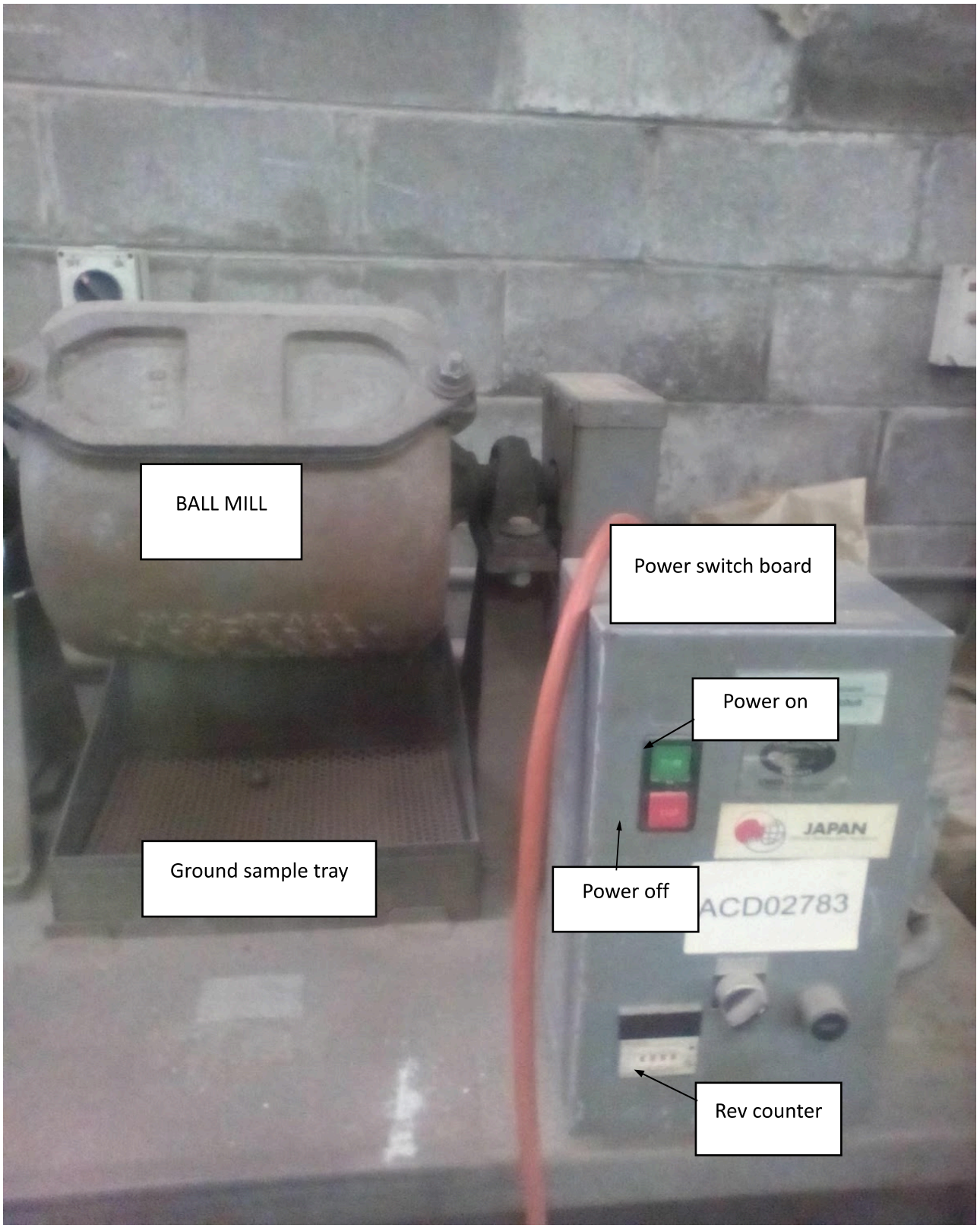
STANDARD OPERATING PROCEDURE
BALL MILL (GRINDING MILL)



OBJECTIVE

This Standard Operating Procedure (SOP) is specifically designed for the purpose of safe operation of the LABORATORY equipment **BALL MILL**. It is a small laboratory mill used in calculating the grindability of all ores. The equipment operator must read through the procedure carefully and should fully understand it before operating the equipment and or otherwise consult the senior laboratory personnel for any clarifications prior to the operation.

HAZARDS

- Moving parts – Moving parts may snag onto loose fitting clothing and cause injury to personnel
- Ultra fine dust creation
- Compressed air – Use of compressed air under very high pressure
- Ergonomics – Improper stance during sample loading and unloading may cause server muscle strain or back injury
- Very high noise – As the ball mill is switched on the noise created by the steel ball during cascading is very high that could induce stress or hearing impairment over an extended period of exposure

SAFETY – Personal Protective Equipment (PPE)

The following safety gears must be worn when operating the BALL MILL. It is a standard safety requirement that every person who is participating in the laboratory experiments or engage in any other activities in the laboratory MUST wear appropriate Personal Protective Equipment as required by nature of laboratory experiments equipment used. Listed below are PPEs required for this particular equipment;

- Dust mask
- Clear safety glass
- Safety boots
- Rubber hand gloves
- Ear muffs or plugs

APPARATUS & MATERIALS REQUIRED

- Bench top electronic balance
- Metal trays
- Metal scoop
- Spatula
- 1 Litre plastic measuring cylinder
- Compressed air
- Sample trays
- Lab funnels
- Plastic bags
- Paint brush
- Note pad and biro

- Stop watch or timer

STANDARD OPERATING PROCEDURE (SOP)

Prestart Check

1. Ensure that the work area is clear of any obstructions that may cause safety hazard in the work area
2. Check and inspect the steel balls are clean
3. Ensure that the steel balls weights and sizes are all set as prescribed in the test procedure
4. Turn on the main power supply switch to the Ball Mill

OPERATION OF BALL MILL

5. Place the set of steel balls into the ball mill
6. Add the required sample weight into the ball mill
7. Place the metal cover (lid) over the opening and tighten the bolts using a spanner. (Note DO NOT over turn the nuts as they may snap off (broken) just slightly tighten enough to hold the lid in position)
8. Switch on the wall power supply
9. Once everything is set Press the START button and start the timer simultaneously
10. When the grind time is achieved Press the STOP button
11. Rotate the mill with your hands until the Mill lid is facing upward
12. Remove the two nuts that hold the lid in position
13. Place the grated tray on top of another tray of a bigger volume
14. Rotate the mill until the mill window is facing directly onto the grated metal tray. By this time most of the ground materials and steel balls would have fallen onto the grated tray
15. Ensure that all the ground samples and still balls are cleaned out from the mill by using a paint brush
16. Shake the grated metal tray until all the ground materials are separated from the grated tray. Any samples sticking onto the steel balls must be brushed way into the tray
17. Use compressed air line to remove ultra fine materials sticking onto the steel balls
18. The ground materials will then be taken way to the next stage of processing
19. Do HOUSEKEEPING around the work area before you leave