# BW650Type Mud Pump

# Instruction for use

**(Please read the instructions before use)**

**Shandong Saigao Group Corporation**

## 1. The purpose of the mud pump and instructions

BW - 650 mud pump is horizontal triplex reciprocating double-acting piston pump, its characteristic is large flow, light weight, easy to decompose, facilitate the mountain carrying, can arrange to send water or mud. Mainly used with water well of machine.

Whether to send with water or mud, all should not contain the pump plays a role of corrosion of metal and rubber parts of chemical impurities, mud is recommended when using the following values:

Viscosity of 18 to 24 seconds and sand content is not more than 4%, sand diameter less than 3 mm.

Has two block displacement pump for drill water demand in different rock drilling shift to use.

## 2. The mud pump technical specifications

Style: horizontal triplex reciprocating double-acting piston pump

Number of cylinders: 3

The cylinder diameter (100 mm)

Piston stroke (85 mm)

Pump speed: 223 times/min), 168, 112, 86

Traffic: (liters/min), 650, 560, 430, 320

Maximum working pressure (Mpa) 2, 3, 4, 5

Suction pipe diameter (89 mm) (inner diameter)

Drain pipe diameter (mm) (inner diameter) 51

Overall dimensions (mm) long and 2170 wide 900 900

Quality: (580 kg)

## 3. The use of mud pump operation

One, the mud pump on the construction site of the installation:

Mud pump on the construction site must be installed in a fixed, on the basis of land use foot screws. Have a vibration in the working process of the phenomenon, should be able to keep the mud pump work steady and durable.

Must use when installing line method to check the engine or intermediate shaft and the parallelism of the mud pump pulley and belt driving position, so that they are all in the same plane, and then to fix the anchor bolt tightening.

Second, the mud pump to start the preparation work before:

Pump was ready to take on the oil seal before they go out, must come first unsealed when using, cleaning the crankcase, filling lubricating oil (foot) according to the oil dipstick scribed line check and pack good rubber rings, make its elastic moderation, check the pump cylinder head top set into the cylinder head is installed correctly.

Such as stop using or reinstall after for a long time, before moving must be to preparation of the following:

1, check and clean the water hose on live valve type water filter, inlet opening shall not be blocked by dirt, should live valve open and close freely, water filter and hose connection, should guarantee the seal.

2, check the fastening of the components and parts.

3, check into the situation of the drain valve are in good condition.

4, check the connecting rod bearing shell, cross shaft sleeve and cross sliding sleeve fit clearance.

5, check whether there is oil inside the crankcase and foot.

6, check the bento institutions are in good condition.

7, to open any cylinder water pump head cover, remove valve, the valve holes reserved water suction tube perfusion, and to fill up.

8, screw the tee watergate to to return place.

## 4. mud pump maintenance

The normal work of complete drilling equipment production of mud pump efficiency plays a big role, so that the work during the pump maintenance should be given enough attention.

Pump head, tie rod, cylinder liner, such as the navarre premature failure, because with nothing more than a large amount of sand flushing fluid to work, so you must take all measures to ensure the send rinses does not contain too much sand, and control in the allowed range, the return of flushing fluid in high sand content should be grille or filtering. Crankcase movement parts, poor lubrication oil contains impurities, friction surface into dirt or mud, etc., also is often the cause of slurry pump failure. In order to guarantee the normal operation of pump, and must pay attention to the following items:

1. Pay attention to check all the moving parts of the lubrication condition, foot, crankcase oil level should keep oil change on time, to be pure no mechanical impurities of lubricating oil. (see the lubrication of the pump)

2. The mud pump working pressure shall not exceed the specified value, pay attention to check the reliability of the relief work.

3. The mud pump piston reciprocating frequency shall not exceed the specified value per minute, more not allowed in the case of no water.

4. The mud pump rubber piston in the cylinder liner inner hole should cooperate closely, elastic moderate, in case the two cavity flushing fluid leakage.

5. On the suction pipe of each joint should maintain its rigor, in order to prevent the formation of air sac and breathe in the air, affect the efficiency of the pump.

6. Water filter to immersed in a tank flushing fluid surface below 0.5 mm, is apart from the pool bottom and surrounded by more than 0.3 mm.

7. Often keep the mud pump clean to prevent mud drip into the crankcase and other moving parts.

8. Pay attention to the tension of the belt and adjust in time.

## 5. stop the pump

1, tee watergate spin to return position of unloading, then stop the pump.

2, a long time to stop the pump, to pump in the line of rinses out and rinse, especially in the cold winter is especially attention.

3, when the pump is stopped for a long time to pump the oil and water, cleaning the mud on the parts and the parts and the following parts are coated with butter, crank shaft diameter of axle, gear, crosshead, crosshead sliding sleeve, tie rod, cylinder liner, cylinder head cover, navarre gland, guide hood. The seat cone, three-way cock, etc.

## 6. the mud pump lubrication

Timely correct lubrication can guarantee the normal work of the slurry pump, the moving parts to minimize wear and tear, provisions should be adopted for this brand of lubricating oil, and to prevent mechanical impurities mixed with oil.

Crankcase summer (GB/T443-1989) L - AN46 total loss system (30 # machine oil), oil (GB/T443-1989) in winter L - AN32 total loss system oil (the original 20 # machine oil).

Drive shaft on both ends of the rolling bearing lubrication, use calcium base mid-december GB491-65-3 grease (not less than 85 ℃ drop point, penetration, 220-250).

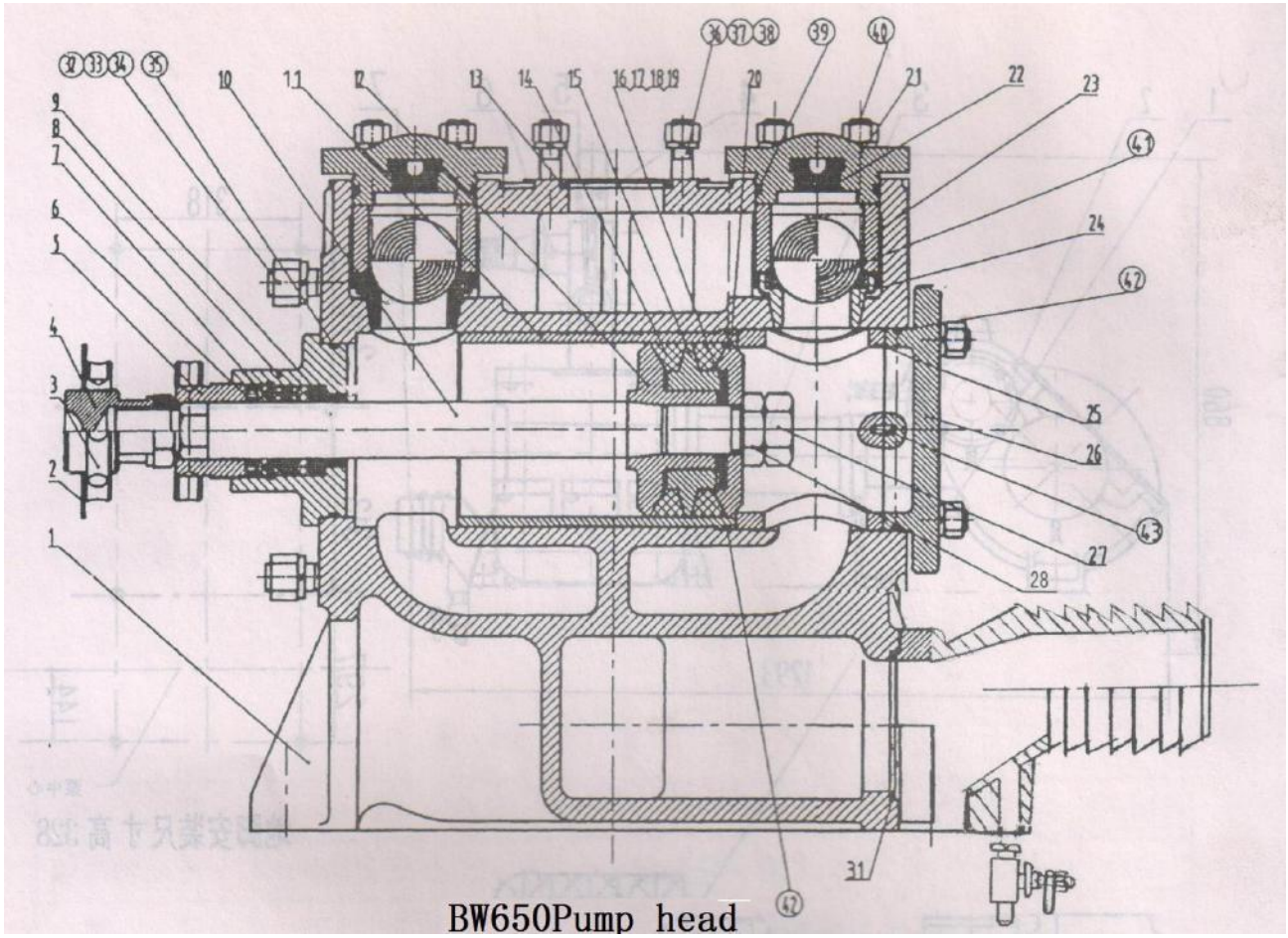
## Breakdowns, Causes and Solution

| breakdowns | causes | Solution |
|---|---|---|
| D ischa rge volu me is not enou gh or the fail to disch arge the flush ing fluid | 1. ater filter is over the surface.<br>2. lter is blocked.<br>3. he sucking pipe way is blocked.<br>4. oor sealing of the sucking pipe way and air is in<br>5. he inlet and outlet valve is stuck.<br>6. iston wearing<br>7. he sucking pipe is not filled up with air or the air is not formed<br>8. he sucking height is over the allowance.<br>9. he sucking pipe is too long or the diameter is small.<br>10. elt sliding<br>11. lutch sliding<br>(1) il stain on the surface of the friction piece<br>(2) he spring of the clutch is loose or broken<br>(3) he extent of the wearing of the piece is over the allowance value<br>12 Close down of the outlet gate | 1. p the filter under the surface for 0.3 to 0.5 meters<br>2. ash the filter<br>3. ash the pipe way<br>4. heck the joints and the hose to clean..<br>5. f it is caused by the wearing of the valve and valve seat then change the parts and if it is blocked by sand then wash clean<br>6. asten the nuts and change parts.<br>7. ill it with water and discharge the air.<br>8. ower the height to 2.5m. (The thick mud is 1m.<br>9. educe the length to 5m or less and enlarge the diameter(Φ76mm rubber pipe)<br>10. ighten the belt<br>11. ind the cause and eliminate<br>(1) emove it and clean in diesel<br>(2) djust or change the new springs<br>(3) hange the new friction piece<br>12 Open the gate |

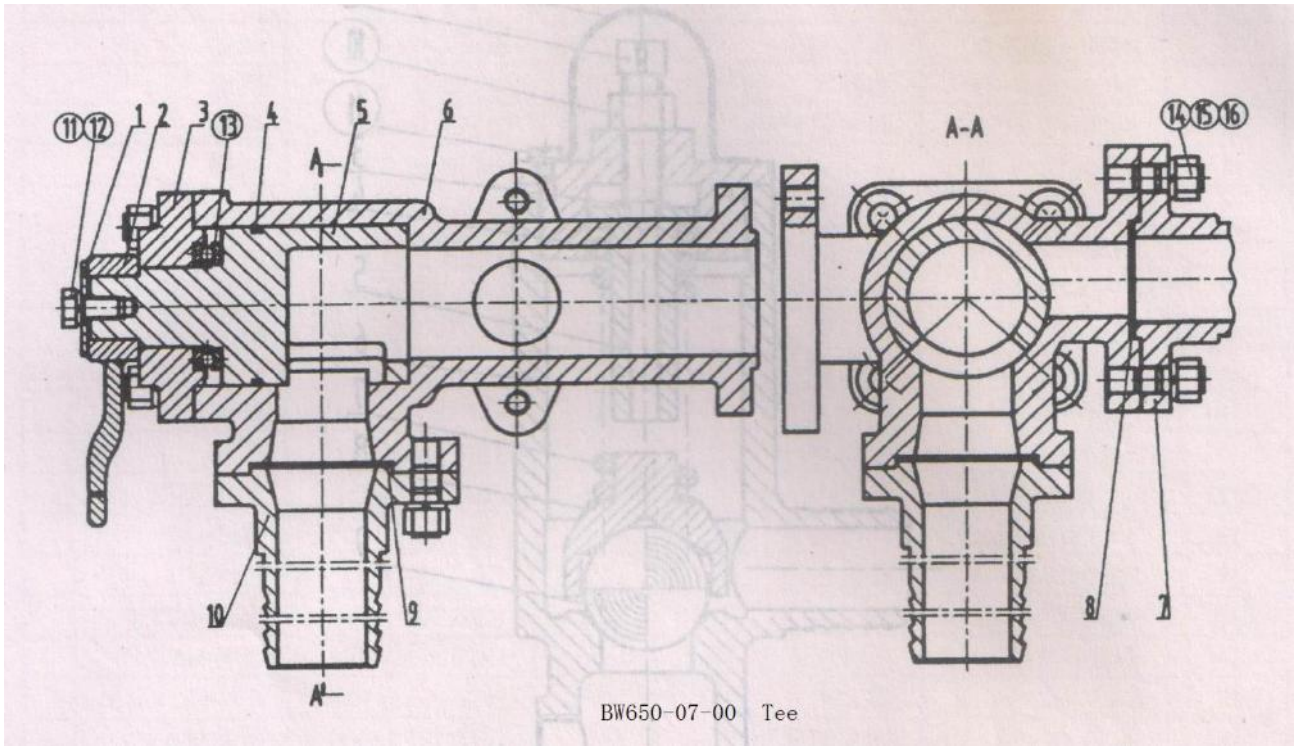
| | | |
|---|---|---|
| Pump running abnormally | 1. he seal of the piston is too tight<br>2. he connecting rod shoe is engaged so fast<br>3. he pull rod, crosshead and connecting structure is not aligned<br>4. all off of connecting parts | 1.Check the fitting clearance and eliminate<br>2. Check and eliminate<br>3. Check and fasten |
| Abnormal sound in operation | 1. The bearing bush of the connecting rod bearing bush is loose or the clearance is too big.<br>2. 2.The joints of the pull rod and the crosshead is loose<br>3. Bearings, bears and other parts damage<br>4.The over flow of the inlet and outlet valve lift causes the air erosion. | 1.Adjust the clearance between the bearing bushes<br>2.Check and tighten<br>3. Check and change parts.<br>4. Reduce the lift to 6 to 7 mm. |
| Too strong pressure jumping | 1. he worn piston of a certain cylinder does not work.<br>2. certain valve seat or valve is worn and it does not work<br>3.The fitting between the valve seat and the valve seat hole ahs clearance<br>4.he discharge medium has a lot of air.<br>(1) he wearing out of the piston is too big<br>(2) he water filter is blocked or emerged out of the water<br>(3) he sucking system has fault sealing | 1. Check and change the parts.<br>2. Check and change new parts<br>3. Eliminate clearance<br>4. Check the cause and eliminate<br>(1)Change the piston<br>(2)Take it out and wash clean and submerge it in the fluid<br>(3)Check and eliminate |

# Rolling bearing specification

| model | code | designation | number | remarks |
|---|---|---|---|---|
| 6209 | GB/T276-94 | Single row radial ball bearing | 1 | 45x85x19 |
| 7304AC | GB/T292-94 | single row angular contact ball bearing | 1 | 20x52x15 |
| 7309AC | GB/T297-94 | single row angular contact ball bearing | 1 | 45x100x25 |
| 30309 | GB/T297-94 | Single row tapered bearing | 2 | 45x100x27.5 |
| 32209 | GB/T297-94 | Single row tapered bearing | 1 | 45x85x25 |
| 32211 | GB/T297-94 | Single row tapered bearing | 1 | 55x100x27 |
| 3613 | GB/T286-94 | double-row self-aligning spherical roller bearing | 2 | 65x140x48 |
| 1609 | GB/T2841-94 | double-row self-aligning spherical roller bearing | 2 | 45x100x36 |



BW650Pump head



BW650-07-00 Tee

# BW650 Pump Head

| number | Code | Name | number | Code | Name |
|---|---|---|---|---|---|
| 1 | BW650-01-01 | pump head | 23 | BW650-01-28 | Guide cover |
| 2 | BW650-01-32 | Mud check ring | 24 | BW650-01-1900 | valve seat |
| 3 | BW650-01-31 | Flat nut | 25 | BW650-01-17 | Cylinder cap |
| 4 | BW650-01-02 | Rod joint | 26 | BW650-01-18 | cylinder head |
| 5 | BW650-01-03 | Plug wire | 27 | BW650-01-24 | Piston nut |
| 6 | BW650-01-06 | Plug pad | 28 | BW650-01-26 | Pull rod nut |
| 7 | BW650-0105-00 | Seal ring | 29 | BW650-01-25 | Hose clamps |
| 8 | BW650-01-04 | Plugwire positioning plate | 30 | BW650-01-21 | Inlet flange |
| 9 | BW650-01-07 | Copper sleeve | 31 | BW650-01-22 | Inlet flange gasket |
| 10 | BW650-01-09 | Pull rod | 32 | GB/T898-1988 | Double stud AM16x40 |
| 11 | BW650-01-10 | Cylinder liner | 33 | GB/T6170-2000 | Nut M16 |
| 12 | BW650-01-11 | Piston seat | 34 | GB/T9387 | Washer 16 |
| 13 | BW650-01-34 | Drain pad | 35 | GB/T 235-76 | O type sealing ring 100x3.1 |
| 14 | BW650-01-12 | Piston ring | 36 | GB/T898-1988 | Double stud AM12x32 |
| 15 | BW650-01-13 | Piston pad | 37 | GB/T6170-2000 | Nut M12 |
| 16 | BW650-01-15a | Washer | 38 | GB/T93-1987 | Washer 12 |
| 17 | BW650-01-15b | Washer | 39 | GB/T1235-1976 | O type sealing ring 70x3.1 |
| 18 | BW650-01-36a | Washer | 40 | GB/T898-1988 | Double stud AM12x35 |
| 19 | BW650-01-36b | Washer | 41 | GB/T308-1988 | The ball is 41 |
| 20 | BW650-01-14 | Piston gland | 42 | GB/T1235-1976 | O type sealing ring 115x3.1 |
| 21 | BW650-01-20 | Walla gland | 43 | GB/T119.1-2000 | Cylindrical pin 5n6x10 |
| 22 | BW650-01-23 | Guevara cushion | | | |

## BW650-07-00 Tee

| number | Code | Name | number | Code | Name |
|---|---|---|---|---|---|
| 1 | BW650-07-06 | Ring | 9 | BW650-07-34 | Drain pad |
| 2 | BW650-0705-00 | Spanner | 10 | BW650-07-08 | Drain connection |
| 3 | BW650-07-04 | Three way upper cover | 11 | GB/T5782-2000 | BoltM10x20 |
| 4 | BW650-07-03 | O type seal ring | 12 | GB/T93-1987 | Washer M10 |
| 5 | BW650-07-02 | Three way cock | 13 | GB/T301-1985 | thrust bearing 51108 |
| 6 | BW650-07-01 | Three species | 14 | GB/T898-1988 | Stud AM12x30 |
| 7 | BW650-07-11 | Return pipe joint | 15 | GB/T170-2000 | Nut M12 |
| 8 | BW650-07-10 | Return pipe gasket | 16 | GB/T93-1987 | Washer 12 |

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(product design and specification change without notice)