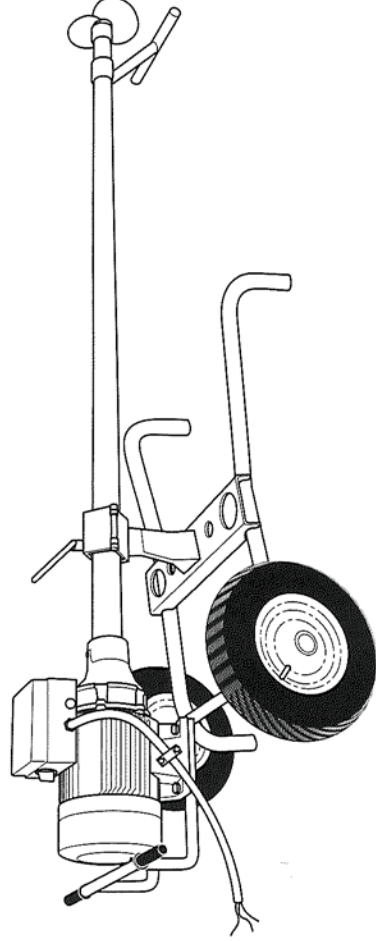


Landbruk & Maskin A/s

OPERATING INSTRUCTIONS AND SPARE PARTS LIST

Recordmix



Declaration of Conformity in accordance with 89/392/EEC



We declare on our sole responsibility that SUMA agitators of type

Recordmix and their genuine accessory components

comply with the requirements set forth in the EC Machine Directive.

Depending on configuration, these agitators are designed for the homogenisation of waste water, liquid manure (slurry) and similar liquids. They are electrically driven by an electric motor attached to them, and must only be operated when submerged.

Applicable harmonised standards, in particular: DIN EN 292, part 1
 DIN EN 292, part 2

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Information concerning the Declaration of Conformity

The Declaration of Conformity certifies that these machines comply with the stringent safety requirements defined in EC Directives 89/392 and 91/368.

It should be noted, however, that no matter how good the safety equipment may be, no agitator is completely without hazard.

For this reason, it is important - in addition to the general code of safety practice and regulations for the prevention of accidents - to observe the safety warnings and handling instructions that we have provided for you in the operating instructions.

Carefully read through the operating instructions before working with the agitator for the first time.

Scope of the CE Declaration of Conformity

This Declaration of Conformity is only valid if

- all of the information in the operating instructions is followed to the letter,
- the safety warnings in the operating instructions are strictly observed,
- the agitators are used for their intended purpose,
- the agitators are operated in the configuration/with the accessories specified by SUMA,
- no unauthorised adaptations or modifications have been made.

Extract from the regulations for the prevention of accidents in conjunction with pits and gullies UVV 2.8



Section 1 Preventing persons from falling in

Pits, trenches, gullies and other similar depressions in the area of buildings and yards must be made safe by means of railings and covers so as to prevent persons from falling into them. Provided these are no deeper than 100cm, other means of protection will suffice.

Implementation instruction

1. Yards are understood to mean the area around residential and farm buildings used for work purposes and by traffic.
2. Pits, trenches, gullies, wells and other similar depressions in the area around buildings and in yards are used, for example, for the purpose of intermediate storage, collection and onward conveyance.
3. Another means of protection is, for example, a gentle slope.
4. Attention is drawn to UVV 2.1 "General provisions on buildings and installations".
5. If, for work reasons, the driving of vehicles and equipment up to pit necessitates the removal of any guard preventing persons from falling into it, an approach wall of at least 30cm in height must be provided.

Section 2 Openings

(1) When removal and access openings and similar apertures are open, it must be ensured that persons and objects cannot fall into them.

Implementation instruction

1. The opening may, for example, be made safe by means of a non-slip and, if necessary, traffickable protection grid.
2. Attention is drawn to UVV 3.5 "Special provisions on pumping installations" with regard to the making safe of feeding and receiving installations sunk into the ground.
- (2) Pits and gullies that are normally accessed must be provided with devices that permit safe access. The openings leading into such pits and gullies must be sized in such a way that casualties can be rescued.**

Implementation instruction

Safe access is possible via vertical ladders. Attention is drawn to UVV 2.1 "General provisions on buildings and installations."

Section 3 Access

(1) Before accessing pits and gullies and while performing work in them it must be ensured that there is sufficient air to breathe and that operating equipment is reliably prevented from switching on. The use of naked flames is not permitted.

Implementation instruction

Potentially explosive gases may develop in pits and gullies, particularly if the subsoil is of a damp and putrid nature, or if they contain faeces. Therefore no naked flames.

(2) Access for the purpose of rescuing casualties is only permissible if two additional persons secure the person descending by means of a rope firmly anchored outside the tank.

Implementation instruction

Because it extends the oxygen supply, a silo rescue cover is considered to be a suitable aid for the roped rescuer descending into inadequately ventilated pits or gullies.

Section 4 Tanks and gullies for animal faeces

(1) In the case of outdoor tanks and gullies, suitable measures must be employed to ensure that sewage gas is unable to penetrate buildings.

Implementation instruction

Suitable measures are, for example, traps, evaporation shafts and tightly closing slide valves in the gullies between tank and building.

(2) Closed tanks located outdoors must have opposing vent openings.

(3) If tanks and gullies are located in buildings - also below slatted floors - it must be ensured that sewage gases are discharged from the building.

Implementation instruction

Measures and equipment for ensuring the forced discharge of sewage gases are, for example:

- venting devices that extract the gases under the floor by suction,
- air pressure systems in sealed sheds in which overpressure forces the gases out into the open via air discharge ducts.
- (4) If tanks and gullies in buildings are equipped with agitators, pumps and flushing systems, devices must be provided for discharging the sewage gas that come on automatically when the agitator, pump and flushing system start up. It must only be possible to switch them off after concluding work. The gases discharged must not endanger persons.**

Implementation instruction

It is not to be expected that persons will be endangered if, for example, the gases are discharged into the open at a height of at least 200cm above ground level.

(5) Gullies must be constructed in such a way that faeces are not swirled up unnecessarily.

(6) Operator stations for agitator, pumping and flushing systems, etc., must be positioned above ground level.

(7) Closed rooms in which operator stations are located must have no openings leading into tanks and gullies.

(8) Operating instructions must be permanently attached to operator stations.

Section 5 Removal of animal faeces from tanks and gullies

(1) Smoking and naked flames are prohibited in the immediate vicinity of removal openings while faeces are being agitated and removed.

(2) Only if adequate ventilation is provided may persons and animals remain present in buildings containing open tanks and gullies while faeces are being agitated and removed.

Section 6 Warning signs

Warning signs drawing attention to the dangers of gases must be provided in a prominent position at openings of tanks and gullies.

Example wordings on warning signs

At access openings:

- "Warning: Risk of poisoning"
- "Warning: Explosion hazard"
- "Secure yourself by rope before entering"

At removal and ventilation openings:

- "Warning: Risk of poisoning"
- "Warning: Explosion hazard"

Attention is drawn to the "Leaflet issued by the German confederation of agricultural employers' liability insurance associations on information, warning, mandatory, prohibition and rescue signs"

RECORDMIX OPERATING INSTRUCTIONS



1. Information on safety

To prevent the occurrence of damage and hazards, agitation must never take place unsupervised. Apertures through which the agitator is inserted must be made safe in order to prevent persons from falling in through them. The agitator must only be connected to the power supply when it is in the operating position and only for the purpose of agitation. Any work on the electric motor must only be carried out by a qualified and responsible electrician. The regulations for the prevention of accidents must be observed.

2. Shipment, assembly

All agitators leave the factory unpacked. The agitator mount or undercarriage is normally supplied as a separate component and must be installed on site. The electric agitator simply needs to be clamped into the pedestal clamp on the undercarriage or in the mounting stand guide.

3. Electrical connection

Unless otherwise expressly stated, the agitator is intended for connection to a 400 V 50 Hz 3~ power supply. To connect the electric agitator to your power supply system you will require a plug suitable for the socket outlets installed at the farm. This plug must be properly connected to the length of cable attached to the motor. The fuse protecting the lead to which the agitator is connected must be of the slow-blowing type and not exceed 25 amperes. If tripped, the fuse must isolate the motor on all 3 phases. The switch box on the electric agitator contains a built-in motor circuit breaker that is set to the agitator's maximum power consumption.

As the agitator is provided with a reversing star-delta switch for forward and reverse operation, there is no need to worry about the direction of rotation when connecting the unit.

0.6m of NSHöu rubber insulated flexible cable (4 x 2.5mm²) are fitted as standard for connecting the agitator to your power circuit. A longer lead should not be connected to the agitator since experience has shown that there is too great a risk of damage to any longer lead permanently connected to the agitator. We therefore recommend that you leave the short length of cable connected to the agitator and extend the lead as you require by using separable plug and socket connectors.

4. Starting up

Only plug in the connection cable after inserting the agitator through the pit opening. Switch on the reversing star-delta switch to the left or right to establish the direction of agitation achieved in each switch position.

At the start of the agitation process it is best to stir only from the bottom upward, i.e. sucking up the slurry under the floating crust and forcing it through the breaks in the crust. The area of broken crust can be opened up by swinging the agitator laterally to the left and right. Once the crust has broken up, switch over to the other direction of rotation which will result in the agitator stirring from the top downwards, i.e. sucking slurry from the top and forcing it down.

A full switching operation must be performed for each switch direction. First to star, then to delta. The star position is not intended as a power saving setting but merely serves to reduce the starting current. If the motor is operated continuously with the switch set to the star position it will be overloaded and may, in spite of the motor circuit breaker, suffer damage as a result of overheating (burn out).

Always unplug the power cable from the agitator before moving it to another pit opening or after finishing agitation.

As pits come in all shapes and sizes, it is not possible to make any technical specification as to the most effective and thus fastest mode of agitation.

A high proportion of long fibres in the liquid manure, in particular foreign matter such as cord or twine, is capable of producing a huge imbalance at the agitator propeller. To prevent overloading or damaging the agitator, such foreign matter should be avoided.

In rare cases, higher material wear may occur on permanently installed units as a result of ground leakage currents and / or through electrochemical influences. As a precaution and for safety reasons we recommend operating the unit with the plug connected to the three-phase system.

RECORDMIX OPERATING INSTRUCTIONS



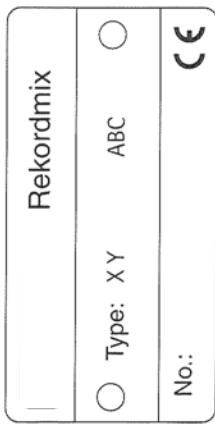
5. Maintenance

On concluding the agitation process, all parts of the agitator having come into contact with agitated slurry must be washed with water. Do not spray the electric motor and switch box with water. When parking the unit in your implement shed, make sure that the motor end of the agitator is higher than the propeller end so that oil in the agitator tube does not escape through the vent opening. Any short-term change to this position will not cause any damage and will not result in any loss of oil either. Oil changes are not necessary because the main purpose of the oil is to fill the agitator tube (static counter-pressure to the slurry). Merely check the oil once a year. Move the agitator to the horizontal position, unscrew the oil plug (52200) and wait until the oil has settled. The level of oil should just reach the top of the shaft that is visible below the oil filler neck. To top up, use oil with ISO VG68 viscosity (roughly corresponding to engine oils).

6. Identification plate

Every Rekordmix agitator is provided with an identification plate.

Type: X: Speed: L = 1,450 rpm | C = 2,900 rpm
Y: Power: 1 = 4.0kW | 2 = 5.5kW | 3 = 7.5kW | 4 = 11kW
ABC: Tube length in cm
No.: Serial number with date of manufacture (M/Y)

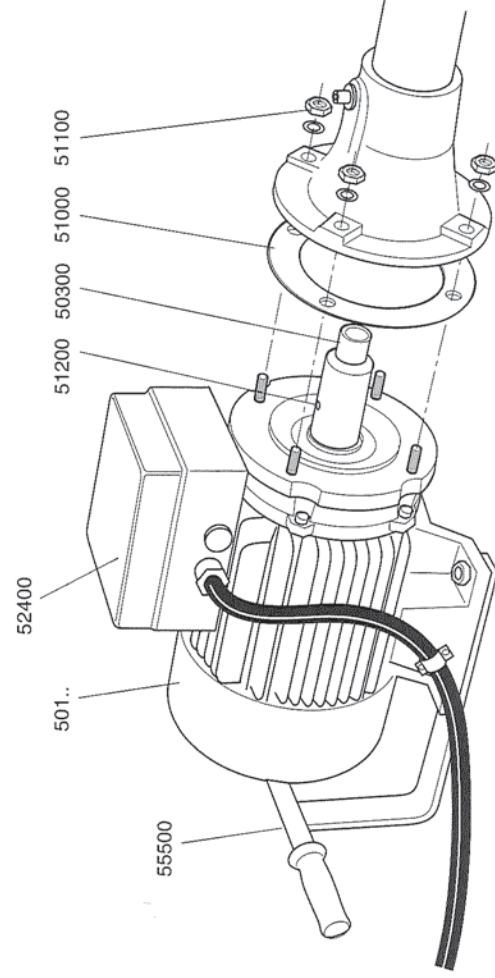


7. Configuration

The Rekordmix comprises two major components, the motor with switch box and handle on the one side and agitator tube with shaft, bearing, agitation propeller and support bracket on the other.

Removing the agitator motor simply involves undoing the bolts (no. 51100) whereupon the motor can be lifted off by hand. Bear in mind that the agitator tube is filled with oil.

The quantity of oil required for the various tube lengths is as follows: 3.25m 8 l / 3.75m 9 l / 4.25m 10 l. The quantity of oil will be lower for shorter lengths and higher for longer lengths. When positioned horizontally, the level of oil should be no lower than the bottom of the shaft and no higher than the top of the shaft.



Motor types

L1	4.0 kW (5.5 HP)	1,450 rpm
L2	5.5 kW (7.5 HP)	1,450 rpm
L3	7.5 kW (10 HP)	1,450 rpm
C4	11 kW (15 HP)	2,900 rpm
501..	Electric motor with switch assy.	
50300	Motor coupling	
51000	Flange gasket	
51100	Bolts for mounting motor	
52400	Switch box assy.	
55500	Motor handle	

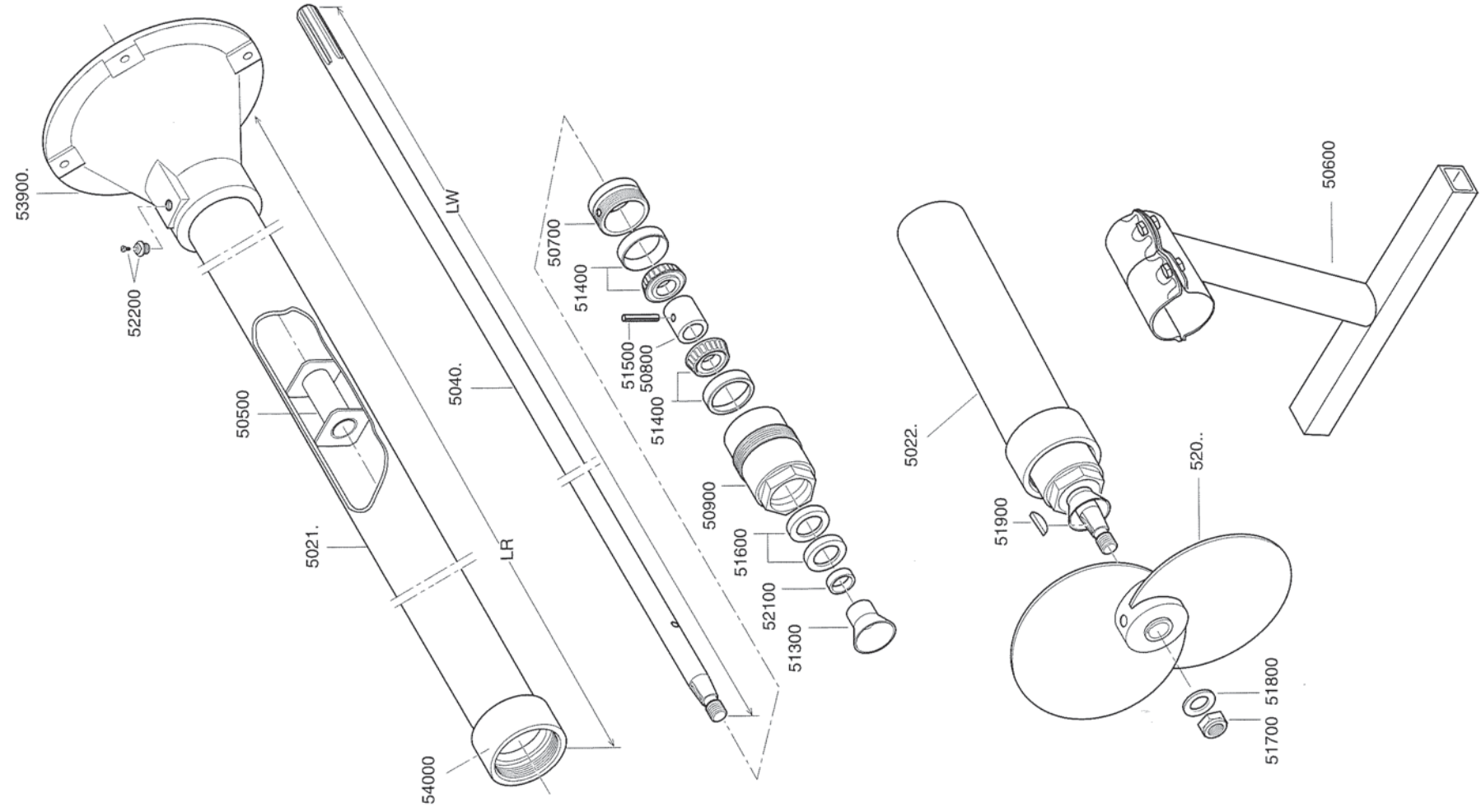
SPARE PARTS LIST FOR RECORDMIX - STANDARD VERSION -



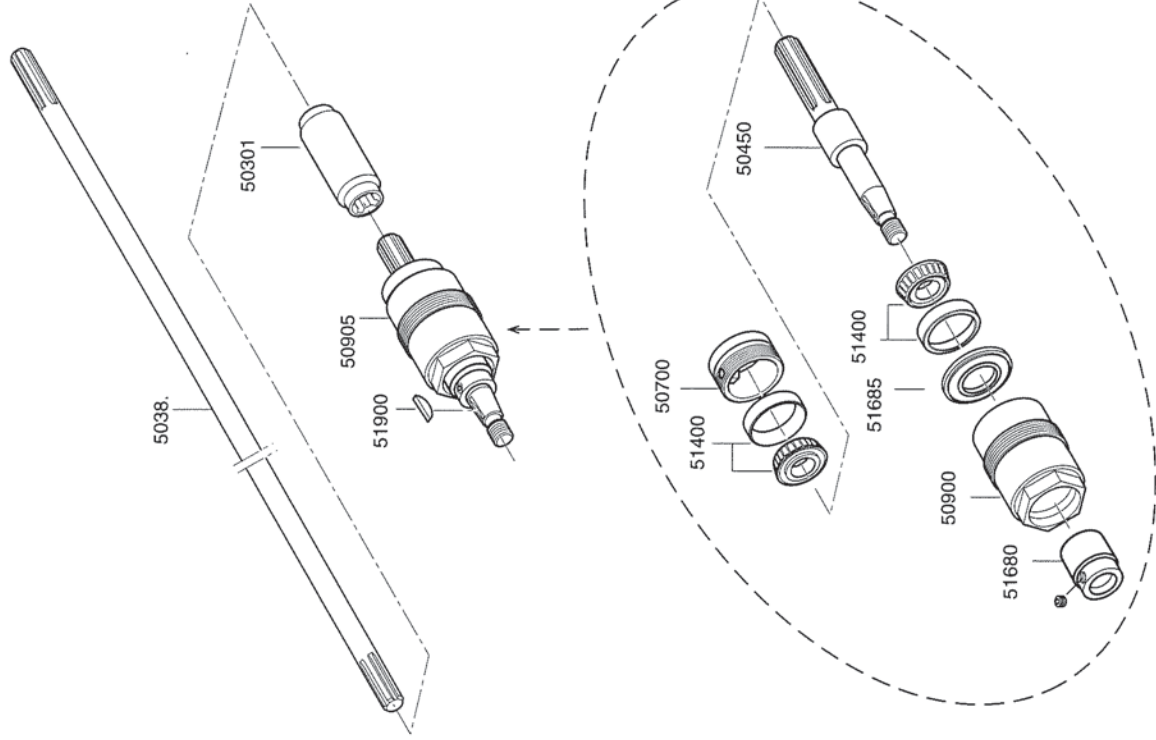
Configuration of standard version

Version	Description
50210	Agitator tube, empty, 3.25m
50211	Agitator tube, empty, 3.75m
50212	Agitator tube, empty, 4.25m
50220	Agitator tube assy., 3.25m
50222	Agitator tube assy., 3.75m
50224	Agitator tube assy., 4.25m
50400	Agitator shaft for 3.25m
50401	Agitator shaft for 3.75m
50402	Agitator shaft for 4.25m
50500	Intermediate bearing
50600	Support bracket assy.
50700	Threaded ring
50800	Spacer bush
50900	Bearing housing, empty
50901	Bearing housing assy. without shaft
51300	Collar
51400	Taper roller bearing (2 each)
51500	Locking pin
51600	Lip seal
51700	Locking nut M16
51800	Toothed lock washer
51900	Woodruff key
52010	Agitator propeller L1
52020	Agitator propeller L2
52030	Agitator propeller L3
52100	Wearing ring
52200	Plug with vent screw
53900	Tube flange (cast)

The agitator propeller must be matched to motor output and speed or the motor will be overloaded and may burn out.



SPARE PARTS LIST FOR RECORDMIX - SPECIAL VERSIONS -



Special version with mechanical seal

50380	Slip-on shaft, 3.25m
50381	Slip-on shaft, 3.75m
50382	Slip-on shaft, 4.25m
51680	SiC mechanical seal
51685	SiC stationary ring
50301	Shaft coupling
50450	Stainless steel agitator shaft end Ø 20
50700	Threaded ring
50900	Bearing housing, empty
50905	Bearing housing assy. GLD with stainless steel agitator shaft end
51400	Taper roller bearing
51900	Woodruff key 6x9

SPARE PARTS LIST FOR UNDERCARRIAGE



Undercarriage for Recordmix

54300	Pedestal clamp - lower part
54400	Pedestal clamp - upper part
54500	Lever nut, short for tube clamping
54600	Lever nut, long for joint clamping
54700	Lever nut, flat for swivel point clamping
54800	Undercarriage base frame
55000	Wheel for undercarriage
55100	Starlock cap

