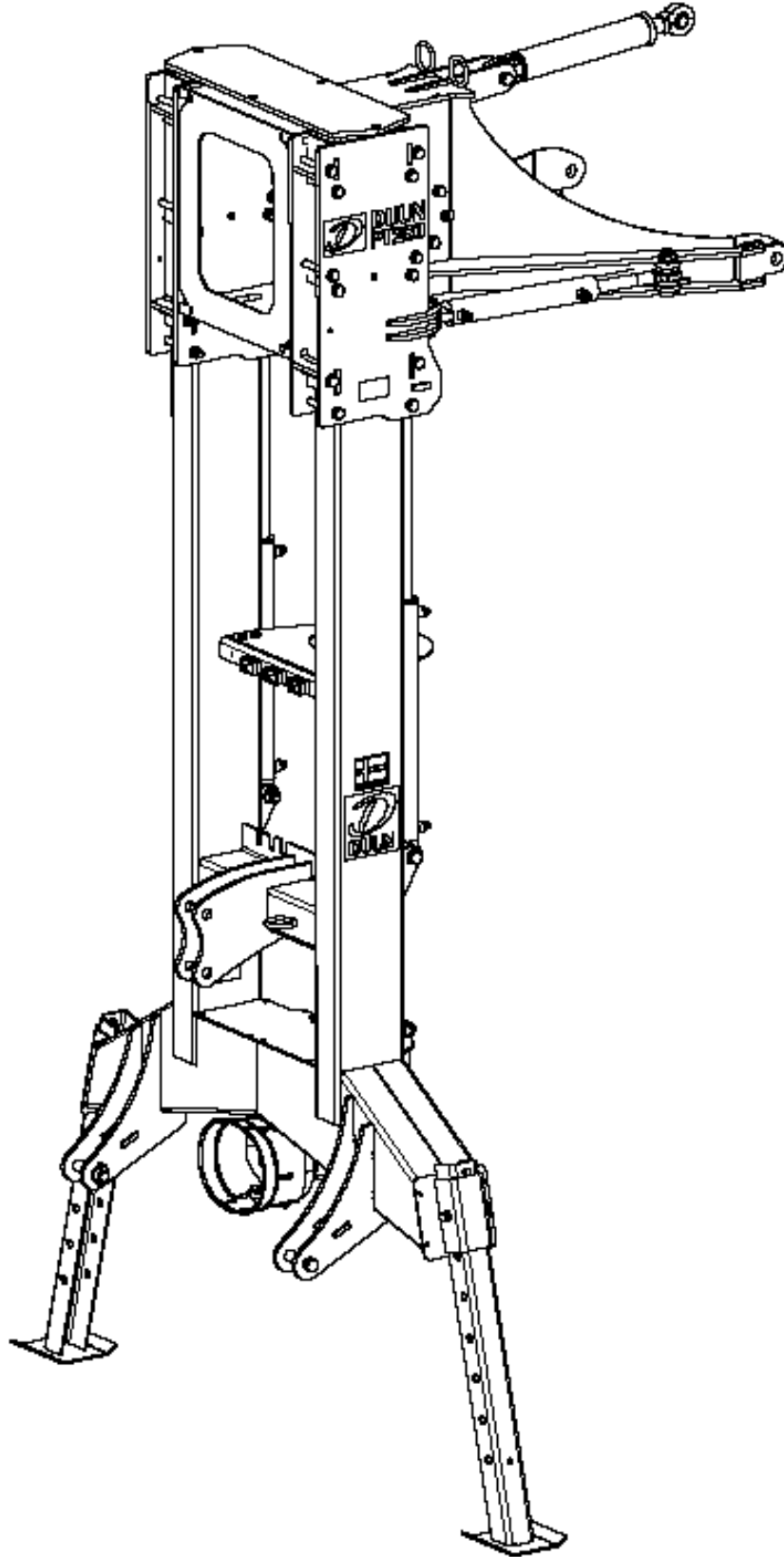


PT280 Instruction manual



Congratulations on your Duun VPO20.

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!

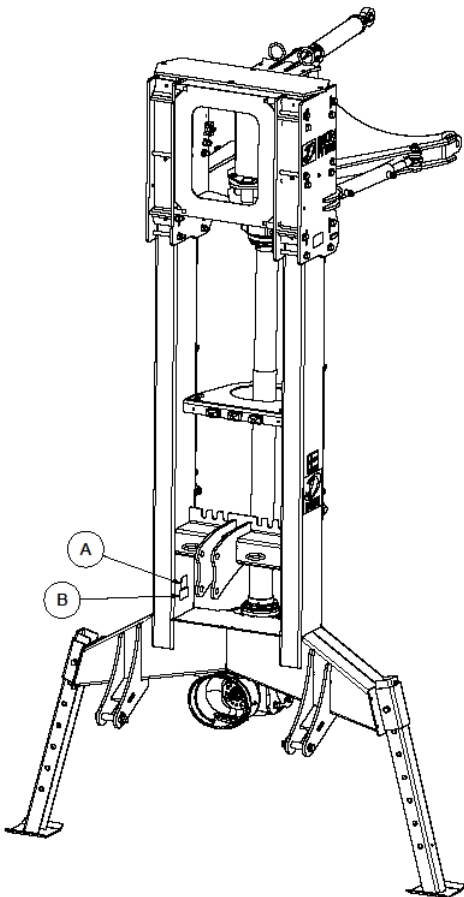
Machine identification

Serial number and manufacturer are specified on the metal plate (A)

Register the serial number and delivery time on the list below.

Always state the serial number in all inquiries regarding service.

The machine is CE marked (B). This confirms that the machine is designed in accordance with the EU machinery directive.



Serial number

Time of delivery (month/year)

CONTENT

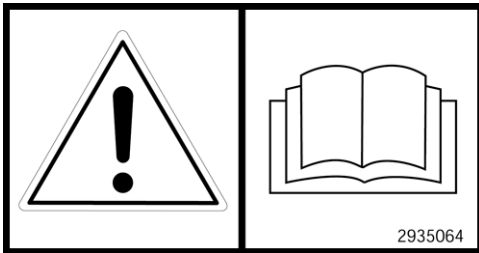
MACHINE IDENTIFICATION	2
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Safety

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

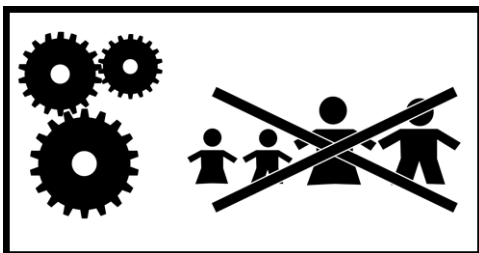


Be particularly aware of warning signs with this symbol, it marks measures that must be carried out in order to avoid accidents. The symbol appears in the instruction manual and on warning signs on the machine.



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 installing and maneuvering.



Safe connection and use

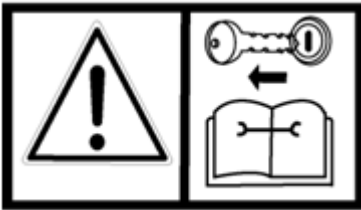
Do not allow anyone to stand between the machine and the tractor when the machine is connected to the tractor. The same applies when using the machine. Ensure that the connection is made in a secure manner.



Power transmission shaft

The tractor is disengaged and the handbrake is applied before the shaft is connected to the tractor's PTO. Max. PTO speed is 540 r.p.m. Make sure that there is the same angle in both joints (ie the pin on the tractor is parallel to the pin on the gearbox). Different angles cause imbalance, vibrations and increased wear. The power transmission shafts must always have protective covers that were originally supplied. **Damaged and worn covers must be replaced immediately!**

During raising and lowering of the rod pump, the power transmission shaft is dismantled.



Safety in case of interruptions and maintenance

Always remember to stop the tractor engine and remove the ignition key before greasing, adjusting, cleaning or carrying out repairs. This is to ensure that the tractor does not start before you have finished.



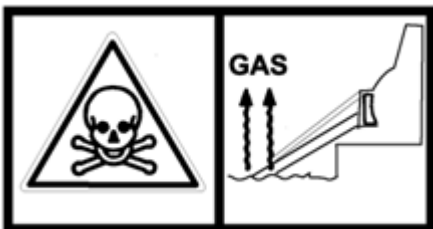
Crushing hazard for hands and fingers with rotating parts

Protective covers must always be fitted except for necessary maintenance and always with the engine stopped. Pay particular attention to the risk of crushing at points marked for this.



Work noise

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



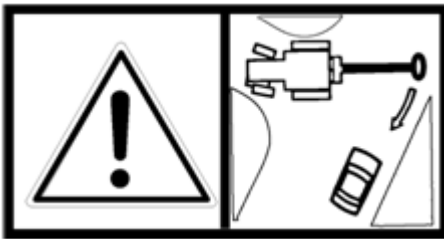
Gas hazard!

During the stirring 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 a slurry container without being absolutely 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 - be at least two people and use a safety harness - lifeline. - Use a fresh air mask! -open doors that the gas has low outlets in the farm building itself during slurry processing. Check the state of health in the farm building continuously during slurry handling! Avoid any unnecessary stay near the slurry chute and propeller during stirring.



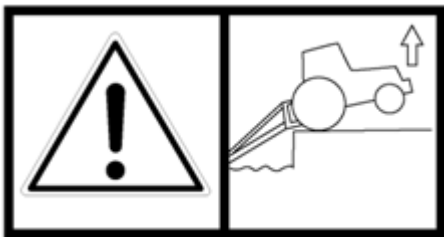
Contact with live wires etc. during transport

Be aware that the propeller can stick out over the tractor during transport and there is a risk of contact with live wires - railway underpasses during movement!



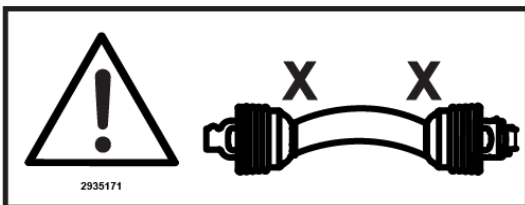
Safe transport

The propeller has a very long turning radius behind the tractor. This can cause dangerous traffic situations when exiting and turning on a busy road. Please be aware of this and avoid situations such as outlined. During transportation over long and busy distances, the propeller should be transported on a tractor trailer or similar.



Steep hazard during manoeuvring

The propeller forms a long weight arm behind the tractor. This means that during removal from storage it can lift up the tractor at the front. The problem can be remedied with front weights or other load at the front of the tractor (loader). Pay particular attention to this and avoid quick maneuvers during removal from the slurry storage.



Risk of spraining the power transmission shaft

It is important to adapt the length of the power transmission shaft to each individual tractor. If it is too long, the shaft can be pressed completely together and there is a risk that either the pin on the propeller shaft or the pin on the tractor will be destroyed.

Warranty terms

Duun slurry mixer tower 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.
- The seller with address, tel. 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.

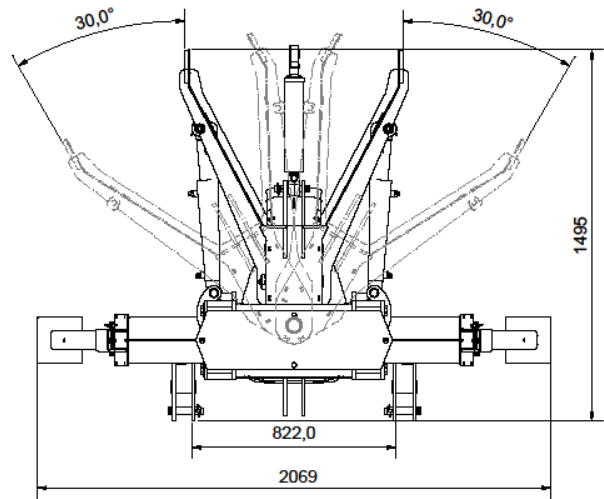
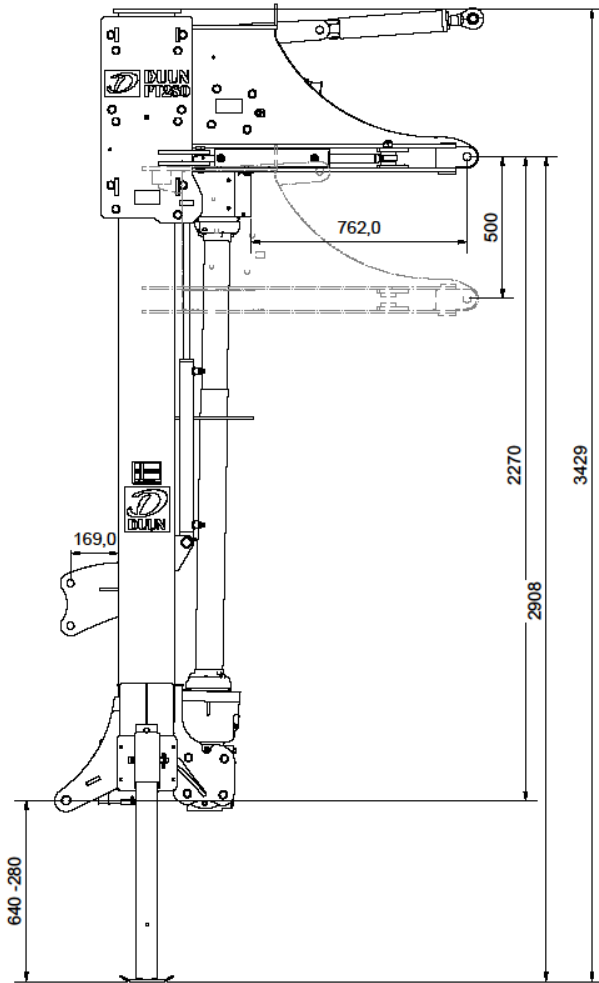
As the employment of the product is beyond our control, we may only guarantee the quality and do not accept liability for the product's general performance.

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:

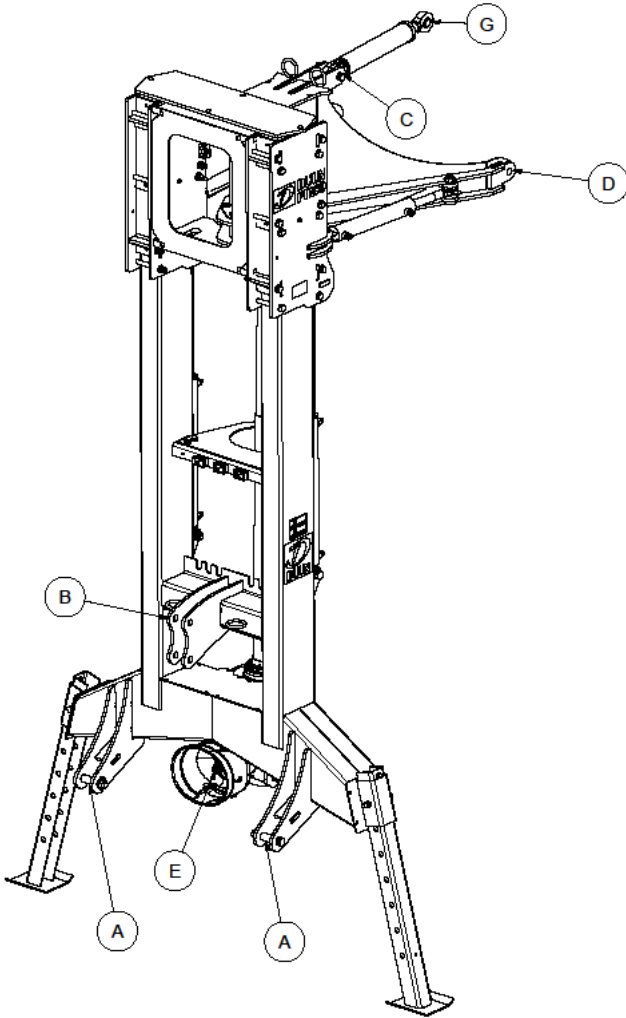
- The guarantee does not cover economic loss as a consequence of interruptions.
- The guarantee does not cover consequential loss due to defects.
- The warranty does not cover damage to galvanization as a result of mixing in acidic liquids.
- The guarantee does not cover defects or damage caused by misuse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

Technical data



Features	Propeller tower
Net weight	Approx. 795 kg
Maximum width	2069mm
Width/depth of the tower	1495 mm
The total height of the tower	3429mm
Side swing/ Lateral turn	30 gr to each side
Hydraulic height adjustment	500mm
Height adjustment of support leg	280mm
Gearbox oil amount	1,9 litres
Output speed at 1000 rpm input	1000 rpm

Mounting instructions

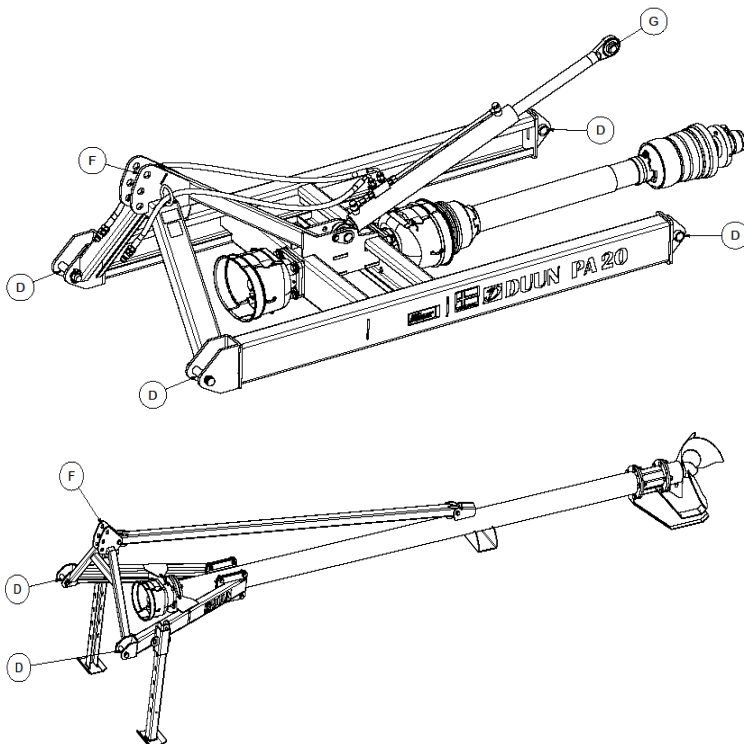


Connection to the tractor

The slurry mixer tower is raised with lifting equipment such as a crane or front loader. Check that no one is standing between the tractor and the machine during connection. Back the tractor up against the propeller tower and stop the engine before connecting the tractor's draw arms to the points marked **A** and the top link to the point marked **B**. Stabilizing struts/support struts on the tractor must be used, i.e. locked to ensure the agitator does not have uncontrolled side movements while driving.

The power transmission shaft is connected from the tractor and to the pto pin marked **E** on the propeller tower.

It is important to adapt the length of the power transmission shaft that it does not remain under tension. The tractor must be able to raise and lower the tower, as well as adjust the top strut, without the risk of damaging the power transmission shaft. The support legs for the three-point linkage are adjusted to a suitable height before proceeding with connection to the tractor.



Connection to propeller and adapter

The slurry mixer tower can be used together with Duun slurry propeller stirrers or together with Duun slurry propeller adapter and propeller stirrers.

When the propeller tower is mounted on a tractor, a front loader or other lifting device can be used to lift the propeller agitator up and together with the tower. If a propeller adapter is used, this is fitted together with the propeller before it is lifted up and together with the tower.

The three points marked **D** and **F** on the propeller stirrer must be mounted against the three points marked **C**, **D** and **G** on the tower. The same applies when installing the propeller adapter. Then first mount the propeller's three points marked **D** and **F** against the adapter's three points marked **D** and **G**.

Remember to adapt the length of all power transmission shafts.

Rotating shaft

Before connecting the power transmission shaft, ensure the following points.

Make sure that the shaft's protective tubes are intact and that the two halves of the shaft fit freely into each other. The length of the power transmission shafts must be adjusted carefully, if it is too long it can damage the bearing in the tractor's PTO or the propeller's bearings. Also ensure good lubrication of the profile tubes. Read the instruction manual for the power transmission shaft.

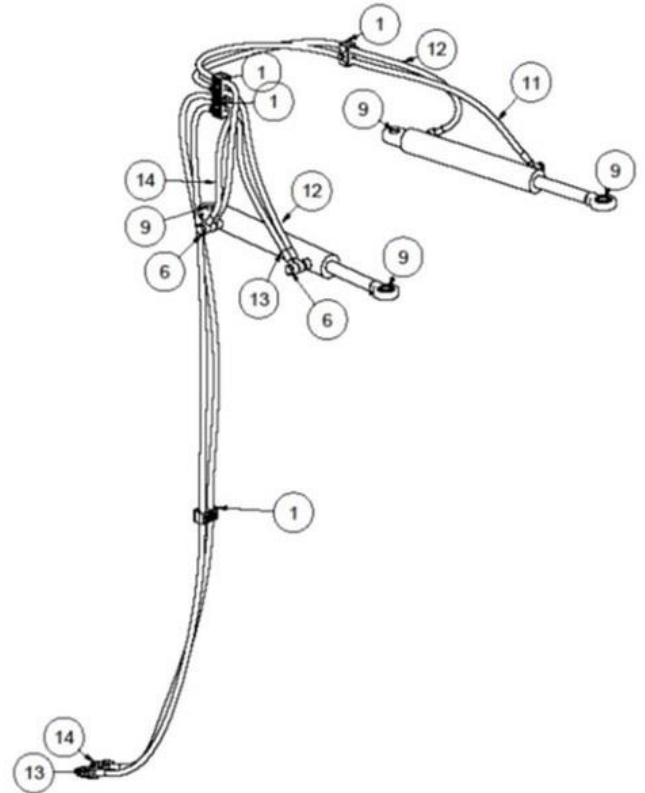
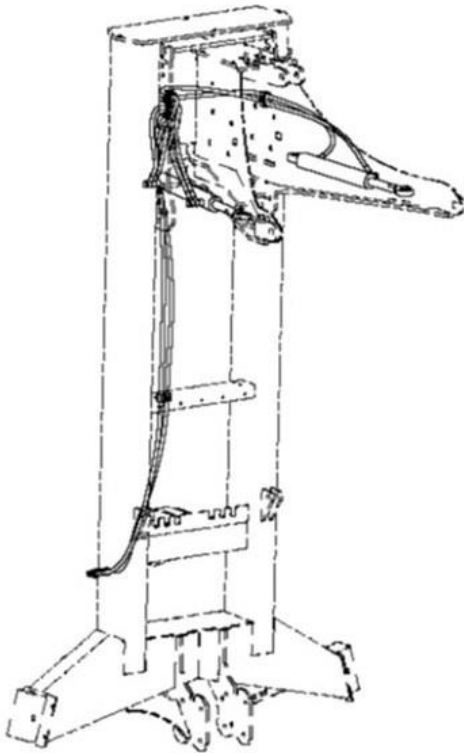
Check that the PTO shaft can be rotated by hand to ensure it is not buckling anywhere.

Make sure, all covers for the shaft are in good condition and correctly fitted. Never start the machine without this being in order! Pay particular attention to the plastic covers on the power transmission shaft. If these are damaged, they must be replaced immediately! The locking chains for the plastic covers must always be attached to suitable fasteners on the propeller to prevent the covers from rotating. The covers are lubricated according to the specified interval.

Mount the PTO shaft on the tractor's PTO with the shear bolt coupling against the propeller agitator. Safety chain is attached to the propeller to prevent rotation of protective covers. The power transmission shaft must always have a shear bolt coupling max. 4180 Nm. Check that the power transmission shaft will not sit in tension when the machine is lifted to a maximum. or min. height. Also note that the angle of the shaft can be too large when using very short shafts - contact the supplier - importer.

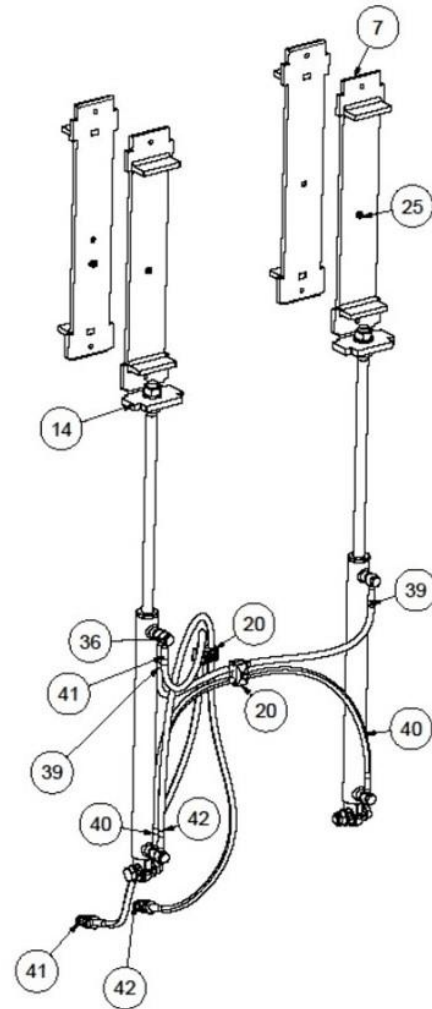
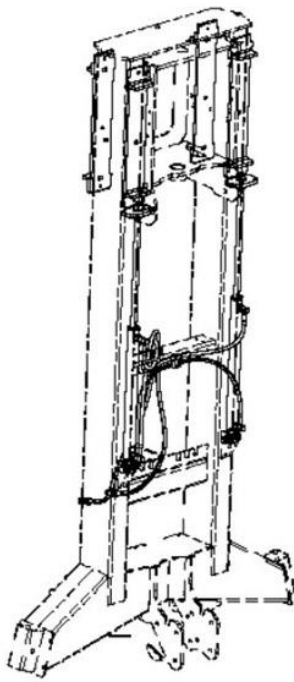
Mounting accessories

When installing hydraulic height adjustment, slide rails (7) must be installed that the side plates on the tower bracket do not clamp firmly to the frame.

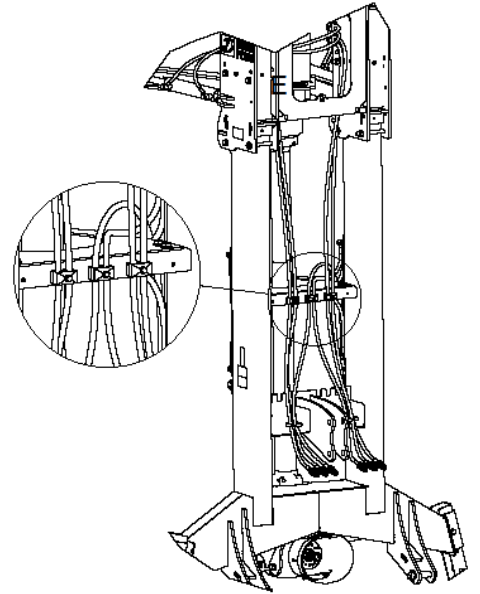
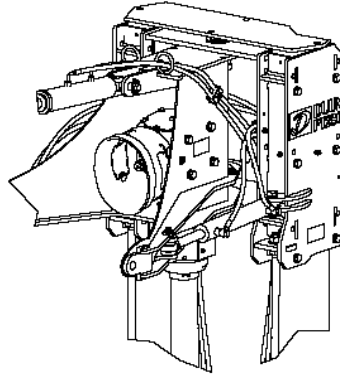
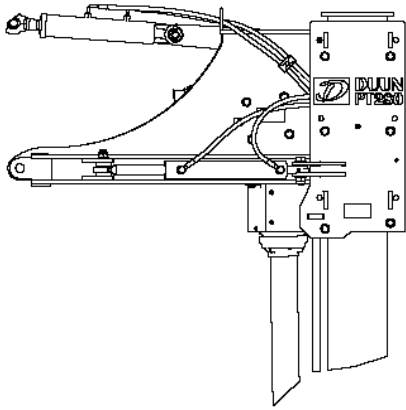
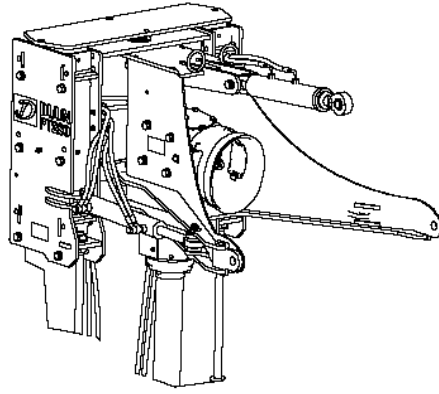
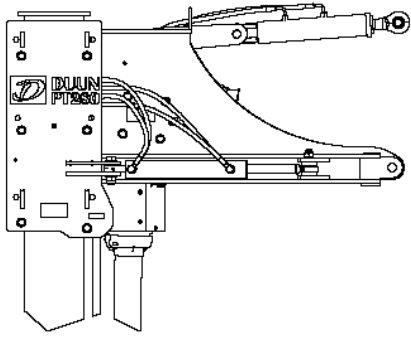


Pos	Qty	Drawing no.	Article no.	Designation
1	4		4251206	Hose holder
2	1		2422258	Hexagon screw M8x55 EIZn 8.8 DIN 931
3	4		2483609	Locking nut M8 EIZn DIN 985
4	8		2531047	Washer M8 EIZn DIN 125
5	2		2955004	Cylinder \varnothing 50/30 SL300
6	2		2957852	Banjobolt Double G3_8 BSP
7	10		2957868	Copper gasket 3/8
8	2		2957851	Banjobolt 3/8"
9	4	32221022	13222022	Sleeve 25/20x20
10	3		2422259	Hexagon screw M8x60 EIZn 8.8 DIN 931
11	1	32221027	2958409	Hydraulic hose 1/4" L1700
12	1	32221028	2958409	Hydraulic hose 1/4" L1700
13	1	32221029	2958406	Hydraulic hose 1/4" L4100
14	1	32221030	2958406	Hydraulic hose 1/4" L4100

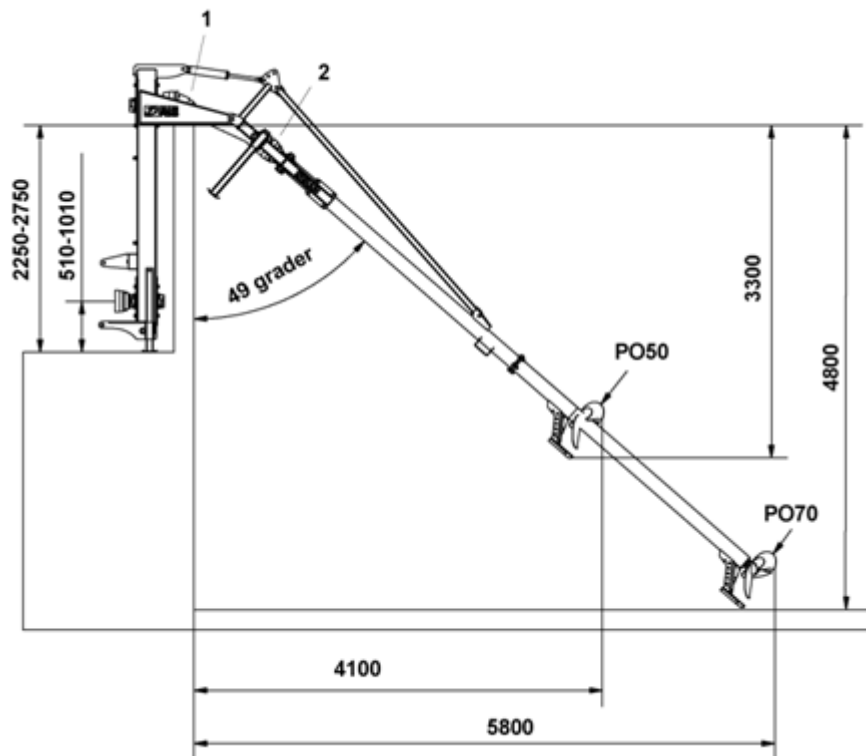
Installing hydraulic height adjustment, skid rails (7) must be installed that the side plates on the tower bracket do not clamp firmly to the frame.



Pos	Qty	Drawing no.	Article no.	Designation
7	4	32221012	13222012	Skid rail
11	2		2955372	Cylinder Ø40x25 SL500
12	4		2531093	Washer M24 EIZn DIN 125
13	4		2482617	Hexagon nut M24x1.5 EIZn DIN 934
14	2	32221014	13222014	Cylinder attachment
17	2		2483615	Locking nut M20 EIZn DIN 985
18	8		2531086	Washer M20 EIZn DIN 125
19	2		2422581	Hexagon screw M20x80 EIZn 8.8 DIN 931
20	2		4251206	Hose holder
21	2		2422258	Hexagon screw M8x55 EIZn 8.8 DIN 931
22	2		2483609	Locking nut M8 EIZn DIN 985
23	4		2531047	Washer M8 EIZn DIN 125
25	6		2478413	Grease nipple 1/4"
36	2		2957852	BonjoBolt Double G3_8 BSP
37	10		2957868	Copper gasket 3/8
38	2		2957851	Banjobolt 3/8"
41	1	32221031	2958407	Hydraulic hose 1/4" L2750
42	1	32221032	2958408	Hydraulic hose 1/4" L2500
39	1	32221025	2958410	Hydraulic hose 1/4" L970
40	1	32221026	2958410	Hydraulic hose 1/4" L970



Propeller towers and angles in the reservoir



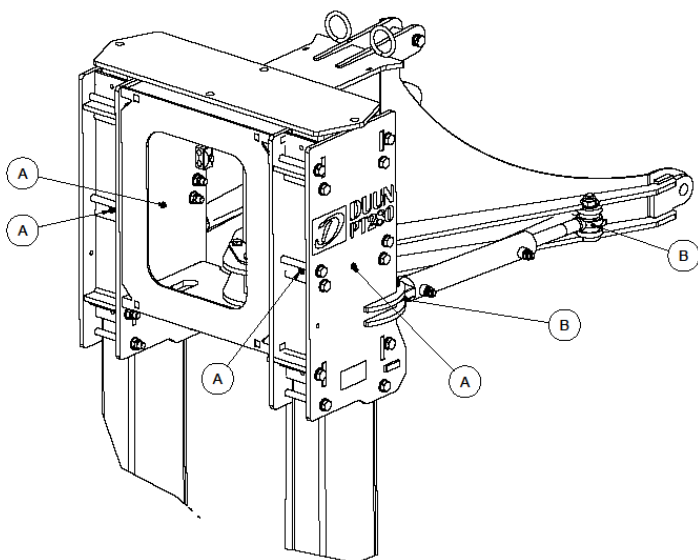
The sketch is indicated with the maximum extent of the top brace and the tower perpendicular to the slurry pit.

This gives the maximum allowable angle on the power transmission shaft between the propeller and the tower, it is recommended to angle the tower to distribute the angular impact between the shafts when stirring deep in the reservoir.

The maximum angle in point 1 on the sketch is 27 degrees and in point 2 14 degrees.

At distances of less than 1m to the bottom / wall, the stirring effect is lost, it is therefore recommended to keep a longer distance. This also results in less stress on the junctions in the power transmission shaft.

Service and maintenance



First of all

Before cleaning, lubricating, repairing or adjusting the machine, stop the engine and activate the handbrake and remove the key during work. Pay special attention to safety during maintenance work, park the machine in accordance with specified safety rules.

Subsequent inspection of screw connections. Screws - nuts - nipples and bolts on the machine must be tightened after two hours of operation.

Clean after use

Power transmission shaft

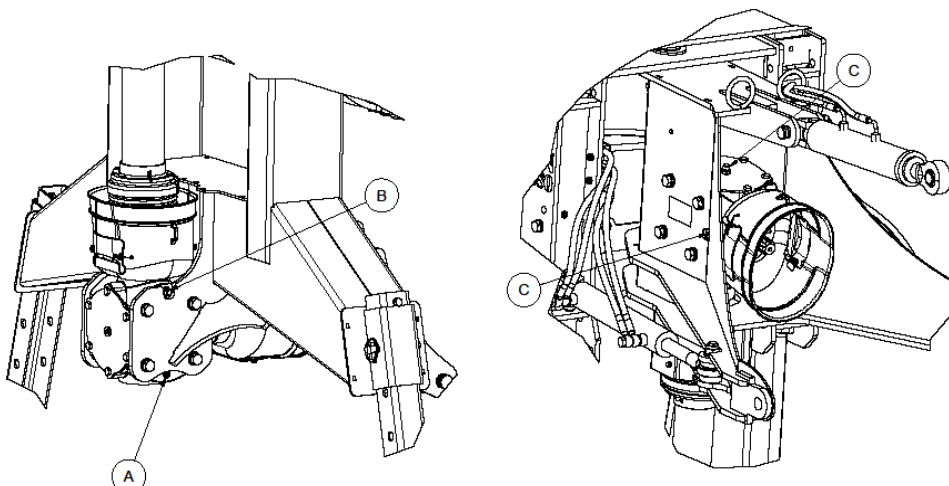
When the wide-angle shaft works with fixed angle, the lubrication interval should be 2-4 hours to ensure the shaft has sufficient supply of lubricating grease. Interval: Every 2-4. operating hours. Maintained in accordance with the attached instruction manual. Please contact supplier if this is missing
Grease quality: Good quality universal grease.

Lubrication points

The lubrication points marked A are lubricated when the hydraulic height adjustment is fitted. Lubrication interval: 50 operating hours.

The lubrication points marked B are lubricated when the hydraulic lateral adjustment is fitted. Lubrication interval 50 operating hours.

Gearboxes



The gearboxes have oil change intervals. The first change must take place after 50 operating hours. Later every 500 operating hours or every other year.

Manufacturer: Gardini

Oil quantity: 1.3 litres

The lower gearbox is drained from the plug marked A. Filling the plug marked B

The upper gearbox must be sucked out of the oil through the upper plug marked C

Can also lay the tower down on its side and drain the oil through the plug marked.

Disconnection

This happens in the opposite order of connection.

Working on the machine and the PTO shaft, the power supply to the tractor must be disconnected.

The machine must be placed on a level surface.

The power transmission shaft must be disconnected and hung on a hook attachment.

Locking bolts for drawbars released.

The machine is now disconnected and can be left.

Gas hazard

1. Measures and points in connection with slurry gas.
2. Extraction fan in the basement contributes to negative pressure and extracts the gas.
3. If there is an open connection between the cellar and the animals housing, the grates can be covered with plastic to contribute to negative pressure when an extraction fan is used. A gas-tight connection between the animals housing and the basement provides greater security, especially when combined with an extraction 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 development occurs - especially in the starting phase. This is due to mixing of air and slurry mass.
6. Open doors in the barn and the gas will have a low outlet in the farm building itself.
7. Use a gas meter at all times in the animal rooms during slurry pumping. We believe this is absolutely necessary regardless of the type of pump and whether or not you have a tight connection.
8. Avoid unnecessary stay near the shaft and propeller during slurry release/stirring.

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

9. Never stir in calm and windless weather!
10. Ensure proper ventilation in animals housing. Let all fans run at full blast, remember, all doors and windows must also be opened.
11. Make sure that ventilation fans do not draw air from the pump inside. If there are openings in the gate or pump sump and the wind direction blows against these, slurry gas can be forced from the basement up into the barn.
12. Do not stand near the filling opening of the transport tank during filling, or in the pump pit during stirring.
13. Never enter animals housing where there may be suspicion of slurry gas without a gas mask with gray filter B. Remember that there must be enough air present even when you use a mask!
14. Never go down into a slurry cellar or tanker without fresh air equipment.
15. If possible, agitation should be carried out when there are no animals inside.
16. Stir gently. Remember that new equipment can cause the effect to increase so that the stirring becomes more powerful and the risk of a gas accident increases.

*Points 9-16 ref. Agriculture's HSE service.
www.lhms.no*

Declaration of conformity

Responsible person

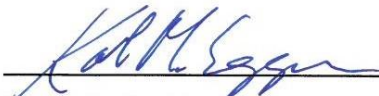
Name: Karl Martin Eggen
Position: CEO
Company name: Duun Industrier as
Address: N-7630 Åsen
Norway
Telephone: +47 74 01 59 00

Person responsible for the technical documentation: Rolf Even Duun

Declares that the following machine: PT280 Slurry mixer tower
Manufacturer: Duun Industrier as
Type: Duun Slurry mixer tower PT280
is in accordance with:

Directive 2006/42/EC Machinery

Signed by:



Karl Martin Eggen

Åsen, 15.09.2020