The general arrangement

of HYWZ-C BLT charging equipment

The users may refer to the appendix drawing No. 1 HYWZ—C—350 entitled the general arrangement of BLT charging equipment before installation to get a general understanding.

The installation sequence of BLT is as follows:

To weld crown ring on BF crown and then connect distributor with crown ring with bolts and nuts. For other parts, the sequence is: burden tank, lower sealing combination, lower bellow, upper sealing combination, burden receiving hopper ,burden stop valve, upper bellow, pressure relief valve, pressure equalizing valve. There are 2 openings for observation and chute replacement respectively in BF crown.

Chapter One Distributor

I. Installation

Distributor and crown ring are mounted together in order to facilitate transportation. The relative position between distributor and crown ring should be marked before installation, and then disassemble it. The crown ring should be hoisted to the right place and make sure its C.L. aligns with BF C.L., tolerance 2 mm. The tolerance of levelness of the crown ring top surface is 0.5/1000. After confirmation, weld the crown ring together with BF crown. If adopt butt welding method , welding groove should be cut out in advance. The groove size is no less than 1/3 size of the wall thickness of crown ring. And then put the seal onto the crown ring and hoist the distributor in right place and fasten the bolts.

Distributing chute should be installed after the whole equipment has been installed. The disassembly and assembly of chute vide Manual related contents and appendix drawing 2: chute replacement procedure.

II. Test

The distributor should be tested separately with motor and limit switch installed after the whole installation of BLT. Start up the distributor and check:

1. Check whether the limit switch is fixed in right place. Is there signal indication when β angle reaches 0º, α angle: chute reaches the extreme limitation position and send the signal appropriately. Adjust the position of limit switch when necessary.

2. Observe the running of the equipment to guarantee smooth running and do not exist abnormal noise.

3. Check whether the gease filling system works well.

III. The cooling of distributor

BF top temperature is around 3000C in condition of normal operation, so it is needed to cool the central throat tube and inside botton surface in order to keep the inside temperature of distributor below 700C.

Only water is needed for cooling distributor in normal condition. Inlet water pressur 0.2-0.3Mpa, temperature 250C, flow rate 2-3m3/h，water consumption 4-6m3/h.

The reqiurement of water supply pipeline: 1.water supply quantity should be easily adjusted and water gauge is needed to measure the quantity of water supply. Water sealing unit is needed to prevent leakage of gas from inlet and outlet of water pipeline for safety purpose.

IV. Nitrogen sealing

The distributor adopts special nitrogen sealing structure which may saves nitrogen effectively. Nitrogen supply pressure is 1.5-2 times as big as the max. pressure of BF top，Nitrogen consumption:40-150m3/h.

V. The lubrication of distributor:

1. According to the requirement of equipment working environment and conditions, It is suggested to choose General lithium based grease for centralized lubrication system(Norm:GB9317-87) Type: ZL-0. Needle penetration:355-385 (250C 1/10mm); If ambient temperature is above 200C, user may choose Type ZL-1 instead. Needle penetration:310-340 (250C 1/10mm); Its dropping point: 1700C; Applicable temperature:-20—1200C.

2. Lubricating system of distributor

Grease filling pressure:5-6MPa

Important points such as upper and lower rotary bearing, upper and lower sealing unit, bearing and speed reductor need to be lubricated every 4-6 hours，other parts need to be greased every 8-12 hours. Grease filling quantity: 2.5-5ml each time.

Adopt General purpose No.3 lithium base grease which conforms to GB7324-1994.

VI. Maintenance and repairing

See Manual related contents.

I. Installation and test requirement:

The installation procedure is as follows:

1. Clean the contact position between support beam and racks of burden tank.

2. Use level instrument to measure these positions and calculate, locate the elevation. The platform is built as per minus tolerance and the elevation calculation should take the following into account: lower sealing combination, the dimension of lower compensator (free status) (The thickness of seal between flanges should be calculated) , and then compare the results with the distance between lower flange surface of burden tank and upper flange surface of distributor.

3. Hoist the burden tank slowly onto the support beam, then measure and align C.L of lower flange of burden tank with BLT C.L to keep coaxiality≤2mm. Verticality of lower flange of burden tank and BLT C.L should be＜2mm.

4. Align the elevation of burden tank through adjusting the height of insert plate of burden tank racks and then fasten the bolts or weld directly to fix it.

5. Remove the big size material inside the burden tank to make sure that the lower units may work well.

II. Maintenance, repairing and safety

Replacement of burden tank lining plate and safety instruction, see Manual Chapter Seven Maintenance and Repairing.

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III. Recommended spare parts

1. Wear resistant lining plate

2. Bolt and nut , sealing washer for lining plate

Chapter Three Lower Sealing Combination

Lower sealing combination includes burden flow regulating valve and lower sealing valve. Burden flow regulating valve is driven by synchronous gear box. Its structure feature see Manual related chapter.

I. Installation, test and commissioning

1. The installation of lower sealing combination

When installation, the upper flange of lower sealing combination should match the lower flange of burden tank in right place and put the seal in between , then fasten them with bolts and nuts.

2. Adjustment and commissioning main points:

a. Before commissioning , the user should check the safety situation of equipment and electricals and the complete construction inspection record should be kept.

b. Make sure all connecting part and turning position conforms to design requirement. Hydraulic pipeline goes smoothly, lubricating points , limit switch, electrical automatic interlocking works well.

Following should be checked during commissioning:

1) Lubrication system runs well, grease pressure and quantity conforms to normal requirement.

2) Automatic interlocking is flexible and reliable.

3) No visual leakage in sealing area.

c. Melon valve plate and sealing valve plate runs well and reliable and no impulse run-out. Melon valve plate can stop at any middle position.

d. Adjust movement speed of oil cylinder Sealing valve Open: 3—5sec Close: 3—5sec Adopt wear resistant Hydraulic oil type: L-HM46 Norm:GB11118.1-1994 Hyd. oil cylinder has only two status when BF is in operation: complete open and complete close.

e. Limit switch adjustment：After valve plate is fully opened or fully closed, the limit switch should duly connect or disconnect the electrical signal. The distance between limiting switch and control board is 6~8mm.
f.After commissioning, cut off power supply and make complete commissioning record and report.

II. Maintenance, repairing and safety technology

1. Recommended spare parts and replacement cycle

a. Wear resistant lining tube---every 4 years

b. Sealing valve plate---every 1 year

c. Seal of valve plate---every 6 months

d. Seal of oil cylinder---every 6 months to 1 year

2. The replacement method of valve plate and seal vide appendix drawing 3: Valve plate disassembly procedure, drawing 4: Valve plate assembly procedure drawing, drawing 5: Valve plate assembly structure scheme

a. Safety measurement：valve plate should be set as open position and stock stop valve should be set as close position. Mechanical lock should be used in above two valves for safety. Cut off hydraulic system through stop valve and cut off the power supply of hydraulic-operated solenoid valve

b. Replacement of wear resistant lining tube: The lining tube is placed on the valve body without connection. Hence, the user may replace the lining tube through adjusting the height of lower bellow to disassembly the lower sealing combination and hoisting the lining tube out. And then install the new lining tube in reverse order.

3. Fault and its analysis see Form 1.

III. Lubrication system

Grease type：ZL-0 Lithium based grease Norm:GB9317-1987.
Grease filling frequency: 8h, quantity 2.5-5ml.

Form 1 Fault and its analysis

Fault	Reason	Solution
Melon valve	Burden stuck	Repeat open-close movement
plate Difficult to	The pressure of burden tank is not equalized adquately	Check sealing situation of equalizing system
open or close	Hydraulic system	Check pressure, oil cylinder, valve
	Lubrication system	Check lubricating points and valves
Valve plate is not tightly sealed	Seal is damaged	Replacing seal of valve plate

IV. Routine check under operation

Form 2 Routine check content and cycle

Check position and content	8 hous	24 hous	1weeks	1month	2months
Lubrication system working situation	√				
Stock stop valve and sealingvalve , check noise situation when do open-close movement	√				
Hyd. Driving system leakage situation	√				
Hydraulic, lubrication pipeline		√			
Limiting switch working situation, firmly fixed.			√		
Damage situation of valve plate seal				√	
Check fastener whether it is				√	
loose					
Check stock stop valve and sealing valve open-colse position and sequence				√	
Check clearance of shaft bush					√
Check lever arm					√

V. Spare parts

1. A set of oil cylinder seal
2. Valve plate, valve plate connecting long shaft, valve plate seal

Chapter Four Lower Bellow

I. Installation requirement

1.The installation of bellow：
The compensating range of lower bellow is about 40-80mm. The compensating range does not include the tolerance of construction. The user may adjust the insert plates located in platform of burden tank to solve the problem of construction tolerance.
Measure the height of lower bellow and compare the height with the distance between the lower flange surface of lower sealing valve and upper flange surface of distributor(the distance including the height of seal ring in the state of being mounted) to make sure they are matched. After confirmation, press down the lower bellow by 5 to 10 mm(easy to insert) and hoist it to the right place and connect it with lower flange of lower sealing valve and then pre-fasten the bolts. And then loose the nuts of threaded rod of lower bellow. Align the mounted equipment with the upper flange of distributor. At last, fasten the lower bellow with the bolts. The installation of upper bellow is almost the same as the above.

2. Prevent any damage of bellow during transportation and installation, especially prevent the damage of the splash of welding arc during on site installation to make sure the normal movement of bellow.

II. Repairing main point

Check fastener to ensure it is tight and check wear resistant bush periodically

III. Recommended spare parts

Wear resistant lining tube

Chapter Five Upper sealing combination

The upper sealing combination is made up of burden stop valve and upper sealing valve and burden stop valve is driven by synchronous gear box. There is wear resistant lining tube in upper sealing valve.

After burden tank is installed in right place, hoisting the upper sealing combination in right place and be fastened with bolts. And then install receiving hopper.

Upper sealing combination and lower sealing combination almost have the same structure except stock stop valve of upper sealing combination is driven by oil cylinder and burden regulating valve of lower sealing valve is driven by servo motor. Regarding test ,commissioning ,maintenance ,repairing and lubricaion user may refer to the related contents in chapter three, lower sealing combination.

Its position of lubricating point, lubricating cycle, fuel supply quantity are same as lower sealing valve.

Chapter Six Material Receiving Hopper

I. Installation procedure

1. Clean the contact positions of supporting beam and receiving hopper racks.

2. Use horizontal instrument to check these positon.

3. Use crane to put burden tank on support beam and adjust to the right place and calculate the thickness of insert plate：Measure the height of stock stop valve, upper sealing valve(or upper sealing combination), upper bellow free height and the distance between lower flange surface of receiving hopper and upper flange surface of burden tank and the thickness of seal should be counted into.

4.Adjust C.L of lower flange of receiving hopper to align with the C.L of BF, the verticality between lower flange and C.L of BF should be less than 10mm.

5. Use plate to fill the clearance between support beam and receiving hopper rack, fasten foundation bolt.

II. Maintenance and repairing

Replacement safety cautions for wear resistant lining plate of burden receiving hopper:
1. Lock material feeding system

2. Empty receiving hopper; close burden regulating valve and lower sealing valve.

3. Close burden stop valve , close upper sealing valve

4. Blow and clean receiving hopper

5. Cut off hydraulic circuit
All valves should be mechanically or electrically locked. To check and analyse gas composition after blowing to ensure safety operation. Regarding lining plate replacement

method, see Manual Chapter Seven

III. Recommended spare parts

1. Wear resistant lining plates

2. Bolt and nuts for fixing lining plates

3. Grizzly