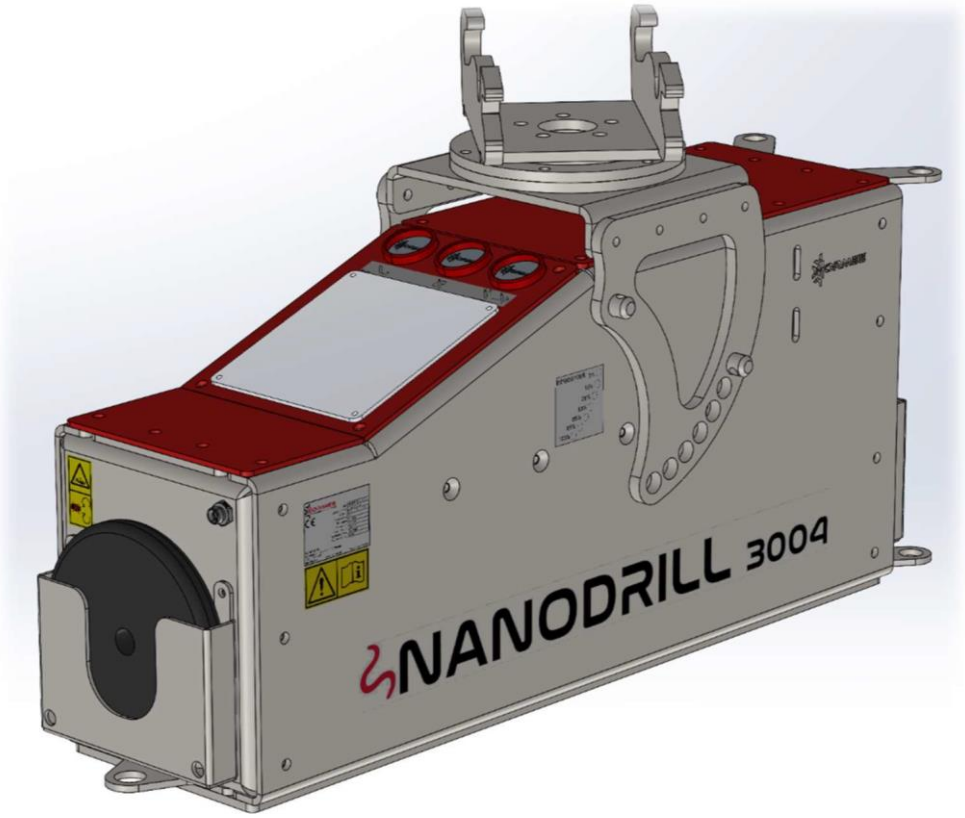
KORMEE machinery

User Manual

NanoDrill 3004



Version 20220930

Original user manual

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EC Declaration

EC declaration of conformity

Concerning Machinery, according to Directive 2006/42/EC, Annex II, Part 1-A.

Kormee BV
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Netherlands

Telephone: +316 2643 6817
Email: info@kormee.nl

Hereby declares that the interchangeable attachment:

Name: NANODRILL
Function: Performing Horizontally Controlled Drilling 3004
Model:
Serial number:
Year of construction:

Under applicable restrictions:

- **Coupling only to mini excavators that meet the specified requirements:**
  - Correct permissible lifting load and load distance: 320kg at min 1.75m from pivot point, 0.25m-0.75m from the ground;
  - Hydraulics: max 35L/min, max 230 Bar;
  - Correct hose connections: 1/2" Male and Female connections;
  - And other requirements mentioned in the manual.

Complies with all the applicable provisions of the following directive(s):

- DIRECTIVE 2006/42/EC (Machinery Directive)

Where applicable, the following harmonised and other standards were used:

- NEN-EN-ISO 12100 (Safety of machinery)

Place: Rhenen
Date:

Name: P. Korpershoek
Function: Director

Signature:

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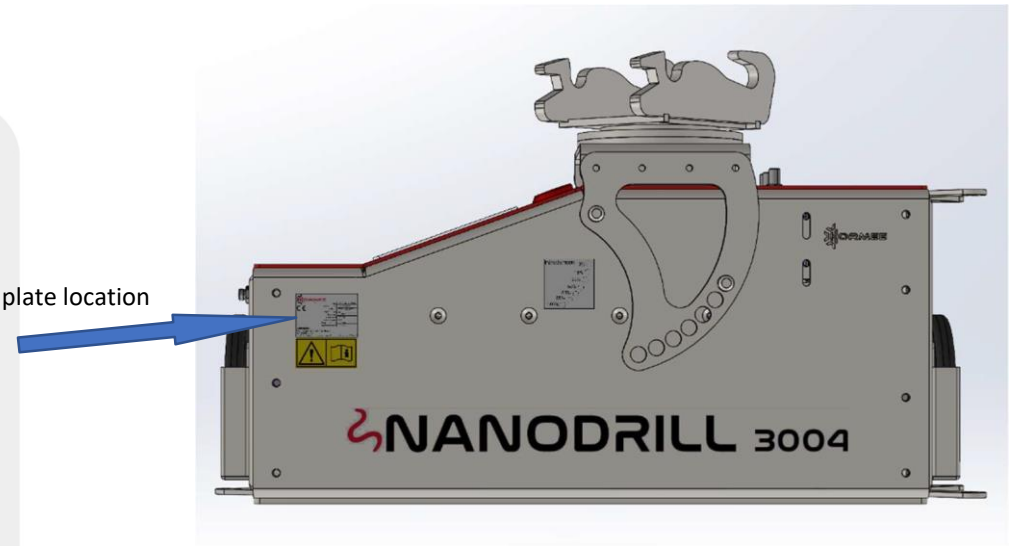
Overview

Data of the NANODRILL 3004.

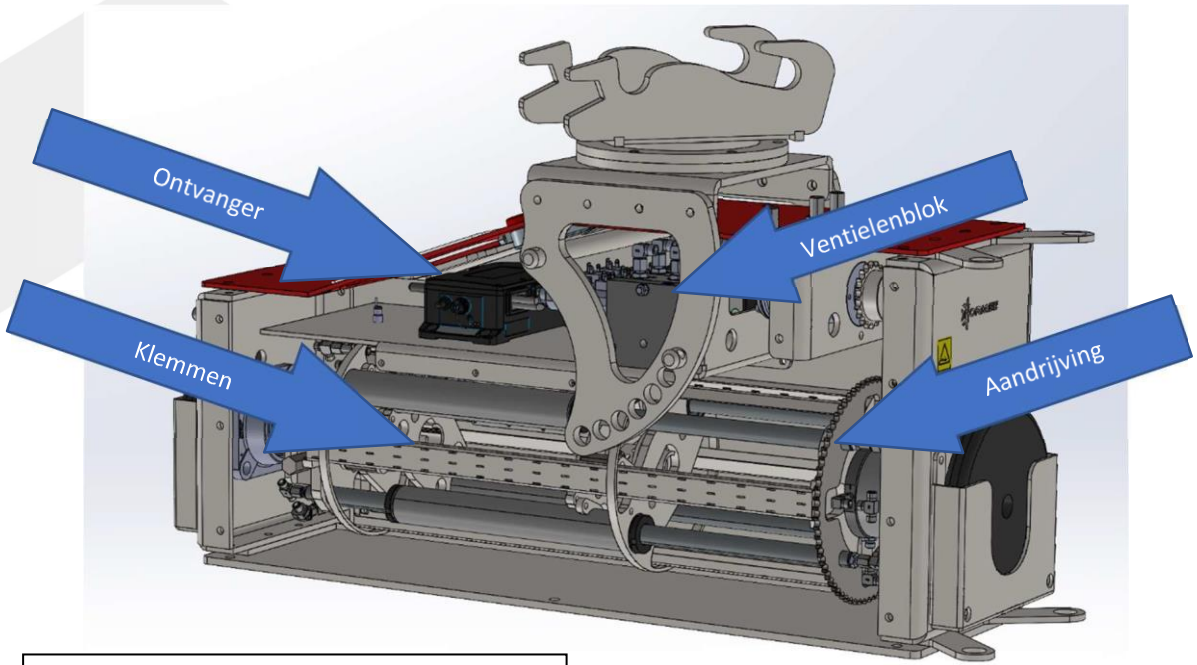


1 - NANODRILL 3004 WITH TYPE PLATE LOCATION

Type designations:

- NanoDrill 3004

Overview of main components:



Ontvanger	Receiver
Klemmen	Clamps
Ventilenenblok	Valve block
Aandrijving	Drive

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Foreword

This manual is an important part of your machine. It provides safety information and operating instructions for the use and maintenance of your KORMEE machine.

Please read this manual before working with the machine. Always keep the manual with the machine for reference. If you sell the machine, you should pass on this manual to the new owner.

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

KORMEE BV
Attn. Sales
Remmerden 13-A
3911 TK Rhenen
The Netherlands

The descriptions and specifications in this manual are subject to change at any time without notice. KORMEE BV reserves the right to make improvements. Some improvements may have been made after publication of this manual. Please consult KORMEE BV or your dealer for the latest information on KORMEE equipment.

Thank you for purchasing and using KORMEE equipment.

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Introduction

Make sure that all persons who will operate and maintain the machine know the contents of this manual; they must familiarise themselves with the correct functioning and operation of the NANODRILL 3004.

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

Explanation of symbols on the machine

	User manual Intended to draw attention to the importance of reading the manual **PLEASE READ MAINTENANCE PAPERS DURING SERVICE WORK!**
	Caution! General danger
	Intended to draw attention to rotational movements and entrapment hazards **MAINTAIN DISTANCE FROM THE ROTATING DRILL ROD**
	Informational: Indication of lubrication point/grease nipple
Where necessary, the symbols mentioned above are also applied to the NANODRILL 3004.	

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Warning categories in the user manual

These categories, together with the pictograms described on the following pages, alert you to situations that may be hazardous for you, bystanders on the job site and the equipment. If you see these words and pictograms in the manual or on the machine, you must carefully read and follow the corresponding instructions. **YOUR SAFETY IS AT STAKE.**

Please note the three warning levels: **DANGER**, **WARNING** and **CAUTION**. Please learn the meaning of each level.

DANGER indicates a hazardous situation which, if not avoided, will result in serious or fatal injury. This signal word is limited to the most extreme situations.

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

CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury. You should

also 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 damage to material).

IMPORTANT can help you do your job better or more easily.

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1. General description of the machine

The KORMEE NanoDrill is a machine that can be used as an interchangeable attachment on mini excavators. The function of the attachment is to drill cables and pipes underground.

The NanoDrill 3004 is equipped with CW05 quick-change plates and functions by using the mini excavator's hydraulics. It is operated by means of a remote control.
The requirements for the coupled situation and specifically for the mini excavator are listed below. Machines other than those described in this manual may not be used without KORMEE BV's explicit permission; otherwise the responsibility of KORMEE BV as a manufacturer shall be void.

1.1 Requirements for coupled situation

In principle, KORMEE BV assumes the role of manufacturer in the event that the NANODRILL 3004 is coupled to a mini excavator which meets the requirements described below.

KORMEE BV retains the role of manufacturer regarding the combined use, provided that the following conditions are met:

- The NANODRILL 3004 is coupled to the Mini Excavator according to the instructions in this manual.
- The Mini Excavator complies with the requirements set out in this chapter.
- The Mini Excavator is maintained according to the Mini Excavator's user manual.
- The Operator is aware of the contents of the user manual, more specifically with the risks and hazards stated therein, as well as the inspection and maintenance aspects.

KORMEE BV shall at all times remain the manufacturer of the NANODRILL 3004 as an interchangeable attachment, subject to the provisions in Chapter 6.

1.2 Requirements for the mini excavator

This section covers the requirements that are placed on the Mini Excavator with which the interchangeable attachment NANODRILL 3004 is coupled.

1.2.1 Technical requirements for the mini excavator

Quick Coupler connection	CW05
Lifting load and load distance	See Figure 1 – Lifting load and load distance (next page)
Hydraulic flow	35L/min max
Hydraulic pressure	230 bar max
Hydr. connections Hoses	1/2” Male (1x) and 1/2” Female (1x)

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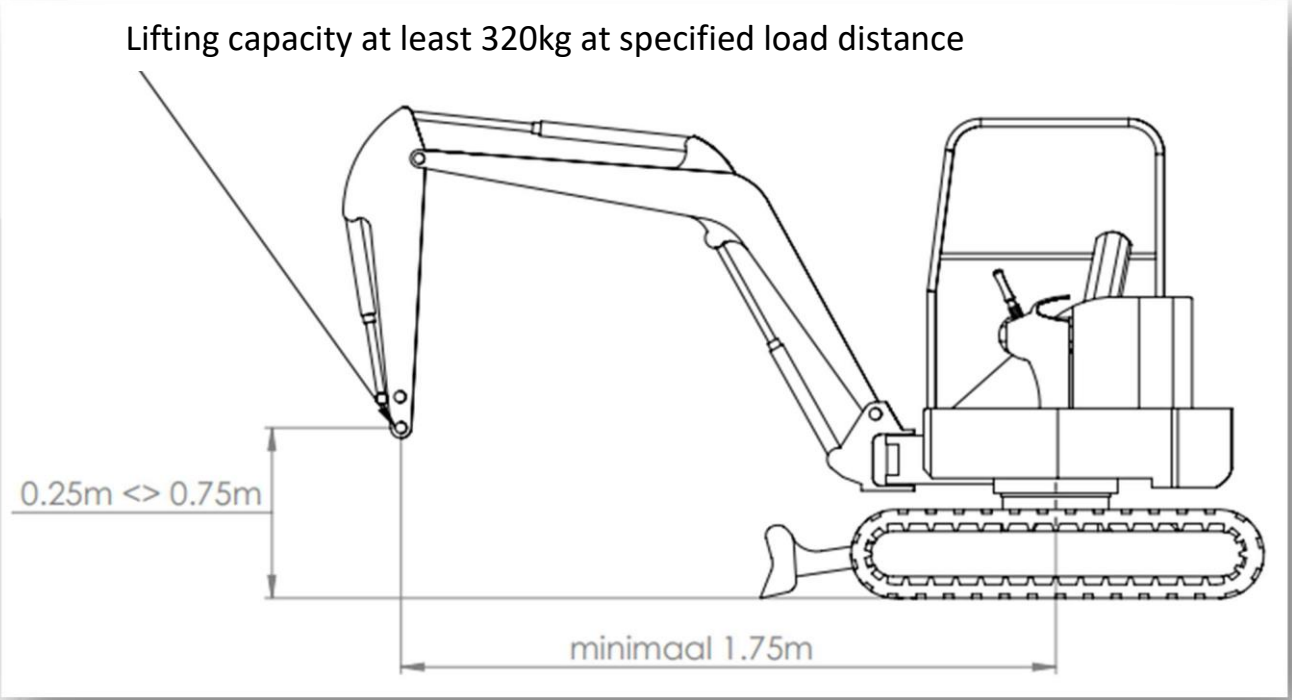

FIGURE 1 – LIFTING LOAD AND LOAD DISTANCE

1.2.2 Requirements for the Quick Coupler

A mini excavator with quick coupler and attachment can cause serious damage or personal injury if used incorrectly or if not maintained properly.

Therefore, check the quick coupler for the following points before using the attachment, but at least daily:

- The quick coupler must not show any damage, bends or cracks.
- Do not use the quick coupler if the suspension pins, spigot, adapter plates or other parts are bent or torn or show noticeable play.
- All lubrication points must be properly greased.
- Lift the excavator arm off the ground and move the bucket cylinder completely out and in. The quick coupler must not scrape anywhere or get stuck against the machine structure or the pressure piece.
- For a hydraulic quick coupler: check the hydraulic cylinder and connections for leaks.
- Before using the earthmoving machine, check that the attachment is correctly attached to the quick coupler. The pins of the quick coupler must fit into the adapter plates without any play.

It is forbidden to work with the machine while the quick coupler is not mounted and secured in the prescribed manner.

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2. Safety

2.1 Safety

KORMEE has made every effort to inform you as correctly and completely as possible about potential dangers in handling the NANODRILL 3004. This information can be found in more detail in this user manual, among other things. You must monitor and are responsible for compliance with these rules of conduct. We wish to emphasise the importance of the correct handling of the NANODRILL 3004. Working in the vicinity of a NANODRILL 3004 carries great risk.

KORMEE products are equipped with safety and protective equipment. Nevertheless, it is still important to always be careful when performing operations on and with the NANODRILL 3004.

Store the manual in the vicinity of the machine

2.2 Intended and unintended use

The NANODRILL 3004 is an attachment for horizontally controlled drilling, which is intended to install underground cables and pipes over distances of up to 35 metres, depending on the soil condition, and is intended for operation in ambient temperatures of 0 to 46°C. Any other use is considered to be contrary to the intended use.
The NANODRILL can be used with MIPO1005/2005 drilling fluid pump system and a SENSE sns2T positioning device. It may only be operated, maintained and repaired by persons who know its special characteristics and are familiar with the relevant safety procedures.

Any deviating use is only possible in consultation with KORMEE BV and can only take place if the described user manual has been adapted to the new requirements.

DANGER – be aware of the forces and cables and pipes under the ground

Changes to the equipment: This equipment is designed and manufactured in accordance with applicable standards and regulations. Modifications to the equipment may result in the NANODRILL 3004 no longer complying with the regulations and possibly not functioning or not functioning properly in accordance with the operating instructions. Modifications to the equipment may only be made by competent employees who are aware of the relevant standards, regulations, functionality/requirements of the design and any necessary special tests, in consultation with KORMEE BV.

2.3 Safety equipment

Safety provisions fitted by the supplier of the installation of the entire NANODRILL 3004 must not be removed or blocked during operation.
This machine is fitted with the following safety equipment:

- Guards at the location of hazardous machine parts
- Warning stickers that warn users about potential hazards
- Closed housing
- Emergency stop device

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2.4 Safety measures

In order to use the NANODRILL 3004 safely, the following general safety measures must be observed:

- As the owner of the NANODRILL 3004 it is your responsibility to ensure that persons who operate or maintain the NANODRILL 3004 are adequately instructed for that purpose.
- During the work, it is forbidden for unauthorised persons to be in the vicinity of the NANODRILL 3004.
- Identify the risks of the working environment and take the necessary measures to continue to guarantee safety.
- Provide a safely cordoned off work area.
- Make sure that unauthorised persons and especially children or animals do not have access to the NANODRILL 3004.
- Wear tight-fitting clothing. Avoid loose clothing (such as scarves), neck and arm jewellery, rings and loose long hair.
- Always wear your PPE (personal protective equipment)
- Safety equipment must not be removed or disabled.
- Keep the workplace clean.
- Provide adequate surrounding lighting.
- Check meticulously that the NANODRILL is functioning properly. Replace or repair parts if necessary.
- Please contact KORMEE BV or your dealer if you have any questions about the operation, maintenance or use of the NANODRILL 3004.

2.5 Emergency procedures

Review the emergency procedures before operating the machine and check that all safety precautions have been taken.

If you are working near power cables, keep the following in mind:

- Electricity follows any path to earth, not only the path of least resistance.
- Pipes, hoses and cables can conduct electricity back to all the equipment.
- Low voltage current can cause serious or fatal injury. Many electrocutions at work are the result of contact with voltages below 440 volts.

There is usually no sign of an electrical impact on the work site, but the following may indicate an electrical impact:

- power failure
- smoke
- an explosion
- loud bangs
- an arc of light

If any of these situations occur, it is best to assume that an electrical impact has occurred. The hazards of the work site can cause serious or fatal injuries. Use the correct equipment and apply the correct working methods. Use and maintain proper safety equipment. Contact with electrical cables will lead to serious or fatal injury. Make sure you familiarise yourself with the location of pipes and stay away from them.

EMERGENCY STOPS – Press the EMERGENCY STOP BUTTON on the remote control and turn off the mini excavator.

If an electrical line is damaged

If you suspect that an electrical line is damaged and you are on the drilling machine or grounding equipment, STAY WHERE YOU ARE.

The sequence and extent of the actions will depend on the situation.

- Alert everyone in the vicinity that an impact has occurred.
- Have someone contact the electricity company.
- Reverse the drilling direction and try to break the contact. Do not touch the drill pipe with your hands or with tools you are holding in your hand. Wait for the electricity company to cut the power.

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- Do not continue drilling and do not allow anyone on the site until the electricity company gives the all clear.

If you suspect that an electrical line is damaged and you are not on the drilling machine or grounding equipment, DO NOT TOUCH ANY EQUIPMENT CONNECTED TO the drill. Proceed as follows:
The sequence and extent of the actions will depend on the situation.

- Stay where you are unless you are wearing electrically insulated shoes.
- If you leave the site, do not return to the premises and do not allow anyone to do so until the electricity company gives the all clear.

If a gas line is damaged

If you suspect that a gas pipe is damaged, proceed as follows.
The sequence and extent of the actions will depend on the situation.

- Shut down the motor(s) immediately if this can be done safely and quickly.
- Remove any ignition sources if this can be done safely and quickly.
- Warn others that a gas pipe has been hit and that they must leave the area.
- Leave the work area as quickly as possible.
- Immediately call the local emergency phone number and utility company.
- If the work area is adjacent to a street, make sure that there is no traffic near the work area.
- Do not return to the work area unless permission has been given by the emergency service and the utility company.

If a fibre optic cable is damaged

Do not look into the cut ends of a fibre optic or unknown cable. This can affect your vision.
Contact the utility company.

If the machine catches fire, perform the emergency stop procedure and then proceed as follows.
The sequence and extent of the actions will depend on the situation.

- Turn the battery switch (if present and accessible) immediately to the switched-off position.
- If the fire is minor and an extinguisher is available, attempt to extinguish the fire.
- If the fire cannot be extinguished, leave the site as quickly as possible and alert the emergency services.

2.6 Emergency stop device

The remote control of the NANODRILL is equipped with an emergency stop device, which stops the controls of the NANODRILL.

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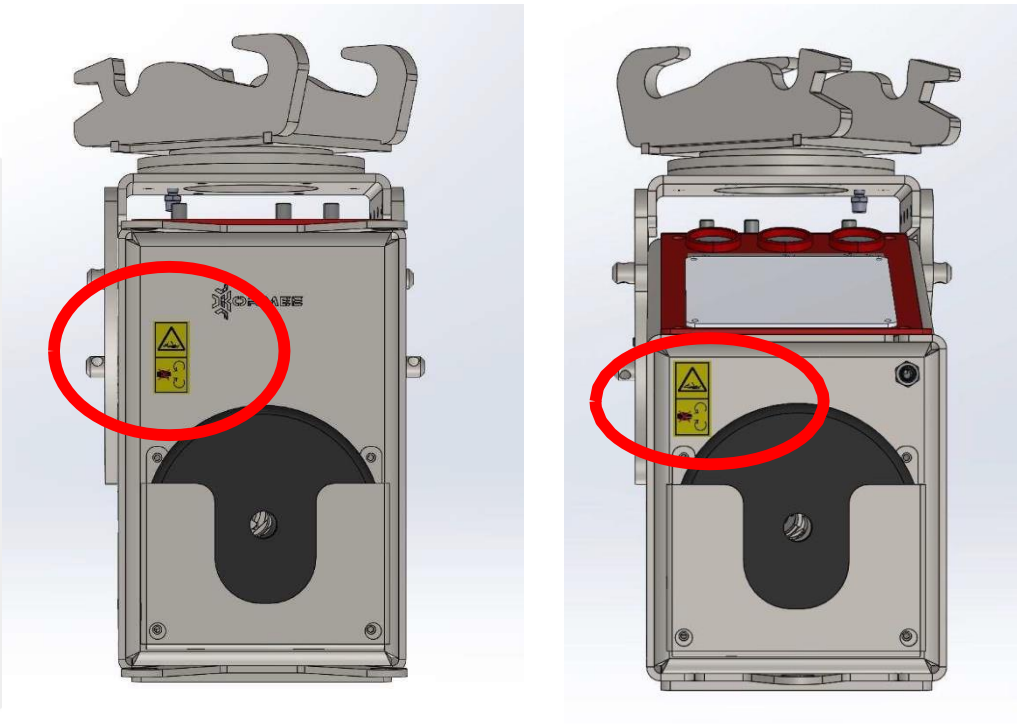
2.7 Warnings and instructions for the machine



WARNING – At the front and rear, the drill rod protrudes from the machine. During drilling, there is a risk that the pushing and/or rotating movement may cause injury, pinching or gripping of hair, loose clothing, etc.

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3. Technical specifications

3.1 Technical data

Type	NANODRILL 3004
Dimensions l x w x h	1300 x 300 x 500
Operating weight	298 kg
Rotation speed (max)	200RPM
Traction	400-700KG
Max. hydraulic flow	10 – 35L/min
Max. hydraulic pressure	100 – 220 bar
Max. power	15KW

The specifications mentioned above are general and subject to change without notice. If precise values are required, the NANODRILL 3004 must be weighed and measured. Options may cause deviations.

3.2 Type plate

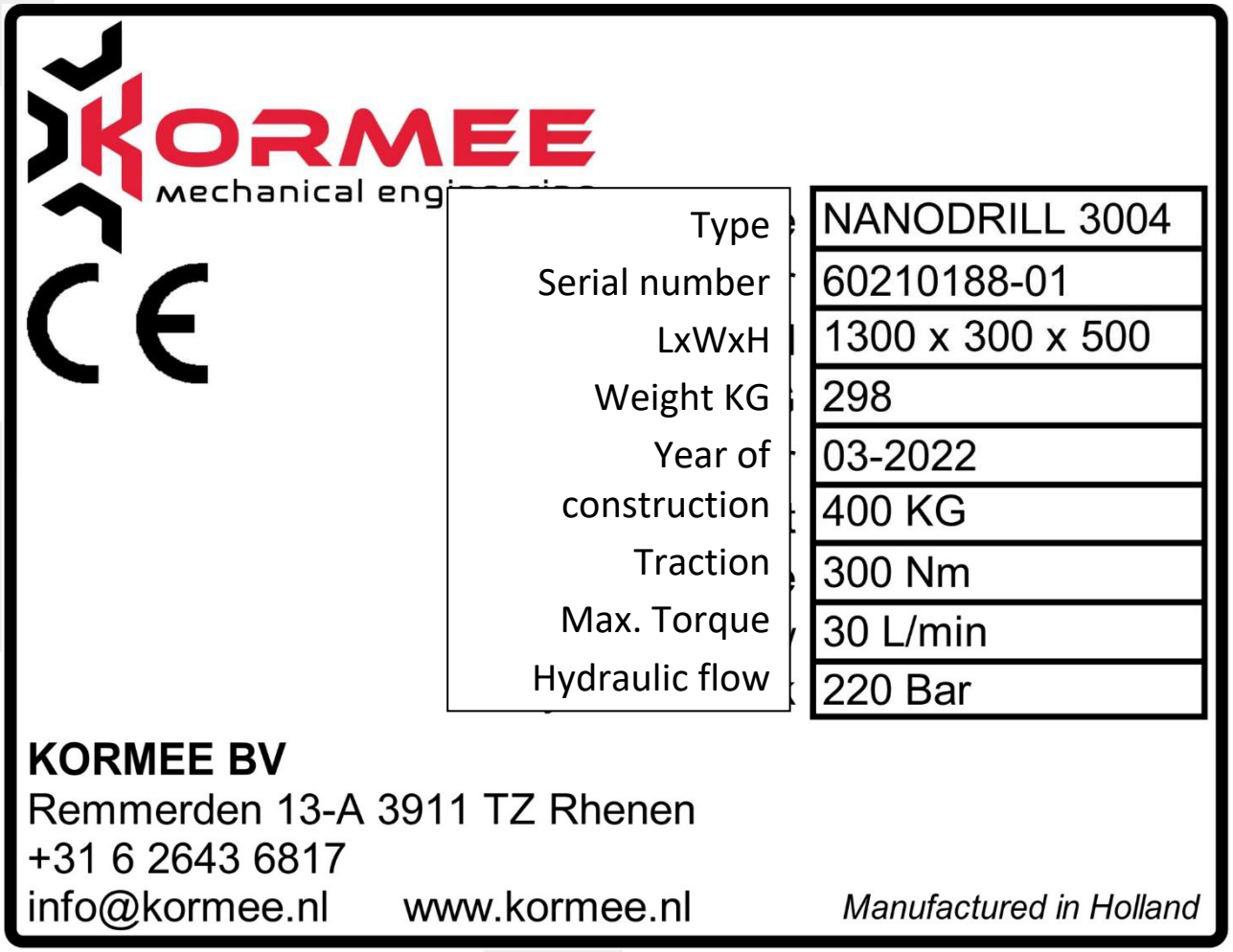

FIGURE 2 – TYPE PLATE (EXAMPLE)

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4. Operation

4.1 Connecting the NanoDrill to the mini excavator

The coupling of the interchangeable attachment must be done in accordance with important conditions, in order to achieve a safe, approved coupling to the mini excavator.
Check the following conditions EVERY time the coupling of the NANODRILL 3004 to the mini excavator is made:

1. The mini excavator meets the requirements in section 1.1
2. Make sure that there is no one in the working area who may be endangered by the machine movements to be carried out.
3. Place the mini excavator on a firm and flat surface
4. Position the crane straight in front of the NANODRILL 3004
5. Make sure that no obstacles or hoses can get between the quick coupler and the quick coupler hooks.
6. Connect the NANODRILL 3004 to the mini excavator.
7. Ensure that the NANODRILL 3004 stays horizontal during coupling.
8. Stop the mini excavator and depressurise the additional function (the hydraulic function that will be used to operate the NANODRILL 3004)
9. Connect the hoses to the mini excavator.
10. Check that the hoses are fully connected
11. Check whether the NANODRILL 3004 is functioning.

4.2 Moving the NanoDrill in coupled situations

Moving the mini excavator with coupled NANODRILL 3004 requires your full attention and must be done according to the following instructions.

- Transport speed not to exceed 3km/h
- Do not drive onto and off of a vehicle
- Keep the NANODRILL 3004 on the side of the sliding board during movements.
- Keep the NANODRILL 3004 as close to the crane as possible and in the direction of travel during movement.

4.3 Instructions and regulations during use

Inspecting the work area

- Follow local regulations regarding excavation and trenching.
- Contact local utility companies to locate underground cables and pipelines prior to commencing excavation work. Also contact the Kabels en Leidingen Informatie Centrum (KLIC, Cable and Pipeline Information Centre) in the region.
- Inspect the work area and surrounding area for signs of underground hazards, such as: – signs indicating underground cables or pipes – buildings that do not have above-ground cables running towards them – gas or water meters – connection boxes – branch boxes – light towers – manhole covers – sagging soil
- Have an employee with experience in operating locating equipment check a 20 ft (6 m) strip on either side of the drill path. Check the locations of pipes and cables previously marked.
- Mark all underground pipes, cables and obstacles.

Precautions for work areas. Contact the authorities that are familiar with the hazards present on each site in order to determine whether drilling can be done and, if so, what precautions should be taken.

Cut-out length drill rod on the rear of the NANODRILL
Due to a variety of safety considerations, there is an explicit instruction to allow the drill rods to protrude a maximum of 4 metres behind the NANODRILL. Please consider objects and/or people who are at risk of being hit in the expanding work area.

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4.4 Drilling the hole

The hazards of the work site can cause serious or fatal injuries. Use the correct equipment and apply the correct working methods. To prevent injury:

- If there is any doubt about the type of work area or if unmarked electrical cables may be present, the work area should be considered electrical.
- Piercing high-voltage cables may cause electrocution. Expose pipes manually before digging.
- All vegetation around the control station must be removed. Touching trees, shrubs or weeds during an electrical impact may lead to electrocution.

Planning the drilling path

The drilling path must be established from start to finish before drilling work is started. Make the drilling path visible on the work site with the help of a paint sprayer or flags, or make sure that the drilling path is recorded on paper for the operator's convenience.

The SMARTDRILLER app, available in the Play Store, is a handy tool for calculating the drilling profile.

Consult an expert in the event of complicated drilling. Have the work area measured and the drilling path calculated. Make sure the expert is aware of the minimum insertion angle, the bending limits of the drill pipe, the bending and stress limits of the material to be withdrawn, the lengths of the pipes and the location of all underground cables and pipes.

Plan for less complicated drilling

Establish the drilling path based on four measurements:

- recommended bending limit
- insertion angle
- minimum set-back
- minimum depth

Recommended bending limits

KORMEE drill pipes are designed in such a way that they can bend during work. The bending makes it possible to steer and correct the drilling direction. If the recommended bending limits are exceeded, invisible damage may occur. This damage will increase in severity and will lead to sudden fractures at a later stage.

The NANODRILL's plastic drill rods can bend up to a radius of 3 metres

Insertion angle

The insertion angle is the inclination of the drill head relative to the inclination of the ground at the start of drilling. The insertion angle depends on the required depth when drilling away.

***CAUTION** for insertion angles exceeding 70%: The measuring points are projected **in front of** the drill head, so that the predicted depth on the measuring systems is no longer reliable. Make sure that the SET-BACK is achieved as quickly as possible and record measurements from the moment the drill head has an angle that is less than 50%.*

Minimum set-back

Set-back is the distance from the insertion point to the point at which the drill pipe starts to run horizontally.

Minimum depth

Because the drill pipe needs to be bent gradually, the depth at which the drilling path will run horizontally depends on the insertion angle and the bending limits. This is known as the minimum depth.

- To reduce the minimum depth, the insertion angle must be reduced. This will also reduce the set-back.
- To increase the minimum depth, the insertion angle must be increased. This will also increase the set-back.

Preparing the work area

Mark the planned drilling path and all localised underground cables and pipes with flags or paint.

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Preparing the insertion point
For successful drilling, the first drill pipe must be straight when it goes into the ground. Dig a small initial hole so that the first pipe can be drilled into a vertical surface, to prevent the first pipe from bending. To prevent the pipe from bending or becoming overloaded, the drill must be set up in such a way that the drill pipe goes straight into the ground.

Checking accessories

Check that the following accessories are present and functioning before starting drilling:

- Receiver and Probe
- Probe(s) with new and spare batteries
- Walkie-talkies with new and spare batteries
- Remote control and battery
- Anchoring fittings and accessories
- Different steering plates
- Adapters, drill pipes, drill heads
- Marking flags or paint and possibly ranging poles
- Water hoses and other hoses
- Fuel for the generator
- Drilling fluid additives
- Keys for assembling and disassembling drill rods
- Reamers, rotary heads, retractors
- Hose for rinsing and spray gun
- Grease and steel brushes
- Electrically insulated shoes and gloves
- Personal safety equipment, such as a helmet and safety goggles
- Notepad and pencil

Preparing the equipment
Check the equipment for the following points:
Fluid levels

- Fuel
- hydraulic fluid
- engine coolant
- battery charge
- engine oil

Checking condition and function

- filters (air, oil, hydraulics)
- fluid pump
- couplings
- tires and tracks
- pumps and motors
- mixer for drilling fluid
- hoses and valves
- water tanks

Starting the drill
Work through the following steps to get the NANODRILL 3004 ready

- Connect hydraulic hoses to the connection points of the mini excavator (if not already done)
- Connect the power cable. *Note the positive and negative connection*
- Put a recently charged battery in the remote control
- Connect the communication cable to and from the MIPO
- For a wireless system, check that a connection has been established
- Connect the bentonite hose to the NANODRILL 3004
- Start up the generator
- Start up the mini crane and switch on hydraulic flow, follow the instructions of the mini crane
- Turn the potentiometer of the remote control to zero

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- Deactivate the emergency stop of the remote control
- Press the start button of the remote control
- Test whether the bentonite pump is working

Switching off the drill

- Press the Emergency stop button on the remote control
- Switch off the hydraulic supply of the mini crane
- Turn off the generator

Preparing the drill head

- Make sure the material is clean
- Open the probe housing
- Choose the optimal frequency of the drill probe
- Make sure that the drill probe indicates '6 o'clock when the probe is mounted in the drill head
- Choose the correct drill plate
- Make sure that the Allen bolts are undamaged during assembly (replace with new bolts in good time)
- Calibrate the drill head 3 metres away from the receiver
- Check that the clock position of the drill head is also 12 o'clock

First rod drilling

1. Connect the bentonite swivel to the drill rod.
2. Switch on the drilling fluid.
3. Check that the drilling fluid is flowing.
4. Turn the steering plate to the start position of 12 o'clock
5. Bring the drill rod forward. Make sure that you steer in such a way that drilling is done straight from the NANODRILL. Drill the drilling tool and 1/3 of the first rod into the ground before starting to steer.
6. Keep an eye on the pressure gauges.

Connecting drill rods

- make sure that the drill cannot be operated
- make sure the drilling fluid is switched off
- unscrew the bentonite swivel from the drill rod
- check the thread for soiling and clean and lubricate the thread if necessary
- mount the new drill rod in line with the previous drill rod
- tighten the drill rod securely with open-end wrenches
- mount the bentonite swivel

CAUTION! – Do not allow drill rods to protrude more than 4 metres behind the NANODRILL.

Tip

Lubricate connections before each use. Lubricate the threads and collars of the outer joints with copper-based grease, to prevent rust and reduce wear of collars and threads.
If necessary, clean the thread with water (high-pressure sprayer) and detergent.

Aligning the drill rod connection

Always align the ends with the outer and inner threads of the pipes meticulously before screwing them together. Poor alignment may damage the thread and adversely affect the usability of the connection.

Correcting the drilling direction

Correcting the drilling direction is a skill that the operator can acquire with experience and knowledge of the equipment and soil conditions. These instructions solely cover the basic operations. In order to monitor progress and make corrections, one of the employees should look after locating the drill head and pass instructions to the operator. Corrections should be made by determining the location of the drill head, comparing it with the drill drawing and adjusting the drill head as necessary.

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Basic rules

- The ability to adjust depends on the soil conditions, the steering plate used, the drill head and nozzle, the position of the drill head and the distance over which the drill head can be pushed without rotation.
- All corrections should be carried out as gradually as possible.
- If there is too much correction, the rod will start "wriggling", which may damage the rod, making it difficult to drill and retract. After each correction, start drilling straight as soon as possible.
- Do not push a piece of drill rod into the ground in its entirety without rotation. Doing so may cause the bending radius to be exceeded and the rod to break.

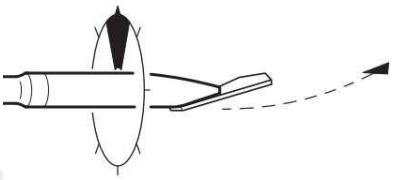
Procedure

1. Determine the location of the drill head when drilling is stopped/paused. Make use of the available data from the transmitter and positioning equipment such as:
    a. depth
    b. inclination
    c. data left/right
    d. temperature
    e. rolling position of transmitter
2. Compare the location of the drill head with the drill drawing. Determine the direction in which drilling must be done.
3. Aim the drill head.
4. Push the drill pipe into the ground as far as necessary to change the direction.
5. Screw the drill pipe into the ground over the remaining length.

Position of the drill head

The position of the drill head is determined by the reading of the roller position of the transmitter (probe). This is indicated as a position of the hands of a clock.

1. Read the rolling position on the transmitter.
2. Allow the drill rod to rotate slowly until the positioning device indicates the desired clock position/roll position.



Changing the direction

1. Turn the rod (always clockwise) to the clock position in which you want to steer it.
2. Push the rod into the ground, if necessary with more flushing pressure for optimal results.

Drilling without changing direction

- Screw the rod into the ground with a high rotation

Establishing the drilling route

For each pipe length, determine the location of the drill head. As the work progresses, record the data for each drill pipe by means of a marking on the ground. The drill head can be logged positively with the receiver box, allowing a depth profile to be created.

Guide the drill head to an exit pit or to the surface

CAUTION *for exit angles exceeding 70%: The measuring points are projected* ***behind*** *the drill head, so that the predicted depth on the measuring systems is no longer reliable. Manually calculate the exit position. For example: Exit angle 70% means: 70cm rise for 1 metre length.*

1. Make sure all turns are slight.

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2. Clear the area around the exit point.
3. Set the fluid flow control to the Off position as soon as the drill head protrudes above the ground.
4. Wait until the operator has switched off the drill.
5. Clean the drill head, especially around the thread.

Mounting a reamer

Sometimes the bore has to be made larger in order to fit a larger product into it. As a rule of thumb, the final hole should be 1.5 times the diameter of the product to be installed. The number of times to ream depends on the soil conditions.

CAUTION! Do not enlarge the gap too much in one go. When reaming several times with ever larger reamers, the machine will wear less quickly

During reaming, rotation must be at full speed and the rotational pressure must not exceed 125 bar. During the reaming process, sufficient flushing must be carried out to remove the loosened material.

Bentonite

Bentonite is a dry powder. When correctly 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.

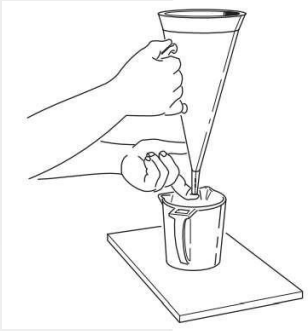
When mixing bentonite, pay attention to the following points:

- Use clean water that does not contain salt, calcium, or excessive amounts of chlorine.
- Use water with a pH level between 9 and 10.
- Use water with a hardness below 120 ppm.
- Do not use bentonite containing sand.
- Thoroughly mix the bentonite to prevent it settling in the tank.
- When mixing bentonite, make sure that the funnel viscosity of **50** is not exceeded. See "Marsh Funnel Viscosity" for information on measuring viscosity using a Marsh funnel.

Marsh funnel viscosity

Viscosity is a fluid's degree of internal resistance to flow; the greater the resistance, the higher the viscosity. The viscosity of drilling fluids must be regulated. To determine the viscosity, you will need a Marsh funnel (Item 100651) and a measuring cup (Item 100652). These are available from KORMEE BV or KORMEE BV dealers.

1. Take a fresh sample of drilling fluid using a flushing hose and a clean container. The sample must be at least 1.5 qt (1.4 l).
2. Hold your finger on the bottom of the funnel and fill it via the strainer with liquid from the container until the liquid reaches the bottom of the strainer.
3. Place the funnel above a 1 qt (0.95 l) container.
4. 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.
5. Thoroughly rinse the measuring cup and Marsh funnel



Required amount of liquid for reaming

In order to be able to ream properly, sufficient liquid must reach the drill hole. The amount of depends on the size of the borehole and the soil conditions. Measure the filling percentage (proportion of soiling in the bentonite liquid) in the return rinse by means of the scale to carry out the bentonite test, article 100730.

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Protecting NANODRILL from frost damage
The drilling rig can be left outside in freezing conditions at night if a polypropylene-based antifreeze is circulated through the machine before the machine is shut down. This applies to the Bentonite channel. To protect the mix pump system against frost damage, see the manual of the mix pump system.

4.5 During operation

- As the owner of the NANODRILL 3004, it is your responsibility to ensure that persons who operate or maintain the NANODRILL 3004 are adequately instructed for that purpose;
- Be responsible for the *entire drilling and work area* and ensure that you carry out the work at all times with authorised and instructed persons, and maintain control over the complete work.
- During the work, it is forbidden for unauthorised persons to be in the vicinity of the NANODRILL 3004!
- For example, ensure there is walkie-talkie contact with the operator before operations are carried out in, for example, the slot through which the pull is made. There may be a risk of entrapment along the entire length between the cable and the surroundings of the cable.

In case of regularly recurring or other malfunctions, please contact KORMEE BV.

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5. Inspection and maintenance

The following inspection points should be checked according to the specified frequency:

No.	Inspection points	Period
1	Lubrication of grease nipples 1 piece	After each use
2	Cleaning the machine	After each use
3	Replace scraper rubber (art. 200196), pass the old one through to the rear	Every 3 weeks
4	Rotating parts (bearings, etc.)	Six-monthly
5	Checking hoses for damage	Six-monthly
6	Check cable(s) for damage (in case of damage, replace cable)	During each use
7	Drive	Six-monthly
8	Presence/readability of stickers and type plates	Every week
9	Hydraulic swivel seals	Six-monthly
10	Presence of instruction booklets	Six-monthly
11	Construction crack formations frame and damage	Six-monthly
12	Stuck parts	Six-monthly
13	Operation of safety facilities	Six-monthly
14	Chain tensioning/inspection	Six-monthly
15	Gears check	Six-monthly
16	Check rod clamps for grip	Every week
17	Check rod clamps for clamping force	Six-monthly

5.1 Maintenance

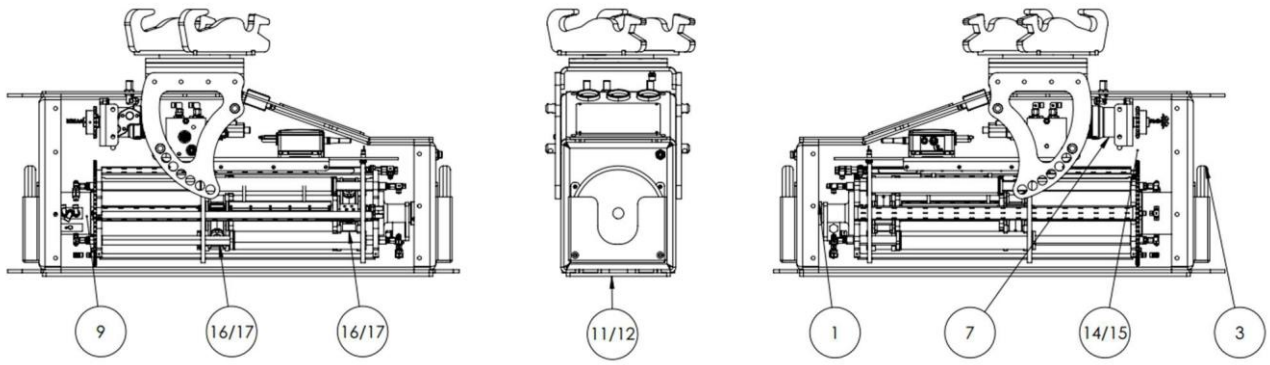
- Maintenance work may only be carried out if the NANODRILL 3004 is stationary, clean and disconnected from the hydraulics and if the hydraulic lines are pressureless.
- Assembly work may only be carried out by authorised personnel.
- The markings on the NANODRILL 3004 such as the name plate, warning symbols, etc., must remain clean, free of paint and clearly legible. Missing or illegible markings must be replaced in good time.

5.2 Storage of the machine

- Always put the NANODRILL away with the starting rod in the machine
- Always clean the NANODRILL after use, including the inside: disassemble the bottom plate.
- After use, spray the blank parts with ML preservative.
- Store the machine in a stable manner.

5.3 Overview of maintenance points

See image for the location of various inspection points



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6. CE marking

This NANODRILL 3004 is provided with the CE marking. This means that the NANODRILL 3004 complies with the application of the European Directives on Safety and Health. The enclosed 'CE Declaration' indicates which directives these are.

6.1 Product liability

KORMEE is not liable for unsafe situations, accidents and damage resulting from:

- Warnings or instructions as shown on the NANODRILL 3004 or contained in this documentation being ignored.
- Use for other applications or in other conditions than specified in this documentation.
- Changes to the NANODRILL 3004. This also includes the application of any non-original spare parts.
- Changing welding and/or mechanical operations on the NANODRILL 3004.
- Insufficient maintenance.
- Any damage caused by poor supervision.

KORMEE is not liable for

- Consequential damage in the event of product failures, business interruption, etc.
- Warnings or instructions as shown on the Winch or contained in this documentation being ignored.
- Use for other applications or in other conditions than specified in this documentation.
- Changes to the NANODRILL 3004. This also includes the application of any non-original spare parts.
- Changing welding and/or mechanical operations on the NANODRILL 3004.
- Insufficient maintenance.

6.2 Warranty

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

KORMEE provides warranty to the first user up to 12 months after delivery, provided that this NANODRILL 3004 is checked by KORMEE every 6 months and provided with a maintenance inspection.

Defects must be reported to the manufacturer before the expiry of the warranty period. The

warranty applies to defects that:

- Occur during normal use of the NANODRILL 3004.
- Are caused by faulty construction or materials.

The warranty will be invalidated for defects caused by:

- Normal wear.
- Normal consumption of consumables.
- Incorrect use.

In the event of defects, KORMEE will:

- Replace the parts. (KORMEE becomes the owner of the replaced parts)
- Repair the defects.
- Choose an alternative, substitute solution, if repair is not reasonably possible.

- The customer must give the manufacturer the opportunity to remedy any defects.
- The warranty conditions of the relevant supplier apply for built-in third-party components. The warranty period may vary from what is indicated above.
- Remediation and/or repair takes place in the KORMEE workshop.
- KORMEE reserves the right to change its machines without prior warning.
- The machines must be delivered thoroughly clean.

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6.3 Liability

KORMEE is not liable for accidents, unsafe situations and damage resulting from ignoring warnings or instructions as shown on the machine or in this documentation, for example:

- Improper or incorrect use or maintenance.
- Use for other applications or in other conditions than specified in this documentation.
- Use of other components than prescribed.
- Repairs carried out without permission from KORMEE.
- Changes to the machine. This includes changes such as welding and/or mechanical operations.

KORMEE is not liable:

- If the customer has not fulfilled all their obligations towards KORMEE (financial or otherwise).
- For consequential damage due to malfunctions or defects of the NANODRILL 3004 (for example, damage to the products to be processed, business interruption, delay, etc.).
- For damage resulting from incompetence of the operators.
- For damages inflicted on the infrastructure of the cables and pipeline.

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KORMEE BV reserves the right to change parts at any time, without prior or direct notification to the buyer. The contents of this user manual are also subject to change without notice. For information regarding set-up, maintenance work or repairs not covered by this manual, please contact your supplier's technical service department

Although this operator's manual has been drawn up with all due care, KORMEE cannot assume any liability for any errors in this operator's manual or any consequences thereof.

If you encounter any further questions or problems that this manual does not answer, please contact your dealer or KORMEE BV.

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7. Parts drawings

In this chapter, several explode views of the machine have been added. These can be used during maintenance of the machine. If parts are damaged during use, they can be reordered with an original part number.

ITEM NO.	DESCRIPTION
1	Quick coupler
2	Outer housing
3	Rotary drive
4	Valve block
5	Linear drive

Subsequently, drawings of the Drill Head, the Steering Plates and the Conical Reamers are included.

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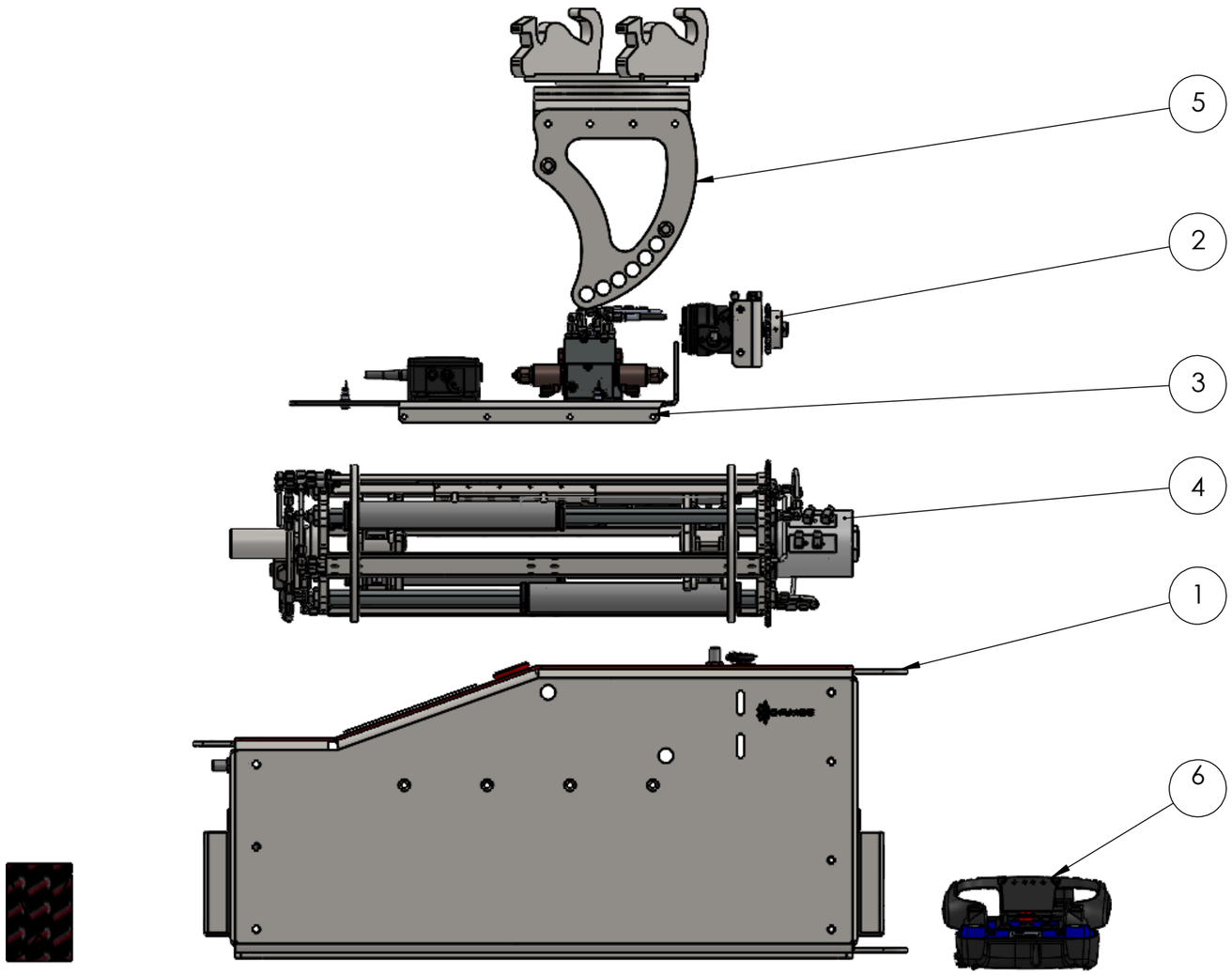

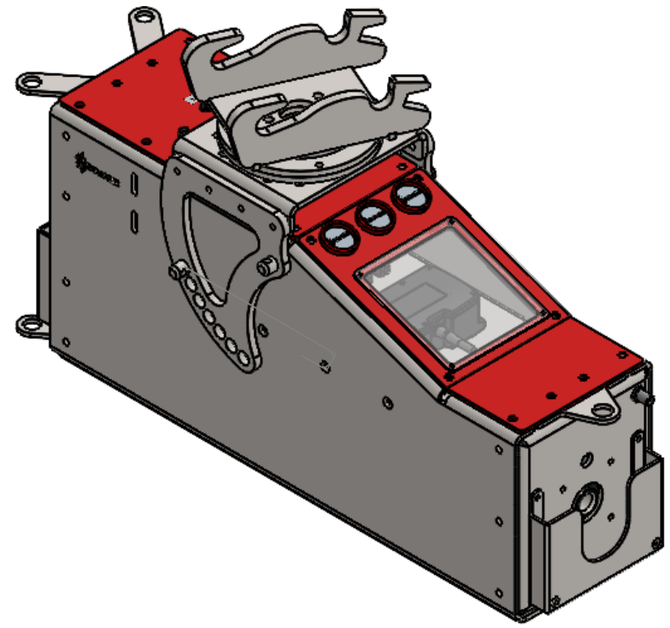

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	NDRILL.101	Enclosure Nanodrill 3004	1
2	NDRILL.102	Rotary drive	1
3	NDRILL.104	Valve plate	1
4	NDRILL.106	Interior workings	1
5	NADR3010.15	Quick coupler	1
6	NDRILL.0059	Scanreco Remote nanodrill 3004	1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:

FINISH:

DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING

REVISION

	NAME	DATE
DRAWN		26-6-2023
REV	Arjan	27-11-2023

MATERIAL:

WEIGHT:

TITLE:

DWG NO.

Nanodrill 3004

A

SCALE:1:20

SHEET 1 OF 1

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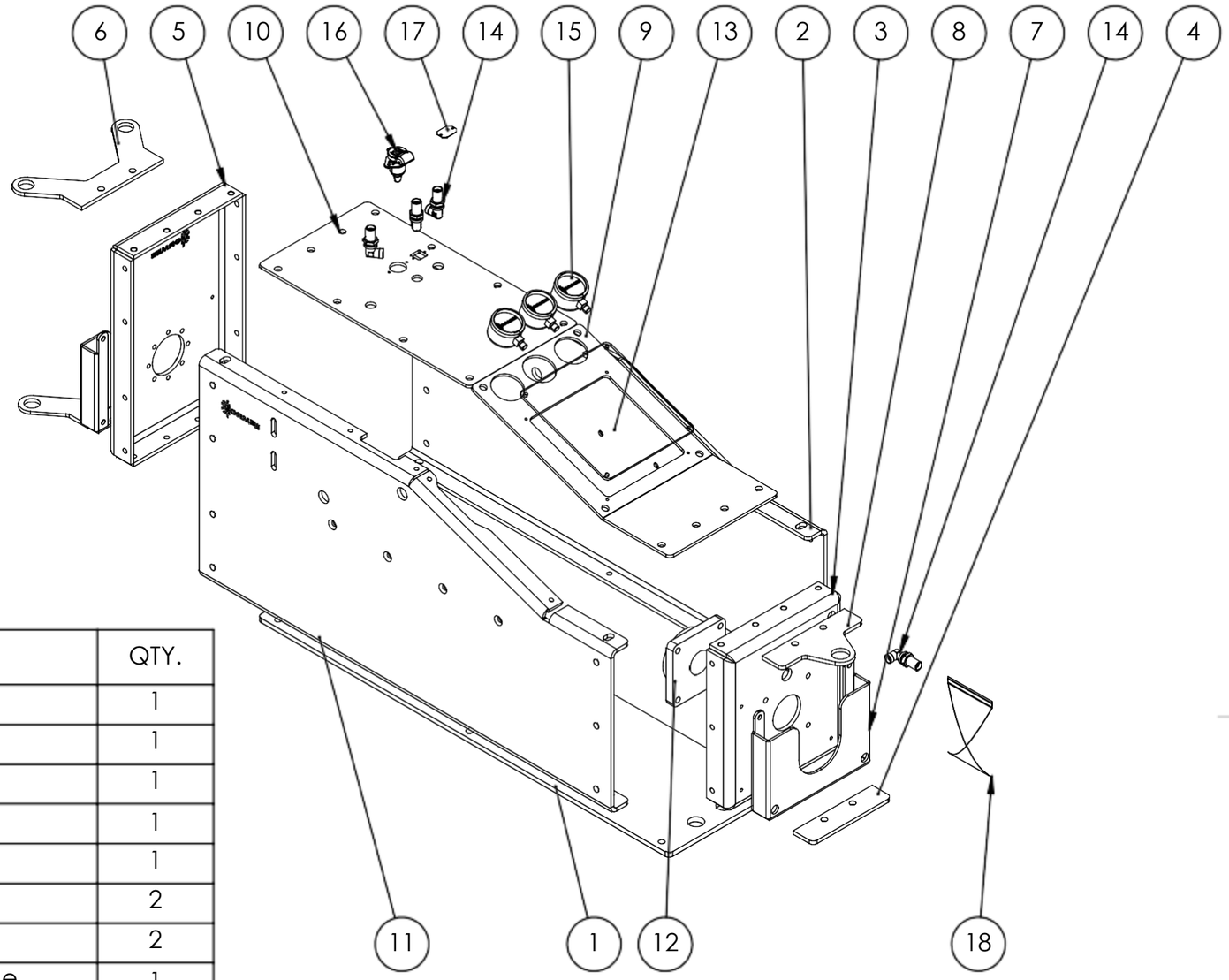
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	NDRILL.101	Enclosure Nanodrill 3004	1
2	NDRILL.102	Rotary drive	1
3	NDRILL.104	Valve plate	1
4	NDRILL.106	Interior workings	1
5	NADR3010.15	Quick coupler	1
6	NDRILL.0059	Scanreco Remote nanodrill 3004	1



ITEM NO.	Order code	PART NUMBER	DESCRIPTION	QTY.
1	106590	NDRILL.0001	Bottom plate	1
2	106589	NDRILL.0002	Side plate right	1
3	106590	NDRILL.0003	Rear filler head	1
4	106592	NDRILL.0004	plate locking	1
5	106585	NDRILL.0005	pin support	1
6	106584	NDRILL.0006	Scraper cage	2
7	106586	NDRILL.0007	pulling support	2
8	106591	NDRILL.0008	head plate rear side	1
9	106577	NDRILL.0009	head plate for left	1
10	106576	NDRILL.0010	side plate	1
11	106588	NDRILL.0011	FLANGE BEARING	1
12	200180	UCF210GP		1
13	101114	NDRILL.0054	Clear acrylic sight glass 245x231x5	1
14	WSV12L	WSV12L	Angled bulkhead coupling 12L	4
15	104972	NDRIL.01.079	Pressure gauge ø63 rear connection Plug 3-pol	3
16	101520	101520		1
17	106891	NDRILL.0046	Cover plate communication plug	1
18	106893	106893	Nanodrill 3004 Bolt Set	1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:

FINISH
:
N.A
.

DEBURR AND BREAK SHARP EDGES

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REVISION

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	NAME	DATE
DRAWN		26-6-2023
REV	Arjan	15-11-2023

TITLE:
Enclosure Nanodrill 3004

MATERIAL:

DWG NO.
NDRILL.101

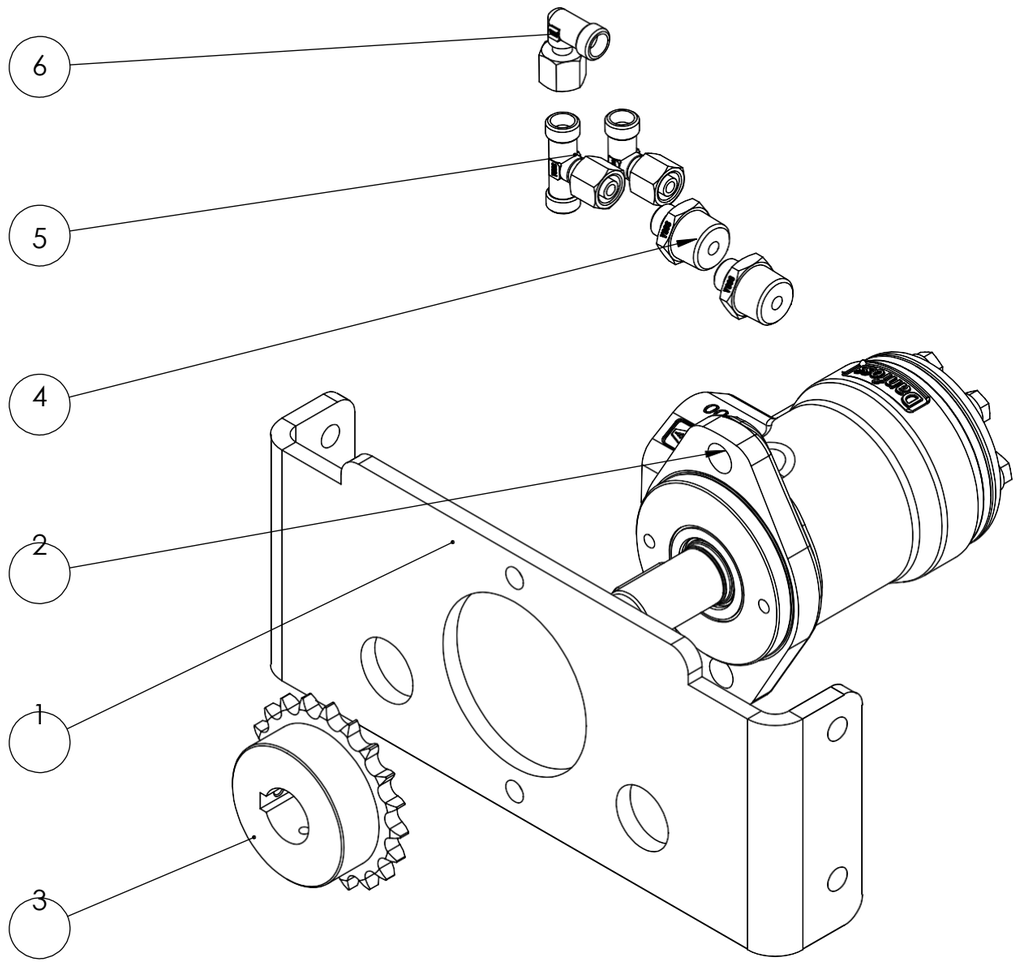
A

WEIGHT: 140468.61

SCALE:1:10

SHEET 1 OF 1

ITEM NO.	Order code	PART NUMBER	DESCRIPTION	QTY.
1	106590	NDRILL.0001	Bottom plate	1
2	106589	NDRILL.0002	Side plate right	1
3	106590	NDRILL.0003	Rear	1
4	106592	NDRILL.0004	filler piece	1
5	106585	NDRILL.0005	head plate	1
6	106584	NDRILL.0006	locking pin support	2
7	106586	NDRILL.0007	Scraper cage	2
8	106591	NDRILL.0008	pull support	1
9	106577	NDRILL.0009	head plate rear side	1
10	106576	NDRILL.0010	head plate front	1
11	106588	NDRILL.0011	left side plate	1
12	200180	UCF210GP	FLANGE BEARING	1
13	101114	NDRILL.0054	Clear acrylic sight glass 245x231x5	1
14	WSV12L	WSV12L	Angled bulkhead coupling 12L	4
15	104972	NDRIL.01.079	Pressure gauge ø63 rear connection	3
16	101520	101520	Plug 3-pole	1
17	106891	NDRILL.0046	Cover plate communication plug	1
18	106893	106893	Nanodrill 3004 Bolt Set	1



ITEM NO.	Order code	PART NUMBER	DESCRIPTION	QTY.
1	106593	NDRILL.0012	Motor bracket	1
2	200442	NDRILL.0014	Orbid motor 25CC	1
3	105697	NDRILL.0013	Sprocket simplex 20 teeth 1/2"	1
4	200439	NDRILL.0015	GES8LR12WD	2
5	200440	NDRILL.0016	ETVD8L	1
6	200441	NDRILL.0017	EWVD8L	2

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES: LINEAR:
ANGULAR:

FINISH: N.A.

DEBURR AND BREAK SHARP EDGES

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	NAME	DATE
DRAWN		26-6-2023
REV	Arjan	26-6-2023

TITLE: Rotary drive

MATERIAL:

DWG NO. NDRILL.102

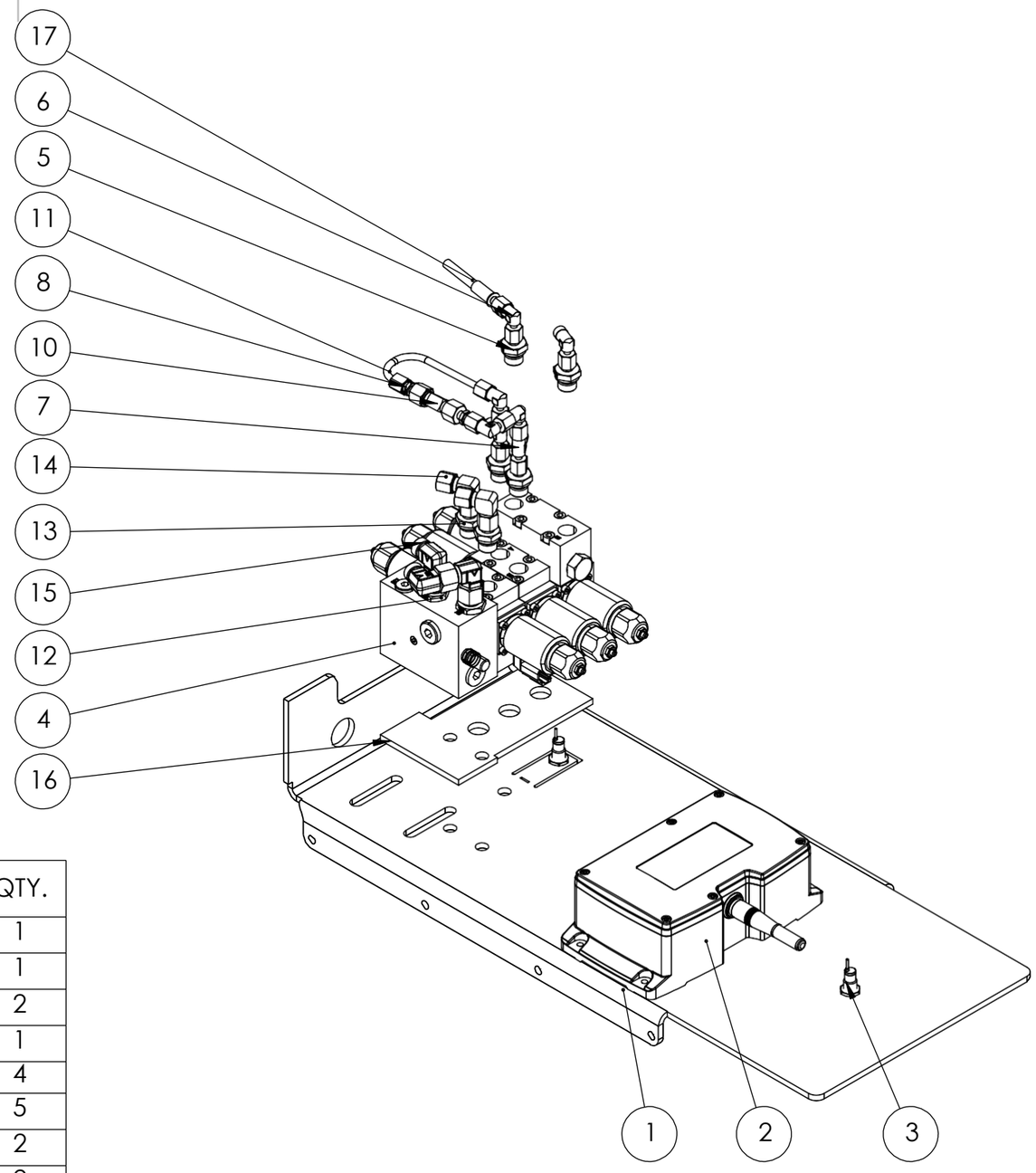
A

WEIGHT: 3946.00

SCALE:1:5

SHEET 1 OF 1

ITEM NO.	Bestelcode	PART NUMBER	DESCRIPTION	QTY.
1	106593	NDRILL.0012	Motor support	1
2	200442	NDRILL.0014	Orbid motor 25CC	1
3	105697	NDRILL.0013	Sprocket simplex 20 teeth 1/2"	1
4	200439	NDRILL.0015	GES8LR12WD	2
5	200440	NDRILL.0016	ETVD8L	1
6	200441	NDRILL.0017	EWVD8L	2



ITEM NO.	Article number Supplier	PART NUMBER	DESCRIPTION	QTY.
1	106594	NDRILL.0018	valve foot plate	1
2	101108	Receiver G2B	Scanreco receiver	1
3	106449	xs612b3dal2	M12 proximity switch	2
4	106913	PSL 2-da-3 fold	Hydraulic valve block	1
5	GES6LR38WD	GES6LR38WD	Screw-in 3/8 BSP- 6L	4
6	EWSD6L	EWSD6L	Adjustable angled coupling 6L	5
7	ELSD6L	ELSD6L	L coupling 6Lx6L	2
8	REDVD86L	REDVD86L	Reduction coupling 8L-6L cutting ring	2
9	MV6L	MV6L	Union nut 6L	3
10	TWV8L	TWV8L	Changeover valve 8L cutting ring	1
11	106914	NDRILL.0056	Tube 6mm 180	1
12	GEV12LR12	GEV12LR12	Screw-in nipple 1/2-12L	2
13	GES8LR38WD	GES8LR38WD	Screw-in nipple 3/8- 8L	2
14	EWSD8L	NDRIL.01.042	Adjustable angled coupling	2
15	EWSD12L	EWSD12L	Adjustable angled coupling	3
16	106915	NDRILL.0058	Valve block filler plate	1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:

FINISH:

DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING

REVISION

KORMEE mechanical engineering
Remmerden 13-A, 3911 TZ Rhenen
0031-626436817
www.kormee.nl - info@kormee.nl

	NAME	DATE
DRAWN		26-6-2023
	Arjan	27-11-2023
REV		

TITLE: Valve plate

MATERIAL:

DWG NO. NDRILL.104

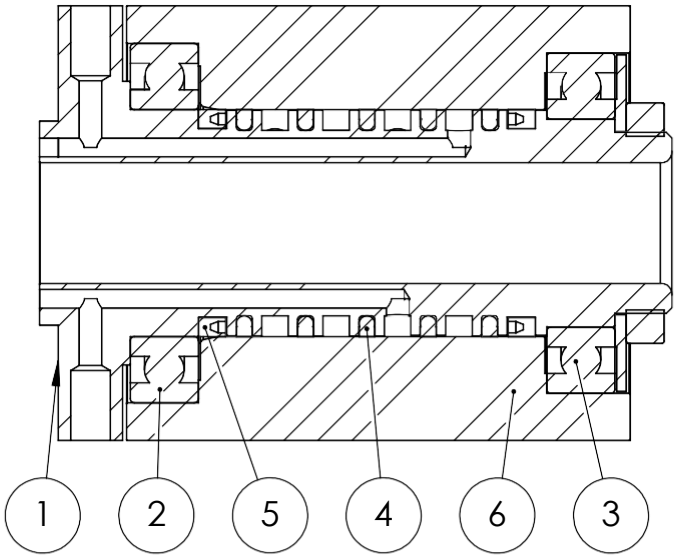
A

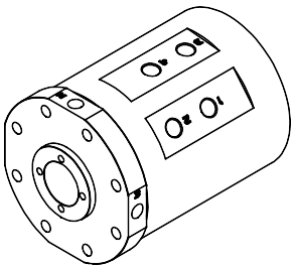
WEIGHT: 13703.90

SCALE:1:5

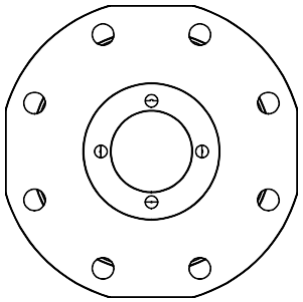
SHEET 1 OF 1

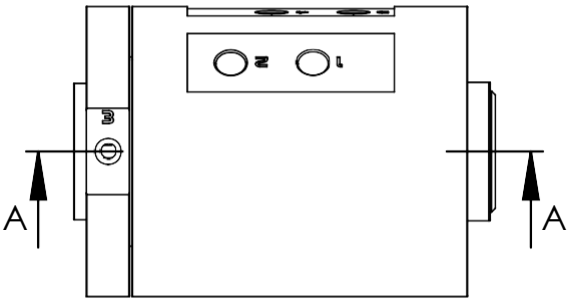
ITEM NO.	Article number Supplier	PART NUMBER	DESCRIPTION	QTY.
1	106594	NDRILL.0018	valve foot plate	1
2	101108	Receiver G2B	Scanreco receiver	1
3	106449	xs612b3dal2	M12 proximity switch	2
4	106913	PSL 2-da-3 fold	Hydraulic valve block	1
5	GES6LR38WD	GES6LR38WD	Screw-in 3/8 BSP- 6L	4
6	EWSD6L	EWSD6L	Adjustable angled coupling 6L	5
7	ELSD6L	ELSD6L	L coupling 6Lx6L	2
8	REDVD86L	REDVD86L	Reduction coupling 8L-6L cutting ring	2
9	MV6L	MV6L	Union nut 6L	3
10	TWV8L	TWV8L	Changeover valve 8L cutting ring	1
11	106914	NDRILL.0056	Tube 6mm 180	1
12	GEV12LR12	GEV12LR12	Screw-in nipple 1/2-12L	2
13	GES8LR38WD	GES8LR38WD	Screw-in nipple 3/8- 8L	2
14	EWSD8L	NDRIL.01.042	Adjustable angled coupling	2
15	EWSD12L	EWSD12L	Adjustable angled coupling	3
16	106915	NDRILL.0058	Valve block filler plate	1
17	106554	NDRILL.119	Hose set Valve-Swivel complete	1





SECTION A-A
SCALE 1 : 2





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	101034	Shaft Rotary Throughfeed 4-way	1
2	200124	Grooved Ball Bearing Single Row 95x60x18	1
3	200125	Grooved ball bearing Single-row 90x55x18	1
4	200126	Rotory Seal	5
5	200127	PU seal 60x50x7.5	2
6	101035	Swivel Housing	1
7	101036	Washer	1
8	200128	Nut M48x2	1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH:
TOLERANCES: LINEAR:
ANGULAR:

FINISH:

DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING

REVISION:

Category:

	NAME	DATE
DRAWN		25-1-2021
REV	Arjan	13-11-2023

TITLE:
Rotary Throughfeed 4-way

KORMEE mechanical engineering
Autoweg 10, 3911 TK Rhenen
0031-626436817
www.kormee.nl - info@kormee.nl

MATERIAL:

A

DWG NO.
NDRILL.105

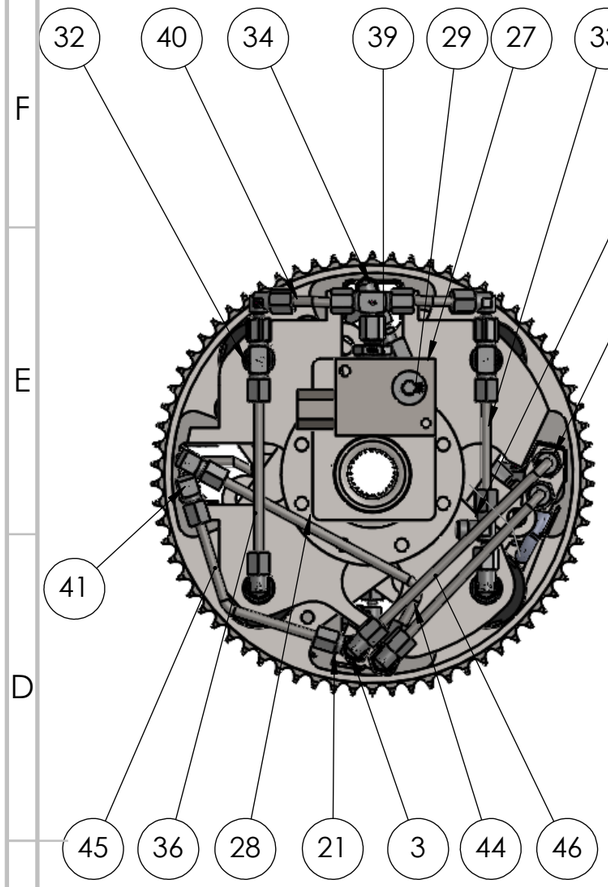
A4

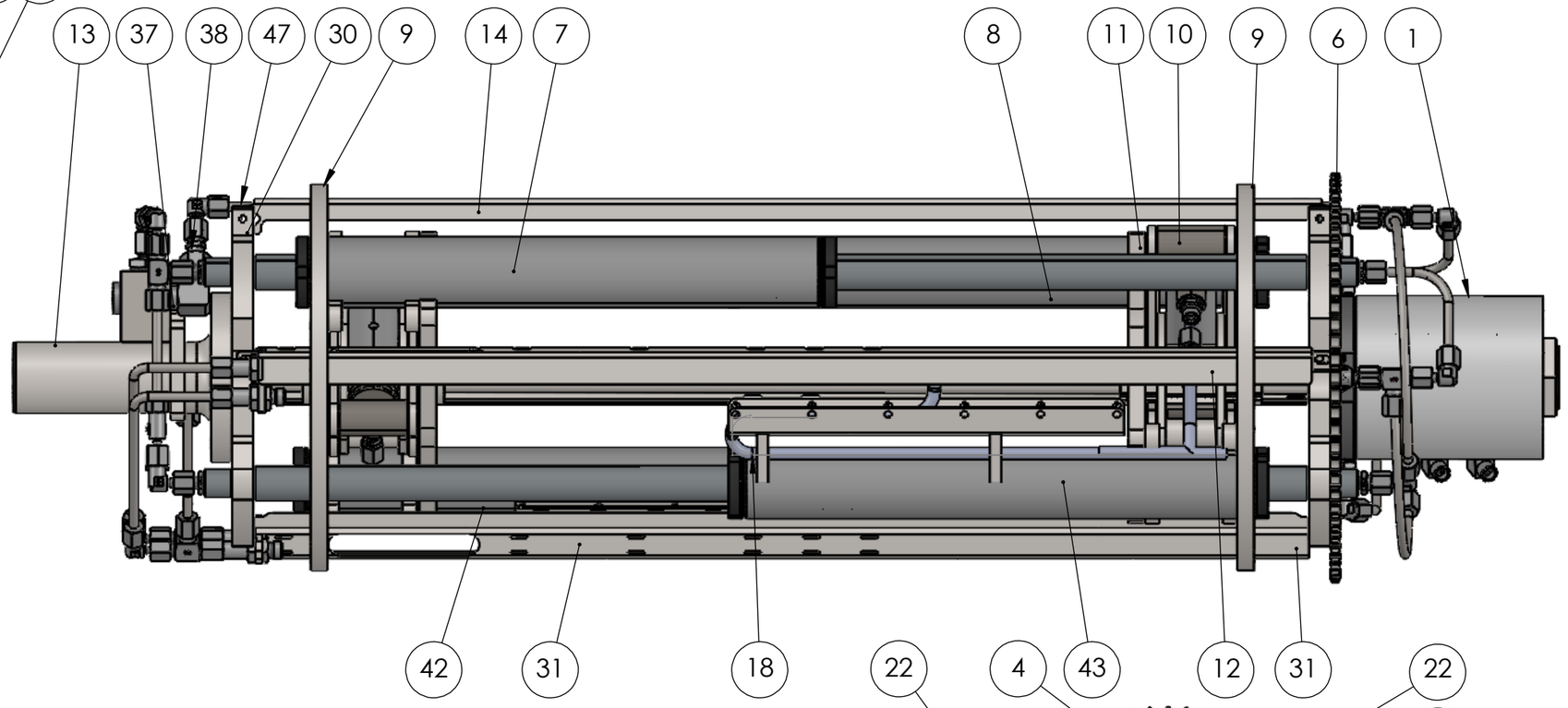
WEIGHT: 10531.42 grams

SCALE:1:5

SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	101034	Shaft Rotary Throughfeed 4-way	1
2	200124	Grooved Ball Bearing Single Row 95x60x18	1
3	200125	Grooved ball bearing Single-row 90x55x18	1
4	200126	Rotory Seal	5
5	200127	PU seal 60x50x7.5	2
6	101035	Swivel Housing	1
7	101036	Washer	1
8	200128	Nut M48x2	1





UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH: N.A.	DEBURR AND BREAK SHARP EDGES

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www.kormee.nl - info@kormee.nl

	NAME	DATE
DRAWN		3-7-2023
REV	Arjan	14-11-2023

TITLE: Interior workings

MATERIAL:

DWG NO. NDRILL.106

A

WEIGHT: 0.00

SCALE:1:10

SHEET 1 OF 3

ITEM NO.	Order code	PART NUMBER	DESCRIPTION	QTY
1	101034	NDRILL.105	Rotary Throughfeed 4-way	1
2	GES6LM12WD	GES6LM12WD	Metric screw-in WD x cutting ring 6L	4
3	EWSD6L	EWSD6L	Adjustable angled coupling 6L	13
4	SNV6L	SNV6L	Connecting coupling 6Lx6L	2
5	ELSD6L	ELSD6L	L coupling 6Lx6L	2
6	101039	NDRILL.0023	Plate wheel Z70	1
7	101239	NDRILL.107	Sliding cylinder C	1
8	101239	NDRILL.108	Sliding cylinder C	1
9	106596	NDRILL.0028	break clamp outside ring	2
10	101235	NDRILL.111	clamping jaw set	2
12	101242	NDRILL.115	Hose duct A	1
13	101040	NDRILL.0038	Throughfeed shaft	1
14	106602	NDRILL.0039	hose duct bridge	2
15	GSS6L	GSS6L	Bulkhead coupling 6L	4
16	GES6LR18WD	GES6LR18WD	BSP screw-in WDx cutting ring 6L	8
18	106549	Hose DN05	Clamping cylinder hose	4
21	TV6L	TV6L	T-coupling 6l cutting ring	4
22	106880	NDRILL.117	Pipe 6L 90 sliding cylinders	2
23	106881	NDRILL.118	Pipe 6L circle sliding cylinders	2
24	106882	NDRILL.0043	Transport pipe 6L clamping cylinder	1
25	106883	NDRILL.0044	Transport pipe 6L clamping cylinder	1
26	WEV6LRK14	WEV6LRK14	Angled coupling 6L BSPT	4
27	104016	FPMD05001	overpressure valve 1/4	1
28	106600	NDRILL.0040	overpressure support	1
29	VSR06WD	VSR06WD	BSP blind cap 3/8	1
30	106595	NDRILL.0022	head plate rotator	2
31	101241	NDRILL.116	Hose duct B	1
32	ETVD6L	ETVD6L	T-coupling adjustable 6L	3
33	106884	NDRILL.0047	Intermediate pipe 6L	1
34	MV6L	MV6L	Union nut 6L	11
36	106885	NDRILL.0048	Intermediate pipe 6L	1
37	WEV10LRK38	WEV10LRK38	Angled coupling 10L R3/8	1
38	GV106L	GV106L	Flared connection coupling 10-6L	1
39	GES6LR38WD	GES6LR38WD	Screw-in 3/8 BSP- 6L	1
40	106886	NDRILL.0049	Intermediate pipe 6L	2
41	WV6L	WV6L	Angled coupling 6L 2x cutting ring	2
42	101237	NDRILL.109	Sliding cylinder A	1
43	101238	NDRILL.110	Sliding cylinder B	1
44	106887	NDRILL.0050	Intermediate pipe 6L clamping cylinders	1
45	106888	NDRILL.0051	Intermediate pipe 6L clamping cylinders	1
46	106889	NDRILL.0052	Intermediate pipe 6L clamping cylinders	2
47	106890	NDRILL.0053	Intermediate pipe 6L clamping cylinders	1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:

FINISH: N.A.

DEBURR AND BREAK SHARP EDGES

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REVISION

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Remmerden 13-A, 3911 TZ Rhenen
0031-626436817
www.kormee.nl - info@kormee.nl

	NAME	DATE
DRAW		3-7-2023
REV	Arjan	14-11-2023

TITLE: Interior workings

MATERIAL:

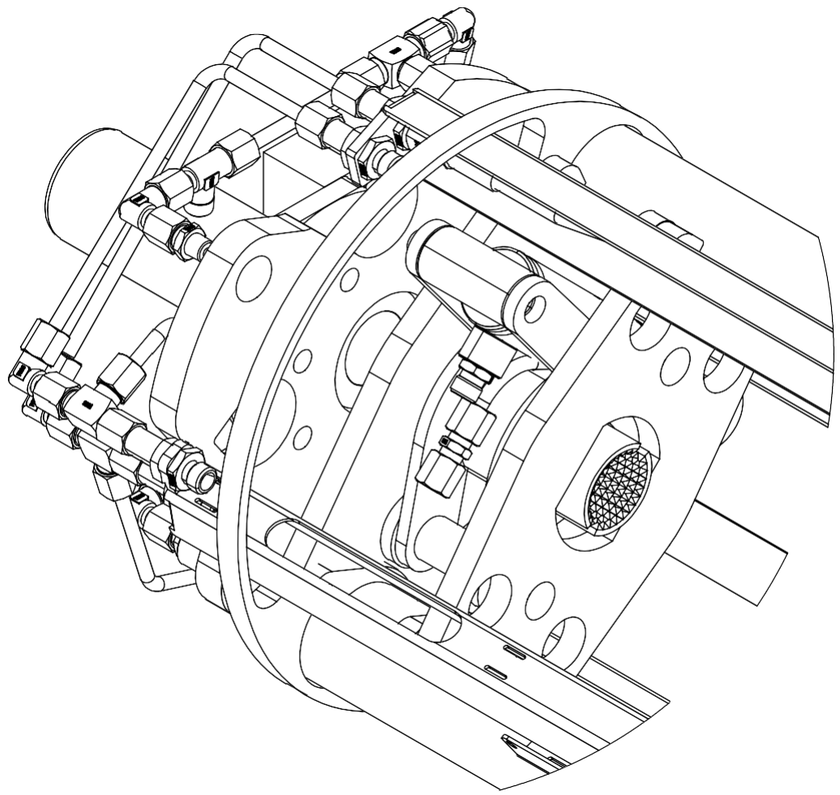
DWG NO. NDRILL.106

A3

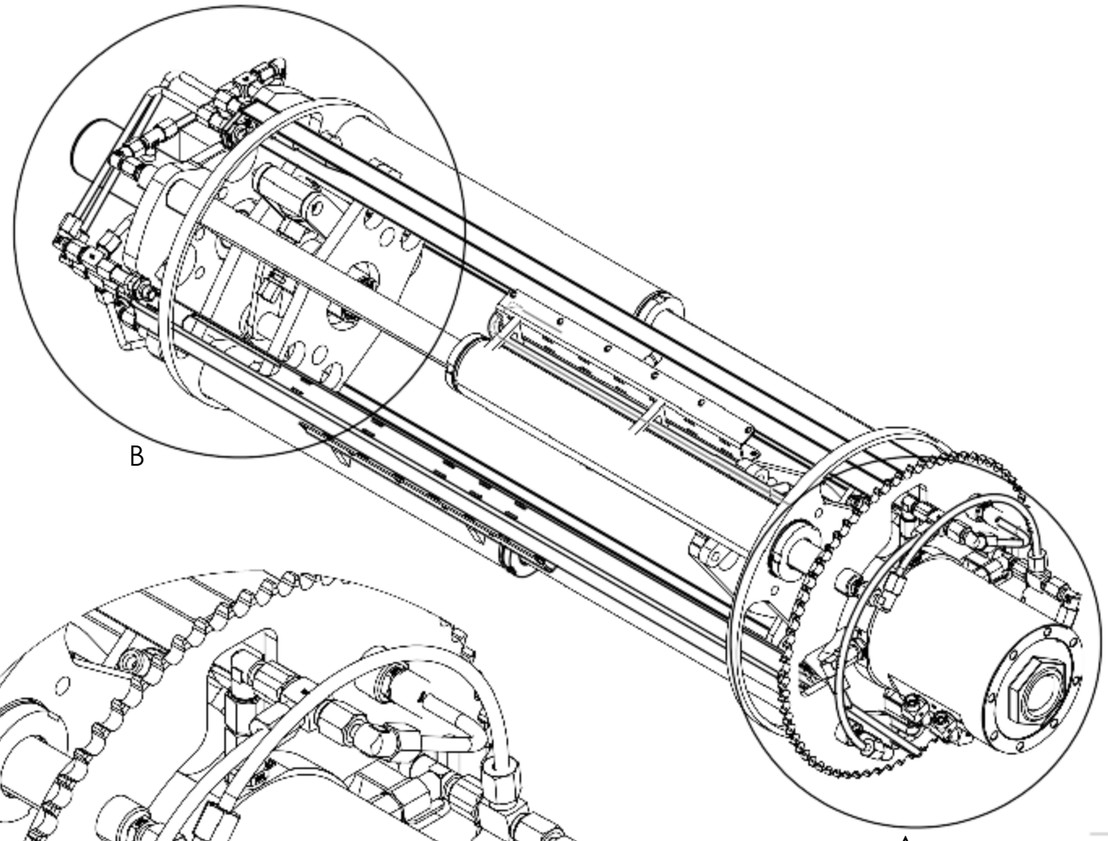
WEIGHT: 0.00

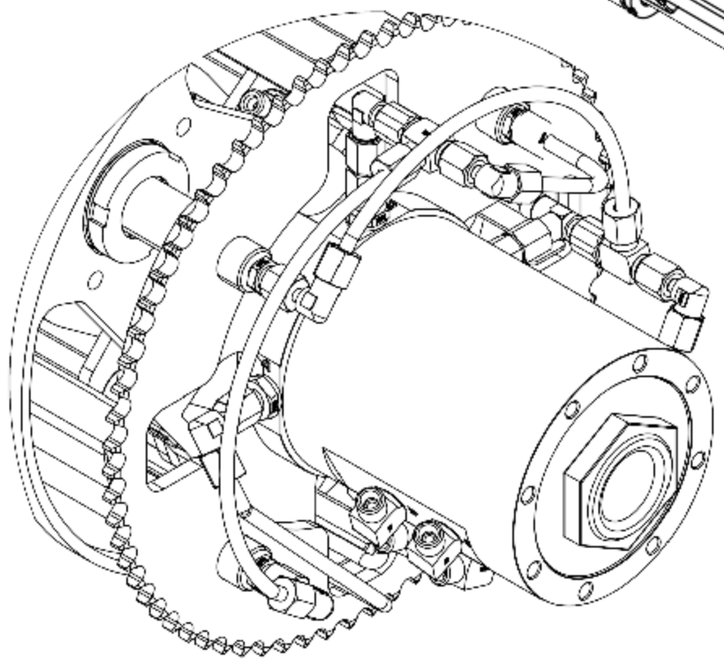
SCALE:1:10

SHEET 2 OF 3



DETAIL B
SCALE 2 : 5





DETAIL A
SCALE 2 : 5

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH: N.A.	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING / REVISION

KORMEE mechanical engineering
Remmerden 13-A, 3911 TZ Rhenen
0031-626436817
www.kormee.nl - info@kormee.nl

	NAME	DATE
DRAWN		3-7-2023
REV	Arjan	14-11-2023

TITLE: Interior workings

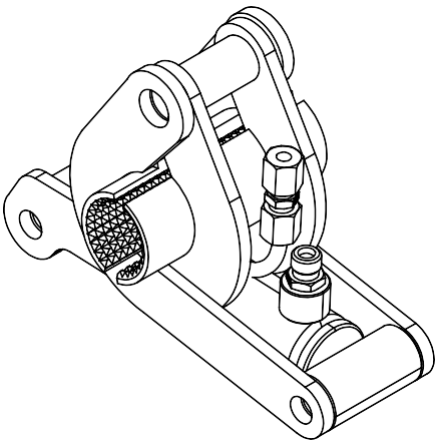
MATERIAL:

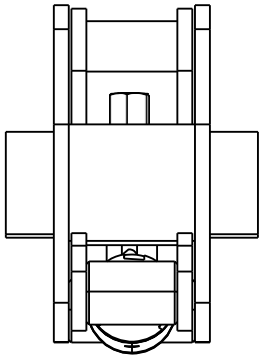
DWG NO. NDRILL.106 — A

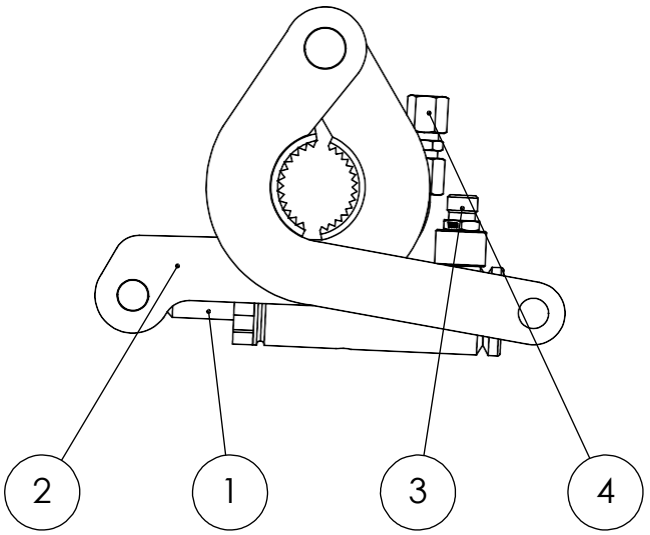
WEIGHT: 0.00 — SCALE:1:10 — SHEET 3 OF 3

ITEM NO.	Order code	PART NUMBER	DESCRIPTION	QTY.
1	101034	NDRILL.105	Rotary Throughfeed 4-way	1
2	GES6LM12WD	GES6LM12WD	Metric screw-in WD x cutting ring 6L	4
3	EWSD6L	EWSD6L	Adjustable angled coupling 6L	13
4	SNV6L	SNV6L	Connecting coupling 6Lx6L	2
5	ELSD6L	ELSD6L	L coupling 6Lx6L	2
6	101039	NDRILL.0023	Plate wheel Z70	1
7	101239	NDRILL.107	Sliding cylinder C	1
8	101239	NDRILL.108	Sliding cylinder C	1
9	106596	NDRILL.0028	break clamp outside ring	2
10	101235	NDRILL.111	clamping jaw set	2
12	101242	NDRILL.115	Hose duct A	1
13	101040	NDRILL.0038	Throughfeed shaft	1
14	106602	NDRILL.0039	hose duct bridge	2
15	GSS6L	GSS6L	Bulkhead coupling 6L	4
16	GES6LR18WD	GES6LR18WD	Screw-in metric -6L cutting ring	8
18	106549	Hose DN05	Clamping cylinder hose	4
21	TV6L	TV6L	T-coupling 6l cutting ring	4
22	106880	NDRILL.117	Pipe 6L 90 sliding cylinders	2
23	106881	NDRILL.118	Pipe 6L circle sliding cylinders	2
24	106882	NDRILL.0043	Transport pipe 6L clamping cylinder	1
25	106883	NDRILL.0044	Transport pipe 6L clamping cylinder	1
26	WEV6LRK14	WEV6LRK14	Angled coupling 6L BSPT	4
27	104016	FPMD05001	overpressure valve 1/4	1
28	106600	NDRILL.0040	overpressure support	1
29	VSR06WD	VSR06WD	BSP blind cap 3/8	1
30	106595	NDRILL.0022	head plate rotator	2
31	101241	NDRILL.116	Hose duct B	1
32	ETVD6L	ETVD6L	T-coupling adjustable 6L	3
33	106884	NDRILL.0047	Intermediate pipe 6L	1

34	MV6L	MV6L	Union nut 6L	11
36	106885	NDRILL.0048	Intermediate pipe 6L	1
37	WEV10LRK38	WEV10LRK38	Angled coupling 10L R3/8	1
38	GV106L	GV106L	Flared connection coupling 10-6L	1
39	GES6LR38WD	GES6LR38WD	Screw-in 3/8 BSP- 6L	1
40	106886	NDRILL.0049	Intermediate pipe 6L	2
41	WV6L	WV6L	Angled coupling 6L 2x cutting ring holder	2
42	101237	NDRILL.109	Sliding cylinder A	1
43	101238	NDRILL.110	Sliding cylinder B	1
44	106887	NDRILL.0050	Intermediate pipe 6L clamping cylinders	1
45	106888	NDRILL.0051	Intermediate pipe 6L clamping cylinders	1
46	106889	NDRILL.0052	Intermediate pipe 6L clamping cylinders	2
47	106890	NDRILL.0053	Intermediate pipe 6L clamping cylinders	1
48	102189	102189	M20x2	8







ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	101236	Clamping cylinder welded	1
2	NDRILL.112	Clamping jaw complete	1
3	GES6LR18WD	Screw-in metric -6L cutting ring	1
4	GV6L	6L cutting ring - 6L cutting ring	1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:

FINISH:

DEBURR AND BREAK SHARP EDGES

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REVISION:

Category:

KORMEE mechanical engineering
Autoweg 10, 3911 TK Rhenen
0031-626436817
www.kormee.nl - info@kormee.nl

	NAME	DATE
DRAWN		28-1-2021
REV	Arjan	13-11-2023

TITLE:
clamping jaw set

MATERIAL:

DWG NO.
NDRILL.111

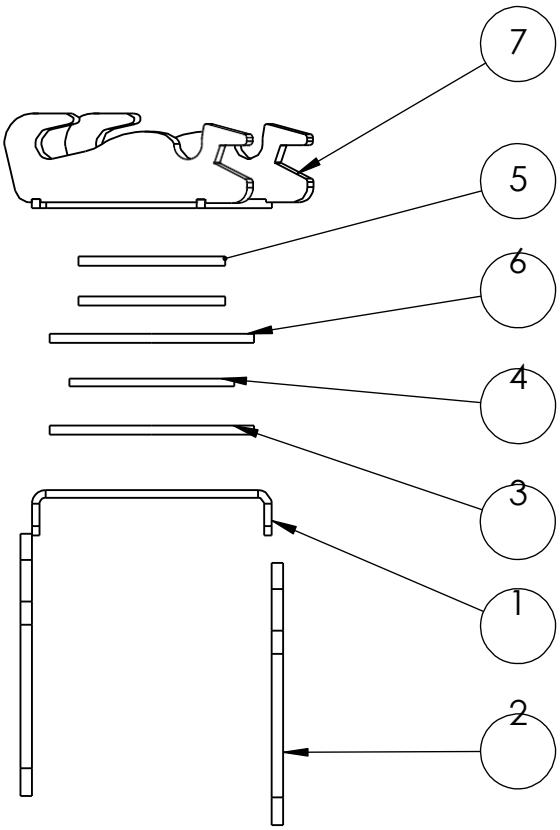
A4

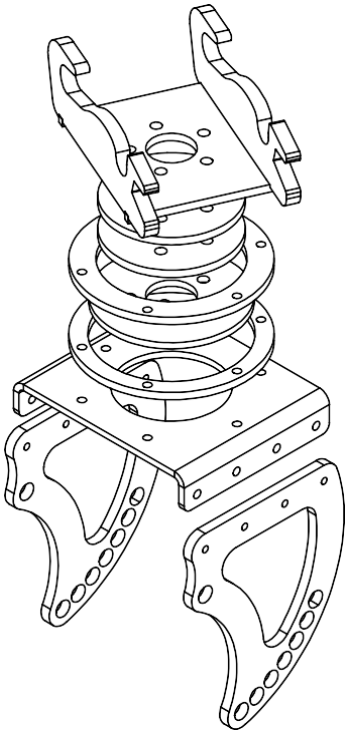
WEIGHT: 1610.51 grams

SCALE:1:5

SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	101236	Clamping cylinder welded	1
2	NDRILL.112	Clamping jaw complete	1
3	GES6LR18WD	Screw-in metric -6L cutting ring	1
4	GV6L	6L cutting ring - 6L cutting ring	1





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	NDRILL.01.066	header plate quick coupler	1
2	NDRILL.01.065	angle adaptor	2
3	MOBLIA.0026	ROTATION DISC	1
4	MOBLIA.0027	FILLING BLADE	1
5	MOBLIA.0034	FILLING PLATE	2
6	MOBLIA.0028	ROTATION DISC	1
7	CW0	QUICK COUPLER CW0	1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH:
TOLERANCES:
LINEAR:
ANGULAR:

FINISH: N.A.

DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING

REVISION:

Category:

NAME

DATE

TITLE:

Quick coupler

KORMEE mechanical engineering
Autoweg 10, 3911 TK Rhenen
0031-626436817
www.kormee.nl - info@kormee.nl

DRAWN		17-2-2021
REV	Arjan	15-11-2023
MATERIAL:		

DWG NO. NDRILLL3010.15

A4

WEIGHT: 40532.01 grams

SCALE:1:10

SHEET 1 OF 1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	NDRILL.01.066	HEADER PLATE QUICK COUPLER	1
2	NDRILL.01.065	ANGLE ADAPTOR	2
3	MOBLIA.0026	ROTATION DISC	1
4	MOBLIA.0027	FILLING BLADE	1
5	MOBLIA.0034	FILLING PLATE	2
6	MOBLIA.0028	ROTATION DISC	1
7	CW0	QUICK COUPLER CW0	1