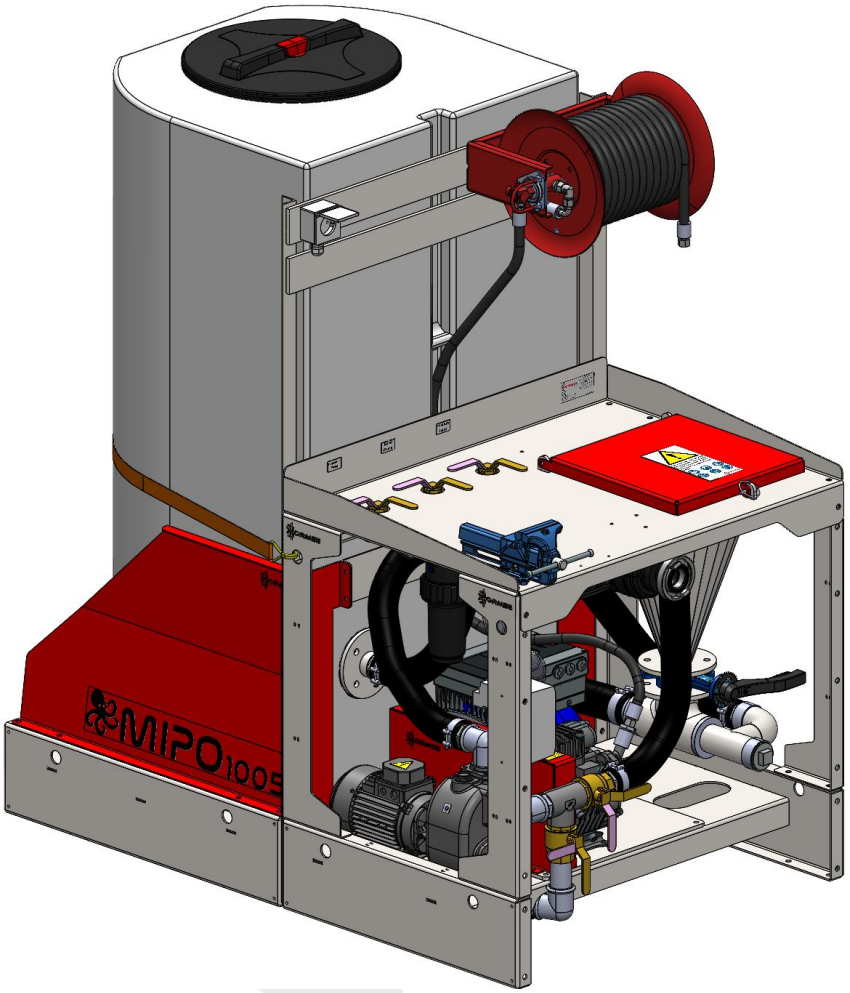
User manual

MIPO 1005



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Translation of original document

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KORMEE reserves the right to change parts at any time without prior or direct notification to the customer. The content of this user manual is also subject to change without prior notice. For information regarding setup, maintenance operations or repairs not provided for in this user manual, please contact your supplier's technical service department.

Information in this document is believed to be accurate and reliable. However, the manufacturer does not give any representations or warranties for its completeness, accuracy, usefulness or timeliness. KORMEE cannot be held liable for direct or indirect damage as a result of errors in this User Manual.

If you have any doubts, questions or problems for which this manual does not provide a solution, please contact your dealer or KORMEE BV.

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Overview

Product description

The MIPO1005 is an electric pumping unit for mixing and pumping of bentonite. The unit is specially designed and developed fort he HDD (Horizontal Directional Drilling) industry. In order to activate and use the machine, you need a generator. The required power is mentioned on the identification plate.

The pumping unit is coupled to a HDD-machine – the NANODRILL – with the bentoniet hose on the reel of the MIPO1005 (Figure 2). De control of the MIPO1005 is via the remote controller of the NANODRILL, the Scanreco. In the manual of the NANODRILL, one can find the instructions to connect the remote controller to the NANODRLL as well as to the MIPO1005. The remote controller also houses the emergency stop function.

NB: The MIPO1005 is also suitable for other HDD-machines. The unit is provided with its own controls.

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DETAILS OF THE MIPO 1005 AND PURCHASE DETAILS

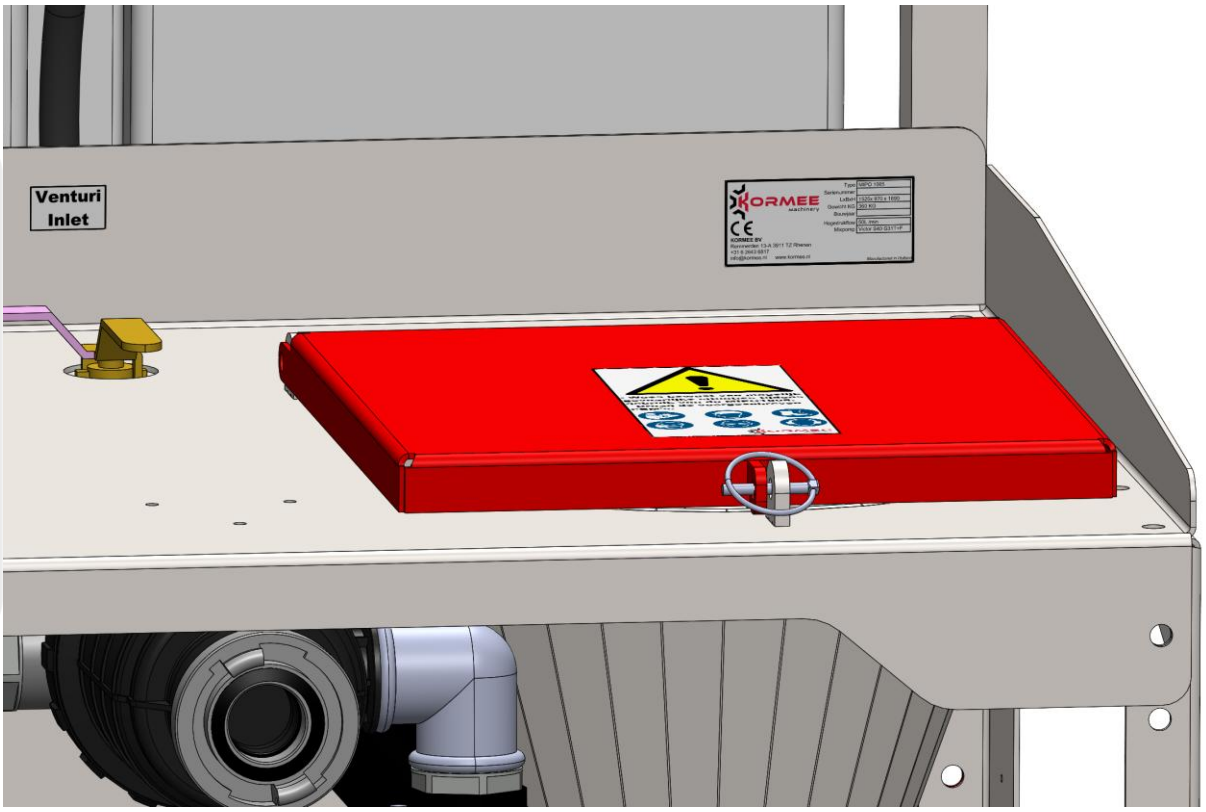

FIGURE 1 – IDENTIFICATION PLATE ON MIXING TABLE BEHIND HOPPER LID

To be completed on delivery:

Production date:	
Serial number MIPO 1005:	

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KEY COMPONENTS:

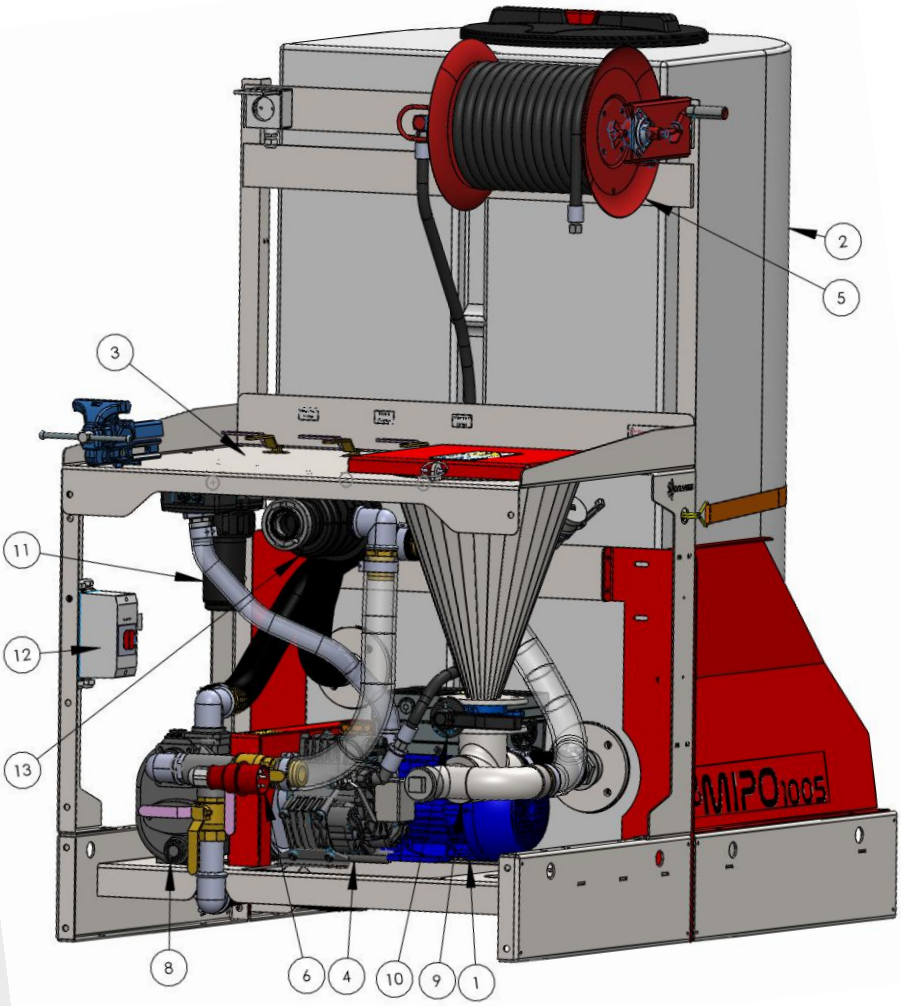

FIGURE 1 – KEY COMPONENTS

1.	Electric motor of high-pressure pump with frequency converter	6.	Electrical supply connection	11.	Press filter
2.	Bentonite tank	7.	Emergency stop (remote controller)	12.	Motor protection switch mixing pump
3.	Mixing table with Venturi	8.	Mixing pump	13.	Intake filter with Storz coupling
4.	High pressure pump	9.	Venturi	14.	Waterhose (not in picture)
5.	Bentonite reel	10.	Butterfly valve	15.	

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SCHEMATIC VIEW

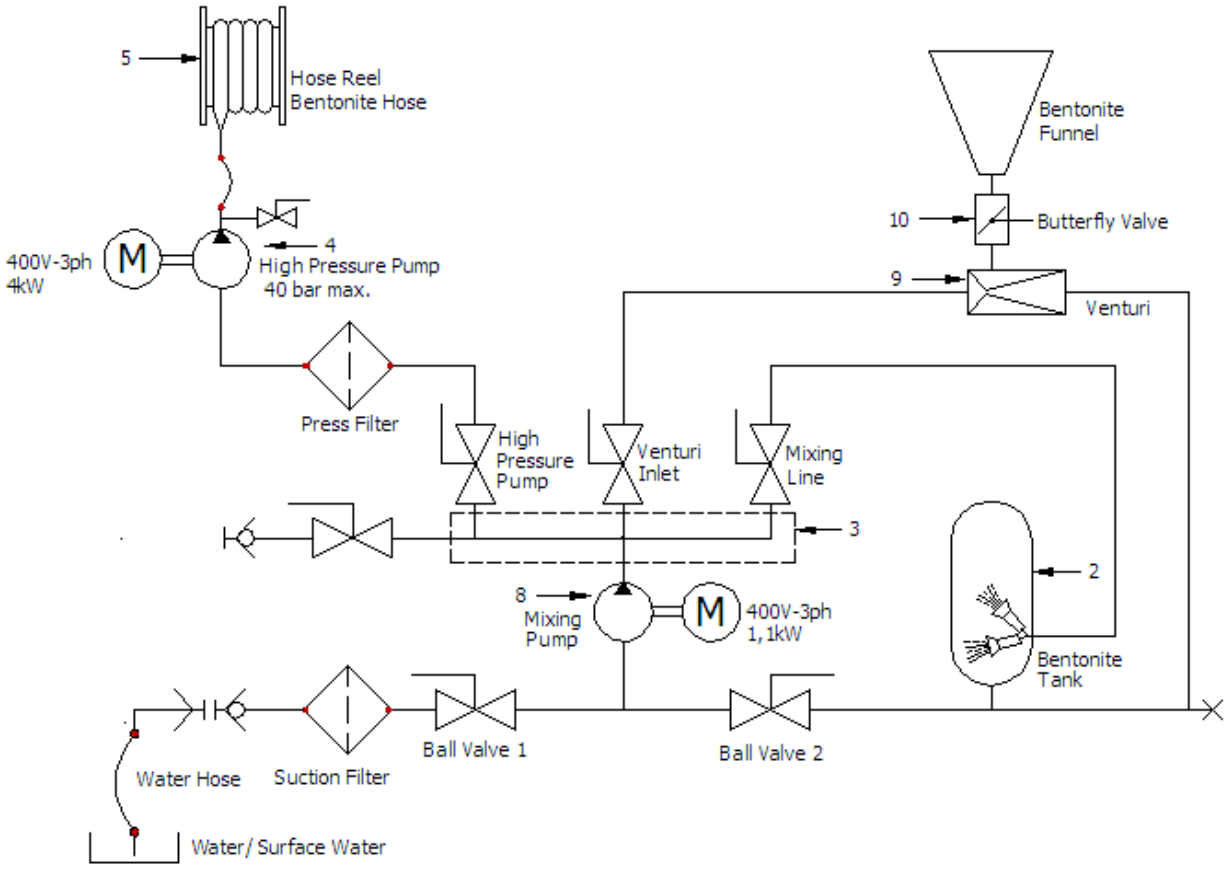

FIGURE 3 – SCHEMATIC VIEW WITH KEY COMPONENTS

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Foreword

This manual is a important part of your machine en offers safety information and operating instructions for using and maintaining your KORMEE-machine.

Read this manual before using the machine. Keep the manual always close to the machine for reference. If you sell the machine in the future, please hand over the manual as well.

If you need a new manual, visit our website www.KORMEE.nl or write to the following address:

KORMEE BV
Att. Sales
Remmerden 13
3911 TZ Rhenen
The Netherlands

The descriptions and specifications in this manual can always be changed without prior notice. KORMEE BV reserves the right to apply new improvements. Some improvements may be applied after publication of this manual. Contact KORMEE BV or your dealer for the most recent information about KORMEE equipment.

We thank you for acquiring and using KORMEE equipment.

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Content

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1. Introduction

Make sure that all persons, operating and maintaining the machine, are familiar with the contents of this manual and are trained on the correct operational and handling procedures of the MIPO 1005.

For information regarding malfunctions, maintenance work or repairs or any other issue not covered by this manual, please contact KORMEE BV.

1.1. Explanation of symbols on the machine or in the manual

These categories, together with the symbols described below, alert you to potentially dangerous situations for you, bystanders on the work site and/or the equipment. If you see these words and symbols in the manual or on the machine, you should carefully read and follow the corresponding instructions. YOUR SAFETY IS AT STAKE.

Pay attention to three levels of warning: **DANGER**, **WARNING** and **CAUTION**. Learn the meaning of each level.

DANGER indicates a hazardous situation that, if not avoided, **will** result in serious injury or death. This signal word is restricted to the most extreme situations.

WARNING indicates a hazardous situation which, if not avoided, **could** result in serious injury or death.

CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

In addition, pay attention to two other words: **ATTENTION** and **IMPORTANT**.

ATTENTION indicates information that is important but not related to danger (such as messages related to material damage).

IMPORTANT can help you do your job better or easier.

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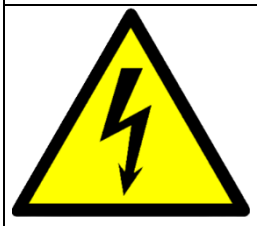
	Manual Please consult this User Manual before use and when in doubt.
	CAUTION: general hazard.
	CAUTION: Keep your distance when the machine is in operation. **KEEP DISTANCE**
	CAUTION: Be aware of moving and rotating parts such as sprockets, gears and V-belts. **KEEP HANDS AWAY FROM ROTATING MOVEMENTS**
	CAUTION: be aware of pending loads. **KEEP YOUR DISTANCE, DO NOT WALK UNDER THE LOAD**
	DANGER: high voltages. **RISK OF ELECTRIC SHOCK PRESENT, DO NOT TOUCH AND DISCONNECT POWER SUPPLY IF NECESSARY**

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	Do not clean with high-pressure sprayer.
	Indication of location of grease nipple.
Hogedruk Pomp **Rond Pomp** **Venturi Inlet**	Indication of ball valves.
	Indication of a point of interest in the manual. **IMPORTANT TO READ**

Where necessary, the above symbols are also displayed on the MIPO 1005 and in the manual.

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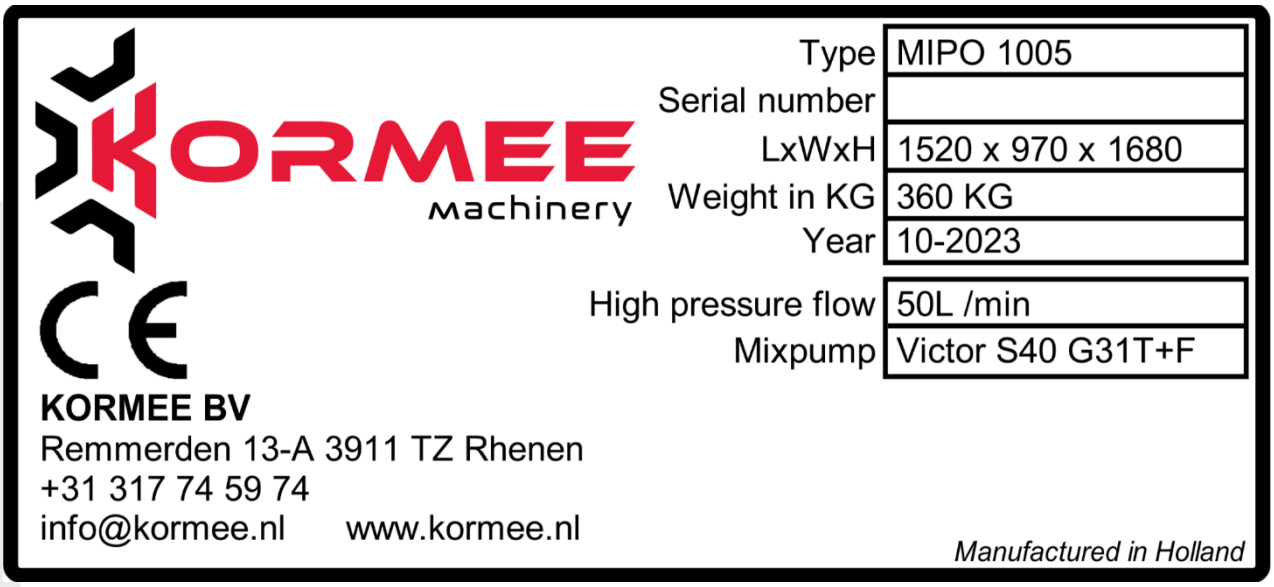

FIGURE 3 – EXAMPLE OF IDENTIFICATION PLATE

2. Safety

KORMEE has made every effort to manufacture equipment that meets the highest safety standards and to inform you as correctly and completely as possible about possible dangers when handling the MIPO 1005. This information can be found in this user manual. You are responsible for observing these rules of conduct.

Nevertheless, KORMEE BV wishes to emphasize the importance of correct handling of the MIPO 1005. KORMEE products are equipped with safety and protection devices, but always be aware that potential risks when working with or in the vicinity of a MIPO 1005 are high.

KORMEE products are equipped with safety and protection devices. Nevertheless, it remains important to be careful at all times when performing actions on and with the MIPO 1005.

Store the manual always near the machine

2.1. Intended and unintended use

The MIPO 1005 is intended **exclusively** for mixing and high-pressure pumping of Bentonite.

Any other use is only possible in consultation with KORMEE and can only be done if the described user manual is adapted to the new requirements.

2.2. Safety resources

Safety devices fitted by the supplier of the MIPO 1005 must not be removed or blocked during operation. This machine is equipped with the following safety devices:

- Shields at the location of dangerous machine parts
- Labels warning users of potential hazards
- Emergency stop device
- Ventilation in the tank lid
- Motor protection switch

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2.3. Safety measures

In order to use the MIPO 1005 safely, the following general safety precautions should be observed:

- As owner of the MIPO 1005, it is your responsibility that people operating or maintaining the MIPO 1005 are adequately instructed to do so.
- During operations, unauthorised people are prohibited from being in the vicinity of the MIPO 1005.
- Identify the risks of the working environment and take the measures necessary to maintain safety.
- Provide a safely secured work area.
- Ensure that unauthorised individuals, especially children or animals, cannot access the MIPO 1005.
- Wear close-fitting clothing. Avoid loose clothing (such as scarves), neck and arm jewellery, rings and long hair.
- Always wear your PPE (personal protective equipment).
- Safety devices must never be removed or rendered inoperative.
- You should keep the emergency stop accessible at all times, so that it can be activated immediately in case of dangerous situations.
- Keep the workplace clean.
- Ensure adequate ambient lighting.
- Before carrying out mixing and/or pumping operations, ensure that the machine is working properly. Replace or repair parts if necessary.
- Contact KORMEE BV or your dealer if you have any questions about the operation, maintenance or use of the MIPO 1005.

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3. Specifications and features

3.1. Technical specifications

Type	MIPO 1005
Dimensions L x B x H	1525 x 970 x 1690 mm
Kerb weight	360 kg
Volume tank	1000 litre
Supply voltage	400 Volt – 3 phases
Max. power input	6,6 kW
Type high pressure pump	Semi-hydraulic diaphragm pump with 3 pistons
Flow high pressure pump	50 L/min (max.)
Max. pressure high pressure pump	50 Bar
Type mixing pump	Self-priming centrifugal pump

The above specifications are general and subject to change without prior notice. If precise values are required, the MIPO 1005 should be weighed and measured. Options may cause discrepancies.

Being in operation:

- As owner of the MIPO 1005, it is your responsibility that persons operating or maintaining the MIPO 1005 are adequately instructed to do so;
- **ALWAYS TEST THE OPERATION OF THE EMERGENCY STOP DEVICE BEFORE STARTING WORK.**
- During work, it is forbidden for unauthorised persons to be in the vicinity of the MIPO 1005!!!

In the event of regular or other malfunctions, contact KORMEE BV

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ACTIVATE THE EMERGENCY STOP DURING INCIDENTS/CALAMITIES AND BE AWARE OF THE MACHINE'S DIMENSIONS AND FORCES.

NB: THE EMERGENCY STOP CAN BE FOUND ON THE REMOTE CONTROLLER (SCANRECO) OF THE NANODRILL (FIGURE 5).

3.2. Mix pump

See Annex 8.5 - Centrifugal pump datasheet

3.3. High-pressure pump

See Annex 8.6 - Diaphragm pump datasheet

3.4. Remote controller - Scanreco

See the manual of the corresponding drilling tool for remote controller information. The process of pairing can also be found here.

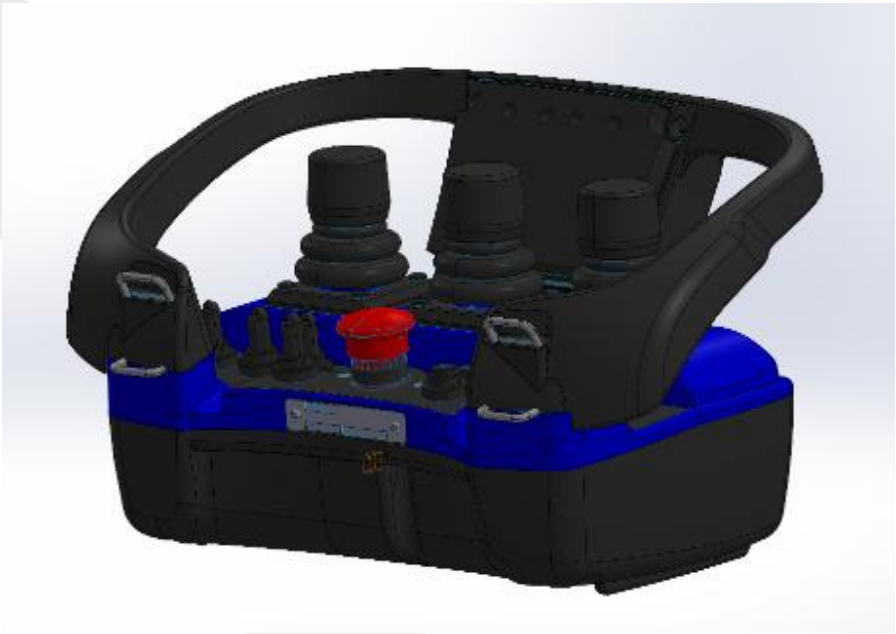

FIGURE 5 – SCANRECO REMOTE CONTOLLER WITH EMERGENCY STOP FUNCTION

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4. Operating the machine

4.1. Preparation

To start drilling, first prepare the machine as follows:

1. Convince yourself of the correct operation of the MIPO 1005, and check the entire machine for damage. Always solve problems first. If you are not convinced, do not continue with this step-by-step plan.
2. Ensure that the remote controller is linked to both the NANODRILL and the MIPO 1005, see also 6.1.
3. Make sure you have all the necessary materials and tools to hand. These include the following:
    a. Water hose;
    b. Sufficient bentonite powder;
    c. Marsh funnel (item 100651);
    d. Measuring cup (item 100652);
    e. Stopwatch;
    f. Any other materials you consider necessary for use of the MIPO 1005.
4. Make sure the NANODRILL is ready for use.
    a. Check that the drill head has no blockages, which would prevent bentonite from entering the drilling passage.
    b. Check the swivel for correct operation.
    c. Perform further preparatory work for correct use of the NANODRILL. See the user manual of the NANODRILL.
5. Check the generator for operation and switch it on. Follow the generator manual if necessary.
6. Check the high-pressure pump for any leaks of oil or water and check the oil level. If necessary, top up with the prescribed type of oil.
7. **WARNING -** Check if the small ball valve on the high pressure pump is **closed**. If left open, the pressure may cause serious injury.
8. Check the emergency stop for operation.
9. Check any other point of interest that you consider necessary for correct operation of the MIPO 1005.
10. Verify the mixing ratio of the bentonite from the bag it comes in and make sure it is known among those working with the MIPO 1005.
11. Pay attention to the following points when mixing bentonite:
    a. Use clean water that does not contain salt, calcium or an excessive amount of chlorine.
    b. Use water with a pH level between 9 and 10.
    c. Use water with a hardness of less than 120 PPM.
    d. Do not use bentonite that contains sand.
    e. Mix the bentonite thoroughly otherwise it will settle in the tank.

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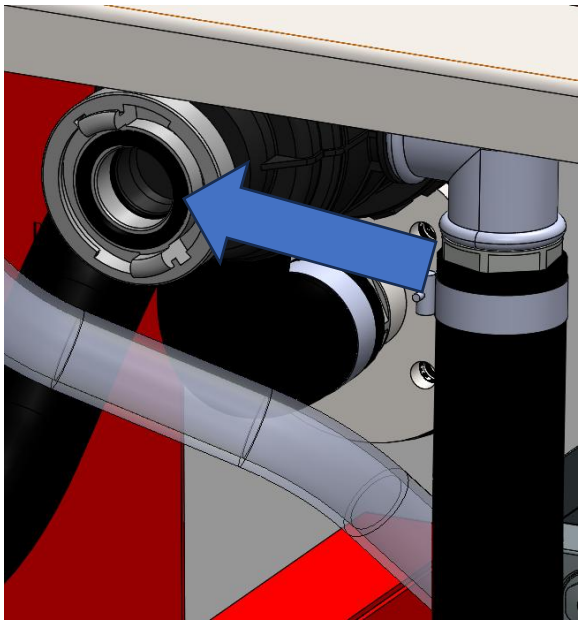
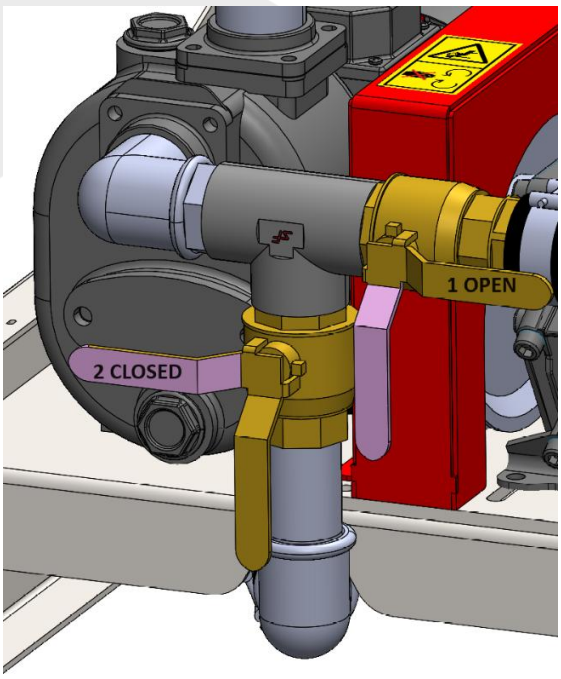
4.2. Starting the machine

To start the machine, perform the following operations:

1. Make sure the generator is running, and connected to the MIPO 1005 using the CEE plug.
2. Connect the water hose to the Storz coupling at the suction filter. Make sure the water hose is in the water source and ready for use. Always check it for any holes. If any holes are present, do not use this hose.



3. Open ball valve 1 and close ball valve 2. Gold is open, pink is closed. See picture below.



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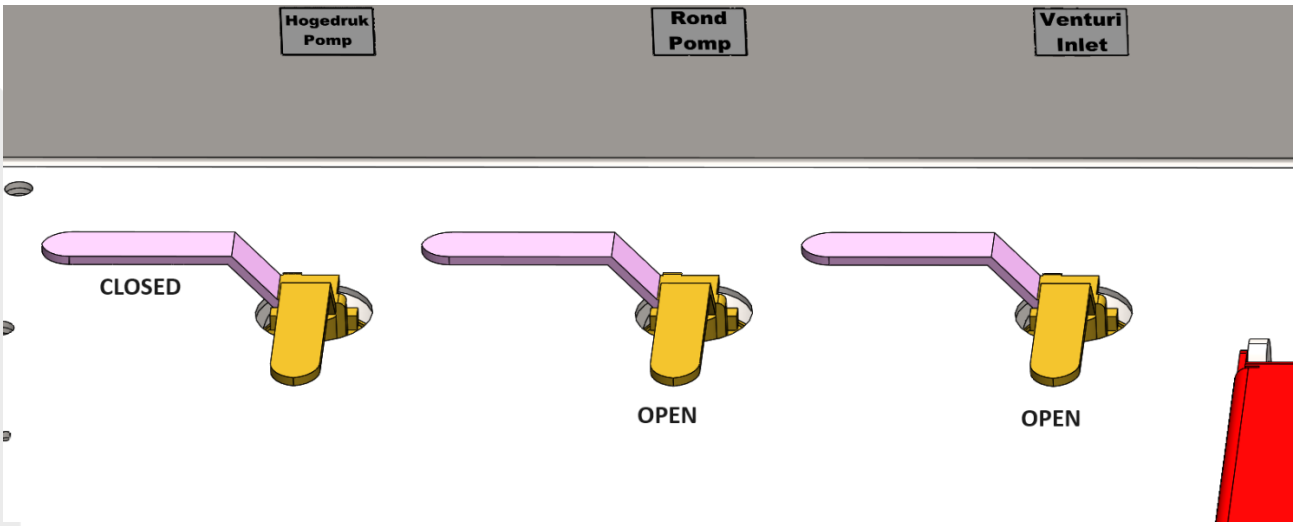
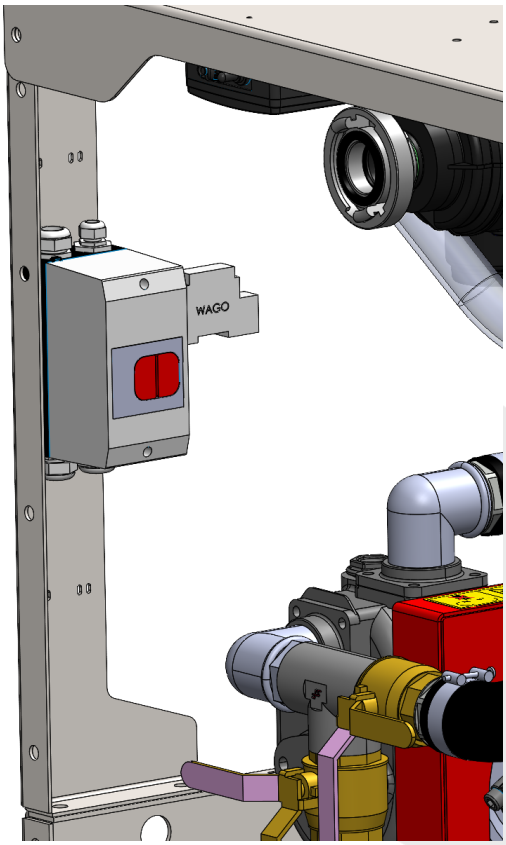
4. Open the ball valve of the circulation pump and venturi inlet. Leave the ball valve of the high-pressure pump closed.



5. Then turn on the mixing pump using the motor protection switch. In principle, the mixing pump stays on unless otherwise stated in.



6. Now the tank will fill with water. When the tank is full, continue with 4.3.

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ATTENTION!

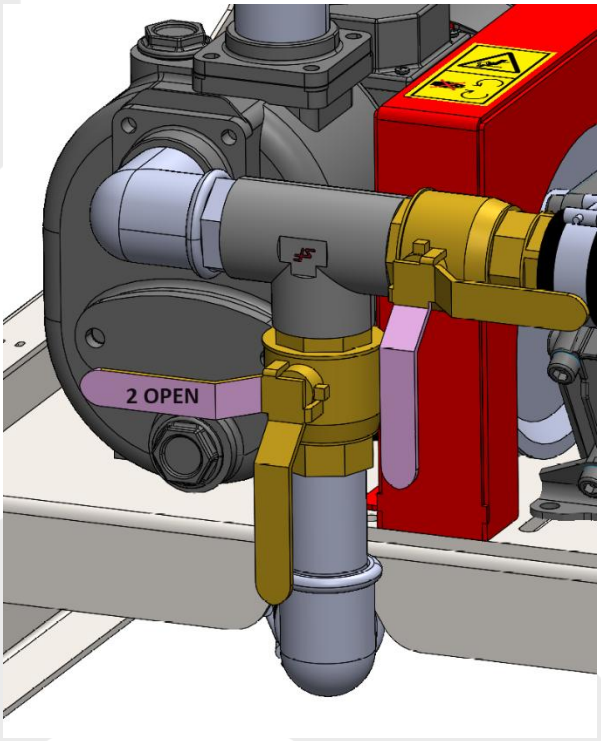
- **Make sure the right ball valves are opened in the right order.**
- **Be aware of the direction of rotation of the mixing pump!**

Electric motor must always rotate clockwise! This is indicated by a sticker.

4.3. Mixing bentonite

Next, the bentonite powder can be mixed with the water. This is done in the following way:

1. First switch off the mixing pump with the motor protection switch.
2. Open ball valve 2 so that the water can be sucked up from the tank by the mixing pump.



3. Then close ball valve 1. This prevents the supply of any more water. Switch the mixing pump on again.

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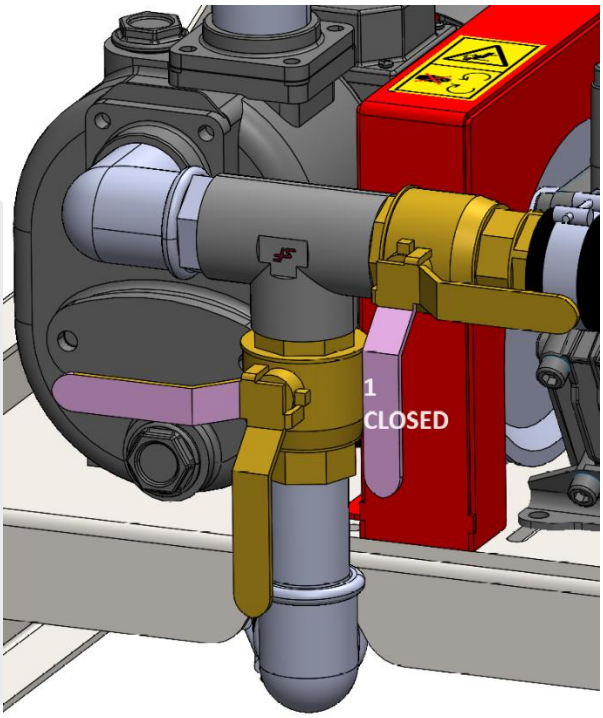

4. Close the ball valve of the circulation pump, leaving only the ball valve of the venturi inlet open. This gives maximum pressure in the venturi, which is necessary for a good mix.
5. Open the hopper lid.
6. **Carefully** open the butterfly valve of the Venturi. Check for a sucking sound.
7. Pour the bentonite powder into the hopper.
8. If the hopper is completely empty, close the butterfly valve completely before taking any further steps.
9. Open the ball valve of the mixing pump again so that the water and bentonite powder are mixed well.
10. When the bentonite is smooth and free of lumps, test it for the right thickness using the step-by-step plan in 4.6. Is the mixture too thick? Add more water. Is the mixture too thin? Add more bentonite powder. Only continue when the mixture has the right thickness.
11. Then close the ball valve of the venturi inlet. Now only the venturi pump ball valve is still open.

If a raw material other than bentonite powder is used for drilling, make sure it also has the right viscosity as indicated on the packaging.

ATTENTION!

- **Be alert when the hopper lid is open. Anything that falls in will be sucked up. Large or hard objects can cause major damage.**
- **Be aware that all ball valves and butterfly valves are NEVER closed at the same time when the mixing pump is running. This can cause damage to valves, pump or other components.**

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4.4. Using the pump function

If the bentonite mixture is well mixed (this should be tested using the Marsh funnel, see 4.6.2), the drilling can be started.

1. Doublecheck all ball valves for their position:
    a. Suction side pump ball valve 1 is closed
    b. Suction side pump ball valve 2 is open
    c. High pressure pump is **closed**
    d. Circular pump is open
    e. Venturi inlet is closed
    f. Butterfly valve is closed
2. Connect the bentonite hose to the swivel of the NANODRILL.
3. To ensure that the correct pre-pressure is given by the mixing pump, open all ball valves on the mixing table (high-pressure pump, circulation pump and venturi inlet).
4. Should you use another raw material with a very high viscosity, make sure that only the high-pressure valve is open. This applies to drilling fluids with a funnel viscosity of more than **58**.
5. Turn on the mixing pump when it is turned off. Otherwise, leave it on.
6. Turn on the electric motor of the high-pressure pump. The rotation speed can be controlled by using the variable speed drive.
7. The NANODRILL can now be used. Should you run out of drilling fluid during the drilling process, first stop the NANODRILL and then make new bentonite according to this step-by-step plan (see also 4.5).

ATTENTION!

- **Make sure the bentonite is well mixed with the water, otherwise the high-pressure system may clog up.**
- **Keep an eye on the level of bentonite mixture in the tank. Never run the pumps without drilling fluid. This could potentially cause damage. Make new drilling fluid in time.**
- **ALWAYS switch off the high-pressure pump when not drilling. This also applies when changing drill rods.**
- **If drilling fluid comes out of the hose when the high-pressure pump is off (e.g. when changing drill rods), this means that the viscosity is too low.**

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4.5. Stopping the machine

There are 3 reasons for stopping the machine: 1) the drilling fluid has run out; 2) the drilling is complete; 3) there is an emergency situation.

No drilling fluid left in the tank

1. Stop the NANODRILL immediately to avoid damage.
2. Turn off the electric motor of the high-pressure pump.
3. Close the ball valve of the high-pressure pump.
4. Now continue from step 2 in section 4.2, (connecting water hose to the Storz coupling).
5. When all the steps in sections 4.2 and 4.3 have been completed, the drilling can be continued. To do this, open all ball valves on the mixing table.

Drill completed

1. Make sure the pilot drill is sufficiently far out of the ground and turn off the NANODRILL.
2. Turn off the electric motor of the high-pressure pump.
3. Close the high-pressure valve to avoid drilling fluid draining out.
4. Now the rest of the system can be switched off. If you want to close the ball valves, first switch off the mixing pump using the motor protection switch.
5. If you are going to use the machine again within a short period of time (max 2 days), there is no need to drain the system.
6. Clean the machine as much as possible after each use. Consistent cleaning ensures a longer service life, less chance of damage and fewer repairs.

Emergency situations

1. In case of emergency, always press the emergency button on the remote controller. Should it not be within reach, for whatever reason, use the motor protection switch.
2. In case of human contact with the machine, call the emergency services immediately and ask for their advice. Always follow these instructions. Never take action on your own initiative unless you have had the right First-AID certificate.
3. Should there be an emergency due to equipment failure, assess the extent of the damage or failure. See if it is possible to repair it on site and continue drilling (always in consultation with KORMEE prior to continuing drilling). In case the damage or failure cannot be repaired immediately, do **not** continue drilling to prevent further damage to the machine or injury to personnel.

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ATTENTION!

- **ONLY in emergency situations should the machine be switched off at once in full operation.**
- **Be aware of the power and capabilities of the machine at all times!**
- **Be fully confident that the machine can continue drilling after on-site repair.**
- **Ensure that several qualified persons are present at all times to intervene in an emergency situation if necessary. Therefore, never work alone with the MIPO 1005!**

4.6. Additional information on the use of bentonite

4.6.1. Bentonite

Bentonite is a dry powder. When properly mixed with water, it adheres to the drill wall in a thin layer, lubricating and keeping the drill hole open and also retaining the fluid in the drill hole.

Pay attention to the following points when mixing bentonite:

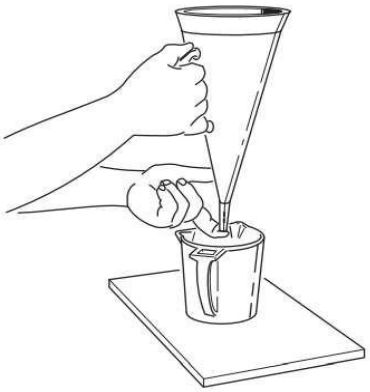
- Use clean water that does not contain salt, calcium or an excessive amount of chlorine.
- Use water with a pH level between 9 and 10.
- Use water with a hardness of less than 120 PPM.
- Do not use bentonite that contains sand.
- Mix the bentonite thoroughly otherwise it will settle in the tank.

When mixing bentonite, ensure that the funnel viscosity is not exceeded. See 'Marsh funnel viscosity' for information on measuring viscosity using a Marsh funnel.

4.6.2. Marsh-funnel-viscosity

Viscosity is the degree of a fluid's internal resistance to flow; the greater the resistance, the higher the viscosity. The viscosity of drilling fluids must be regulated. To determine viscosity, you need a Marsh funnel (Item 100651) and a measuring cup (Item 100652). These are available from KORMEE BV or dealer of KORMEE BV. Take a fresh sample of drilling fluid using a rinse hose and a clean container. The sample should be at least 1.5 qt (1.4 l).

1. Hold your finger on the bottom of the funnel and fill it through the sieve with fluid from the container until the fluid reaches the bottom of the sieve.
2. Place the funnel above the 1 qt (0.95 l) measuring cup.
3. Remove your finger from the bottom of the funnel and, using the stopwatch, count the number of seconds it takes 1 qt (0.95 l) of liquid to flow through the funnel. The number of seconds indicates the viscosity. **Correct viscosity for bentonite is between 50 and 55 seconds**. This may vary for other drilling fluids. Read the packaging for more information.
4. Rinse the measuring cup and Marsh funnel thoroughly.



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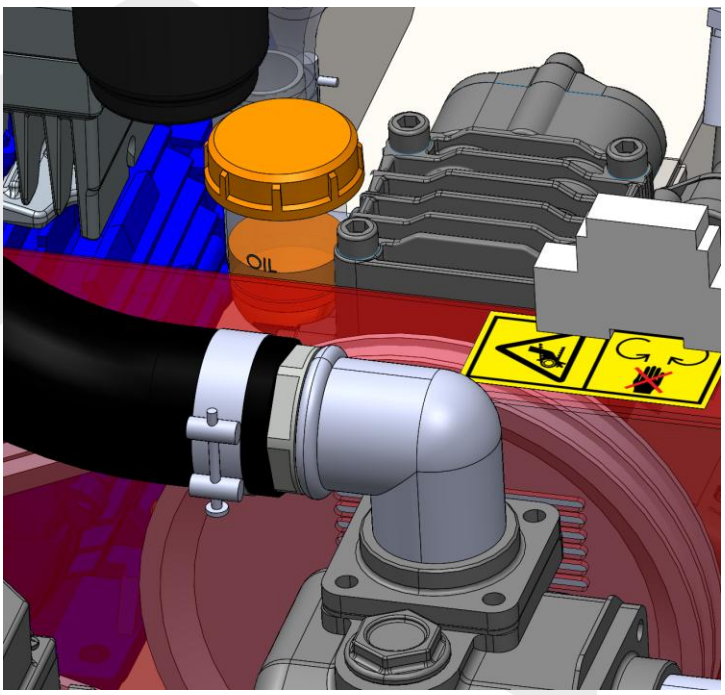
5. Inspection and maintenance

5.1. Inspection

The following inspection points must be checked in accordance with the specified intervals. In case of third-party components or parts with their own manual, the interval in the own manual is leading (Chapter 3).

ATTENTION!

Always consult original manual before performing maintenance work on components described in chapter 3.

Inspection points	Interval
MIPO 1005: Check for abnormal sounds (initial period: 10min / 1h / 10h / 1 day / 1 week / 1 month)	Daily
MIPO 1005: Exterior and interior inspection. Cleaning of pump and motor	6 months
MIPO 1005: Check for frost damage before first use after winter period	Annually, after winter
HIGH-PRESSUREPUMP: Oil change	4000 hours / 6 months
HIGH-PRESSUREPUMP: Check for leaks, check oil level 	With every use
HIGH-PRESSUREPUMP: Replacing V-belts	Annually
HIGH-PRESSUREPUMP: Checking V-belts for damage	Monthly

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Emergency stop on operation	With every use
Stickers and rating plate on presence/readability	twice a year
Presence of instruction manuals	twice a year
Structural cracking of frame and damage	twice a year
Fixed parts	twice a year
Operation of sensors	twice a year
Operation of safety devices	twice a year
Clean and check suction filter, also inner filter (replace if necessary)	With every use
Clean and check pressure filter, also inner filter (replace if necessary)	With every use

5.2. Maintenance

Maintenance work may only be carried out when the MIPO 1005 is disconnected from the power source and the emergency stop has been pressed.

Maintenance work may only be carried out by authorized personnel.

Markings affixed to the MIPO 1005 such as identification plate, warning symbols, etc. must remain clean, free of paint and clearly readable. Missing or unreadable markings must be replaced immediately.

5.3. Storage

5.3.1. Cleaning of machine after use

It is important to always clean the machine after use. This is to prevent the machine becoming unusable due to contamination and blockages that may occur due to prolonged non-cleaning.

1. Spray down the MIPO 1005 with a high-pressure sprayer. Take care with electronic components. Remove all bentonite and other dirt left on the machine after use. Be aware that the variable speed drive should NOT be hosed down with a high-pressure sprayer. It is waterproof, but to prolong its lifespan, it is advised not to hose it down.
2. Make sure that all stickers and the identification plate are visible again and in good condition.

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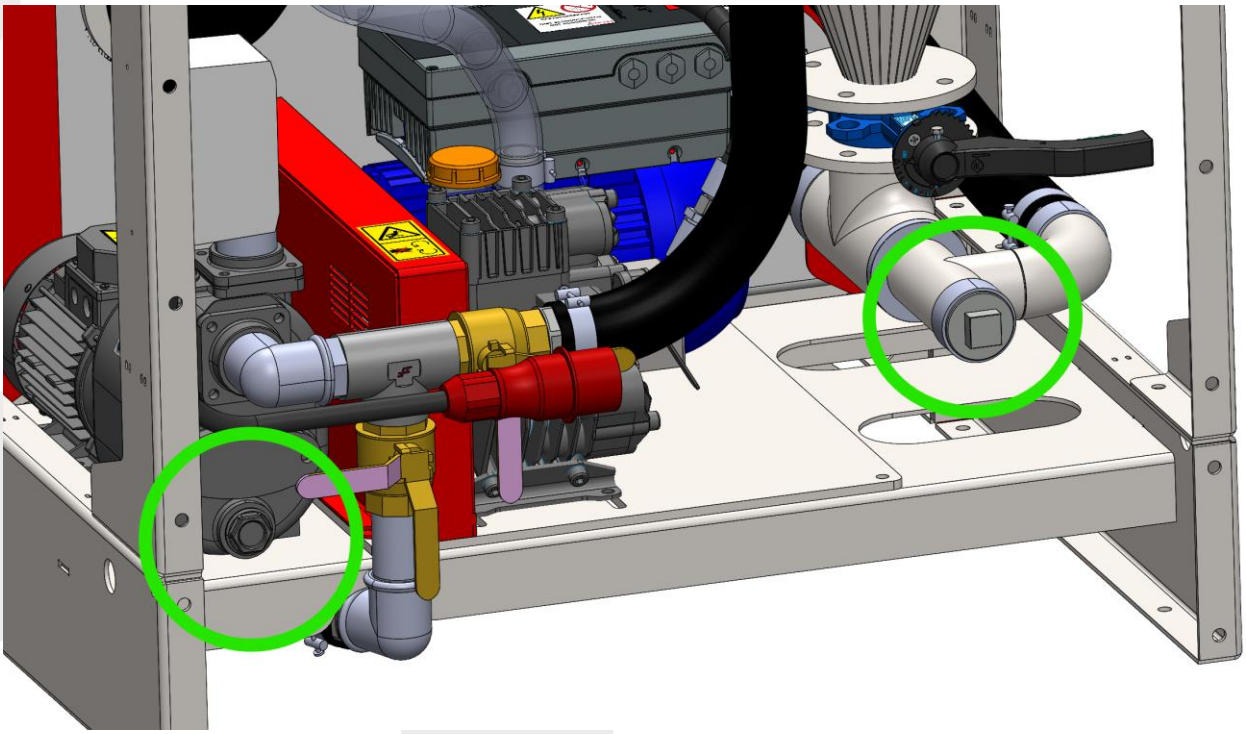
3. Unscrew the filter cups from the filters using the filter nut and remove the inner filters. Always clean these after use, and replace if necessary. See also 6.2 and 6.3.
4. Check that no large objects have fallen into the hopper. These may cause damage during subsequent use.
5. Inspect the entire MIPO 1005 for damage and loose parts. If necessary, execute repairs immediately.

5.3.2. Storage in case of winter

During a frost period when the MIPO 1005 is not in use, it should be carefully prepared for proper storage. This is important, as failure to do so may result in permanent damage to the MIPO 1005. To clean the MIPO 1005 properly, the following procedure has been developed by KORMEE BV.

1. First, clear the system of all bentonite and/or water. To do this, unscrew the plug in the venturi and in the mixing pump. See the photo below.



2. Make sure all ball valves are open.
3. Turn on the mixing pump at low speed, until no more drilling fluid comes out of the bentonite hose.
4. Drain all bentonite and water from the tank through the 2 stops mentioned above with the mixing pump.

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5. Once the entire system is empty, there are 2 options as follow-up steps. The first is to bleed the system, the second is to flush the system with coolant.

Option 1:

a) Close the plugs on the venturi and mixing pump again.

b) Pump air through the system by turning on both the mixing pump and the high-pressure pump. This cleans the system, including the bentonite hose on the reel.

c) Then continue with step 6.

Option 2:

a) Close the plugs on the venturi and mixing pump again.

b) Pour 30 litres of coolant into the tank of the MIPO 1005. It is also possible to connect a suction hose to the suction filter and place this hose in a bucket with 30 litres of coolant. This achieves the same result.

c) Use both the mixing pump and the high-pressure pump to pump the coolant through the system.

d) Pump out all the coolant and collect it for proper disposal. Coolant is a toxic product, with serious damage to humans, animals and nature if handled incorrectly.

e) Have the system bled afterwards.

6. Once the whole system has been bled in both options, the pumps can be turned off.
7. Make sure all ball valves are left open. Closed valves will be damaged if frost occurs.
8. Also open the ball valve on the high-pressure pump to prevent it from freezing. This should **only** be done when the system is completely empty to avoid dangerous situations. See also the photo below.

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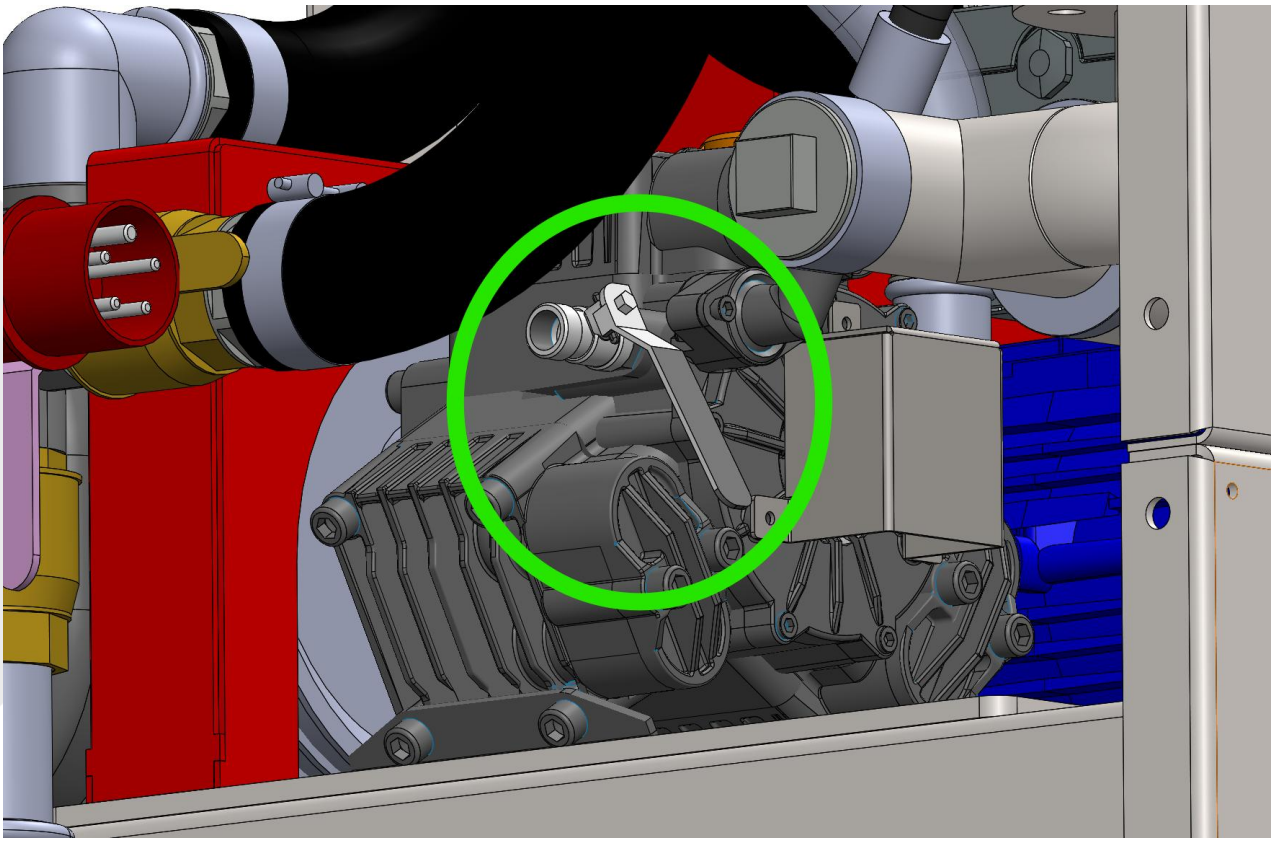

9. Store the MIPO 1005 carefully. The prevent damage, it is strongly recommended to store it in a place where frost does not occur. Should this not be possible, cover the MIPO 1005 completely.
10. When the MIPO 1005 is first used again after the frost period, make sure you convince yourself that the machine is operating correctly. Check the whole machine including the pump system for damage, cracks and any frozen parts. Repair parts that have been broken. Check that the ball valves and butterfly valve can all open and close.
11. Do not forget to close the ball valve of the high-pressure pump again before use. The MIPO 1005 is now ready for use again.

ATTENTION!

- **Failure to do so will result in damage to pumps and pipes!**
- **Always be careful with coolant and its harmful side effects when ingested.**
- **NEVER open the ball valve of the high pressure pump without making sure that the whole system is completely empty. This can cause dangerous situations.**

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6. Frequently occurring problems

Occasionally, the MIPO 1005 may not work properly. Below are some common problems with corresponding solutions. Most known problem are listed here, or are very similar. Therefore, please consult this manual first, before calling KORMEE BV.

6.1. Pairing remote controller with machine

To pair a remote control with another machine, the following procedure should be followed.

- Switch off the Scanreco receiver using the switch on the right side. The switch should be set in the centre position.
- Press the emergency stop on the remote controller.
- Remove the battery from the remote controller.
- Connect the connection cord to the remote controller.
- Connect the connection cord to the receiver.
- Flip up the switch on the receiver.
- Unlock the emergency stop. (Turn it right, it will spring back up).
- Press the Connect button on the right side of the emergency stop until the remote controller makes a sound (takes 15 seconds). The remote controller is paired with the receiver again.
- Press the emergency stop again.
- Turn the receiver switch back to centre.
- Remove the connection cord from the remote controller and the receiver.
- Replace the waterproof seals on the connection points.
- Put the battery back in the remote controller.
- Flip the receiver switch back up.
- Press and hold the Connect button on the right side of the emergency switch until the remote control is paired. This is indicated by LEDS on the remote controller lighting up.
- If the remote controller is not paired properly, the whole procedure must be carried out again.

6.2. Bentonite hose rattles

On occasion, the bentonite hose may start rattling violently. This is due to cavitations in the pump.

- Stop the drilling and turn off the high-pressure pump.
- Close the high-pressure valve.
- Check whether the pressure filter in front of the high-pressure pump is clogged. Unscrew it with the filter nut and clean the inner filter if necessary. The inner filter can also be replaced, if necessary.
- If the filter is not clogged, the high-pressure pump should be checked.
- Dirt may have remained in the valves, causing them to malfunction. If necessary, clean these or replace them with new valves.

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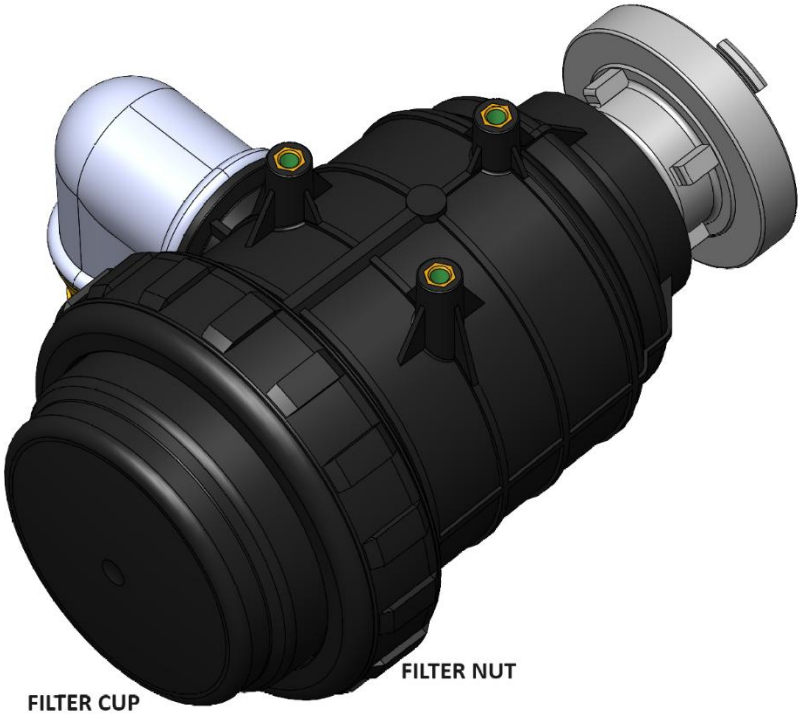
- Should the oil level in the reservoir rise, the diaphragms may be leaking. These must then be replaced. See 8.2 for spare part numbers.

6.3. Tank fills up too slowly

Should you feel that filling the tank of the MIPO 1005 is too slow, it could be because the filter is clogged.

- Switch off the mixing pump using the motor protection switch.
- Disconnect the water hose from the Storz coupling on the filter.
- Unscrew the filter cup from the back of the filter, using the filter nut. See attached illustration. **Please note that the intake filter may still be full of water. Be aware of this.**



- Remove the inner filter from the suction filter.
- Clean the inner filter if necessary or replace the entire inner filter.
- Reinstall the intake filter with the filter nut.
- Check whether the problem is now solved by reconnecting the water hose and starting pumping.

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6.4. Venturi no longer has suction power

If, after adding bentonite in the hopper, the venturi no longer seems to suck properly, it may be because the bentonite inlet is clogged. This blockage is caused, for example, by a funnel that has been rained full.

- If it rains and the lid is open, the funnel may start filling up when the butterfly valve is closed. If there is then some residual bentonite powder in the funnel, it will start to encrust. This will clog the funnel or venturi.
- To solve this, first switch off the mixing pump using the motor protection switch. This is to prevent the venturi from operating when it is being cleaned. Failure to do so can cause hazardous situations.
- Rinse the funnel thoroughly with water so that all encrusted bentonite is loosened and ground into small lumps. Scrape off stubborn lumps with a hard object.
- Turn the mixing pump back on and **carefully** open the butterfly valve.
- Now mix the chunks of bentonite with the water and add the extra bentonite.
- If the problem is still not solved, stop the mixing pump again and repeat the steps.
- Other possible causes are: the suction side in the tank is clogged; there is contamination in the manifold; the pump is running in the wrong direction; the impeller of the pump is worn.

ATTENTION!

Never insert an object into the hopper, such as a stick, to push the bentonite into the venturi when the mixing pump is running and the butterfly valve is open. This may cause dangerous situations resulting in human injury and/or material damage.

6.5. Mixing pump no longer pumps

If, during any of the steps of preparing the drilling, it appears that the mixing pump is not doing its job properly, it may be clogged. It is also possible that the pump is running in the wrong direction.

- If the pump turns in the wrong direction, the tank will not fill with water. Air will be blown into the water source instead of water towards the pump. This is easily solved by reversing the poles.

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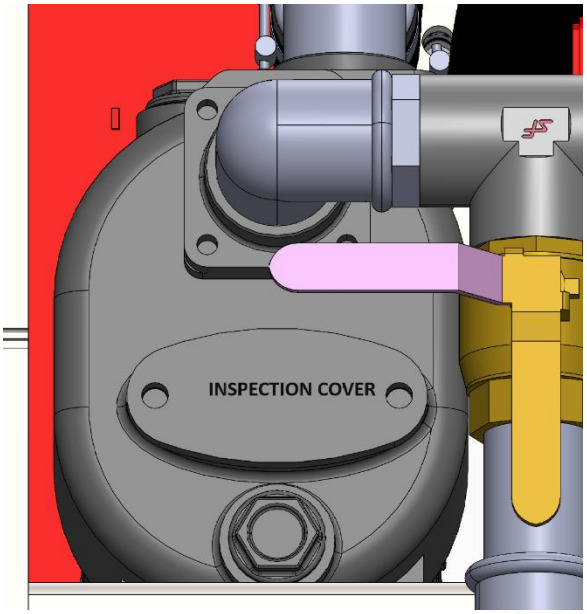
- If this is not the case, the mixing pump is most likely clogged. This is often caused by twigs or stones. This can usually be heard as a rattling sound.
- First switch off the mixing pump using the motor protection switch.
- Close the suction ball valves.
- First remove the inspection cover from the mixing pump. This is visible in the photo on the right. Check whether any dirt is visible.
- Unscrew the plug under the inspection cap to let the dirt drain out with the water.



- Check if any dirt is still visible in the pump through the inspection cover.
- Re-open the suction valve and the circulating pump ball valve.
- Run the pump again to check if there is still dirt in it.
- If you cannot convince yourself that the mixing pump is working correctly, do not continue using the MIPO 1005. Contact KORMEE BV, to discuss next steps.

6.6. Variable speed drive at fault

It may happen that the variable speed drive on top of the electric motor breaks down. If so, a red light on the variable speed drive, and the pump stops running. This does not immediately mean it is broken and therefore needs to be replaced, but somewhere it has intercepted an error message and therefore goes into failure mode. This can have the following reasons.

- The pressure filter is clogged.
- The bentonite mixture has been made too thick.
- The feed source is faulty or has stopped working.
- The drill head or reamer is clogged, e.g. there is dirt in the nozzle.

This can be solved using the following steps:

- After each step, the variable speed drive should be reset to find out whether the fault has been fixed or not. If it goes into fault again, the problem has not yet been solved.
- Always start by checking and cleaning the filters. Open them by unscrewing the filter nut. Dirt can always remain in the filter, causing a blockage. Thoroughly clean the inner filters with water and check whether the inverter is still at fault.

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- Then check the thickness of the bentonite. Use the measurement method described in 4.5.2. to determine the thickness. Even if you have ensured the correct viscosity before drilling, always check this again when in failure. Therefore, if the viscosity of the additional measurement is good, this is not the problem. If the viscosity is too low or too high, add extra water or extra bentonite powder, depending on what is needed. Again, check whether the variable speed drive is still at fault.
- If the problem is still not solved, check the power source. Most likely, this is a generator. Check whether it is at fault, and whether the output is sufficient as prescribed. Check this for both 50 Hz and 60 Hz. Reset the inverter and check for faults.
- The final cause is a blockage in the drill head or reamer. Of course, this is difficult to detect when it is underground. To test this, disconnect the high-pressure hose from the swivel on the drill rods. Open the tank lid and hang the hose in the tank. Reset the inverter and run the high-pressure pump again. If bentonite comes out of the hose, it means there is a blockage in the drill head or reamer. Do not drill any further and retrieve the drill head or reamer. Clean it and test if it is still clogged.
- If the problem is still not solved, repeat the steps to see if anything was missed. If you really can't figure it out, contact KORMEE BV or your KORMEE dealer.

6.7. Slipping V-belts

During drilling, pressure may drop. If this is accompanied by a scraping sound at the V-belts, they may be slipping. The cause of this is that the bentonite hose is blocked and so the high-pressure pump cannot work.

- First turn off the high-pressure pump and the mixing pump.
- Disconnect the bentonite hose from the high-pressure pump.
- Clean the bentonite hose inside with a high-pressure sprayer.
- Check that water can flow through the hose without resistance.
- Reconnect the bentonite hose to the high-pressure pump.
- Run the system again and check that the V-belts no longer slip and that enough pressure is delivered by the high-pressure pump.
- It could also be that the V-belts are being ‘eaten up’ by the pulleys. If so, there is still no pressure after cleaning the bentonite hose.
- This means the V-belts need to be replaced. This repair is always carried out at KORMEE BV or, in consultation with KORMEE BV, elsewhere. So never replace V-belts yourself.

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7. CE certification

This MIPO 1005 bears the CE mark. This means that the MIPO 1005 complies with the application of the European Directives on Safety and Health. The included 'CE Declaration' indicates which directives these are.

7.1. Product liability

KORMEE BV is not liable for accidents, unsafe situations and direct or indirect damages resulting from:

- Ignoring warnings or instructions as shown on the MIPO 1005 or in this documentation.
- Use for applications or under conditions other than those specified in this documentation.
- Modifications to the MIPO 1005. This includes the use of any non-original replacement parts.
- Altering weldments and/or mechanical operations on the MIPO 1005.
- Inadequate maintenance.
- Damage caused by poor supervision.

KORMEE BV is not liable for:

- The resulting direct or indirect damage in case of product failures, business interruption, etc.
- Ignoring warnings or instructions as shown in this documentation.
- Use for applications or under conditions other than those indicated in this documentation.
- Modifications to the MIPO 1005. This includes applying non-original replacement parts.
- Altering weldments and/or mechanical operations on the MIPO 1005 without consent of KORMEE BV.
- Inadequate maintenance.

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7.2. Warranty

Unless otherwise agreed in writing, the warranty provisions below apply:

KORMEE BV provides warranty to the first user up to 12 months after delivery, provided this MIPO 1005 is maintained with the descriptions in this user manual and provided a maintenance inspection by KORMEE BV every 6 months.

Defects must be reported to KORMEE BV before the expiry of the warranty period.

The warranty applies to defects occurring due to:

- Occurring during normal use of the MIPO 1005;
- Occurring due to faulty construction or materials.

The warranty is void in the event of defects occurring due to:

- Normal wear and tear;
- Normal consumption of consumables;
- Misuse.

If defects occur, KORMEE BV will:

- Replacing the parts. KORMEE BV becomes the owner of the replaced parts;
- Repair the defects;
- Opt for another replacement solution, if repair is not reasonably possible.

Other comments:

- The customer must give KORMEE BV the opportunity to remedy any defects.
- For built-in third-party components, the warranty conditions of the respective supplier apply.
- The warranty period may differ from what is stated above.
- Restoration and/or repair shall take place in KORMEE BV's workshop.
- KORMEE BV reserves the right to change its machines without prior warning.
- Machines must be delivered thoroughly clean.

7.3. Liability

KORMEE BV is not liable:

- If the customer has not fulfilled all its obligations to KORMEE BV (financial or otherwise).
- For consequential damages due to malfunctions or defects of the MIPO 1005 (e.g. damage to the products to be processed, business interruption, delay, etc.).
- For damage resulting from incompetence of the operators.
- For damage caused to the infrastructure and environment.

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8. Appendix

Attached are all parts drawings. This allows you to easily request new or replacement parts from KORMEE BV. If you need a part, please contact KORMEE BV or your KORMEE dealer. Also, if you would like to request another part that is not on these drawings, please contact KORMEE BV or your KORMEE dealer. You will then be helped further.

Next in 8.2. you can find the spare parts of the MIPO 1005. These parts need to be replaced with some regularity, and can therefore be ordered separately from KORMEE BV. Please contact KORMEE BV for the possibilities.

In 8.3 you can find the fastening materials. Should you lose a bolt, nut or washer, you can request a new one from KORMEE BV or your KORMEE dealer.

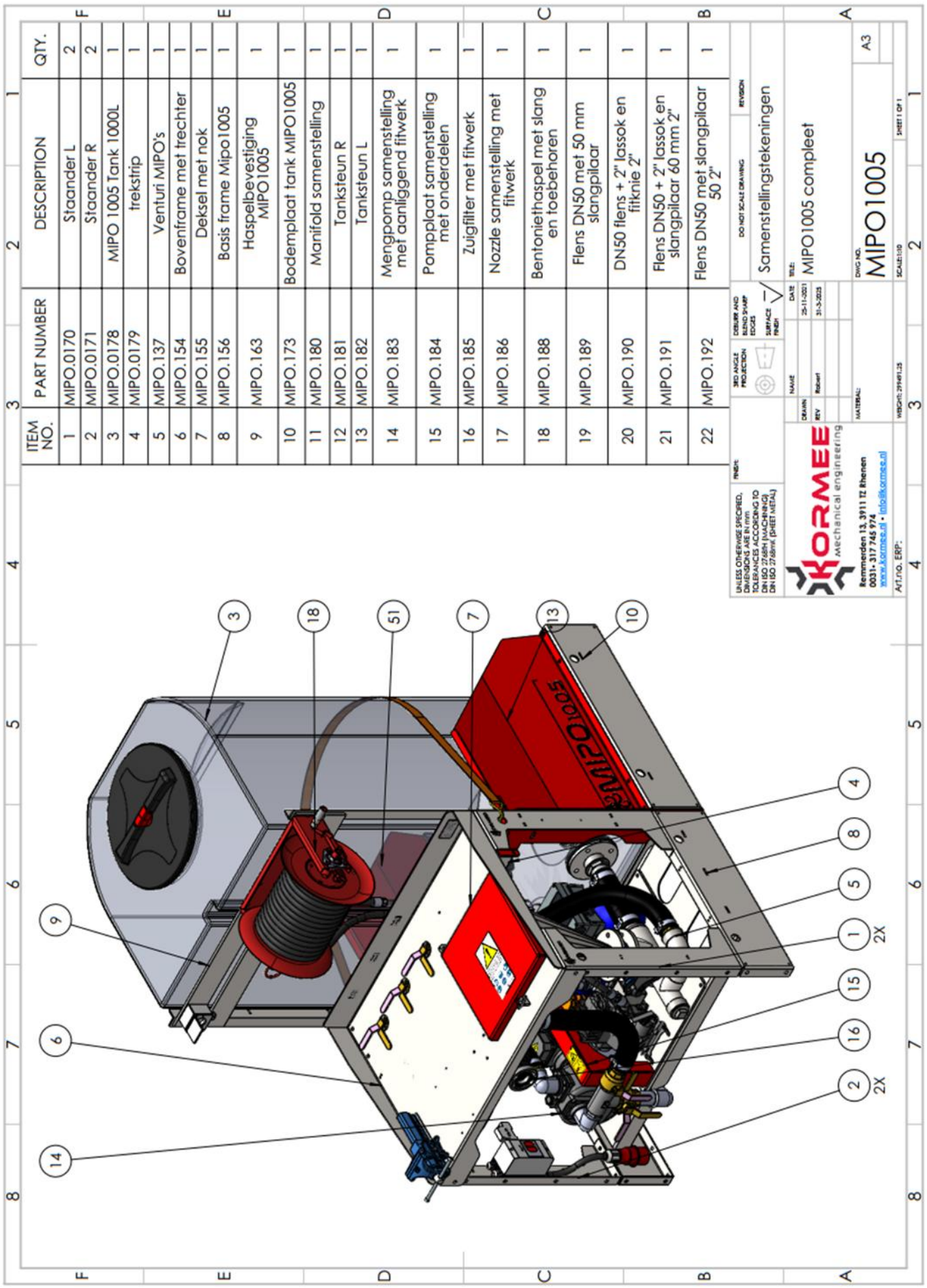
8.1. Parts drawings MIPO 1005

KORMEE
Remmerden 13
3911 TZ Rhenen

tel nr. +31 (0)317 - 74 59 74
email info@kormee.nl
website www.kormee.nl

KVK nr. 73 12 31 53
Btw nr. NL 85 93 64 318 B01

Bank nr. NL11 ABNA 0872 9817 38
BIC Code ABNA NL 2A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MIPO.0170	Staander L	2
2	MIPO.0171	Staander R	2
3	MIPO.0178	MIPO 1005 Tank 1000L	1
4	MIPO.0179	trekstrip	1
5	MIPO.137	Venturi MIPO's	1
6	MIPO.154	Bovenframe met trechter	1
7	MIPO.155	Deksel met nok	1
8	MIPO.156	Basis frame Mipo1005	1
9	MIPO.163	Haspelbevestiging MIPO1005	1
10	MIPO.173	Bodemplaat tank MIPO1005	1
11	MIPO.180	Manifold samenstelling	1
12	MIPO.181	Tanksteun R	1
13	MIPO.182	Tanksteun L	1
14	MIPO.183	Mengpomp samenstelling met aanliggend fitwerk	1
15	MIPO.184	Pompplaat samenstelling met onderdelen	1
16	MIPO.185	Zuigfilter met fitwerk	1
17	MIPO.186	Nozzle samenstelling met fitwerk	1
18	MIPO.188	Bentoniethaspel met slang en toebehoren	1
19	MIPO.189	Flens DN50 met 50 mm slangpilaar	1
20	MIPO.190	DN50 flens + 2" lassok en fitknie 2"	1
21	MIPO.191	Flens DN50 + 2" lassok en slangpilaar 60 mm 2"	1
22	MIPO.192	Flens DN50 met slangpilaar 50 2"	1

Samenstellingstekeningen

MIPO1005 compleet

MIPO1005

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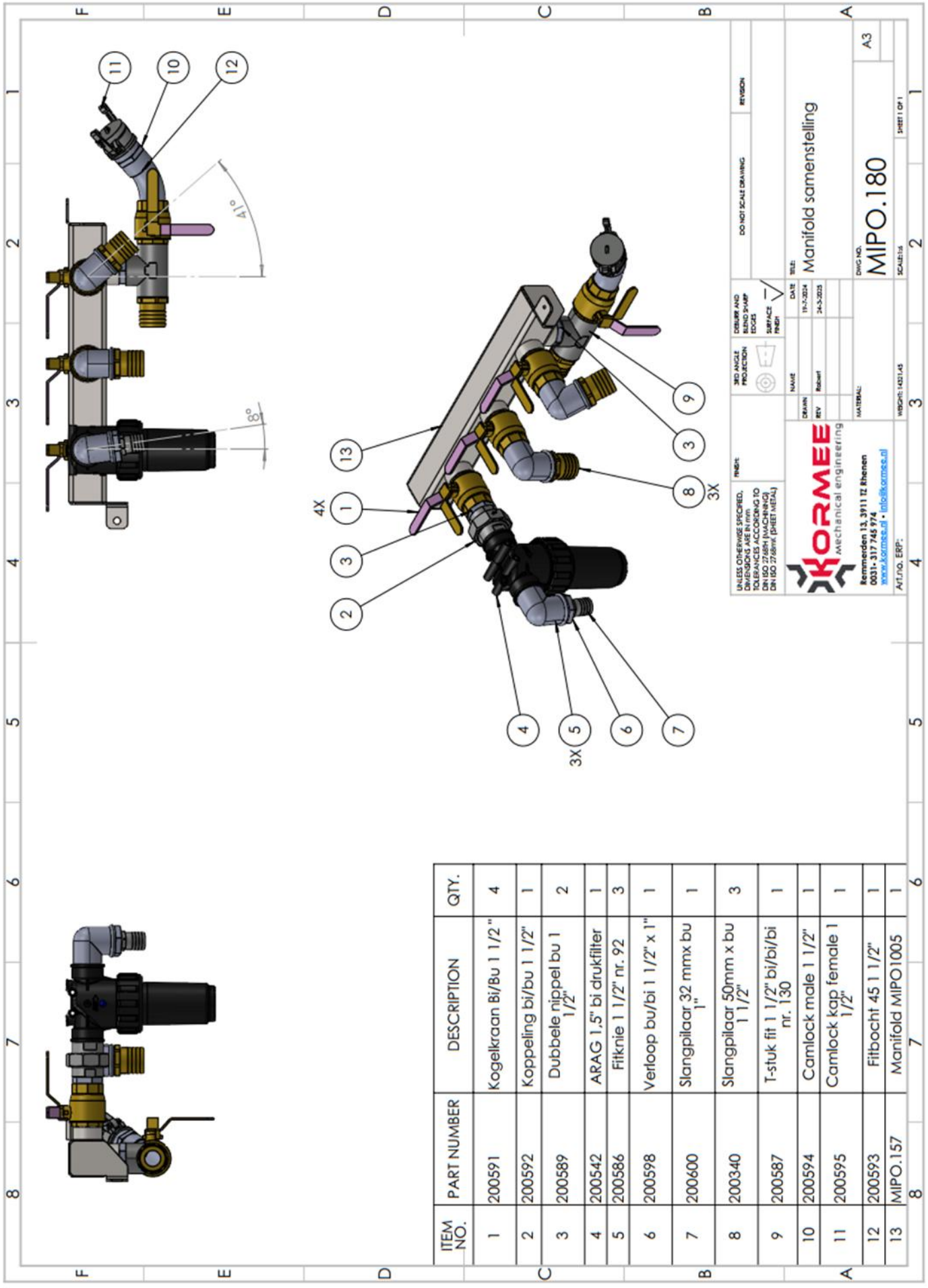

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	200591	Kogelkraan Bi/Bu 1 1/2 "	4
2	200592	Koppeling bi/bu 1 1/2"	1
3	200589	Dubbele nippel bu 1 1/2"	2
4	200542	ARAG 1,5" bi drukfilter	1
5	200586	Fitknie 1 1/2" nr. 92	3
6	200598	Verloop bu/bi 1 1/2" x 1"	1
7	200600	Slangpilaar 32 mmx bu 1"	1
8	200340	Slangpilaar 50mm x bu 1 1/2"	3
9	200587	T-stuk fit 1 1/2" bi/bi/bi nr. 130	1
10	200594	Camlock male 1 1/2"	1
11	200595	Camlock kap female 1 1/2"	1
12	200593	Fitbocht 45 1 1/2"	1
13	MIPO.157	Manifold MIPO1005	1

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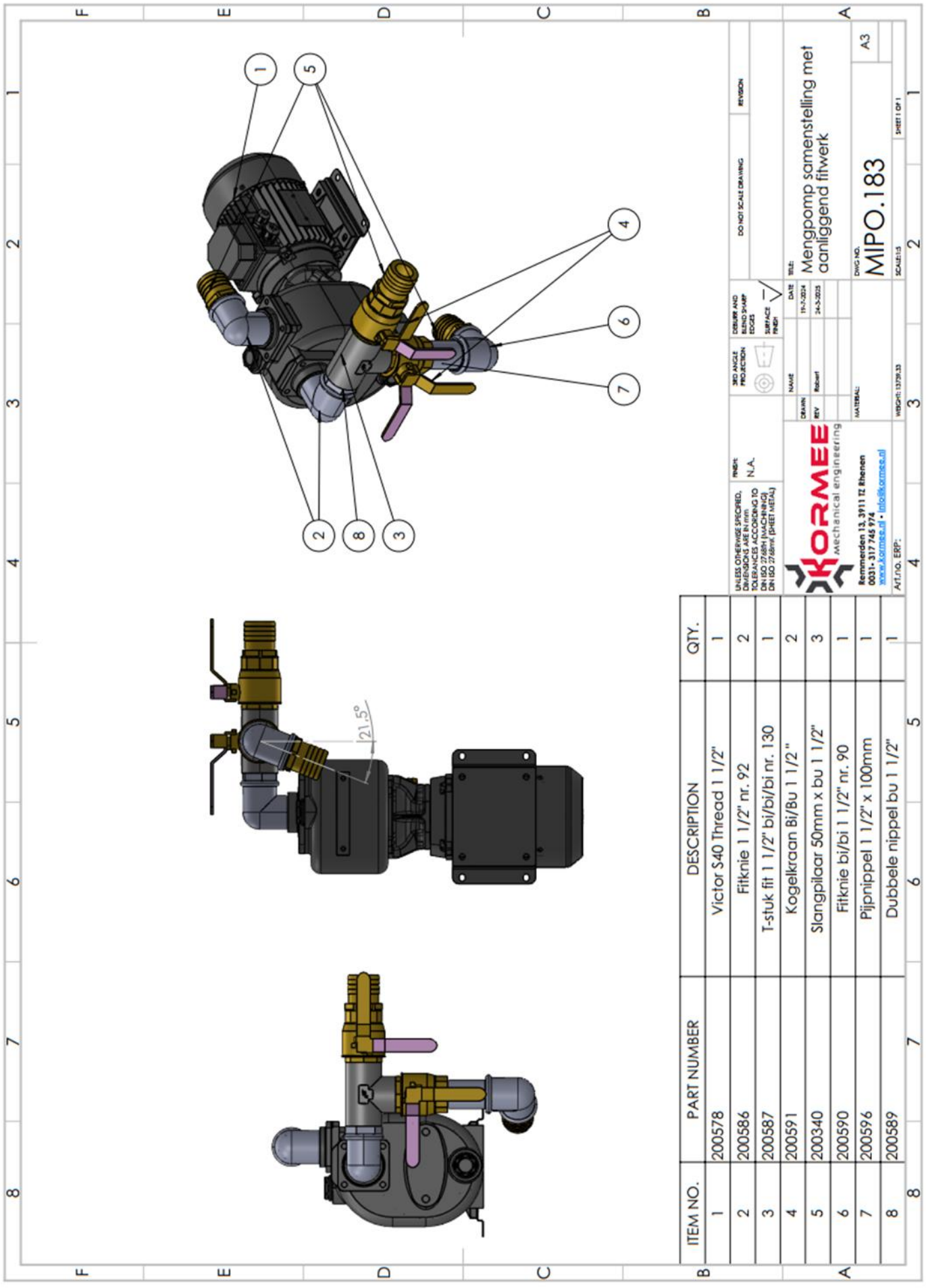

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	200578	Victor S40 Thread 1 1/2"	1
2	200586	Fitknie 1 1/2" nr. 92	2
3	200587	T-stuk fit 1 1/2" bi/bi/bi nr. 130	1
4	200591	Kogelkraan Bi/Bu 1 1/2 "	2
5	200340	Slangpilaar 50mm x bu 1 1/2"	3
6	200590	Fitknie bi/bi 1 1/2" nr. 90	1
7	200596	Pijpnippel 1 1/2" x 100mm	1
8	200589	Dubbele nippel bu 1 1/2"	1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN mm
TOLERANCES ACCORDING TO
DIN ISO 2768H (MACHINING)
DIN ISO 2768mk (SHEET METAL)

FINISH: N.A.

3RD ANGLE PROJECTION

DEBURR AND BLEND SHARP EDGES

SURFACE FINISH

DO NOT SCALE DRAWING

REVISION

	NAME	DATE
DRAWN		19-7-2024
REV	Robert	24-5-2025

MATERIAL:

KORMEE Mechanical engineering
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0031- 317 745 974
www.kormee.nl • info@kormee.nl

WEIGHT: 13739.33

SCALE: 1:5

SHEET 1 OF 1

TITLE: Mengpomp samenstelling met aanliggend fitwerk

DWG NO. MIPO.183

A3

Art.no. ERP:

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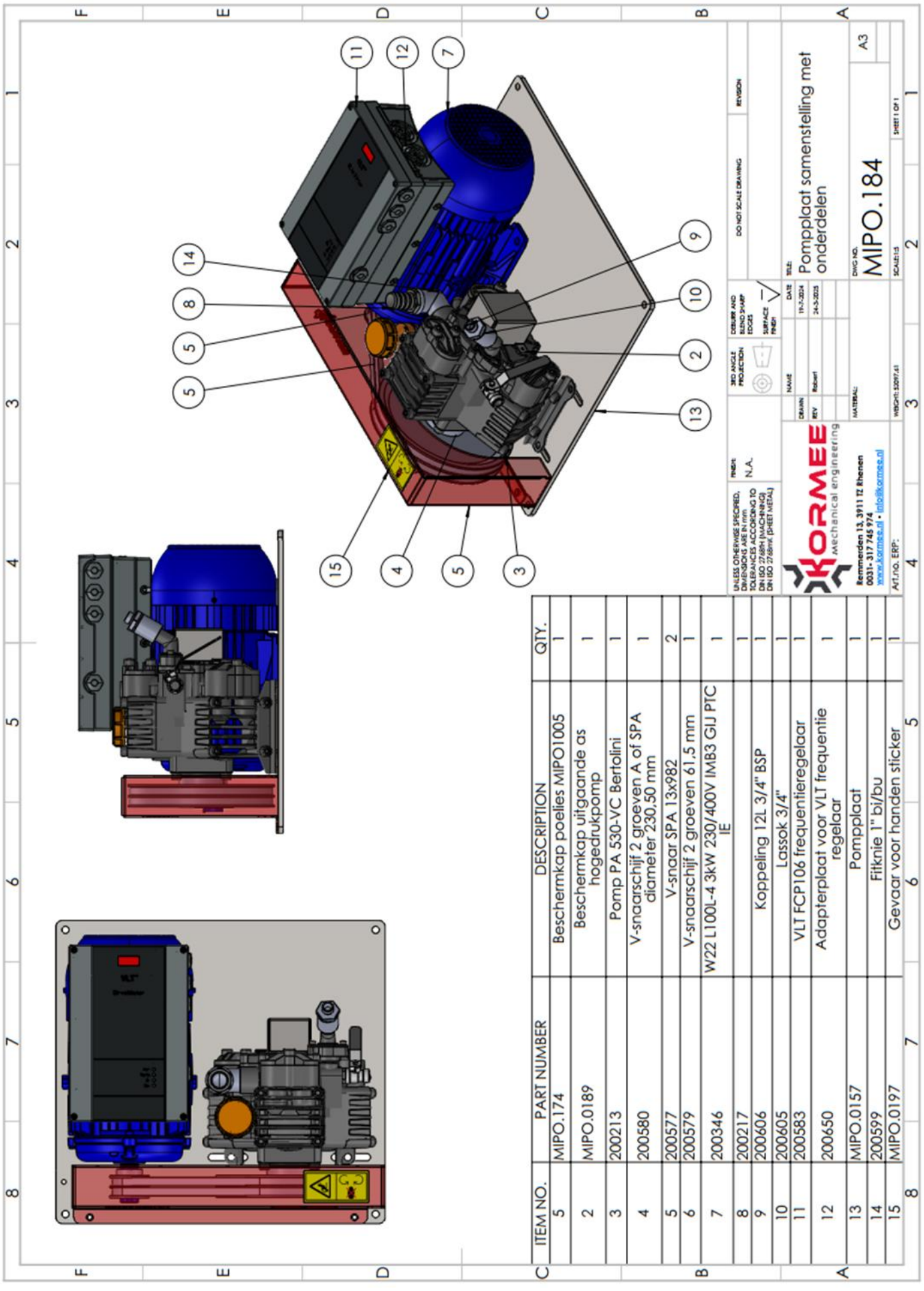

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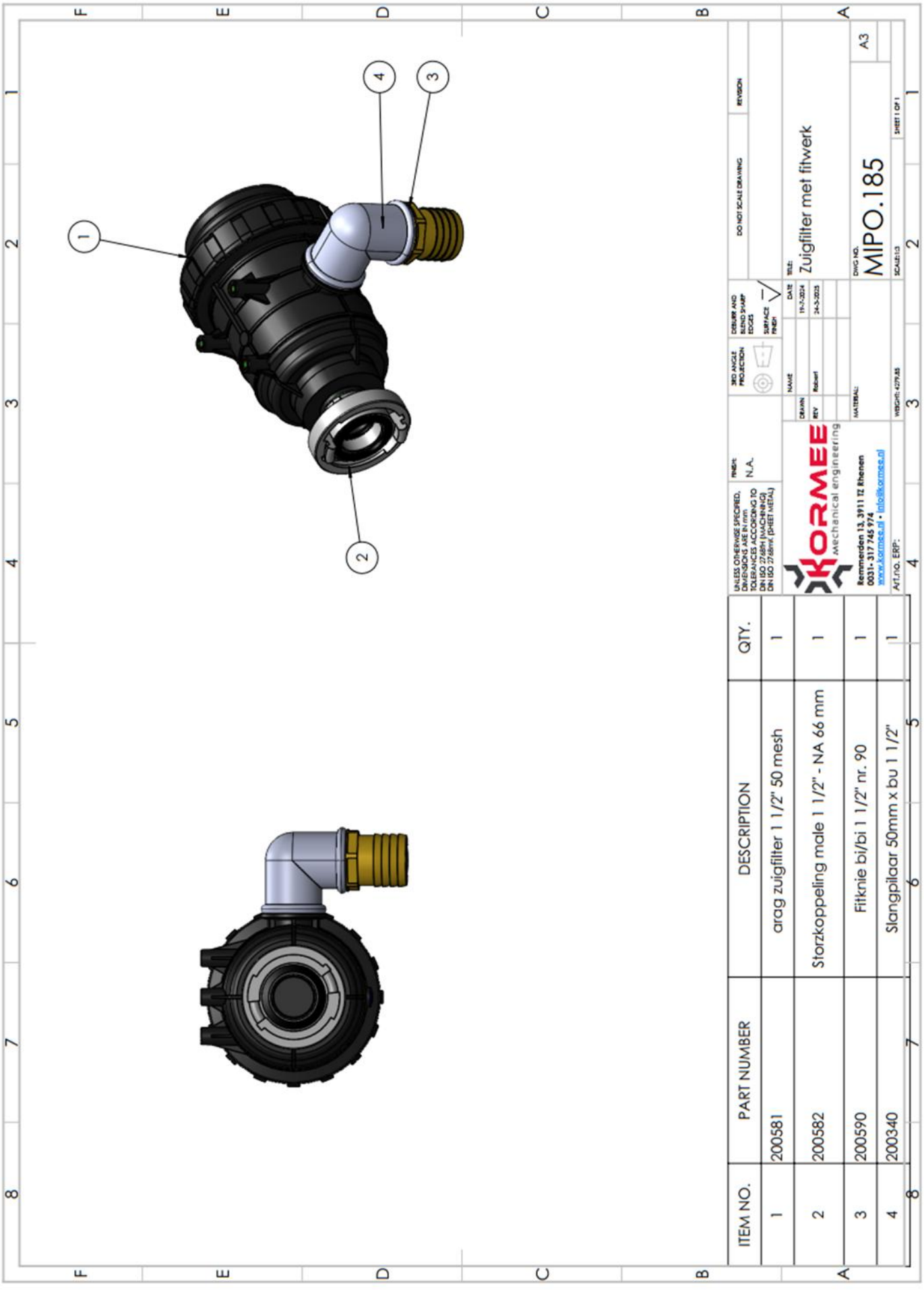

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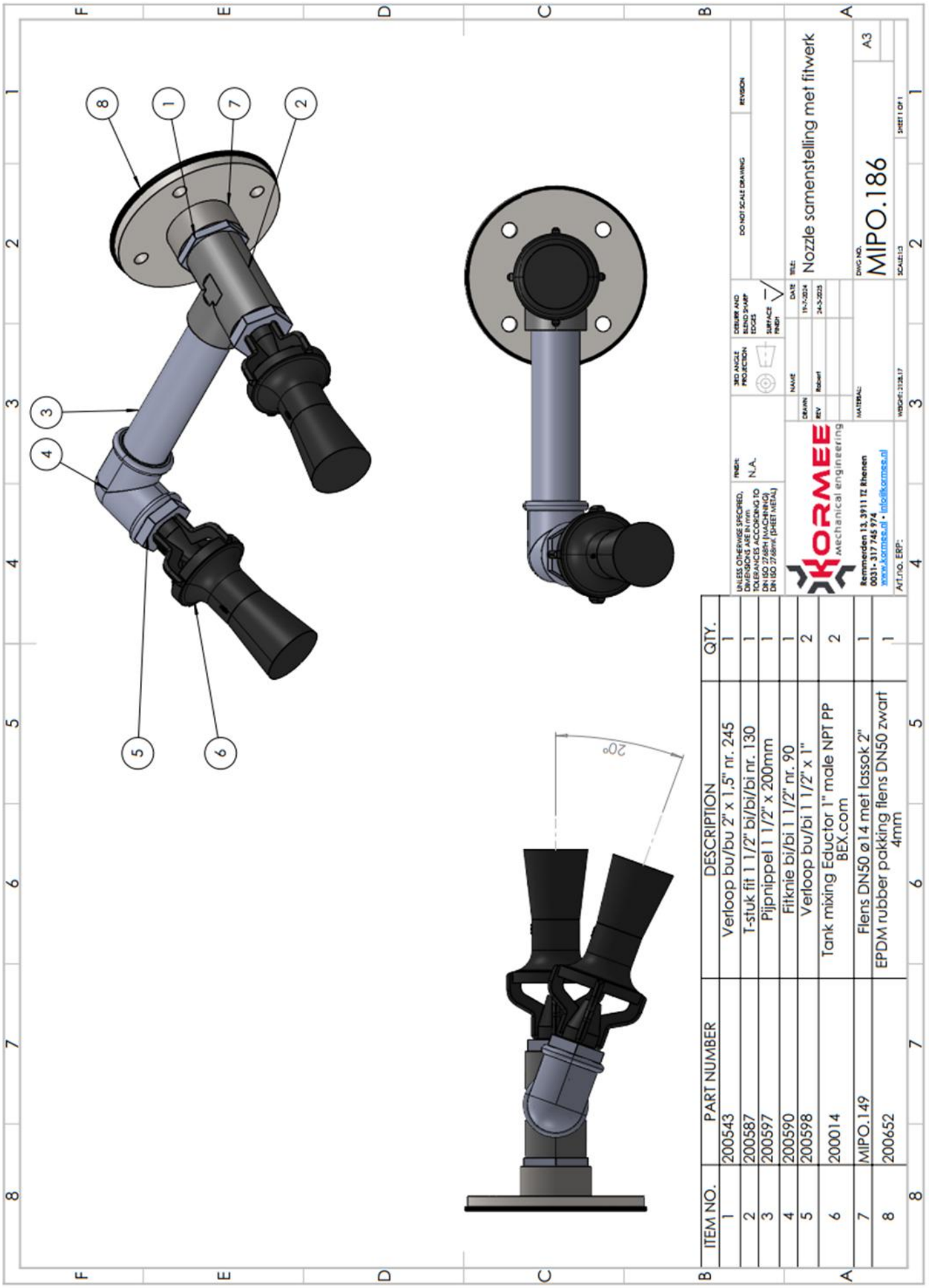

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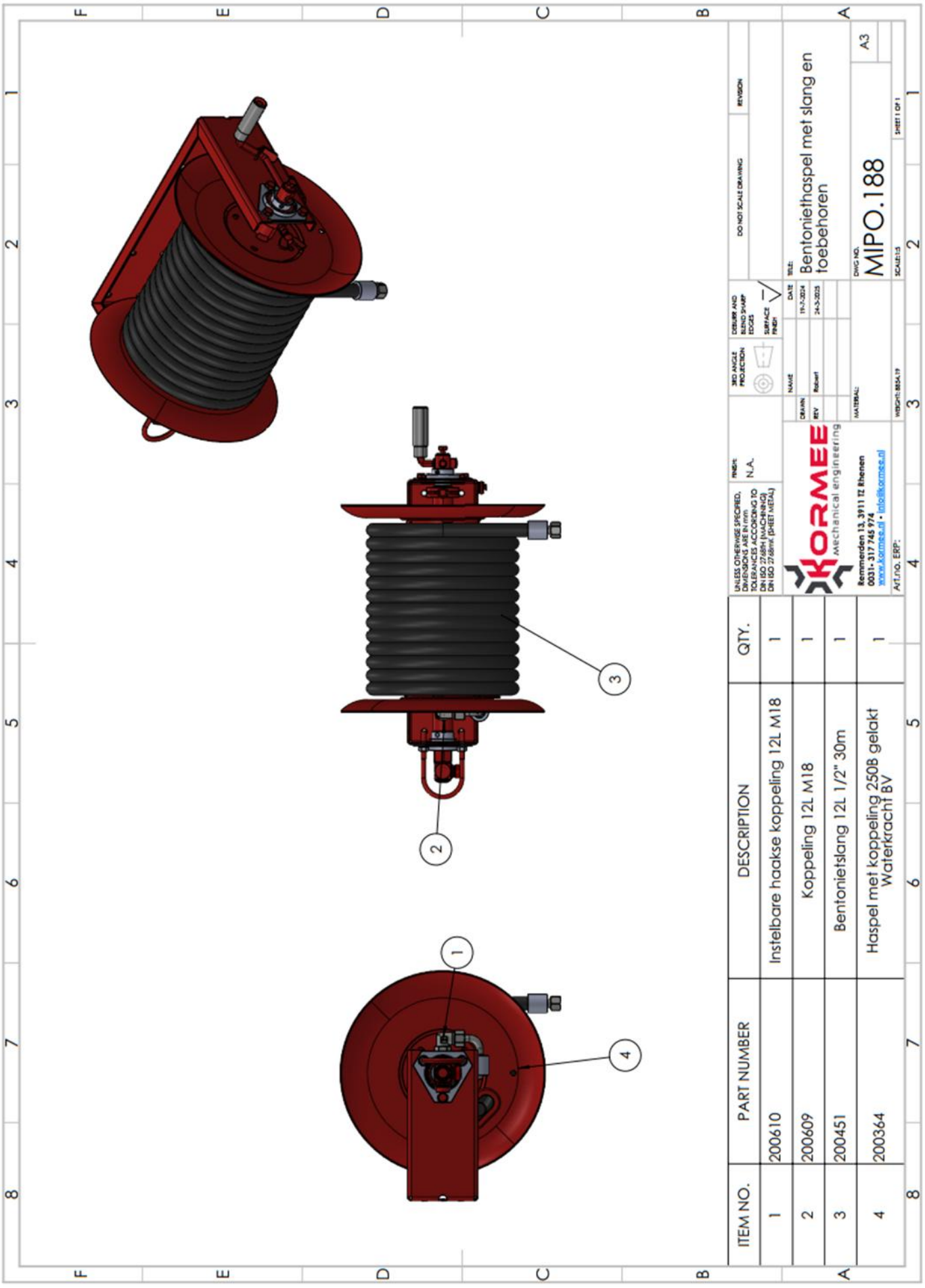

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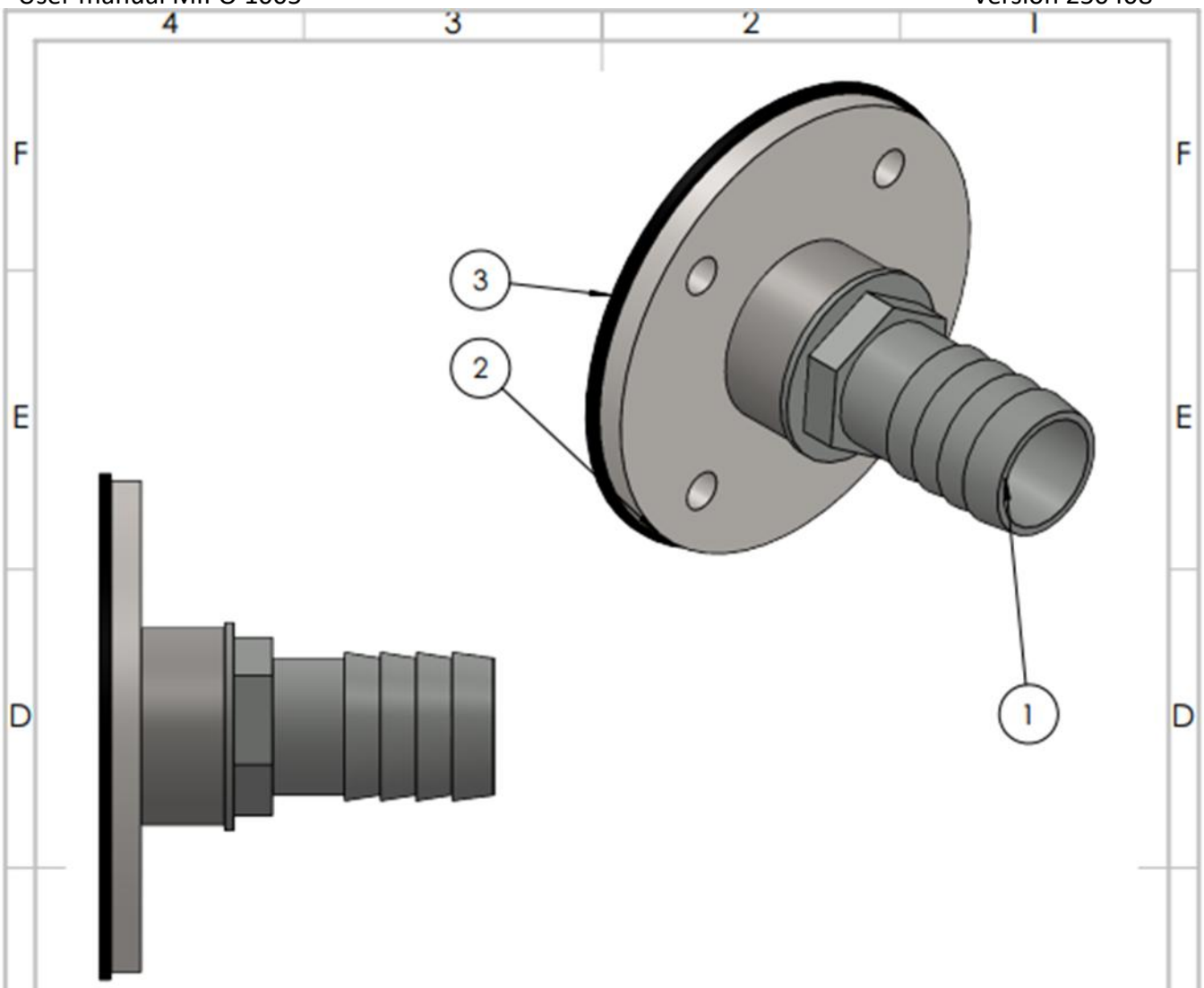

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	200539	Slangpilaar 50mm x bu 2"	1
2	MIPO.149	Flens DN50 ø14 met lassok 2"	1
3	200652	EPDM rubber pakking flens DN50 zwart 4mm	1

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN mm
TOLERANCES ACCORDING TO DIN ISO 2768fH (MACHINING) DIN ISO 2768mK (SHEET METAL)

FINISH: N.A.

3RD ANGLE PROJECTION

DEBURR AND BLEND SHARP EDGES

SURFACE FINISH Ra 3,2

DO NOT SCALE DRAWING

REVISION:

Category:

KORMEE mechanical engineering

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0031- 317 745 974
www.kormee.nl - info@kormee.nl

	NAME	DATE
DRAWN		19-7-2024
REV	Robert	24-3-2025

TITLE: Flens DN50 met 50 mm slangpilaar

MATERIAL:

DWG NO. MIPO.189

A4

Art.no. ERP:

WEIGHT: 1742.16 grams

SCALE:1:2

SHEET 1 OF 1

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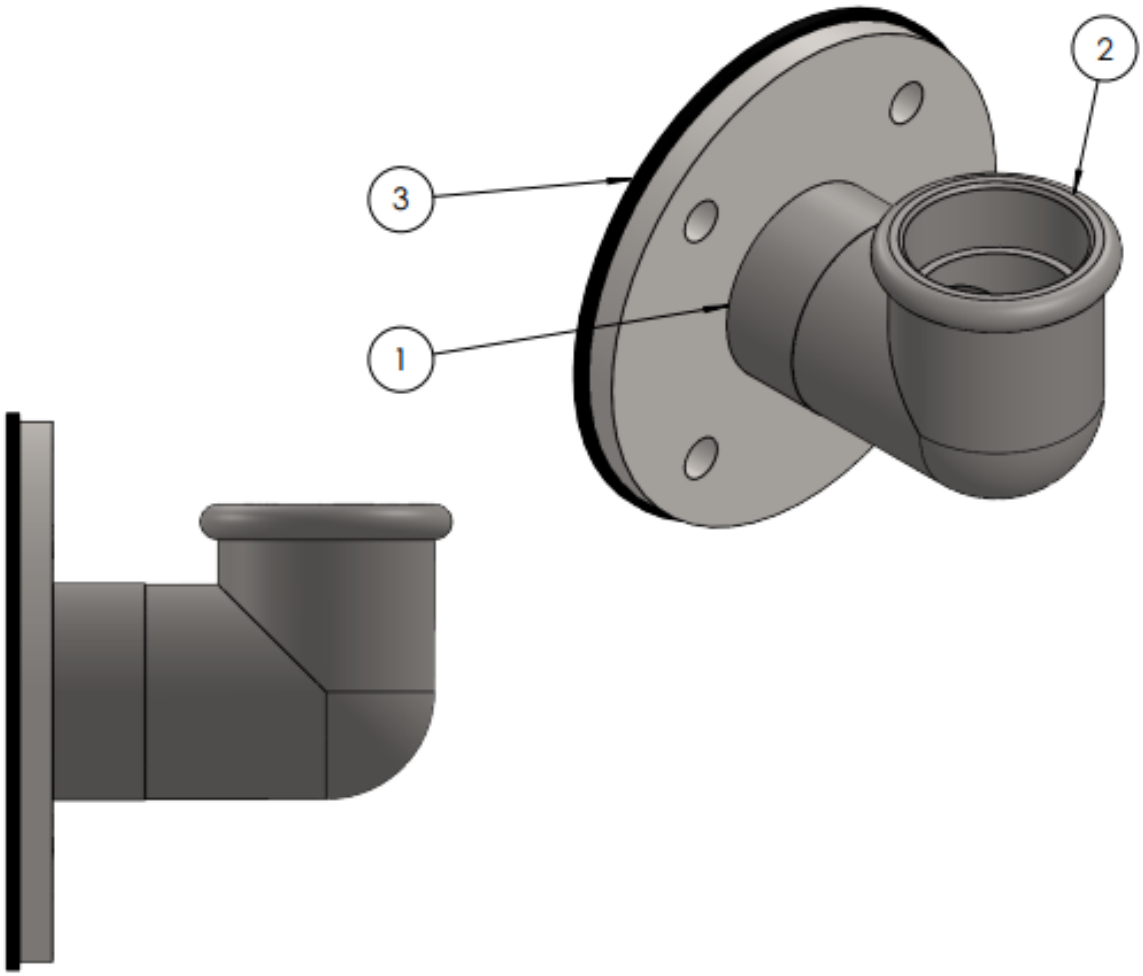
BIC Code ABNA NL 2A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MIPO.149	Flens DN50 ø14 met lassok 2"	1
2	200511	Knie bi/bu 2" nr. 92	1
3	200652	EPDM rubber pakking flens DN50 zwart 4mm	1

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN mm
TOLERANCES ACCORDING TO DIN ISO 2768fH (MACHINING) DIN ISO 2768mK (SHEET METAL)

FINISH: N.A.

3RD ANGLE PROJECTION

DEBURR AND BLEND SHARP EDGES

SURFACE FINISH Ra 3,2

DO NOT SCALE DRAWING

REVISION:

Category:

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	NAME	DATE
DRAWN		19-7-2024
REV	Robert	31-3-2025

TITLE: DN50 flens + 2" lassok en fitknie 2"

MATERIAL:

DWG NO. MIPO.190

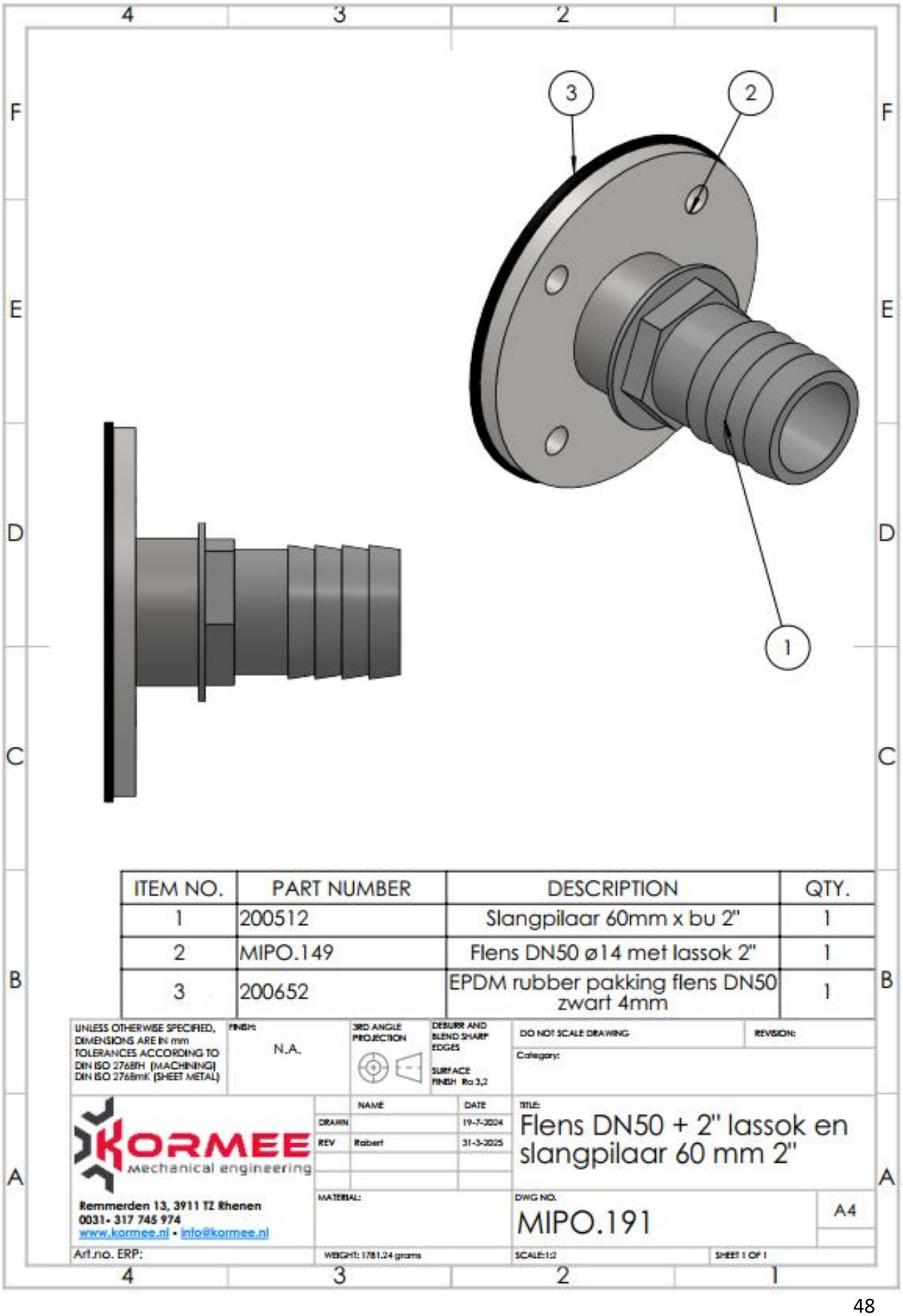
A4

Art.no. ERP:

WEIGHT: 3003.00 grams

SCALE:1:2

SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	200512	Slangpilaar 60mm x bu 2"	1
2	MIPO.149	Flens DN50 ø14 met lassok 2"	1
3	200652	EPDM rubber pakking flens DN50 zwart 4mm	1

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN mm
TOLERANCES ACCORDING TO DIN ISO 2768fH (MACHINING) DIN ISO 2768mK (SHEET METAL)

FINISH: N.A.

3RD ANGLE PROJECTION

DEBURR AND BLEND SHARP EDGES

SURFACE FINISH Ra 3,2

DO NOT SCALE DRAWING

REVISION:

Category:

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0031- 317 745 974
www.kormee.nl - info@kormee.nl

	NAME	DATE
DRAWN		19-7-2024
REV	Robert	31-3-2025

TITLE: Flens DN50 + 2" lassok en slangpilaar 60 mm 2"

MATERIAL:

DWG NO. MIPO.191

A4

Art.no. ERP:

WEIGHT: 1781.24 grams

SCALE:1:2

SHEET 1 OF 1

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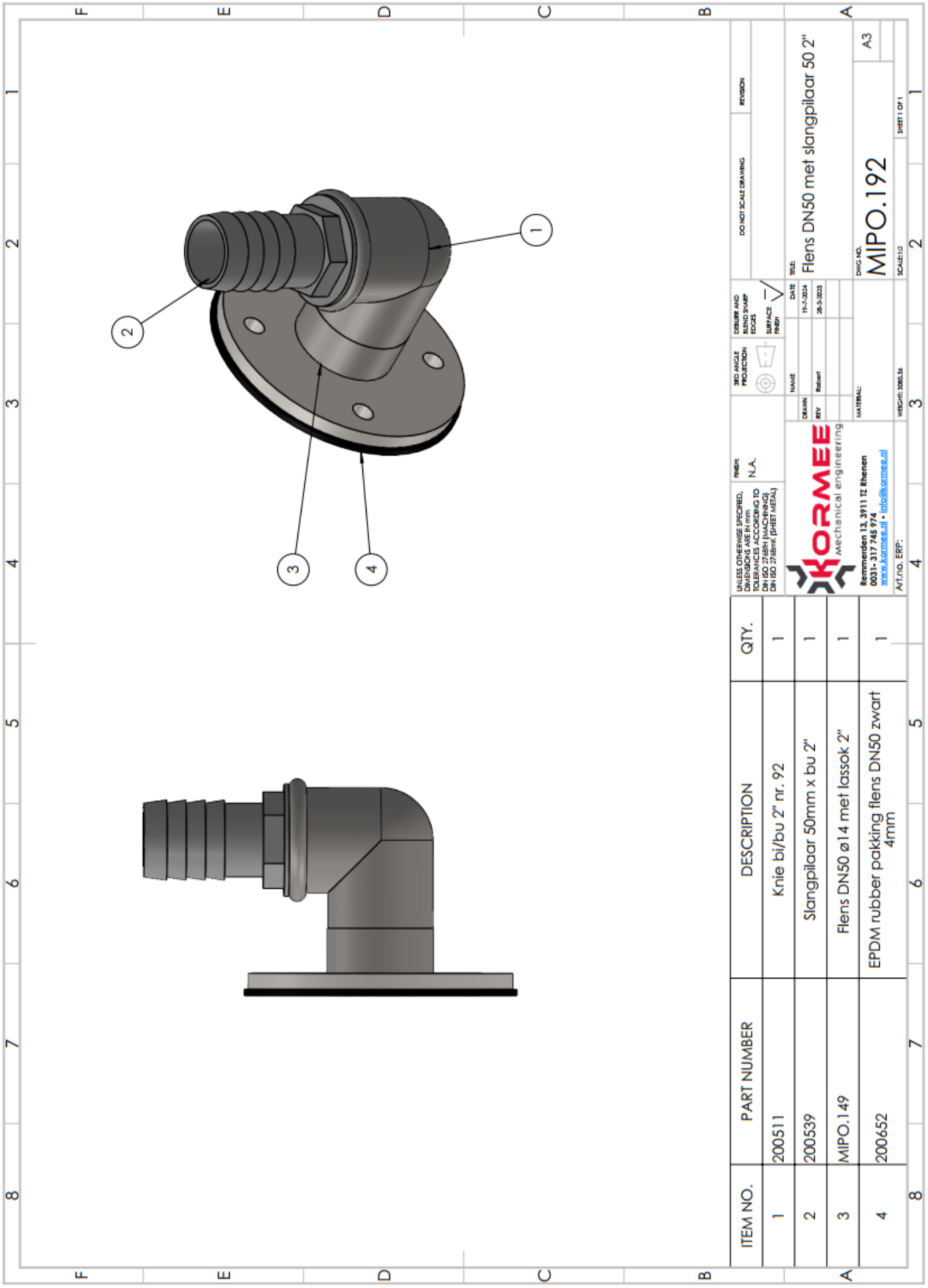

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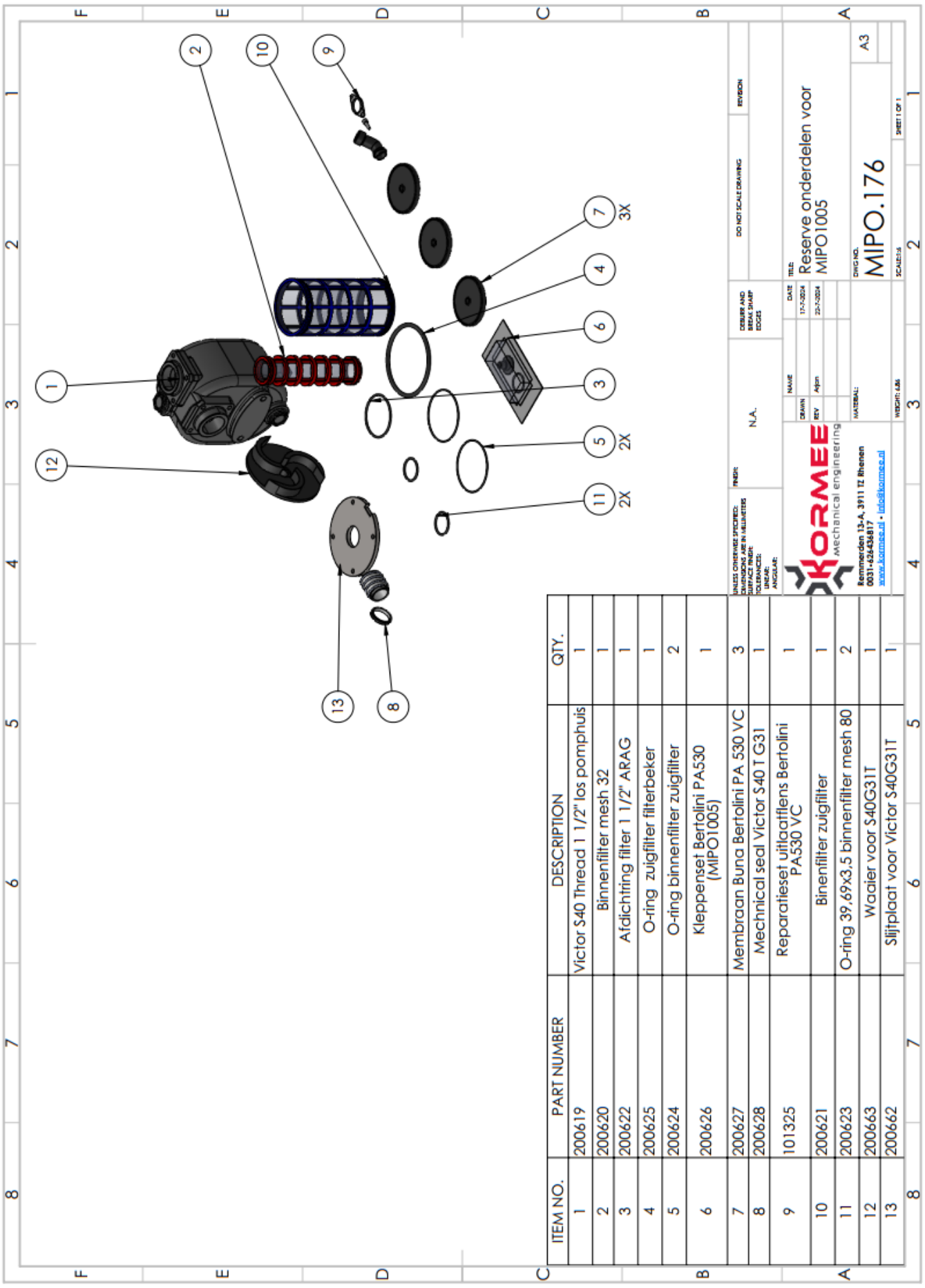
8.2. Spare parts MIPO 1005



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	200619	Victor S40 Thread 1 1/2" los pomphuis	1
2	200620	Binnenfilter mesh 32	1
3	200622	Afdichtring filter 1 1/2" ARAG	1
4	200625	O-ring zuigfilter filterbeker	1
5	200624	O-ring binnenfilter zuigfilter	2
6	200626	Kleppenset Bertolini PA530 (MIPO1005)	1
7	200627	Membraan Buna Bertolini PA 530 VC	3
8	200628	Mechnical seal Victor S40 T G31	1
9	101325	Reparatieset uitlaatflens Bertolini PA530 VC	1
10	200621	Binenfilter zuigfilter	1
11	200623	O-ring 39,69x3,5 binnenfilter mesh 80	2
12	200663	Wadier voor S40G31T	1
13	200662	Slijtplaat voor Victor S40G31T	1

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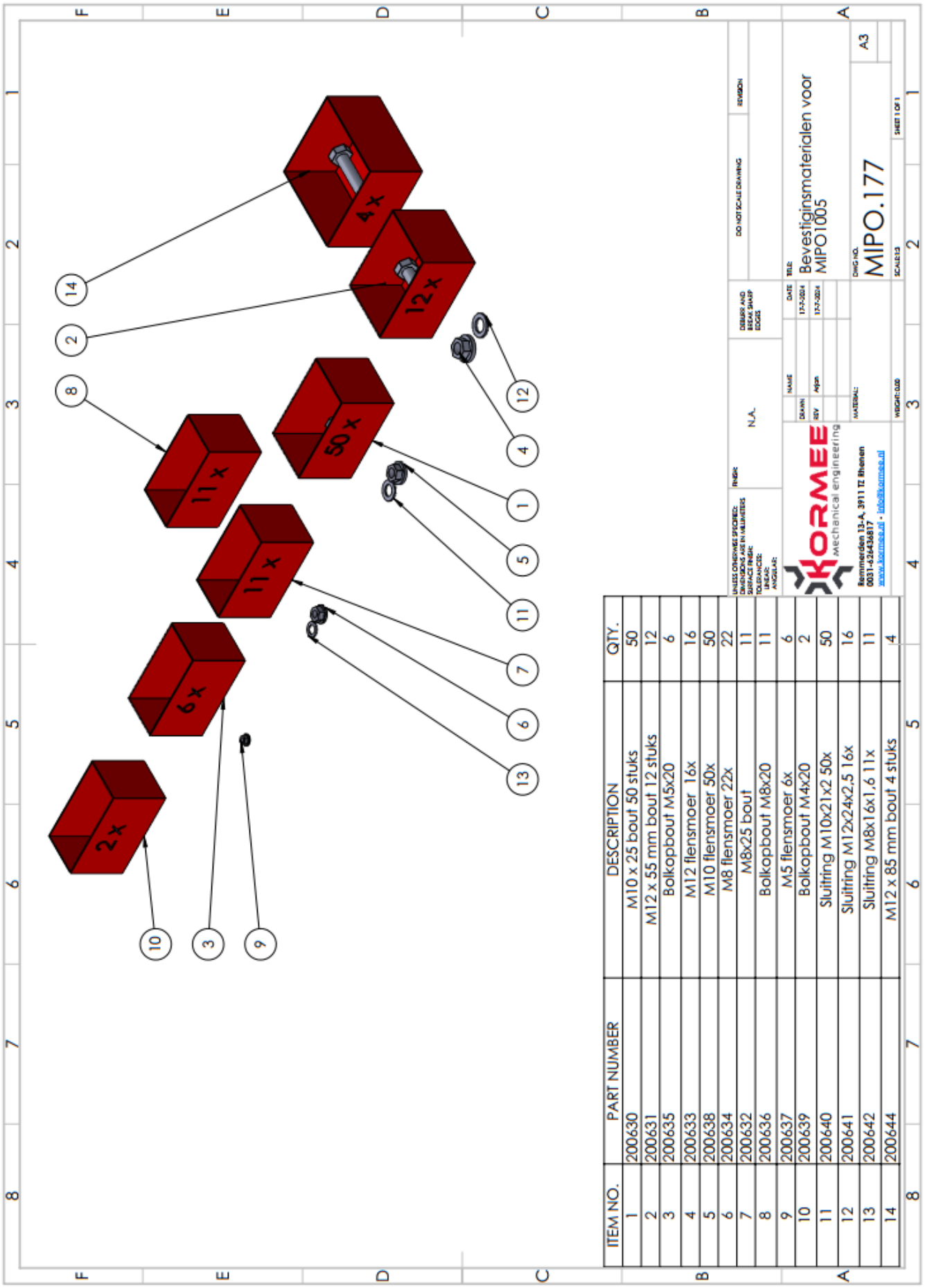
8.3. Fasteners



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	200630	M10 x 25 bout 50 stuks	50
2	200631	M12 x 55 mm bout 12 stuks	12
3	200635	Bolkopbout M5x20	6
4	200633	M12 flensmoer 16x	16
5	200638	M10 flensmoer 50x	50
6	200634	M8 flensmoer 22x	22
7	200632	M8x25 bout	11
8	200636	Bolkopbout M8x20	11
9	200637	M5 flensmoer 6x	6
10	200639	Bolkopbout M4x20	2
11	200640	Sluitring M10x21x2 50x	50
12	200641	Sluitring M12x24x2,5 16x	16
13	200642	Sluitring M8x16x1,6 11x	11
14	200644	M12 x 85 mm bout 4 stuks	4

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:
N.A.
DEBURR AND BREAK SHARP EDGES
DO NOT SCALE DRAWING
REVISION
NAME DATE
DRAWN 17-7-2024
CHK Arjan 17-7-2024
MATERIAL:
WEIGHT: 0,00
TITLE: Bevestigingsmaterialen voor MIPO1005
DWG NO. MIPO.177
A3
SCALE:1:3
SHEET 1 OF 1
KORMEE mechanical engineering
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Btw nr. NL 85 93 64 318 B01
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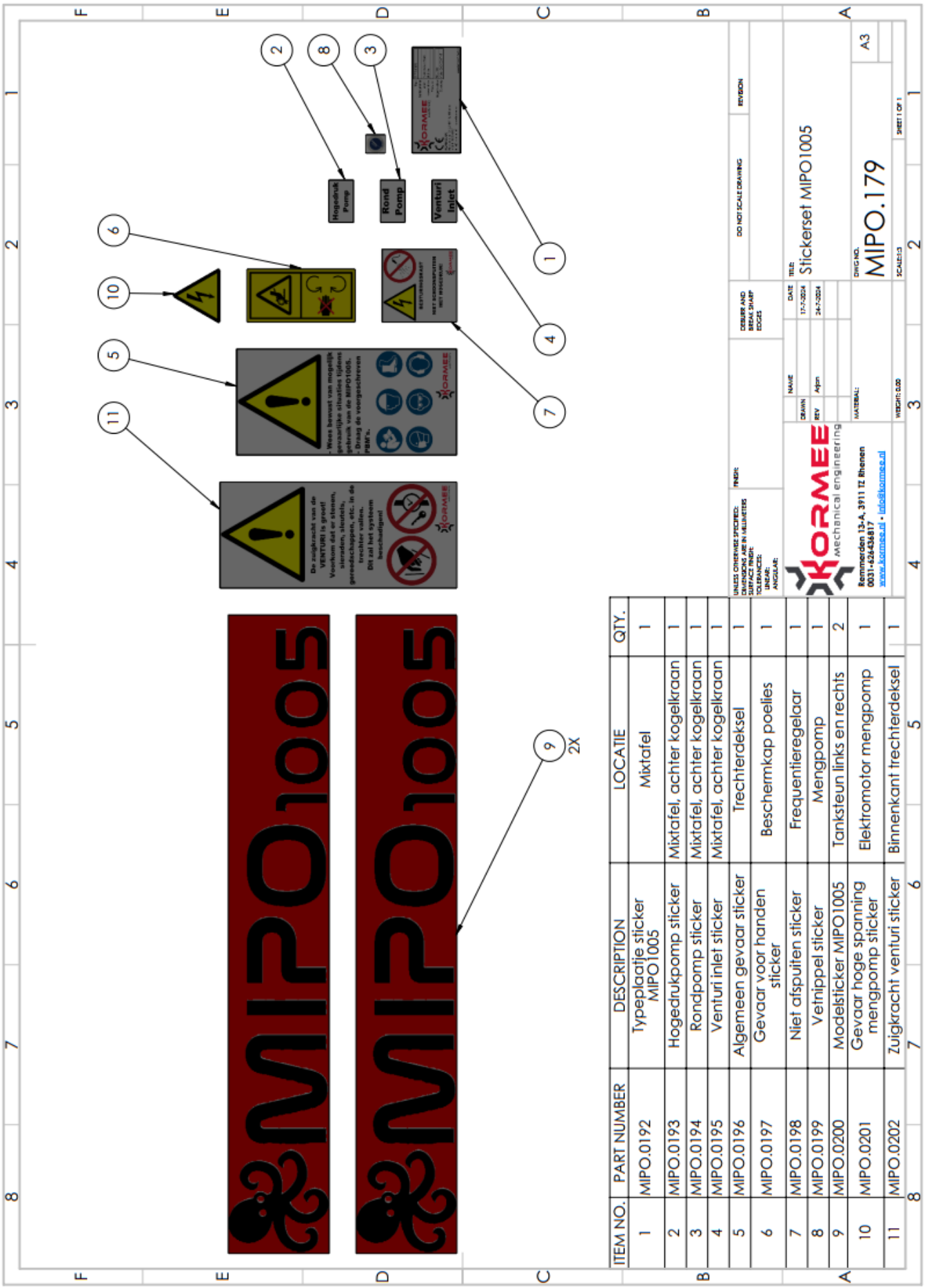
8.4. Sticker set MIPO 1005



ITEM NO.	PART NUMBER	DESCRIPTION	LOCATIE	QTY.
1	MIPO.0192	Typeplaatje sticker MIPO1005	Mixtafel	1
2	MIPO.0193	Hogedrukpomp sticker	Mixtafel, achter kogelkraan	1
3	MIPO.0194	Rondpomp sticker	Mixtafel, achter kogelkraan	1
4	MIPO.0195	Venturi inlet sticker	Mixtafel, achter kogelkraan	1
5	MIPO.0196	Algemeen gevaar sticker	Trechterdeksel	1
6	MIPO.0197	Gevaar voor handen sticker	Beschermkap poelies	1
7	MIPO.0198	Niet afspuiten sticker	Frequentieregelaar	1
8	MIPO.0199	Vetnippel sticker	Mengpomp	1
9	MIPO.0200	Modelsticker MIPO1005	Tanksteun links en rechts	2
10	MIPO.0201	Gevaar hoge spanning mengpomp sticker	Elektromotor mengpomp	1
11	MIPO.0202	Zuigkracht venturi sticker	Binnenkant trechterdeksel	1

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8.5. Datasheet centrifugal pump

Centrifugal pump

Short description:

1 ½" self-priming centrifugal pump with 1.1 kW electric motor.

Pump performance	
Flow rate:	Max. 360 l/min
Suction connection:	1 ½" female BSP
Drain connection:	1 ½" female BSP
Max. density liquid:	1,1 kg/dm^3
Drive	
Drive type:	3-phase electric motor
Efficiency class:	IE2
Power:	1,1 kW
Max. rpm:	2900
Voltage:	400 V @ 50 Hz 230 V @ 50 Hz
Current:	4 A @ 400 V 6 A @ 230 V
Protection grade:	IP55
General	
Dimensions L x W x H:	461 x 210 x 256 mm
Weight:	27 kg
Lubrication:	Grease-lubricated, normal grease with viscosity grade 1-3

Data source: https://shop.victorpumps.com/en/122-1812.html

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8.6. Datasheet diaphragm pump

Diaphragm pump

Short description:
High-pressure diaphragm pump with 3 pistons and oil lubrication.
Driven by 3-phases electric motor.

Pump performance	
Flow rate:	Max. 50 l/min
Suction connection:	Ø 30 mm hose barb
Drain connection:	¾” male thread
Max power:	4 kW
Min. pressure:	-0,15 bar
Max pressure:	40 Bar
Max. rpm:	550
Drive	
Drive type:	3-phase electric motor (external)
Efficiency class:	IE3
Power:	3 kW
Max. rpm:	1500
Voltage:	400 V @ 50 Hz 230 V @ 50 Hz
Current:	10,7 A @ 230 V 6,15 A @ 400 V
Protection grade:	IP55
General	
Dimensions LxWxH:	335 x 230 x 256 mm
Weight:	14 kg
Oil type:	SAE 30
Oil capacity:	0,5 L

Bron van data: www.bertolinipumps.com

www.shop.app4sales.net/BenPelektromotoren/#product?id=10929

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