INSTALLATION QUALIFICATION PROTOCOL FOR POWDER FILLING MACHINE

Equipment ID	
Equipment Location	**Powder Filling machine Area**
Equipment Make	**JP machine tools**
Document No.	
Reason For Qualification	**New Equipment**

TABLE CONTENT

1.0 PRE-APPROVAL

Signing of this Installation Qualification Protocol indicates agreement with the Validation Master Plan approach of the equipment. Further if any changes in this protocol are required, protocol will be revised and duly approved.

PREPARED BY:

Organization	Name	Signature	Date
Production			

CHECKED BY:

Organization	Name	Signature	Date
Engineering			
Production			
Quality assurance			

APPROVED BY:

Organization	Name	Signature	Date
Head Engineering			
Head Manufacturing			

AUTHORISED BY:

Functional area	Name	Signature	Date
Head Quality			

2.0 OBJECTIVES

The objectives of this Installation Qualification (IQ) are as follows:

- To verify that the Powder filling machine in Tablets, Capsules & Dry Syrup, Dry injection and Oral Manufacturing Facility has been installed in accordance with the set acceptance criteria and meets GMP requirements.
- To verify that there is sufficient and accurate information to operate and maintain the system reliably and reproducibly.
- To verify that the requirements specified at the time of purchase are met in the delivered and installed item. Purchase Order and Equipment Specifications have been used to prepare this Protocol. Confirmation of the installed system to pre-determined specifications will verify that user requirements have been met.

3.0 SCOPE

This protocol covers all aspects of Installation Qualification for the Powder filling machine serving the …….; Tablets, Capsules & Dry Syrup, Dry Powder injection and Oral Manufacturing Facility. Scope incorporates qualification of all Powder filling machine components such as Hopper, guides, Head, tooling components etc.

This protocol will define the methods and documentation used to qualify the Powder filling machine for IQ. Successful completion of this protocol will verify that the Powder filling machine meets all acceptance criteria and is ready for Operational Qualification.

4.0 RESPONSIBILITIES

All work is to be performed under ……. oversight and according to ……. approved procedures.

The following are the primary responsibilities of the ……. Validation Personnel

- Preparation, Review and submission of IQ Protocol.
- Ensures that the protocol is in compliance with current …… policies and procedures.
- Ensures that the content is sufficient, clearly defined technically sound and accurate.
- Ensures compliance with design specifications.
- Overall cGMP compliance for IQ
- Review and Pre-Approval of IQ Protocol
- Execution of this IQ protocol
- Document Control of IQ Protocol until such document is completed, approved and after.
- Regulatory Compliance Review of the completed IQ Protocol

- Review and Approval of the executed IQ Protocol

5.0 SYSTEM DESCRIPTIONS

In this equipment Filling of powder is takes place in the bottles of desired quantity. Very High Speed Power Filling Machine is versatile self supported on stainless steel legs with height adjustable adjustment system. The machine is precision made on sturdy welded stainless steel frame and completely enclosed in stainless steel covers. Doors are provided to facilitate the servicing of m/c. The table top plate is made from good quality steel and cladded with stainless steel. The bottles travelling on the infeed side of the conveyor are separated by the feed worm and fed to the infeed turret. The infeed turret transfer bottles to the central turret. The bottle lifters mounted on the central turret lifts the bottles so as to seal the bottle mouth with the funnel terminations. The funnels are mounted on four turret sectors, each sector carries six funnels. The funnel sectors can be vibrated at variable frequency and adjustable amplitude. The frequency can be varied from the control panel and the amplitude can be varied adjusting the eccentricity of the vibrator driver cam. Each funnel carries one specially designed slug breaker. The powder is received in the powder hopper. The powder wheel mounted below the hopper has cavities to hold the measured volume of the powder. The powder wheel is connected to vacuum and pressure thru a valve plate. This creates alternative vacuum and pressure in the powder holding cavities. The cavity when in the top position is connected with vacuum. The powder is sucked in to the cavity under the influence of vacuum. The powder gets stratified, air voids are removed and the powder slug with uniform density is formed in the cavity. The bottom portion of the cavity is adjustable to individually vary the cavity volume.

6.0 DOCUMENTATION REQUIREMENTS (Ref:)

The IQ File should include:

- This IQ Protocol
- All printouts and handouts generated during qualification procedure
- A Signature Sheet where all people, performing the qualification checks, are listed
- Any change control actions that may have occurred during the qualification activities.
- Any deviations, exceptions or investigation reports generated during the qualification activities.

7.0 DATA COLLECTION

All individuals executing this Protocol shall complete the *Signature Sheet* .All personnel shall have suitable documented training or experience.

All approvals shall be made in BLACK ink.
All data entry shall be made in BLACK ink.

All corrections to this Protocol, which are not retyped, are to be made in *BLACK* ink. All written corrections to this Protocol or to data entered in this Protocol should be made by using a single line to delete the error. The person who makes the correction shall initial and date it and add comment to explain reason for correction.
After performing the checks, collect all relevant printouts and certificates and retain for inclusion in the IQ File. If more Data Sheets or Deviation Sheets are required, they are to be attached to this Protocol as *Annexures* and to be listed in *Section 13. List of Annexures*.

8.0 CHANGE CONTROL

Any changes or modifications to the system shall be performed in accordance with the Change Control Procedure.

Change Control Forms raised during the execution of this IQ will be filed with the protocol. An assessment will be made to check whether any re-validation is required before the change request is closed out.

9.0 PRE-QUALIFICATION REQUIREMENTS

The results of any tests should meet the limits and acceptance criteria specified in the test documents. Any deviations or issues should be rectified and documented prior to IQ commencing. Open action items resulting from these tests shall be listed in the Comments section.

Test	Test Date	Documentation [Title, Rev.]	Documentation Location	Complete [Y/N]	Initial / Date
FAT					
Commissioning					
SAT					

Comments:

Reviewed by		Date	

10.0 TESTS AND CHECKS

The following tests and checks are to be completed for IQ of Powder filling machine. After completion of this section, fill the *Checklist* in *Section 10*.

10.1 DRAWING VERIFICATION (REF:)

10.1.1 OBJECTIVE

To verify that relevant drawings of the equipment are available and current.

10.1.2 METHOD

Examine whether the specified drawings of equipment are available and current. Ensure Title, Revision No., Originator and Document Location are recorded in *Section 10.1.4 Data*. Record any deviation / non-conformance as described in *Section 12. Deviation Sheet.*

10.1.3 ACCEPTANCE CRITERIA

Drawings must be of the latest version approved and filed correctly.

10.1.4 DATA

Reference Engineering Drawings [Title, No., Originator (Company)]	Document Location	Acceptable [Y/N]	Initial / Date
GA Drawing of equipment			
Main Drive Gear Box assembly			

Comments:

Reviewed by		Date	

10.2 EQUIPMENT VERIFICATION (REF:)

10.2.1 OBJECTIVE

To verify that the equipment components are as specified.

10.2.2 METHOD

Visually examine all equipment components as listed in the tables below. Confirm that all specified requirements listed in SPECIFIED column [*Section 10.3.4. Data*] have been met. Record any deviations/non-conformances as described in *Section 12. Deviation Sheet*.

10.2.3 ACCEPTANCE CRITERIA

Equipment must be in conformance to specifications as listed in the SPECIFIED column in Section 10.3.4.

10.2.4 DATA

S.No.	Description	Actual	Initial / Date
1.	Verify that major components are securely anchored and shock proof		
2.	Verify that all-critical instruments have Identification tags.		
3.	Verify that there is no observable physical damage to the equipment.		
4.	Verify that there is sufficient room of servicing provided.		
5.	Required electrical connections are tight, weather proof and properly earthed.		

10.2.4.1 POWDER FILLING MACHINE

Parameters	Specified	Actual	Acceptable [Y / N]	Initial / Date
Equipment Name	Powder filling machine			
Manufacturer	JP machine Tools			
Model/Type	cGMP Model			
Capacity	Max.240 bottles per min.			
Dimensions	2440L x 1320W x 2090mm(H)			
MOC Chute	SS-304			
Loading Arrangement	loader of 1000 kg capacity Trolley - MOC 304 Carriage – MOC 316			

Comments:

Reviewed by		Date	

10.2.4.2 COMPONENTS OF MACHINE

Parameters	Specified	Actual	Acceptable [Y / N]	Initial / Date
Drive motor				
Manufacturer	HAVELLS			
HP	1			
RPM	1390			
Gearbox				
Make	BONFIGLIOLI			
Vibrator motor				
Manufacturer	Bonfiglioli			
HP	0.5			
RPM	1390			
Conveyor Gear motor				
Make	Bonfiglioli			
HP	0.5			
Covers & Panels				
MOC	SS-304			
Star wheels				
MOC	UHMWPE			
Description	Rotating star wheels for movements of bottles			

Comments:

Reviewed by		Date	

10.3 MATERIALS IN PRODUCT CONTACT (REF:)

10.3.1 OBJECTIVE

To verify that all materials in product contact meet the specified requirements.

10.3.2 METHOD

Examine there is documented evidence that all materials that come into product contact meet the required specifications for material type and surface finish as applicable. Attach documents/identify the location. Utilities (such as nitrogen, air, steam, water) that subsequently come into contact with the pharmaceutical products shall be deemed as "product". Report any deviation/non-conformances as described in Section 12. Deviation Sheet.

10.3.3 ACCEPTANCE CRITERIA

All materials in product contact must be in conformance with the specifications listed in the SPECIFIED column in Section 10.5.4. Data.
Documented evidence attached/location checked.

10.3.4 DATA

System Component	Reference Document [Title, No., Rev. No., Date]	Specified	Actual	Material Certificate Available [Y/N, Location]	Acceptable [Y/N]	Initial / Date
Powder Hopper	Technical Specification of Screw cap machine	SG Iron				
Powder Wheels		Standard Bearing				
Star wheel		UHMWPE				
Feed worm		Delrin				
Conveyor chain		Delrin				
Covers		Aluminum				
Table Top		SS-304, Polycarbonate, Aluminum				
Conveyor channels		SS-304				
Bottle guide on conveyor		SS-304				
Funnels		SS-304, Aluminum, Plastic				
M/C Frame		SS-304				

Comments:			
Reviewed by		Date	

10.4 SERVICES VERIFICATION (REF:)

10.4.1 OBJECTIVE

To verify that all services required for the operation of the system are available and connected to the system and that these utilities conform to the system requirement.

10.4.2 METHOD

Visually examine that all services are available and connected in accordance with the applicable engineering drawings and system specifications. Complete the list of services installed in *Section 9.6.4 Data*. Record any deviation / non-conformances as described in *Section 11. Deviation Sheet*.

10.4.3 ACCEPTANCE CRITERIA

All services are available and connected in conformance to specifications listed in the SPECIFIED column in Section 9.6.4 Data.

10.4.4 DATA

Electricity	• Voltage: 415V • Phases: 3 • Frequency: 50 Hz	• Voltage: • Phases: • Frequency:		
Air Supply	• CONSUMPTION: COMPRESSED AIR @ 6kg/cm2, 200LPM free air, QUALITY: Oil, water & dust free. PRESSURIZED AIR Due point -20 Deg. C or lower. • Flow pressure : 6 kg/ cm^2	• Air: • Flow:		

Comments:

Reviewed by		Date	

10.5 AUTOMATION AND CONTROL SYSTEMS HARDWARE INSTALLATION VERIFICATION (REF:)

10.5.1 OBJECTIVE

To verify that the control and monitoring devices are installed as specified.

10.5.2 METHOD

Visually examine the hardware components as listed in the SPECIFIED column in *Section 10.7.4. Data*. Report any deviation / non-conformances as described in *Section 12. Deviation Sheet*.

10.5.3 ACCEPTANCE CRITERIA

The hardware components must be in conformance to the specifications listed in the SPECIFIED column.

10.5.4 DATA

10.5.4.1 PLC CONTROLLER

Parameters	Specified	Actual	Acceptable [Y / N]	Initial / Date
PLC				
Manufacturer	DELTA			
HMI				
Manufacturer	DELTA			
Sensors				
Make	Powder Level Sensor. Photo sensor:-Retro reflective type. Spec: PNP/NO Capacitance type Spec. PNP/NO.			
Conveyor chain				
Make	MOC: DELIRN , MAKE:- MCC/ Habasit			

Comments:

Reviewed by		Date	

10.6 SPARE PARTS LIST

10.6.1 OBJECTIVE

To verify the availability of specified spare part lists

10.6.2 METHOD

Examine for the availability of spare part lists and attach either as *Annexure* or indicate location of the actual spare part lists. Record any deviations / non-conformances as described in Section 12 Deviation *Sheet*.

10.6.3 ACCEPTANCE CRITERIA

Approved spare part lists must be available.

10.6.4 DATA

Spare Parts List	Confirm Attached or Refer to Location	Initial/Date
General Spare Parts List		
Mechanical Spare Parts List		
Electrical Spare Parts List		

Comments:

Reviewed by		Date	

10.7 LUBRICANTS LIST

10.7.1 OBJECTIVE

To verify all fluids used in the system are as specified.

10.7.2 METHOD

Examine whether all fluids used in the system are as listed in the SPECIFIED column in *Section 10.9.4. Data*. Classify whether each fluid may be in product contact or not. Record the quantity and location of the fluids inventory. Confirm that all specified requirements have been met. Record any deviations / non-conformances as described in Section 12. Deviation Sheet.

10.7.3 ACCEPTANCE CRITERIA

Fluids used must be in conformance with the specifications listed in the SPECIFIED column.

10.7.4 LUBRICANT

Fluid	Product Contact [Y/N]	Specified	Actual	Quantity & Location of Inventory	Acceptable [Y / N]	Initial / Date
Enclo 68	Y	Enclo 68				
Omala 220	Y	Omala 220				

Comments:

Reviewed by		Date	

10.8 VISUAL INSPECTION

10.8.1 OBJECTIVE

To verify that the Powder filling Machine is ready for operation.

10.8.2 METHOD

Visually examine that the installation of Powder filling machine is completed and that all instrument / component packaging is removed. Visually examine the cleanliness of the Powder filling Machine and verify that all connections to instrument/components (electrical wire, hoses, pipes, clamps, etc) are firmly affixed. Confirm that the Powder filling Machine is ready for operation.

10.8.3 ACCEPTANCE CRITERIA

The specifications listed in the SPECIFIED column are met.

10.8.4 DATA

S. No.	Specified	Acceptable [Y/N]	Initial / Date
1.	Installation of Powder filling Machine is completed.		
2.	Powder filling Machine is clean.		
3.	All instrument/component packaging is removed.		
4.	All instrument/ component hopper,funnel etc firmly affixed.		
5.	All accessories are available.		

Comments:

Reviewed by		Date	

11.0 CHECKLIST OF ALL TESTS AND CHECKS

This checklist is provided to ensure that all tests or checks required for this IQ have been executed.

Reference No.	Tests or Checks	Executed [Y/N]	Comment
10.1	Drawing Verification		
10.2	Equipment Verification		
10.3	Instrumentation Verification		
10.4	Materials in Product Contact		
10.5	Services Verification		
10.6	Spare Parts List		
10.7	Lubricant List		
10.8	Visual Inspection		

Comments:

Reviewed by		Date	

12.0 DEVIATION SHEET

Report any deviations from the acceptance criteria or exceptions from protocol instructions in the Record Sheet as described in SOP -handling of Deviations .Record the total number of exceptions / deviations reported during the qualification activities of this Protocol. Record the Deviation Number and Title in the Table below. Include all Deviation Record Sheets in the IQ File.

TOTAL NO. OF EXCEPTIONS / DEVIATIONS = _____

Exception / Deviation No.	Exception / Deviation Title	Status

Comments:

Reviewed by		Date	

12.1 DEVIATION AND CORRECTIVE ACTION REPORT FORM

This Deviation and Corrective Action Report Form shall be completed for each result that does not meet the expected or as designed condition encountered during the execution of the protocol. Each form shall be numbered sequentially and tracked on the Deviation Sheet within the protocol.

Deviation Report Number:		
Protocol Section No.:	Date of Test:	
Description Of Test Result:		
Immediate Action Taken:		
Corrective Action Taken / Planned:		
Deviation Reported By:		
Name:	Signature:	Date:
Corrective action must be taken prior to approval of IQ or OQ? :		
Head - Engg. Signature		Date:
Head-User dept. signature		Date
QA Signature:		Date:
Corrective Action Implemented:		
Corrective Action Implemented By:		
Name:	Signature:	Date:
(Attach comments and supporting documentation as necessary)		
Was a re-test or amendment necessary due to the Deviation?		Date of re-test:
Is Deviation Closed (Yes/No):		
QA Signature:		Date:

13.0 REFERENCES

The Principle Reference is the following

- Master Validation Plan.
- Schedule – M – "Good Manufacturing Practices and Requirements of Premises, Plant and Equipment for Pharmaceutical Products."
- WHO Essential Drugs and Medicines Policy, QA of Pharmaceuticals, Vol 2 – Good Manufacturing Practices and Inspection.

The following references are used to give addition guidance

- FDA/ISPE Baseline Pharmaceutical Engineering Guide-Volume 5:- Commissioning and Qualification Guide, First Edition / March 2001.
- Code of Federal Regulations (CFR), Title 21, Part 210, Current Good Manufacturing Practice (cGMP) in Manufacturing, Processing, Packing, or Holding of Drugs, General. April 1, 1998.
- Code of Federal Regulations (CFR), Title 21, Part 211, Current Good Manufacturing Practice (cGMP) for Finished Pharmaceuticals, April 1, 1998.
- EU Guide to Good Manufacturing Practice, Part 4, 1997.
- European Commission's working party on control of medicines and inspections document, Validation Master Plan, Design Qualification, Installation & Operational Qualification, Non Sterile Process Validation, Cleaning Validation, October 1999.
- GAMP Guide, Validation of Automated Systems in Pharmaceutical Manufacture, Version 4.0, December 2001.
- "Handling of Deviations".
- "Change Control Procedure".

14.0 LIST OF ANNEXURES

Annexure No.	Document Title

15.0 SUMMARY:

16.0 APPROVALS

The following approvals signify that the IQ is complete and acceptable and that the system is ready for OQ Execution.

EXECUTED BY:

Department	Name	Designation	Signature	Date
Production				
Engg. Dept.				
QA Dept.				

REVIEWED BY:

Department	Name	Designation	Signature	Date
Production Dept.				
Engg. Dept.				
QA Dept.				

APPROVED BY:

Department	Name	Designation	Signature	Date
Head - QA				
Plant Head				