OPERATING MANUAL

OILSEED SCREW PRESS

FARMET DUO

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IMPORTANT

READ CAREFULLY BEFORE USE

KEEP FOR FUTURE REFERENCE

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Dear Customer,

Farmet DUO Screw Presses are quality products by Farmet a.s. Česká Skalice. You can fully utilise the advantages and qualities of the Equipment after thoroughly studying the operating manual.

The serial number of the Equipment is punched on the production label and written in the operating manual. The Equipment serial number must be stated whenever ordering spare parts for possible repairs. The production label is located on the basic frame by the gearbox.

Only use spare parts for the Equipment according to the **Spare Parts Catalogue** officially issued by the manufacturer, Farmet a.s. Ceska Skalice. The spare parts are identified by a catalogue number (e.g. LAMELA – 2900133).

Possibilities of the Use of Your Equipment

The Farmet DUO screw press is designed for cold-pressing oilseeds, namely rapeseed, sunflower seeds and other oilseeds. The pressed oil can be used for both technical and food-processing purposes.

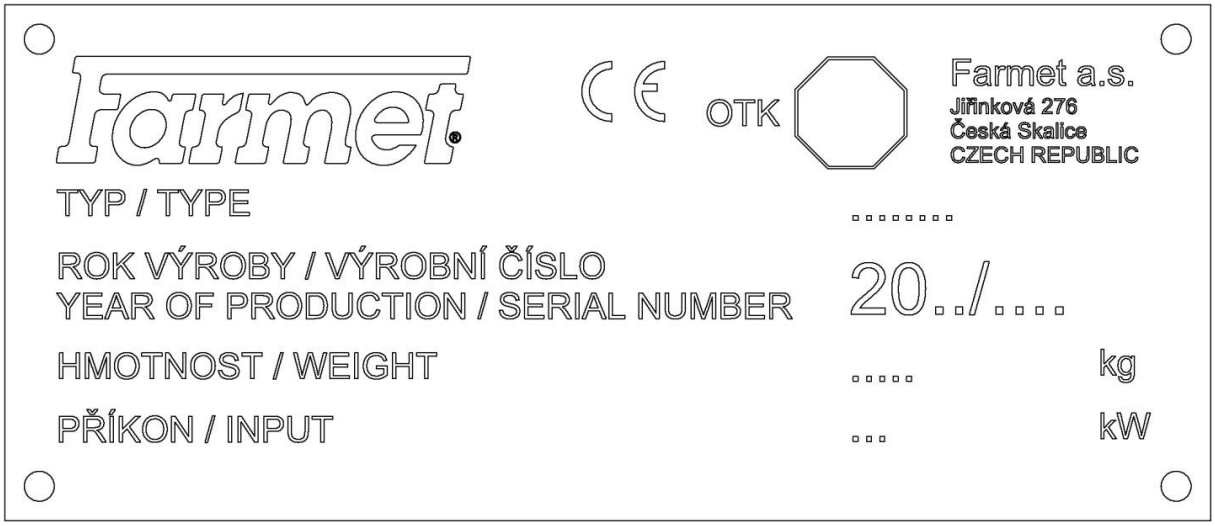


Table 1 *- Technical Parameters of the Equipment*

PARAMETERS	FARMET DUO 3f	FARMET DUO FM	FARMET DUO FM 4kW
Machine Length (mm)	780	775	795
Height (mm)	465	540	560
Width (mm)	650		
Electromotor Voltage (V)	400		
Requirement – Voltage/Frequency (V/Hz)	3+PE+N,3x230/400V / 50Hz		
Rated Output of the Electrometer (kW)	2.2	3	4
Requirement – Line Protection (A)	10	16	
Press Input Material Parameters	Minimum seed temperature at the press input 15° C, humidity 5–7 %, quality according to CSN 462300		
Noise Level	Equivalent noise level A does not exceed 70 dB, acc. to EN 61672-1:2003		
Granule Diameter (mm) – acc. to the jets	4 (for oilseeds with at least 20 % fat content) 4, 6, 8, 10		
Press Head Warming-up to Pre-actuation Temperature (°C)	60		
Press Weight (kg)	115	120	120

Table 1 *– Gearbox Parameters*

GEARBOX PARAMETERS	3f	FM	FM 4kW
Type	PSL 100		
True Gear	i = 28.2		
Input Speed (min-1)	1415		
Max. Input Power (kW)	2.2	3	4
Oil Quantity (L)	2.2		
Viscosity Class	VG 220		
Oil Type	CLP 220		

TABLE OF CONTENTS

1. LIMIT PARAMETERS OF THE EQUIPMENT

The Equipment is designed to be operated in interiors with ambient temperature from +15 °C to +35 °C and relative humidity from 10 % to 90 % without condensation.

The Equipment is designed for continuous operation with periodical inspections and regularly performed maintenance.

The Equipment is designed for continuous operation with periodical inspections and regularly performed maintenance.

The Operator must not use the equipment for any other purposes, especially for pressing other seeds than oilseeds or other materials.

2. SAFETY MESSAGES

Symbol	Meaning
	The general warning symbol identifies important information regarding the safety instructions in the instruction manual and safety signs on your machine. If you see this warning sign, be aware that there is a risk of injury which may cause death. Instructions labeled this general warning sign must always be observed.
	**Danger!** This warning sign warns about an immediate dangerous situation ending with death or severe injury.
	**Warning!** This warning sign warns about a dangerous situation ending with death or severe injury.
	**Caution!** This warning sign warns about a situation that may end with a smaller or slight injury. It also warns about dangerous actions related to the activity that could lead to an injury.
	The symbol indicates an important instruction, feature or procedure that is required to meet during installation, use and maintenance of equipment. Failure to comply may result in equipment damage.
	Symbol indicates useful information related to equipment.

A. GENERAL INSTRUCTIONS FOR USE	
	**A.1** The Operator must get acquainted with the Equipment, its function and control elements prior to its first use.
	**A.2** The Equipment may only be operated by a person authorized by the Owner under the following conditions: • The Operator must be demonstrably informed of the safety regulations for the operation of the Equipment and the operation of the technological unit in which it is installed and must be practically able to control the operation of the Equipment. • The Equipment must not be operated by a minor (person below 18 years of age). • The Operator must know the meaning of the safety signs placed on the Equipment. The safety signs must be respected to ensure a safe and reliable operation.
	**A.3** Maintenance and servicing repairs on the Equipment may only be performed

by a person:

- Authorised by the Owner
- Educated in the machinery field with knowledge of repairs of similar equipment
- Demonstrably acquainted with safety regulations for work with the Equipment

A.4 The Operator must secure the safety of other persons when working with the Equipment.

A.5 The Operator may only enter the Equipment structure when the Equipment is in standstill and only for the following reasons:

- Adjustment of the working parts of the Equipment
- Repair and maintenance of the Equipment

A.6 Any changes or modifications of the Equipment may only be performed with written consent of the Producer. The Producer bears no liability for any potential damage incurred due to the failure to observe this instruction. All warning and safety signs must be legible and in their places. In case of damage or loss, these signs must be immediately renewed.

A.7 The Operator must have the Operating Manual with the work safety requirements available at any time when working with the Equipment.

A.8 The Operator must not consume alcohol, medicines, narcotic and hallucinogenic substances that reduce attention and coordination capabilities while using the Equipment. If the Operator must use medicines prescribed by a physician or uses over-the-counter medicines, he must be informed by a physician, whether he is capable of a responsible and safe operation of the Equipment under such circumstances.

A.9 The Equipment may be activated provided that it is technically fit and complies with regulations for safety and hygiene at work and provided that it is used in compliance with the terms and conditions specified by the Producer.

A.10 When working with the Equipment, follow the instructions in this Operating Manual as well as generally binding regulations for safety at work, protection of health, fire and traffic safety and protection of the environment.

A.11 Do not use water to extinguish fire of electric equipment. In case of fire, follow the valid fire regulations.

B. TRANSPORTING THE EQUIPMENT

B.1 The vehicle intended for the transportation of the Equipment must have at least the same bearing capacity as the weight of the transported Equipment is. The total weight of the Equipment is stated on the nameplate.

B.2 The dimensions of the transported Equipment including the vehicle must comply with valid acts and regulations, e.g. Decree No. 102/1995 for road transportation.

B.3 The transported Equipment must be always attached to the vehicle so that it cannot be released during transportation.

B.4 The carrier is liable for damages caused by the release of incorrectly or insufficiently attached Equipment to the vehicle.

C. MANIPULATING THE EQUIPMENT BY A LIFTING DEVICE

C.1 The lifting device and binding instruments intended for manipulation with the Equipment must have at least the same bearing capacity as the weight of the manipulated Equipment is.

C.2 The Equipment may only be attached for manipulation in designated places marked by stick-on labels showing a “chain”.

C.3 When attached (suspended) in designated places, it is not allowed to move in the area of a potential reach of the manipulated Equipment.

D. WORK SAFETY LABELS

The warning safety labels are used for the Operator’s protection.

The following applies generally:

- Strictly observe the warning safety labels.
- All safety instructions also apply to other users.
- If the aforementioned “**SAFETY LABEL**” located on the Equipment is damaged or destroyed, **THE OPERATOR MUST REPLACE IT WITH A NEW ONE!!!**
- The position, appearance and exact meaning of work safety labels on the Equipment are given in the following table (*Table 2*) and picture (*Figure 1*, *Figure 2*).

***Table 2** – Warning Safety Labels*

WARNING SAFETY LABEL	TEXT TO THE LABEL	POSITION ON THE MACHINE
	Read the Operating Manual carefully prior to manipulation with the Equipment. Observe the instructions and safety rules when operating the Equipment.	**P 1 H**
	Do not enter the area of the moving screw unless the machine is standstill and the motor is switched off.	**P 24 H**
	The Equipment must be disconnected from the power supply during repairs and maintenance or when welding is performed on the Equipment.	**P 47 H**
	Main switch	**P HV**
	Warning! Electrical device	**P PEZ**

3. DESCRIPTION OF THE EQUIPMENT

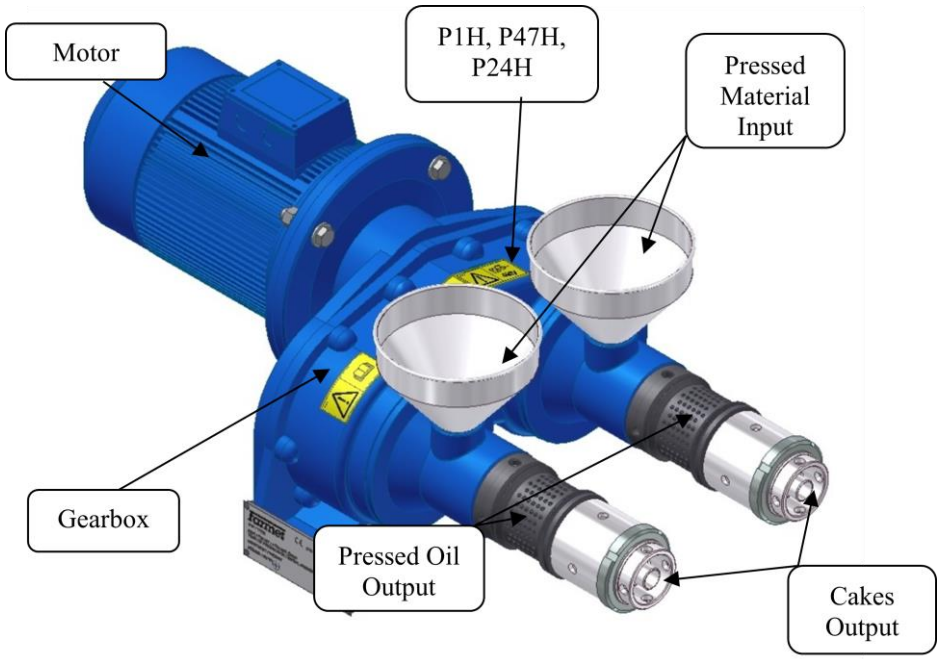


Figure 1 *– DUO*

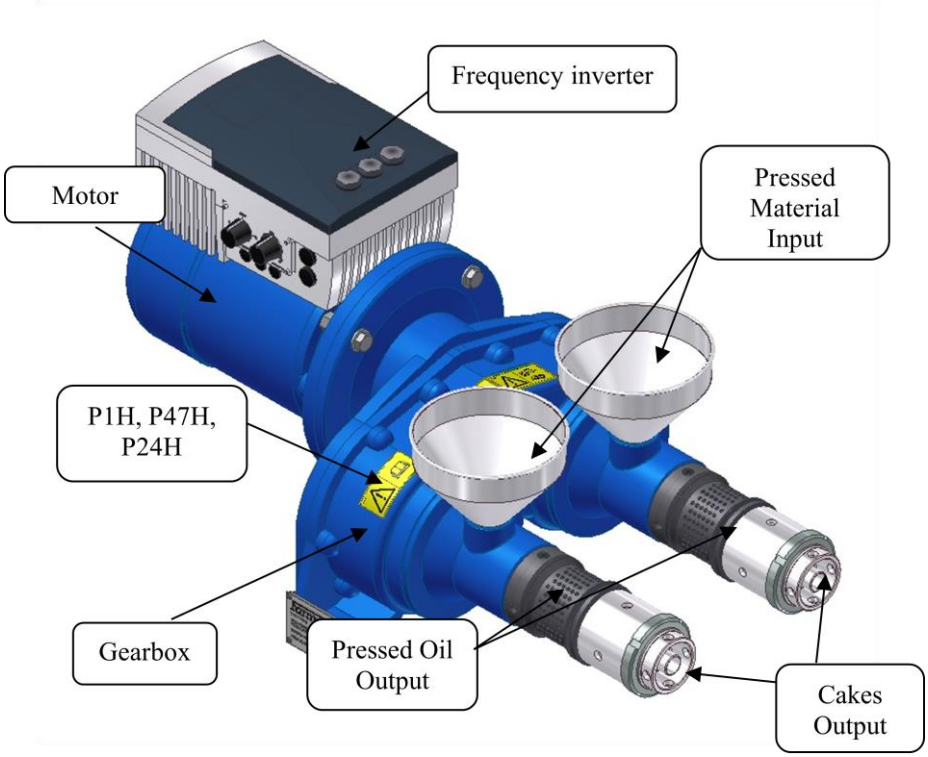


Figure 2 *- DUO FM*

The pressing unit consists of an aluminium hopper, a press screw, a die, a heating sleeve nut, a nozzle holder, a nozzle for cakes and a heating sleeve.

Press Description

The presses can be assembled into batteries placed on one pedestal with a joint discharge chute and a belt conveyor for carrying away the pressed cakes in the form of granules. Each press has two press heads, two press screws, two dies, driven by one gearbox and one electromotor.

Press Gearbox Description

It is a wet-operation gearbox; it is a single reduction gearbox for the operation of two screws of one press, designed as a compact mono-block. The box is a casting with a bottom; bearings: conical (ISO 355 – 7FB corresponds with 31310), ball (6306).

The output hollow shafts of the gearbox are designed to be inserted into the press screw. The shafts are sealed with Gufero shaft seal. The gearbox is lubricated by wading wheels in an oil bath and oil spray inside the box.

Press Function Description

The oilseeds are brought into the hopper. This may be solved either by a standpipe from a higher floor of the building or by a separate container above the press or above the press battery. When the electromotor is activated, the seeds from the hopper are collected by the screw that presses the seeds into the head (nozzle holder) in the place of the perforated die which presses out oil that runs down into the chute (not included in the delivery). The pressed cakes go through the nozzle where they are pressed to come out in the form of granules. When actuating the press, the pressing mechanism must be heated to the temperature of 60°C. Use the heating sleeve (optional accessory).

3.1 TERMS DEFINITION

Oilseed (seed, oil seed) – a common crop seed containing vegetable oil, prepared (i.e. cleaned and dried) for storage under the local conditions of the seed species

Cake – remaining oilseed material after oil pressing

Vegetable oil – oil obtained from oilseeds or by chemical extraction

Crude oil – vegetable oil after pressing (or extraction) and filtration without any other treatment (filtered oil)

Oil pressing – pressing oil from oilseeds by mechanical force – pressure

Screw press (for oilseeds) – equipment for pressing oil by creating pressure using a rotating screw with variable geometry in a closed perforated filter (also called the bin)

Oil separation – separation of gross mechanical impurities from oil

Oil filtration – separation of mechanical impurities from oil (particles)

Press capacity – the quantity of the pressed material entering the press per unit of time, usually stated in kilograms per hour

3.2 OPTIONAL EQUIPMENT

Electrical Equipment with Frequency Convertor

The frequency convertor is installed directly on the motor terminal block. There are control buttons on the frequency convertor for switching on and controlling the motor revolutions. More information is available in the **NORDAC SK 205E** Frequency Convertor Operating Instructions**.**

Electrical Equipment without Frequency Convertor

The electromotor starter allows starting and stopping the motor (including emergency stop).

Heating Sleeve

It warms up the die before the actuation of the press to ensure better start-up.

Heating sleeve with temperature regulation

It allows heating and stabilization of the temperature of pressing device to the desired temperature.

Wooden Pedestal under the Press

The pedestal under the press is made from solid stained timber. It stabilizes the press during operation.

Table under the Press

The metal pedestal under the press ensures stability during operation.

Service Tools

Tools required for disassembling and cleaning the press. It contains a hook spanner, a box spanner and a cleaning preparation.

Hopper above the Press with Capacity of 20L

A metal hopper above the DUO screw press with the capacity of 20 litres. It is an extension above two hoppers that are included in the pressing mechanism.

4. ON-SITE ASSEMBLY AND INSTALLATION OF THE EQUIPMENT

- The Owner must perform the assembly according to the instructions of the Producer, best in cooperation with an expert servicing technician assigned by the Producer.
- The Owner must secure a functional test of all assembled parts after the completion of the Equipment assembly.
- The wiring must be executed in compliance with valid standards and documented by a revision. Any repairs, modifications and other work on the wiring may only be performed by authorized persons with corresponding electrical qualifications.
- The spatial organization of the pressing shop must ensure free access to the Equipment so that it is possible to perform its maintenance and service without any difficulties.
- If more than one piece of equipment is installed in the pressing shop, make sure that the individual control elements, boxes and equipment are clearly and visibly marked so that there is no confusion in case an emergency stop is required.
- When the Equipment is installed, it has to be properly levelled into a horizontal position using spacers that do not increase the surface pressure from the supporting leg so that the Equipment is not twisted or distorted; use suitable base wedge blocks. If the Equipment is attached to a steel structure together with other heavy appliances, make sure that the other appliances are installed on the structure prior to the final levelling using a water level.
- When installing the Equipment, make sure that the Equipment is accessible for the purpose of maintenance and oil change (access to the outlet and inlet openings, oil level gauges, air release plugs and sight holes).
- The Equipment may be installed on a floor with the bearing capacity specified in the project.
- The Equipment is oriented according to the technological disposition.
- Make sure that there are tools available. It is also suitable to provide all other equipment required for maintenance, such as various hand tools, crowbars and lifting devices.
- Check the direction of turning for all rotary devices.
- The wiring circuit is included in the annex to this manual.

5. ACTIVATION AND SHUTDOWN

5.1 SAFETY INSTRUCTIONS FOR THE OPERATOR

The Operator must not:

- **Activate or use the Equipment when the covers are removed or damaged**
- **Touch the moving parts of the Equipment**
- **Work with the Equipment when the working area of the Equipment and the workstation are not sufficiently illuminated**
- **Perform the maintenance, cleaning, repairs and adjustments of the Equipment when in operation**
- **Discard and remove safety protective and locking devices**
- **Take off or remove the covers unless the machine is in complete standstill and the shutdown condition has been secured**
- **Remove the aluminium hopper from a press that has not been switched off and from a press in operation**
- **Insert limbs into the hopper and the gap created by removing the hopper**
- **Connect the equipment to a power supply with damaged cables or damaged distributor covers**

- The Operator must get acquainted with the Equipment, its function and control elements prior to its first use.
- The Operator must check the Equipment with regard to its completeness, work safety, work hygiene, fire safety, traffic safety and protection of the environment prior to each use (activation after a shutdown).
- The Operator is responsible for the safety and all damages caused by the operation of the Equipment.
- The Operator must observe the technical and safety regulations for the Equipment specified by the Producer.
- The Operator must prevent unauthorized access to the rotary parts of the Equipment.
- Check the condition of the Equipment prior to its activation. It is forbidden to active the Equipment when showing signs of damage.
- It is required to use working clothes, gloves, shoes with anti-slip soles and protective goggles when operating the Equipment.
- It is recommended to use anti-noise protectors when moving around the pressing shop. It is a workplace with periodical supervision and operation.

- The Operator must keep the workplace clean and in order and must check and clean the functional elements.
- Check the proper direction of the screw rotation. Switch the motor on for a short time and check the correct direction of rotation by looking into the charging hole of the press. If the direction of rotation is incorrect, you have to connect two phase conductors in a row on the lead-in cable. Any repairs, modifications and other works on the wiring may only be executed by authorized persons with a corresponding electrical and technical qualification.
- **ATTENTION: Reversing of the electromotor is not permitted in any case!**

When pressing larger or harder seeds (such as sunflower), it is possible to prevent arching and to increase the efficiency of the press by pre-crushing the seeds.

5.2 INSPECTION OF THE EQUIPMENT BEFORE ACTIVATION

- Clean the equipment of any impurities and metal objects. Note: metal objects and similar impurities may cause serious damage to the press if they get inside.
- Check the status of the oil filling in the gearbox.
- Switch the motor on for a short time to make sure that it runs freely and in the proper direction. Pay special attention to that. You can perform the inspection by looking into the charging hole. The correct direction of rotation is clockwise when looking at the motor in the direction of the cakes output.
- Check that the heating with the heating sleeve is alright.
- Check that all other devices connected behind the press are running.
- The press is designed to achieve the best results when running continuously.
- The components of the screw system will wear down in time so it is necessary to check: the screw, the die, the nozzle holder and the nozzles.

5.3 DUO CONTROLS

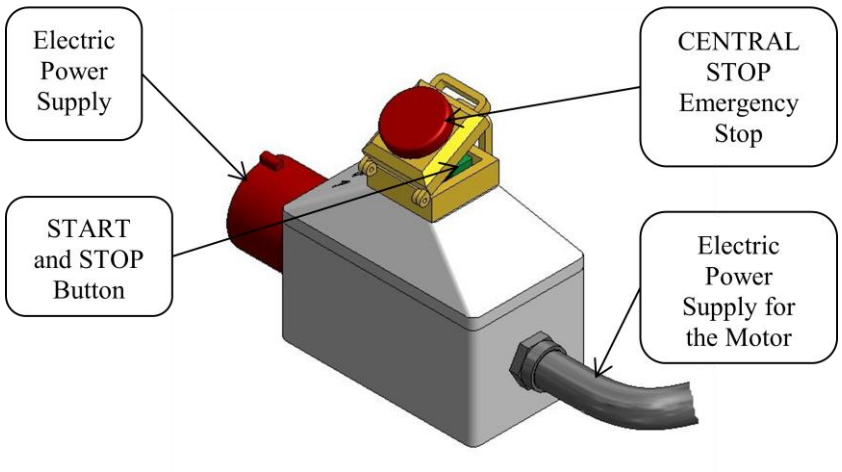


Figure 3 *– DUO control*

The equipment cannot be switched on using the controls until it is connected to the mains.

- Press START to switch on the drive of the equipment.
- In case of a power failure, the motor-circuit switch protection automatically turns off the drive of the equipment, i.e. you have to press START again to the start the equipment when the power supply has been renewed. If the motor is overloaded, the motor-circuit switch turns off the drive of the equipment. If the motor-circuit switch turns off repeatedly in short intervals (2 or 3 times), check the function of the pressing mechanism, the temperature of the gearbox and the motor.

5.4 DUO FM CONTROL

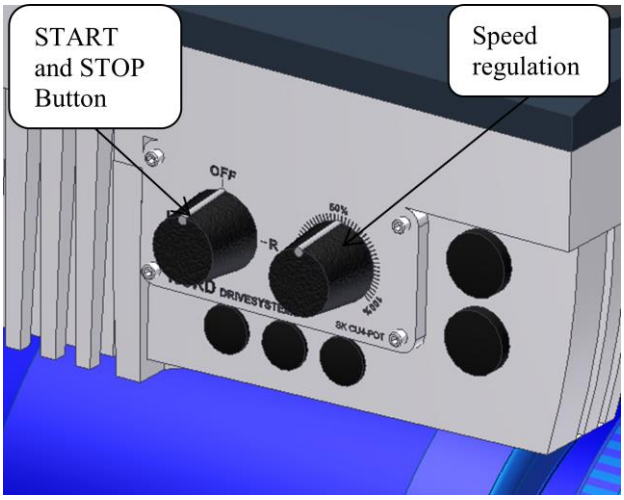


***Figure 4** - UNO FM control*

- The equipment is connected or disconnected from the mains by inserting or pulling out the plug (source of voltage) from the socket.
- If the equipment is not connected to the mains, it cannot be switched on by the controls.
- The drive of the equipment is switched on by the START button and by turning the potentiometer. The mode of the press is clockwise!
- When the work has been completed, disconnect the equipment from the mains by unplugging the lead-in cable plug from the socket!
- In case of a danger or accident, immediately switch the equipment off by pressing the STOP button.

5.5 ACTIVATION OF THE PRESS

5.5.1 Activating a new press and a press after a long standstill

- Check that there are no foreign undesirable objects in the press (screws etc.)
- Switch on the empty press and listen that the operation is silent (without any blows).
- Switch the press off and warm up the press head to the temperature of 60°C using the heating sleeve.
- Switch the press on; heating can be left on during the start-up (for a period of about 5 minutes).
- Slowly start filling the press until cakes appear at the press output and oil starts to come out from the oil output.
- Then, increase the filling to the required quantity and check the cakes output and oil flow.

- When the operation of the pressing mechanism has been stabilized, it is possible to replace the nozzle with the 10 mm diameter for 8 mm and later for 6 mm. The best yield is achieved with the 6 mm nozzle. Proceed according to *Chapter 7.1*.
- The 4 mm nozzle may be used for oilseeds with the minimum fat content of 20 %, see *Chapter 7.1*.
- **Attention!!! Turn off the heating;** the heating sleeve is not designed for continuous operation.

The entire process has to be carefully monitored during the first few hours of operation of the new press.

5.5.2 Activating the press after a standstill under 5 minutes

- **Unscrew the nozzle and switch the press on.**
- When **hard material has been pressed out, let the press run out** (close the material feed and wait until cakes stop falling out of the press), **switch the press off and install the nozzle.**
- **Switch the press on** without heating according to *Chapter 5.5*.
- **Check the operation, cakes output and oil flow** until the press has been stabilized.

5.6 SHUT-DOWN OF THE PRESS

5.6.1 Shut-down of the press for a short period of time (under 5 minutes)

The press must be emptied before the screw press is switched off. The cakes harden immediately after the press has been switched off, thus preventing a trouble-free start-up.

Proceed according to *Chapter 5.6.2*, the nozzle and the die openings do not have to be cleaned.

5.6.2 Shut-down of the press for a longer period of time (more than 5 minutes)

When the press is shut down for a longer period of time, it is necessary that the press is completely emptied. Any residues of the pressed material will harden in the press, causing overload of the press drive when activated again.

- Switch off the press and remove the end nozzle.
- Close the material feed in the press.
- Switch the press on and let the material come out of the press.
- Check that the cakes output has not completely stopped. Then switch the press off.
- Clean the nozzle and the die openings.
- Install the nozzle.

6. OPERATION OF THE EQUIPMENT

6.1 INSPECTION OF THE OPERATING VALUES AND PARAMETERS

The Equipment may work continuously with regular inspections provided that a regular feed of material has been ensured.

Many problems and defects may be prevented by regular inspection rounds, during which you should check:

- **Noise, vibrations** – increase in noise, banging, creaking or vibrations may signal wear or malfunction – of bearings and other components. If such a noise is present, try to identify its location and inform your service technician, or the Producer's service.
- **Temperature** – The press warms up significantly during pressing (by friction of the pressing bodies) but its operating temperature stabilizes (it depends on the ambient temperature and the temperature and humidity of the pressed material). If there is an increase in temperature, inform your service technician or the service centre. If the higher temperature is caused by a high temperature in the press shop, provide better ventilation or decrease the pressing capacity (decrease revolutions).

6.2 BREAKDOWN

	In case of an unnaturally loud noise coming from the Equipment (banging, creaking, blows) or in case of smoke or any other dangerous situation, immediately stop the material feed. If there is a risk of injury of the employees or damage to the property or the Equipment, immediately stop the Equipment, contact the service centre.
	**The Equipment may only be activated again after the cause of the breakdown has been identified and removed.**

Please, contact the service centre in case of any uncertainties or unknown failures. The contact information is provided on the title page of the Operating Manual.

6.3 SUDDEN STOP OF THE PRESS

If during the press operation suddenly stop due to overload, do the following:

- Stop the flow of seeds in the press
- Let press to cool for several minutes
- Unscrew the nozzle and start the press shortly
- In the event that the press does not rotate, remove the nozzle holder and press shortly start

- After you press the empty (material falls from the output of the press), mount bracket and nozzle and press it once again
- After starting, check the temperature, or identify a possible source of overload

6.4 "OILING UP" THE PRESS

If the press is running when in operation but the seeds stay in the hopper, oil is not flowing (or only little) and cakes are not falling out of the discharge nozzle, the oil has been "oiled up". Remove the defect in the following way:

- Stop the feed of seeds
- Clean the exterior side of the openings for the oil discharge in the die. Use the cleaning preparation (included in the service tools)
- Start up the press according to Chapter 5.5

If the aforementioned procedure does not help, execute the following:

- Stop the press
- Disassemble the nozzle and the nozzle holder
- Run the press shortly to empty it (the material will fall out of the press)
- When the press is empty, turn it off and install the holder and the nozzle and start up the press again

If the problem recurs, disassemble and clean the die.

6.5 OPERATING DIARY

We recommend keeping written records of the operation of the Equipment and reporting all exceptional circumstances and failures and situations leading to failures and handing over the operating diary to the following shift. Record information about the operation at least once per shift:

- Report exceptional circumstances

7. ADJUSTING OPERATING MECHANISMS

- When adjusting the operating mechanisms of the Equipment, the Operator must follow the recommended values specified in the Operating Manual. Always observe the principles of safe operation of the Equipment and instructions provided in *Chapter 5.1* and *Chapter A.*

- The Operator may only adjust the operating mechanisms when the Equipment is in standstill, i.e. the Equipment is not operating. When adjusting the operating mechanisms, always turn the Equipment off and place a sign on the control cabinet stating "DO NOT TURN ON, THE EQUIPMENT IS BEING REPAIRED!"

7.1 ADJUSTING THE OPERATING PARTS OF THE EQUIPMENT

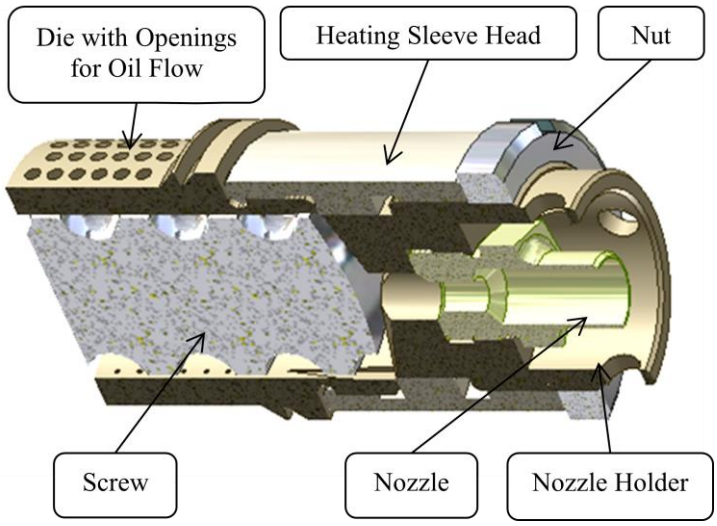


***Figure 5** - Cross Section of the Operating Part of the Equipment*

You can only adjust the equipment when the press has been disconnected from the power supply!!!

The adjustment of the press is very easy and it lies in the correct setting of the front (die) against the screw.

It is executed in the following way:

- Clean the pressing mechanism.
- Screw the nozzle holder in until its front is leaning against the screw.
- Release the nozzle holder by 1.5 revolutions and secure it with a nut.
- Screw a 10 mm nozzle into the front (new press).
- When the operation of the pressing mechanism has been stabilized, you can replace the 10 mm nozzle with 8 mm and later with 6 mm. The best yield is achieved with the 6 mm nozzle.
- The 4 mm nozzle may be used for oilseeds with the minimum fat content of 20 %.

- It is forbidden to use the 4 mm nozzle for pressing oilseeds with a fat content below 20 %, such as vine seeds, caraway seeds…
- It is also forbidden to use the 4 mm nozzle for the start-up of the press.

8. OPERATING DEFECTS

In the table below, the solutions of problems, which may occur during the equipment operation, are described. The equipment must always be properly installed and used in accordance with this user manual. In case of uncertainties concerning the use of the equipment, contact the service centre.

Table 2

Operating problems	**Probable causes**	**Solutions**
The press stops	Press overload	Proceed according to *Chapter 5.3*
The press is running but seeds stay in the hopper and cakes do not fall out	Oiling up of the press	Proceed according to *Chapter 5.4*
Noise from the pressing mechanism	Penetration of a foreign object in the press	Shut down the press, check the individual components and replace damaged parts
Noise from the gearbox / motor	Gearbox / motor failure	Contact the service centre
The press cannot be activated after shut-down	Hardened material in the press	Clean the working part of the press according to *Chapter 5.5.1*
Press overheating	Out-of-phase thermal protection	Let the press cool down for several minutes, then proceed according to *Chapter 5.3*

9. MAINTENANCE AND REPAIRS OF THE EQUIPMENT

⚠	**Danger!** Any work on the Equipment (maintenance, assembly) may only be executed when the Equipment is in standstill and secured from accidental activation it is required to place a sign on the main switch stating ***"DO NOT TURN ON, THE EQUIPMENT IS WORKED ON"***.

9.1 GENERAL INSTRUCTIONS

- You must follow the safety regulations according to *chapter* 2 in case of any repairs or maintenance.
- Make sure that a safe work method has been specified and that the proper tools, instruments and equipment are available.
- Check the tightness of all assembly points on the Equipment after the first 200 hours of operation; then continuously as needed.
- Lubricate all lubrication spots according to the lubrication plan for the Equipment.
- When executing adjustments, cleaning, maintenance and repair of the Equipment, secure the parts of the Equipment that could endanger the Operator by fall or another movement.
- During repairs of the Equipment, use exclusively genuine spare parts, suitable tools and protective equipment.
- Keep the Equipment clean, particularly the parts that heat up (engine, gearbox…).
- It is forbidden to use a high-pressure appliance to clean the Equipment.
- Check the status of the oil in the gearbox prior to the activation of the Equipment.
- Check the proper function of the Equipment at least 3 x per hour.
- In case of a long shutdown, empty the Equipment and protect it against corrosion with suitable agents.
- Perform all jobs in a dutiful way and with thoroughly trained staff. The intervals for maintenance, inspections and repairs depend on the experience of the Operator. Therefore, there is no generally valid regulation for such works.
- Do not use brute force during repairs or maintenance.
- Mark the mutual positions of the components prior to disassembly.
- Wash the parts with a cleaning agent prior to assembly. Lubricate the functional surfaces of the parts prior to assembly.
- When executing repairs, avoid dropping any tools or parts into the Equipment. Any object that falls into the Equipment or the gearbox or the electromotor must be removed as it could cause a breakdown of the Equipment.
- Always test the function of assembled groups to prevent any potential jamming of the moving parts and to check that the relevant clearances have been met etc.

9.2 LIST OF RECOMMENDED TOOLS FOR REGULAR MAINTENANCE AND OPERATION

The tools may be ordered as an option or they are available on local markets.

Recommended special tools for regular maintenance:

Hook spanner no. 60 – 90	product number m11257
Box spanner no. 32	product number m05781
Screwdriver 60TLG	product number 9905804

Recommended standard tools for regular maintenance:

Set of Allen wrenches from 1.5 to 10 mm

Set of spanners 7-32 mm

9.3 MAINTENANCE OF THE EQUIPMENT

The maintenance includes oil exchange according to the Lubrication Plan and the inspection of the **proper function in operation at least once per shift**. If most openings of the pressing die are clogged, shut the press down and clean the die.

Clean the clogged openings in the following way:

- Clean the openings in the machine using a cleaning needle.
- Remove the die and soak it in hot water for about 20 minutes and then clean the opening using the needle. This is a more efficient cleaning method and it should be performed at least once every month (the die is screwed in the body of the gearbox – **Attention – left-hand thread!)**

9.4 REGULAR MAINTENANCE AND REPAIRS

Always perform all the jobs in a dutiful way and with thoroughly trained staff. The recommended time intervals are stated in time for continuous operation / in motor-hours for other operations.

Table 3 *- Maintenance schedule*

Job	**Activity**	**Lubricant**	**Schedule**				
			Before activation	3 x per hour	Once every eight days / 200 hours	Once a year/ 8000 h	Reference to relevant chapter
Visual and Audio Inspection	Checking proper function of the equipment			x			9.1
Gearbox, bearings	Checking temperature			x			9.1
Screw and installation connections	Checking tightening			x			9.1
Oil in the gearbox	h – level check, first oil exchange after 300 hours, x – oil exchange	Olej VG 220 (CLP)	h			x	9.4.1

9.4.1 Lubrication Plan

Table 4 *- Lubrification plan*

LUBRICATION SPOT	INTERVAL	LUBRICANT
Press Gearbox	First 300 hours, then at least once every 12 months	CLP 220 with viscosity of VG 220; quantity: 2.2 l.

9.4.2 Gearbox Maintenance and Operation

The maintenance of the gearbox is simple. If the operating control registers any signals of a potential failure, any further operation is forbidden.

Most important points of the failure signals:

- Checking temperature in the place of the bearings fitting
- Checking the oil content level
- Checking the noise level of the gearbox
- Checking tightness
- Checking the cleanliness of ventilation

If any irregularities are found during the operation, such as noise, increased temperature of the bearings or increased temperature of the oil, switch off the equipment. If the gearbox is in the guarantee period, immediately inform the service centre. If it is not possible to determine the cause of the defect or the defect cannot be repaired, we recommend contacting the service centre.

Use CLP 220 oil with viscosity of VG 220, quantity: 2.2 L.

The oil can only be discharged when the gearbox is in complete standstill. We recommended discharging the oil warm. **The first** oil **exchange** is **after 300 hours** of operation, then in the maximum interval of 1 year.

When exchanging the oil, the gearbox is filled with the same type of oil as used previously. Mixing various types of oils or oils by various producers is not recommend; consult the oil producer.

Never mix synthetic oils with mineral oils. When exchanging oil, changing the type of oil or transferring from mineral oils to synthetic oils, the gearbox must be properly rinsed with the new oil in advance. Use the same oil for rinsing the gearbox that will be used in the gearbox after the exchange.

Procedure for oil exchange

- **Secure the driving unit** to prevent accidental activation!
- **Unscrew the filler plug** on the gearbox.

- **Unscrew the drain plug** and drain the oil. There is a risk of scalding by the hot oil and therefore use appropriate protective equipment.
- **Clean the magnetic plug** on the oil drainer (used as a catcher of metal impurities). Rinse the gearbox with oil that will be placed in the gearbox after the exchange.
- **Screw the drain plug in**.
- **Fill the gearbox with new oil.**
- **Check the oil level**. The oil must reach to the control plug (the oil is slightly overflowing when the plug is unscrewed). Any oil leak must be immediately removed according to the hygienic and ecological regulations.
- **Close the filler plug of the gearbox**. When filling the gearbox with oil or draining the gearbox, avoid any pressure increase inside the gearbox! It could damage the sealing shaft elements. The producer bears no liability for such incurred damage.

9.5 DISASSEMBLY AND ASSEMBLY OF THE EQUIPMENT PARTS

When disassembling and assembling the Equipment parts, pay special attention to manipulating heavy weights. The Equipment is disassembled in case of a breakdown of one of its parts or when adjusting the Equipment. When disassembling and assembling the Equipment, always use the Spare Parts Catalogue – it provides detailed installation drawings of the subassemblies of the Equipment.

9.5.1 Disassembly and Assembly of Press Components

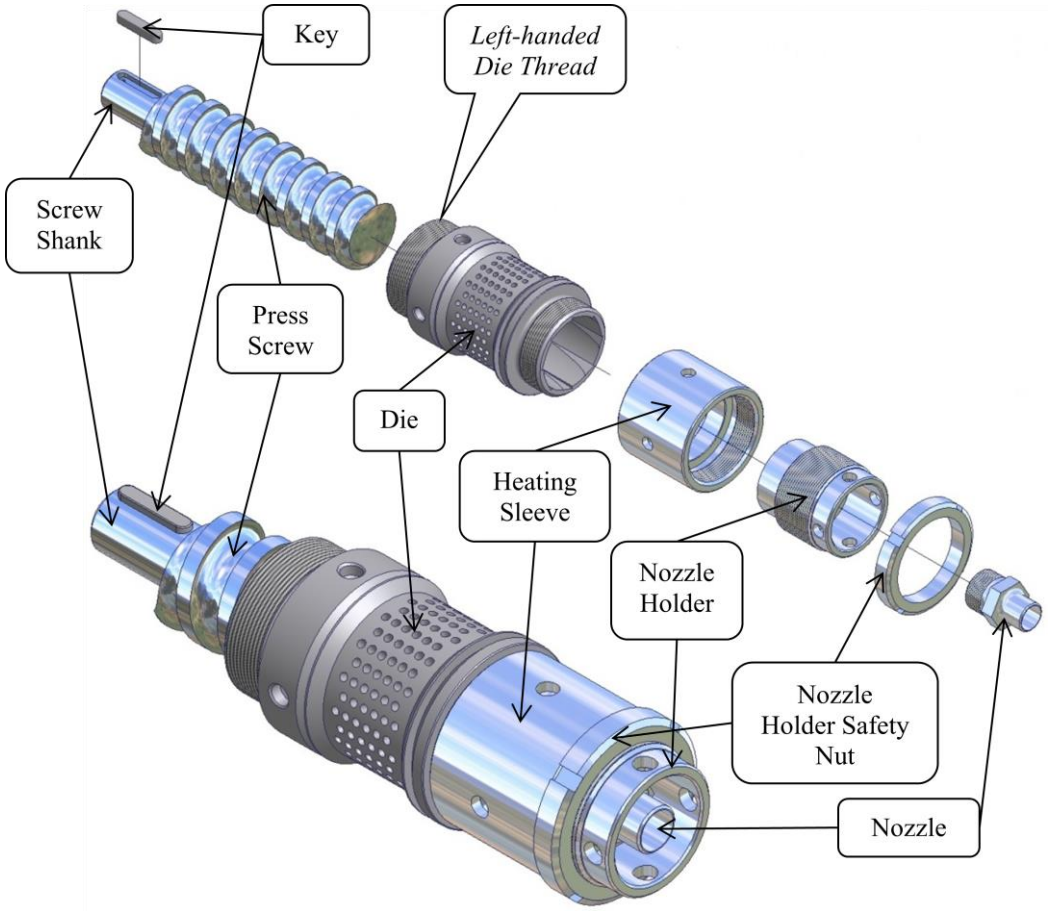


***Figure 6** - Disassembly and Assembly of Pressing Mechanism*

- **Disconnect the press from the mains**
- **Unscrew the nozzle** using box spanner no. 32
- **Unscrew the nozzle holder safety nut** using hook spanner no. 60-68
- **Unscrew the nozzle holder** using hook spanner no. 60-68
- **Unscrew the heating sleeve head** using nook spanner no. 85-90
- **Unscrew the die** using hook spanner no. 85-90, Attention: **The die has a left-handed thread**!
- **Remove the press screw**

9.5.2 Assembly of Press Components

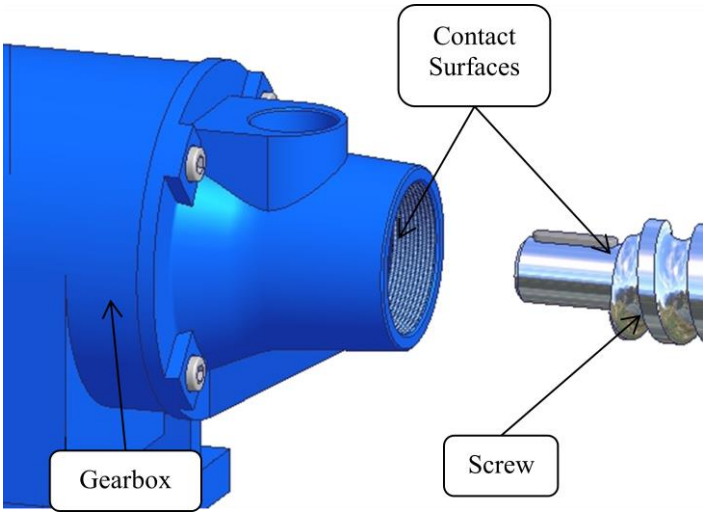


Figure 1 *– Screw Contact Surfaces*

- **Clean the contact surface of the screw and the gearbox carrier**
- **Spray silicone oil on the screw shank**
- For assembly, proceed **in a reverse way as in disassembly** described in *Chapter 9.5.1*, install the nozzle holder according to the following point.
- **Screw the nozzle holder until its front touches the screw; then, release the nozzle holder by 1.5 revolution and secure it with the nut.**

9.6 ASSESSING THE DETERIORATION OF THE OPERATING MECHANISMS OF THE EQUIPMENT

The operating mechanisms of the Equipment have a limited service life. The service life of the individual parts of the Equipment may be prolonged by observing the instructions for the operation and maintenance provided in the Operating Manual.

Increased deterioration of the operating mechanisms of the Equipment is manifested by a change in the parameters of the Equipment. To assess the level of deterioration of the individual parts of the Equipment, please contact the service centre.

If a deteriorated part needs to be replaced, contact the relevant service centre or a sales representative of Farmet a.s. The list of spare parts with relevant catalogue numbers is provided in the Spare Parts Catalogue.

10. DISPOSAL OF THE MACHINE, PROTECTION OF THE ENVIRONMENT

- The Owner must ensure that the Equipment is disconnected from the power supply prior to the commencement of disposal.
- The Owner must ensure that steel parts and parts contaminated with the transmission oil and lubrication grease are separated during the disposal of the Equipment.
- The Owner must cut the steel parts according to the safety regulations and deliver them to the usable by-products collecting station. The Owner must follow valid regulations on wastes when disposing other parts.

11. SERVICE AND GUARANTEE TERMS

11.1 SERVICE

The service is provided by service centres or directly by the Producer. Only use spare parts according to the Spare Parts Catalogue published by the Producer.

11.2 GUARANTEE

The Producer provides guarantee for the Equipment in compliance with the terms and conditions of the Purchase Contract and the General Terms of Trade.

Notes:

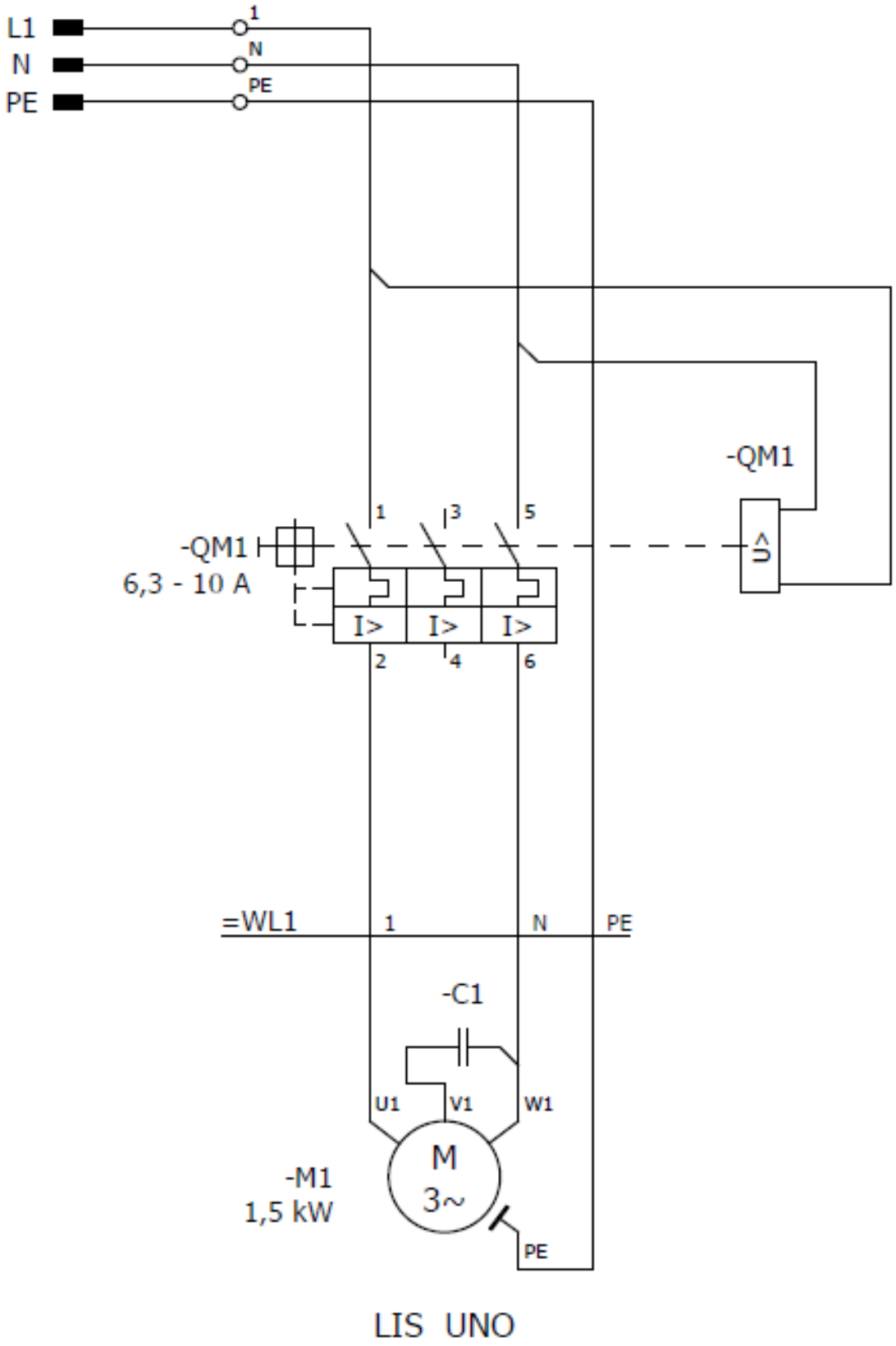
Notes:

12. ANNEXES

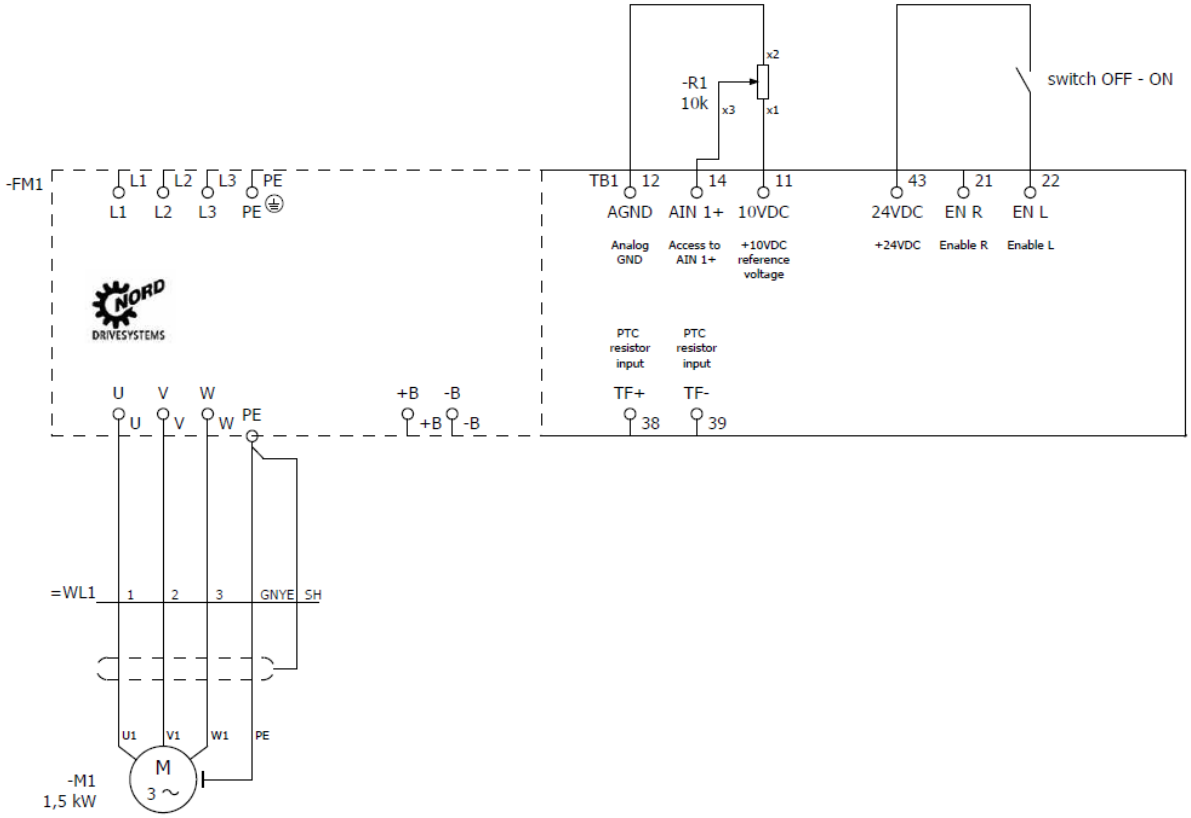
Annex A 1 *- Operating Diary*

Date	Submitted Accepted	Defects, damage to the machine, operating deviations found during operation, repairs, lubrication and other information	Operator's signature

Annex B 1 *– Wiring of single-phase motor without frequency convertor*



***Annex B 2** - Wiring with frequency convertor*



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2.

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(GB) Machine:	- name :	Oilseed screw press	- model, modèle: 3f -
(D) Fabrikat:	- Bezeichnung:	Schneckenpresse für Ölfrüchte	
(F) Machinerie:	- dénomination:	PRESSE À VIS SANS FIN POUR PLANTES OLÉAGINEUSES	
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(F) Machinerie:	- dénomination:	PRESSE À VIS SANS FIN POUR PLANTES OLÉAGINEUSES	
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