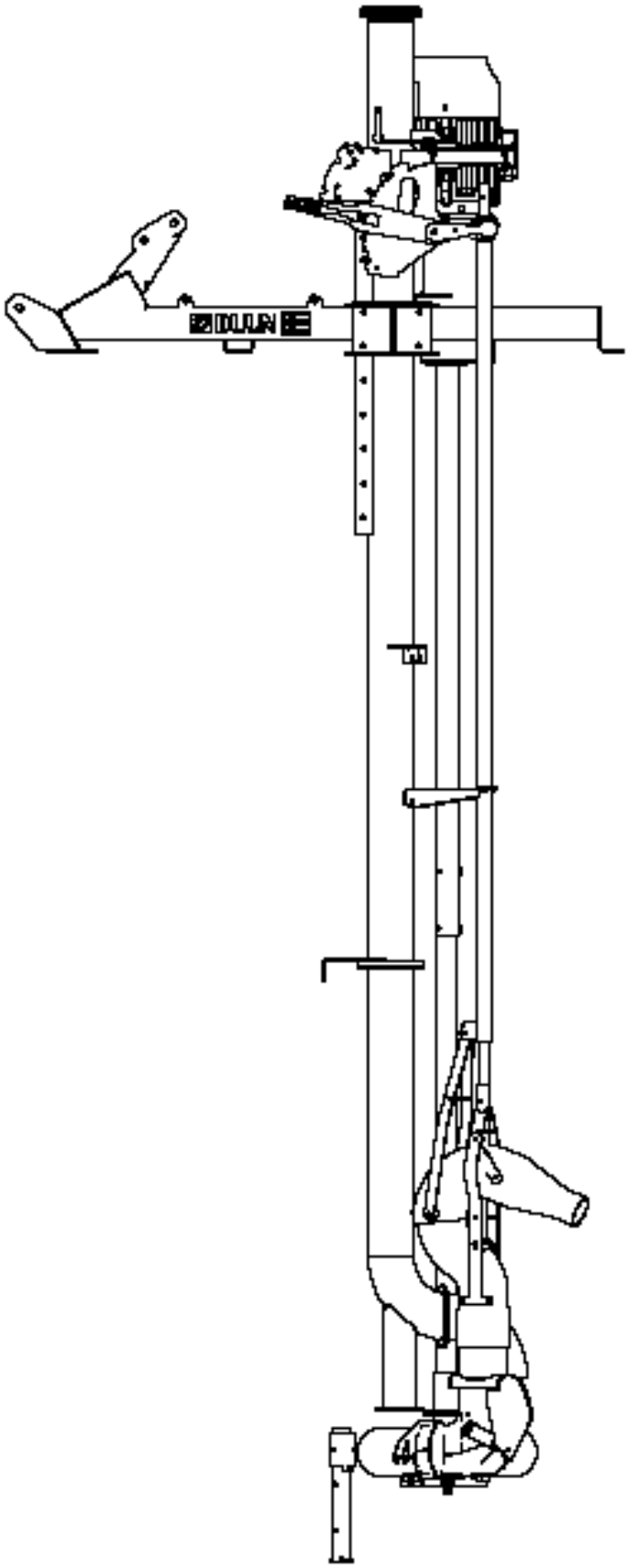
Duun Industrier as
7630 Åsen, Norway
www.duun.no

SP200 EL Rod

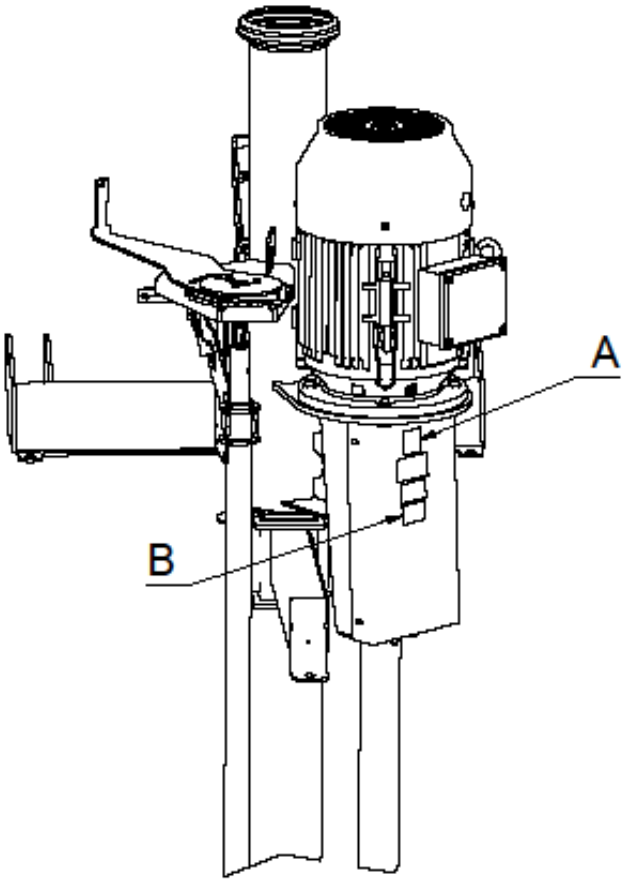


Congratulations on your Duun SP200 EL slurry pump.

All Duun tractor operated machines have been engineered and tested in close cooperation with representative users to produce functionally safe and user-friendly machines.

Please read this instruction manual before using the machine.

Good luck!



Machine identification

Serial number and manufacturer are indicated on badge (A)
Register serial number and delivery time as indicated.
Always specify serial number when requesting service for the machine.
The machine is CE-marked (B). This marking confirms that the machine has been manufactured in conformity with EU Directive Machinery.

Serial number

Time of delivery (month/year)

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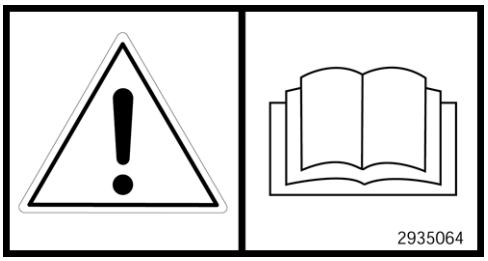
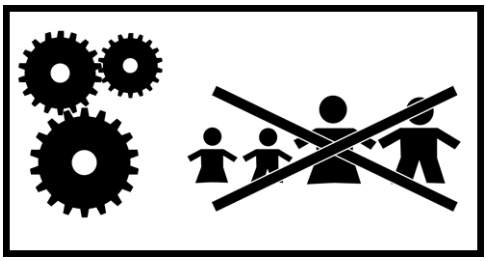
Safety

All operators, mechanics and the owner must always work carefully with agricultural machinery. Read and observe safety instructions in this instruction manual.

Be particularly aware of warning signs with this symbol, it marks measures that must be carried out in order to avoid accidents. The symbol appears in the instruction manual and on warning signs on the machine.



Instruction manual
All operators, mechanics and the owner must be well acquainted with the instruction in this instruction manual before the machine is taken into use.



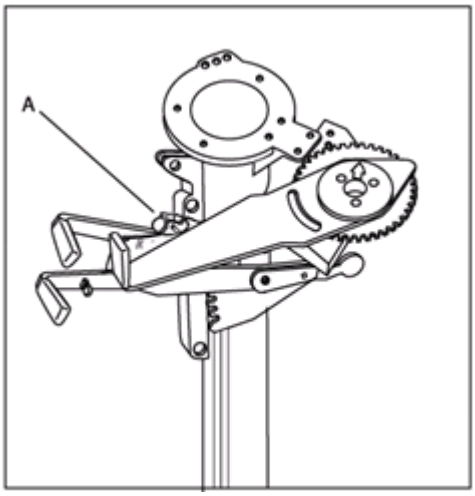
Safety of the surroundings
Be very careful when other people or animals are near the machine or tractor. Never start the machine when there are people or animals close to it, also never stand between the tractor wheels and the machine!

Be very careful during maneuvering and installing.
Ensure that no one is in the pump's operating radius or "impact area" during assembly and maneuvering.

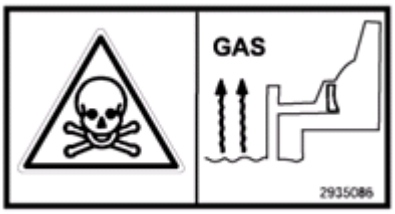
Avoid standing between pump and tractor.
During the use, any unnecessary standing between the pump itself and the tractor must be avoided.

Variable load on the loading stand
Ensure that the loading rack is anchored, loaded that it is stabilized during loading.

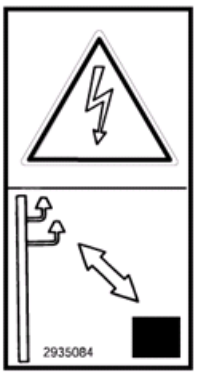
If the pump has a side-mounted loading system: 131279004, it is important to empty the hose of slurry before frost occurs, so that the hose is not damaged by frost blasting.



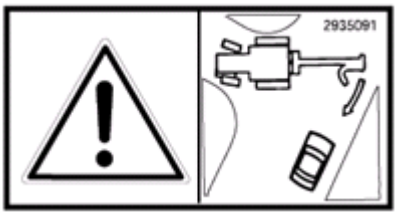
Be very careful when switching from stirring to loading. Avoid accidental loading by locking the discharge tap **(A)** of the loding tube during stirring.



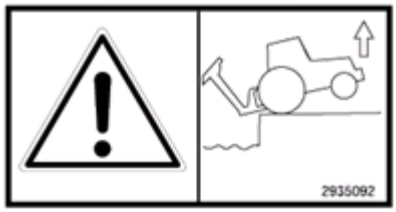
Gas danger!
During stirring and loading of slurry, gas evolution occurs which in strong concentrations can be fatal for humans and animals. Follow the following safety regulations to avoid injury! - Avoid air flushing during stirring as far as possible!- Never go down into the slurry container without being completely sure that all gas has been removed (can be checked with a gas meter that is submerged with a string) – Never work alone in a slurry container – at least two or even better three people, also use safety belts - a lifeline. – Use a fresh air mask! - open the door in the barn to minimize the amount of gas during slurry processing. Check the health in the farm building continuously during pumping!
Avoid any unnecessary standing near the pump shaft and the pump during the work - stirring.



Contact with current-carrying cables etc. during transport
Please note that the pump protrudes over the tractor during transportation and there is a risk of contact with live wires - railway underpasses and similar things!



Safe transportation
The pump has a very long turning radius behind the tractor. This can cause dangerous traffic situations when exiting and turning on a busy road. Be aware of this and avoid unexpected situations.



Sudden danger during maneuver
The pump forms a long weight arm at the back of the tractor. This means that it can lift up the front of the tractor during removal from the warehouse. This is due to the fact that in such situations the pump has increased its weight with slurry mass in the pump housing and loading tube. The problem can be remedied with front weights or other load on the front of the tractor (loading device). Pay special attention to this and avoid fast maneuvers during removal from the slurry storage.

Work noise
The noise level during use of the pump depends on the tractor's general noise level and the acoustics at the workplace. In certain cases this can exceed 85db. In such cases, the operator must use hearing protection.

If warning signs are removed during repairs or service, new signs must be installed immediately!

Transportation

SP200 rod pump.
If the pump is to be moved over long distances, it must be transported on a trailer.

Warranty terms

Duun SP200 EL has 12 months guarantee against defects in materials and workmanship.

Parts that are not originally manufactured by Duun Industrier as, for example, wheels, hydraulic parts, etc. are subject to these suppliers' guarantees and terms.

In cases where a repair is considered to be covered by the guarantee, the representative must inform the supplier's representatives that the repair is intended executed based on the guarantee. In this context, the following information must be recorded:

- Product name
- The product's serial no. (see the machine identification)
- Date of sale
- The product owner's address, telephone no.

In case of such a repair, the supplier is presented with a claim within 3 weeks after the repair date.

Replaced parts are to be kept until a decision has been made with reference to the claim and the replaced parts are to be forwarded to Duun Industrier as for assessment if so required.

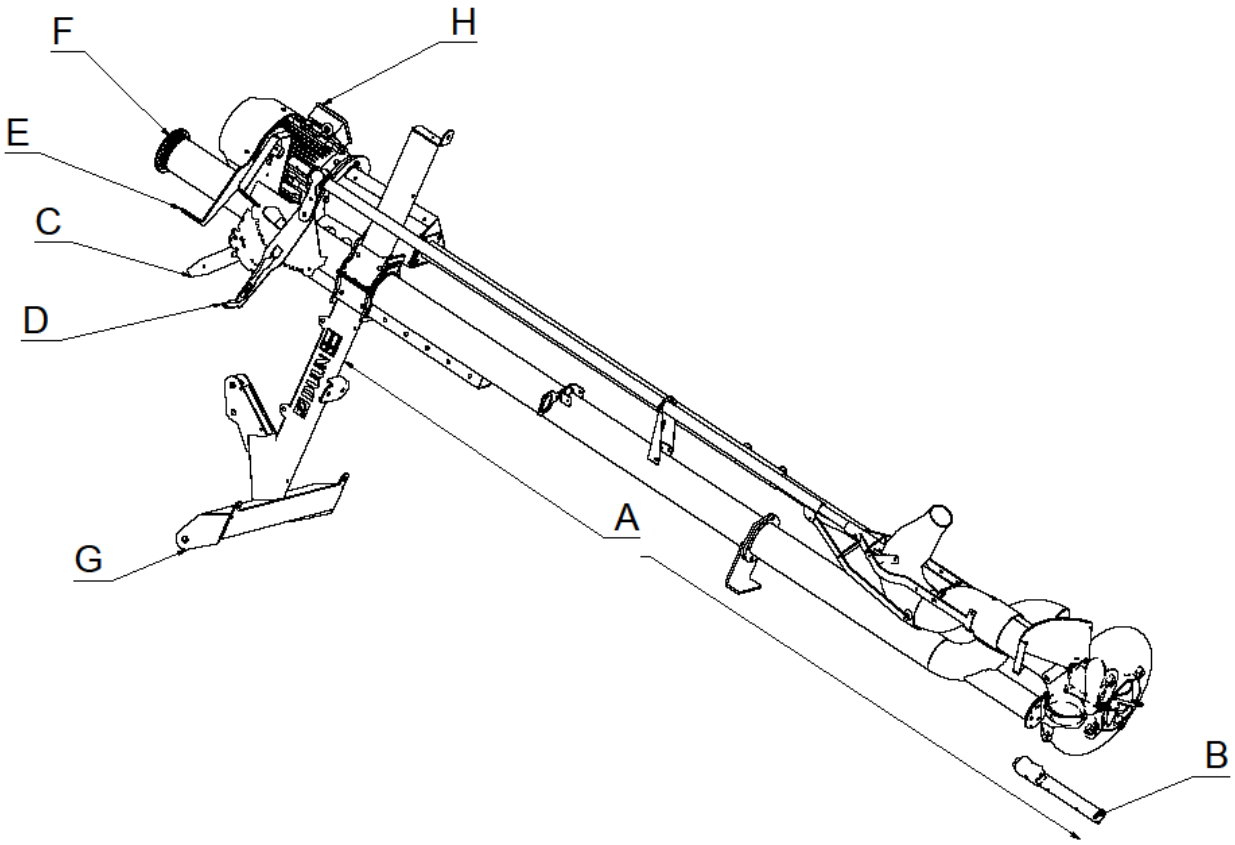
As the employment of the product is beyond our control, we may only guarantee the quality and do not accept liability for the product's general performance.

Duun Industrier as reserves the right to modify the design and specifications and/or make alterations and improvements without notification.

What is not included in the guarantee:

- The guarantee does not cover economic loss as a consequence of interruptions.
- The guarantee does not cover consequential loss due to defects.
- The guarantee does not cover defects or damage caused by misuse and uses that are not in accordance with the instruction manual's specifications and guidelines.

Technical data

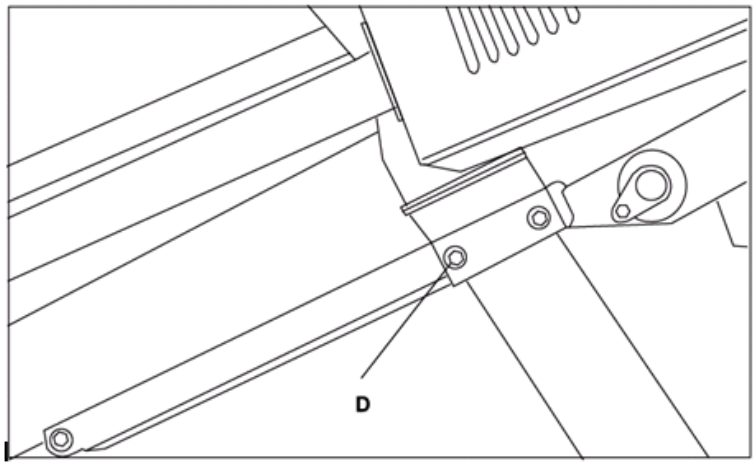


Weight:	From 500-540 kg
Total length of the pump **A**	Complete 3000-4000mm
Travel distance vertical nozzle	310mm
Maximum vertical nozzle height	1320mm
Minimum vertical nozzle height	810mm
Nozzle diameters	100mm is standard 75mm is optional equipment

Support leg	**B**
Handle for outlet tap	**C**
Handle for nozzle height adjustment	**D**
Handle for nozzle rotation	**E**
Bauer coupling	**F**
Tractor attachment	**G**
18,5 kW El-engine	**H**
Rotary sector nozzles	280 degrees

All measurements and weights are approximate values.

Assembly instruction

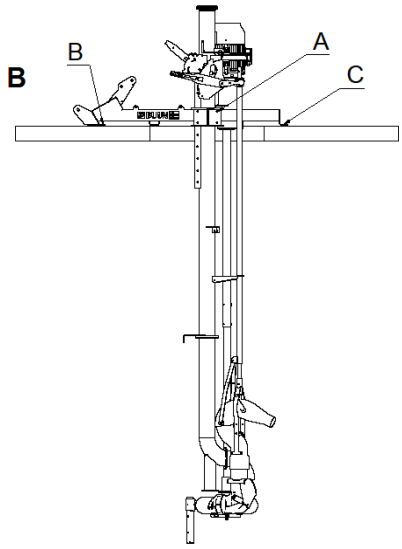


The pump is delivered packed on a EUR pallet with all relevant information.
These are picked out and connected to the tractor's front loader, or to three-point linkage.

The pump is lifted so high that the tractor attachment can be driven under. 2 pcs. M16x140 screws **D** are attached.

The support arm and loader attachment are screwed together with 6 pcs. M16x40 screws with washer and locking nut.

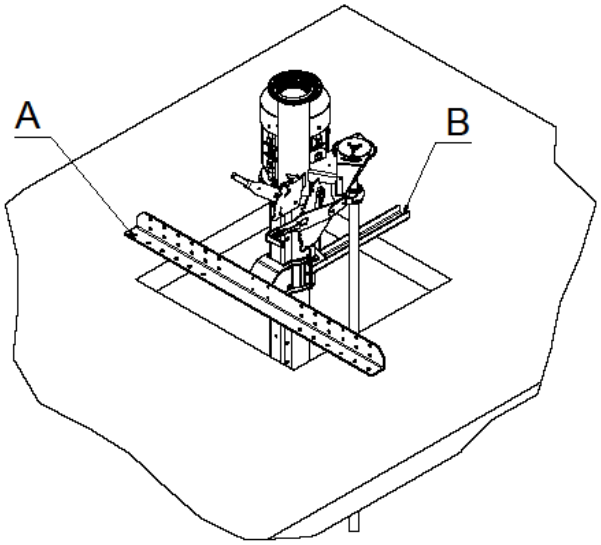
Immersion to the slurry storage

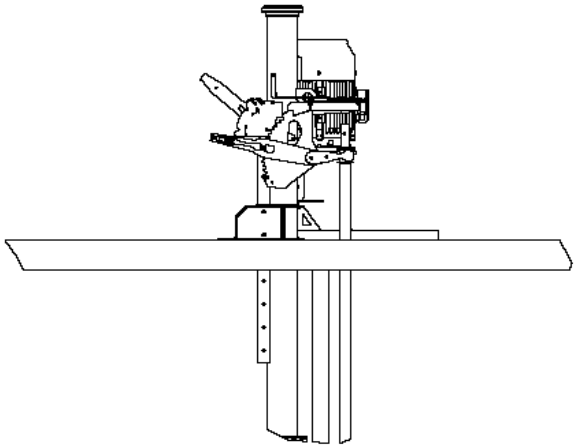


Before immersing the pump in the shaft opening, ensure that the outlet nozzle points straight ahead or backwards in the tractor's longitudinal direction. In order for the nozzle to take up as little space as possible during lowering, it is set in a position that it points upwards as much as possible.

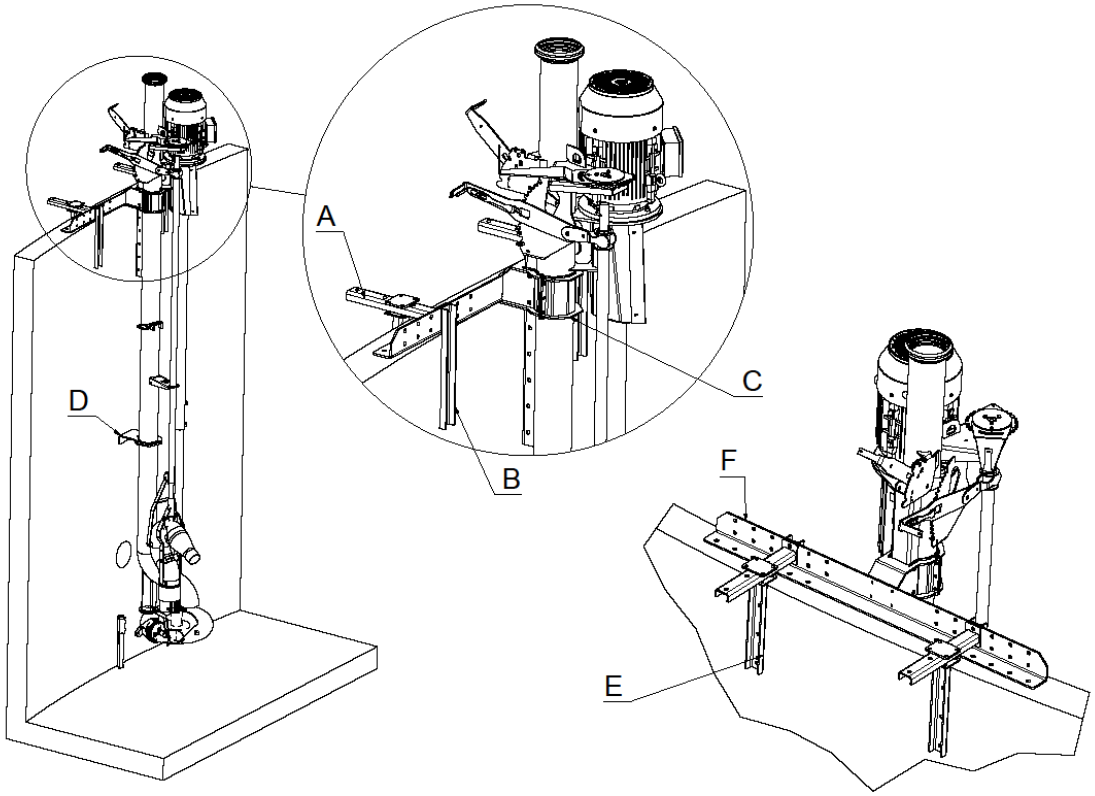
Pump sunk in sump/container with tractor attachment
The support leg is pulled out and the pump is lowered into the bottom. In order for the pump to be permanently mounted, the tractor attachment must be lowered to the concrete surface by removing 2 screws (**A)**. During mounting the pump again, at least one of the screws must be fitted. The pump is anchored with suitable screws fasteners **B**, **C** and **D**. Our recommend size is 16mm or larger.
If the pump is used over an edge so that the attachment **D** cannot be used, it is very important that the pump is on the support leg and the attachment at points **B** and **C** take place before the pump is released from the tractor. **Otherwise, the pump can disappear in the slurry storage.**

Pump sunk in shaft with shaft attachment
It is installed according to the same principle as the attachment to the tractor and is screwed with screws at points **A** and **B**.

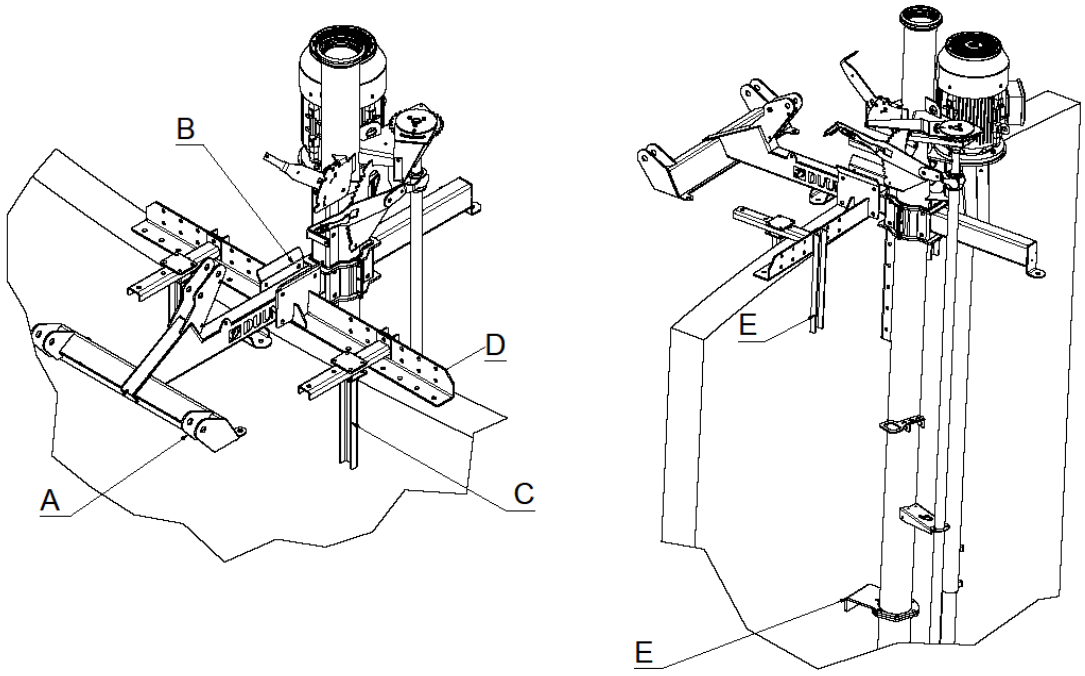


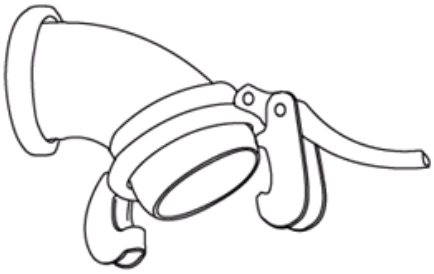


Pump attached to sump with edge attachment
Lower into the reservoir, the fixing brackets marked **A**, **B**, **E** and **F** are adapted to the reservoir's shape and thickness.
Fasten with expansion bolts or through screws to the edge of the reservoir.
Support leg **D** keeps the distance between the pump and the sump wall.



Coulter attachment for tractor attachment
For pumps with a tractor attachment that must be attached to the sump. Attaches as an edge attachment and clamps the tractor attachment with 4 bolts.



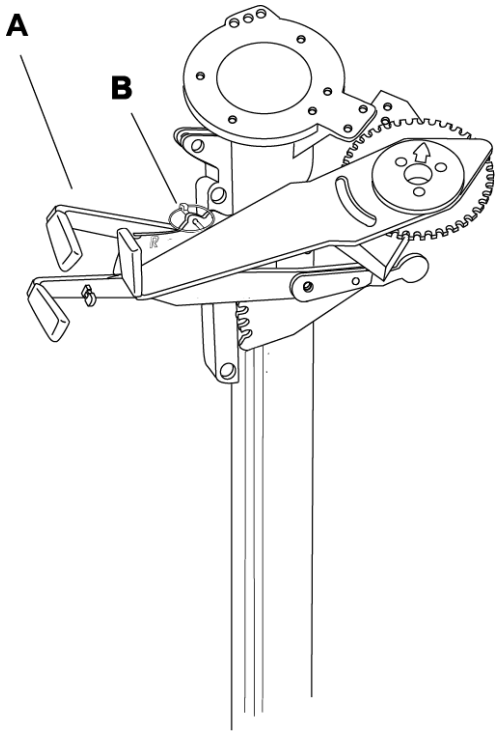


Loading system installation

SP200 EL Rod pump is supplied with 2x45' PP plastic bends at each end.

The loading system is delivered fully assembled. During expanding, use normal 160mm PP pipe which can be obtained from a local plumber.
Support legs 2 pcs. of 30x30 square tube is mounted in a pre-mounted bracket and adjusted in height with **D** 2 pcs. M8x25 hex screws with counter nut.
The rack should be weighted before driving to ensure stable loading.

ATTENTION! All screws in the loading system must be checked and possibly re-tightened at regular intervals.



Stirring

1. Stirring causes a danger of gas - take safety measures and check!
2. Close the outlet opening to the loading tube by placing the loading handle **A** in position **R** and locking it in this position with ring pin **B**.
3. Start by directing the outlet jet towards the floating layer on the surface around the pump. Turn the nozzle sideways and upwards that the fluid layer around the pump becomes moistened and thin.
4. If the slurry turns out to be too dry (syrup-like consistency), water must be added. Adding water makes thinner slurry and far more efficient mixing. Do not start loading until the entire content is well mixed.
5. After the surface slurry has been stirred and homogenous, direct the stream towards the bottom of the container that the bottom layer will be also well stirred before discharge.
6. Due to large quantities of slurry passing the discharge nozzle, it is necessary to slacken the tractor speed when raising and lowering the nozzle, and when turning it sideways. Operation will then be much easier.
7. Changing the stirring side is easier to carry out at the same time as loading because there is no slurry flow through the nozzle.
8. If stirring is carried out without constant supervision, the loading handle for the loading tube should be locked with padlock **B** as protection against accidental loading.

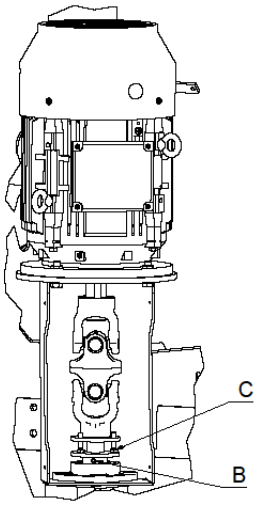
Alternative outlet nozzles

Outlet nozzle **E** can be supplied in various diameters to regulate the flushing pressure from the pump.

Loading

1. Check if the loading tube is correctly assembled and properly anchored. Pay attention to the anchoring/loading to keep the outlet in place!
2. Start loading by moving the handle **A** for this (left side) to position **L**. This is done gradually to avoid shock loading!
3. When the tanker is full, the loading is finished by moving the handle over **R** for stirring.
4. Avoid dry running of the plastic bearing below the impeller. This is lubricated by the slurry mass and will be damaged when driving above the liquid level.

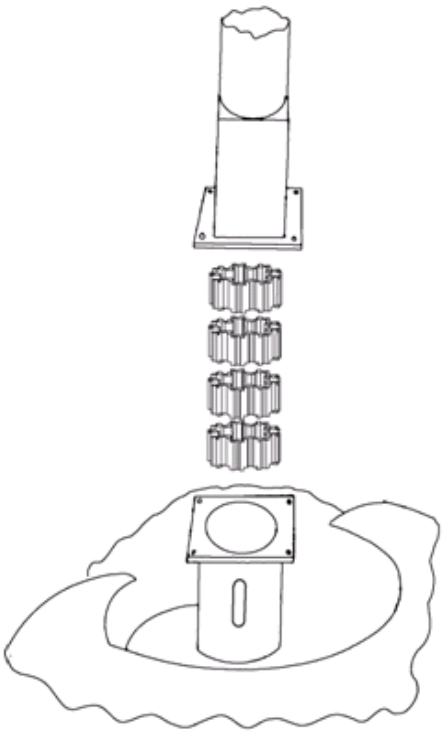
NB! The pump can pump thicker slurry than some reservoirs are able to spread. It may be an advantage not to fill the wagon on the first load and possibly add water if necessary.



Impeller adjustment

To maintain a good cutting capacity, the distance between the impeller and the inlet ring must be 2-3mm (**A**) The distance is checked at least once per season or after 40 hours. If the distance is too small, a bump may occur which causes vibrations. Too large distance can cause a loss of power.

The distance is adjusted as follows:
Loosen the set screws **B** and adjust with the screws **C** to the recommended distance between the nozzle ring and the impeller, 2 mm between the inlet ring and the impeller. Tighten the set screw **B**.



Impeller storage maintenance/replacement

The lower part of the pump shaft near the impeller is stored in a plastic bearing.
The bearing is lubricated by the slurry mass and therefore does not need other lubrication.
Ensure that the bearing operates below the slurry level during the use to avoid wear.
The wear of the bearing should be checked at least once per season or after 40 operating hours. If the space between pump shaft and bearing is 1.5mm or more, it should be replaced.

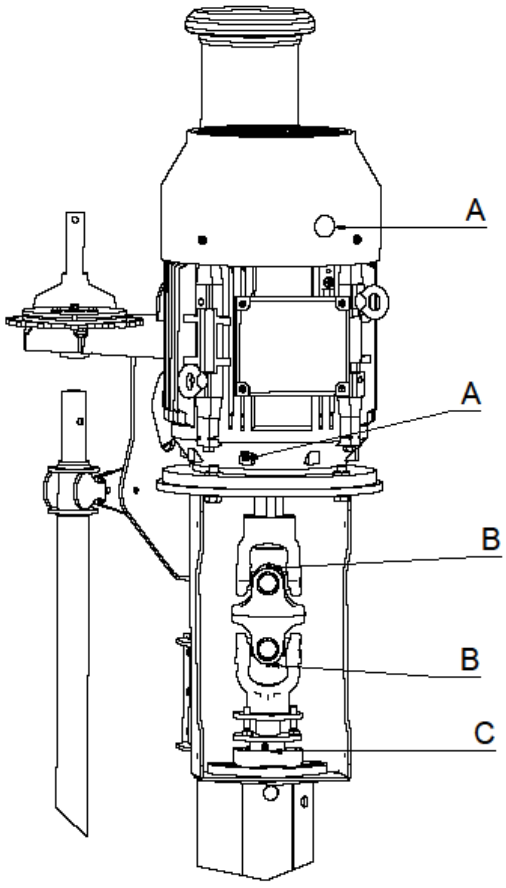
This is done in the following way:

1. Loosen the four fastening screws for the cover tube.
2. Loosen the two screws connecting the cover tubes.
3. Lift the cover tube.
4. Remove the old bearing and press in the 4 new parts after the bearing housing and grooves have been lubricated with grease.
5. Lower the cover tube and fasten the screws.

Lubrication and maintenance

	Daily or every 8 hours	Every other day or every 40 hours	Every season or every 100 hours	Every second year Every 10 000 hours
A. Electric motor				X
B. Universal joint grease nipple		X		
C. Bearing under Electric motor/coupling grease nipple			X (7-8 gram)	
D. Impeller distance Check according			X	
E. Plastic warehouse Check according			X	

Retighten all screws and nuts after 5-10 hours of use.
Bolts and moving parts are lubricated as needed.



Troubleshooting form

Problem	Cause	Solution
Low capacity	Pumping air around the pump housing.	Add water and flush down the area around the pump. Do not throw away soft mass to prevent blocking with a dry mass. Raise the pump with the hydraulic cylinder during operation. If installed.
	Thick slurry	Add water. The pump can handle a maximum of 9-10% dry matter.
	Deformed impeller	Change the pump impeller, also check the inlet ring and pump shaft.
	Incorrect distance in the pump housing.	Adjust the distance between the impeller and inlet ring according to the instructions.
	The pump housing too close to the floor	Extend the support leg.
	Worn out cutter	Change the cutter and adjust the distance.
Vibrations	Bent shaft	Replace shaft and all cover tubes. Check the universal joint in the coupling.
	Worn out plastic bearing	Check and, if necessary, change the bearing for the impeller.
	Driving at critical speed	Certain speed can cause vibrations. Avoid this by slightly increasing/decreasing speed.
Bearing breakdown upper bearing	The bearing has been lubricated too much and the seal in the bearing have been pushed out. Foreign elements (round bale strings) lie between the impeller and the pump housing and pull the drive shaft downwards and create tension in the bearing.	
Slurry sprays out from the top of the cover tube	Three drainage holes at the bottom of the cover tube are blocked. Dried slurry mass or foreign elements may have lodged in the cover tube. Pick up the pump and flush the drainage holes. Detach the cover tube from the pump housing and flush the inside of the cover tube cleanly.	

Gas danger

Measures and points in connection with slurry gas.

1. Extraction fan in the basement contributes to the negative pressure and draws out the gas.

2. If there is an open connection between the cellar and the animals housing, the grates can be covered with plastic to contribute negative pressure when an extraction fan is used.

3. A gas-tight connection between the animal housing and the basement provides better security, especially when combined with an exhaust fan in the basement.

4. Stir under wind - if possible with open windows and doors and closed gate.

5. If the discharge from stirring flows into the surface of the slurry storage, strong gas evolution occurs - especially in the starting phase. This is due to mixing of air and slurry mass.

6. Open doors in the barn, gas will have a low outlet in the farm building itself.

7. Use gas meter all the time in the animal housing during slurry pumping. We believe this is absolutely necessary, regardless of the pump type and whether or not you have a tight connection.

8. Avoid unnecessary stay in the vicinity of the pump shaft and the pump during slurry application and stirring.

We therefore recommend the IBT article (Department of Technical Sciences ÅS/NLH) no. 33/87 "measures against slurry gas poisoning" for more details.

Starter installation

The electrical cabinet must be installed protected from weather conditions and direct sunlight. This prevents moisture penetration and high temperatures in the cabinet.

Cabling to electricity:
The wiring to the cabinet must be carried out by an electrician.
A cable must also be installed on the motor. This is connected to the included plug that the pump can be easily dismantled for maintenance.

230V requires 63A
400V requires 40A (N leader must be involved)

Start-up of SP200EL
When the pump is installed and the electrical work is finished, the direction of rotation of the motor must be checked. Look at the direction of rotation of the cooling fan when the engine starts. It should go in the same direction as the arrow on the engine indicates.

The electric motor has a built-in heating element that can be connected to 230V to prevent condensation in the motor. This is recommended when the pump is in a humid environment.

User's manual starter cabinet:

1. **Start of pump**
   a. Turn on the main switch [1] — Red light [3] lights up on the cabinet
   b. Press START [2] — Red light [3] turns off, green light [2] lights up

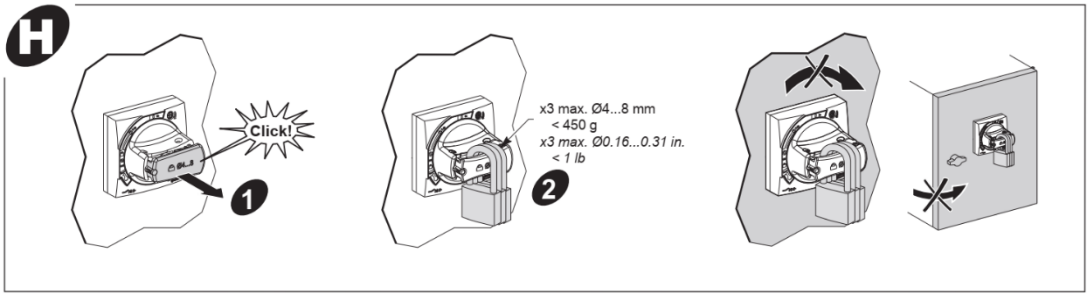
2. **Stop the pump**
   a. Press STOP [3] — Green light [2] turns off, red light lights up [3]

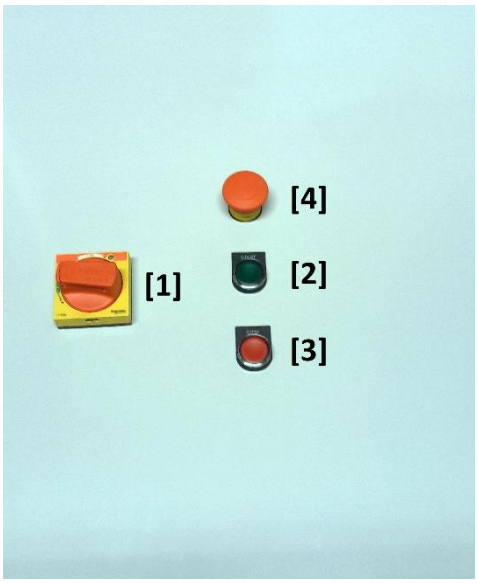
3. **Emergency stop**
   a. Press EMERGENCY STOP [4] — Red light lights up on the cabinet [3]

4. **Reset alarm**
   When an alarm has occurred in the soft starter display, the main power switch must be turned off and on to reset. This also applies if the emergency stop has been activated.

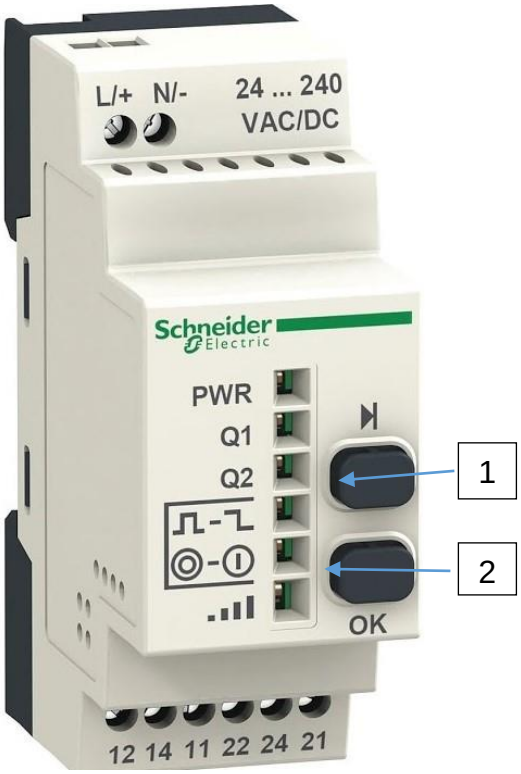
   a. Turn off the main switch [1] — The light on the cabinet turns off
   b. Wait for 5 seconds
   c. Turn on the main switch [1] — Red light [3] lights up on the cabinet

5. **Secure the system during service work or extended downtime.**
   a. Turn off the main switch [1] — Place a padlock on the switch if necessary.
   b. Place a padlock on the switch if necessary.



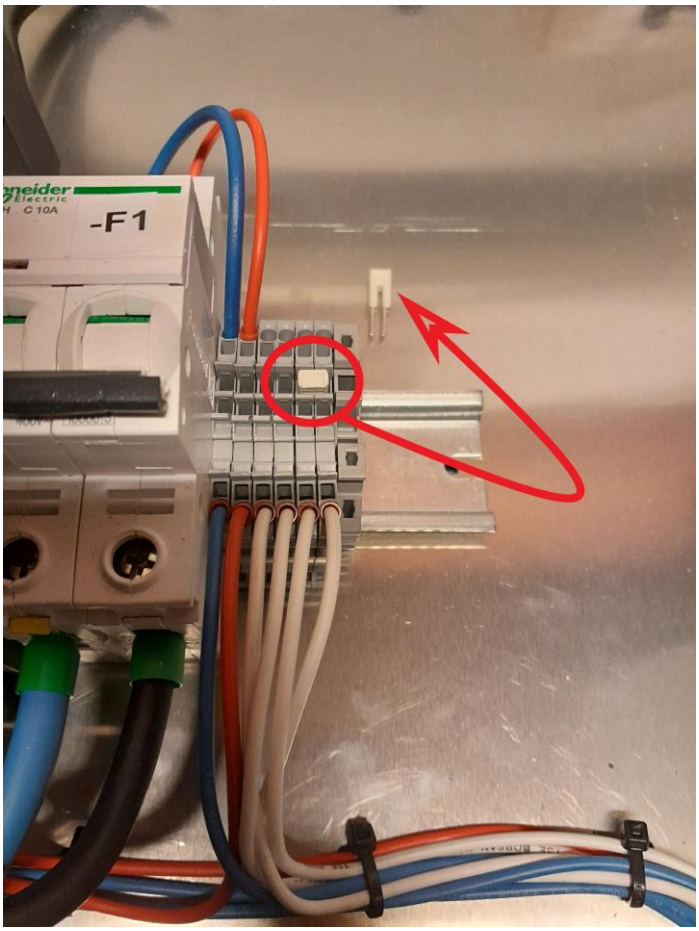


Wireless receiver programming (optional)



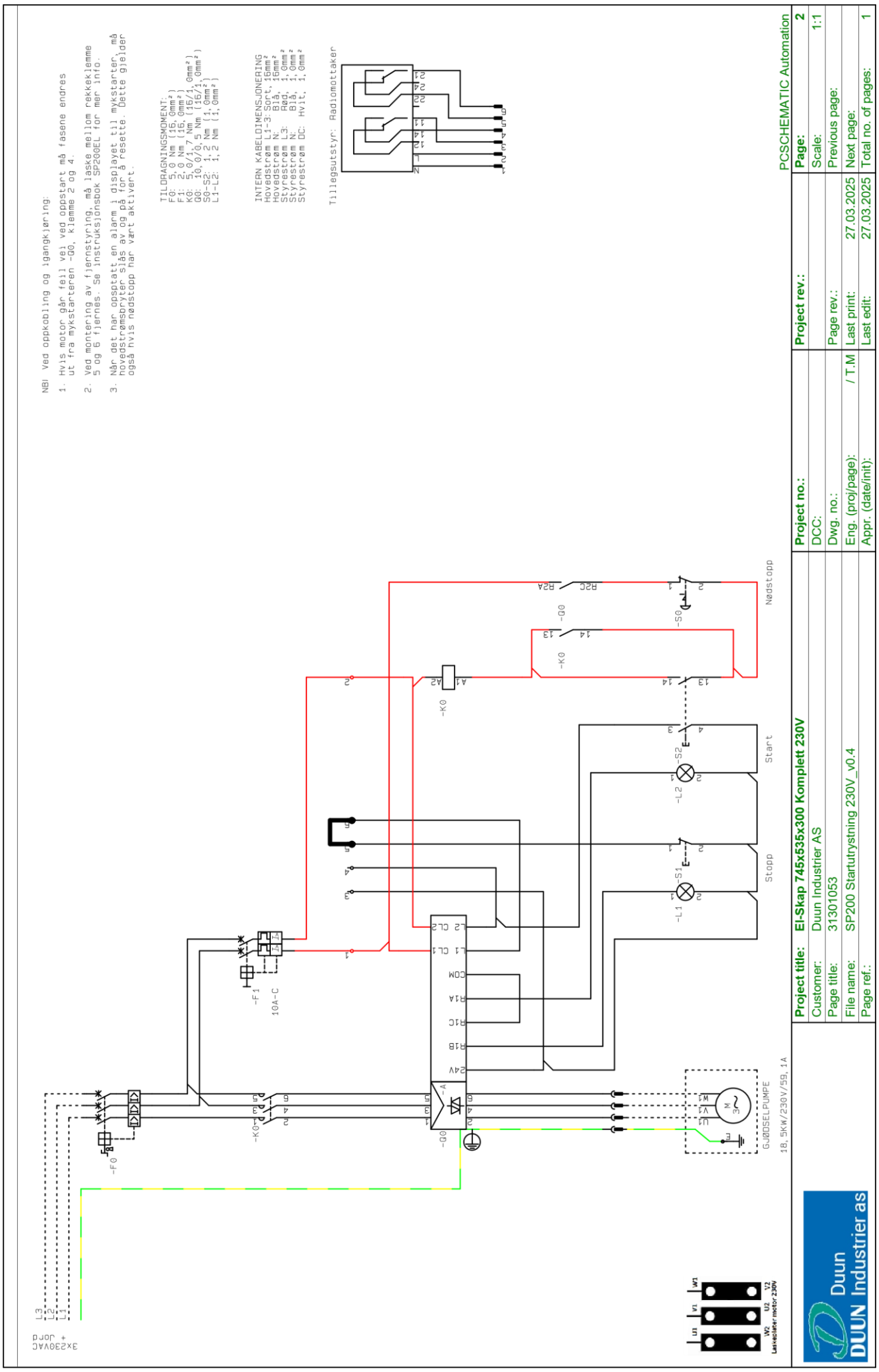
1 Make sure that the cable between the control cabinet and the pump is disconnected. This is to avoid accidental starting of the pump during programming.
2 Check that the PWR is lit.
3 Press and hold button 1 until Q1 starts blink. About 3 seconds.
4 Press button 1 once. Q2 is blinking.
5 Press button 1 again. Q1 blinks again.
6 Press button 2.
7 Press the green button on the transmitter 3 times.
8 The bottom light on the receiver lights up.
9 Repeat point 3 and point 4.
10 Check that Q2 is blinking.
11 Press button 2.
12 Press the red button on the transmitter 3 times.
13 The bottom light on the receiver lights up.
14 Programming is complete.
15 Press the green button on the transmitter. Q1 should light up. When the button is released, Q1 should to turn off.
16 Press the red button on the transmitter. Q2 should light up. When the button is released, Q2 should to turn off.
17 To add more transmitters, repeat the procedure.
18 To delete a transmitter, the procedure is repeated, but then the buttons on the transmitter must be pressed 6 times.

Retrofitting of wireless control (optional equipment)



1 The Wireless Receiver is mounted on the DIN rail, next to the terminal blocks.
2 There is a small tab (A) between terminal blocks 5 and 6. This must be removed.
Pry it out with a small screwdriver.
3 Install the plug (B) from the wireless receiver by pressing it down where the latch was.
4 Follow the instructions for programming the wireless receiver.

Electrical scheme of starter cabinet 230V



Declaration of conformity of starter cabinet 230V

Declaration of conformity

Responsible person

Name:	Karl Martin Eggen
Position:	CEO
Company name:	Duun Industrier as
Address:	N-7630 Åsen
	Norway
Telephone:	+47 74 01 59 00

Person responsible for the technical documentation: Terje Moksnes

Declares that the following equipment / machine:	Starter cabinet SP200EL 230V
Article number:	31301053
Manufacturer:	Duun Industrier as

is in accordance with:

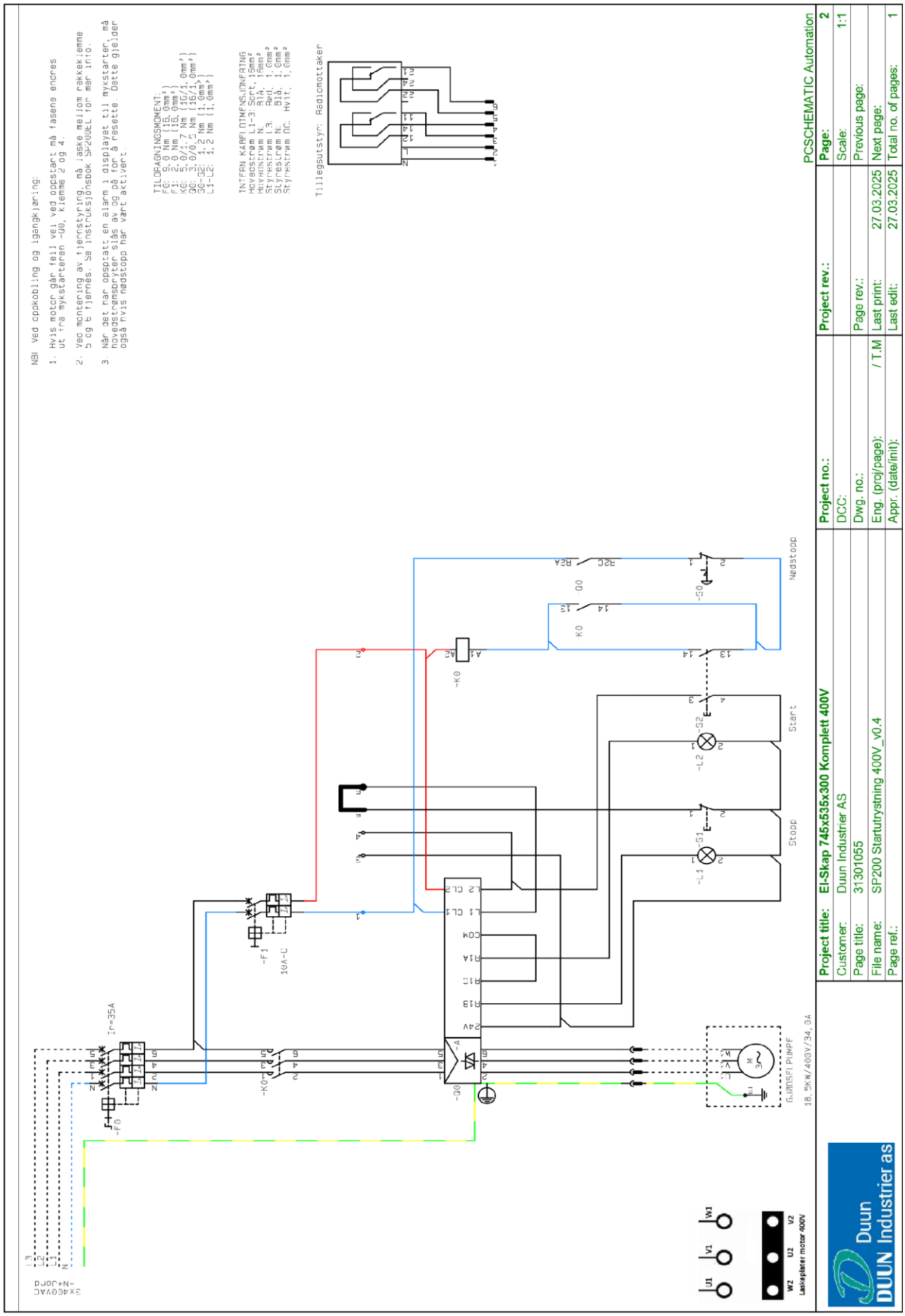
NEK EN 60204-1_2018

Signed by:

Karl Martin Eggen

Åsen, 01.03.2025

Electrical scheme of starter cabinet 400V



Declaration of conformity of starter cabinet 400V

Declaration of conformity

Responsible person

Name:	Karl Martin Eggen
Position:	CEO
Company name:	Duun Industrier as
Address:	N-7630 Åsen
	Norway
Telephone:	+47 74 01 59 00

Person responsible for the technical documentation: Terje Moksnes

Declares that the following equipment / machine:	Starter cabinet SP200EL 400V
Article number:	31301055
Manufacturer:	Duun Industrier as

is in accordance with:

NEK EN 60204-1_2018

Signed by:

Karl Martin Eggen

Åsen, 01.03.2025

Declaration of conformity slurry pump

Responsible person

Name:	Karl Martin Eggen
Position:	CEO
Company name:	Duun Industrier as
Address:	N-7630 Åsen
	Norway
Telephone:	+47 74 01 59 00

Person responsible for the technical documentation: Rolf Even Duun

Declares that the following machine:	SP200 EL Slurry pump
Manufacturer:	Duun Industrier as
Type:	Duun Slurry pump SP200 EL

is in accordance with:

Directive 2006/42/EC Machinery

Signed by:

Karl Martin Eggen

Åsen, 15.09.2020