) of the filter.

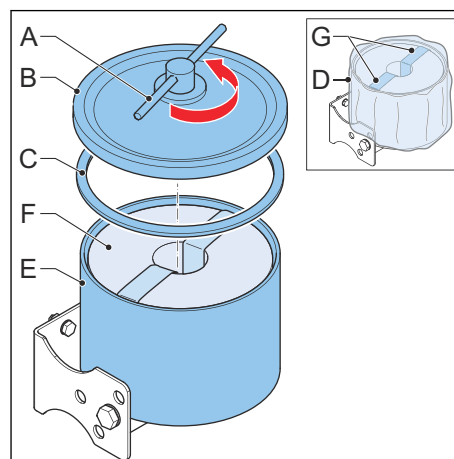
6. Remove the depth filter (F).

The packaging must stay over the filter while you remove the filter.

- a) Hold the filter at the pull straps (G).
- b) Pull the filter from the housing of the filter.

Quickly close the packaging to prevent that you spill oil.

7. Clean the inner side of the housing.



9.7.2 Install a depth filter

Procedure

1. Install the depth filter (A) in the housing (B) of the filter.

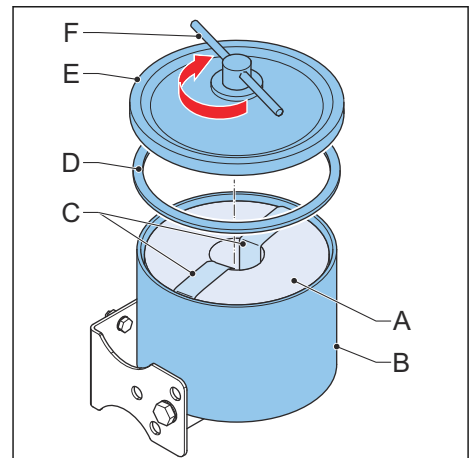


Note:

- The pull straps (C) of the filter must be at the top.
- Carefully push the filter to the bottom of the filter housing until it is in position.

2. Install the seal ring (D).
 - If necessary, install a new seal ring.
 - Apply a small quantity of oil to the seal ring. Use the same oil as the oil in the device.
3. Install the cover (E).
4. Tighten the T-bolt (F) in small increments.

After each increment, do a check on the seal ring. The seal ring must fully seal the top of the housing of the depth filter.



9.8 Change the suction filter or the pressure filter

9.8.1 Remove the suction filter or the pressure filter



Warning: The filters can be hot. To prevent injury, wear protective clothing and safety gloves.



Caution: Drain the oil from the device before you remove a filter. For information on how to drain the oil, refer to section [Drain the oil from the device](#) on page 35.

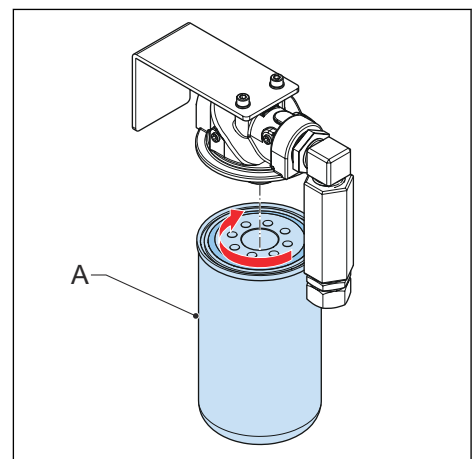
Procedure

1. Remove the filter (A).
 - a) Turn the filter counterclockwise by hand until the filter comes loose.



Note: If you cannot remove the filter by hand, use a removal tool.

- b) Remove the filter.
 - c) Let the oil in the filter drain into a container.
2. Discard the filter and the oil. Obey the local environmental regulations.



9.8.2 Install the suction filter or the pressure filter



Caution: Install the correct filter. For information on the filters that you must use, refer to section *Spare parts* on page 44.

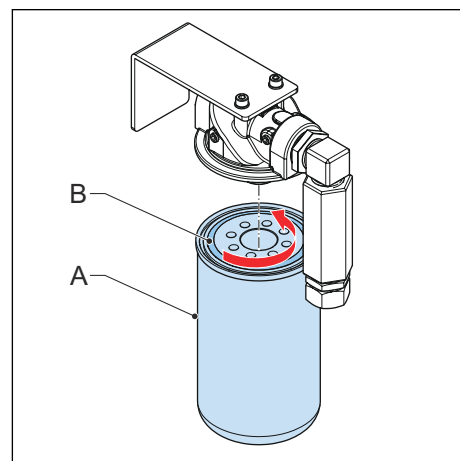
Procedure

1. Install the filter (A).
 - a) Apply a small quantity of oil on the seal ring (B).




Note: Use the same oil as the oil that you will use in the device.

- b) Put the filter in position on the device.
- c) Turn the filter clockwise by hand until the filter is sufficiently tightened.



9.9 Cleaning schedule

Task	Limit	Instruction
Clean the device	When the outer side of the device is dirty  Note: Clean the outer side of the device regularly when the device operates in an environment with high quantities of dust	Refer to section <i>Clean the device</i> on page 41

9.10 Clean the device



Warning: Let the device cool down before you clean the device. The device can be hot.

Procedure

1. Clean the outer side of the device. Use water and soap.
Make sure that the frequency drive and the electric motor are free of dust.

10 Technical data

10.1 Device specifications

Parameter	Specification
Mass [kg]	92
Oil capacity [l]	8
Oil flow [l/min]	16 (at 50Hz / 1500 rpm)
Maximum operating pressure [bar]	6
Power consumption [kW]	0.75
Operating voltage [V (AC)]	200-240
Operating amperage [A]	3.04 (at 50Hz / 1500 rpm)
Input frequency [Hz]	50-60
Materials	Carbon steel
	Aluminium
	Synthetic rubber
	Brass
	Technical plastics

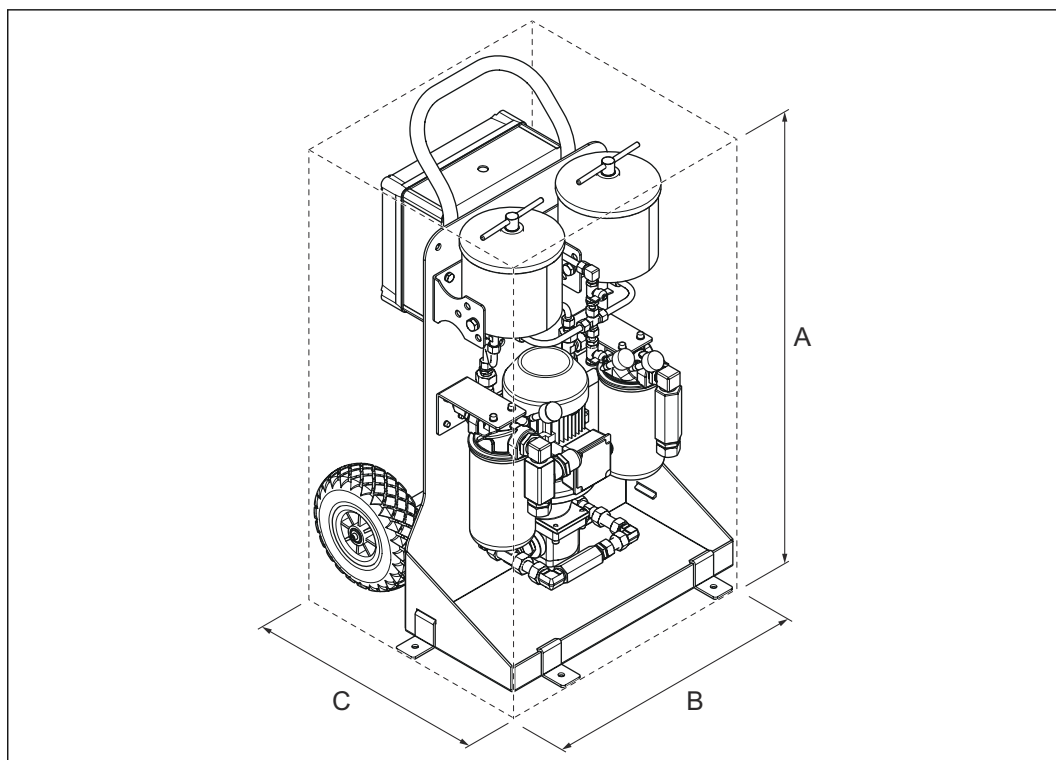
10.2 Ambient conditions during use

Parameter	Specification
Temperature [°C]	-20 to +40
General protection	IP55

10.3 Ambient conditions during storage

Parameter	Specification
Temperature [°C]	-20 to +40
Relative humidity	Non-condensing
General protection	IP55

10.4 Dimensions



- A 1180 mm
- B 610 mm
- C 600 mm

10.5 Oil specifications

Item	Specification
Minimum oil capacity of the connected system [l]	6
Gear units	<ul style="list-style-type: none"> • Mineral oil • PAO gear unit oil
Hydraulic systems	Mineral hydraulic oil
Temperature range [°C]	0 to +95

10.6 Hose specifications

S.D.T. supplies hoses with the device that obey the requirements of the gear unit or hydraulic system that you use. If you must use hoses with different specifications, get in contact with S.D.T.

10.7 Spare parts

Table 1: Gear units / gear oils = high viscosity (ISO VG \geq 100 mm²/s)

Part	Type	Rating	Filtration specification [micron]	Part number
Depth filter	X100	Absolute	10	350-TR25450
Suction filter	CS15	Nominal	125	350-SM211885
Pressure filter	CS15	Absolute	10	350-SM211882



Caution: S.D.T. recommends that you do not filter lubrication oil finer than 10 micron absolute.

Table 2: Hydraulic systems / hydraulic oils = low viscosity (ISO VG \leq 68 mm²/s)

Part	Type	Rating	Filtration specification [micron]	Part number
Depth filter	M100	Absolute	2	350-TR430003
Suction filter	CS15	Nominal	60	350-TR4300301
Pressure filter	CS15	Absolute	5	350-TR430028

10.8 Oil sample equipment

Part	Quantity	Bottle volume [ml]	Part number
Sample bottle	1	250	350-TR5719061
Sample bottle	30	250	350-TR5719065

11 Services

We recommend that you regularly make an analysis of the oil in your device. We can do this for you with the aid of independent laboratories.

For more information, speak to Sumitomo Drive Technologies.

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