

USER MANUAL



MIX-UNIT MD 2000 M



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Enclosure:

1. Electrical Drawings
2. Centrifugal pump description
3. Motor dircdribtion
4. Mixer 4620
5. Crane DC Pro

1. Introductory safty notes

1.1.1 Danger clasification:

Safety notes are subdivided into different steps, the following table a survey of the used pictographs gives.

Piktograph	Signal word	Definition / consequence
	DANGER !	Endangering immediatly, this one to a grave one Lead injury of persons can!
	WARNING !	Risk: endangering could appear and cause an injury of persons!
	CAUTION !	Endangering by an inattentive procedure, lead this one to injuries of persons or property damage can!
	ATTENTION !	Situation, this one to a damage to the plant, the plant components or other property damages can lead.
	INFORMATION	Application notes or useful information.
		Not endangering any or damage causing Consequences for persons and things.

Additional pictographs



Wearing dust mask



Carrying eye protection



Caution electrical tension



Carrying protection gloves

1 introductions safety advice



- **The build-up and commissioning of the unit has only to be done after a detail study of this operating instruction.**
- **The work of building-up, cleaning and maintenance has only to be done on a shut down unit.**

This operating instruction includes important advice to use the unit safety, properly, and economically. Pay attention to this and you can avoid danger, reduce repair costs and downtimes and you can rise the reliability and the life of the unit.

All drawings and pictures of this operating instruction are general, serve for illustration and are not responsible for the individual constructions.

The technical details and measures are not binding. Claims can not be done out of it.

Technical changes based on development of this described unit are reserved without changing this operating instruction.

All rights on this operating instruction, on the include drawing, other documents. and coping and passing on are in the hands of **MUD-DATA GmbH**, also in case of protecting right declaring.

The machine is build on the latest stand of technology. On unproper use the following things can happen:

- danger for life and live for the user or a third person
- disturbance of the unit and following real value of the user
- danger for the effective work of the unit

Every person, which is engaged with the building-up, commissioning, serving, maintenance and repairing the unit has to read and to understood this operating instruction and safety advice.

Only authorised personal should serve the unit. During the operation the competence of the individual activities have to be fixed clearly, that in the aspect of safety no unclear competence are there. This is aseptically for the work on the electrical and hydraulical equipment, which only have to be done by expert personal.

1.1 purpose using

The unit is build on the latest stand of technology and legal safety rules Nevertheless there can be danger for life and live of the user or a third person and disturbance of the unit and other real value.

The unit is only to use in technical perfect condition as well as purpose, safety and danger conscious in the case of this operating instruction. Troubles, which disturbance the safety of the unit are immediately to repair.

The unit is exclusive for mixing drillingfluids. An other use is a not purpose using. For damages resulting out of a not purpose using the user takes the risk. The seller will not pay for any damage then.

The purpose using includes also the attention of the operating instruction and keeping the maintenance.



Attention: If the unit will be used for an other purpose as mentioned or with a higher operating resources as licensed, there can be dangerous situations for person and damage to property.

Opposite purpose and forbidden use of the delivered unit is not known for the seller.

1.2 safety advice

This operating instruction includes fundamental advice which you must pay attention to the building-up, for the operation and maintenance of the unit. Depending on this, the operating instruction has to read before absolutely every commissioning and every installation by the operator or the expert personal and it has to be on absolute every insert place of the unit.

Every working method which reduce the safety of the unit is to omit. The user has to watch out that only authorised persons work on the unit.

The user is committed to look for watchable damages on the unit daily (including the operation behaviour), which reduce the safety of the unit and has to report it.

The user has to pay attention that the unit is in a technical perfect condition and only then the unit should be used. If necessary the user has to commit the working personal to wear protective clothing.

Depending on special instructions and controls the user has to ensure cleanness and cleanness on the workplace. Fundamentally, no safety precaution has to remove or set out of order. When it is necessary to remove or set out of order some safety precaution depending on installation, repairing maintenance, every safety precaution has to install immediately after finish of the repairing or maintenance work..

1.3 advice on specially danger

1.3.1 electrical unit

Work on the electrical unit could only be done from experts or from instructed persons under leading and looking of an expert, attending the electrical rules. More details of this you can get from enclosed descriptions of the individual parts.



**Attention: Warning for electrical voltage!
Danger for Person due electrical voltage!**



The machines and unit parts on which are going on repairing and maintenance works must switched out of voltage.

After the electrical equipment of the unit must be watched every day. Damages (loosed or burnt cables) must be repaired immediately.

Are works on voltage parts necessary there must be a second person which can switch on the emergency switch. During the works only use isolate tool.

1.3.2 safety advice for special operating kinds

Every safety endanger working is to avoid. You should only work with the unit when all protective and safety device (emergency switch, protective barrier, mudguards) are installed and in perfect condition.

If you notice any trouble stop the machine immediately. Defects are to repair immediate.

Before start working with the machine, make sure that nobody becomes trouble or is in danger with moving parts of the unit.

1.3.3 Special working in using sense

The statements of remove, maintenance and inspection in the operating instruction must be kept implicitly.

The using personal must be informed of special working on the unit.. In the same time you have to care that the unit can not be switched on unexpected. (cut electrical connection, put a warning sign on the main switch).

When you must work over ahead use the existing ladders, stairs and platforms.



**Attention: Do not use unit parts as ladder, stairs or platforms!
Danger of hurting!**

After maintenance and repair working you have to care about a non-polluting sewage and refuse disposal of fuels.

Damages which result out of non-observance of the operating instruction are not in the guarantee performance.

1.4 User information

When you have to order spare parts please have a look in the enclosed parts lists. MUD – DATA GmbH gives only guarantee for spare parts delivered of its own. The using or purposing of other spare parts can have perhaps a negative influence of the constructive characteristic and so can have a negative influence on the safety of the whole unit.

Please order your spare parts directly by the following address:

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Everytime we stand helpful by your side with an operator.

2 Unit description

2.1 model variation

The mix- unit MD 2000M will be constructed in the variation of the customer wishes. Special in the sphere of equipment and design we realise the wishes of our customers. The work assignment of the standard model is the basis for the description of the mixing unit MD 2000M.

2.1.1 General data.

20ft Mixing Unit includes the following details:

MUD-DATA, 20ft container - tank

- as basic for the mixing unit
- with two compartment mixing tank system
- Sand blasting, zinc primer and RAL colour
- main electric panel to operate the equipment
- emergency shut down system
- remote control panel for transferpump including 25m cable .
- 6 x 5 centrifugal pump (3667 L/min. 2,5 bar) with mec. seal for serving the Mud-Hopper, together with E-motor (37 kW) stabile installed on skid in container
- 4 x 3 centrifugal pump (2667 L/min. 2,5 bar) with mec. seal for serving the Mud-Hopper, together with E-motor (22kW) stabile installed on skid in container.

MUD – DATA, High sheer Mud Hopper with sack table

- 2" nozzle, venturi
- 6" hopper outlet
- 6" butterfly valve
- bentonit funnel
- stable installed on container

Flyght, underflow Agitator

- 2 Flyght underflow agitator for Mixing compartement
- impeller diameter 210mm
- electric – motor 1,5kW / 1390 rpm / 400V / 50hz
- stable installed in compartements

technical notes / capacity of the Mixing Unit:

Mixing compartement: 9,0 m³

Suction compartement: 11,0 m³

max. corn size of adding solids material are 5mm

max. specific weight of the mixed suspension 1,25 kg/l

adding solids material about 200 kg / min bentonit

electric power input:

- nearly 100 kVA
- 380V / 50hz

weight of the equipment completely:

- nearly 6,500 kg

Transportvolume of unit

- 1 item 20 ft Container
- nearly 6,058mm x 2,435mm x 2,580 mm

3. Transport, build-up and connection of the unit

3.1 transport of the unit

For transport and loading the unit has corner boxes. So the loading can be done with twist-lock system. When the transport is done with an other vehicle, pay attention on a good fastening.

During the unloading of the unit you must use robes and chains with a high enough heavy luggage.

The robes and chains are to nail on the corner boxes. Sensitive parts of the unit are to protect with soft underground.



Attention: During crane working do not walk under suspended load! Danger for life!
The known accident prevention's must be cared about

3.2 level the unit

The unit must build up on a horizontal, even and tight underground.

On uneven underground you have to make a even building ground (underlay blocks of wood, level or fasten the underground)

If you use blocks of wood you have to lay it under the main frame of the unit, so you can avoid a damage of the tank walls.

3.3 connecting the hoses

The waterinlet and transferline are following clients wishes, all in 6" Perrot F .

3.4 electrical connection

a 4 core rubber cable will be stable installed for the electrical influence. This work should only be done by an expert with the special knowledge.

When you will connect the unit on a generator please pay attention on the necessary power.

The power consumption is noticed in the description sheet of the unit. The unit has to earth according to the VDE regulations.



Attention: Before you connect the electrical influence, switch off the voltage and make sure that it can not switched on unexpected by an other person! Danger for life!

A influx pump can be connected with a 32 ampere CEE stocked. It will be navigated by the 4/4 float of the suction chamber of the recycling unit. For the connection of more extern equipment you can use further unnavigated stocked.

4. Handling of the unit

4.1 electrical production facility



Attention:

The electric panel can only be opened by electrical experts or persons who have a special introduction in that electrical panel.



4.2 Phase fault

After connecting the electric cables switch on the main switch.

When the lights of „ Phase ok „ is lighting , the unit will work.

If the light is off, the cores of the electric influx cables must be changed.

This safety precaution has been installed, because the pumps have only one right rotary field.

When the rotary field of the pumps works in the wrong direction, the shovel wheels of the pumps can be loose, the pump case and bearing can be damaged.

(see operating instruction of the centrifugal pump)



5 operation of the unit

All the valves of the unit have to be closed fundamentally.

The valves needed for mixing or transferring have to be opened just a moment before starting the operation.

5.1 Mixing the drilling fluid.

After filling the mix-compartment with fresh water we can start mixing bentonite. First we open the suctionvalve and transfervalue from the mixpump to the mix-compartment. Then we can start the mixpump by pushing the button on the mainboard. After we started the pump, we can slowly open the valve on the hopper. As soon as we opened the valve completely, and have enough vacuum, we can start adding Bentonite.

The best result we get by adding the bentonite with a smooth constant amount.



When you can not get any more remedy, please do not hesitate to contact the technical department of MUD-DATA GmbH.

5.1.1 Transfer the recycled drilling fluid

For the transfer of the drilling fluid you have to open the suctionvalve and pressurevalve of the transferpump. After you opened the valves you can start the pump. The pump can be started over the main board, and by remotecontrol.

Be aware that these unit is not equipped with float switches, so is **not protected** against dry running of the pumps !!!!!

6 Drain the mix-unit.

There is a connection on every chamber of the unit to suck the chamber completely empty. After connection of the suction pump you have to open the closing valve.

All pipes have to be completely empty then you can close the valves.

Attention: By frost warning, you have to empty the unit completely! Danger of destroying parts of the unit (pumps, pipes, valves).



When you have to empty the unit you have to take care of a non-polluting disposal.

7 shut down the unit

In emergency you can switch off the unit by the emergency switch every time.



8 repair defects

problem

You can not start the unit

possible reason

- The emergency switch is pushed
- Phase fault
- fuse / fault electric protection switch is triggered
- Main switcher is not pushed

problem

Mixpump can not be started

possible reason

- The emergency switch is pushed
- Phase fault
- Main switcher is not pushed
- fuse / fault electric protection switch is triggered

problem

Transferpump can not be started

possible reason

- The emergency switch is pushed
- Phase fault
- Main switcher is not pushed
- fuse / fault electric protection switch is triggered

problem

Agitators can not be started.

possible reason

- The emergency switch is pushed
- Phase fault
- Main switcher is not pushed
- fuse / fault electric protection switch is triggered

9 maintenance of the unit

Attention: If you work with the unit in cement suspensions or corrosive substance and material you have to wear protective glasses. Addition to that you have to have a wash bottle to wash out solids of the eyes.(for example in the building container)

9.1 control advice

Repair-, maintenance- and clean working have to be done fundamentally.

Danger for life and live!

Addition to the noticed advice for maintenance and control you have to pay attention on the advice on the centrifugal pumps, in the operating instructions of it.

9.1.2 safety equipment

The protecting and safety equipment of the unit is to check in regular times.

This includes as follows:

- all protective barriers, stairs, podest, banisters, cover cap are to check on existence, defect and tight seat.
- The emergency switch and the main switch for the electrical influx of the unit are to check if they work.
- All control and sign lights and machinists calliper are to control if they work.
- electrical cables are to control on loose cables and defects.
- external damages on the tank, the pipes or pumps are to repair immediately
- damaged parts are to repair or to remove
- You have to pay attention on changing behaviour from parts of the unit. If you have recognised any changing behaviour you have to inform your superior. Due changeable inform your responsible person immediately. immediately.

9.2 cleaning the mixing unit

9.2.1 general advice

You have to clean the recycling unit daily as follows:

- steps, handles, banisters, platforms and ladders you have to clean up because of the slide danger
- The cooling fin of the electrical motor and of the electric panel are to check on cleanness, over heating danger!
- The unit is to clean up one time a day fundamentally.

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1. Action on trouble

a) **leak of the packing and fast wear and tear**

Wear out cover of the shoulders: remove the packing. You can make certain scratches in the wave shoulders with a wire. Than you have to change it. A to fasten sit of the packing results a fast wear out of the shoulders.

When leaking, change mecanical seal.

Table of reasons of trouble

Reasons	noise vibrations	no flow	volume - electricity low	pressure to low	high power-input	short life-span
Pump not switched on speed to low		X	X			
insufficient NPSH	X	X	X			
blocked shovel wheel		X	X			
wrong rotary direction			X	X		
blocked in and out flow	X	X	X			
damaged shovel wheel			X	X	X	
Defect packing				X	X	
shovel wheel to small				X	X	
speed to high					X	X
spez. weight or viscosity to high			X		X	X
to big Shovel wheel space			X	X	X	
unrow	X				X	X