

Operation & Maintenance Manual



Submersible grinder pump type 3DSP18-5 “JAWS” (WETTERFRETTER)

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1. Foreword:

This manual includes several warnings, installation guidelines and safety instructions. Before installation, please read this manual carefully to avoid dangerous situations, which can lead to severe physical injury, and which could also damage the pump.

The DSP grinder pump is typically designed to pump small quantities of waste water with high discharge heads. Large solids are cut into small particles. The pump is equipped with a heavy duty Epoxy coating for long operational use.



The DSP pumps are designed for professional use only.
Only trained and skilled personal may install, maintain and operate the pump.

2. Pump identification:

The main characteristics are given on the data plate, which is connected to the pump.

Data plate DSP18-5			
	No.	=	Serial number
	Δ	=	Connection and Voltage
	n	=	Speed
	In	=	Max. current
	P	=	Shaft power
	Type	=	Pump type
	B.j.	=	Year of production

3. Power supply:

The power supply of the pump is part of the controls of the electrical installation. Please read carefully the specific user instructions of the electrical installation. These instructions, including the wiring diagram, are necessary for safe installation.



4. Usage limitations:

The DSP18-5 grinder pump is designed to pump normal sewage water. The cutting mechanism cuts long fibrous materials into small parts.

The DSP pump in Basic Version may not be installed in potential explosive atmospheres.



5. General safety instructions before installation or maintenance:

The following safety instructions should be followed very carefully to avoid severe injury or damage.

Before maintenance or inspection, both mechanical and electrical, always switch off the pump.

- Turn off the main power supply, lock out and tag out according local procedures!
- Remove the fuses (if applied) and store them in a safe place.
Switch off the emergency power supply if available.
- Alert other people with a clear warning to make aware of this service or maintenance operation.
- For servicing the pump and replacing the oil, place the pump in the horizontal position. This position is also needed to check the rotation of the pump.
Be aware the recoil can be very powerful, don't go near rotating parts, or stand close to the pump when testing.
- Never put your hands near the pump if no safety measures are taken!
- When it is necessary to inspect the pump outside the sump, please close the cover of the pump sump, and take care about the following:
Check carefully the power cable for bends and jamming.
To avoid cable damage put a decent spacer between pump cover and the sump.
- Never use the power cable to hoist the pump!
- Avoid any risk that might damage the power supply cable.
- Always use safety shoes, goggles and gloves when handling the pump.
- Make sure all safety measures comply to the legal laws and provisions, such as the specific Labor Safety Instructions for confined spaces.



6. Environment:

Parts which will be replaced during repair, maintenance or renewal, may contain materials which could be harmful to the environment.

Please also be aware that some of the components can be recycled.

The owner is responsible for careful disposal and processing of the materials.

This should be done in line with the local environmental regulations.

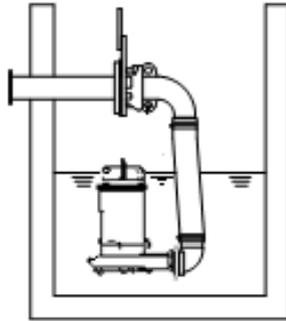


7. Installations:

For the DSP pumps in basic versions, several installation options are possible. These options will be explained, focusing on specific points of attention.

Installation “BWK”

This installation represents a permanent submerged installation using the header coupling type “BWK”.

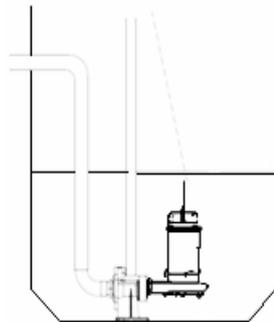


Points of attention:

- Ensure a good free passage under the pump, at least identical to the suction opening.
- Adjust start- and stop levels in such a way that the motor will not make more than 20 starts per hour.
- Check that the motor is adequately cooled.
At full load conditions, at least 2/3 of the motor housing should be submerged.
- The pump casing must stay under water to avoid air being drawn in.

Installation “OWK”

This installation represents a permanent submerged installation using the guide bar coupling type “OWK”.

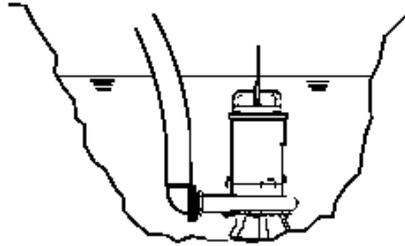


Points of attention:

- Ensure a good free passage under the pump, at least identical to the suction opening.
- Check both the vertical and parallel position of the guide bars.
The maximum tolerance for the vertical position is $\pm 3^\circ$.
- The installation angle for the pump in case of installation or taking out is important.
This angle (between pump and guide bar) is about 10° to 15° .
This angle can be adjusted by changing the position of the hoisting cable/chain on the lifting bracket.
- Adjust start and stop levels in such a way that the motor will not make more than 20 starts per hour.
- Check that the motor is adequately cooled.
At full load conditions, at least $\frac{2}{3}$ of the motor housing should be submerged.
- The pump casing must stay under water to avoid air being drawn in.

Installation “VRS”

This installation represents a permanent freestanding submerged installation.



Points of

attention:

- Ensure a good free passage under the pump, at least identical to the suction opening.
- Adjust start- and stop levels in such a way that the motor will not make more than 20 starts per hour.
- Check that the motor is adequately cooled.
At full load conditions, at least $\frac{2}{3}$ of the motor housing should be submerged.
- The pump casing must stay under water to avoid air being drawn in.

8. Hoisting device:

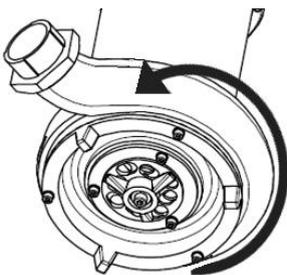
Submersible pumps can be (re-)installed in the sump by means of an adequate hoisting device.
Landustrie can provide this certified equipment.



9. Hoisting cable/chain:

If applied, please replace the stainless steel hoisting cable every two years, or according to local regulations.

10. Direction of rotation:



The correct direction of rotation is counter clockwise (ccw), looking at the suction opening of the pump (see picture).
Check procedure: Place the pump into horizontal position, start the pump short time, check visually the direction of rotation, Please follow all safety measures!.



The pump should operate with sufficient cooling conditions.

This means that for at least $\frac{2}{3}$ of the motor is submerged.

Without this requested cooling condition, the motor runtime is limited to maximum 15 minutes, to avoid overheating. The cooling down time is twice the running time.

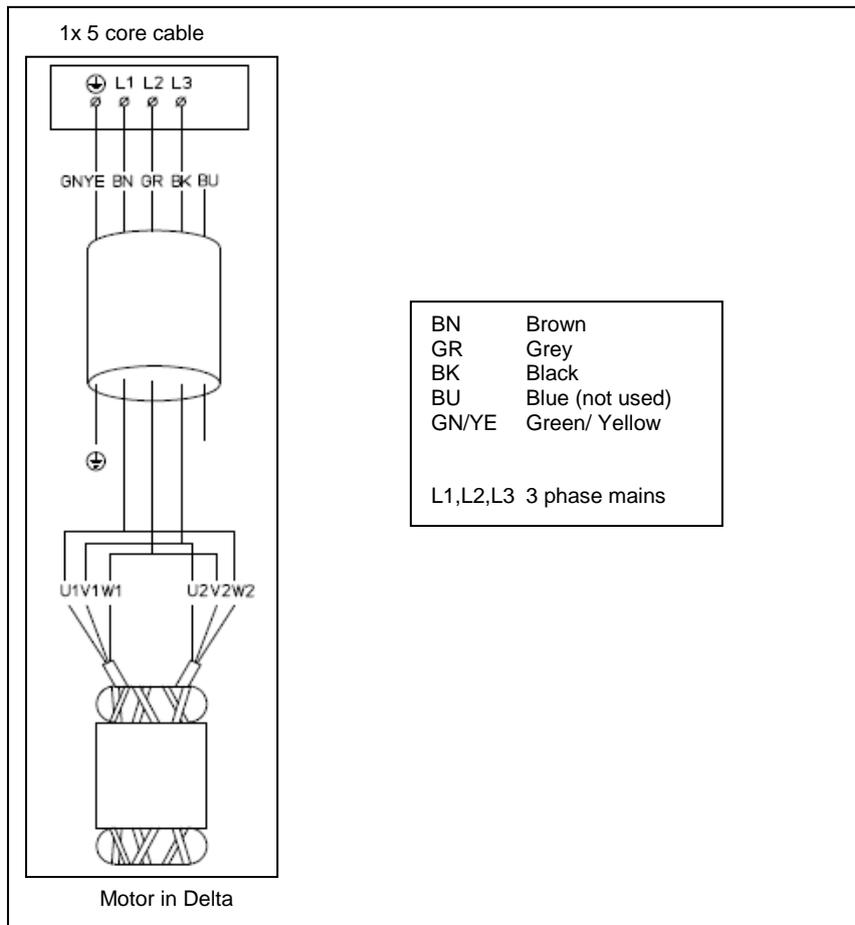


11. Noise level:

For pump installations in sumps, with closed pump cover, the noise level will not exceed 70 dB(A).

12. Electrical pump connection:

The cable connection for the 5 core cable.



We do strongly recommend the pump is connected to the mains by authorized persons only. Please ensure this is done according to and in compliance with local regulations.

13. Spare parts:

For ordering spare parts please contact your supplier.

Parts list and sectional drawings are available on request.

When ordering spare parts, please specify the pump type and serial number. This information is available on the data plate of the pump.



14. Checklist before starting the pump for the first time:

Before installing and starting operating the pump following checkpoints are involved:

- Check on delivery
Remove the pump from the packing and check for transport damage, such as material errors, cracks or bent or damaged cable.
- Check for completeness of the delivery.
If the delivery is incomplete, or damaged, please contact your supplier immediately.
- Check oil level
Verify the oil level in the seal housing (according to procedures on page 11)
- Check Power supply.
Verify if voltage, frequency and starting method are according to the data as specified on the pump data plate.

Connect the pump according to the wiring diagram of the electrical cabinet.
Information about the pump cable codes can be found on page 7.

- Check motor protection
Verify the presence of the motor protection circuit breaker.

At direct start (DOL) the motor circuit breaker should be set at the current value given on the data plate of the pump.

15. Maintenance:

Before taking out the pump from the installation, please switch off the mains, according to the instructions on page 4. Clean the pump adequately!
Take care! The surface of the pump can be hot, especially when it just has been switched off.



Maintenance schedule:

* After the first 100 operating hours:

- Check the condition of the oil.

If too much water is mixed with the oil, please contact your supplier.

* Every 1000 operating hours or each 2 years:

- Check both the condition of the oil and the oil level.
If too much water is included, please contact your supplier.
- Change the oil if not transparent.

Lubricants:

The bearings of the pump (A and B) are greased for life.

Standard oil type for the mechanical seals: Shell Tellus 32, viscosity 32 cSt. Oil quantity = 0.6 ltr.

Check motor housing:

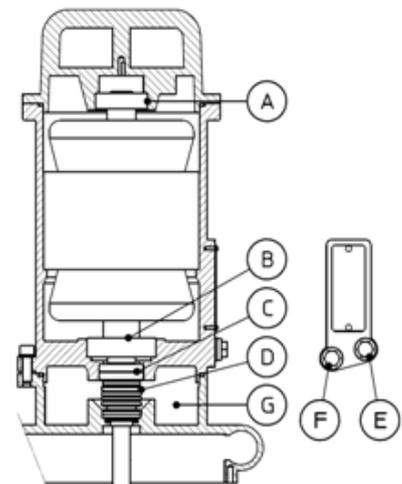
Bring the pump into vertical position, and remove the inspection plug (E). No fluid may come out. If water comes out there is a leak in the housing, if oil comes out the upper shaft sealing (C) should be renewed.

Oil check:

Bring the pump into horizontal position with plugs (E) and (F) downwards. Remove the oil plug (F) until the oil comes out. Only oil should come out. If more than 0.1 ltr water comes out, the pump seal (D) should be renewed. Add oil to the right level, see next.

Check oil level:

Bring the pump into vertical position and remove the oil plug (F).



The accurate oil level is reached when the oil level is just below the fill plug. You can check this by tilting the pump a little. If the level is too low, please add accordingly.

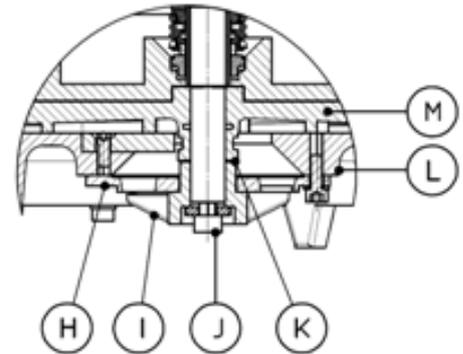
Adjustment of the cutting mechanism:

The knife (I) can be adjusted to the cutting disc (H) by means of shims (K) between the knife and the impeller (M).

The knife should just run free from the disc.

When the cutting mechanism does not work properly, this can be renewed.

Block the knife and unscrew bolt (J).



Take care, the parts can be sharp!

Now you can remove the knife.

Unscrew the bolts from the disc and take it out.

Leave the shims in place.

Place the new parts and check the clearance after fastening bolt (J).

If necessary adjust with shims (K). You have to remove the knife and key temporarily.

When the clearance is correct, remove the knife again and place the key.

Mount the knife and fix the bolt tightly. Check the clearance again.

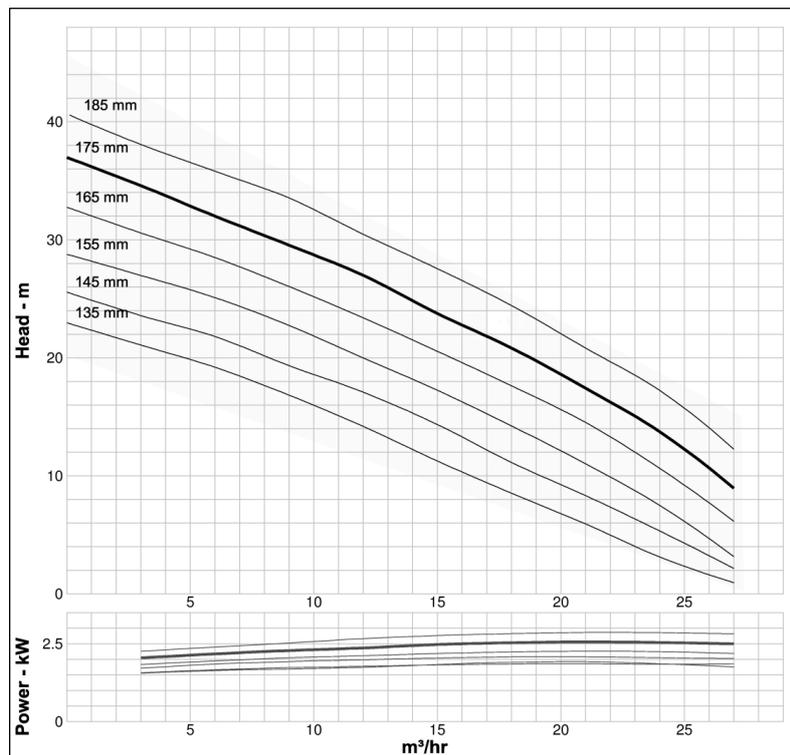


16. Technical data:

Shaft Power: 2.2 kW

Speed: 2820 rpm

Capacity according performance curve below



Mains: 400V-50Hz-3ph
 Starting method: Direct On Line (DOL)
 Impeller diameter: 135 – 185 mm
 Discharge: G2" male
 Weight: ca. 35 kg

17. EC Declaration of Conformity:

<p style="text-align: center;">DECLARATION OF CONFORMITY</p> <hr/> <p>Landustrie Sneek bv Pieter Zeemanstraat 6, P.O Box 199, 8600 AD Telephone +31 515 - 486888, Fax +31 515 - 412398 SNEEK, THE NEDERLANDS E-mail: info@landustrie.nl, Internet: www.landustrie.nl</p> <p>Herewith declares , that the submersible pump series type DSP , as manufactured by: Landustrie Sneek BV.</p> <p>in accordance with:</p> <ul style="list-style-type: none">~ Machinery Directive 2006/42/EG, annex IIB~ EMC-Directive 89/336/EEG~ Low voltage Directive (LVD 73/23/EEG) <p>and declares conformity to:</p> <ul style="list-style-type: none">~ the following (parts of) harmonized standards : NEN-EN-ISO 12100-1 / 2 en EN-ISO-14121,~ the following (parts of) technical specifications: NEN-EN 50 081-2, NEN-EN 50 082-2 en EN 60 204 <p>Sneek</p> <p>P.J.M. Jorna, Quality Manager</p>
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18. Service Contract:

Although the quality standards of the Landustrie pumps are very high, we do strongly recommend securing a service contract with your local supplier.

For service- or technical information, please contact:

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19. Trouble shooting:

 <p>Make sure the mains is switched off during inspection.</p>	 <p>Only trained and authorized people may install and maintain the pump.</p>
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 <p>Make sure the pump will not start unexpectedly.</p>	 <p>Don't go near to rotating parts of the pump</p>
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	<p>Observe the local safety regulations for installation, maintenance and repair!</p>
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Problem:	Possible cause:	Required action:	Checkpoints:
Pump does not start	No voltage on the terminals	Check power	* main switch * installation switches * all auxiliary switches * voltage relay
		Check motor protection	* earth leakage relay * the auxiliary switches * motor protection relay
		Check start- and stop signals	* too low level * obstructed level switches * engaged emergency stop * general electrical error
	Wrong pump cable connection	Measure cable wires	* check motor phases
	Blockage impeller	Check pump and/or impeller	* impeller or pump jamming
Pump does not stop	No stop signal	Check level	* level switches * general electrical error
	Wrong start / stop signal	Check level switches	* installation switches * level switches * settings level switches
Pump start and stops repeatedly	Fault in power supply	Check power supply	* main switch * installation switches * switch thermal protection
	Level control system not stable	Check level switches	* installation switches * level switches * settings level switches
	Motor overload	Check motor protection	* wrong direction of rotation * impeller blockage * motor protection relay
Motor current too high	Supply failure	Check power supply	* voltage monitoring relay
	Pump failure	Check pump	* impeller blockage * medium specific gravity too high
No flow or too low pump capacity	Jamming or airlock in discharge pipeline	Check discharge pipeline	* wrong direction of rotation * blockage in discharge * valves half open or closed
	Pump failure	Check pump	* pump draws air * impeller blockage * impeller loose or damage
	Fault in power supply	Check power supply	* main switch * installation switches * switch thermal protection
High level alarm	Pump failure	Check pump	* impeller blockage * impeller loose or damage * pump draws air * damaged bearings
			Supply failure
	Level control system failure		

	<p>If the pump still fails please contact:</p> <div style="border: 1px solid black; height: 60px; width: 100%; margin-top: 5px;"></div>
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