

Operation & Maintenance Manual



Submersible mixers type LANDY DWM & Submersible mixers type LANDY DNM

Explosionproof version

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Landustrie



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Foreword:

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

Both the DWM and DNM mixer series are typically designed to handle waste water containing long fibrous materials.

De DNM wear resistant mixers are typically designed for all kinds of weary media, such as sand mixtures and slurries.

The mixer is equipped with a heavy duty Epoxy coating for long operational use.

The pump is built in Flameproof version and might be used in a potentially explosive atmosphere, ATEX: group II category 2, IEC: Gb (zone 1).



The DWM en DNM mixers are designed for professional use only.
Only trained and skilled personal may install, maintain and operate the pump.

Mixer identification:

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

Landustrie 		CE	
Type		Code	
No.	Yr	kg	
ϕ	m ³ /h	m	rpm
P1/P2	kW/ kW	cos ϕ	~ Hz
		S1	F
Cert. no: DEKRA 12ATEX0013 X		IECEx DEK 15.0052 X	IP68 ∇ 20m
Landustrie Sneek B.V. Pieter Zeemanstraat 6 - 8606JR - Sneek - The Netherlands			
		CE 0344	
ATEX: II 2 G Ex b c d IIB T4 Gb with frequency control II 2 G Ex b c d IIB T3 Gb			
IECEx: Ex d IIB T4 Gb with frequency control Ex d IIB T3 Gb			

Type	= Pump type	m ³ /h	= Capacity in duty point	~	= Number of phases
Code	= Product code	m	= Head in duty point	Hz	= Frequency
No.	= Serial number	rpm	= Speed	Y of D	= Connection (star or delta)
Yr	= Year of production	P1	= Rated electrical power	V	= Voltage
kg	= Weight [kg]	P2	= Shaft power	A	= Max. current
ϕ	= Impeller diameter	cos phi	= Power factor	Cert. no.	= ATEX certificate number

Code of Notified body 0344 (DEKRA) and Ex category are on the second data plate.

Power supply:

The power supply of the mixer 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.



Usage limitations:

De DWM & DNM mixers in Explosion proof Version may be installed in potential explosive atmospheres, group II category 2 (zone 1) gas group IIB temp. class T4. In combination with frequency control temperature class T3 is valid.

Pay attention to the right temperature and gas group classification, see EN 60079-0.



Only use original spare parts to maintain the explosion safety !

General safety instructions before installation or maintenance:

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

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

Turn off the main power supply, log 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 mixer, and replacing the oil it bring the mixer in horizontal position. This position is also needed to check the rotation of the impeller. Be aware the recoil can be very powerful, don't go near rotating parts, or stand close to the mixer when testing.



Do not put hands or fingers near the impeller if no safety measures are taken!



When it is necessary to inspect the mixer outside the sump, please close the cover of the 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 cover and the sump



Never use the power cable to hoist the mixer!
Avoid any risk, that might damage the power supply cable.



Always use safety shoes and safety gloves when handling the mixer.



Make sure all safety measures are conform the legal laws and provisions, such as the specific Labor Safety Instructions for confined spaces.

Environment:

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

Please be also aware that some of the components can be very useful for reuse. The owner is responsible for careful disposal and processing of the materials. Do this in line with the local environmental regulations.



Installations:

For the DWM & DNM mixers several installation options are possible.
For all options please check the following point of attention.

Points of attention:

- Adjust start- and stop levels in such a way that the motor will not make more than 20 starts per hour **and so that the volute and seals are always submerged!**
The level regulation should be intrinsic save with safety level of a least SIL1.
- Check that the motor is adequately cooled.
At full load conditions, at least 2/3 of the motor housing should be submerged.

Hoisting device:

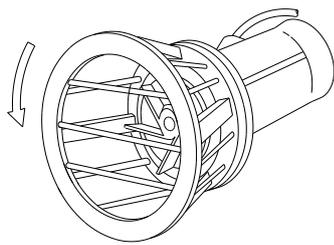
De submersible mixers can be (re-)installed in the sump by means of an adequate hoisting device.
Landustrie is able to deliver this certified equipment.



Hoisting cable:

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

Operation checks:



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



The mixer should operate with sufficient cooling conditions.
This means 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.



Noise level:

The noise level of the mixer will not exceed 70 dB(A).

Electrical pump start options:

The different connections for the cables are specified on page 8 and 9.
Check the cable type, installed on the mixer and verify the data onto the mixer data plate.
The mixer is equipped with extra leads for thermal protection. The thermal protection ensures that the mixer under all conditions meet the needs of temperature class T4.

Standard thermo-switches (Klixons) with 125°C switching temperature are supplied.
Contact rating: max. 250V-1.6A. The contacts are normally closed.

As an option thermistors (PTC) with 125°C switching temperature can be supplied.
These are resistors, not circuit breakers!
Resistance cold: 200-500 Ohm,
Resistance at switching temperature: 1650-4000 Ohm
Maximum voltage is 7.5 V.

Resetting may only be done manually!

The electrical connection of the permanently connected un terminated cable shall be made in a certified enclosure in type flameproof enclosure “d” or increased safety “e”.



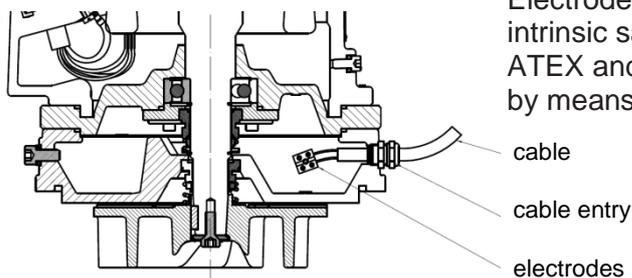
We do strongly recommend to connect the pump to the mains by authorized personal only. Please ensure this is done accordingly and in compliance with local regulations.

Water in oil detection:

As a safeguard against water ingress into the motor, the pump can be equipped with a water detector in the oil housing. The water detector detects water which might have entered the oil housing due to seal failure or cable damage.

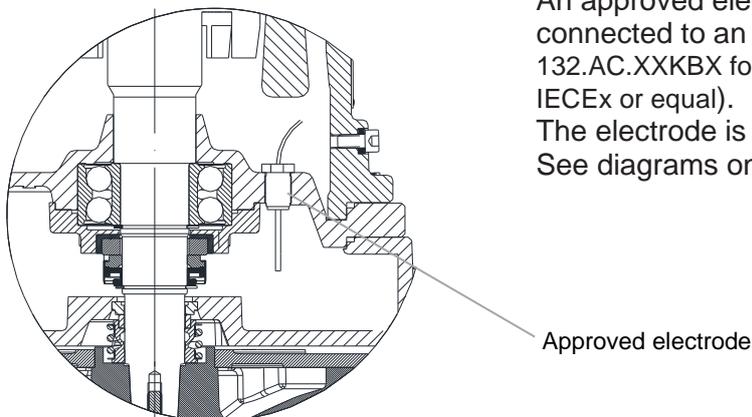
The water detector causes the pump to switch off, before damage to the motor is done.

Option one:



Electrodes in the oil housing are connected to an intrinsic safe amplifier (eg Vegator 132.AC.XXKBX for ATEX and Vegator 132.IC.XXKBX for IECEx or equal) by means of a shielded cable.

Option two:



An approved electrode in motor and oil housing is connected to an intrinsic safe amplifier (eg Vegator 132.AC.XXKBX for ATEX and Vegator 132.IC.XXKBX for IECEx or equal). The electrode is connected through the pump cable. See diagrams on page 10 and 11



We do strongly recommend to connect the pump to the mains by authorized personal only.



Please ensure this is done accordingly and in compliance with local regulations.

Spare parts:

For ordering spare parts please contact your supplier.

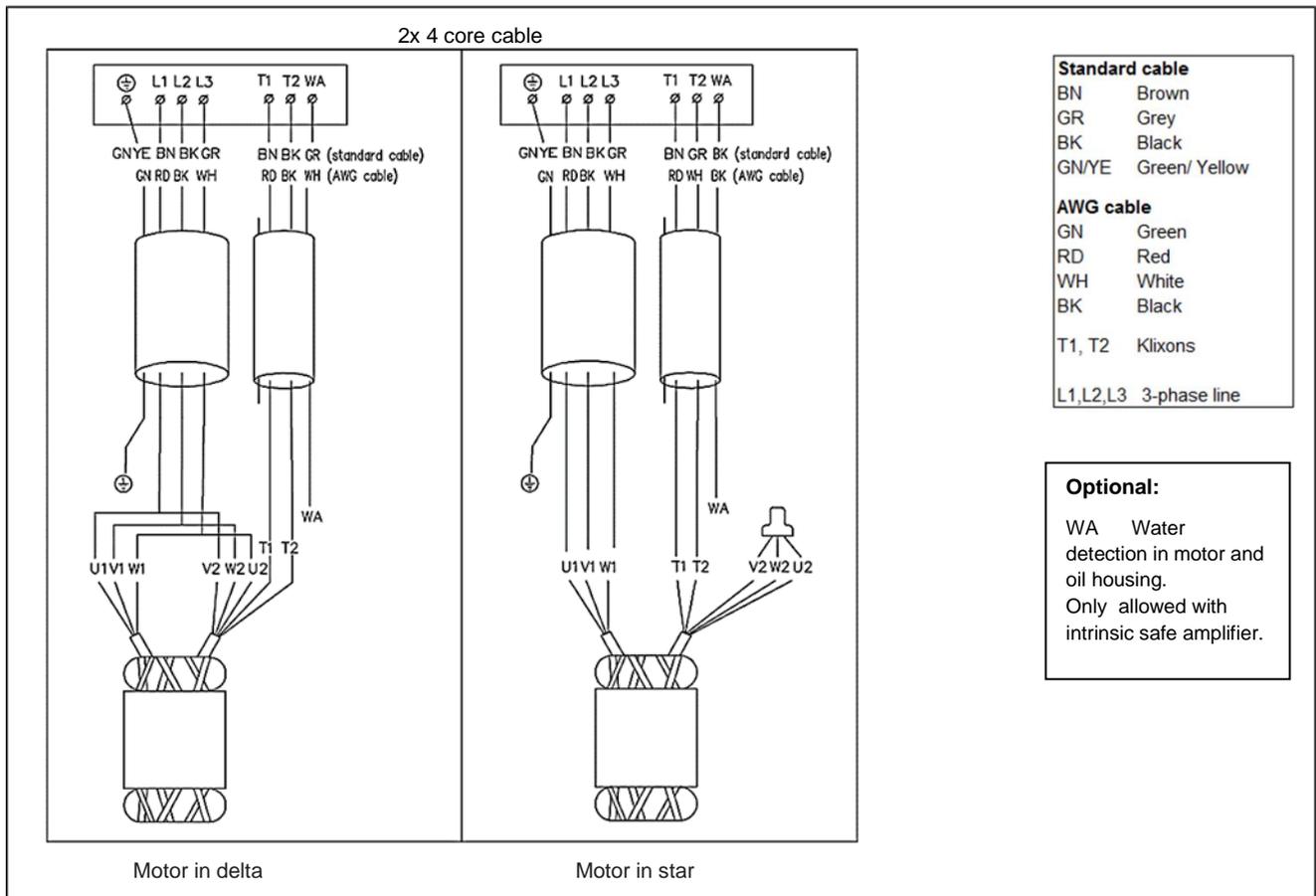
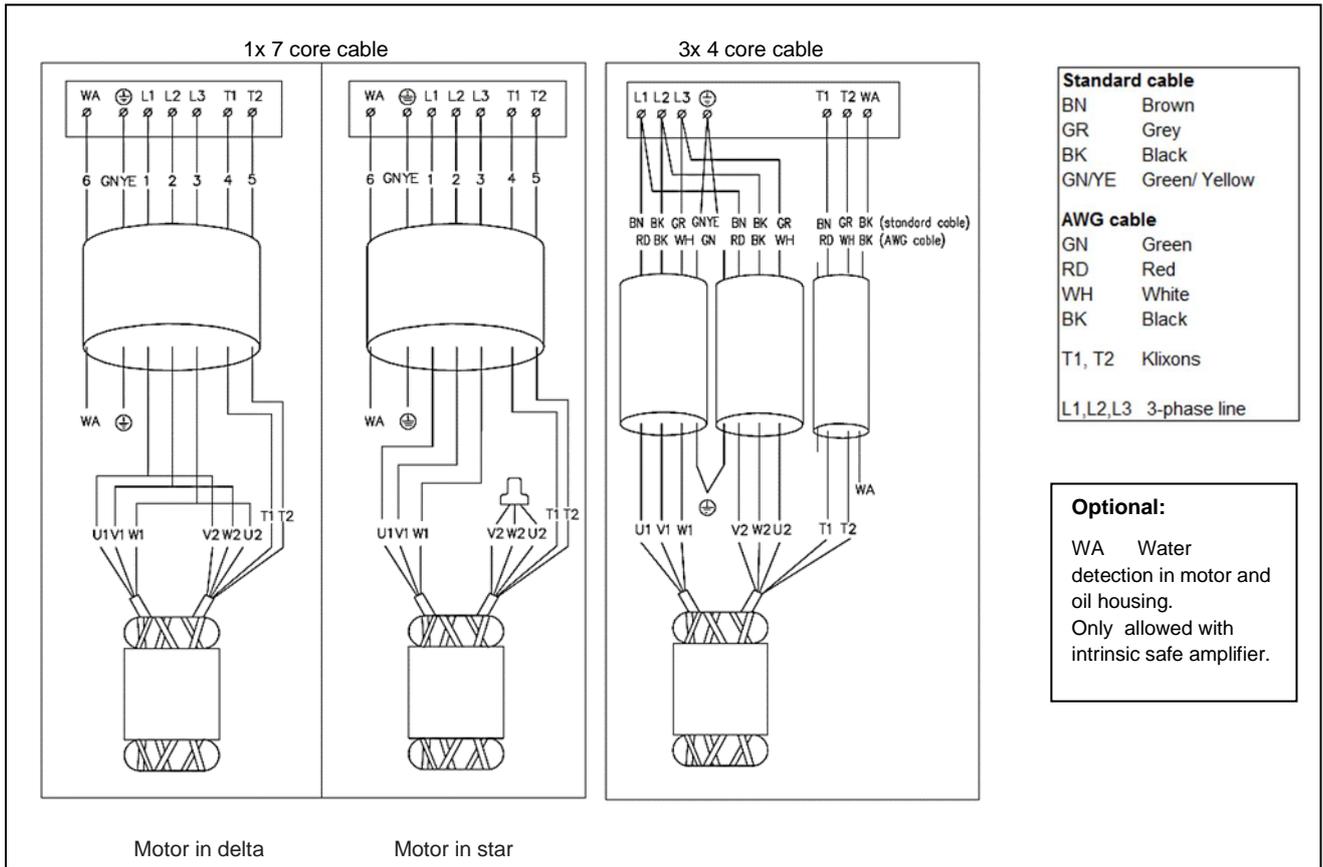
Parts list and sectional drawings are available on request.

When ordering spare parts, please specify the following data:

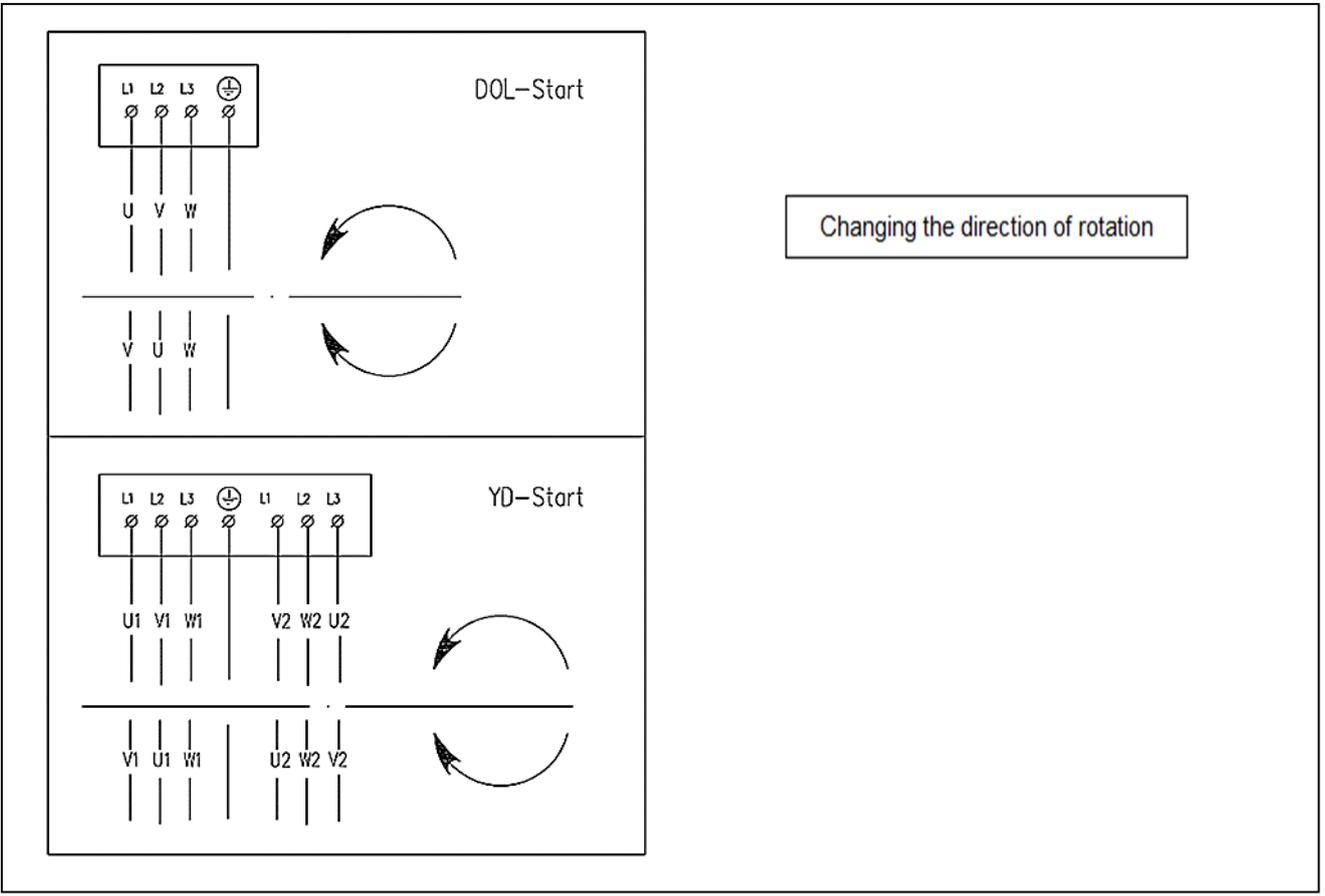
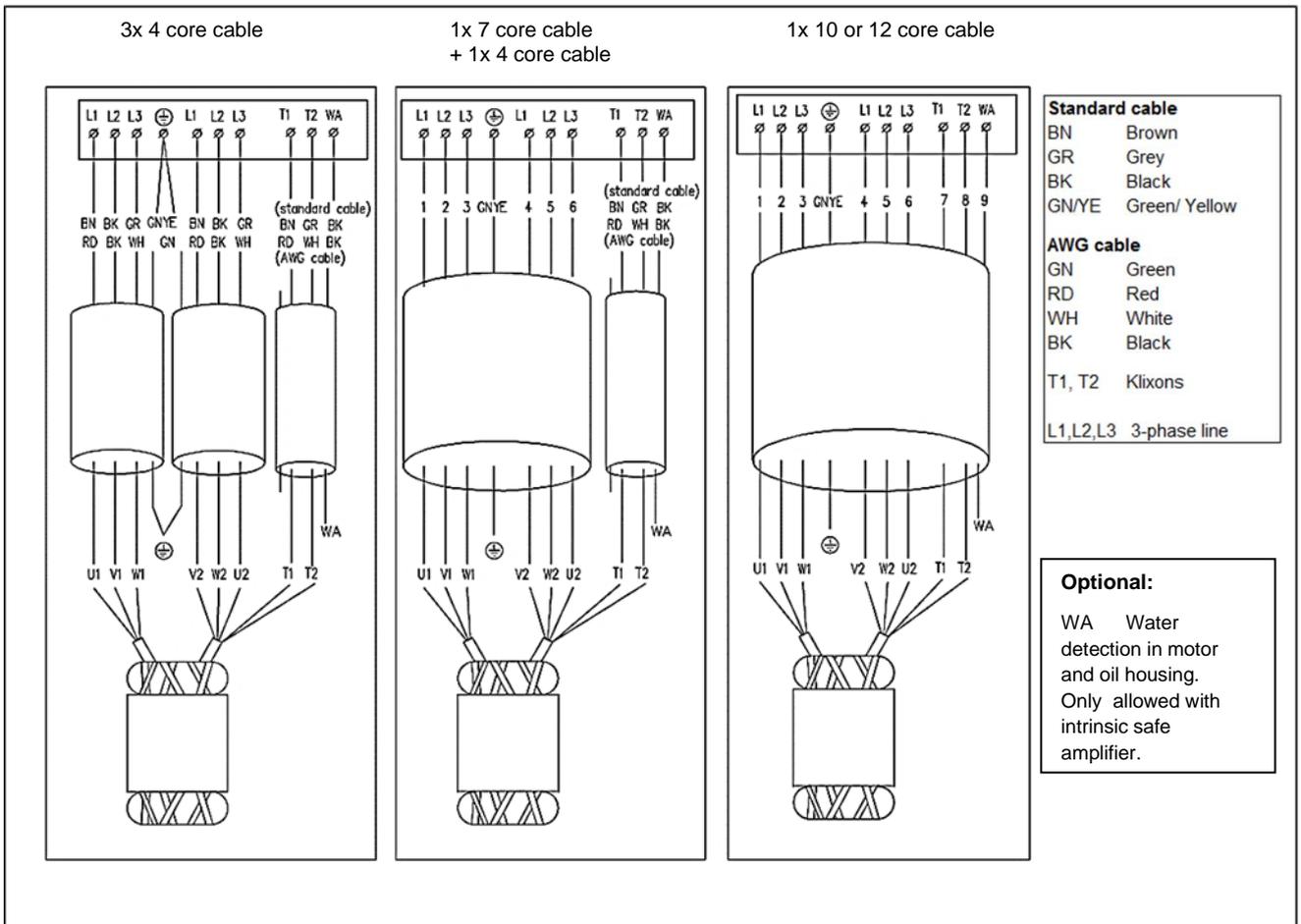
- Type,
- product code,
- serial number,

This information is available on the data plate.

Cable connection direct start of the mixer (DOL)



Cable connection star-delta start of the mixer (YD)



Checkpoint first pump start:

Before installing and start operating the mixer following checkpoints are involved:

- Check on delivery
Remove the mixer from the packing and check for transport damage, such as material errors, cracks of bended 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 mixer according to the wiring diagram of the electrical cabinet.
Information about the cable codes can be find on page 7 or 8.

Thermal protection:

Thermo-switches (klixons), the connection values for the standard thermal protection are max. 250V-1.6A. In 'cold' condition the switch is closed.

Thermistors (PTC), as an option thermistors can be supplied.
Resistance cold: 200-500 Ohm,
Resistance at switching temperature: 1650-4000 Ohm

Cable entry:

Especially when the mixer has been stored for a long time, fasten the cable entry, if necessary, to tighten the rubber gland of the cable entry, the torque should be; G7/8" = 80-100 Nm, M42 = 120-150 Nm.

Motor protection:

The pump should always be connected to the line by means of a suitable 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.

At star delta start (YD) the setting of the motor circuit breaker should be 0.6 of the current value on the data plate of the mixer.

Special conditions for safe use

Thermo-switches or PTC thermistors in combination with a protective device shall be installed in the motor-circuits in such a way that too high temperatures leads to switching-off of the motor. The resetting of the supply shall be manually.

The level sensors must have a minimum safety integrity level SIL 1

The motors are provided with fasteners of at least property class A2-70

Contact the manufacturer for information on the dimensions of the flameproof joints

Maintenance:

Before taking out the mixer from the installation, please switch of the mains, according to the instructions on page 4.

Clean the mixer adequately!

Take care! The surface of the motor housing can be hot, especially when it is just 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 year:

- 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.

After 5 years a complete revision is prescribed especially fitting dimensions should be checked and bearings and seals should be replaced.

Lubricants:

The bearings of the mixer are greased for life.

Standard oil type for the mechanical seals: Shell Tellus 32, viscosity 32 cSt.

The quantity of the oil depends on the mixer:

DWM/ DNM 22 series: 0,5l.

DWM/ DNM 42 series: 2,0l.

DWM/ DNM 62 series: 2,5l.

Cable entry:

If the mixer is stored for long time, the rubber gland of the cable entry might be diminished.

This can lead to leakage to the motor compartment.

By turning-in the cable entry clockwise, the sealing of the gland will be secured.

The torque should be: G7/8" = 80-100Nm M42 = 120-150Nm

Check oil level:

DWM/ DNM 22 series

Bring the mixer into horizontal position, and remove both the fill plug and the vent plug.

The accurate oil level is reached when the oil level is just below the fill plug.

You can check this to turn the pump a little.

Be aware that the mixer are equipped with 2 or with 3 plugs, depending on the size.

If the level is too low, please add accordingly.

DWM/ DNM 42 series

Bring the mixer into horizontal position, in such position that 2 plugs are on top and one is beneath.

Remove the two plugs, using one of them as fill plug and the other as vent plug.

The accurate oil level is reached when the oil level is just below the fill plug.

You can check this to turn the mixer a little.

If the level is too low, please add accordingly

DWM/ DNM 62 series

Bring the pump into vertical position en remove the M20 fill plug, at the counter side of the cable box.

The accurate oil level is reached when the oil level is just below the fill plug.

If the level is too low, please add accordingly.

Make sure the mixer cannot fall during this procedure.

EC Declaration of conformity:

EU-DECLARATION OF CONFORMITY	
Landustrie Sneek bv Pieter Zeemanstraat 6, P.O. Box 199, 8600 AD Tel. 0515 - 486888, Fax. 0515 - 412398 Sneek The Netherlands E-mail: info@landustrie.nl . Internet: www.landustrie.nl	
Herewith declares, that submersible mixers series LANDY DWM and DNM in explosion proof version, as manufactured by Landustrie Sneek BV, are in compliance with:	
ATEX Directive 2014/34/EU Machinery Directive 2006/42/EC EMC Directive 2014/30/EU	
Provisions of the ATEX Directive fulfilled by the Equipment: Group II Category 2G Ex b c d IIB T4 Gb (with frequency control T3)	
Notified body for EU-Type Examination and Production: DEKRA Certification B.V. (0344)	
EU-Examination Certificate: DEKRA 12ATEX0013 X	
Harmonized standards used: EN 12100:2010, EN 60204-1:2018	
Other standards and specifications used: EN 60079-0:2009 (A review against EN 60079-0:2018 + A11:2013, which is harmonised, shows no significant changes relevant to this equipment so EN 60079-0:2007 continues to represent "State of the Art"). EN 60079-1:2007 (A review against EN 60079-1:2014, which is harmonised, shows no significant changes relevant to this equipment so EN 60079-1:2007 continues to represent "State of the Art"). EN 13463-1:2009 (A review against EN 80079-36:2016, which is harmonised, shows no significant changes relevant to this equipment so EN 13463-1:2009 continues to represent "State of the Art"). EN 13463-5:2003 and EN 13463-6:2005 (A review against NEN-EN-IEC 60079-0:2018, NEN-EN-ISO 80079-37:2016, which is harmonised, shows no significant changes relevant to this equipment so EN 13463-5:2003 and EN 13463-6:2005 continues to represent "State of the Art").	
Sneek, May 5 th , 2021 	
F. Rijpma, Quality Assurance Manager	

Service Contract:

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

For service- or technical information, please contact:

Annex 1: Electrical mixer data:

Motor type	P1 electrical Power		Speed		cos phi		maximal current [A]						
	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz			60Hz			
	[kW]	[kW]	[min-1]	[min-1]			220V	400V	690V	220V	460V	575V	
22 series	DA	0,9	1,1	1340	1700	0,79	0,78	3,1	1,7	1,0	3,7	1,8	1,4
	DC	2,1	2,4	1420	1700	0,85	0,85	6,6	3,6	2,1	7,5	3,6	2,9
	DD	3,0	3,6	1375	1650	0,80	0,89	9,1	5,0	2,9	10,5	5,0	4,0
	DG	4,5	5,2	1385	1660	0,85	0,85	14,0	7,7	4,5	16,1	7,7	6,2
42 series	DJ	6,3	7,2	1420	1704	0,82	0,85	20,4	11,2	6,5	23,5	11,2	9,0
	DL	7,7	8,9	1395	1674	0,85	0,85	24,0	13,1	7,6	27,6	13,1	10,5
	DO	9,2	10,6	1390	1668	0,88	0,87	27,6	15,2	8,8	31,8	15,2	12,2
	DU	12,5	14,4	1420	1704	0,85	0,88	38,6	21,2	12,3	44,4	21,2	17,0
	DZ	15,1	17,4	1420	1704	0,84	0,84	47,5	26,1	15,1	54,6	26,1	20,9
62 series	LD	18,8	21,8	1450	1740	0,78	0,78	63,3	34,9	20,2	73,2	35,0	28,0
	LF	26,2	29,8	1430	1720	0,84	0,82	83,8	46,0	26,7	95,2	45,6	36,4
	LI	39,5	45,4	1435	1730	0,85	0,86	121,0	66,3	38,4	136,0	66,2	52,9
	LL	54,5	62,5	1460	1750	0,86	0,91	165,0	91,6	53,0	180,0	86,1	68,9

Annex 2: Mixer denomination:

Motor types	Mixer types		
22 series	DA	DWM22DA	DNM22DA
	DC	DWM22DC	DNM22DC
	DD	DWM22DD	DNM22DD
	DG	DWM22DG	DNM22DG
42 series	DJ	DWM42DJ	DNM42DJ
	DL	DWM42DL	DNM42DL
	DO	DWM42DO	DNM42DO
	DU	DWM42DU	DNM42DU
	DZ	DWM42DZ	DNM42DZ
62 series	LD	DWM62LD	DNM62LD
	LF	DWM62LF	DNM62LF
	LI	DWM62LI	DNM62LI
	LL	DWM62LL	DNM62LL

Notes:

Lined area for notes.



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Notes:

Lined area for notes, consisting of multiple horizontal dashed lines.



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