STANDARD OPERATING PROCEDURE	
Department: Production	**SOP No.:**
Title: Operation and Cleaning of Automatic High Speed Injectable Powder Filling and Stoppering Machine	**Effective Date:**
Supersedes: Nil	**Review Date:**
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1.0 OBJECTIVE:

To lay down a procedure for Operation and Cleaning of Automatic High Speed Injectable Powder Filling & Stoppering Machine ID.

2.0 SCOPE:

This SOP is applicable for Operation and Cleaning of Automatic High Speed Injectable Powder Filling & Stoppering Machine (**Make:** NKP) at production area at ……...

3.0 RESPONSIBILITY:

Officer/Executive – Production

4.0 ACCOUNTABILITY:

Head – Production.

5.0 DEFINITIONS:

Not Applicable

6.0 PROCEDURE:

6.1 PRECAUTIONS:

6.1.1 Filling and Stoppering Machine shall be cleaned & sanitized.

6.1.2 Surrounding areas shall be cleaned & sanitized.

6.1.3 All the Machine Parts (Hopper, Pistons, Doctor Blade, Wheel Guard, Powder Collector, Free wheel etc.) shall be cleaned & sterilized.

6.1.4 Temperature of filling area shall be product specific as per BMR.

6.1.5 Relative Humidity of filling area shall be product specific as per BMR.

6.1.6 Laminar Air Flow pressure on Magnehelic Gauge shall be between 10 mm to 15 mm of Water Gauge.

6.1.7 Supply of Nitrogen, Vacuum, compressed air shall be through pendant.

6.1.8 All the safety guards shall be fitted on machine.

6.1.9 During initial setting of filling machine, operator shall set the dosing timeout and ensure that sterile powder shall directly dose inside the vials through piston.

6.1.10 If any dosing time out during filling operation, immediately stop the machine and remove all vials on filling machine track and discard all dosing timeout vials and record the same in BMR respectively.

6.1.11 After getting Approval from Production and IPQA Officer/Executive filling operation shall start as per re-adjustment of the dosing properly.

6.1.12 During filling operation if any change of Piston, Filter Tips, Sterile Change Parts which effect on dosing time, ensure that 1st cycle of filled vials to be discard immediately and records the same in BMR respectively .

6.2 OPERATION:

6.2.1 MACHINE SETTING:

6.2.1.1 Start the Laminar Air Flow prior to 30 minutes of filling operation.

6.2.1.2 Adjust the vial guide rails as per size for run of vials on conveyor by loosening left/right rail support mounting screw.

6.2.1.3 Adjust the **"Filling Head"** as per vial size by loosening head support column clamp screw.

6.2.1.4 Take appropriate dosing piston as per requirement & position it with pistons in the filling port of feed wheel.

6.2.1.5 Adjust the known depth of all dosing pistons.

6.2.1.6 Position it above wheel on machine.

6.2.1.7 Adjust the doctor blade of hopper & place it above the wheel.

6.2.1.8 Feed the powder in the hopper by inverting the sterile powder container. Tight the clamp from butterfly valve.

6.2.1.9 Take one vial whose weight is known and fill it with powder from any one filling port.

6.2.1.10 Check the weight of powder of vial and adjust the depth of port to increase or decrease the weight obtained as per requirement.

6.2.1.11 Adjust the depth of all the remaining of filling ports.

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6.2.2 FILLING OPERATION:

6.2.2.1 Perform Challenge test of sensors before start of operation and after any break-down of machine.

6.2.2.2 Record the details of sensors challenge test in **Annexure-I**

6.2.2.3 Production personnel shall check & ensure that all the adjustments for container size have been made.

6.2.2.4 Place empty containers upright on the in feed portion of the conveyor.

6.2.2.5 Production personnel shall check & ensure that sufficient amount of containers are ready to be filled.

6.2.2.6 Production personnel shall check & ensure that nitrogen supply is turned on and adjust the nitrogen pressure as standard value NLT 0.50 kg/cm^2 and Vacuum Pressure NMT 760mm of Hg.

6.2.2.7 Pass one container through conveyor rails to ensure proper clearance.

6.2.2.8 Press the Filling Head push button and adjust the speed of filling head to match it with the same of the empty container supplied under filling wheel.

6.2.2.9 Turn dose switch to **"ON"** position.

6.2.2.10 Depress **"Filling Head"** switch. The machine shall be started to operate only after ensuring that the die wheel has been adjusted, the escapement wheel shall hold the vial for the desired quantity of doses.

6.2.2.11 After the container is filled, the escapement wheel shall release the container, while the next container shall wait to enter. The filled container shall leave and proceeds along the conveyor.

6.2.2.12 The vial handling section of the machine shall be completely adjusted. Turn on the unscrambler until vials have been fed all the way to the vial feed wheels. Visually check to see that no fallen vials are between the unscrambler and the vial feed wheels.

6.2.2.13 Turn on the scrambler and adjust the speed of both the scrambler & unscrambler for easy movement of feeding vials to and receiving vials from the conveyor belt at the desire speeds.

6.2.2.14 Press the **"Inch Push Button"** to adjust the vials being fed in to the vial feed wheels momentarily press the inch button. Observe the movement of the vials in to the pocket as the vial feed wheels rotate as well as the discharge of vials are entering and discharging from the wheels properly.

6.2.2.15 Depress the inching switch and hold it observing carefully that vials feed freely in to and out of the machine with no jams occurring and make minor adjustment as necessary to the rails and speed of the scrambler and un-scrambler.

6.2.2.16 Check weight of 24 vials/as per dosing of API Weight/Vials respectively. Ensure that weight of individual vial is within permissible weight limit.

6.2.2.17 After getting approval from Production and IPQA Officer/Executive filling operation shall be started.

6.2.2.18 Check Relative Humidity, Room Temp. Differential Pressure, Fill Weight, after every hour during filling to ensure that all the specifications are within Limit.

6.2.3 STOPPERING:

6.2.3.1 Set the bowl as per stopper size.

6.2.3.2 Adjust the height of chute according to the vial size by rotating jack screw.

6.2.3.3 Place stoppers inside the stopper bowl.

6.2.3.4 Turn on the vibrator switch and make sure that stoppers are feeding properly.

6.2.3.5 The bowl speed shall be adjusted, never operate at a faster speed than it is required to keep up with production rate.

6.2.3.6 During vial Filling and Stoppering operation if any vial broken/fall down, refer as per SOP.

6.2.3.7 Switch "ON" the main power and HMI supply, HMI display as under:

6.2.3.8 Press F2 and fill the user name and press F3and fill the user pass word then press Enter to login on following display:

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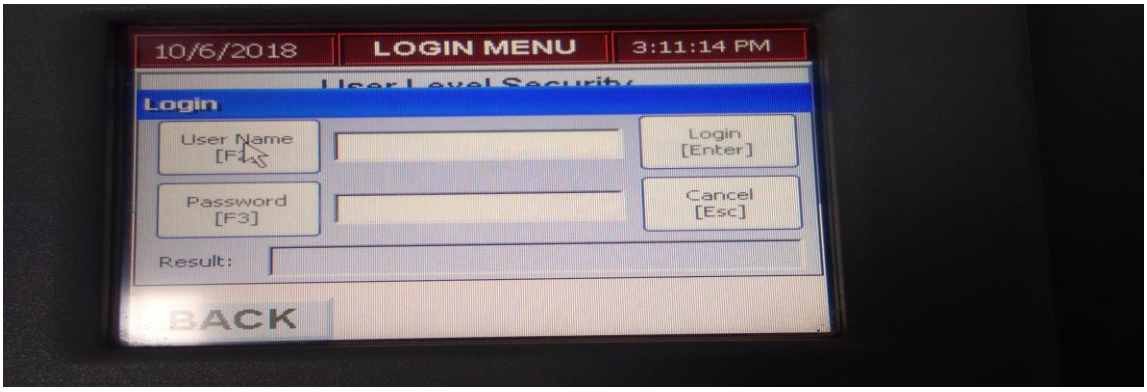
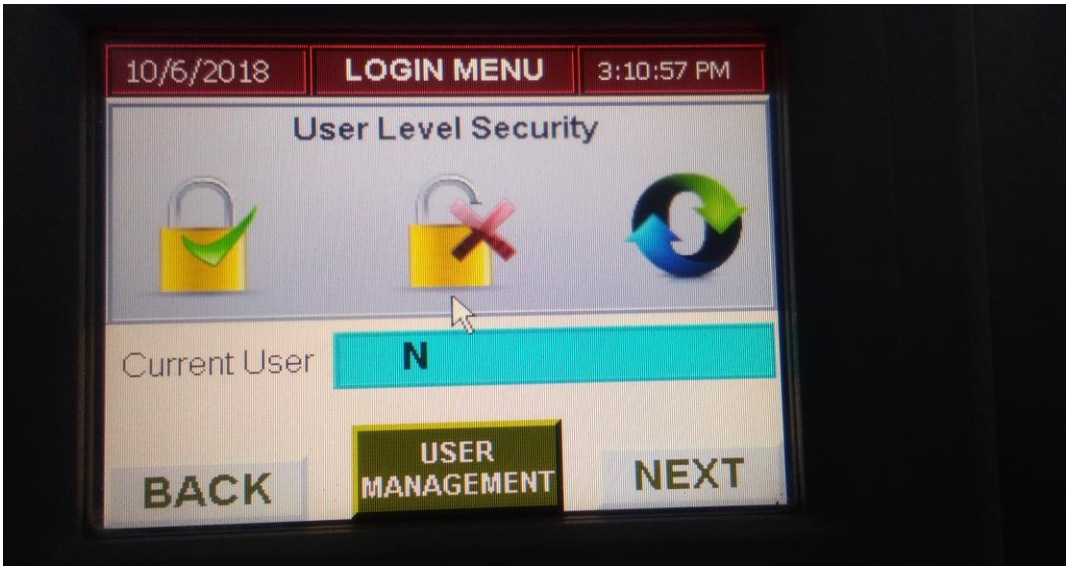


6.2.3.9 Following display on screen:



6.2.3.10 Press NEXT on above display.

6.2.3.11 Following display on screen for mode selection:

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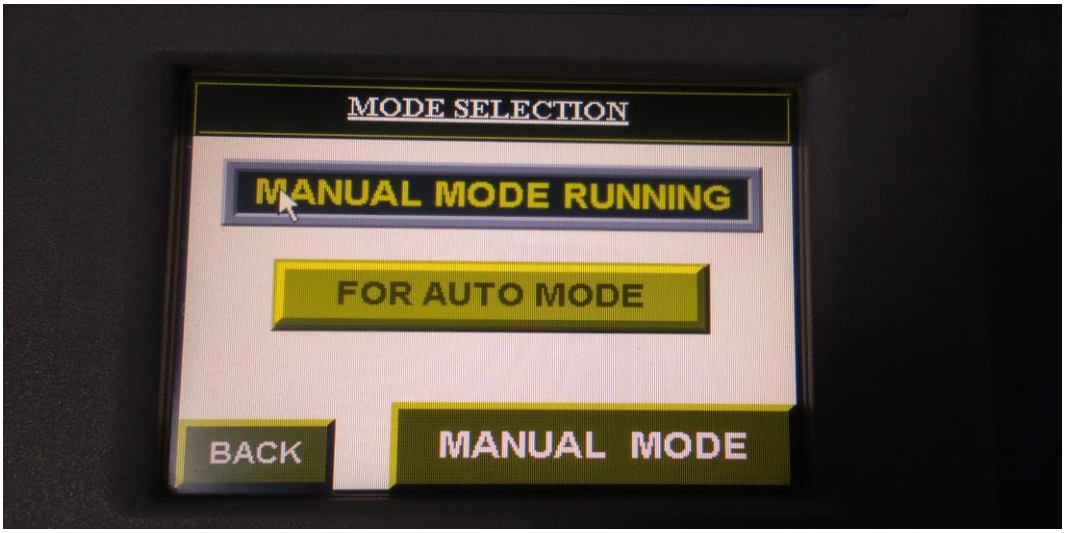

6.2.3.12 Select Auto Mode and following display on screen:

6.2.3.13 Fill the required batch details on above screen by pressing batch report.

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6.2.3.14 Press M/C START on above screen and run the machine in AUTO MODE-1

6.2.4 CLEANING OF FILLING & RUBBER STOPPERING MACHINE:

6.2.4.1 Switch off the Mains & Machine.

6.2.4.2 Turn off the supply of Nitrogen Gas & Vacuum.

6.2.4.3 **Dismantle Filling Parts: -** Hopper, Powder wheel, Pistons, Bowl, rubber bung chute etc. from filling & Stoppering machine, and transfer all accessories to Unit Preparation Area through the dynamic pass box.

6.2.4.4 Remove all the Safety Guards of Machine.

6.2.4.5 Remove all the powder from the body and inner side of the machine using lint free cloth.

6.2.4.6 Clean all the guards, machine body & conveyor belt using WFI.

6.2.4.7 Clean all the guards, machine body & conveyor belt using 70% IPA.

6.2.4.8 Wipe all the guards, machine body & conveyor belt using lint free cloth.

6.2.4.9 Clean the surrounding area of the machine using disinfectant solution 70 % IPA.

6.2.4.10 Intimate QA to collect the swab from machine body for analysis.

6.2.4.11 Wait for QC/QA release.

6.3 Record the Operation details in format titled **"Equipment log"** of SOP.

6.3.1 FILLING & STOPPERING CHANGE PARTS CLEANING:

6.3.1.1 Rinse dismantles parts using Purified Water thoroughly.

6.3.1.2 Wash all the dismantled parts thoroughly with Purified water thrice.

6.3.1.3 Wash all the dismantled parts with filtered WFI.

6.3.1.4 Finally rinse all the dismantled parts with filtered WFI.

6.3.1.5 Intimate QA to collect the sample of final rinse water from Powder Filling & Sealing Machine's change part for Rinse water analysis in QC.

6.3.1.6 After QA clearance dry all parts using filtered compressed air and sterilize it.

7.0 ABBREVIATIONS:

SOP	Standard Operation Procedure
WFI	Water for Injection
Ltd.	Limited
No.	Number
QA	Quality Assurance
UV	Ultraviolet Light
ID No	Identification Number
IPA	Isopropyl Alcohol
DPI	Dry Powder Injection
NMT	Not more than

8.0 ANNEXURES:

ANNEXURE No.	TITLE OF ANNEXURE	FORMAT No.
Annexure-I	Sensor Challenge Test Record	

9.0 DISTRIBUTION:

- Master Copy — Quality Assurance Department
- Controlled Copy No.1 — Production Department

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10.0 REFERENCES:

SOP Titled **"Equipment Log"**

11.0 REVISION HISTORY:

Revision No.	Change Control No.	Details of Changes	Reason of Changes	Effective Date	Done By
00	Not Applicable	Not Applicable	New SOP		

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ANNEXURE-I

	PRODUCTION
	SENSOR CHALLENGE TEST RECORD

Frequency: Before Start of Operation and After Machine Break-Down

Date	Product Name	Batch No.	Sensor Details	Status (Ok / Not Ok)	Done By Sign & Date	Checked By Sign & Date	Verified By Sign & Date	Remarks
			Powder Level Low Sensor					
			No vial No Filling Sensor					
			Nitrogen low Pressure Sensor					
			Vacuum low Pressure Sensor					
			Rejection Sensor					
			Temperature & RH Low Sensor					
			Low Air Velocity Sensor					
			Door Interlocking Sensor					