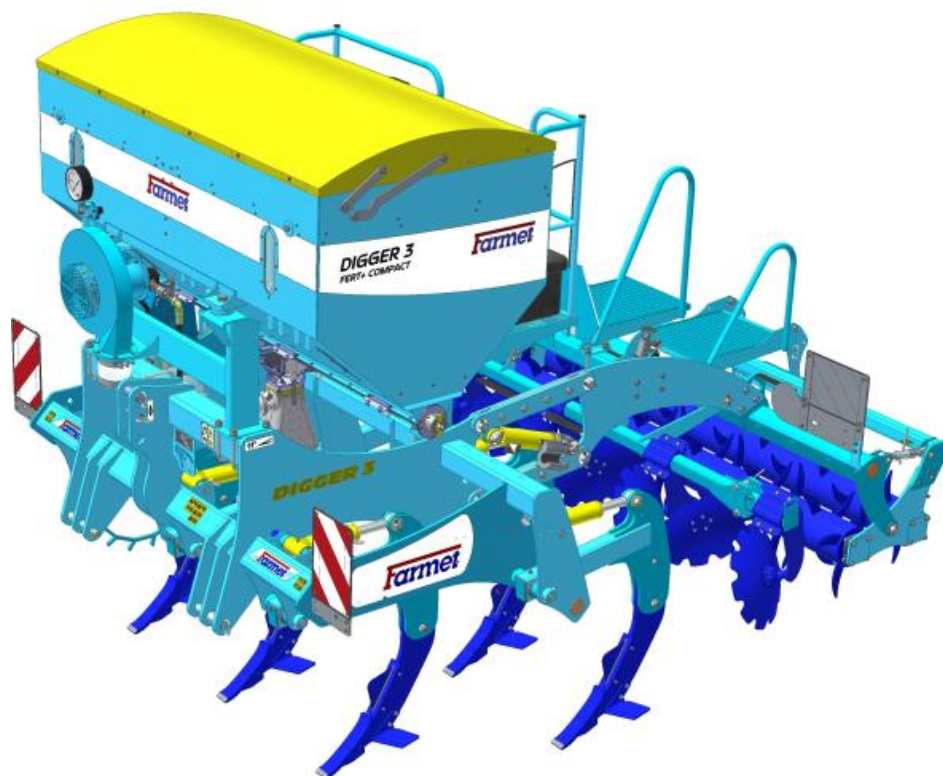


OPERATING MANUAL

DIGGER 3 | 4

FERT+ COMPACT



Edition: 2 | effective from: 01. 08. 2018

Dear customer,

Mounted chisel plough DIGGER is a quality product by the company Farmet a.s. Česká Skalice.
You can fully utilise the advantages of your machine after thoroughly studying the operating manual.

The serial number of the machine is punched on the production label and written in the operating manual (see Table 1). This machine serial number must be stated whenever ordering spare parts for possible repairs. The production label is located in the front of the machine frame.

The chisel plough is designed and intended for in-depth soil loosening up to the depth of 600 mm (see also Chapter – **Purpose of in-depth Soil Loosening**).

!!! ATTENTION: During deep cultivation, there is a risk of damaging underground communication and power lines. Prior to using the deep cultivator, it is necessary to seek the opinion of the operating manager of such equipment (telephone, gas, power lines, etc.).

Use only spare parts for these machines according to the **Spare parts catalogue** officially issued by the manufacturer, Farmet a.s. Ceska Skalice.

Production label of the machine e DIGGER 3 FERT+ COMPACT

		OTK 	Farmet a.s. Jířňnková 278 Česká Skalice
TYP / VARIANTA	DIGGER 3 FERT+ COMPACT		
ČÍSLO SCHVÁLENÍ	_____		
ROK VÝROBY / VÝROBNÍ ČÍSLO	_____		
MAX. PŘÍPUSTNÁ HMOTNOST	3460	kg	
MAX. PŘÍPUSTNÁ HMOTNOST NA NÁPRAVĚ	-	kg	

Production label of the machine DIGGER 4 FERT+ COMPACT

		OTK 	Farmet a.s. Jířňnková 278 Česká Skalice
TYP / VARIANTA	DIGGER 4 FERT+ COMPACT		
ČÍSLO SCHVÁLENÍ	_____		
ROK VÝROBY / VÝROBNÍ ČÍSLO	_____		
MAX. PŘÍPUSTNÁ HMOTNOST	4600	kg	
MAX. PŘÍPUSTNÁ HMOTNOST NA NÁPRAVĚ	-	kg	

Table 1 - Your Machine Characteristics

MACHINE TYPE	
MACHINE SERIAL NUMBER	
SPECIAL DESIGN OR ACCESSORIES	
.....	
.....	
.....	
.....	

TABLE OF CONTENTS

MACHINE LIMIT PARAMETERS.....	4
Technical parameters.....	4
Safety statement	4
A. GENERAL INSTRUCTIONS FOR USE.....	5
Protective tools.....	5
B. MACHINE TRANSPORT USING TRANSPORT MEANS	6
C. MACHINE HANDLING USING LIFTING EQUIPMENT	6
D. WORK SAFETY LABELS	6
1. DESCRIPTION.....	9
Work parts of the machine	9
Hydraulics	10
Purpose of in-depth soil loosening.....	10
2. MACHINE ASSEMBLY AT THE CUSTOMER.....	11
3. COMMISSIONING	11
3.1. Aggregation to a tractor.....	11
3.2. Hydraulics connection.....	12
3.3. Hydraulic protection function of the machine	13
3.4. Connecting the electronic unit.....	14
3.5. ConnectIng the hydraulic motor of the fan.....	15
4. MACHINE TRANSPORT ON ROADS.....	18
5. MACHINE ADJUSTMENT.....	19
5.1 Setting of the machine working depth.....	19
5.2 Work with one row of ploughshares.....	21
5.3 Setting of the levelling discs.....	22
5.4 Setting of the roller inclination.....	23
5.5 Setting of the hydraulically controlled levelling discs	23
5.6 Setting the fertiliser batch (Fert+Compact extension).....	24
5.6.1. Setting the fertiliser batch in an extension with a mechanical screw drive.....	24
5.6.2. Setting the fertiliser batch in an extension with a hydraulic screw drive.....	28
5.7. Setting fertilisation zones	33
6. MACHINE MAINTENANCE AND REPAIRS.....	34
7. MACHINE STORAGE.....	36
8. MACHINE LUBRICATION SCHEDULE	37
9. ENVIRONMENTAL PROTECTION	38
10. MACHINE DISPOSAL AFTER SERVICE LIFE EXPIRY	38
11.SERVICING AND WARANTY CONDITIONS	38
LETTER OF GUARANTEE	39
CE Certificate of Conformity	40

MACHINE LIMIT PARAMETERS

- ^(x) The machine is designed for soil cultivation up to a depth of 50 cm when agricultural soil cultivation. Another type of use exceeding the determined purpose is forbidden.
- ^(x) Machine operation is performed by one person – the tractor driver.
- ^(x) Machine operator must not use the machine in a different way, especially:
 - ^(x) Transport of persons and animals on the machine structure,
 - ^(x) Transport of burdens on the machine structure,
 - ^(x) Aggregation of the machine with another towing equipment than stated in Chapter „3.1.“.




TECHNICAL PARAMETERS

Table 2 – Technical Parameters





PARAMETERS	DIGGER 3 FERT+ COMPACT	DIGGER 4 FERT+ COMPACT
Working width (mm)	2 990	3 990
Transport width (mm)	2 900	3 900
Transport height (mm)	3 500	3 500
Machine total length (mm)	4 125	4 125
Working depth (mm)	250 – 500	250 – 500
Number of shares (chisel)	7	9
Working performance (ha/h)	2,4 – 3,6	3,1 – 4,7
Towing means (kW)	180 - 270*	240 - 360*
Working speed (kph)	8 – 12	8 – 12
Container capacity (l)	3 000	3 000
Filling height of the container (mm)	3 300	3 300
Maximum transport speed (kph)	25	25
Maximum slope grade (°)	11	11
Machine weight (kg)	3 460	4 600

* Recommended towing means, the real towing force may significantly vary according to the processing depth, soil conditions, land slope, working body wear and adjustment


SAFETY STATEMENT

	This warning sign warns about an immediate dangerous situation ending with death or severe injury.
	This warning sign warns about a dangerous situation ending with death or severe injury.
	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.

A. GENERAL INSTRUCTIONS FOR USE

- A.1** ^(x) The machine is made in accordance with the latest equipment state and approved safety regulations. However, dangers of user or third person injury or machine damage or creation of other material damage may arise during use.
- A.2** ^(xx) Use the machine only in a technically sound condition, in accordance with its purpose, aware of possible dangers, and while adhering to the safety instructions of this operating manual!
The Manufacturer is not liable for damages caused by the use of the machine that is in contradiction with the limit parameters of the machine (p. 4) and with the instructions for the use of the machine (Chapter A and 3). The User bears the risk
Immediately remove especially the failures that may negatively affect safety!
- A.3** ⁽⁷⁾ Machine operation may be performed by a person authorised by the operator under these conditions:
- ⁽⁸⁾ It must own a valid driver's licence of the corresponding category,
 - ⁽⁹⁾ It must be demonstrably familiarised with the safety regulations for work with the machine and must practically master the machine operation,
 - ⁽¹⁰⁾ The machine may not be operated by juveniles,
 - ⁽¹¹⁾ It must know the meaning of the safety signs located on the machine. Their respecting is important for safe and reliable machine operation.
- A.4** ⁽¹²⁾ Maintenance and servicing repairs on the machine may only be performed by a person:
- ⁽¹³⁾ Authorised by the operator,
 - ⁽¹⁴⁾ Educated in the machinery field with knowledge of repairs of similar machines,
 - ⁽¹⁵⁾ Demonstrably familiarised with safety regulations for work with the machine,
 - ⁽¹⁶⁾ During a repair of a machine connected to a tractor, it must own a driver's licence of the corresponding category.
- A.5** ⁽¹⁷⁾ Machine operator must secure the safety of other persons when working with the machine or transporting the machine.
- A.6** ⁽¹⁸⁾ During machine work in the field or during transport, the operator must control the machine from the tractor's cabin.
-  **A.7** ⁽¹⁹⁾ The operator may enter the machine structure only with the machine at rest and blocked against movement, namely only for these reasons:
- ⁽²⁰⁾ Adjustment of the machine working parts,
 - ⁽²¹⁾ Repair and maintenance of the machine.
-  **A.8** When stepping on the machine, do not step on roller tyres or other rotary parts. Those may turn and you can cause very serious injuries by the subsequent fall.
-  **A.9** ⁽²²⁾ Any changes or modifications of machine may be performed only with written consent of the manufacturer. For possible damage arisen due to ignoring this instruction, the producer bears no responsibility. The machine must be maintained equipped with prescribed accessories and equipment including safety marking. 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.10** ⁽²³⁾ The operator must have the Operating Manual with the work safety requirements available at any time when working with the machine.
-  **A.11** ⁽²⁴⁾ The operator must not consume alcohol, medicines, narcotic and hallucinogenic substances that decrease his attention and coordination capabilities while using the machine. If the operator must use medicines prescribed by a physician or uses freely sold medicines, he must be informed by a physician, whether he is capable of responsible and safe operation of the machine under these circumstances.


PROTECTIVE TOOLS

 For the operation and maintenance use:



- Tight clothes
- Protective gloves and goggles for protection against dust and sharp parts of the machine



B. MACHINE TRANSPORT USING TRANSPORT MEANS

- B.1 ⁽¹⁾ The transport means designed for machine transport must have the load capacity minimally identical with the weight of the transported machine. The total weight of the machine is stated on the production label.
- B.2 ⁽²⁾ The dimensions of the transported machine including the transport means must comply with the valid regulations for road traffic (decrees, laws).
-  B.3 ⁽³⁾ The transported machine must be always fastened to the transport means so that its spontaneous loosening could not happen.
- B.4 ⁽⁴⁾ The carrier is responsible for damage caused by the loosening of incorrectly or insufficiently fastened machine to the transport means.

C. MACHINE HANDLING USING LIFTING EQUIPMENT

- C.1 ⁽¹⁾ The lifting equipment and tying means designed for handling of the machine must have their load capacity at least identical with the weight of the handled machine.
-  C.2 ⁽²⁾ Machine fastening for handling may only be performed in places designed for that and marked with self-adhesive labels showing the "chain" symbol. 
- C.3 ⁽³⁾ After fastening (suspending) at designated points, it is forbidden to move in the space of possible reach of the handled machine.

D. WORK SAFETY LABELS



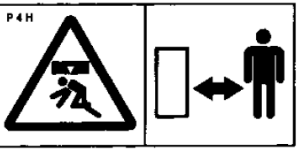
Warning safety labels serve for operator protection.

General:

- A) Strictly observe the warning safety labels.
- B) All safety instructions also apply to other users.
- C) Upon damage or destruction of the aforementioned "SAFETY LABEL" located on the machine, THE OPERATOR IS OBLIGED TO REPLACE IT WITH A NEW ONE!!!

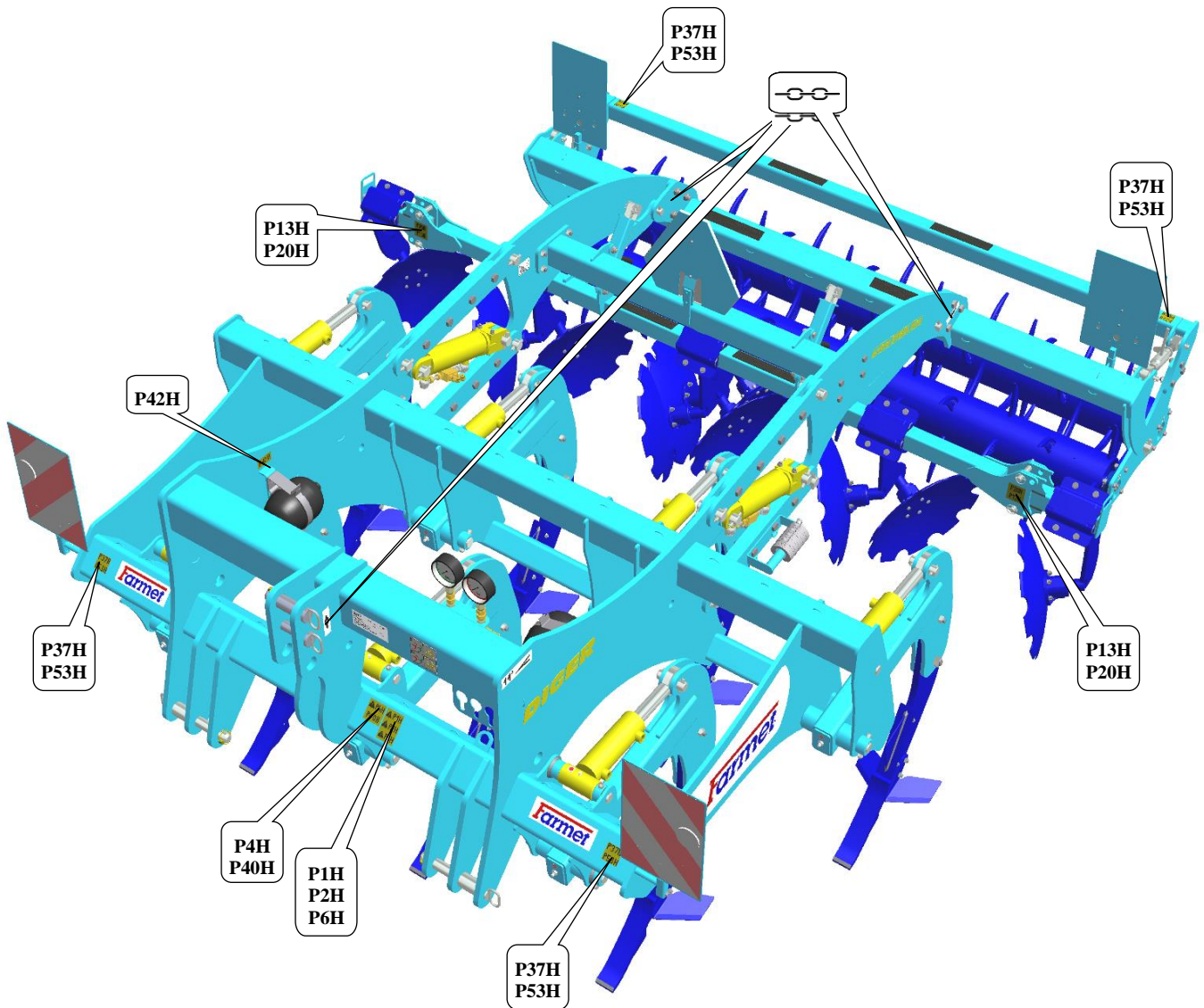
The position, appearance, and precise meaning of work safety labels on the machine is determined in the following tables (Tab. 3) and in the figure (Fig. 1).

Table 3 – Self-adhesive warning safety labels located on the machine

WARNING SAFETY LABEL	LABEL TEXT	MACHINE POSITION
	<p>Before handling the machine, carefully read the operating manual. Observe the instructions and safety regulations for machine operation during use.</p>	<p>P 1 H</p>
	<p>When connecting or disconnecting, do not step between the tractor and the machine, also do not enter this space, if the tractor and the machine are not at rest and the engine is not turned off.</p>	<p>P 2 H</p>
	<p>Stay out of reach of the drawn-up machine.</p>	<p>P 4 H</p>

	<p>Stay outside the reach of the tractor - agricultural machine set, if the tractor engine is in operation.</p>	<p>P 6 H</p>
	<p>For transport, as well as for work, the side foldable discs must be secured with a pin.</p>	<p>P 13 H</p>
	<p>When handling the side discs, do not touch the area of the folding joint.</p>	<p>P 20 H</p>
	<p>Travelling and transport on the machine structure is strictly forbidden.</p>	<p>P 37 H</p>
	<p>It is forbidden to dismantle or remove any hydraulic part when under pressure.</p>	<p>P 40 H</p>
	<p>The pressure container is under the pressure of gas and oil. For disassembly and repair, follow the instructions from the manual only.</p>	<p>P 42 H</p>
	<p>Do not approach the rotary parts of the machine, if these are not at rest, i.e. they do not turn.</p>	<p>P 53 H</p>

Fig. 1 - Location of safety labels on the machine

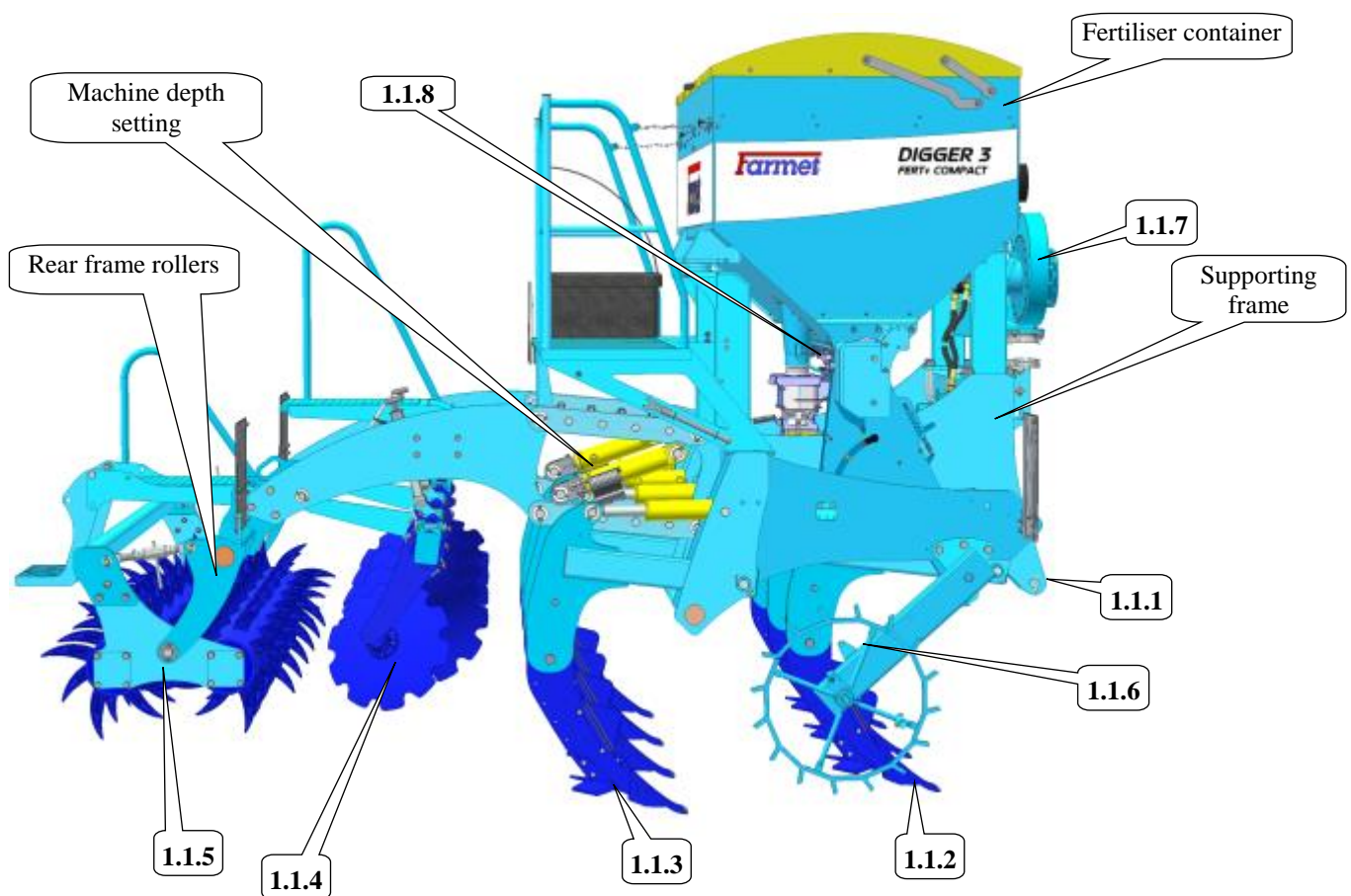


1. DESCRIPTION

The DIGGER 3 and 4 FERT+ COMPACT machines are structurally designed as a mounted machines. The chisel plough is fitted with a three-point suspension TPS 3 and 4. The machine consists of the main frame which is fitted with two rows of shanks with ploughshares which are protected by automatic hydraulic protection and a shear bolt against overload. After the rear share row, there is a parallelogram that enables setting the depth of the machine. Moreover, DIGGER 3 and 4 FERT+ COMPACT are equipped with a fertiliser container. The fertiliser container is equipped with a dispensing mechanism with a screw feeder. The fertiliser is carried by an air stream through the delivery tube into the seeding coulter where it passes through the tube into the created groove in the soil. That is how the fertiliser gets placed under the seedbed and under the processed soil layer. The dispensing mechanism is driven by a step wheel, or a hydraulic drive. The fan that transports the fertiliser is driven by a hydraulic drive using the hydraulic circuit of the tractor.

WORK PARTS OF THE MACHINE

Fig. 2 – Work Parts of the Machine

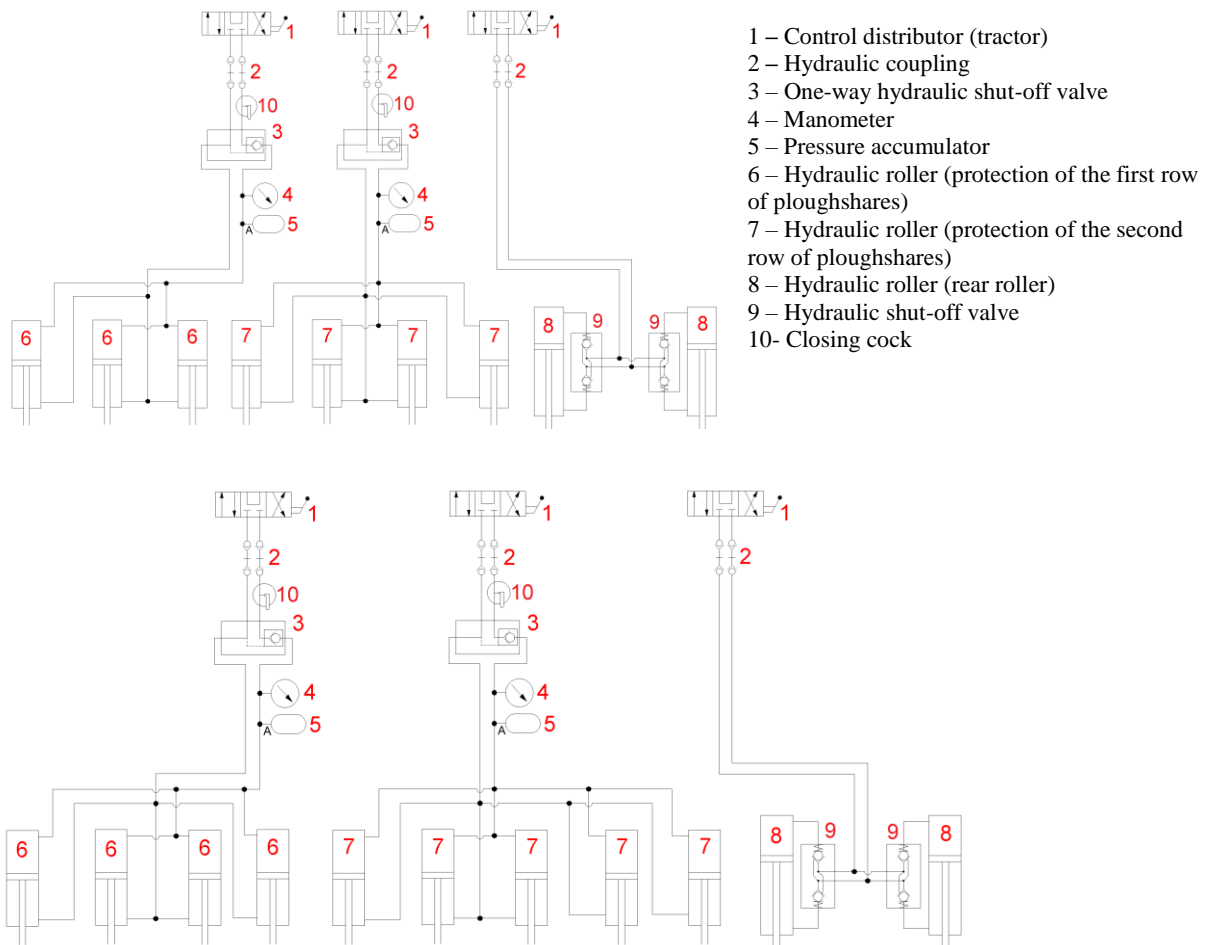


- 1.1.1 TPS towing suspension
- 1.1.2 Front share row
- 1.1.3 Rear share row
- 1.1.4 Packing discs

- 1.1.5 Crumbling roller
- 1.1.6 Dispenser drive
- 1.1.7 Fan
- 1.1.8 Screw feeder

HYDRAULICS

Fig.3 – Hydraulic diagram of the DIGGER 3 and 4 machine



Parts of the hydraulic system of the machine, which are under pressure, are forbidden to disassemble. Hydraulic oil that penetrates the skin under high pressure causes severe injuries. In case of injury, seek a physician immediately.

PURPOSE OF IN-DEPTH SOIL LOOSENING

In-depth soil loosening is a soil-improving intervention that mechanically scarifies compacted layer of soil. Depth looseners can also be used in soil-protection cultivating systems where the soil is in-depth loosened with a minimum surface failure. This can be effectively used with deep soils in more arid areas where there is a danger of wind erosion.

In-depth loosening can also be used for other purposes such as:

- increasing water-accumulation capacity of soil and/or,
- draining surface water into deeper parts of the soil profile.

Loosening the compacted layers under topsoil enables crop roots to penetrate deeper, which results in higher crop yield.

Conditions for effective in-depth soil loosening

The basic condition for effective in-depth loosening (around 0,5 m) is the appropriate soil moisture in the depth of loosening. The soil should be crumbly and always under the limit of plasticity and it must not show plastic deformations when being loosened. Loosening soil with excessive moisture can be counterproductive. If the soil to be loosened is extremely dry, the working resistance acting on the Loosener is enormous. To decide on the soil conditions it is advisable to use a probing rod. When applying pressure on a soil sample, the soil should fall to smaller lumps.

2. MACHINE ASSEMBLY AT THE CUSTOMER



- The operator must perform the assembly according to the instructions of the producer, best in cooperation with the expert servicing technician determined by the producer.
- The operator must secure a functional test of all assembled parts after the completion of the machine assembly.
- The operator must secure that the handling of the machine using lifting equipment during its assembly is in accordance with chapter C.

3. COMMISSIONING



- Before taking over the machine, test and check, whether damage occurred during transport and whether all parts contained in the bill of delivery were supplied.
- Before commissioning the machine, carefully read this operating manual, especially Chapters **A-D**. Before the first use of the machine, familiarise yourselves with its controls and overall function.
- During work with the machine, observe not only the instructions of this operating manual but also generally valid regulations of work safety, health protection, fire and transport safety, and environmental protection.
- The operator must check the machine before every use (commissioning) from the standpoint of completeness, work safety, work hygiene, fire safety, transport safety, and environmental protection. A machine showing signs of damage must not be commissioned.
- Aggregation of the machine with the tractor is to be performed on a flat and hardened surface.
- When working on slopes, observe the lowest slope grade of the set **TRACTOR - MACHINE**.
- Before starting the tractor motor, check whether no person or animal is in the working space of the set and push the warning sound signal.
- The operator is responsible for the safety and all damage caused by the operation of the tractor and the connected machine.
- The operator is obliged to adhere to the technical and safety regulations of the machine determined by the producer when working.
- When turning the machine at headland, the operator must lift the machine, i.e. the working bodies are not in the ground
- The operator is obliged to observe the prescribed working depths and speeds stated in the manual in Tabl. 2 when.
- The operator is obliged to lower the machine to the ground and secure the set against movement before leaving the tractor cabin.
- **When working with agricultural chemicals, always carry a canister with clean water for personal protection against chemical burns.**
- **Remember that agricultural chemicals are dangerous. Before handling agricultural chemicals, make sure that you know what you are going to do and what can happen. An inappropriate and improper choice may lead to injuries of people or animals, damage to plants or soil contamination. Always read the safety data sheet of the chemical product.**
- **When handling agricultural chemicals, always use the prescribed protective equipment (rubber gloves, goggles, or a protective overall).**
- **Liquid fertilisers are dangerous! If swallowed or in case of contact with eyes, always seek medical help immediately.**
- **Provide a sufficient amount of the fertiliser.**
- **Check that the coulters on shares are passable.**
- **When working with the machine without additional fertilisation and during a standstill, empty the channel of the screw feeder thoroughly, for best results use compressed air. Protective equipment is required for cleaning!**

3.1. AGGREGATION TO A TRACTOR

- The machine can be connected only to a tractor, whose curb weight is identical or higher than the overall weight of the connected machine.
- The machine operator must observe all generally valid regulations of work safety, health protection, fire safety, and environmental protection.
- The operator may connect the machine exclusively to a tractor that is equipped with a rear three-point suspension and a functional undamaged hydraulic system.

Tabl.4 – The table of requirements for the towing means for work with the machine:

(5) Requirement for the tractor engine power for chisel plough DIGGER 3 a 4 FERT+ COMPACT		180 – 270 kW*	
(6) Requirement for the tractor's TPS	(7) Spacing of the lower suspension joints (measured at the joint axes)	TBZ 3	1040 ± 1,5 mm
		TBZ 4	1250 ± 1,5 mm
		TBZ 4 US	1040 ± 1,5 mm
	(8) Ø of the hole of the lower suspension joints for the machine suspension pivots	TBZ 3	37,4 - 37,75 mm
		TBZ 4	51 – 51,5 mm
	TBZ 4 US		
Ø of the hole of the upper suspension joint for the machine suspension pivot	TBZ 3	32,0 – 32,25 mm	
	TBZ 4	45,2 – 45,5 mm	
	TBZ 4 US		
(9) Requirement for the tractor's hydraulic system	protection circuit of the first row of ploughshares		(14) Circuit pressure 200 bar, 2 pcs of quick-coupler sockets ISO 12,5
	protection circuit of the second row of ploughshares		(14) Circuit pressure 200 bar, 2 pcs of quick-coupler sockets ISO 12,5
	roller lifting circuit		(14) Circuit pressure 200 bar, 2 pcs of quick-coupler sockets ISO 12,5
	fan control – pressure branch		(14) Circuit pressure 200 bar, 1 pc of quick-coupler sockets ISO 12,5
	fan control – pressure-free reverse branch		(14) Circuit pressure 5 bar, 1 pc of quick-coupler sockets ISO 20
	** Control circuit for levelling discs		(14) Circuit pressure 200 bar, 2 pcs of quick-coupler sockets ISO 12,5

* Recommended towing means, the real towing force may significantly vary according to the three-point suspension TPS as per Fig. 4.

- The machine aggregated with the tractor changes the distribution of the weight to the individual axles of the tractor. The weight of the front axle is reduced and therefore the controllability gets worse. It also affects braking properties.

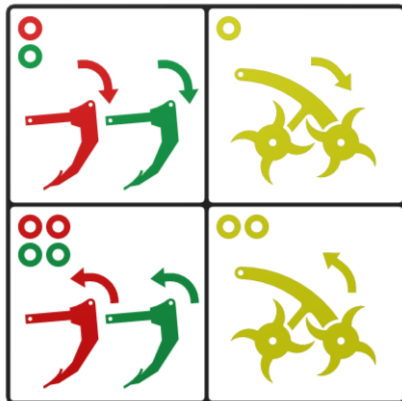


When connecting, no persons may stay in the space between the tractor and the machine.

3.2. HYDRAULICS CONNECTION

- The hydraulic system is under high pressure. Regularly check for leaks and immediately remove obvious damage of all lines, hoses, and pipe unions.
- When seeking and removing leaks, use only the suitable tools.
- For connecting the hydraulic system of the machine to the tractor, use the plug (on the machine) and the socket (on the tractor) of the quick-couplers of the same type.
- When connecting the rapid couplings of the machine with the tractor hydraulic circuits, make sure that the protections of the front row of ploughshares **RED DUST CAPS** are on one control circuit, the protections of the second row of ploughshares **GREEN DUST CAPS** are on the second control circuit and the roller lifting **YELLOW DUST CAPS** are on the third control circuit.
- If the machine is not equipped with hydraulically protected ploughshares, only connect the **YELLOW DUST CAPS**

Fig. 4 – Hydraulic Circuits



RED DUST CAPS – protection of the first row of ploughshares

- 1 TAPE – pressure branch – ploughshare protection
- 2 TAPES – reverse branch – ploughshare shallowing

GREEN DUST CAPS – protection of the second row of ploughshares

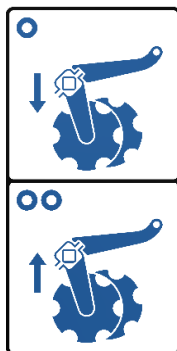
- 1 TAPE – pressure branch – ploughshare protection
- 2 TAPES – reverse branch – ploughshare shallowing

YELLOW DUST CAPS – control of the roller

- 1 TAPE – drawing out roller piston-rods => shallowing the machine
- 2 TAPES – drawing in roller piston-rods => recess of the machine

- To control the hydraulic drive of the fan, it is required to connect the quick-coupling devices of the circuit with the **BLACK DUST CAPS**. The ISO 12.5 quick-coupling device is a pressure branch and the ISO 20 quick-coupling device has to be connected to the free discharge.
- If your machine is delivered with optional equipment, i.e. the hydraulically controlled levelling discs, connect the quick-couplings of the **BLUE DUST CAPS** circuit to the fourth tractor control circuit.

Fig. 5 – Control Circuit for Levelling Discs



BLUE DUST CAPS – levelling discs control

- 1 TAPE – pressure branch – lowering discs
- 2 TAPES – return branch – lifting discs

In order to prevent accidental or foreign person (children, passengers) caused movement of the hydraulics, the control switchboards on the tractor must be secured or blocked in the transport position.



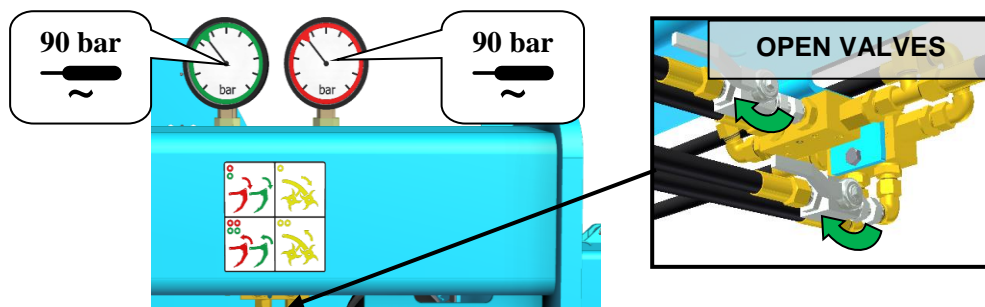
3.3. HYDRAULIC PROTECTION FUNCTION OF THE MACHINE

- Hydraulic protection of the front and rear row of ploughshares is implemented by means of pressure accumulators.
- To ensure proper operation, the **ploughshare protection circuits** must be pressurized to **90 bar** and these circuits must then remain in the **floating position**.
- The hydraulic protection circuits of the machine are also equipped with 2 ball valves, one for each row of ploughshares.
- The ball valves are used for easier disconnection of the hydraulic quick-couplings from the tractor distributor by allowing depressurizing of the supply hydraulic hoses of the machine ploughshare protection circuit, while maintaining pressure in the ploughshare protection circuit that has to be maintained to safely shut the machine down.

The procedure for setting the hydraulic protection

1. Check that the hydraulic hoses are connected properly according to the preceding chapter 3.2.
2. Check that both ball valves of the ploughshare protection circuit are open; if not, open them.
3. Pressurize the **protection circuit of the first row of ploughshares to 90 bar** - using the hose marked with one red tape, monitor the pressure on the manometer with the red marking.
4. On the tractor distributor, set the **red circuit to the floating position**.
5. Pressurize the **protection circuit of the second row of ploughshares to 90 bar** - using the hose marked with one green tape, monitor the pressure on the manometer with the green marking.
6. On the tractor distributor, set the **green circuit to the floating position**.
7. When this has been set, the protection is ready for work.

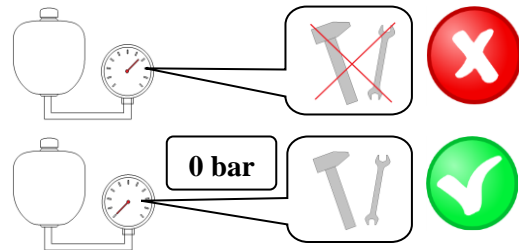
Fig.6 – setting the pressure of the protection circuits



PRESSURE VESSEL

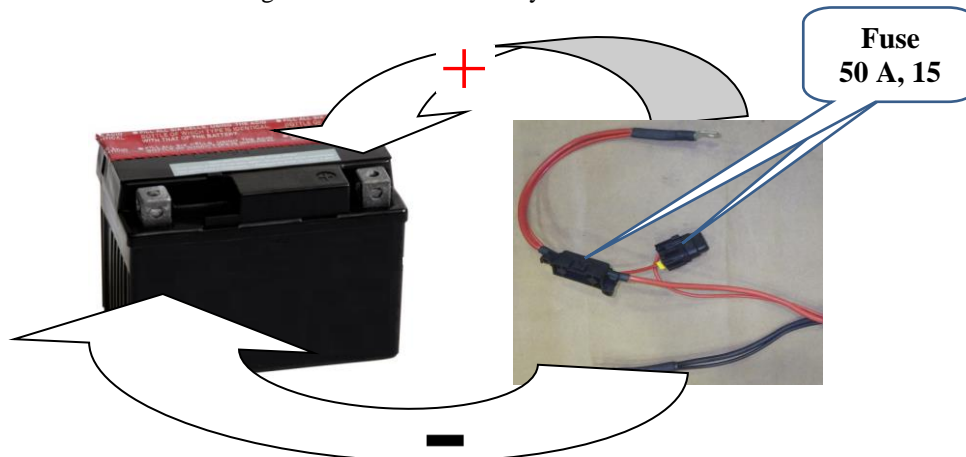
Never open or adjust (welding, drilling etc.) the pressure vessel (pressure accumulator). The pressure vessel is still under gas pressure even after it has been emptied.

Empty the pressure vessel in case of any work on the hydraulics of the machine. The manometer must not show any pressure, or the pressure on the manometer must decrease to 0 bars. Only then it is permitted to work on the hydraulic circuit.



3.4. CONNECTING THE ELECTRONIC UNIT

- Only applies to machines with the Fert+Compact extension with an electronic control system.
- Connect the electronic unit of the machine only when the tractor is standing still and is secured against movement and intervention by third persons.
- Put the display unit to a place in the tractor where it will not obstruct the driver's view and where it will be in the visual field of the operator.
- To connect the electronic unit, use the feeding cable that is included in the machine delivery.
- The connecting cable must be connected directly to the tractor accumulator!
- The connecting cable contains the required sockets for connecting the electronic unit.
- Do not connect the connecting cable and the unit to any other connectors in the tractor.



ATTENTION! Check correct polarity of the cable!

Fig. 7 - Connection socket on the tractor



3.5. CONNECTING THE HYDRAULIC MOTOR OF THE FAN

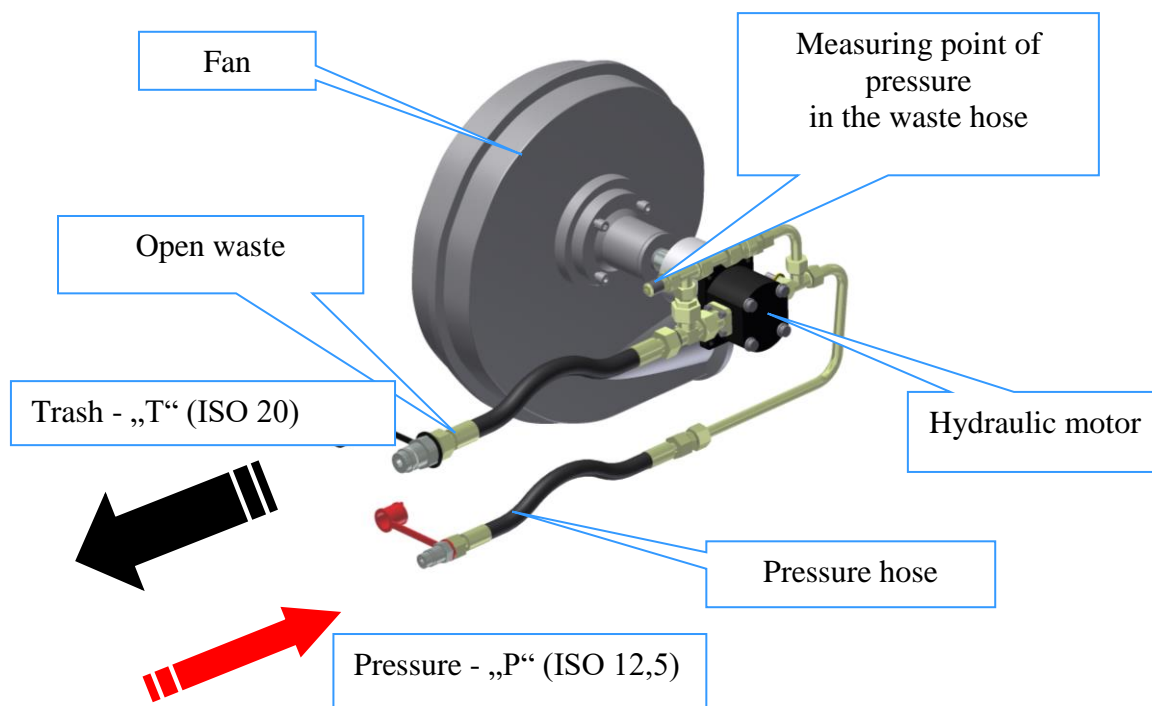
3.5.1 Description of the function

The hydraulic fan is powered directly from the tractor's hydraulic system.

For proper operation, the hydraulic pump of the tractor must supply sufficient amount of oil so that the fan revolutions are not affected by decreased number of revolutions of the tractor engine or by another hydraulic circle being switched on.

The fan revolutions are set by regulating the oil flow rate. To change the fan revolutions, the tractor must be equipped with regulation of the oil flow rate.

Fig. 8 – Hydraulic drive



Tab. 5

Rotary hydraulic motor	Capacity (cm ³ /rev.)	8
	Minimum revolutions (rpm)	1000
	Maximum revolutions (rpm)	5000
Pressure oil - „P“	Minimum pressure in the “PRESSURE HOSE” (bar)	130
	Maximum flow rate in the “PRESSURE HOSE” (l/min.)	40
Outlet - „T“	Maximum pressure in the “PRESSURE HOSE” (bar)	5

3.5.2 Proper connection to the tractor



For proper connection, the following facts must be observed:

Outlet hose

- Do not connect the outlet hose to the tractor distributor! (pressure in the reverse branch would thus be increased)
- Large quick coupling on the outlet hose must not be confused with the small one
- Oil returning through the outlet pipe must not be throttled anywhere
- **Maximum allowed pressure value in the outlet hose is 5 bar**, higher pressure pushes the shaft seal out, which causes damage to the hydraulic motor fan

Pressure hose

- Connect the pressure hose to the circuit giving priority to the oil supply

Fig. 9 – Position of quick couplings in the tractor



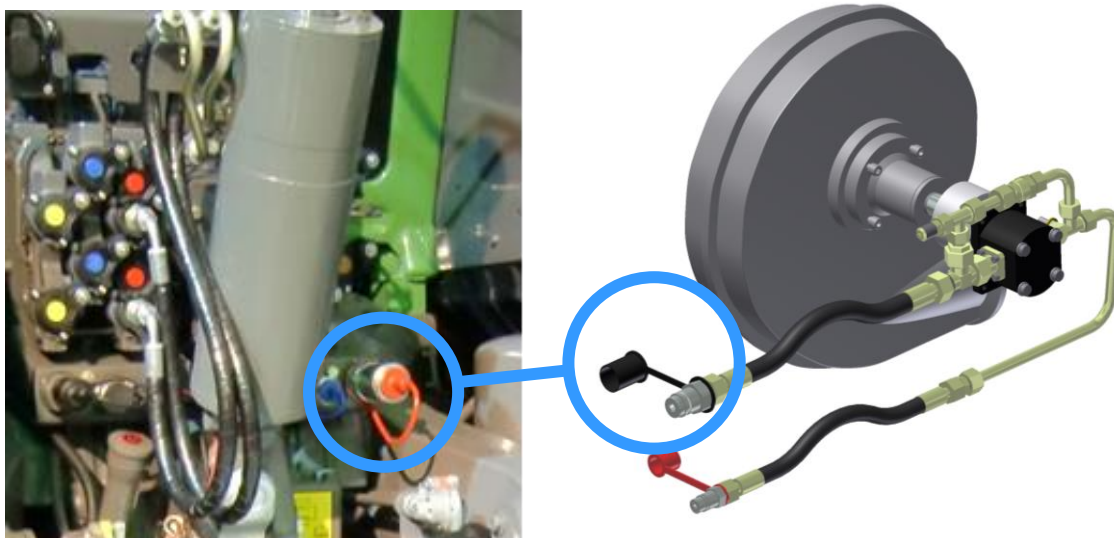
1. Connecting the outlet hose

Connect the outlet hose (outer \varnothing 27 mm) with the large quick coupling to the free drain to the tractor tank.



In case that there is no free drain to the tank attached to the tractor as standard, please contact the tractor manufacturer (dealer) for information regarding the possibilities of a free drain end piece.

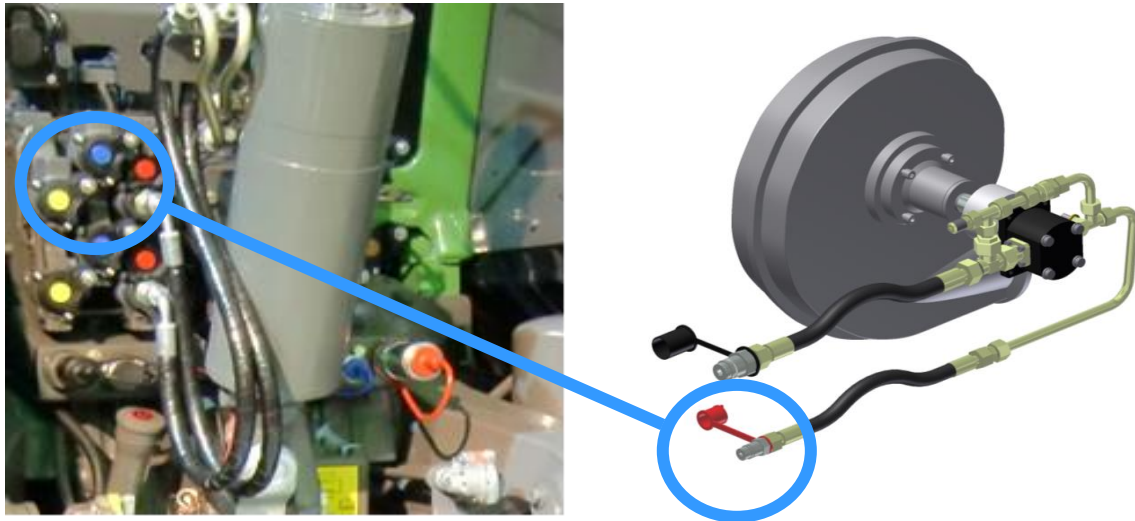
Fig. 10 – Outlet hose connection



2. Connecting the pressure hose

Connect the pressure hose (outer \varnothing 22 mm) with the small quick coupling to the tractor distributor.
Connect this hose to the circuit giving priority to the oil supply.

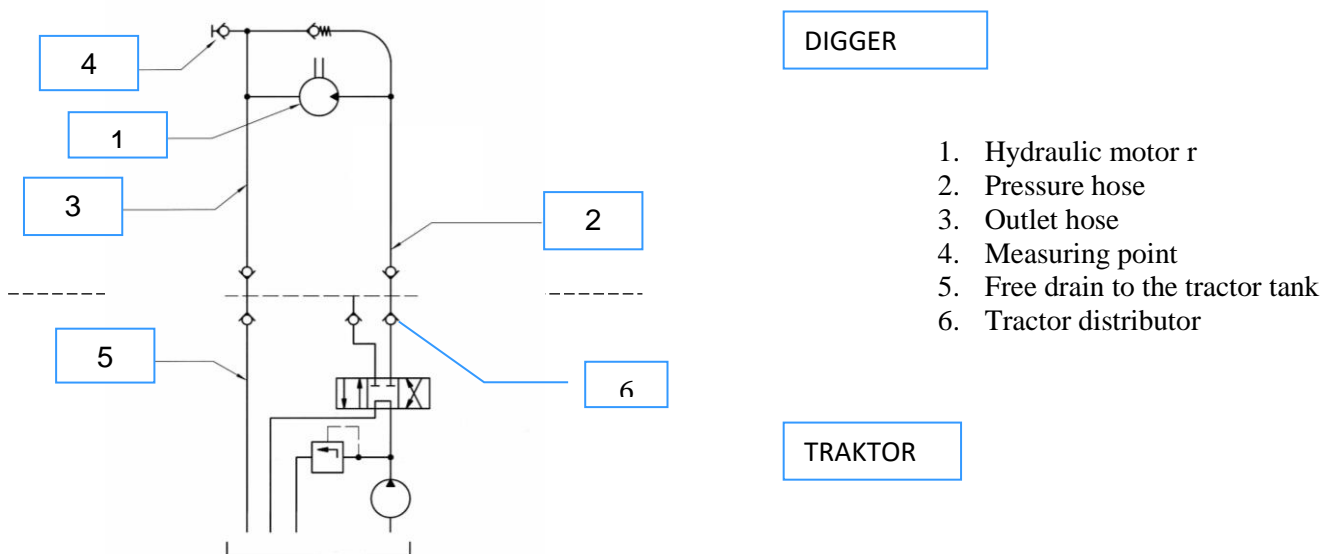
Fig. 11 – Pressure hose connection



3.5.3 Commissioning

- When setting the required fan revolutions, the hydraulic oil must be warmed up.
- When commissioning the hydraulic drive, the fan revolutions (working air pressure on the pressure gauge in the hopper) must be set gradually.
- Fan revolutions (pressure on the pressure gauge) are set by regulating the oil flow rate in the tractor.
- If the hydraulic drive is started with cold oil, it is necessary to increase the motor revolutions gradually before the oil warms up.
- During commissioning and the first handover, the technician in charge of the handover must inspect all connections of the hydraulic drive and measure pressure in the outlet hose. He must record the obtained results in the handover protocol.

Fig.12 - Diagram of the hydraulic drive of the fan



Warning!



Farmet a.s. is not liable for any damage of the hydraulic drive or the tractor caused by improper connection of the hydraulic drive.

4. MACHINE TRANSPORT ON ROADS

Transport Position of DIGGER 3 and 4 Fert+ Compact

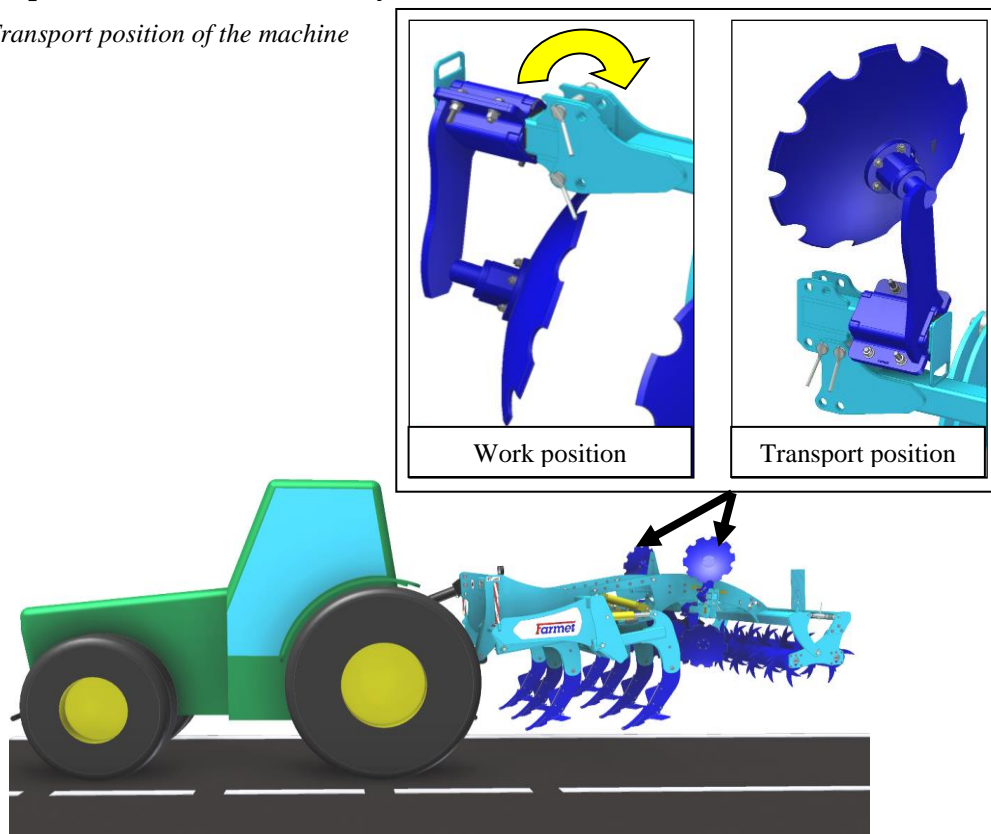


- Hitch the machine to the tractor using the three-point suspension device and lift the machine by means of the lower tractor arms.
- For road transport, the edge discs must be folded and secured with pins as per Fig. 13.
- The machine must be equipped with removable shields with marking of contours, functional lighting, and the board of the rear marking for slow vehicles (according to ECE No. 69).
- The lighting must be activated during travelling on roads.
- The tractor must be equipped with a special light device of an orange colour, which must be activated during travelling on roads.
- Secure the lower shoulders of the tractor TPS from side swing.
- The lower arms of the tractor rear three-point suspension must be secured in the upper position, and the operating lever of the lower arms of the tractor three-point suspension must be protected against undesirable activation of the arms.
- The maximum transport speed during travelling on roads is **25 kph**.



Ban of transport with decreased visibility!

Fig.13 – Transport position of the machine



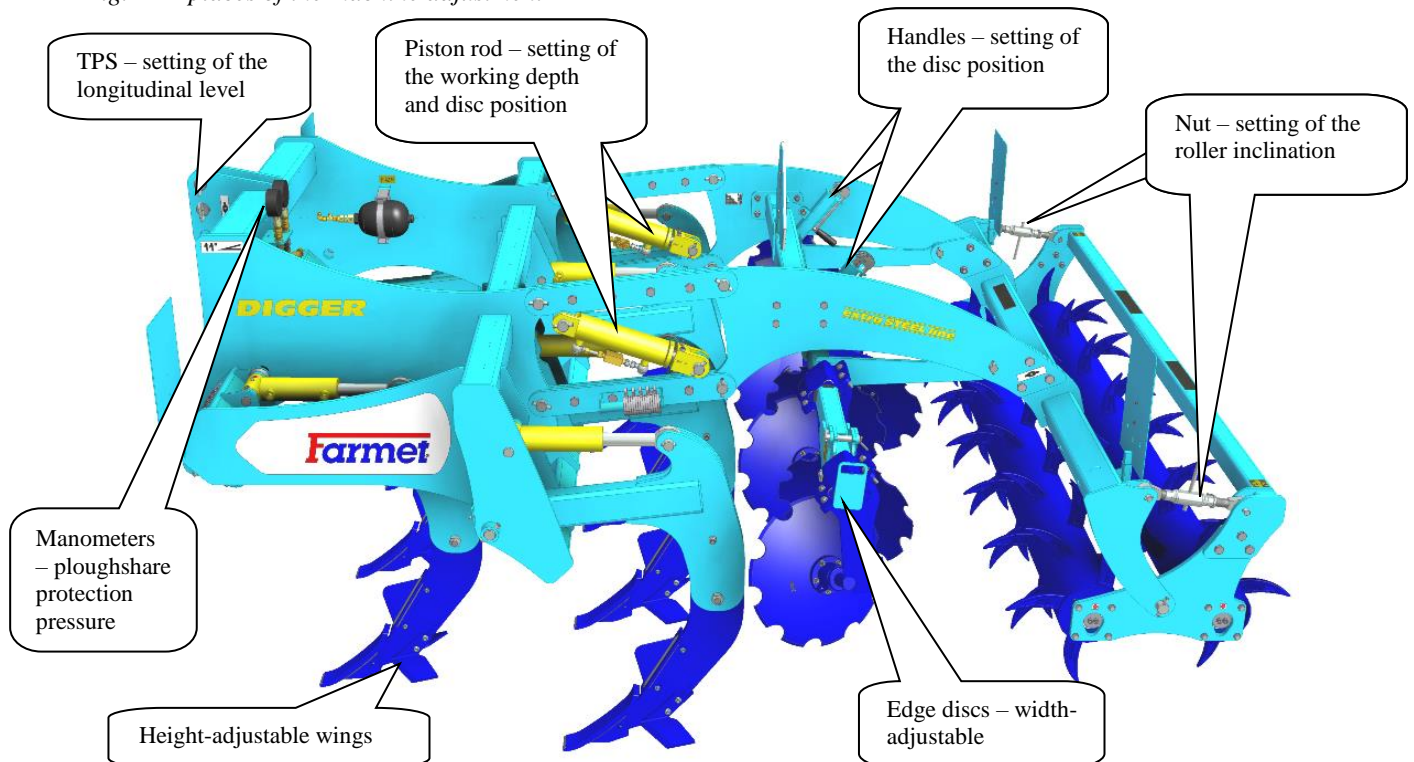
- The operator is obliged to pay increased attention during transport on roads, due to the transport dimensions of the machine.
- The operator must observe the valid regulations for transport on roads (laws, decrees) after connecting the machine to the tractor, for reason of a change of the axle load. The driving properties of the set also change depending on the terrain nature, adapt the manner of driving to these conditions.
- Only machines with a valid technical certificate issued in accordance with the valid regulation on the approval of technical qualification and operation on public communications as amended may be transported on public communications. Machines without a valid technical certificate may only be transported on public communications when carried by a towed trailer or other approved means of transport in accordance with the valid regulation.
- The operator is obliged to secure sufficient outlook during reversing from his position of the tractor driver. In case of insufficient outlook, the operator is obliged to call a competent and informed person.

- The operator must secure the arms of the rear TPS of the tractor in the transport position during road transport, i.e. prevent unexpected arm drop using the hydraulic arm control lever. At the same time, the arms of the rear TPS of the tractor must be secured against side swinging.
- During machine transport on roads, the operator must observe the valid laws and decrees that deal with this topic and which specify the relationships of the tractor axle load depending on transport speed.
- Clean the entire machine from any accumulated soil before the transportation on the road.
- If your machine is equipped with side deflectors, fold them into the transportation position, see Chapter 5.5 Optional Equipment.

5. MACHINE ADJUSTMENT

- The working parts of the machine can be adjusted by the operator only when the machine is idle, i.e. not working and secured against movement.

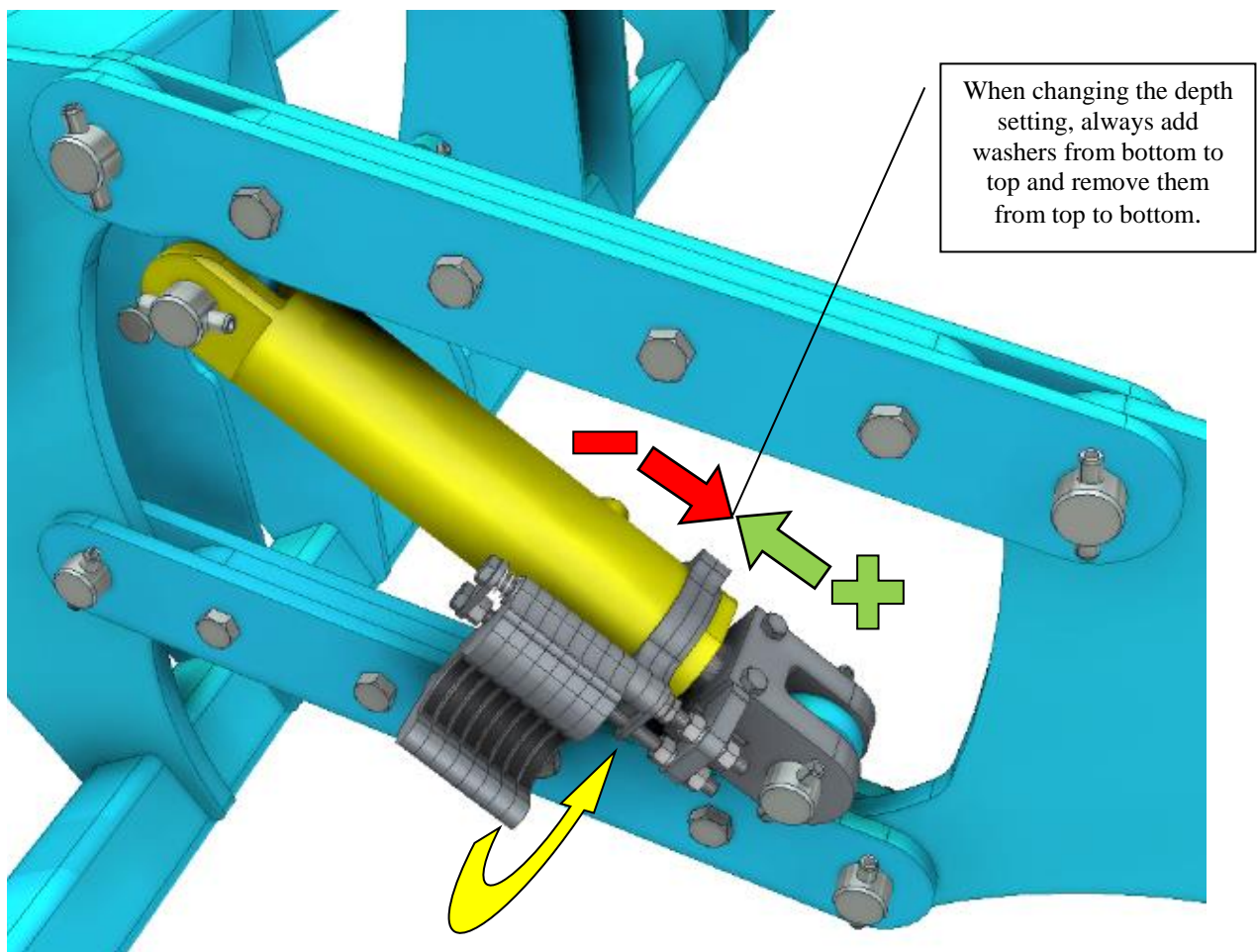
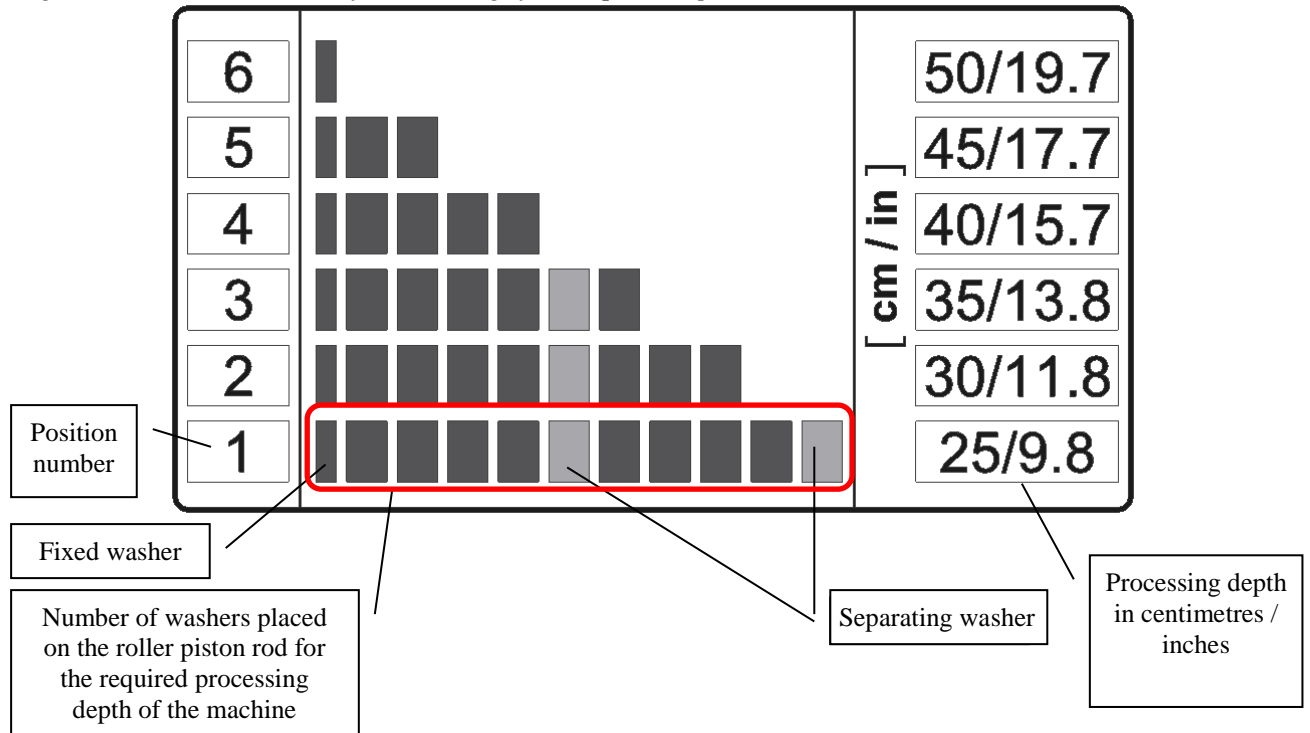
Fig. 14 – places of the machine adjustment



5.1 SETTING OF THE MACHINE WORKING DEPTH

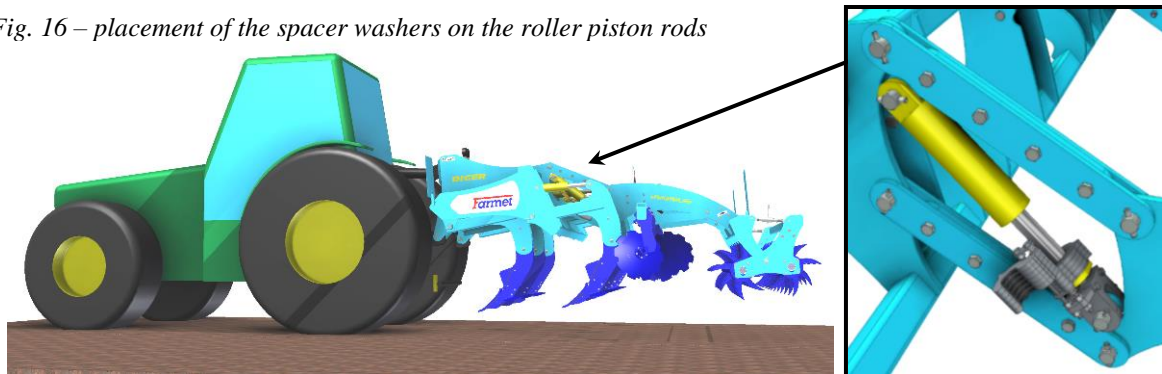
- The working depth is set by means of washers on the piston rods of the rear roller.
- 12 mm thick washers are used for setting the depth, where one washer changes the depth by 25 mm.
- For the required embedding of the machine, the individual combinations of the spacer washers are provided in Fig. 15.
- The working depths mentioned below are only approximate and can differ depending on the given soil conditions.

Fig. 15 – washer combinations for the setting of the required depth



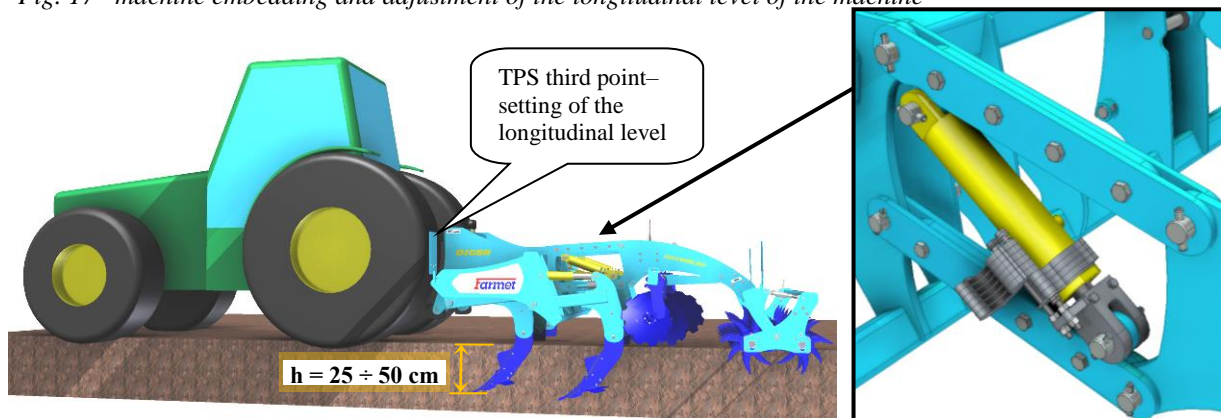
1. Lift the machine in the tractor hitch and lower the rollers by means of the piston rods to the maximum lower position (piston rods out). Place the appropriate number of spacer washers on the piston rods of the rollers.

Fig. 16 – placement of the spacer washers on the roller piston rods



2. Slide the roller piston rods to the maximum upper position (piston rods in) so that the spacer washers placed on these piston rods are firmly clamped. You can embed the machine gradually (while driving) to the soil, until it leans against the rear roller. By the position of the tractor lower arms and adjustment of the tractor third point rod, set the longitudinal level of the machine, thus ensuring the same processing depth of the first and second row of ploughshares.

Fig. 17– machine embedding and adjustment of the longitudinal level of the machine



5.2 WORK WITH ONE ROW OF PLOUGHSHARES



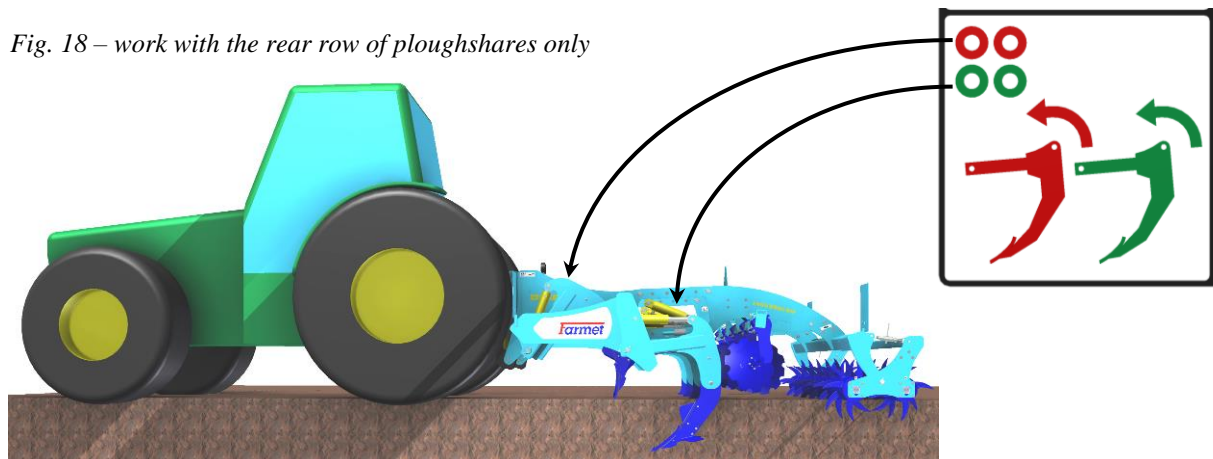
- In case that the tractor output is insufficient due to more compacted local soil, or due to considerable slippage of the tractor wheels, resulting in inefficient transmission of power to the washer, it is possible to work with one row of DIGGER ploughshares only.
- When working with one row of ploughshares, it is recommended that you lift the first row and work with the rear row only, in order to maintain the working width of the machine.
- Both rows of ploughshares have their own separate hydraulic protection circuits.
- The first row of ploughshares can be lifted using the red hose marked with 
- The second row of ploughshares can be lifted using the green hose marked with 

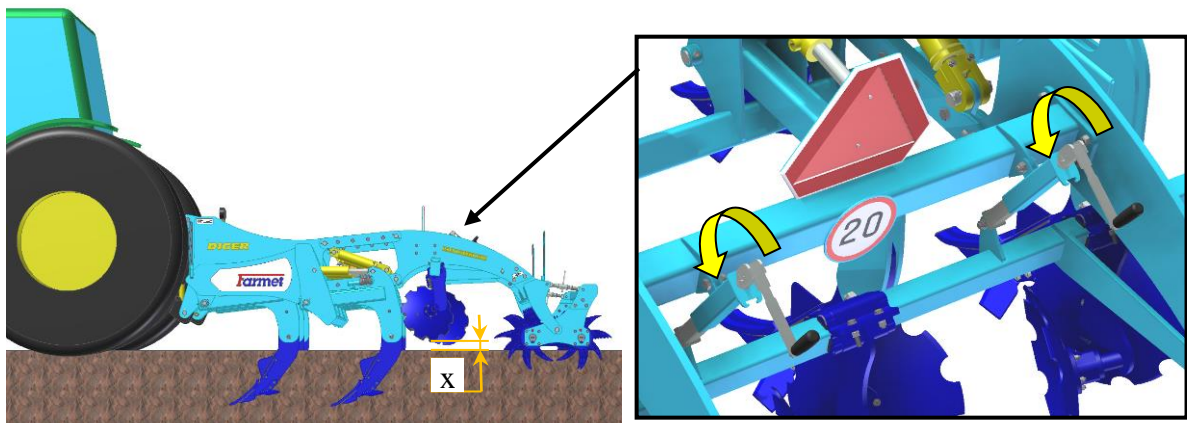
Fig. 18 – work with the rear row of ploughshares only



5.3 SETTING OF THE LEVELLING DISCS

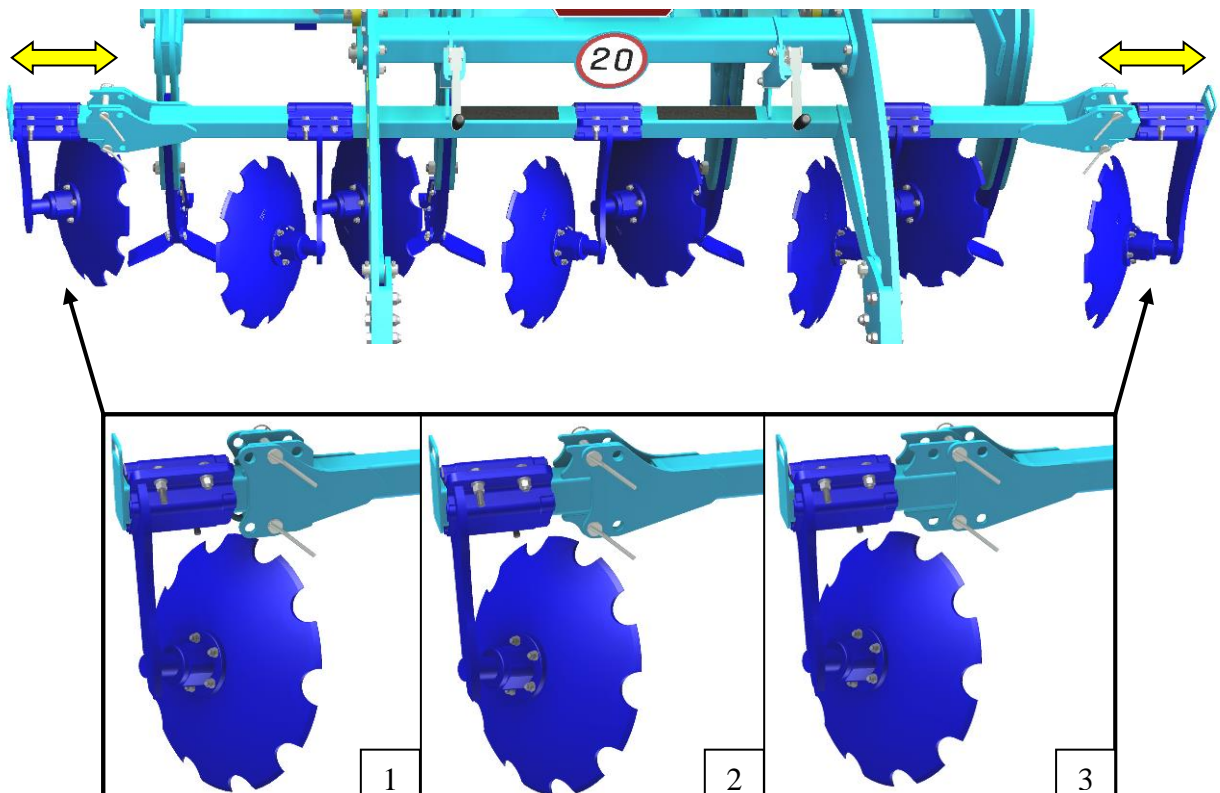
- Behind the second row of ploughshares, there are the directing discs which, if properly adjusted, increase the quality of the output behind the machine - above all, they eliminate land unevenness along the entire working width.
- Levelling discs are not designed for cultivating compacted soil, but rather for directing the processed soil and covering it with finer soil along the entire working width of the machine.
- The working height of the levelling discs is adjusted by two handles as per Fig. 19.
- Due to the fact that the disc beam is connected with the roller frame, when changing the machine working depth, the working height of the discs is changed as well, which means that the setting by means of handles is used for fine adjustment of the disc position.

Fig.19 – setting of the disc height



- With edge discs, it is possible to set three width positions for work as per Fig. 20 and thus achieve optimal directing of the soil towards the rear roller in various soil conditions.
- For transport, the edge discs must be folded as per chapter 4

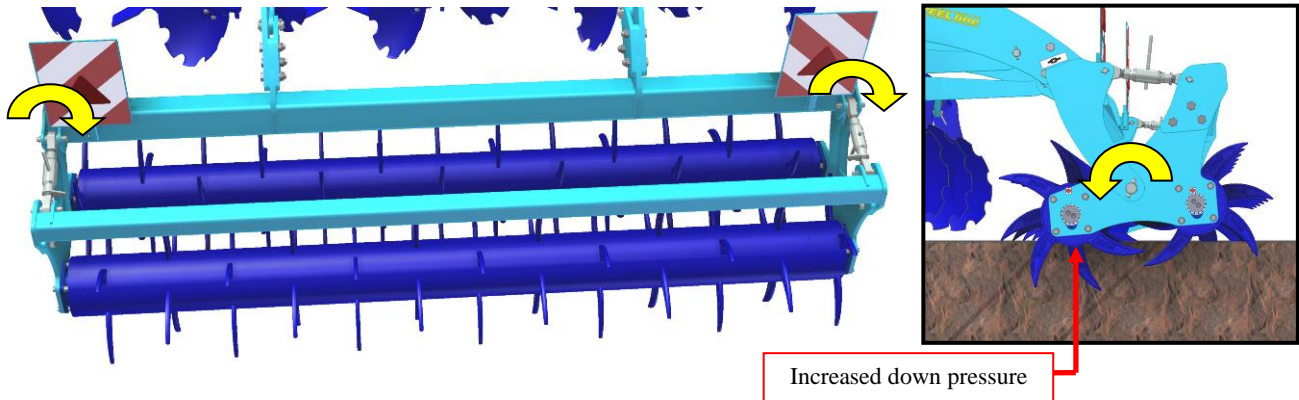
Fig.20 – setting options for edge levelling discs for work



5.4 SETTING OF THE ROLLER INCLINATION

- For optimal clod crushing in the processed soil and more efficient self-cleaning of the roller, it is, under certain conditions, necessary to incline the roller, in a majority of cases it is appropriate to increase the down pressure on the front roller.
- Inclination can be changed by means of adjustment screws as per Fig. 21.

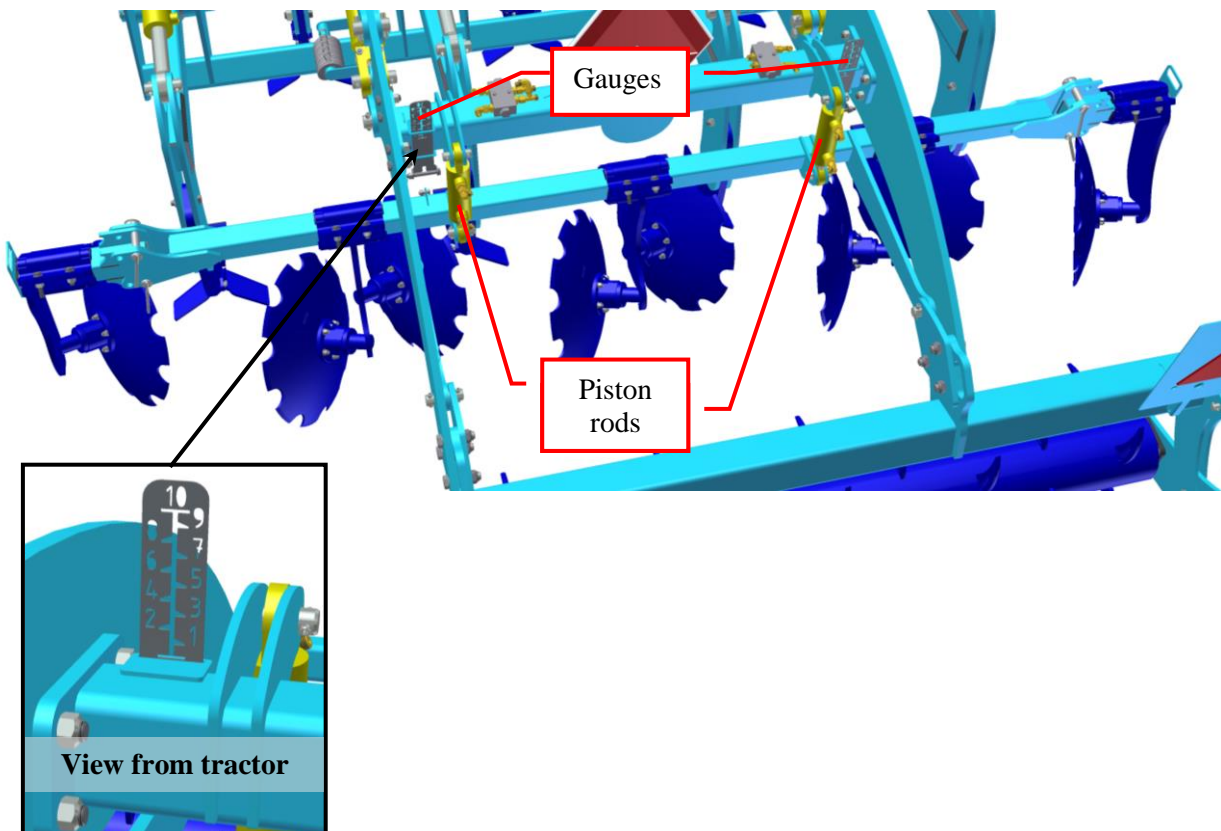
Fig.21 – roller inclination change



5.5 SETTING OF THE HYDRAULICALLY CONTROLLED LEVELLING DISCS

- The DIGGER machine may be equipped with hydraulically controlled levelling discs at the customer's request. The system lifts and lowers disks using a hydraulic circuit marked with blue dusters instead of the standardly delivered mechanical jacks.
- For better view of the disc position, the control is equipped with gauges displaying the 1 – 10 position scale.

Fig. 22 – Hydraulically controlled levelling discs

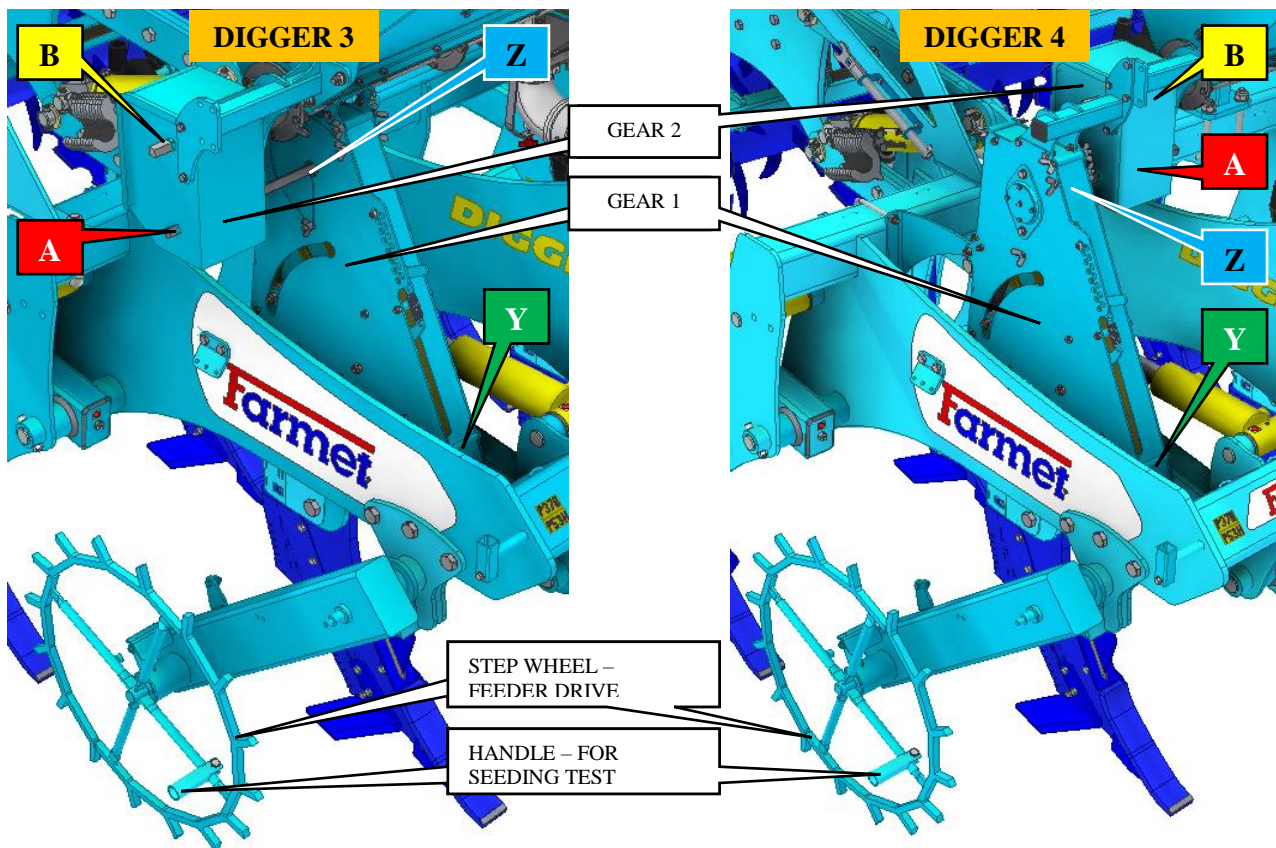


5.6 SETTING THE FERTILISER BATCH (FERT+COMPACT EXTENSION)

5.6.1. SETTING THE FERTILISER BATCH IN AN EXTENSION WITH A MECHANICAL SCREW DRIVE

- The selected quantity of the fertiliser that we want to distribute per 1 hectare is set by changing the turning speed of the screw feeder; this speed is regulated by changing the rotations from the step wheel, for which there are two gearboxes, see Fig. 23.

Fig. 23 – screw feeder drive



- For the actual fertiliser batch, set GEAR 1 and GEAR 2 according to the table, see Fig. 24.
- The final batch for the particular fertiliser can be further adjusted by changing the change ratio in GEAR 2 in the following way: the smaller the ratio of A / B is, the slower the screw turning is and thus the smaller the batch is. Analogically, the greater the ratio of A / B is, the faster the screw turning is and thus the bigger the fertiliser batch is.
- Final fertiliser batch:
DIGGER 3: $m \text{ (kg/ha)} = m_{33} \text{ (fertiliser weight in kg per 33 step wheel revolutions)} \times 50$
DIGGER4: $m \text{ (kg/ha)} = m_{20} \text{ (fertiliser weight in kg per 20 step wheel revolutions)} \times 64$
- Procedure for setting the batch: According to the table, Fig. 24, set GEAR 1 and GEAR 2. Loosen the winged nut securing the elbow with the fan hose and remove the elbow. Place a vessel under the injector outlet for a check seed batch. Turn the step wheel to gradually get the check seed batch (33, or 20 revolutions). Weigh the seed batch and multiply it by **50**, or **64** to get to the value for **1 hectare**.
- The required fan air pressure should be between 4.5 and 6 kPa. To achieve that, regulate the delivered amount of the pressure oil into the hydraulic drive of the fan.

Fig. 24 – setting the seed batch

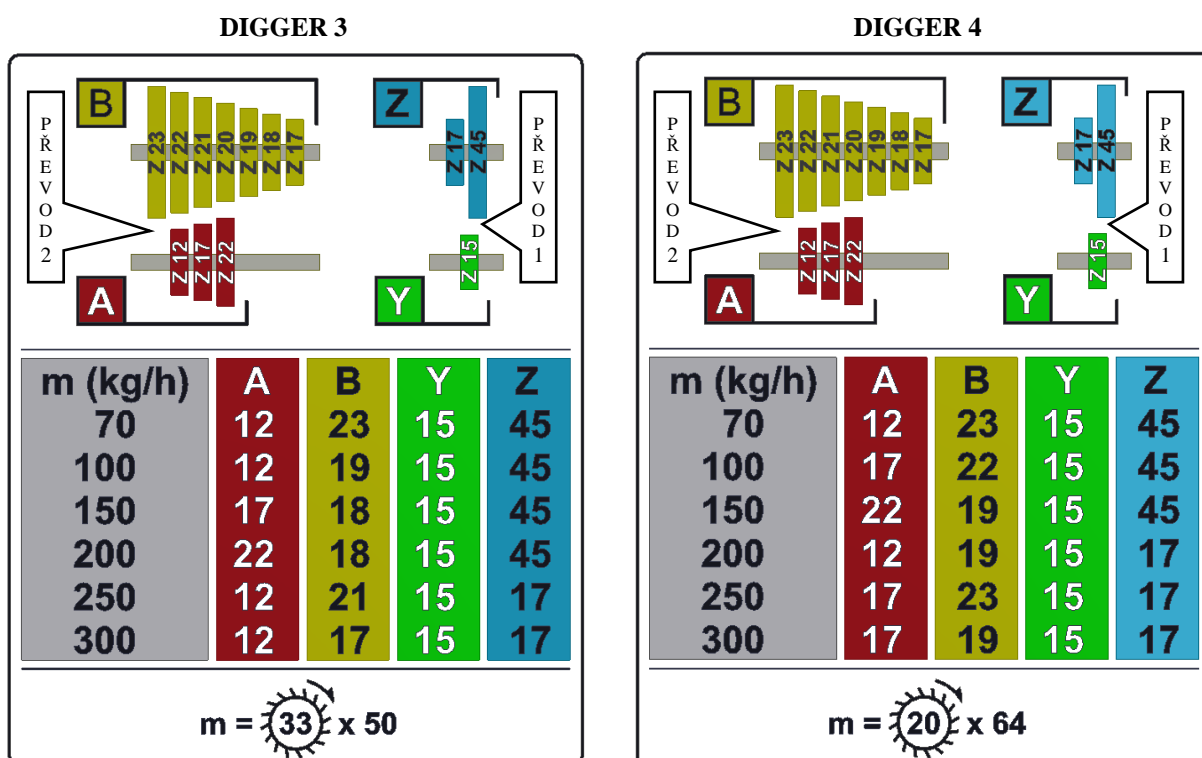


Fig. 25 – setting GEAR 1

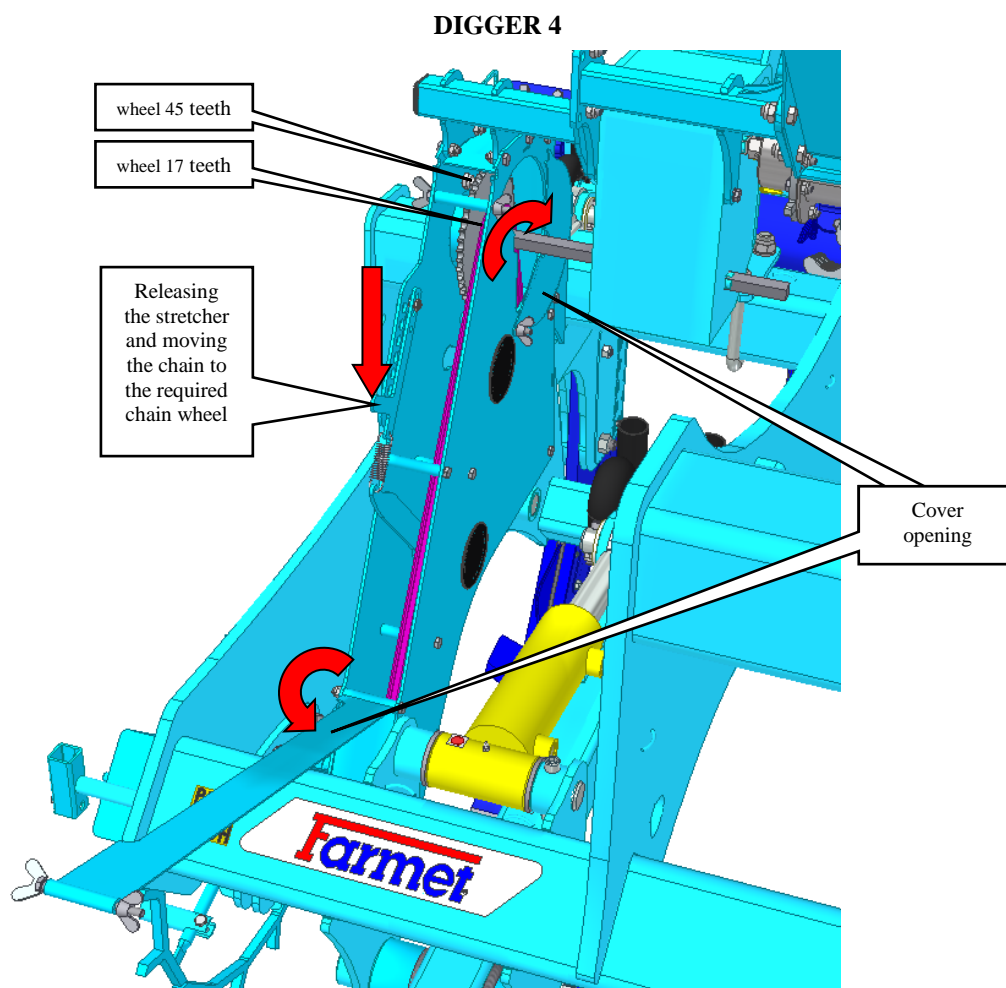
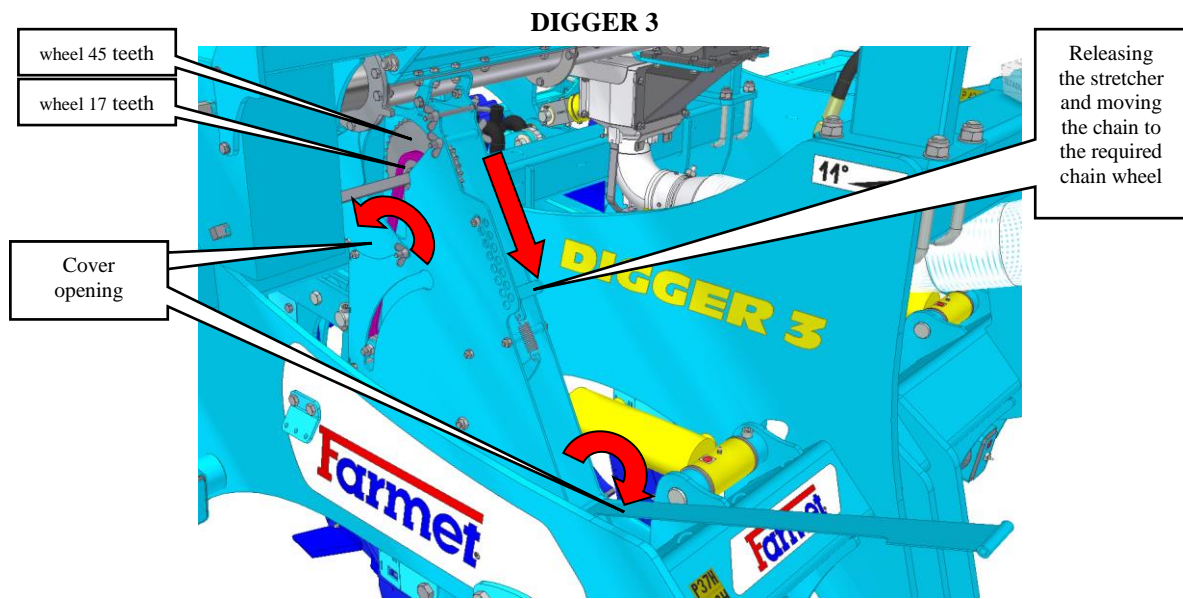
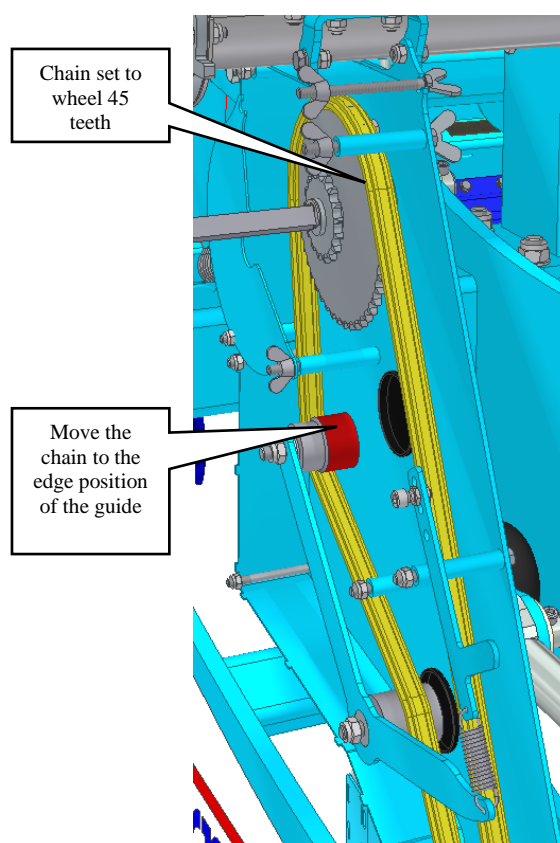
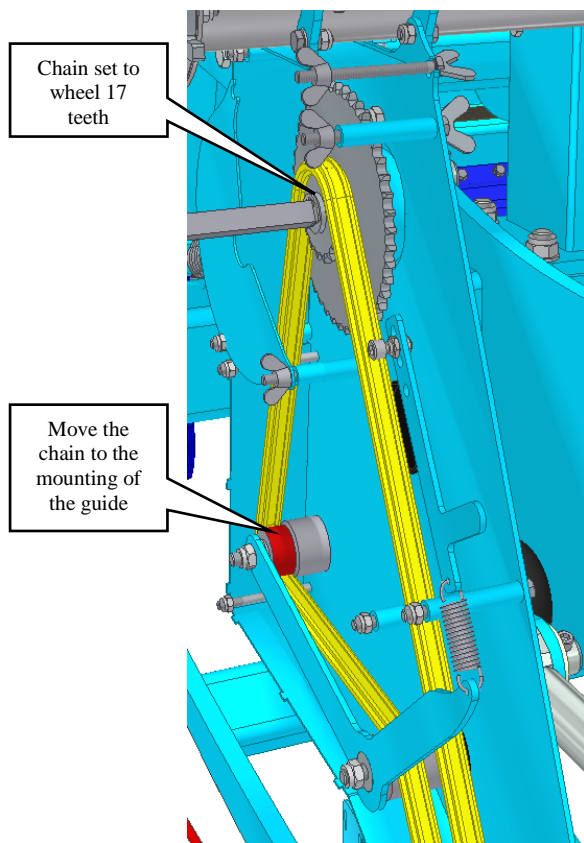


Fig. 26 – position of GEAR 1 chain

DIGGER 3



DIGGER 4

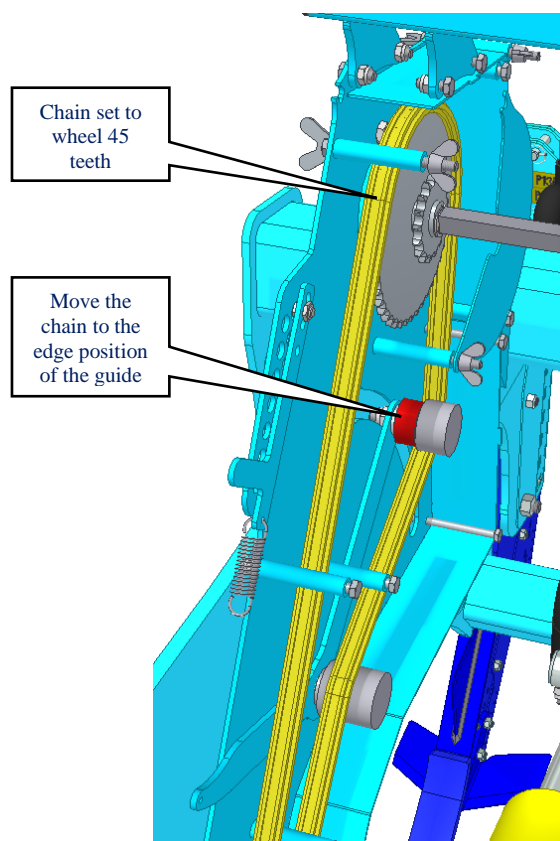
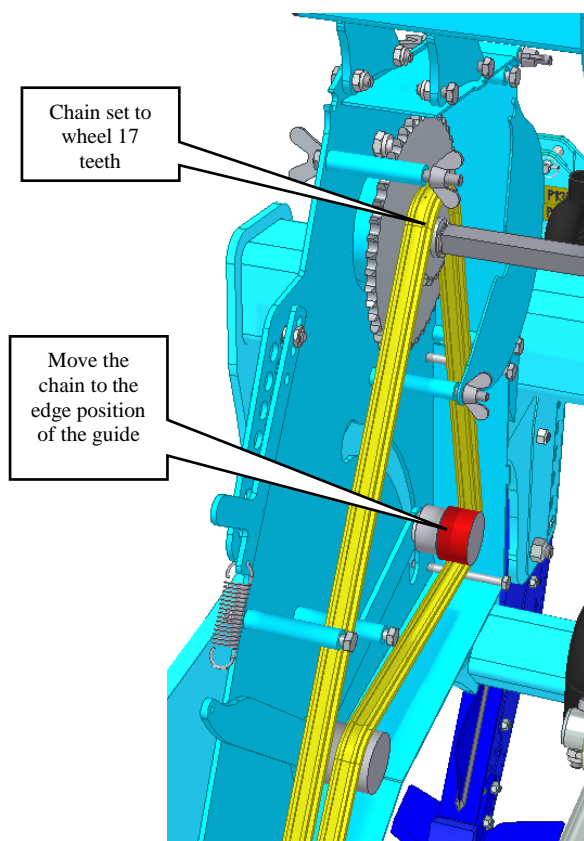
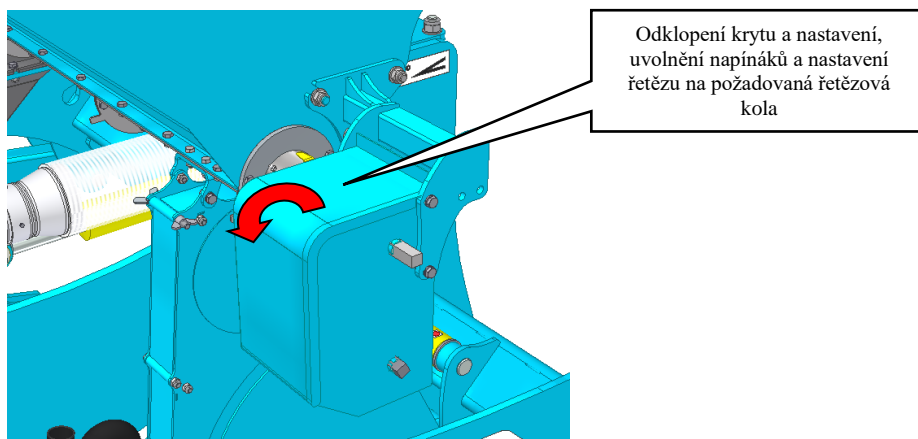


Fig. 27 – setting GEAR 2

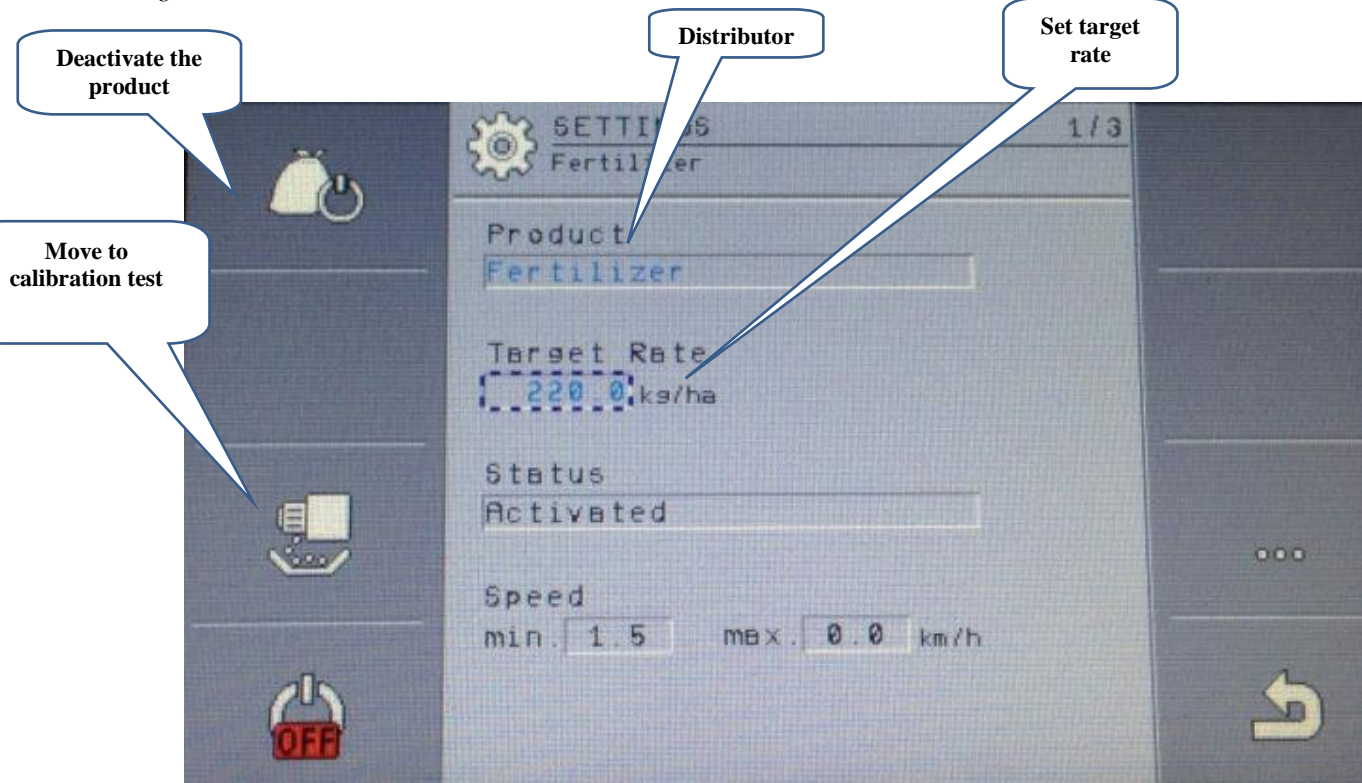


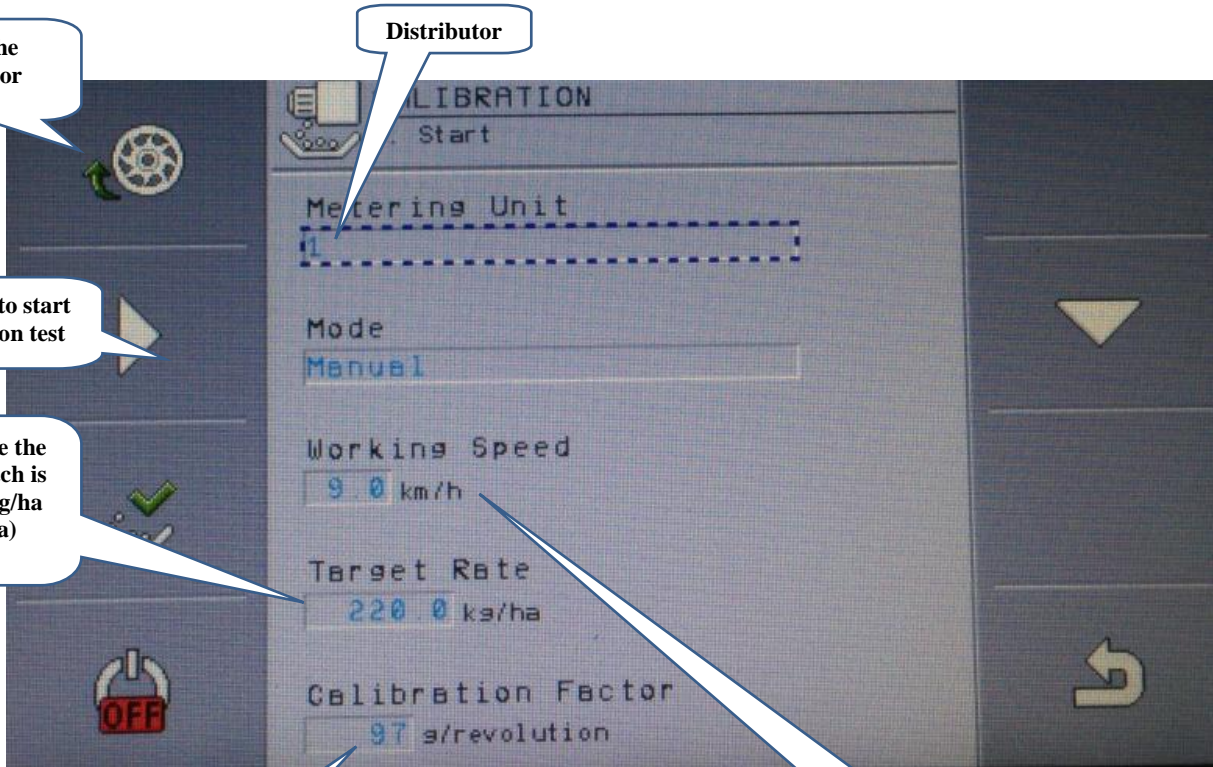
5.6.2. SETTING THE FERTILISER BATCH IN AN EXTENSION WITH A HYDRAULIC SCREW DRIVE

Procedure:

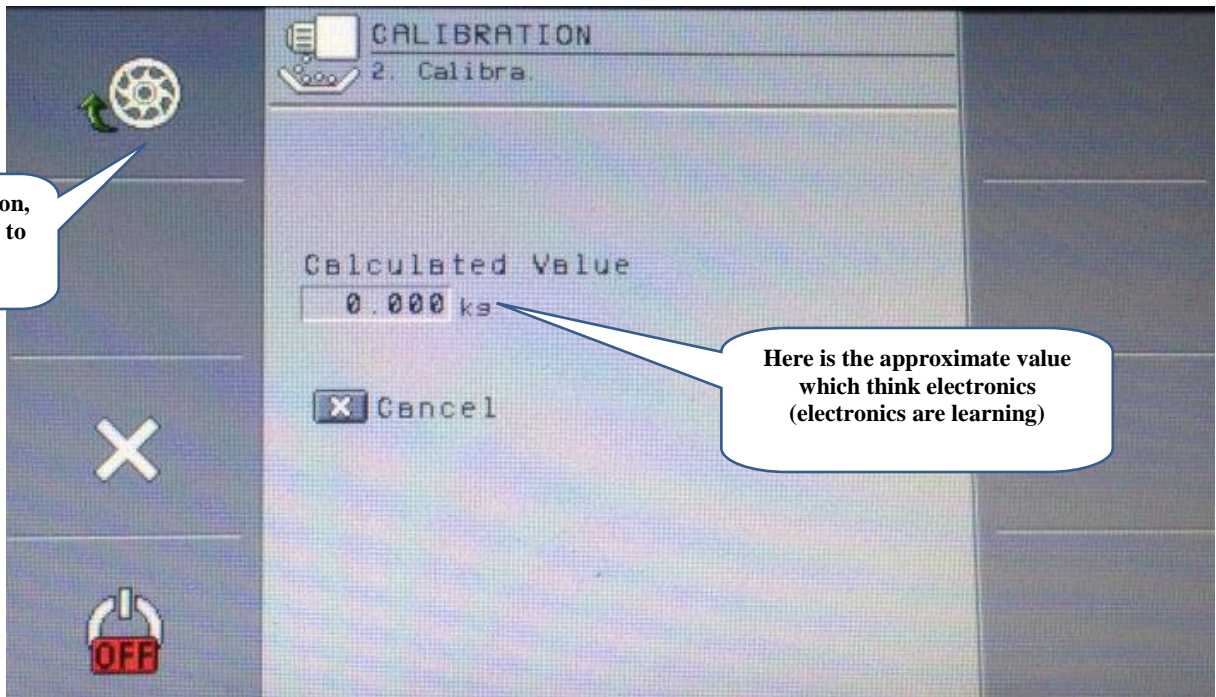
- Remove the elbow below the mixer
- Weigh the test bag
- Place the bag below the mixer, turn the oil to engine
- Press the button, the bag starts to fill up
- Weigh the bag with the fertiliser
- Enter the net weight of the fertiliser to the display unit
- Set the batch size that you want to apply in the field on the display unit

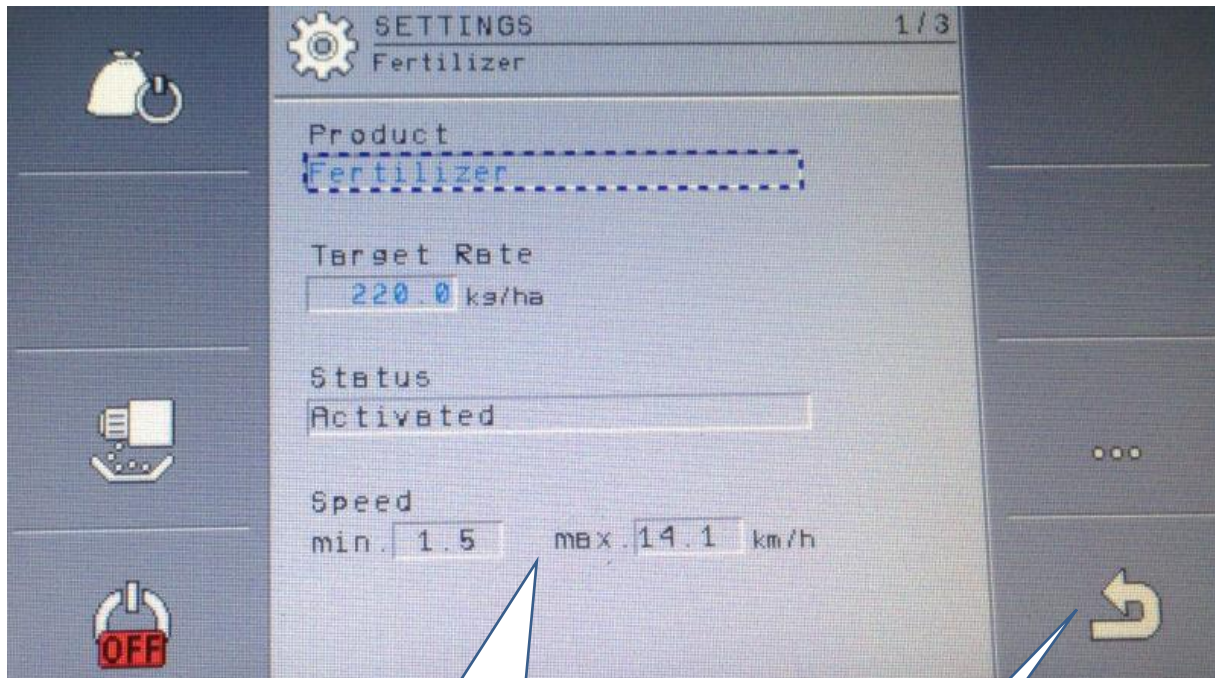
Fig. 28 – Calibration test





Calibration factor	
Rape	5 g/rev.
Cereals	300 g/rev.
Legumes	300 g/rev.
Pea	400 g/rev.





This is where the range of speed available for sowing is displayed

Back

Fig. 29 – Filling the bag



By pressing this key you start filling the bag with fertilizers (hold until there is a weighable amount in the bag)

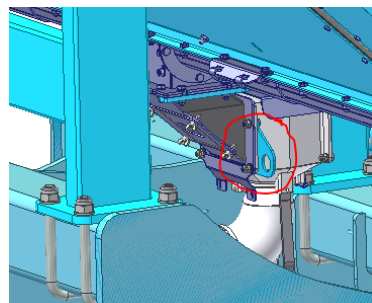
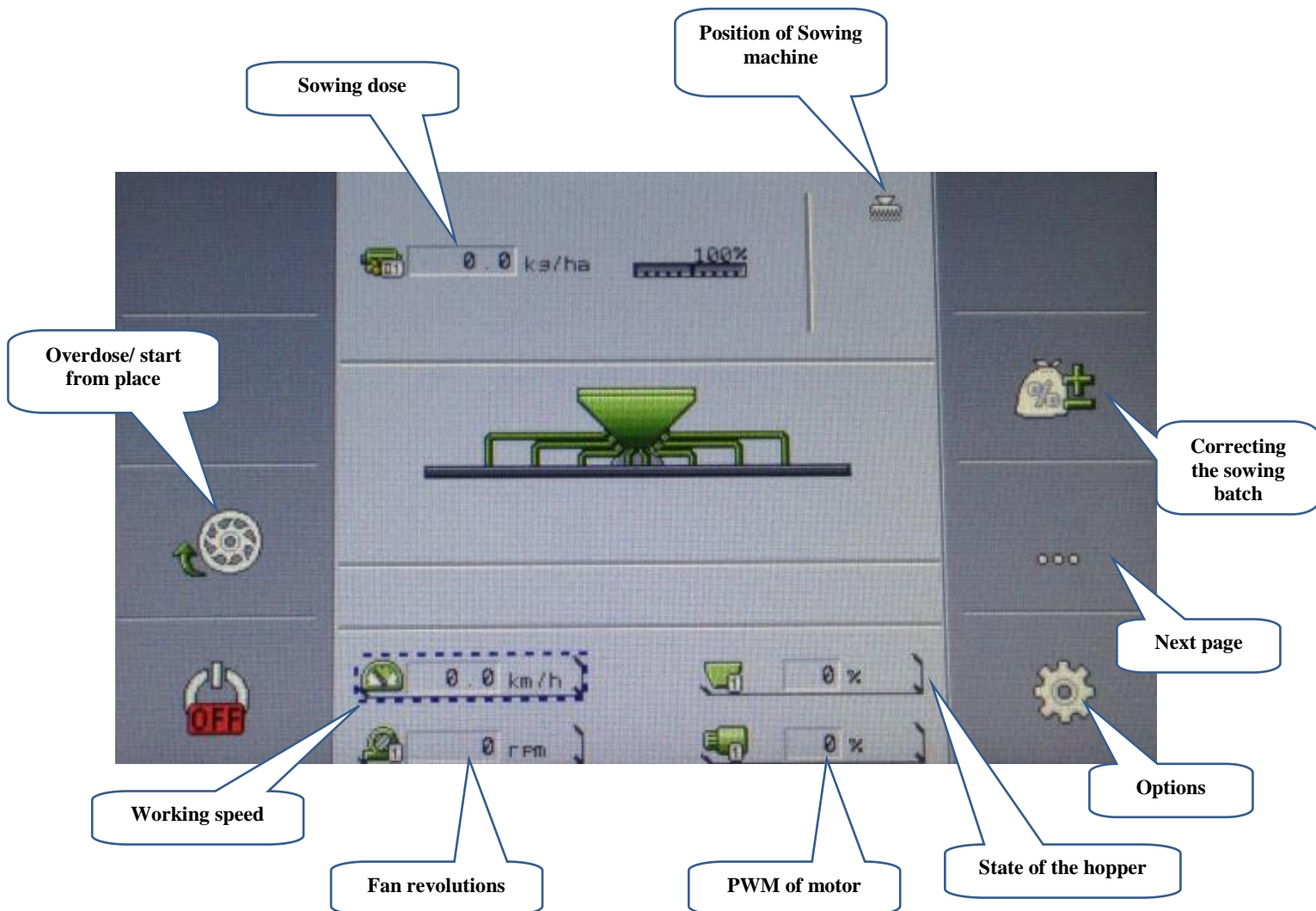
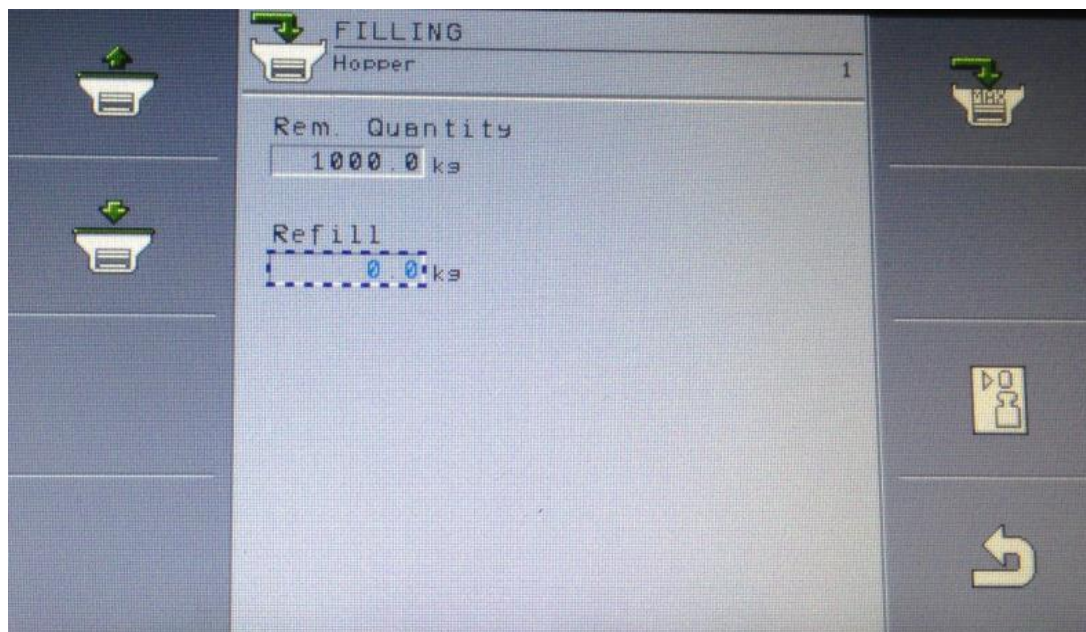
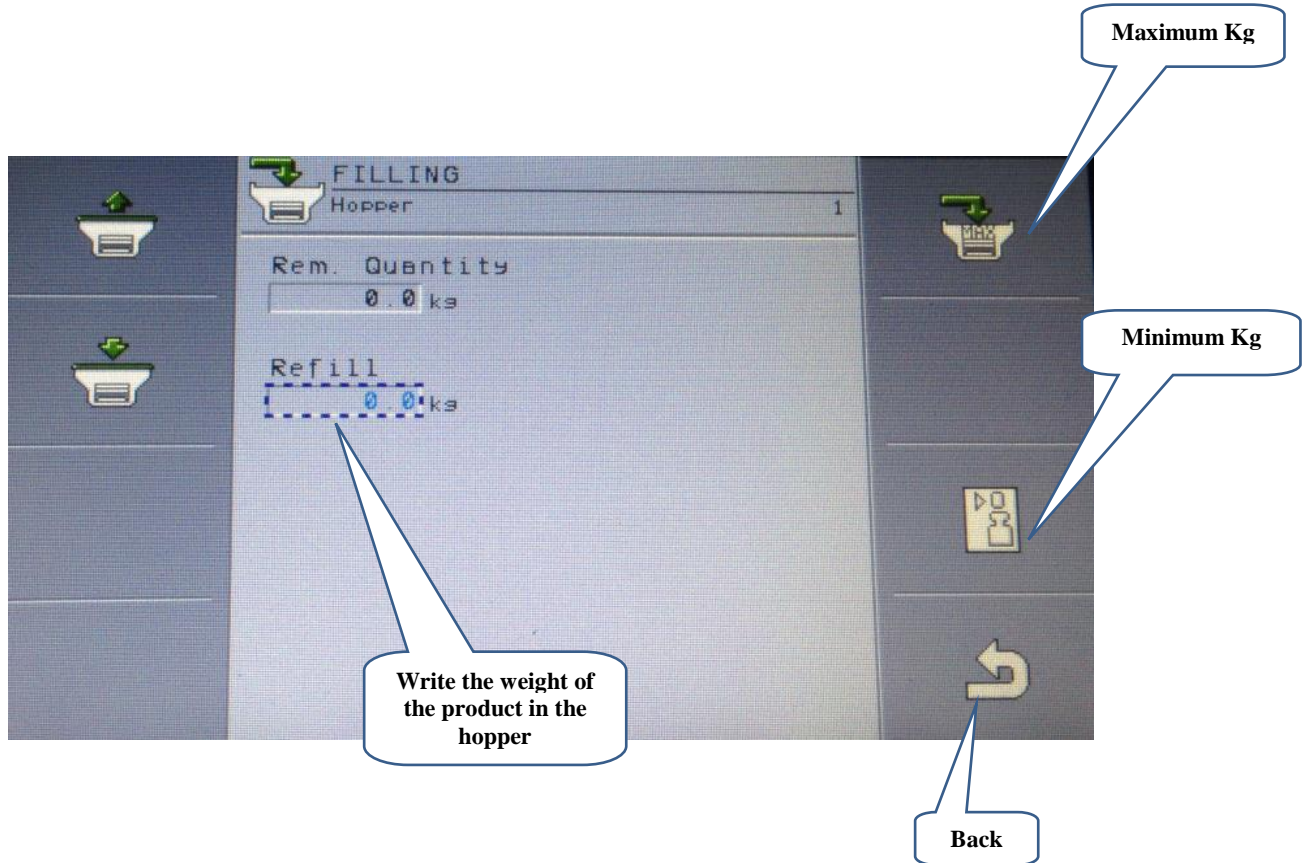


Fig. 30 – Main screen



- Correcting the sowing batch – the sowing batch can be changed during sowing as shown in Fig. 31. The sowing batch is adjusted by 10 %.

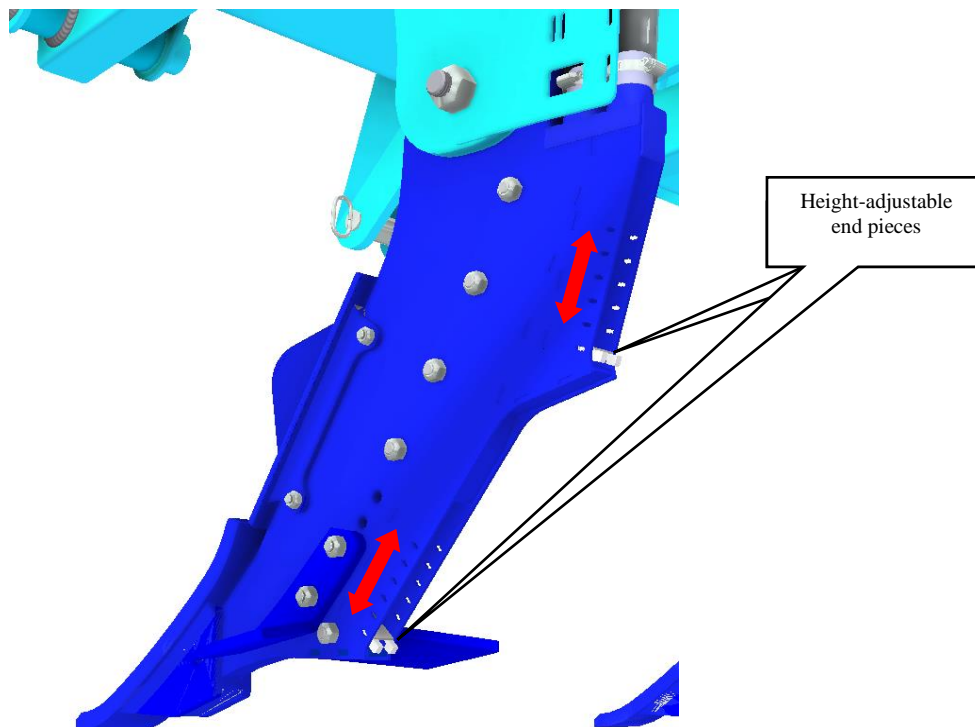
5.7. CALCULATION OF THE LEVEL OF THE HOPPER



5.8. SETTING FERTILISATION ZONES

Each ploughshare has a double fertiliser outlet and each of the outlets have an independent height regulation using end pieces. The end pieces can be set at 6 height positions by 2 cm, as shown in Fig. 32.

Fig. 32 – setting the depth of the fertiliser placement



6. MACHINE MAINTENANCE AND REPAIRS

Dodržujte bezpečnostní pokyny pro ošetřování a údržbu.

- If it is necessary to weld during the repair and have the machine connected to the tractor, it must have disconnected supply cables from the alternator and the accumulator.
- Check the tightening of all screw and other assembly connections at the machine before every use of the machine, furthermore continuously as needed.
- Continuously check the wear of the working bodies of the machine, possibly replace these worn working bodies with new ones.
- Adjustment, cleaning, and lubrication of the machine may only be performed with the machine at rest (i.e. the machine is standing and not working).
- When working on a lifted machine, use suitable support equipment supported at marked points or at points suitable for that.
- During adjustment, cleaning, maintenance, and repair of the machine, you must secure those parts of the machine that could endanger the operator by falling or another movement.
- For catching the machine during handling using lifting equipment, use only the places marked with self-adhesive labels with the chain sign "—○—".
- Upon a failure or damage of the machine, immediately turn off the tractor's engine and secure against restarting, secure the machine against movement ⇒ only then you can remove the failure.
- During repairs of the machine, use exclusively the genuine spare parts, suitable tools and protective equipment.
- Keep the machine clean.
- Tightening torques for wearing parts of the ploughshare are shown in Fig. 33.
- The machine is equipped with a spanner for manually turning the screw without using the step wheel, or for turning the gearbox squares, e.g. when the shear bolt of the dispenser is cut off, see Fig. 34. Furthermore, it is possible to use the other end of the spanner (pipe) as a lever when removing the channels of the feeder, which are equipped with protrusions to facilitate that.

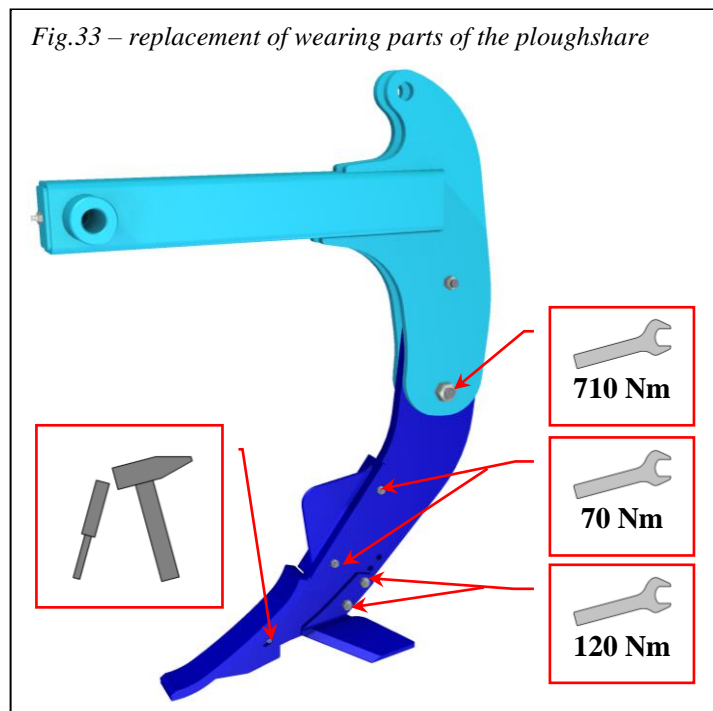
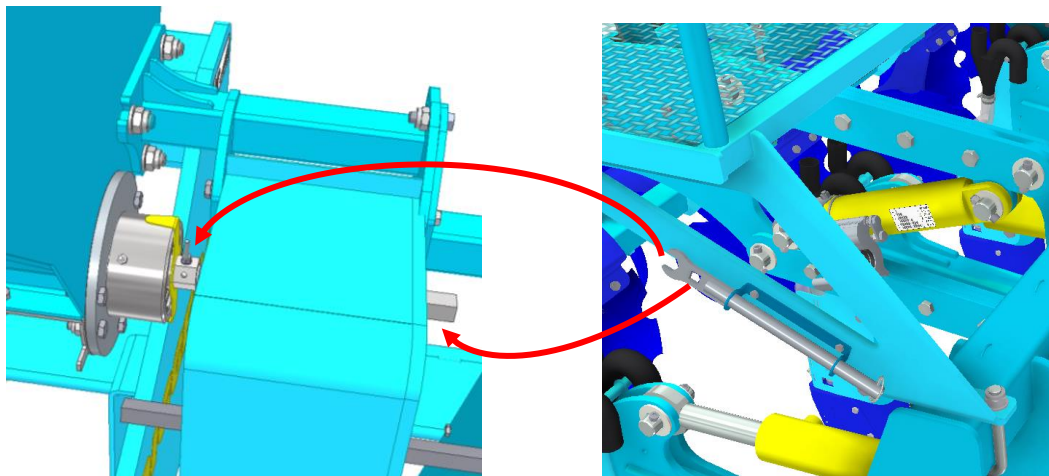



Fig. 34 – placement and use of the auxiliary spanner



 **Do not clean bearings with a high-pressure cleaner or direct water stream. The seals and bearings are not watertight at high pressure.**

 **COMPLETION OF FERTILISATION**

- When there is some fertiliser left in the container after the completion of fertilisation, release the winged nut securing the elbow with the fan hose and remove the elbow. Place a vessel under the injector outlet and turn the step wheel to empty the container. Use compressed air to remove any residual fertiliser from the channel.
- When you empty the container, we recommend “sowing” a few metres with the empty machine and running fan in order to remove the residues of seeds from the feeder and the whole system of the machine.
- Prompt removal of the seed residues, especially when you do not use the machine for a longer period of time, prolongs its usable life and prevents complications in the following operation.

7. MACHINE STORAGE

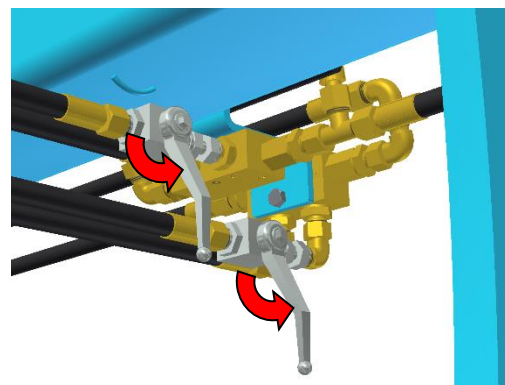
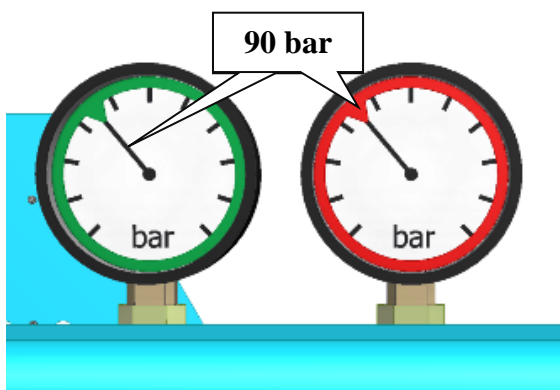
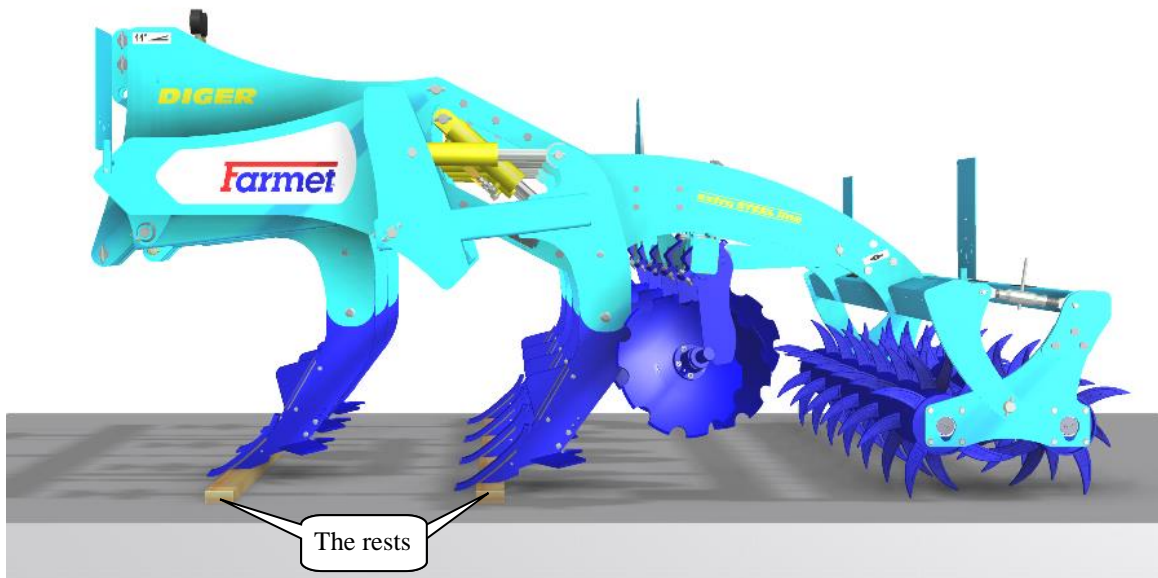
Long-term machine shutdown:

- Store the machine on a flat and solid surface with sufficient load capacity.
- Clean the machine before storing and conserve so that it is not damaged in any way during storage. Pay special attention to all marked lubrication points and properly lubricate them according to the lubrication plan.
- Empty the container according to chapter COMPLETION OF FERTILISATION

Machine Shutdown Procedure

1. Eject the roller piston rods to the maximum position, hose marked with
2. Check that the pressure shown on the pressure gauge of the ploughshare protection circuit is 90 bar; if so, close both ball valves, see Fig. 35.
3. Depressurize the supply hoses for the hydraulic circuits of the machine.
4. Check that the pressure in the ploughshare protection circuit shown on the pressure gauges of the machine has not decreased.
5. Disconnect the hydraulic hoses of the machine from the tractor distributor.
6. Place the machine on a flat and firm ground so that it is resting on the rear roller and share beams. Use a suitable support for the share beams (such as scantlings) so that the points of the chisels are above the ground, see Fig. 35. If you do not have a suitable support, disassemble the chisels.

Fig. 35 – machine put out of operation correctly



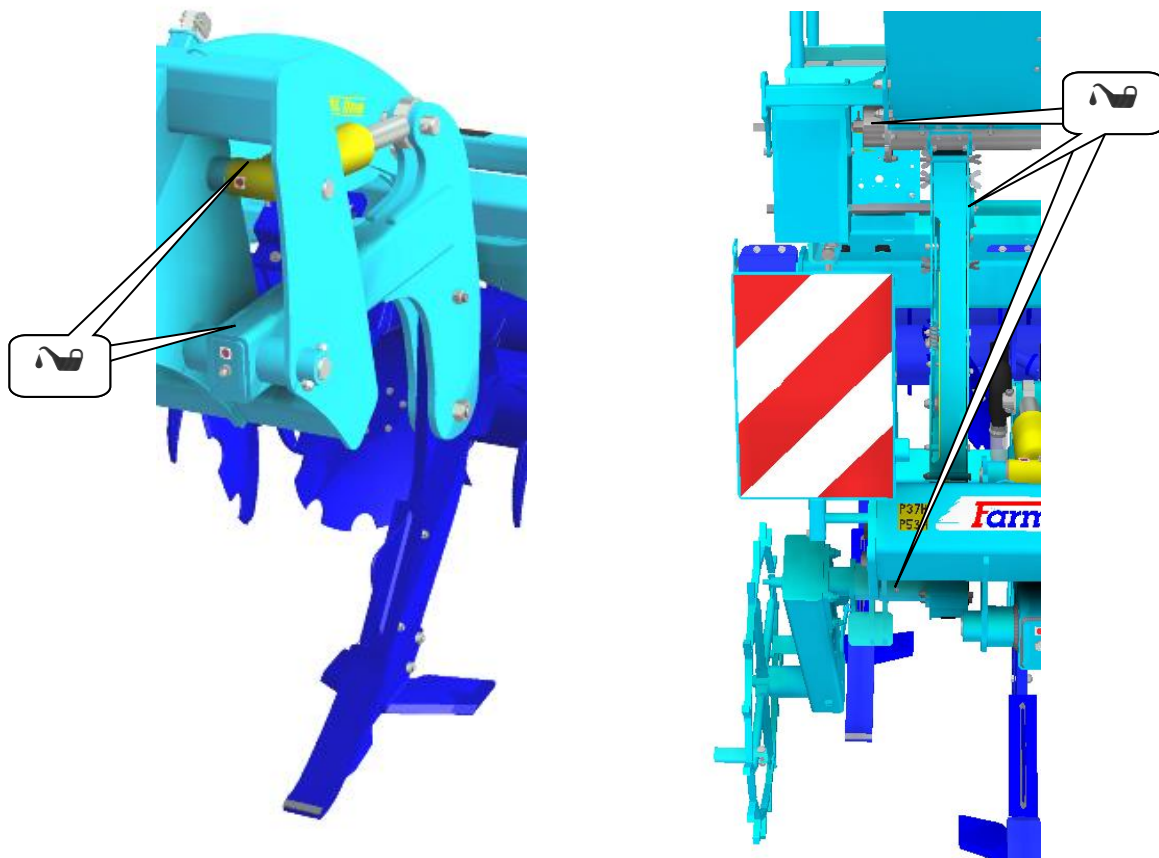
8. MACHINE LUBRICATION SCHEDULE

- During machine maintenance and its lubrication, it is necessary to observe the safety regulations.

Table 6 – Locations and Intervals of the Machine Lubrication

LUBRICATION POINT	INTERVAL	LUBRICANT
Discs bearings	- Always after the end of the season and before storing the machine	Plastic grease
Mounting of the ploughshare and piston rod protection (only for hydraulically protected ploughshares)	- Always after the end of the season and before storing the machine	KP2P-20 Likx dle DIN 51 502

Fig 36 – grease points on the machine



Lubricant handling:



Protect yourselves against direct contact with oils by using gloves or protective creams. Thoroughly wash oil spots on the skin using warm water and soap. Do not clean the skin with petrol, engine diesel fuel or other solvents. Oil is poisonous. If you swallowed the oil, immediately seek a physician. Protect the lubricants against children.

9. ENVIRONMENTAL PROTECTION

- Handle oils and greases according to valid waste laws and regulations.
- Regularly check for the tightness of the fertiliser distribution system.

10. MACHINE DISPOSAL AFTER SERVICE LIFE EXPIRY

- The operator must secure during machine disposal that steel parts and parts, in which hydraulic oil or lubricating grease moves are differentiated.
- Steel parts must be cut by the operator while observing safety regulations and handed over to the secondary raw material collection point. He must proceed with other parts according to valid laws about waste.

11. SERVICING AND WARRANTY CONDITIONS

11.1 SERVICING

Servicing is secured by the dealer after consulting with the manufacturer, possibly directly by the manufacturer. Spare parts then using the sales network by individual sellers in the entire country. Use only the spare parts according to the spare parts catalogue officially issued by the manufacturer.

11.2 WARRANTY

- 11.2.1** The manufacturer provides a warranty of 24 months for these machine parts: main frame, axle, and machine tow bar. For other parts of the machine, the manufacturer provides a warranty of 12 months. The warranty is provided from the date of sale of the new machine to the end user (consumer).
- 11.2.2** The warranty applies to hidden defects that will show in the warranty period with proper use of the machine and while fulfilling the conditions stated in the operating manual.
- 11.2.3** The warranty does not apply to wearable spare parts, i.e. regular mechanical wear and tear of replaceable parts of the working sections (shares, edges, etc.).
- 11.2.4** The warranty does not apply to indirect consequences of possible damage, such as service life decrease etc.
- 11.2.5** The warranty is bound to the machine and is not void upon an owner change.
- 11.2.6** The warranty is limited to the disassembly and assembly, possibly replacement or repair of the defective part. The decision, whether to replace or repair the defective part, is up to the contractual workshop of Farmet.
- 11.2.7** During the warranty period, only the authorised servicing technician of the manufacturer may perform repairs or other interventions into the machine. In the opposite case, the warranty will not be acknowledged. This provision does not apply to the replacement of wearable spare parts (see point 11.2.3).
- 11.2.8** The warranty is conditioned by using the genuine spare parts of the manufacturer.

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Fax.: +420 491 450 136
GSM.: +420 774 715 738

LETTER OF GUARANTEE

MACHINE TYPE:

PRODUCTION YEAR/PRODUCTION NUMBER: _____

CHECK CONFIRMATION: _____

ADDRESS (BUYER): _____

ADDRESS (SELLER): _____

WARRANTY CONDITIONS:

- I. The manufacturer provides a warranty of 24 months for these machine parts: main frame, axle, and machine tow bar. For other parts of the machine, the manufacturer provides a warranty of 12 months. The warranty is provided from the date of sale of the new machine to the end user (consumer).
- II. The warranty applies to hidden defects that will show in the warranty period with proper use of the machine and while fulfilling the conditions stated in the operating manual.
- III. The warranty does not apply to wearable spare parts, i.e. regular mechanical wear and tear of replaceable parts of the working sections (shares, etc.).
- IV. The warranty does not apply to indirect consequences of possible damage, such as service life decrease etc.
- V. The warranty is bound to the machine and is not void upon an owner change.
- VI. The warranty is limited to the disassembly and assembly, possibly replacement or repair of the defective part. The decision, whether to replace or repair the defective part, is up to the contractual workshop of Farmet.
- VII. During the warranty period, only the authorised servicing technician of the manufacturer may perform repairs or other interventions into the machine. In the opposite case, the warranty will not be acknowledged. This provision does not apply to the replacement of wearable spare parts (see point III).
- VIII. The warranty is conditioned by using the genuine spare parts of the manufacturer.

PRODUCTION PLANT CONFIRMATION

SELLER CONFIRMATION

DATE

FIRST SALE DATE

ⒸZ ES PROHLÁŠENÍ O SHODĚ
ⒸGB CE CERTIFICATE OF CONFORMITY
ⒸD EG-KONFORMITÄT SERKLÄRUNG
ⒸF DÉCLARATION CE DE CONFORMITÉ
ⒸRU СЕРТИФИКАТ СООТВЕТСТВИЯ ЕС
ⒸPL DEKLARACJA ZGODNOŚCI WE

1. ⒸZ My ⒸGB We ⒸD Wir ⒸF Nous ⒸRU Мы ⒸPL My: **Farmet a.s.**
Jiřinková 276
552 03 Česká Skalice
Czech Republic
DIČ: CZ46504931
Tel/Fax: 00420 491 450136

ⒸZ Vydáváme na vlastní zodpovědnost toto prohlášení. ⒸGB Hereby issue, on our responsibility, this Certificate. ⒸD Geben in alleiniger Verantwortung folgende Erklärung ab. ⒸF Publiions sous notre propre responsabilité la déclaration suivante. ⒸRU Под свою ответственность выдаем настоящий сертификат. ⒸPL Wydajemy na własną odpowiedzialność niniejszą Deklarację Zgodności.

2. ⒸZ Strojní zařízení: - název : **Dlátový pluh**
ⒸGB Machine: - name : **Chisel plough**
ⒸD Fabrikat: - Bezeichnung : **Meißelscharpflug**
ⒸF Machinerie: - dénomination : **Charrue à ciseaux**
ⒸRU Сельскохозяйственная машина: - наименование : **Чизельный плуг**
ⒸPL Urządzenie maszynowe: - nazwa : **Plug dlutowy**
- typ, type : **DIGGER**
- model, modèle : **DIGGER 3; 4 FERT+ COMPACT**
- ⒸZ výrobní číslo :
- ⒸGB serial number
- ⒸD Fabriknummer
- ⒸF n° de production
- ⒸRU заводской номер
- ⒸPL numer produkcyjny

3. ⒸZ Příslušná nařízení vlády: č. 176/2008 Sb. (směrnice 2006/42/ES). ⒸGB Applicable Governmental Decrees and Orders: No. 176/2008 Sb. (Directive 2006/42/ES). ⒸD Einschlägige Regierungsverordnungen (NV): Nr. 176/2008 Slg. (Richtlinie 2006/42/ES). ⒸF Décrets respectifs du gouvernement: n°.176/2008 du Code (directive 2006/42/CE). ⒸRU Соответствующие постановления правительства: № 176/2008 Сб. (инструкция 2006/42/ES). ⒸPL Odpowiednie rozporządzenia rządu: nr 176/2008 Dz.U. (Dyrektywa 2006/42/WE).

4. ⒸZ Normy s nimiž byla posouzena shoda: ⒸGB Standards used for consideration of conformity: ⒸD Das Produkt wurde gefertigt in Übereinstimmung mit folgenden Normen: ⒸF Normes avec lesquelles la conformité a été évaluée: ⒸRU Нормы, на основании которых производилась сертификация: ⒸPL Normy, według których została przeprowadzona ocena: ČSN EN ISO 12100, ČSN EN ISO 4254-1.

ⒸZ Schválil ⒸGB Approve by dne: 01.07.2016
ⒸD Bewilligen ⒸF Approuvé
ⒸRU Утвердил ⒸPL Uchwalil

Ing. Tomáš Smola
technický ředitel
Technical director

V České Skalici dne: 01.07.2016

Ing. Karel Žďárský
generální ředitel společnosti
General Manager