



FACTORY ACCEPTANCE TEST FOR AUTOMATIC EIGHT HEAD VIAL SEALING MACHINE

MACHINE NAME : AUTOMATIC EIGHT
HEAD VIAL SEALING MACHINE

CLIENT NAME & ADDRESS :

MODEL NO. :

DOCUMENT NAME : FACTORY ACCEPTANCE TEST

DOCUMENT NO. :

MACHINE SR. NO. :

REVISION NO. : 00

WORK ORDER NO. :

PO. NO. & DATE :



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FACTORY ACCEPTANCE TEST FOR AUTOMATIC EIGHT HEAD VIAL SEALING MACHINE

1.0 SYSTEM DESCRIPTION

Automatic Eight Head Vial Sealing Machine is compact in design and versatile in its own. The machine is precisely built on sturdy structure fabricated from M.S. and dully covered with stainless steel sheet to match the cGMP norms. This machine is used to seal the duly stoppered vial filled with either liquid or powder. This machine can handle vial ranging from 2 ml to 100 ml having 13, 20 & 32 mm seals as per the requirement of customer with the help of change parts and accessories.

It works on the basic principle of sealing the duly stoppered vial. The machine works from left to right direction i.e. when vials are charged from the left hand side of the machine they are driven via conveyor belt between the rotating chuck and lifting assembly.

This machine is equipped with some latest feature like online compression pressure indication system and online rejection system. In rejection system following vials are rejected.

1. Different Flip off Color.
2. Low or high pulse value then the set value.
3. Raised or No stoppered vials at in feed machine stop.

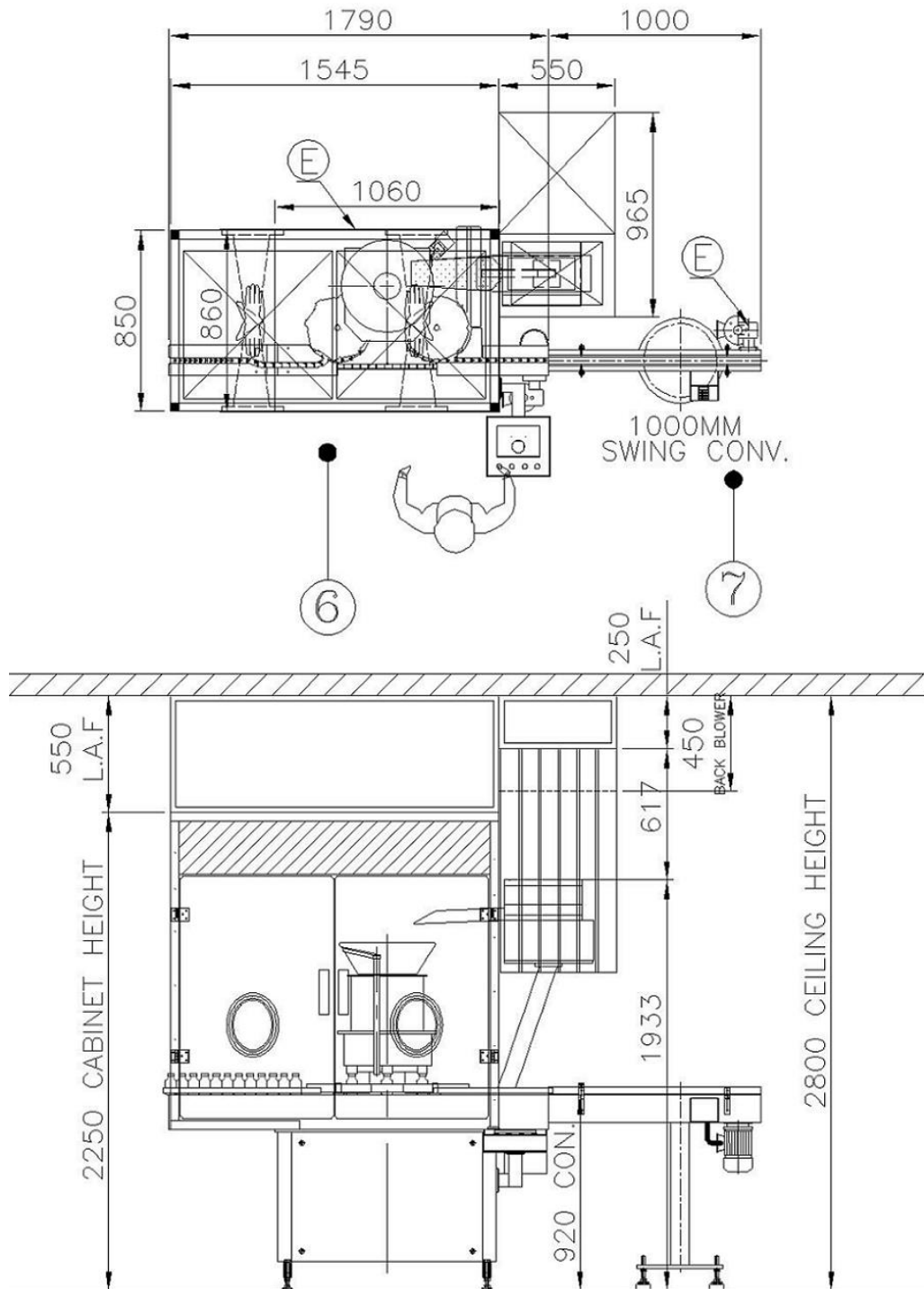
This machine is also equipped with automatic height adjustment system in which by just inserting the value of height required in the HMI the upper turret height gets adjusted. By introducing this system now, the operator need not to change the height manually. A sensor is provided at the top of the bowl containing seals which checks the level of seal in the bowl. It gives an alarm on the HMI Screen. Due to this feature now the operator can know easily when there is a less quantity of seal in the bowl.

This machine is fully Automatic machine. Special care has been taken in wiring of the machine.



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2.0 SCHEMATIC DIAGRAM



THERE MAY BE ±20 MM VARIATION IN MENTION DIMENSIONS.



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3.0 SYSTEM CHECKS

3.1 PHYSICAL CHECKS

METHOD	DESCRIPTION	ACCEPTANCE CRITERIA	OBSERVATION	SIGN/DATE
Outer Surface finish Verification	Check Outer surface of machine	-Matt finish -Curved corner -No dent -No visible spot of welding.		
Document Verification	Verification of Wiring diagram	-As per wiring diagram attached in FAT.		
Document Verification	Verification of Input / Output connection	-As per Screen Short attached in DQ.		
Document Verification	Verification of MOC certificate	-MOC of all contact and component mentioned in BOM or test certificate from manufacturer /accredited test lab.		
Panel Positioning verification	Panel positioning	Control panel positioning is assessable and at standard visible height.		
Machine Dimension	Verification with machine	As per attached Layout drawing in FAT.		



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3.2 MECHANICAL DRAWING VERIFICATION

S.No.	DRAWING NAME	DRAWING No.	OBSERVATION	SIGN/DATE
1.	MACHINE LAYOUT	001		
2.	PINION SHAFT ASSEMBLY	002		
3.	TURRET ASSEMBLY	003		
4.	LIFTER MECHANISM ASSEMBLY	004		
5.	CHUCK MECHANISM ASSEMBLY	005		
6.	LIFTER SCREW ASSEMBLY	006		
7.	INFEED STAR WHEEL CLUTCH ASSEMBLY	007		
8.	OUTFEED STAR WHEEL CLUTCH ASSEMBLY	008		
9.	STAR WHEEL ASSEMBLY	009		
10.	PRESSURE TESTING ASSEMBLY	010		
11.	CRIMPING ASSEMBLY	011		
12.	CHUTE ASSEMBLY	012		
13.	IDLER ASSEMBLY	013		
14.	CONVEYOR ASSEMBLY	014		
15.	OUTFEED VACUUM DIAGRAM	015		



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3.3 ELECTRICAL DRAWING

S.No.	DRAWING NAME	DRAWING No.	OBSERVATION	SIGN/DATE
1.	POWER DISTRIBUTION CONNECTION DIAGRAM -1	001		
2.	POWER DISTRIBUTION CONNECTION DIAGRAM -2	002		
3.	PLC INPUT CONNECTION DIAGRAM	003		
4.	PLC OUTPUT CONNECTION DIAGRAM	004		
5.	MODULE CONNECTION DIAGRAM	005		
6.	AC DRIVE, RELAY CARD & SSR CARD CONNECTION DIAGRAM	006		
7.	TERMINAL BLOCK-1 CONNECTION DIAGRAM	007		
8.	TERMINAL BLOCK-2 CONNECTION DIAGRAM	008		



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3.4 COMPONENT VERIFICATION

S. NO.	ITEM	MAKE	MODEL	SPECIFICATION	SERIAL NO.	MEETS YES/NO	SIGN
1.	MOTOR (MAIN)	BONFIGLIOLI	BN80B4	0.75KW,1400RPM			
2.	GEAR BOX (MAIN)	BONFIGLIOLI	W63UF1 10 P80B5B3	RATIO-10:1			
3.	MOTOR (CONVEYOR)	BONFIGLIOLI	BN56B4	0.09KW, 1350RPM.			
4.	GEAR BOX (CONVEYOR)	BONFIGLIOLI	VF30F1 20 P56B5B3	RATIO-20:1			
5.	MOTOR (HEIGHT UP/DN)	BONFIGLIOLI	BN56B4	0.09KW,1350RPM			
6.	GEAR BOX (HEIGHT UP/DN)	BONFIGLIOLI	VF30F1 60 P56 B5B3	RATIO-60:1			
7.	MOTOR (PUSHER WHEEL)	PANASONIC	M8MX25G4YGA	25WATT,1350RPM			
8.	GEAR BOX (PUSHER WHEEL)	PANASONIC	MX8G30B	RATIO-30:1			
9.	ENCODER (TRAVELLING)	POSITAL	UCD-IPH00- 05000-L100-2RW	4.75-30VDC			
10.	ENCODER (PRESSURE)	POSITAL	UCD-IPH00- 05000-L100-2RW	4.75-30VDC			
11.	ENCODER (HEAD UP/DOWN)	POSITAL	UCD-IPH00- 05000-L100-2RW	4.75-30VDC			
12.	AC DRIVE (MAIN)	ALLEN BRADLEY	22F-D2P5N103	1HP, 3PH TO 3PH			
13.	AC DRIVE (CONVEYOR)	ALLEN BRADLEY	22F-A2P5N103	0.5HP,1PH TO 3PH			
14.	AC DRIVE (HEAD UP/DOWN)	ALLEN BRADLEY	22F-A2P5N103	0.5HP,1PH TO 3PH			
15.	MODE BUS MODULE WITH 485	ALLEN BRADLEY	1763-NC01	24VDC			
16.	PLC	ALLEN BRADLEY	1766-L32BXBA	24VDC			
17.	INPUT MODULE	ALLEN BRADLEY	1762-IQ16	24VDC			
18.	HMI	ALLEN BRADLEY	2711P-T6C20D8	24VDC			
19.	MCB (MAIN)	HAGER	NCN410N	C10			
20.	MCB (SMPS)	HAGER	NCN206N	C6			
21.	MCB (24V DC SUPPLY)	HAGER	NCN204N	C4			
22.	CONTACTOR (MAIN)	SCHNEIDER	LC1D18	NA			
23.	CONTACTOR (VACUUM PUMP)	SCHNEIDER	LC1D09	NA			
24.	OVER LOAD RELAY	SCHNEIDER	LRD07	1.6 TO 2.5 AMP.			



PHARMA DEVILS

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S. NO.	ITEM	MAKE	MODEL	SPECIFICATION	SERIAL NO.	MEETS YES/NO	SIGN
	(VACUUM PUMP)						
25.	CONTACTOR (VIBRATOR)	SCHNEIDER	LC1D09	NA			
26.	OVER LOAD RELAY (VIBRATOR)	SCHNEIDER	LRD 10	4 TO 6 AMP.			
27.	CONTACTOR (LINEAR VIBRATOR)	SCHNEIDER	LC1D09	NA			
28.	OVER LOAD RELAY (LINEAR VIBRATOR)	SCHNEIDER	LRD07	1.6 TO 2.5 AMP.			
29.	RELAY CARD (4 CHANNEL)	PHOENIX	PC24D04-CNB	24VDC			
30.	SSR	UNISON	807 PMDD 100 08 01	8AMP			
31.	SMPS	OMRON	S8VK-C06024	24VDC,2.5 AMP.			
32.	SENSOR FOR NO SEAL ON VIAL	LEUZE	CRT448.S3/444- M12	10-30VDC			
33.	SENSOR FOR NO STOPPER ON VIAL	PANASONIC	LX-101-P-Z	10-30VDC			
34.	SENSOR FOR NO CAP IN CHUTE	PANASONIC	FX-301-P	10-30VDC			
35.	SENSOR FOR REF. FOR REJECTION	PANASONIC	FX-301-P	10-30VDC			
36.	SENSOR FOR REJECTION COUNTING	PANASONIC	FX-301-P	10-30VDC			
37.	SENSOR FOR NO VIAL M/C STOP	PANASONIC	CX-481-P	10-30VDC			
38.	SENSOR FOR VIAL JAM	PANASONIC	CX-481-P	10-30VDC			
39.	SENSOR FOR RAISED RUBBER STOPPER	PANASONIC	CX-481-P	10-30VDC			
40.	SENSOR FOR PRESSURE READING	PANASONIC	PM-K44P	10-30VDC			
41.	SENSOR (DISC SENSOR FOR REJECTION-1)	PANASONIC	PM-K44P	10-30VDC			
42.	SENSOR (DISC SENSOR FOR REJECTION-2)	PANASONIC	PM-K44P	10-30VDC			
43.	SENSOR FOR LOW SEAL IN BOWL	PANASONIC	EQ-34-PN-J	10-30VDC			
44.	SENSOR FOR LOW SEAL IN LINEAR	PANASONIC	CX-411D-P,CX- 411E	10-30VDC			



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S. NO.	ITEM	MAKE	MODEL	SPECIFICATION	SERIAL NO.	MEETS YES/NO	SIGN
	BOWL						
45.	PROXIMITY FOR INFEED STAR WHEEL CLUTCH	SICK	IME12-04 BPSZW2S	24VDC			
46.	PROXIMITY FOR OUTFEED STAR WHEEL CLUTCH	SICK	IME12-04 BPSZW2S	24VDC			
47.	PROXIMITY FOR HOMING	SICK	IME12-04 BPSZW2S	24VDC			
48.	PROXIMITY FOR DOOR INTERLOCK	ACCENT	17 X 17	24VDC			
49.	PROXIMITY FOR SLIDING CONVEYOR OPEN	ACCENT	17 X 17	24VDC			
50.	AIR VELOCITY SENSOR (SEALING UNIT)	E+E	EE660-V7xBFxx	24V AC/DC			
51.	VIBRATOR CONTROLLER (MAIN)	VIBRACON IV	NA	NA			
52.	VIBRATOR CONTROLLER(LINEAR VIBRATOR)	VIBRACON IV	NA	NA			
53.	BUZZER CUM FLASHER	MIMIC	BZ	24VDC			
54.	ACTUATOR (MAIN)	SCHNEIDER	BLACK	NA			
55.	PUSH BUTTON (START)	SCHNEIDER	GREEN	NA			
56.	PUSH BUTTON (STOP)	SCHNEIDER	RED	NA			
57.	EMERGENCY STOP	SCHNEIDER	RED	NA			
58.	PUSH BUTTON (INCHING)	SCHNEIDER	YELLOW	NA			
59.	INCHING BOX	TEKNIC	NA	NA			
60.	PRESSURE TRANSMITTER	KELLER	PR- 23RY/80710.34	(-1)TO (0) BAR			
61.	VALVE (REJECTION-1,2)	ROTEX	30125-3-2G	NA			
62.	COIL (REJECTION-1,2)	ROTEX	I-24V-DC-06	NA			
63.	VACUUM GAUGE	EXCEL	NA	0 TO -760 mmhg			
64.	VACUUM PUMP	BECKER	VT 4.16	0.55KW,1420RPM			
65.	VACUUM PUMP MOTOR	BECKER	D 80 B4 P	0.55KW,1420RPM			



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4.0 MATERIAL OF CONSTRUCTION

- This is to prove that the materials used for construction of components are as per the DQ Specification / Approved Drawing.
- The Vendor shall present certificates for the parts listed.
- The submitted certificates shall be checked for correct material usage against the details submitted in the DQ / Approved Drawing form by the vendor.

S.No.	COMPONENTS	SPECIFIED	ACTUAL
1.	Conveyor Belt	Delrin	
2.	Conveyor Guide Rail	Delrin	
3.	Star Wheel set	Delrin	
4.	Conveyor "C" Channel	S.S.304	
5.	Cap sealing bowl & chute	S.S.316L	
6.	Crimping Roller	S.S. 304	
7.	Chuck die	S.S. 304	
8.	Lifter Bowl	S.S. 304	
9.	Linear Vibrator	S.S. 316L	

COMMENTS

CHECKED BY



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5.0 COMPONENT CERTIFICATION:

- This to verify the Test certificates of the designated components.
- The Vendor shall present Test certificates of the designated components (From the original manufacturer) for verification. Check whether the certificate corresponds to the installed component. Compare the make, Model No. and other specifications from the certificate with the specifications of the component and in the table below.

S.No.	NAME OF COMPONENT	CERTIFICATE AVAILABLE YES / NO
1.	MOTOR (MAIN)	
2.	GEAR BOX (MAIN)	
3.	MOTOR (CONVEYOR)	
4.	GEAR BOX (CONVEYOR)	
5.	MOTOR (HEIGHT UP/DN)	
6.	GEAR BOX (HEIGHT UP/DN)	
7.	MOTOR (PUSHER WHEEL)	
8.	GEAR BOX (PUSHER WHEEL)	
9.	ENCODER (TRAVELLING)	
10.	ENCODER (PRESSURE)	
11.	ENCODER (HEAD UP/DOWN)	
12.	AC DRIVE (MAIN)	
13.	AC DRIVE (CONVEYOR)	
14.	AC DRIVE (HEAD UP/DOWN)	
15.	MODE BUS MODULE WITH 485	
16.	PLC	
17.	INPUT MODULE	
18.	HMI	
19.	SENSOR FOR NO SEAL ON VIAL	
20.	SENSOR FOR NO STOPPER ON VIAL	
21.	SENSOR FOR NO CAP IN CHUTE	
22.	SENSOR FOR REF. FOR REJECTION	
23.	SENSOR FOR REJECTION COUNTING	
24.	SENSOR FOR NO VIAL M/C STOP	
25.	SENSOR FOR VIAL JAM	



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S.No.	NAME OF COMPONENT	CERTIFICATE AVAILABLE YES / NO
26.	SENSOR FOR RAISED RUBBER STOPPER	
27.	SENSOR FOR PRESSURE READING	
28.	SENSOR (DISC SENSOR FOR REJECTION-1)	
29.	SENSOR (DISC SENSOR FOR REJECTION-2)	
30.	SENSOR FOR LOW SEAL IN BOWL	
31.	SENSOR FOR LOW SEAL IN LINEAR BOWL	
32.	PROXIMITY FOR INFEED STAR WHEEL CLUTCH	
33.	PROXIMITY FOR OUTFEED STAR WHEEL CLUTCH	
34.	PROXIMITY FOR HOMING	
35.	PROXIMITY FOR DOOR INTERLOCK	
36.	PROXIMITY FOR SLIDING CONVEYOR OPEN	
37.	AIR VELOCITY SENSOR (SEALING UNIT)	
38.	PRESSURE TRANSMITTER	
39.	VACUUM PUMP	

COMMENTS

CHECKED BY



FACTORY ACCEPTANCE TEST FOR AUTOMATIC EIGHT HEAD VIAL SEALING MACHINE

6.0 FUNCTION VERIFICATION:

AS PER ANNEXURE-I



FACTORY ACCEPTANCE TEST FOR AUTOMATIC EIGHT HEAD VIAL SEALING MACHINE

7.0 INTERLOCK AND ALARM TEST:

Simulate Alarm/Interlock condition and observe results:

S.No.	FEATURE	SPECIFIED	REASON	RECTIFICATION	SIMULATION RESULT
1.	Clutch at in feed Star wheel	Machine Stop	Over Size Vial & Fallen Vial at Infeed Star wheel	Release clutch which placed below of infeed star wheel.	
2.	Clutch at Outfeed Star wheel	Machine Stop	Fallen Vial At Outfeed Star wheel	Release clutch which placed below of Outfeed star wheel.	
3.	No Seal In Chute M/C Stop	Machine Stop	Empty Bowl /Chute	Availability of Sufficient seal is in chute	
4.	No Vial Machine Stop	Machine Stop & Auto Restart	Vial are not present on infeed conveyer	Load vial at infeed	
5.	Vial Jam Machine Stop	Machine Stop & Auto Restart	Maximum vial at outfeed conveyer	Clear the vial jam	
6.	Raised Rubber Stopper	Machine stop	Before sealing raised stopper on vial	Removed the Vial	
7.	No Stopper On Vial M/C Stop	Machine Stop	No Stopper On Vial	Remove Vial Manually	
8.	Low Seal in Bowl	Linear Vibrator Start	linear vibrator will start	NA	
9.	LAF Stop	Machine Stop	LAF is off condition	Start LAF unit / if LAF is running then check input status.	
10.	Emergency Stop	Machine Stop	If press emergency button.	Emergency released	
11.	Main Motor Drive Faulted	Machine Stop	Main Motor overload or AC Drive Faulted	Rectify the problem & Go to drive status & clear the fault.	
12.	Conveyor Drive Faulted	Machine Stop	Conveyor Motor overload or AC Drive Faulted	Rectify the problem &Go to drive status & clear the fault.	
13.	Height Up/Down Drive Faulted	Machine Stop	Height Up/Down Motor overload or AC Drive Faulted	Rectify the problem &Go to drive status & clear the fault.	
14.	Door Open	Machine Stop (Auto & Manual mode)	Any door open	Close the door / if door is closed then check input status.	
15.	Swing Conveyor Open M/C Stop	Machine Stop	Sliding Conveyor open	Close Sliding Conveyor	



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S.No.	FEATURE	SPECIFIED	REASON	RECTIFICATION	SIMULATION RESULT
16.	Vacuum Low Machine Stop	Machine Stop	Fault in vacuum pump & any leakage in pipe line	Please check the Infeed Vacuum pipe connector is not leakage/if it ok then check pressure gauge.	
17.	No Seal on Vial or Wrong colour	If No Seal / Wrong colour seal on vial it automatically rejects the vial.	No Seal on Vial or Wrong colour.	Set Seal related setting properly & Check wrong colour seal lot.	
18.	Vacuum Pump Trip	Machine Stop	Vacuum Pump overload or fault in vacuum pump.	Check vacuum pump.	
19.	Vibrator Trip	Machine Stop	Fault in Vibrator	Check Vibrator & Rectify the problem	
20.	Maximum number of vial Rejected M/C Stop	Machine Stop	More than Rejected Vial Value mention in HMI	Identify Problem & Resolve it.	
21.	Low Height Vial & High Height Vial	Vial Reject	Low Height Vial & High Height Vial	If this type of rejection are continue then resolve height setting problem.	
22.	Power Failure	Machine Strop	Power Supply Fail	Connect power supply	
23.	Low seal in Linear Bowl	Machine Stop	Low seal in Linear Bowl	Add Seal in Linear Bowl	
24.	Linear Vibrator Trip	Machine Stop	Fault in Vibrator	Check Vibrator & Rectify the problem	
25.	Air Velocity Low	Machine Stop	Air Velocity Low	Set required Air Velocity	



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8.0 LOGICAL SECURITY VERIFICATION:

Simulate Alarm/Interlock condition and observe results:

8.1 ACCESS LEVEL TEST

S.No.	USER GROUP NAME	RIGHTS & AUTHORIZATION	OBSERVATION	SIGN / DATE
1.	Administrator	All rights		
2.	Manager	Change in the process parameters, Operation, Recipe Creation, Deletion & edit, Print reports, Calibration		
3.	Supervisor	Operation, Variable parameters change, Print report, Recipe download, alarm ack.		
4.	Maintenance	Calibration, I/O list		
5.	Operator	Operation, print reports alarm acknowledge		



FACTORY ACCEPTANCE TEST FOR AUTOMATIC EIGHT HEAD VIAL SEALING MACHINE

9.0 TEST RUN:

METHOD	DESCRIPTION	OBSERVATION	SIGN/DATE
Start test as per instruction.	Observe sequence of operation and compare with requirement.		
Test Run successfully.			

REMARK



FACTORY ACCEPTANCE TEST FOR AUTOMATIC EIGHT HEAD VIAL SEALING MACHINE

10.0 DEVIATION:

DEVIATION	REMARKS



FACTORY ACCEPTANCE TEST FOR AUTOMATIC EIGHT HEAD VIAL SEALING MACHINE

11.0 APPROVAL:

APPROVAL TABLE FOR FAT (CLIENT)			
SIGNS FOR	ROLL / NAME	DATE	SIGNATURE
REVIEW			
APPROVAL			

CONCLUSION

