**SOP FOR**

1. **PURPOSE: Maintenance of bleeder valve in safe way for optimum Performance**
2. **SCOPE:** Blast Furnace Top charging system
3. **RESPONSIBILITY: Engineer In charge & work men on job**
4. **PROCEDURE: MAINTENANCE OF BLEEDER VALVE**

PPEs to be used:

* Helmet, Safety shoes, Co monitor, Hand gloves, Dust mask and safety goggle. (Depending upon type of job)

**LIST OF TASKS COVERED:**

**Work No 1: Replacing bleeder seat & cap**

**Work No 2: Replacement of Bleeder spring washers (belly-velly)**

**Work No 3: Replacement of Bleeder seal**

**Work No 4: Replacement of hydraulic cylinder**

**Aspect Impact**

|  |  |
| --- | --- |
| Scrap generation | Resource Depletion |
| Dust Generation | Air pollution |
| Fumes | Health |
| Fire  Oil & grease spillage | Air pollution SP 42  Land contamination & resource depletion |

**Hazards identified**

**Physical Hazard** - Pressure, temperature, Burn injury

**Mechanical Hazard** - Trapping between two objects,

1. Fall of material, hammer, tools, slinged items, bolts.
2. Fall of person from platform,
3. Entanglement
4. Impact of moving / slinged items
5. Chemical hazard - Gas poisoning, Fire
6. Electrical hazard - electrical shock
7. Behavioral Hazards:
8. working without all required PPE’s
9. Working under influence of alcohol
10. Horse play
11. Casual approach
12. Not following SOP/WI while carrying out the job
13. Take clearance from production department (Work Permit) from the shift Superintendent / cast house in charge.
14. There is no clearance to work in bleeder & its accessories when following activities are in progress:
15. Tuyere changing
16. working inside distributor
17. Working on lower /upper seal replacement
18. Working inside GDC.

**Work No 1: Replacing bleeder seat & cap**

**Furnace s/d is required to carry out above activity**

1. Take production clearance ~~by taking work permit~~.
2. Take electrical shutdown of hydraulic power pack.
3. Take work permit from shift SS.
4. At any given time second bleeder should be kept open.
5. Check the bleeder seat & cap for any wear out.
6. If bleeder seat is damaged then same needs to be replaced.
7. Close the respective hydraulic line shut off valve and isolate the same by putting loto.
   1. .Replace the seat by removing all the bolts(M20 x90) and putting new seat
   2. Cut the bolts if bolts are not getting loosened by spanners then Use Oxy acetylene cutting set Follow procedure (WI/MAINT/91) for the same
   3. Replace bleeder seat & ensure that metallic gasket for seat to be replaced without fail.
   4. Clear Hydraulic isolation valve shutdown.
   5. Close bleeder valve manually & again hydraulic valve isolation to be taken, remove the top 2 nuts of cap stud.
   6. Once the 2 nuts are removed, release the Hydraulic isolation valve shutdown, open bleeder valve manually , (arm will get separated from the seat).
   7. Remove old cap & place new cap in position using 3 ton chain block.
   8. Slowly close bleeder valve manually once cap is rested on its seat , tighten the 2 nuts
   9. Close the bleeder valve completely.
   10. Once again open the bleeder & close to ensure proper seating, check for insertion of 0.05mm filler gauge.
   11. Clear work permit.& take the trial of the valve 2 times in auto mode.

**Work No 2: Replacement of Bleeder spring washers (belly-velly)**

1. Take production clearance by taking work permit.
2. Ensure other bleeder is open.
3. Close the bleeder of which belly velly washers is to be replaced in such a manner that there is 30- 40 mm gap between cap & seal. This will ensure that there is no load on the belly washers.
4. Hydraulic isolation valve shutdown to be taken.
5. Tighten the flange bolts
6. Loosen the flange bolts of belly velly housing & Replace belly vellY washers..
7. Clear electrical shutdown.
8. Open the bleeder valve, and then close it. Ensure that hydraulic cylinder stroke is fully closed. Also check the main arm of bleeder valve is perfectly vertical & there is no gap between cap & seal by inserting 0.05mm feeler gauge.
9. Take trial of bleeder 2 to 3 times
10. Clear work permit

**Work No 3: Replacement of Bleeder seal**

1. Take production clearance by taking work permit.
2. Ensure that Hydraulic isolation valve shutdown to be taken by keeping bleeder in Open condition.
3. Check bleeder seal, if found damaged remove the seal by jacking bolts and afterwards loosen the jack bolts and replace with new one.
4. Clear Hydraulic isolation valve shutdown.
5. Ensure gap between seat and cap to be 0.05 mm max by feeler gauge.
6. Clear work permit.

**Work No 4**: **Replacement of hydraulic cylinder**

1. Take production clearance by taking work permit
2. Close bleeder valve by ensuring 40 to 50mm gap between seat & cap , whose cylinder needs to be replaced & ensure that the other bleeder is open.
3. Take Hydraulic isolation valve shutdown.
4. Remove the hydraulic cylinder & replace with spare cylinder.

Note: Ensure to release the air lock from the cylinder while taking trials , before fully tightening the hose nut.

1. Clear Hydraulic isolation valve shutdown & take trial 3- 4 times.
2. Clear work permit

**Do**:

1.      Take electrical shutdown while working on bleeder.

2.      Use proper size slings & D shackles of rated capacity.

3.      Keep monitoring CO gas.

4.      Use plate while working on bleeder to avoid hot air coming on hand.

**Do Not:**

1. Allow any loose parts to fall down.
2. Stand in front of bleeder valve while taking trials
3. Operate bleeder valve by yourself.
4. Throw any scrap from furnace top

**Tools & Tackles: -** 3 Ton chain block, Open & Close spanner 30-32, Hammer 2 kg, Cutting set, Filler Gauge, Adjustable spanner.

**REFERENCES: Operation & Maintenance manual**

**Amendement Record**

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| --- | --- | --- | --- |
| **Date** | **Manual Section Ref. & Para** | **Brief details of Revision** | **New Rev.** |
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| **Prepared By:**  Digital head VAB | **Reviewed & Issued By:**  Management Representative | **Approved By:**  Mechanical and Asset Integrity Head VAB |
| **Signature:** | **Signature:** | **Signature:** |
| **Review Date: 07.06.2023** | **Review Date: 07.06.2023** | **Review Date: 07.06.2023** |