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HWL400R

TECHNICAL SHEET

Content **page**

CHAPTER 1: WORKING CONDITIONS

Any mechanical equipment will be affected by the natural environment, geographical conditions, air temperature and other conditions, which will produce unfavorable factors to the performance and quality of the product. Therefore, under the premise of using our products, the following should be done:

1. When using this press pile driver machine, the soil must be kept relatively solid so that the path does not collapse during operation.

2. When working, avoid crowded areas and, if necessary, install guards around the site.

3. During operation, avoid high voltage lines and overhead power grids to ensure that the installation and use of the pole beater arm is not affected.

4. In case of severe weather, such as strong wind, rain, snow, fog, thunder and lightning or low visibility, work should be avoided in order to avoid accidents.

5. In an environment where the temperature is lower than -15 degrees and higher than +40 degrees, the use of the pole beater should be avoided. If construction is really necessary and urgent, take measures to conserve heat or cooling, to avoid malfunction of the pile driver machine.

CHAPTER 2: USE AND CHARACTERISTICS

The rotary hydraulic press pile driver is a multifunctional machine with 360-degree free rotation function and multi-angle pile pressing. The machine uses a diesel engine and a complete hydraulic mechanical transmission. It has the characteristics of high efficiency, convenient movement, installation of piles in several angles, high precision, durability, time and labor savings, etc. It is especially suitable for land construction.

The working team of the rotary hydraulic press pile driver is composed of professional team of technicians, extremely cohesive, which also includes research and development engineers, but also a team that provides technical assistance in the field. Given the fact that the machine has been used in different working conditions and various environments, it has been continuously reviewed and improved, so that it can be used today in complex locations, in various working conditions, on different surfaces. It can be adapted to round, square, rectangular pillars of various and special shapes.

The company’s quality inspection department and strict inspection methods ensure first-class quality for these machines.

CHAPTER 3: MAIN TECHNICAL PARAMETERS

Model	**HWL-400R**
Hammer model	400
Rod diameter	0-400 mm
Duplex transmission pump pressure	25 (mpa)
Duplex transmission pump displacement value	40 (ml/r)
Hydraulic system pressure	20 (mpa)
Overall machine weight	5.8t
Diesel engine power	85 (kw)
Rotation angle	360°
Rotation semi diameter	1925 mm
Effective press pile stroke	0-4000 mm
Dimensions (W × W × H)	4200 x 2200 x 2400 mm
Track width	350 mm
Engine total emissions while driving	1575 (ml/n)
Engine rated pressure while driving	18 (mpa)
Engine output torque while driving	4300 torque
Engine RPM while driving	50 (rpm)

CHAPTER 4: USE AND OPERATION

The hydraulic rotary pile driver is a machine carefully developed in order to meet the needs of market development and construction field's expantion.

Compared with the wheeled pile driver, it has stronger site adaptability and wider working surface. After a lot of theoretical deliberation and practical local certification, the current technical indicators have reached the relevant product standards in the industry. In order to standardize the operation, to ensure the normal operation of the drilling rig, operators must operate according to the following procedures:

1. Carry out a technical check before using the machine.

1. Check levels of engine oil, hydraulic oil, diesel, etc. in order to meet work requirements. If the oil level is insufficient, it must be added in time to prevent damage to the equipment due to lack of oil while working.
2. Check that the screw connections of the main mechanical parts, such as the power unit, the drive part, the hammer, the slider and the sliding support are loose and tighten the screws that are loose to prevent accidents during work.
3. Check that the pins on the hydraulic oil cylinders and rotating shafts are normal and replace the severely worn cutting pins over time.
4. Carefully observe the environment in which the machine is operated to ensure that there are no pedestrians and / or obstacles within its working range.

2. Start the engine

Set the power switch of the engine unit to the ON position, turn the engine ignition key and press the power button with a single press to start the engine.

The hydraulic pump starts running once the engine starts and will idle for 3 ~ 5 minutes, gradually increasing the oil supply to make the hydraulic pump reach the nominal pressure of 20 mpa and make sure that the throttle control lever is locked.

3. Move the machine to the working position

1. Carefully check the appropriate functions of the control levers in the operation table and memorize them. It is forbidden to operate them at random;
2. Use the control lever next to the left wheel to move and the right wheel to steer. Move the machine to the position designated for pole position.
3. Using the boom control lever, raise the boom and adjust its angle to position it according to the working requirements. In the process of raising the arm, always observe if the column at the bottom of the blade is in contact with the ground. If the lower column touches the ground, push the slide valve stem up.
4. Depending on the working needs, the rocker valve stem can be pushed to swing the arm left and right to adjust to the required position;
5. After adjusting the position, push the slide valve stem to slide down and insert the column at the bottom of the slide into the ground.

Once the positioning is completed, you can start inserting the post.

4. Inserting the pole

1. By moving the hammer head control lever up and down, move it to the highest position.
2. Place the rectangular post in the support bracket. Once the rectangular post is stable, push the hammer control lever to start it working. Slowly push the hammer head rod control lever to fit it into the end of the rectangular post.
3. Under normal working conditions, by impacting the hammer head, the rectangular pole is inserted into the ground to the required depth.

CHAPTER 5: ISSUES THAT NEED ATTENTION

After successfully learning the operating steps of the product, users must pay attention to the following aspects so that you can, on the premise of safety, successfully complete the tasks of the construction project:

1. Before working, check that the levels of engine oil, cooling water, diesel and power supply are sufficient and that there are no leaks in each part.

If each connection component is reliable continue operating, but if problems are found, they should be corrected in time;

2. When starting the diesel engine in winter, the diesel engine should idle for 3 ~ 5 minutes and wait until the water temperature and oil pressure of the diesel engine get to normal values.

3. When working, pay attention to the safety of the hydraulic oil lines on the machine to prevent oil leaks;

4. The ignition switch of the machine must be in the ON position whenever it is used and in the off position when it is not in use;

5. Before starting work with the hammer head, the column at the bottom of the blade must be lifted off the ground surface to prevent damage to its components due to the swing in suspension.

6. When the hammer is operating under normal impact, it is strictly forbidden to operate the control rod directly in the opposite direction and it is strictly forbidden to operate other control levers. If it is really necessary to operate other control levers, the hammer head must be stopped.

7. When operating the hydraulic reversing lever in several ways, pay attention to the movement, to be light and uniform, being strictly forbidden to push and / or pull;

8. Pay attention to the temperature of the hydraulic oil. When the temperature is overheated, switch off the machine and wait for it to cool down. Pay attention to any type of abnormal noise or abnormal operation.

The work must be stopped, and a rigorous check must be carried out, and the work can be resumed only after a possible troubleshooting;

CHAPTER 6: MAINTENANCE OF THE HYDRAULIC PILE DRIVER

In addition to the technical conditions of the equipment itself, the most important thing is the quality of the machine and its duration of use.
For daily maintenance, to improve the utilization rate of our machine and to maximize its effectiveness, the following maintenance content is formulated, which must be consulted and follow its implementation with all users.

Engine group maintenance

The engine unit is the heart of the equipment, its operation, normal or not, will directly affect the operation of the other components of the machine. Delivered from the factory, the machines deliver extraordinary performances, and strictly following the maintenance schedule, the long-term standard operation is ensured.

Before each shift, the oil levels, hydraulic oil, cooling water level, battery current level must be checked, otherwise they should be filled into the right level, respectively charged on time;
All connecting bolts, bolts and nuts on the vehicle's body must be inspected in detail before and after each shift, and the parts detected as loose must be tightened individually;

Before each shift, check that the drill rod device as well as the bearing and pin holes are well lubricated, otherwise Vaseline must be applied immediately;
Check the hydraulic oil lines and brake cables used on the poles frequently if they are found to be old, oxidised, cracked, etc., they must be replaced immediately;
In case of rain and snow, the electrical equipment of the machine must be treated in advance with waterproof substances; and must be stored sheltered if not used for a long time.
The track tension must be checked frequently and must not be too weak or too tight (± 8). When not in use for a long time, the track must be in a relaxed state;

Periodic inspection and maintenance ensure that the hydraulic pile driver is maintained in good technical condition, and thus extends its service life. Therefore, the operator must read and stricly respect the maintenance schedule as specified.

1. Engine inspection and maintenance.

The diesel engine is the main source of power for the hydraulic pile driver

The classification of maintenance types is as follows:

- Daily maintenance at each shift (8 ~ 10 hours).
- Class A maintenance (every 50 accumulated working hours)
- Class B maintenance (every 250 accumulated working hours)
- Class C maintenance (every 1000 accumulated working hours)
- Winter maintenance

Daily maintenance at each shift

1. Check the oil level in the oil pan, confirm the calibration of the dipstick.
2. Check the water level in the cooling system, and if it is insufficient, fill it to the appropriate level. Add antifreeze when the temperature can go below 5 degrees or stais parked.
3. When the water temperature drops to 40 ~ 50 degrees after being parked, the cooling water must be discharged
4. Check and tighten exposed engine bolts and

nuts to eliminate oil, water and air leaks.

5. When working in dusty places, use compressed air to remove dust from the air filter.
6. Remove mud, dust and oil from the outside of the engine.
7. When the engine is running, pay attention and listen to its sound, observe the color of the exhaust fumes and eliminate any defects and abnormalities found

Class A maintenance:

1. Run the **daily maintenance** contents
2. Wash the oil filter with clean diesel.
3. Clean the air filter and the dust within the dust disc.
4. Check the fan belt tension adjustment.
5. Add Vaseline to the water pump bearing
6. View the different parts of the engine. Make the necessary adjustments
7. When maintenance is complete, start the engine to check its operation

Maintenance Class B:

1. Perform all **Class A maintenance** contents.
2. Change the oil, clean the oil pan.
3. Clean the oil filter and replace the filter element.
4. Clean the fuel tank, fuel pump filter and line. Clean the diesel filter element with clean diesel.
5. Use compressed air to remove any dust from the generator, check that the parts are normal and change or adjust the parts that require it.
6. Check and adjust the valve clearance.
7. Check the opening pressure and spray quality of the fuel injector and adjust if necessary.
8. Every 2 maintenance cycles, check and adjust the contact gap and the iron core gap of the voltage regulator.

Class C maintenance:

1. Perform all **Class B maintenance** contents.
2. Clean the cooling system to remove impurities.
3. Clean the oil cooler system.
4. Replace the air filter and diesel filter.
5. Remove and inspect the cylinder head. Check the valve for leaks, remove carbon deposits and flush the valve as appropriate.
6. Check the tightening of the cylinder head bolts, main bearing bolts and connecting rod bolts. If the tightening torque is insufficient, tighten them again to the standard value.
7. Check the water pump, re-grease with Vaseline and replace the water gasket if necessary.
8. Check the starter, clean and / or repair it (if necessary) and add new Vaseline.
9. Check the fuel injection pump, adjust the feed feed feed angle and adjust the fuel injection pump to normal.
10. Check the supercharger, clean the parts, remove the carbon deposits and check the rotary capacity of the rotor.

Winter maintenance

When the temperature gets lower than 5 degrees, the engine must be specially maintained.

1. Special winter oil and fuel must be used. When the temperature is lower than -10 degrees in winter, anticoagulants must be added to the fuel and special attention must be paid to the water content, in order to avoid blocking the oil circuit.
2. The cooling system is filled with antifreeze, otherwise the cooling water should be drained when the water temperature drops to 40 ~ 50 degrees after shutting down.
3. In severe cold seasons and regions, it is best not to store the engine outdoors, otherwise the cooling water must be heated to preheat the body at start-up.

2. Inspection and maintenance of the hydraulic pump and hammer

The hydraulic pump is the main power supply for the hydraulic pole mixer, and the hydraulic hammer head is the main electrical support of the drill rod.

Its inspection and maintenance must be carried out as follows:

1. Before each change, check that the external connection of the hydraulic pump oil circuit is secure.
2. Before each change, check the external oil circuit of the hydraulic pump for oil leaks.
3. Before each change, check the motor connection and whether the screws are tight.

3. Hydraulic pump and hammer head

The hydraulic pump is the main source of energy for the hydraulic pole mixer.

Its inspection and maintenance must be carried out as follows:

1. Before each change, check the connection of the external circuit of the machine pipe whether it is weak or not;
2. Before each change, the connection of the power distribution spring must be checked for weakness or not.
3. Before each change, you should check the engine connection line, the screws to be tightened.

4. Inspection and maintenance of the hydraulic system

1. Before each change, check that the amount of hydraulic oil is sufficient and if not, refill;
2. Before each change, check that the connections of the hydraulic components are secure and adjustable in time;
3. Before each change, check for leaks in each part of the hydraulic system and resolve it in a timely manner.
4. The original hydraulic oil must be replaced after 50 hours of operation and the hydraulic oil must be replaced every 1500 hours.

5. Chassis inspection and maintenance

1. Before each shift, check the track tension and keep it at ±8 degrees.
2. Before each shift, check the tightness of each track shoe connecting bolt and adjust it.
3. Every 3000 working hours, check the wear of the “four wheels” (driving wheels, guide wheels, supporting wheels, and supporting wheels) and adjust them accordingly.
4. Every 50 working hours, check whether the track connecting live pin is firmly connected and replace it in time.

6. Inspection and maintenance of the mechanical parts of the pile driver

1. Before each shift, check the lubrication of each mechanical friction slide of the pile driver, and apply grease in time.
2. Before each shift, check the tension of the chain in time. If any slack is found, the chain should be tensioned in time and lubricating oil should be added in time.
3. Before each shift, check the amount of oil in the power head cycloid reducer and replenish it in time.
4. Before each shift, check the connection and wear of the drill rod connecting pin, and restore its working reliability in time.
5. Before each shift, check the wear of the pile cap and replace it according to the degree of wear to ensure its workability

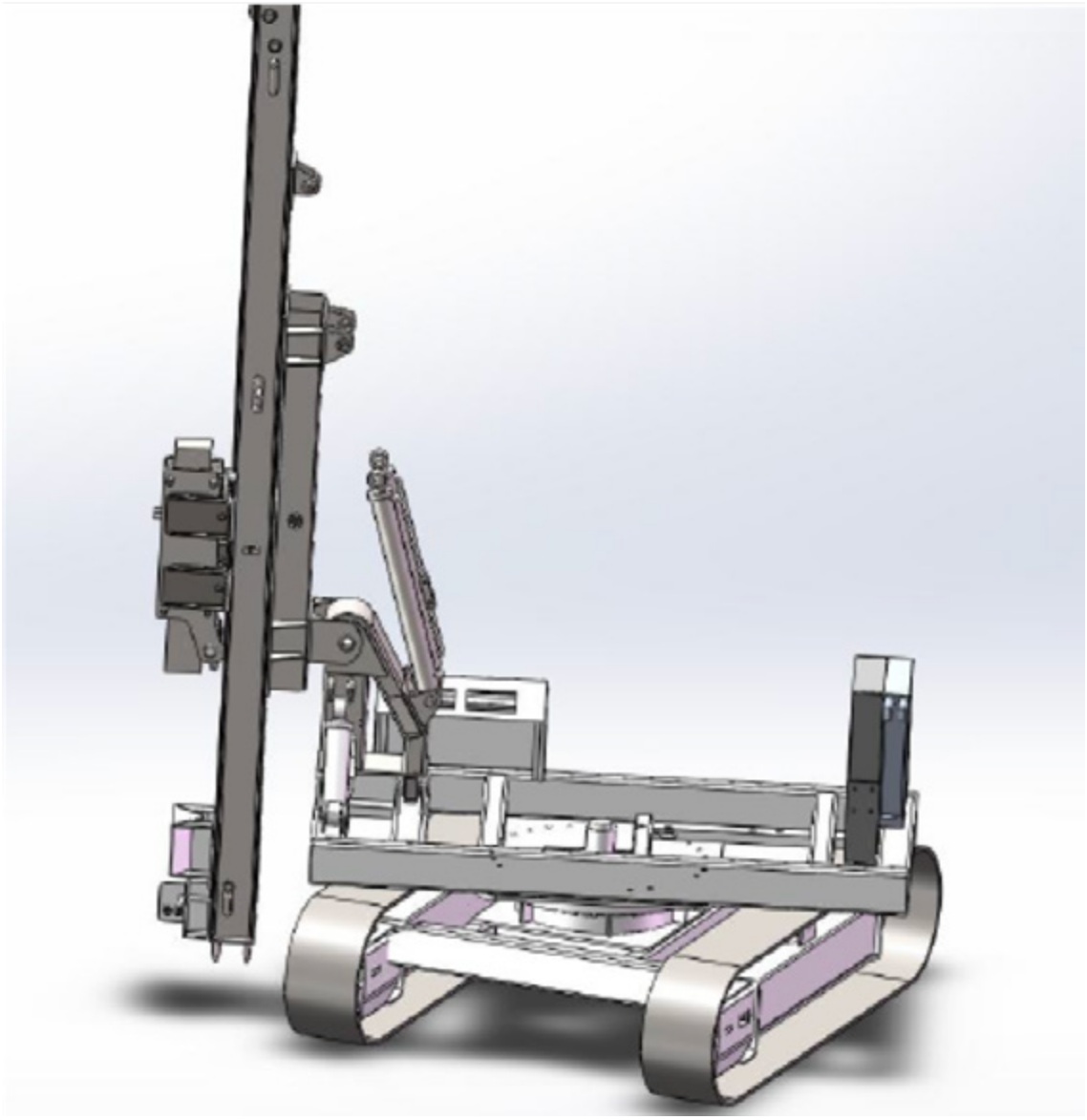
CHAPTER 7: TROUBLESHOOTING INSTRUCTIONS

If you encounter an abnormality during startup or during normal operation, you should carefully investigate the cause of the failure and handle it in time. Continue to work and it is strictly forbidden to use faulty equipment to press piles. After the problem occurs, troubleshoot as listed in the following table:

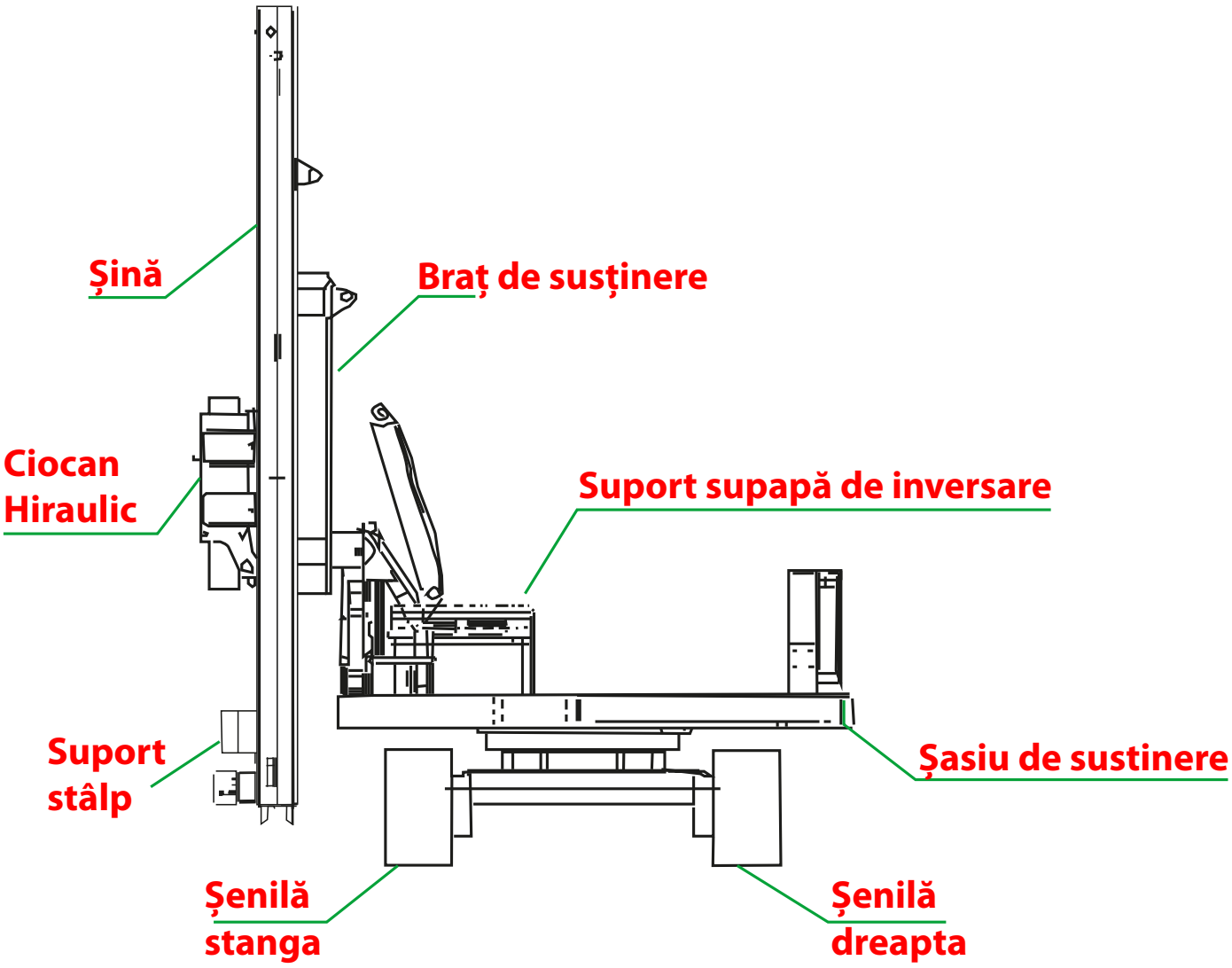
Symptom	Cause	Action
The diesel engine speed is normal, but the generator voltmeter has no response or cannot meet the voltage requirement.	• The generator switch is off • Damaged volume • The carbon brush of the generator is loose • The rectifier is weak • Damaged generator	• Start the generator • Change the voltmeter • Repair or replace the carbon brush • Repair or replace the rectifier set
The impact of the hammer has no power, the frequency of the impact is slow	• Nitrogen loss, insufficient pressure • Lack of hydraulic oil • Clogging of the oil suction filter • Oil cannot be sucked in	• Use nitrogen manometer detection; maintain a nitrogen pressure of 2.2 MPa • Fill the hydraulic oil to the level • Clean the oil filter or replace it • Drain the suction line, replace the oil suction hose and the hose rings.
Hydraulic hammer shaft does not work	• Hammer input and output connection is incorrect • Pipe connector blocked, oil supply interrupts • The hydraulic system pressure is too low • Battery pressure greater than 3 mpa or battery pressure too low • Hydraulic hammer reversing valve clogged	• Check and adjust the pipe connection • Check the oil and fuel supply system, the oil pipe connector is blocked • Check the oil pressure pump for normal operation • Check the nitrogen pressure in the battery of 2.2 Mpa • In addition, to clean the blocked parts of the reversing valve, make the normal movement.
The generator operates normally, the voltmeter looks normal, but the electrical panel is disconnected, or the electrical panel is normal, but other electrical equipment cannot operate normally.	• The generator output cable is not connected properly or is interrupted • The leakage protection panel on the electrical control panel is turned off • The generator output cable is connected incorrectly	• Check that the generator output cable is connected correctly • Switch on the Leak Protection Switch • Connect the cable correctly

Symptom	Cause	Action
The generator works normally, the electrical panel is normal, but the hydraulic pump cannot be operated, the drilling motor has no response at start-up.	• The main power line is not connected properly • The read value of the delay relay is 0	• Connect the main power line correctly • Set the delay relay to 05 ~ 10
When operating the multidirectional control valve, the drilling rig has no response or cannot go down or up.	• Hydraulic oil is insufficient • The hydraulic system pressure is too low • Oil line, multi-way valve or hydraulic blockage blocked	• Refill or replace hydraulic oil • adjust the system pressure • Clean the oil line, multi-way valve and hydraulic lock.
With the hydraulic system on, the drilling machine cannot move when you operate the multi-directional valve	• The hydraulic oil pressure is too low or not supplied with oil at all • Pressure regulating valve is blocked or hydraulic motor faults	• Add hydraulic oil • Clean the hydraulic line • Check the hydraulic pump • Clean or replace the pressure regulating valve

CHAPTER 8: STRUCTURAL DIAGRAM OF THE HYDRAULIC PILE DRIVER



CHAPTER 9: HYDRAULIC SYSTEM PRINCIPLE DIAGRAM



CHAPTER 10: PARTS LIST

Complete machine parts list		
	Name	**Quantity**
1	Engine Oil filter	1pc
2	Diesel filter	1 pc
3	Air filter	2pcs
4	Oil seal	1 set
5	Belt	1 pc
6	Cylinder tube cushion	1 pc
7	Piston ring	1 set
8	Start Button	1 pc
9	Start key	1 set
10	Composite seal gasket	2 sets
11	0-type ring	2 sets
12	Double row of chain joint	4 pcs
13	Cotter	1 set
14	Grease gun	1 pc
15	Nitrogen watch	1 pc
16	Nitrogen cylinder	1 pc
17	Wire connector	1 set
18	Drill rod	1 pc
19	Pile cap	2 pcs
20	Tool	1 set

List of hydraulic pipe fittings			
	Part	**Model**	**Quantity**
1	0-ring	2.65 × 30	2
2	0-ring	47 × 3.55	2
3	plug	M27 × 2	1
4	Three-way valve	3-M20x1.5 H Internal screw for sealing the inner cone	2
5	nipple	Composite gasket-M18 × 1.5 / H-shaped M20 × 1.5 outside the wire	4
6	nipple	Composite gasket – M22 × 1.5 / H-shaped M20 × 1.5 outside the wire	2
7	nipple	Composite gasket – M27 × 2 / H-shaped M20 × 1.5 outside the wire	8
8	nipple	Composite gasket – M27 × 2 / H-shaped M27 × 1.5 off the wire	7
9	nipple	Composite gasket – M22 × 1.5 / H-shaped M27 × 1.5 outside the wire	4
10	nipple	Composite gasket – M27 × 2 / H-shaped M33 × 2 outside the wire	2
11	nipple	Composite gasket – M33 × 2 / H-shaped M27 × 1.5 outside the wire	4
12	nipple	Composite gasket – M14 × 1.5 / H-shaped M16 × 1.5 outside the wire	1
13	Combined sealing ring	Φ27	50
14	Combined sealing ring	Φ22	50
15	Combined sealing ring	Φ33	50
16	Combined sealing ring	Φ18	50
17	nipple	G1 / 2 ”/ M27x1.5 H-shaped outside the wire	6
18	nipple	G1 / 2 ”/ M16x1.5 H-shaped outside the wire	2
19	nipple	G3 / 8 ”/ M16x1.5 H-shaped outside the wire	2
20	nipple	G1 / 4 ”/ M16x1.5 H-shaped off the wire	2

CHAPTER 11: REPAIR PARTS LIST

Lista pieselor componente ale ansamblului hidraulic			
No.	**Item**	**Model**	**Remarks**
1	Generator	TZH-50	Power 50kw / Rotation speed 1500r / min
2	Motor	R4105ZDI-1	Power 61.6kw / Rotation speed 1500r / min
3	Drill pipe generator	YE2-180L-4	Power 22kw / Rotation speed 1475r / min
4	Cycloidal reduction	BLD5	Speed ratio 29: 1
5	Anti-vibration	300 kg	Oxidizes over time, needs to be replaced in a timely manner
6	Fuel tank	50L	Corrodes due to oxidation, must be replaced in time
7	Air filter	R4105ZDI	Clean every 12 hours, change every 100 hours
8	Oil filter	JX0811A	Every 200 hours worked, it must be changed
9	Diesel filter	CX0710B4	Every 250 hours worked, it must be changed
10	Balance valve	SO-H8C-J8	When the valve core fails, it must be changed
11	Hydraulic fluid	68#	First shift after 50 hours worked, then every 600 hours worked.
12	Hydraulic oil pump	CBGJ2040/2040	displacement: 40L; pressure: 16Mpa; If the working pressure drops and cannot reach the specified value, it must be replaced.
13	Pressure control valve	DC30-15-3T-3C-3C	It must be changed every 50 working hours. If the pressure adjustment is incorrect, it must be replaced.
14	Hydraulic cylinder oil	90#-5 100#	If leaks occur, they must be replaced
15	Hydraulic strainer	WC800	When changing the oil, the filter must also be changed
16	Hydraulic compound	33# 22# 18#	If it has losses, it must be changed
17	Hydraulic joint	22 devine 27, 33 devine 27, 20 devine 22 (mm)	The damaged support screw thread needs to be replaced
18	Diesel engine oil	CD 15W-40	Every 250 hours worked, it must be changed
19	High pressure diesel oil pump	BH4R750	Every 1000 hours worked, it must be recalibrated
20	Drill bit	Aliaj de prospectare	If it gets too blunt, it needs to be replaced
21	Drill Pipe	300×4000mm	If it shows excessive wear, it must be replaced
22	Injector	R105	If the atomization is not appropriate, adjust or change.

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