Molenvliet 28
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Unit Manual

P1500E pumping unit

First of all we like to thank you for purchasing this mixing unit and hope it will be of complete satisfaction to you. This product is built to perform, easy to maintain and is user friendly. To insure a long lifetime of this quality product we would like your attention for this maintenance- and operating manual. Please keep it near the mixing unit at all times so it can be of help.

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Operating manual P1500E

OPERATING MANUAL

SITETEC
HDD EQUIPMENT

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1.1 MOBILISATION

The weight of the P1500E is approx. 9200 kg. including platform hookarm.
Prior to lifting the pump unit a few checks must be made:

1. check if all stored articles inside the pump unit are securely tied down
2. take the ignition key out of the control panel
3. lock all doors

When all this is done you can hook up the lifting chains to the 4 top twist lock blocks.
Use certified and tested chains only, longer than 5 meters.

NEVER:

1. Stand or walk underneath the load
2. Use chains that are too short, to light, or have uneven lengths
3. Uncertified lifting equipment
4. Less or more than the 4 top twist lock blocks

Use a rope, tied to one of the bottom twist lock blocks to steer and/or turn the pump unit when it is lifted.
When the pump unit is loaded onto the truck, tie it down securely before it leaves your yard, have the driver sign the delivery note and keep the original.

1.2 PLACING THE PUMPUNIT ON SITE

Before you place your pump unit on its site location, there are a few preparations you can do:

1. Place a sheet of 8x4 meters of oil resistant plastic foil on the location of the pump unit
2. Place 2 drag line boards each at least 6 mtr. long with approx. 0.5 mtr. space between another horizontally, well supported by solid soil, on top of the plastic foil.
3. if you decide not to use the plastic foil: always use drag line boards or something similar placed horizontally to give the pump unit its full support
4. Place the pump unit as close to the mud tank as possible: maximum length of the suction hose is 6 meters.
5. Place the unit as horizontal as possible

When all this is done you can unhook up the lifting chains
Put the pump unit on the drag line boards and unlock the doors
Remove all articles out of the pump

The following connections have to be made:

1. mud-in:
- 6" victaulic

2. mud discharge:
- 3" weco #200

3. pop-off:
- 2" weco #200

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1.3 OVERALL CHECK OF THE PUMPUNIT

Before you can start pumping there are a several checks to be made:

1. Check electric power supply, switch-on indoor lights, check on/off of the liner wash pump.
2. Always keep the ground stake (ground/earth cable) in the ground during use.
3. Check oil level of the GD piston pump: a dipstick is located at the drive-end on the side of the pump unit. If the level is to low, add oil at the breather/filler cap on top of the drive-end. Check if there are any oil leaks on the power-end of the pump, if so, they must be fixed prior to starting the pump unit up.
4. Check oil level off the pump.
5. If any of these levels is to low, they must be added to the maximum level.
6. Check for any leaks on each of the systems and if so, they must be fixed prior to starting the pump unit up.
7. Check if all electrical cables and wires are still in good condition, repair if necessary.
8. Check pump drive V-belts.
9. Check, overall, for any damaged or loose parts and repair if needed.
10. Check the safety valve and its setting
11. Check all guards
12. Check remote control unit and cable.

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1.4 CAPACITY PARAMETERS AND PERFORMANCE CHART

This unit is capable to pump 1500 ltr/min @ 70 bar with fresh water of 7 Ph and 60 sec of viscosity and 1.2 gram/Cc.

Engine:
kW: 225
Speed: 1500

V belt drive
Make: Gates
Type: QP4-XPC4750

HP Pump:
Make: Garner Denver
Type: THE

Performance Chart

Strokes	4,5" liner	5" liner
75	292,5	360
100	390	480
125	487	600
150	585	720
175	682,5	840
200	780	960
225	877,5	1080
250	975	1200
275	1072,5	1320
300	1170	1440
325	1267,5	1560
ltr p/stroke	3,9	4,8
max pressure	85 bar	70 bar

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2.1 CHECK BEFORE STARTING THE PUMPUNIT

Before starting the pump unit you must do a quick check of all components of the pump unit:

1. Check the pump
2. Check Right liner size
3. Safety valve setting: check pump performance list
4. All fluid levels
5. Liner wash pump, tank, filter, manifold, hoses and water level make sure that there is now water in the last compartment of the liner wash tank this compartment is to collect oil spill and have to by drained every day.
6. Open all valves (suction and discharge)
7. Check for any leaks on the suction hose and inside the pump unit.
8. Connect and check remote
9. Make sure that all emergency switches are pulled out

FILL THE LINERWASH TANK UP WITH CLEAN WATER

START THE LINERWASH SYSTEM AND RUN IT FOR A FEW MINUTES
CHECK IF ANY DEBRIS PLUGS THE WASHPIPES if so clean out the system

2.2 STARTING THE PUMPUNIT

- Connect all hoses
- Connect remote control
- Check the “safety valve”
- Fill the two of the three compartments of the liner wash tank with clear water
- Check all oil levels (marked red)
- Check the liner wash if it’s flushing
- Make sure that “Pump on/off” is switched to “**on**” on both the main contol panel and remote control
- The potential meter must be on “ 0 ”
- **Always switch boosterpump to “on” before running the pump**
- Check booster pressure min. 2 bar max 3.5 bar
- Switch “pump on/off” to “on” and use potential meter to adjust pump speed
- Lock doors at night
- Clean liner wash tank daily

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2.3 OPERATING THE PUMPUNIT

When the pump unit is in service the responsible operator has to keep checking all items discussed in chapter 1.3 and 2.1 on a regular basis.
Extra to that is keeping an eye on the mudflow of the pump: bouncing hoses often mean you have a valve problem, mud in the liner wash system often means a liner and/or piston rubber has to be replaced.

Also while running the unit make sure that the oil pressure of the pump is between 1.5 and 3 bar this is the pressure of the lubrication system inside the pump when there is not enough pressure this means that the filters have to be changed ore lines are blocked

Do not continue running your pump until all these problems are solved!!
The fluid-end, drive-end and drive line will be seriously damaged by this!!

The unit will stop automatically.

1. Emergency stop
2. Charge pressure drop below 2 bar

2.4 WORKING ON THE PUMP AND EXCHANGING PARTS

Before you start working on the pump idle the engine for 5 minutes then stop it.
Before you start working on the pump close all valves.
Before you start working on the pump determine what the problem could be.

In case of a valve problem you can repair as follows:

1. screw out all six cap retainer rings
2. remove all six caps and gaskets
3. remove the 3 suction valve spring holders
4. remove all valves and springs
5. wash all parts and the inside of the fluid-end thoroughly
6. determine what parts need to be replaced, do not forget to check the valve seats remaining in the fluid-ends, for any wash-outs
7. replace worn out parts
8. re-assemble the pump with great care!
9. place suction valves in first
10. place valve springs onto the 3 holders and put them one by one into the fluid-end using the heavy bar to hold them down through the valve seat of the valve above
11. put in the cylinder head cap with its special seal using little grease
12. screw in the cap retainer ring using little anti-seize
13. after the suction valves are assembled put in the discharge valves
14. put in the springs
15. put in the valve caps with their special seals using little grease
16. screw in the cap retainer rings using little anti-seize

To start the pump, go back to chapter 2.1 of this manual.

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In case of a liner problem you can repair as follows:

1. start working as described above in 'in case of a valve problem'.
2. stop the liner wash system and disassemble the liner wash manifold
3. undo the piston rod clamp of the leaking liner
4. turn the crank of the pump leaving the piston rod in the front of the liner and pull the push rod back using the Allen wrench turning the jack shaft at the back of the pump.
5. undo the 4 bolt's that hold the liner and retainer ring in the fluid-end
6. carefully pull out the liner/piston rod/retainer ring assembly
7. press out the piston/rod assembly
8. replace the piston rubber and grease it
9. press the piston/rod assembly into the new liner that is lightly greased on the inside
10. clean the bore of the liner in the fluid-end using little detergent
11. grease the o-ring chamber of the liner and place a new o-ring in it
12. grease the bore of the liner in the fluid-end lightly after checking for any wash-outs on the o-ring area on the fluid-end
13. carefully put the liner/piston rod assembly into the fluid-end
14. place the retainer ring over the liner
15. screw in the 4 bolt's hand tight only
16. torque up the 4 b crosswise
17. turn the crank of the pump until the push rod hits the piston rod
18. check for misalignment
19. put on the piston rod clamp
20. reassemble the liner wash manifold
21. reassemble the valves as described above in 'if you have a valve problem'
22. drain liner wash water, clean the system and fill up with clean water

To start the pump, go back to chapter 2.1 of this manual.

3.1 12 HOUR SHIFT MAINTENANCE

The maintenance on the pump unit for a 12 hour shift is running through all the points discussed in chapter 1.3 thru 2.4. Notice only the time intervals for different oil changes that have to be made on time.

3.2 24 HOUR SHIFT MAINTENANCE

The maintenance on the pump unit for a 24 hour shift is running through all the points discussed in chapter 1.3 thru 2.4 at every change of shifts (2x in 24 hours).
Notice only the time intervals for different oil changes that have to be made on time.

3.3 WEEKLY MAINTENANCE

For weekly maintenance on the pump unit the following activities are recommended:

1. check the pump as described in chapter 2.3 thru 3.2.
2. check the pump unit overall as described in chapter 1.3 and 2.1
3. clean the inside of the pump unit
4. carefully wash out the bentonite from the radiator using a steam cleaner
5. empty the cans from the sump vents
6. disassemble the fluid-end and replace worn out parts
7. check if an oil change is needed
8. check filters of the oil lube System and pump

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9. grease the universal joint with 5 pump strokes
10. drain water out of the air tank

for grease use Shell RHODINA EP2

3.4 MONTHLY MAINTENANCE

For monthly maintenance on the pump unit the following activities are recommended:

1. follow all the points described in weekly maintenance
2. open crank case cover of the pump to:

- Check if all bolts and nuts are still tightened
- Check if all oil lines are still in good condition and flushing
- Check for excessive play on the big con-rod bearings
- Drain water from pump bottom

3.5 3 MONTH MAINTENANCE

For 3 month maintenance on the pump unit the following activities are recommended:

1. Follow all the points described in monthly maintenance
2. Open remote control box and check for any loose wires and air hoses
3. Grease all door hinches
4. Check if all gauges work properly
5. Check coolant condition

3.6 6 MONTH MAINTENANCE

For 6 month maintenance on the pump unit the following activities are recommended:

3.7 OIL CHANGE INTERVALS

Gardner Denver pump
- oil must be changed every 250 running hours
- or when you have water in the oil (milky substance)
- oil filter must be cleaned every 250 running hours
- or when you had water in the oil
- USE SHELL Spirax 80W90

DRAIN WATER OUT OF DIESELTANK AT LEAST ONCE A YEAR

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4.1 DEMOBILISATION

The weight of the P1500E is approx. 9.200kg. including platform and hook arm.
Prior to lifting the pump unit a few handlings must be made:

1. check if all stored articles inside the pump unit are securely tied down
2. uncouple all hoses
3. open the fluid-end as described in 'if you have a valve problem' and wash out the inside of the fluid-end
4. wash out the inside of the pump unit
5. lock all doors

When all this is done you can hook up the lifting chains to the 4 top twist lock blocks.
Use certified and tested chains only, longer than 5 meters.

NEVER:

1. Stand or walk underneath the load
2. Use chains that are to short, to light or have uneven lengths
3. Use uncertified lifting equipment
4. Use less or more than the 4 top twist lock blocks

Use a rope, tied to one of the bottom twist lock blocks to steer and/or turn the pump unit while it is lifted.

4.2 LONG-TERM STORAGE

Long-term storage is when the pump is out of use (on or off site) for more than 3-4 weeks.
If this is so, there are a few preparations to be made to make sure the pump unit can be in operation as soon as it is needed.

Preparations on the pump:

1. Undo liners as described in chapter 2.4
2. drain liner wash tank and take out the liner wash pump

CLEAN OUT YOUR ENTIRE PUMPUNIT

Before start-up dress-up the pump as described in chapter 2.4.
Also you must go through all the points described in chapter 2.1 thru 2.3.

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5.1 PARTS SUPPLY AND RECOMMENDED PARTS STOCKLIST

To make sure all your wear parts are available you have to stock your parts on-site.

PUMPING UNIT: P1500E serialnumber 2210737	
WEAR PARTS	**ARTICLE#**
GARDNER DENVER THE	1
5"LINER THE	2
VALVE ASSY	3
VALVE COVER GASKET	4
CYLINDER HEAD GASKET	5
LINER O-RING	6
PISTON ROD	7
PUSH ROD CLAMP	8
PISTON RUBBER 5" SERIES B	9
PISTON RUBBER COMPLETE 5" SERIES B	10
V BELT	12