PHARMA DEVILS

PRODUCTION DEPARTMENT

STANDARD OPERATING PROCEDURE	
Department: Production	**SOP No.:**
Title: Cleaning and Operation of Rotary Bottle Washing Machine	**Effective Date:**
Supersedes: Nil	**Review Date:**
Issue Date:	**Page No.:**

Vernacular SOP: No

1.0 OBJECTIVE:

To lay down the procedure for cleaning and operation of Rotary bottle washing Machine.

2.0 SCOPE:

This procedure is applicable for cleaning and operation of Rotary bottle washing machine in liquid department.

3.0 RESPONSIBILITY:

Technical associate Production - For Execution.

Officer/ Executive Production - For verification and implementation of SOP.

Head Production - Shall ensure compliance of the SOP.

4.0 **DEFINITION(S):**

NA

5.0 PROCEDURE:

5.1 Cleaning

5.1.1 Cleaning Procedure:

5.1.1.1 Remove all the good and rejected bottles from the area and carry out the reconciliation. Destroy the rejected bottles with status label.

5.1.1.2 Close purified water supplies from the valve.

5.1.1.3 Remove the PU pipe (used for water supply in to the water tank) from the valve and from the machine tank to machine chamber and transfer it to the wash area, clean the pipe with the help of purified water by passing water from one end to the other end, dry the pipe with the help of compressed air and hang the pipe on the wall hanger in spare room in inverted position and store in the change part cabinet.

5.1.1.4 Open the drain valves of water storage tank detach the PU pipe from the pump and drain out all the water from tank and PU pipe line. Ensure that there is no water in the water lines. Clean the platform of tank with purified water and dry it with lint free cloth.

5.1.1.5 Dry run the machine (Run the machine through PLC by selecting User 3 on login, select Operation then Auto air wash mode and set the speed of the machine up to 60 bottles/minute) with compressed air for 15-20 minutes, so that all the water from the machines PU pipes shall be remove. Clean the water storage tank, tank cover with wet cloth followed by dry lint free cloth. Open the pipe line and clean them in wash area, dry them and stored in the change part cabinet (If not used) with status label. Remove the water filter from the tank and clean it with purified water and dry it with compressed air and dip for 15 min. in 70% v/v IPA and again dry with compressed air and kept in change part cup board for further use.

Note: If next product to be taken within 24 Hrs. then follow point No. 5.1.1.2, 5.1.1.3, 5.1.1.4 and point 5.1.1.5 shall not be followed.

5.1.1.6 Remove the S.S cover of lubricating pipe line, lower S.S cover of conveyor belt and clean it with purified water and dry with compressed air and refit after cleaning. Mop the entire machine including change part, Ionizer unit, machine panel, conveyor belt, Inspection unit, S.S pipe of wiring, Upper SS Cover of the conveyor belt etc. with, compressed air, dry lint free cloth followed by wet and again dry lint free cloth.

5.1.1.7 Check that all the surfaces, all parts and PU pipes of Bottle Washing Machine are visually clean and dry.

5.1.1.8 If there is change in bottle size for next batch then dismantle the change parts and take it to wash area for cleaning. Clean them with the help of purified water and nylon brush and dry it with compressed air and kept them in change parts cup board. Assemble the new parts as per bottle size.

5.1.1.9 **Batch change over from the single bulk:** This procedure is applicable if there is a change in packing batch from a single Bulk. Change only the change parts as per requirement and Mop the entire machine with lint free cloth.

5.1.1.10 Put ‘CLEANED’ status label having Unit, Department, Equipment name, Cleaned by, Checked by Production Officer, Date and finally certified by Quality Assurance (QA) as per reference SOP (“Status labeling”).

5.2 Machine set up and operation

5.2.1 Machine set up

5.2.1.1 Ensure that Bottle Washing Machine is cleaned.

5.2.1.2 After line clearance from QA, put the "EQUIPMENT STATUS" label dully filled and signed on the machine.

5.2.1.3 Reassemble the accessories as per requirement such as pipe line & PU pipe line to the bottle washing machine.

5.2.1.4 Switch 'ON' the machine through panel board. The PLC of the machine is automatically on. The PLC screen shows.

Check the main air pressure of the machine through gauge provided on left side bottom of machine. It should be NLT 4.0 kg/cm^2.

5.2.1.5 Press login on PLC screen, the screen shows login user and password. On selecting the option user, the screen shows 4 different user ID.

5.2.1.6 (i) Administrator -This user id is for internal setting.
(ii) User 1 - This user id is use by Technicians.
(iii) User 2 - This user id is use by Technicians.
(iv) User 3 - This user id is use by Officer.

5.2.1.7 The ID's are protected with password. For password refer reference SOP (Procedure for password protection of PLC system).

5.2.1.8 In user 1 only machine MANUAL mode is active.

5.2.1.9 In user id 2 machine will be run on auto and manual mode with selected washing cycle.
In user id 3 machine whole setting will be done.

5.2.1.10 Select user 3 on Login and type password. On PLC five options are shown - HOME (in symbol), SETTING, OPERATION, PLC I/O, ALARMS.

5.2.1.11 On Selecting SETTING the screen will show.

5.2.1.12 Different options are shows on screen .These options are used for time delay.

- Bottle jam time: Machine (delay) when bottle is jam on conveyor

- Pump 1 & 2 low level alarm delay: The time delay is the time of machine stops as the water level low in both tank.

- Tank 1 & 2 water inlet sov (solenoid valve) on delay: The time delay of machine stops as the inlet valve will open after machine's stops.

- No bottle m/c stop delay: Delay time for machine stop as the there no bottle on machine.

- Bottle tilt delay time: This is the machine stops time as the bottle is tilt on the machine in feed conveyor.

Machine set speed: Machine speed.

Set the desired delay time required to stop the machine on activating the sensor of the machine.

Select Home and then select OPERATION and then select Manual Mode the screen will show:

5.2.2.1 Select water wash mode. Log out from user 3 by selecting home and then select User 1, type password.

- Select water wash mode: The screen will show:

5.2.2.2 On manual mode the machine setting will be done :- Machine will start and stop through this mode on touching the option .Machine lifting 'UP & DOWN' will be done through PLC (Lifting UP and Down is for setting of machine as per bottle size). Pump 1 & 2 'ON & OFF' will be selected through PLC.

5.2.2.3 Take the change parts from the spare room as per required bottle size and set the change parts warm shaft, Inlet and discharge star wheel and inlet and discharge guide on machine (if required) . Run the machine on inch mode through movable inch remote for proper setting of machine. Check all the nozzles of the machine (water nozzle and air nozzle for its proper opening).Check all the nozzles and PU pipes for its proper working before start of process. Check the free movement of machine.

5.2.2.4 Start the water supply on both the tank through the purified water supply. As the purified water fill on both the tank, run the machine through movable remote. The flow of the water and compressed air can be check through pressure gauge provided on machine main stand. The air pressure and water pressure should be NLT 3.0 kg/ cm^2.

5.2.2.5 Remove the shrink wrap (If applicable) and Load the bottles on the platform and the bottles are come through turn table to the machine conveyor. There is IONIZER provided on machine conveyor. The IONIZER provided for cleaning of bottles before it runs on machine. Put any damaged bottle in waste bin.

NOTE: There are two nozzles provided for washing of bottles on machine. During water wash mode, water is passing through one nozzle and through another compressed air is pass for washing of bottles and during air wash mode compressed air is passed from both the nozzles.

5.3 Machine Operation

After complete setting of machine in user 1, select home then logout from current user, select user 3 type password then select Operation then select water wash mode or air wash mode whichever is required. After selecting the option the screen will show :

AUTO air wash mode -

STANDARD OPERATING PROCEDURE	
Department: Production	**SOP No.:**
Title: Cleaning and Operation of Rotary Bottle Washing Machine	**Effective Date:**
Supersedes: Nil	**Review Date:**
Issue Date:	**Page No.:**

AUTO water wash mode -

5.3.1 Set the speed of the machine through PLC. Count reset the total production count before start of machine.

5.3.2 Log out from user 3 and again login to user 2. Start the machine through PLC by selecting Operation and then select that wash mode which is showing on screen.

5.3.3 Run the machine by selecting Auto enable. The speed of the machine will show on the scale provided on the PLC screen after 1 minute of start of machine.

5.3.4 **Wash Sequence during water wash mode:**

Inside Wash: - W1 code for Blue pipe, W2 code for red pipe and CA1 code for yellow pipe .
- N1 codes for water nozzle and A1 for codes for air nozzles

W1	W2	CA1
Water wash (N1)	Water wash (N1)	Air wash (A1)

Outside wash:(2 nozzles are provided)

E1
Water
W1 = From tank No.01 (Filtered purified water)
W2= From tank No. 02 (Filtered purified water)

E1 = External water From tank No.01 (Filtered purified water)

STANDARD OPERATING PROCEDURE	
Department: Production	**SOP No.:**
Title: Cleaning and Operation of Rotary Bottle Washing Machine	**Effective Date:**
Supersedes: Nil	**Review Date:**
Issue Date:	**Page No.:**

5.3.5 During process as the bottles reaches to washing machine through conveyor there is bottle collector provided on machines (32 heads are provided on machine) .These heads are take the bottles to machine in inverted position, all the process of washing are done on inverted position, as the washing process complete the heads take the bottle to its normal position and the bottles are pass through swing conveyor belt for inspection. The speed of machine conveyor and swing conveyor can be adjust with the machine speed through Knob provided on machine PLC panel and conveyor panel. Start/Stop push button is provided on conveyor panel to start and stop the conveyor.

On PLC screen there are option provided PLC I/O.

5.3.6 +On selecting this the PLC screen shows:

5.3.7 The PLC I/O shows the INPUTS and OUTPUTS of the machine .The options Provided on the PLC screens are provided to see the matters that are 'ON or 'OFF' on machine.

5.3.8 On main PLC screen there is Option provided ALARMS.
During running condition if there is any type of error observed on machine the alarm will show on PLC screen with 'BUZZER'

- Air pressure low.
- No bottle on in feed conveyor.
- Low water level in tank 1
- Low water level in tank2
- High water level in tank 1
- High water level in tank 2
- Bottle tilt.
- Door open.
-Emergency pressed.

If any alarm is show on PLC then reset on PLC to stop the buzzer, then Select Ack Selected, then Ack all and then select Clear. The alarm showing on PLC will remove from PLC

5.3.9 After completion of batch, stop the washing machine through PLC by selecting STOP.

5.3.9.1 Switch 'OFF' Bottle washing machine through Panel.

5.3.9.2 Affix "TO BE CLEANED" label on the machine as per reference SOP (Status Labeling).

5.4 NOTE:

5.4.1 Lubricate the machine through pump (provided on left bottom side of machine) at the start of batch.

5.4.2 Dip the water filter for 15 min. in 70% v/v IPA and dry with compressed air before use.

5.4.3 Transfer the bottles from store to bottle loading area in the shrink wrap or in poly bag.

5.4.4 Heater is provided on machine tank for heating.(If required)

5.4.5 Change the Water filter if water pressure from the pump is reduce from the requirement.

6.0 ABBREVIATION (S):

PLC : Programmable logic controller .

IPA : Iso Propyl Alcohol

V/V : Volume / volume

7.0 REFERENCE(S):

7.1 SOP No.: Status labeling.

7.2 SOP No.: Procedure for password protection of PLC system.

8.0 ANNEXURE (S):

8.1 NIL

9.0 DISTRIBUTION:

9.1 **Master copy:** Quality Assurance.

9.2 **Controlled copy (s):** Production department (01), Quality Assurance (01).

9.3 **Reference copy (s):** Production Department (01).

10.0 REVISION HISTORY:

S.No.	REVISION No.	CHANGE CONTROL No.	REASON (S) FOR REVISION	DETAILS OF REVISION	EFFECTIVE DATE
01	00		New SOP	NA	