AUTOMATIC THREE HEAD AUGER TYPE POWER FILLING MACHINE

OPERATING INSTRUCTION MANUAL

MODEL: 3-HEAD
MACHINE SR. NO. : G-19074
Mfg. YEAR: 2019-20

CLIENT: M/s. ECO FARMS PTY. LTD.

MAHARSHI™

- HEAD OFFICE -

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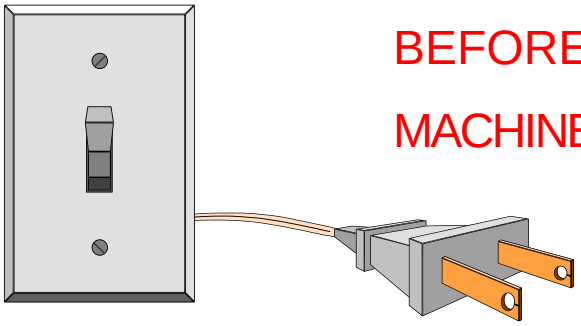
MOST IMPORTANT



BEFORE SWITCHING “ON" THE MACHINE ENSURE THE FOLLOWING

- POWER SUPPLY: 415 ± 6% V, 3 PHASE AC. 50 Hz. POWER SUPPLY WITH NEUTRAL & PROPER EARTHING TO POWDER FILLING MACHINE CONTROL PANEL.
- POWER SUPPLY ONLY FOR SCREW CONVEYORS: 220/240 V AC. SINGLE PHASE POWER SUPPLY WITH PROPER EARTHING FROM FILLING MACHINE PANEL.
- AIR SUPPLY: 4 TO 6 Kg./cm^2 AT CONSTANT PRESSURES ONLY THRO' FRL. UNIT.
  (ONLY FOR PNEUMATIC OPERATION)
- ENSURE TIGHTNESS OF ALL CONNECTORS.

Table Of Contents

INTRODUCTION

MACHINE PRINCIPLE

The Automatic Three Head Auger powder filling machine working on Auger Screw principle of Positive displacement of screw with accuracy and efficiency. The round/square shape containers feed from turn table to filling machine conveyor and machine conveyor feeding the bottle to filling head based on sets speed and bottle stop and hold. Sensor gives signal to servo Motor start to rotate auger for filling. It will fill desire quantity of powder of container through auger. The motion of Auger timing screw is based on servo motors. Servo Auger filler systems enable you to achieve precise & repeatable filling cycles. With each fill cycle, the servo accelerates at chosen speed rotates a selected number of revolutions and stop with repeatable filling and accuracy cycle each time.

THE MACHINE CONSIST OF

The main frame is S.S. encompassed in S.S. covering. The main plate which is made of S.S. cladded overhangs the frame to prevent spillage from leaking in to the S.S. mechanism below. The cabinet is made of covers with convenient access doors for adjustment or maintenance of all the assemblies.

The conveyor consist of 100 mm. S.S. Slat Chain mounted on a main plate. Hanging type suitable driving unit covered with S.S. 304 box duly matt finished fix at exit end of the product conveyor.

The Separate geared motor drives provided for hopper agitators, Servo motor drive provided for powder filling Auger screw.

BASIC OPERATION

Machine having Vary-speed S.S. Slat Product Conveyor; which will Carry the Bottles to Filling Station. 'No Bottle, No Fill' Product Sensor provided at filling station, which sense the presence of bottle & give signal to stopper, Pneumatic Bottle Stopper will operate and hold the bottle at filling station, Pneumatically Operated Filling nozzle (funnel) will moves down; As soon as the filling operation is over by mechanical Operated Auger. weight is adjusted by servo motor RPM and set time; and then the last stopper withdraws and allowing the filled bottles to move further. Pneumatic Pusher is provided at out feed end of product conveyor which will divert filled bottle to next machine i.e. Metal Detector (in Client Scope) or capping for next Operation. Once the filled bottles are passed, the stopper & filling nozzle (funnel) comes back to its original position to keep next empty bottle ready for filling operation. bottle stoppers are provided for filling where one by one bottles will be stop for filling and tapping accordingly at Three heads station and filled bottle will be passed through on conveyer one by one. The height for filling can be adjusted according to the size of the bottle to be filled.

There is provision of Emergency stop for stop the machine; In case of any emergency.

INSTALLATION INSTRUCTION

- Open up the packing & shift the machine to the desired position. check the all items as listed in packing slip. If found any Missing or broken during transportation pls. inform immediate to us.

- Level the machine with adjusting legs.

- There is huge 2 Nos. loader are provided on the ground with 2 Nos Screw Conveyors. Both Screw Conveyor takes powder from the bottom of the individual tank / ground hopper to the top and 3 tracks Drop into 3 Nos Augurs; 3 Nos. Augurs fitted on the top of powder filling machine.

- No wires in the power connections should be connected loosely, spike in the supply of sparking on the wires connecting to the instrument can cause heavy radio frequency interference's resulting in malfunctioning of the instrument.

- **POWER SUPPLY: PROVIDE 415 (± 6%) V AC, 50/60 Hz. THREE PHASE POWER SUPPLY WITH NEUTRAL & PROPER EARTHING TO FILLING MACHINE CONTROL PANEL**

- **POWER SUPPLY ONLY FOR SCREW CONVEYORS: 220/240 V AC. SINGLE PHASE POWER SUPPLY WITH PROPER EARTHING FROM FILLING MACHINE PANEL.**

- Electrical environment should be free from heavy electromagnetic fields, radio frequency interference's, sparking etc.

- **AIR SUPPLY: In case of pneumatic operation, will have to provide compressed Air at 4-6 Kg/cm² at Constant pressure thro' FRL Unit.**

- Turn the Mains "ON" on Touch screen HMI / Machine Frame.

- Set the Programming Data in Touch Screen HMI as required fill volume, bottle size/dia etc.. as per instruction given in Page No. 18.

- Set the Proper speed of Conveyor, adjust Tapping-1, Tapping-2 and Tapping-3 (Knocking Cylinder).

- After Programming, check the function/operating by inching and then put the machine for continuous operation.

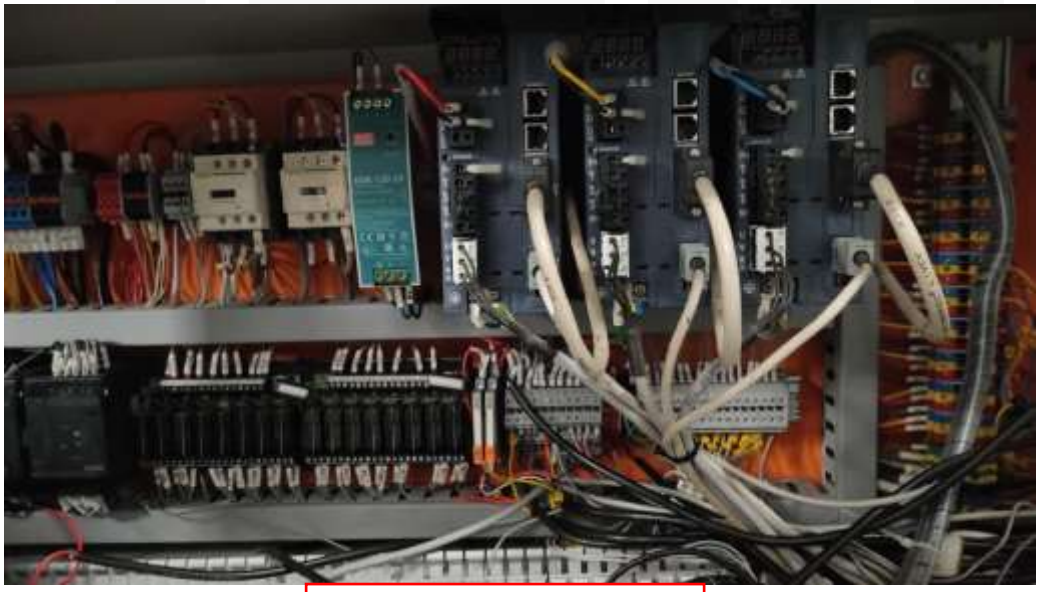
- The Three Head powder filling machine is a servo based Augur type filling machine suitable for filling Spices / Powder.

TOUCH SCREEN HMI

1. Touch Screen HMI
2. Inch button
3. Emergency Switch
4. Digital Low Air Pressure Switch
5. Main On/Off Switch (On Machine Frame)

CONTROL PANEL

CONTROL PANEL IMAGE-1



CONTROL PANEL IMAGE-2

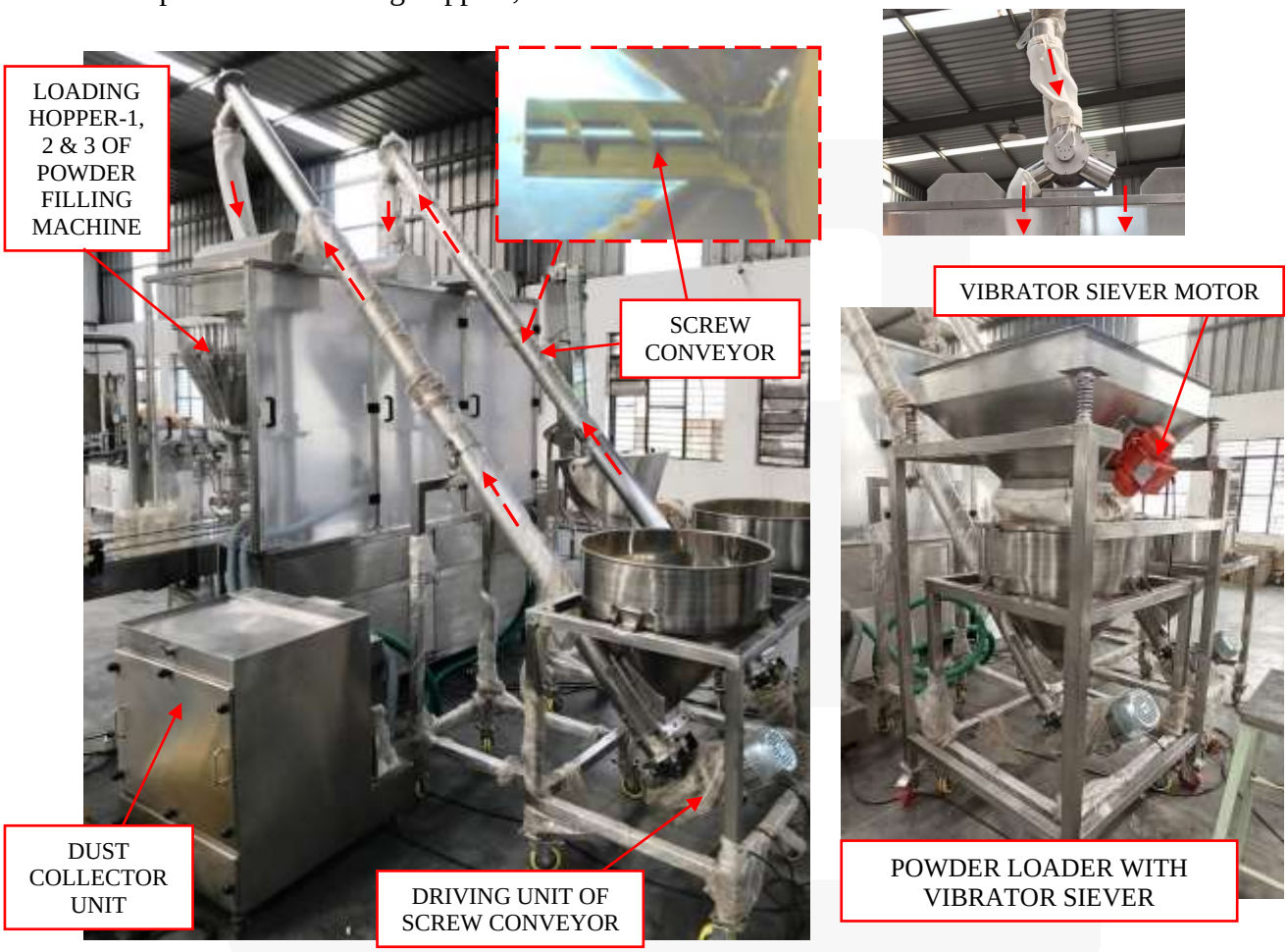
CONTROL PANEL IMAGE-3

PNEUMATIC PANEL

THREE HEAD AUGER FILLING-MAJOR STATION

A. POWDER LOADER WITH SIEVER & SCREW CONVEYOR

Machine Supplied with 2 Nos Huge powder loader with Vibrator Sievers & 2 Nos Screw Conveyor for 3 track, The powder shall be load in to powder loader, Both SS screw conveyor with individual geared motor driven provided for feeding and 3 track Drop into 3 Nos Filling hoppers,



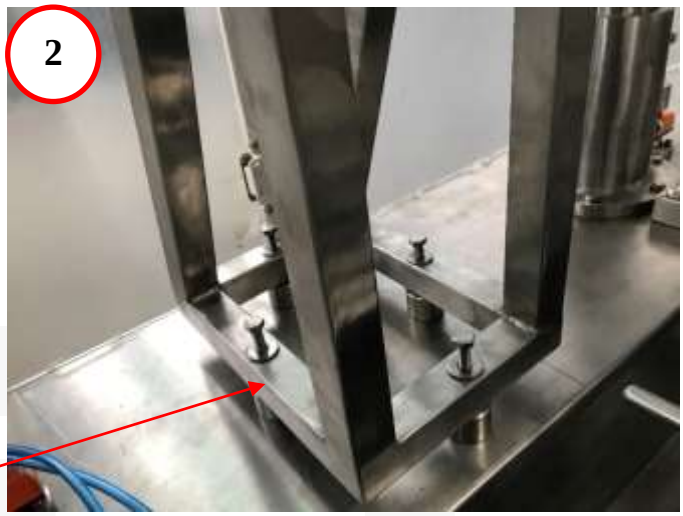
SCREW CONVEYOR is useful for Continuous Feeding of the Powder. There are 2 Nos huge loader provided on the ground with 2 Nos. Screw Conveyor. Both Screw Conveyors takes powder from the bottom of individual tank / ground hopper to the top and 3 tracks Drop into 3 Nos. Augurs; 3 Nos. Augurs fitted on the top of powder filling machine.

B. POWDER DIVERTER

1

FITTING POSITION OF DIVERTER FRAME ON MACHINE FRAME

2



3

DIVERTER FRAME

POWDER DIVERTER FIX ON TOP

4

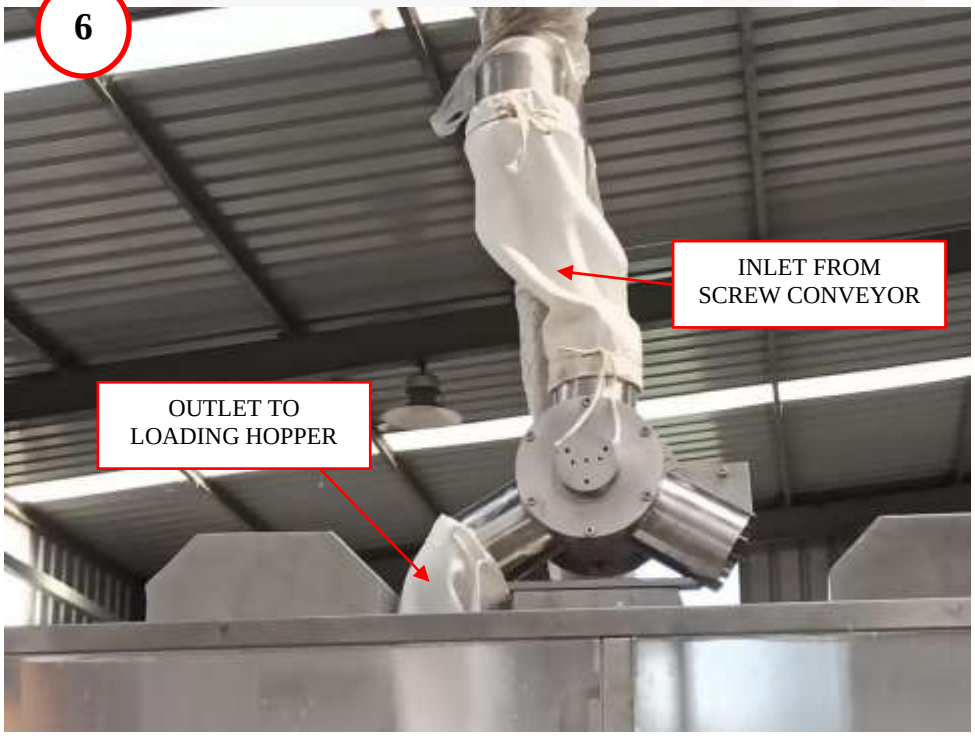
5


POWDER
DIVERTER
FIX ON TOP

7

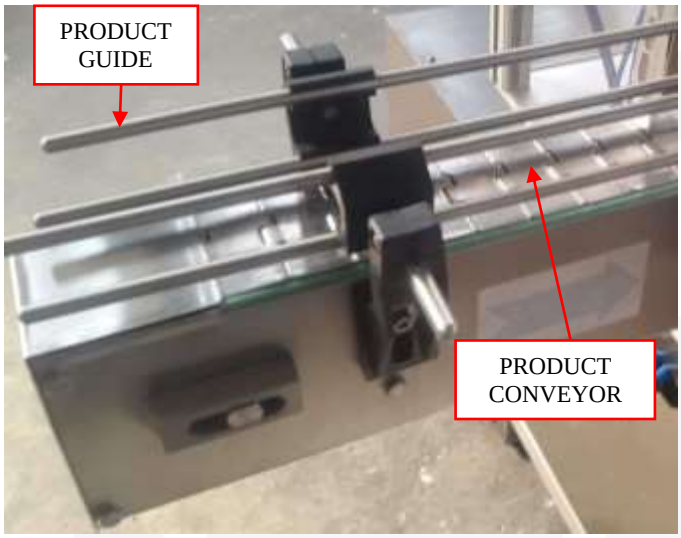

AIR PIPE
FOR
DIVERTER
VALVE

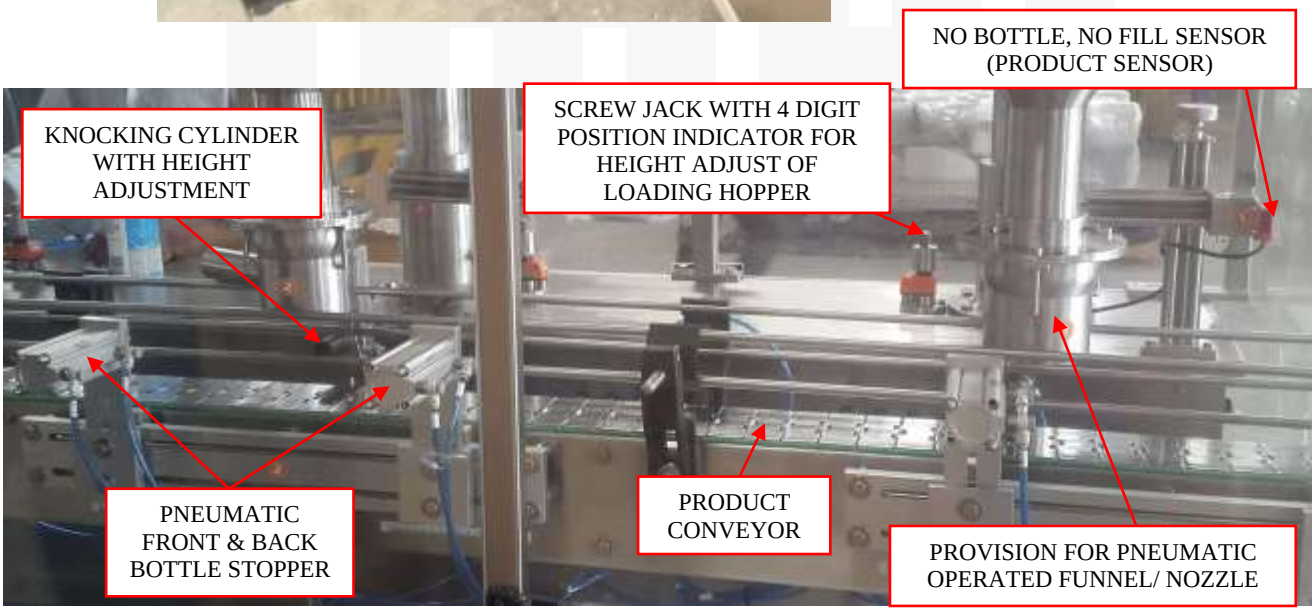
6


INLET FROM
SCREW CONVEYOR
OUTLET TO
LOADING HOPPER

C. PRODUCT CONVEYOR

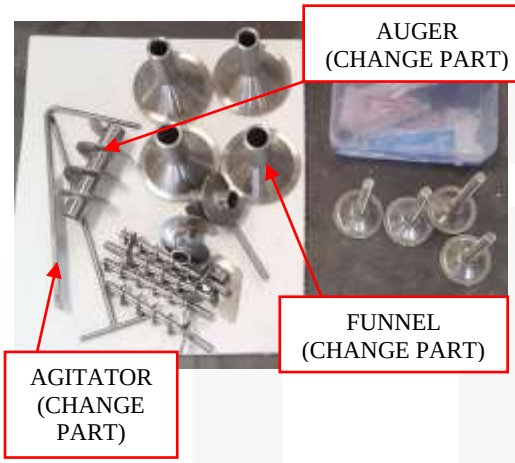
Operator has to load empty bottles on conveyor, which will carry up to filling station. Pneumatic Front & back Bottle stopper installed at Each Filling station (3 Stations) on conveyor, which will hold the bottle with help of' 'No Bottle, No Fill' Sensor (Product sensor) below filling nozzle (funnel). Please adjust product guide before start the machine as per size/dia of bottle.

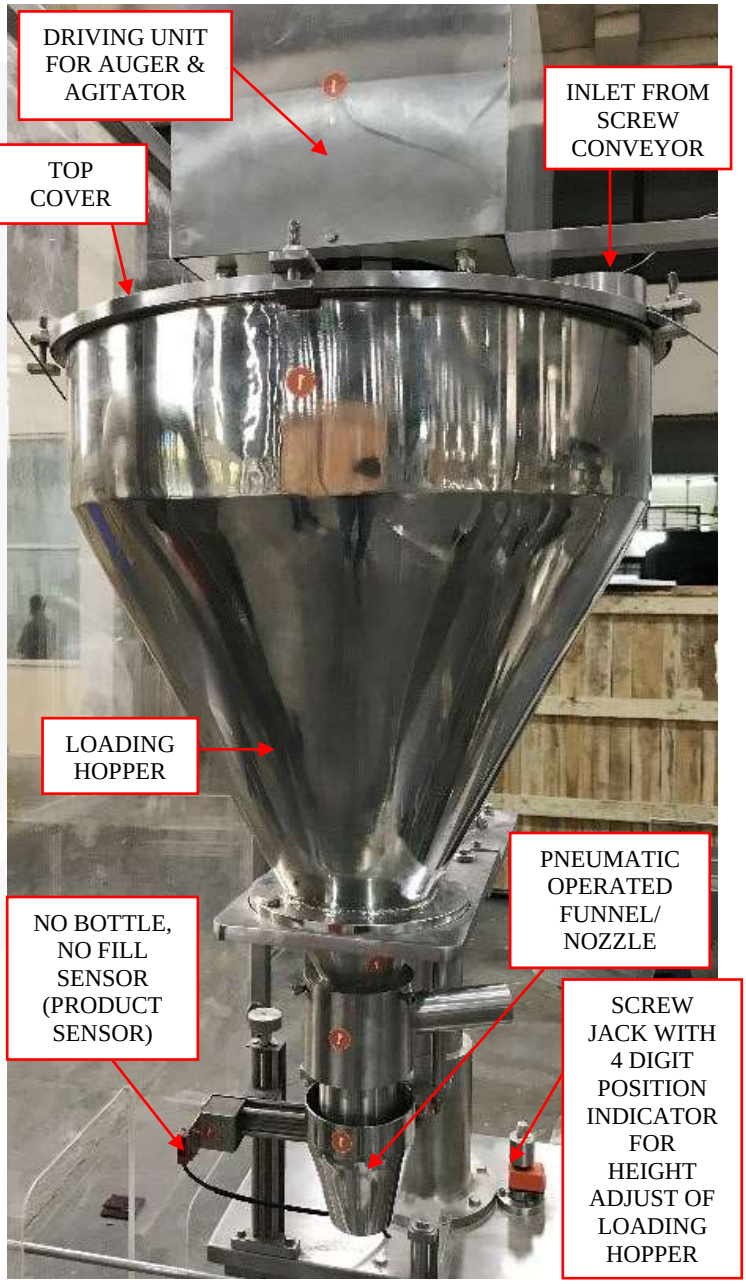




D. POWDER LOADING HOPPER WITH AUGER

Load powder in each hopper (3 Nos) by Screw Conveyor; 3 Nos. Loading hopper fitted on the top of 3 Head filling machine. Loading Hopper having Top Cover, inside Agitator, funnel (auger) & Servo Driven auger for filling powder in bottle. Operator can adjust loading hopper height by Screw Jack given at back side of the pillar.

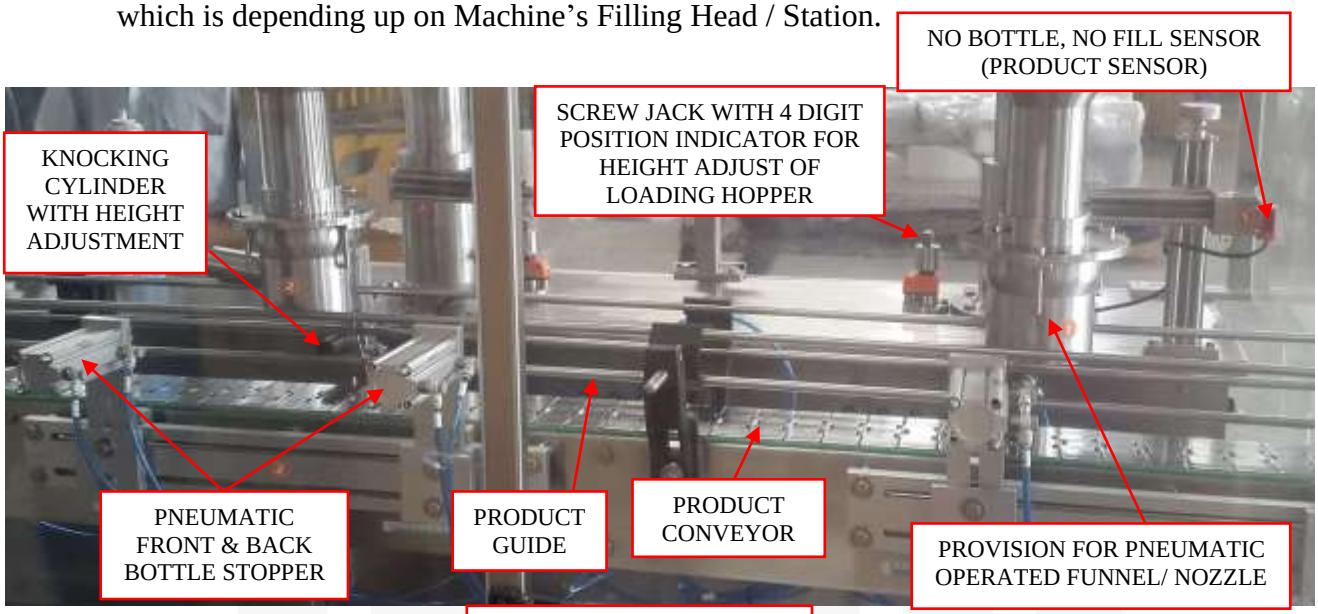




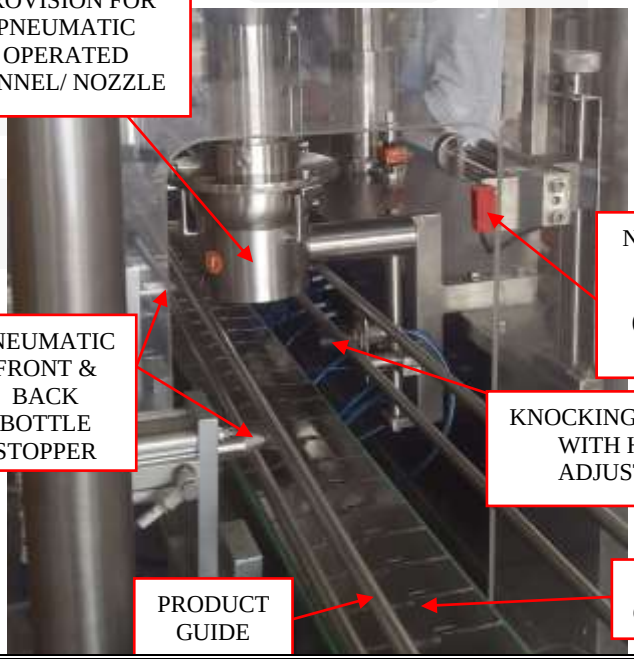

KNOCKING CYLINDER WITH HEIGHT ADJUSTMENT
PRODUCT CONVEYOR
TOP COVER
DRIVING UNIT FOR AUGER & AGITATOR
LOADING HOPPER
POWDER LEVEL SENSOR
NO BOTTLE, NO FILL SENSOR (PRODUCT SENSOR)
PROVISION FOR PNEUMATIC OPERATED FUNNEL/ NOZZLE
SCREW JACK WITH 4 DIGIT POSITION INDICATOR FOR HEIGHT ADJUST OF LOADING HOPPER

E. FILLING STATION

The bottle on the conveyor reaches the filling station, where pneumatic front & back bottle stopper hold the bottles and three bottles are filled at a time, where first bottle will be filled on first filling station, second empty bottle will be filled at a second filling station, and as same third empty bottle will be filled at a third filling station, which is depending up on Machine's Filling Head / Station.



FILLING STATION

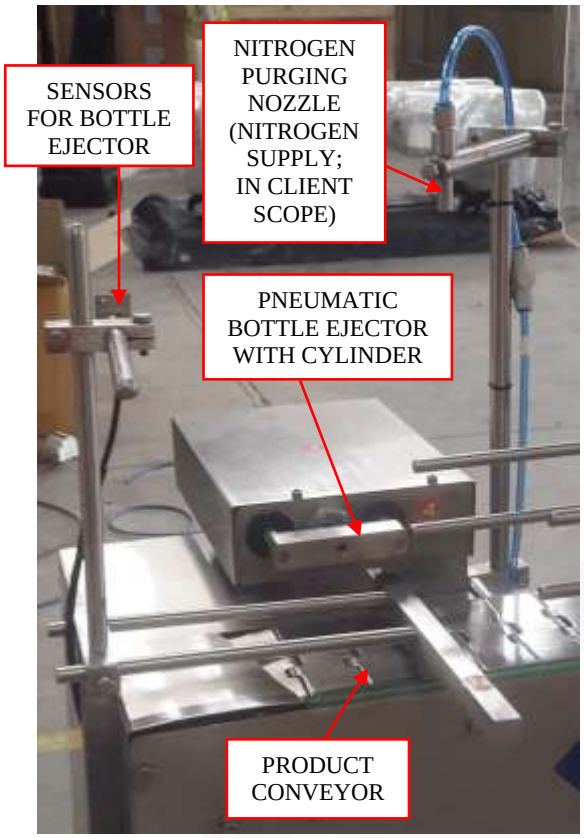


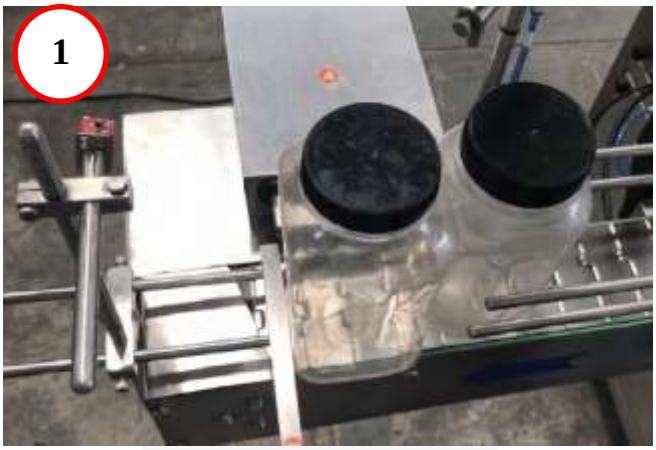
F. TAPPING / KNOCKING UNIT

Knocking cylinder provided with height adjustment at all three filling station; during filling all the same will operated to maintain powder level in the bottles.

G. BOTTLE EJECTOR

Pneumatic Operated Bottle Ejector with 'Janatics' Make, cylinder for eject the filled Bottle at exit end of conveyor and transfer to another machine as shown below photo 1 & 2.





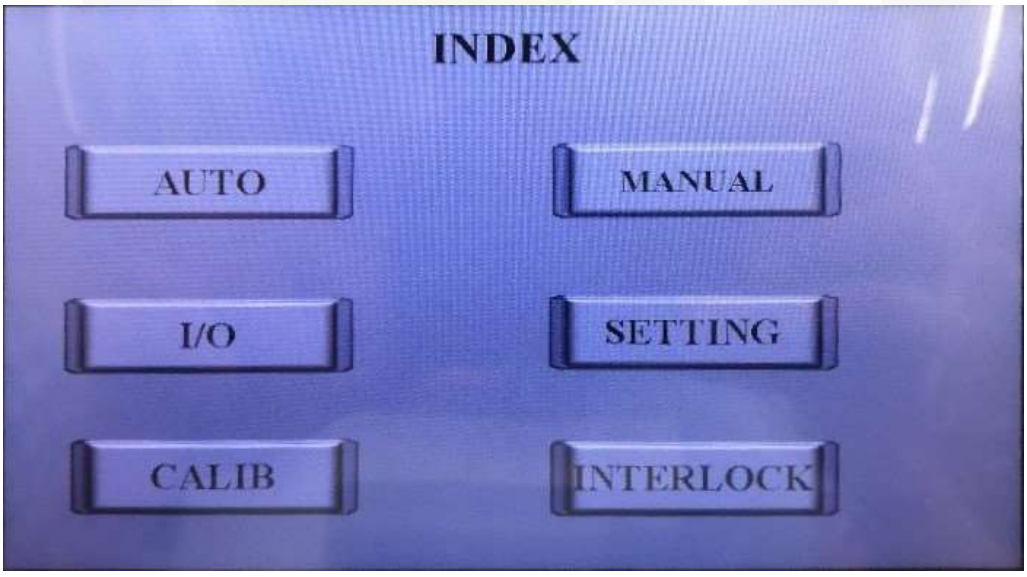
SAFETY CABINET

- Safety Cabinet of S.S. Square frame with all four side Acrylic covers/door As shown in above Photo. Do not open any of the above doors during operation.
- In case of any emergency, machine conveyor can be stop with the help of emergency stop switch given on S.S. Box of HMI.

TOUCH SCREEN HMI PROGRAMMING

WELCOME / HOME SCREEN

INDEX SCREEN



MACHINE CONTROL

This screen is use for Machine Cycle Run / Stop.

START: Use for Machine Cycle Run
MACHINE RESET: Use for Machine Function Reset before Run Machine Cycle.

Note:- Reset before start Machine Cycle.

POWDER VIB.1: Use for Powder Vibrator 1 start (Toggle Button – one touch start / stop)
POWDER VIB.2: Use for Powder Vibrator 2 start (Toggle Button – one touch start / stop)
RESET: Use for TOTAL COUNT Reset.
BOTTLE PER MIN: Showing speed of Machine.
TOTAL COUNTER: Showing Total Production Counts.

MANUAL SETTING

This screen is use for Manually Check all Motor and valve.

MACHINE VFD

CONVEYOR: To Start/ Stop for Conveyor Motor
HEAD 1 STIRRER: To Start/ Stop for Head 1 Stirrer Motor
HEAD 2 STIRRER: To Start/ Stop for Head 2 Stirrer Motor
HEAD 3 STIRRER: To Start/ Stop for Head 3 Stirrer Motor

LOADER 1 VFD

FORWARD: To Start/ Stop in Forward Direction for Powder Loader 1 Motor
REVERSE: To Start/ Stop in Reverse Direction for Powder Loader 1 Motor
VIB. 1: To Start/ Stop for Vibrator 1 Motor
DUST EXTR: To Start/ Stop for Dust Extractor Motor

LOADER 2 VFD

FORWARD: To Start/ Stop in Forward Direction for Powder Loader 2 Motor
REVERSE: To Start/ Stop in Reverse Direction for Powder Loader 2 Motor
VIB. 2: To Start/ Stop for Vibrator 2 Motor

HEAD 1 CYLINDER

EXIT: To Operate Exit Cylinder at Filling Station 1 for Bottle Stopping
INFEED: To Operate Infeed Cylinder at Filling Station 1 for Bottle Stopping
TAPPING: To Operate Tapping Cylinder at Filling Station 1 for Tapping on Bottle
NOZZLE: To Operate Nozzle Cylinder at Filling Station 1 for Non Free Flow Material Filling

HEAD 2 CYLINDER

EXIT: To Operate Exit Cylinder at Filling Station 2 for Bottle Stopping
INFEED: To Operate Infeed Cylinder at Filling Station 2 for Bottle Stopping
TAPPING: To Operate Tapping Cylinder at Filling Station 2 for Tapping on Bottle
NOZZLE: To Operate Nozzle Cylinder at Filling Station 2 for Non Free Flow Material Filling

HEAD 3 CYLINDER

EXIT: To Operate Exit Cylinder at Filling Station 3 for Bottle Stopping
INFEED: To Operate Infeed Cylinder at Filling Station 3 for Bottle Stopping
TAPPING: To Operate Tapping Cylinder at Filling Station 3 for Tapping on Bottle
NOZZLE: To Operate Nozzle Cylinder at Filling Station 3 for Non Free Flow Material Filling

OTHER VALVE

AIR PURGING: To Operate Nitrogen Valve
BOTTLE EJECTOR: To Operate Bottle Ejector at the Outfeed of Bottle Conveyor
DIVERTOR: To Operate Powder Diverter Valve

INPUT LIST

In the INPUT LIST screen, it is showing the operating condition of all Inputs which are used in machine. It will indicate with Green and Red Color. It will Showing Green when it Working.

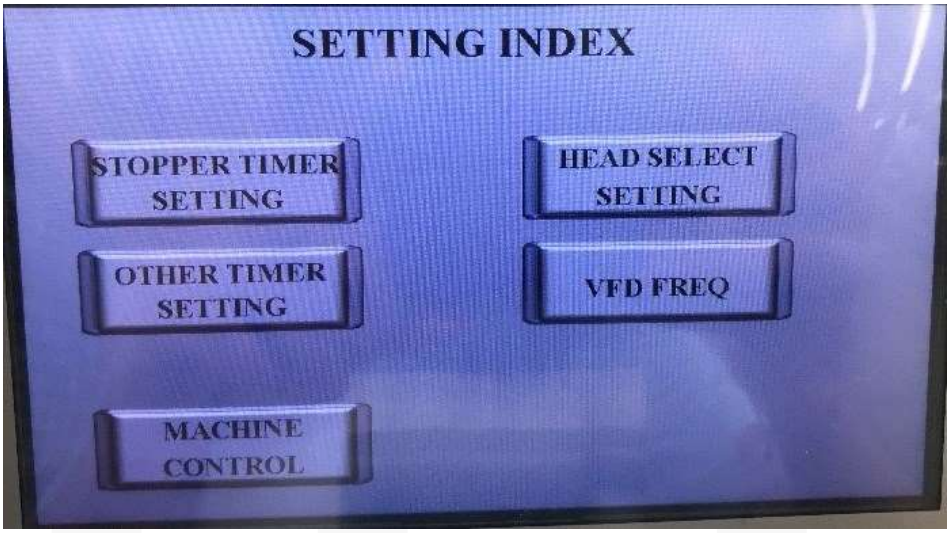
OUTPUT LIST-1

In the OUTPUT LIST-1 screen, it is showing the operating condition of all Outputs which are used in machine. It will indicate with Green and Red Color. It will Showing Green when it Working.

OUTPUT LIST-2

In the OUTPUT LIST-2 screen, it is showing the operating condition of all Outputs which are used in machine.

SETTING INDEX



This screen is use for Setting.

STOPPER TIMER SETTING: Use for TIME setting of cylinders
HEAD SELECT SETTING: Use for Selection of Filling head, Stirrer, Tapping , UP/ DOWN (For Non Free Flow Filling)
OTHER TIMER SETTING: Use for UP/ DOWN (For Non Free Flow Filling), Powder Loader OFF Delay after Level Reach of Powder Hopper, Bottle Sensing Time,
Bottle Ejector Cylinder ON/ OFF Delay, Nitrogen Purging ON/ OFF Delay
VFD FREQ: Use for Speed Setting of AC VFDs.
MACHINE CONTROL: Use for Go to Machine Control Screen

STOPPER TIMER

INFEED ON DELAY

HEAD 1: On Time for Infeed Cylinder at Filling Station 1
HEAD 2: On Time for Infeed Cylinder at Filling Station 2
HEAD 3: On Time for Infeed Cylinder at Filling Station 3

FILLING ON DELAY

HEAD 1: On Time for Filling after Bottle Stop at Filling Station 1
HEAD 2: On Time for Filling after Bottle Stop at Filling Station 2
HEAD 3: On Time for Filling after Bottle Stop at Filling Station 3

OUTFEED OFF DELAY

HEAD 1: Off Time for Outfeed Cylinder after Bottle Sensor 1 Sense 1st Bottle at Filling Station 1
HEAD 2: Off Time for Outfeed Cylinder after Bottle Sensor 1 Sense 1st Bottle at Filling Station 2
HEAD 3: Off Time for Outfeed Cylinder after Bottle Sensor 1 Sense 1st Bottle at Filling Station 3

INFEED OFF DELAY

HEAD 1: Off Time for Infeed Cylinder after 3 bottle enter at Filling Station 1
HEAD 2: Off Time for Infeed Cylinder after 3 bottle enter at Filling Station 2
HEAD 3: Off Time for Infeed Cylinder after 3 bottle enter at Filling Station 3

OUTFEED ON DELAY

HEAD 1: On Time for Outfeed Cylinder for all 3 Bottle exit from Outfeed cylinder at Filling Station 1
HEAD 2: On Time for Outfeed Cylinder for all 3 Bottle exit from Outfeed cylinder at Filling Station 2
HEAD 3: On Time for Outfeed Cylinder for all 3 Bottle exit from Outfeed cylinder at Filling Station 3

TAPPER CYL ON DELAY

HEAD 1: On Time for Tapping Cylinder after Bottle Stop at Filling Station 1
HEAD 2: On Time for Tapping Cylinder after Bottle Stop at Filling Station 2
HEAD 3: On Time for Tapping Cylinder after Bottle Stop at Filling Station 3

TAPPER CYL ON/OFF DELAY

HEAD 1: On and Off Time for Tapping Cylinder at Filling Station 1
HEAD 2: On and Off Time for Tapping Cylinder at Filling Station 2
HEAD 3: On Time for Tapping Cylinder after Bottle Stop at Filling Station 3

Note: msec / ms = milli second

HEAD SELECTION

HEAD 1 ENABLE: Enable/ Disable selection of Filling Operation of Filling Station 1
HEAD 2 ENABLE: Enable/ Disable selection of Filling Operation of Filling Station 2
HEAD 3 ENABLE: Enable/ Disable selection of Filling Operation of Filling Station 3

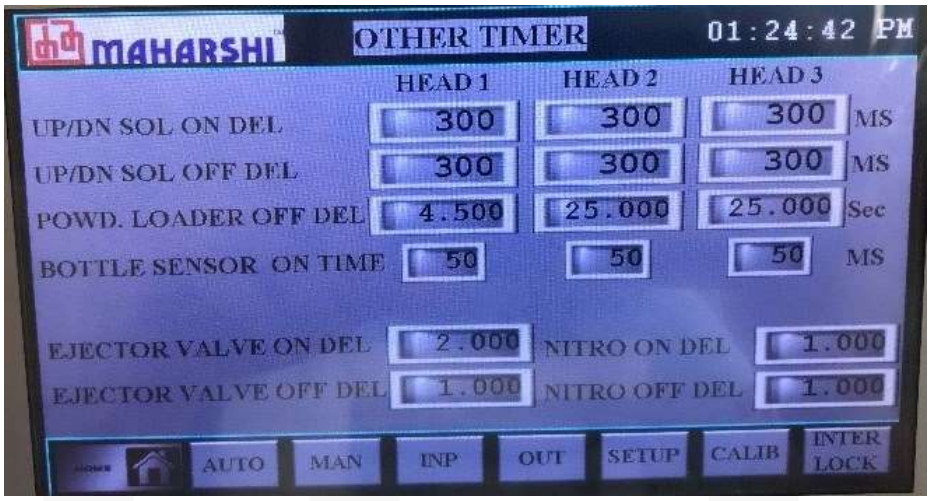
H1 SERVO ENABLE: Enable/ Disable selection of Servo Rotation of Filling Station 1
H2 SERVO ENABLE: Enable/ Disable selection of Servo Rotation of Filling Station 2
H3 SERVO ENABLE: Enable/ Disable selection of Servo Rotation of Filling Station 3

H1 STIRRER CONTINOUS: Selection of Head 1 Stirrer Motor Operation- Rotate when Servo Run / Continuous Rotation
H2 STIRRER CONTINOUS: Selection of Head 2 Stirrer Motor Operation- Rotate when Servo Run / Continuous Rotation
H3 STIRRER CONTINOUS: Selection of Head 3 Stirrer Motor Operation- Rotate when Servo Run / Continuous Rotation

H1 TAPPER DISABLE/ENABLE: Enable/ Disable selection of Tapping Cylinder Operation of Filling Station 1
H2 TAPPER DISABLE/ENABLE: Enable/ Disable selection of Tapping Cylinder Operation of Filling Station 2
H3 TAPPER DISABLE/ENABLE: Enable/ Disable selection of Tapping Cylinder Operation of Filling Station 3

H1 UP/DN DISABLE/ENABLE: Enable/ Disable selection of Up Down Cylinder Operation of Filling Station 1
H2 UP/DN DISABLE/ENABLE: Enable/ Disable selection of Up Down Cylinder Operation of Filling Station 2
H3 UP/DN DISABLE/ENABLE: Enable/ Disable selection of Up Down Cylinder Operation of Filling Station 3

OTHER TIMER



UP/DN SOL ON DELAY

HEAD 1: On Time for Up Down Cylinder after bottle Stop at Filling Station 1
HEAD 2: On Time for Up Down Cylinder after bottle Stop at Filling Station 2
HEAD 3: On Time for Up Down Cylinder after bottle Stop at Filling Station 3

UP/DN SOL OFF DELAY

HEAD 1: Off Time for Up Down Cylinder after Filling Stop at Filling Station 1
HEAD 2: Off Time for Up Down Cylinder after Filling Stop at Filling Station 2
HEAD 3: Off Time for Up Down Cylinder after Filling Stop at Filling Station 3

POWD. LOADER OFF DELAY

HEAD 1: Off Time for Powder Loader 1 Motor after level Reach at Hopper 1
HEAD 2: Off Time for Powder Loader 2 Motor after level Reach at Hopper 2
HEAD 3: Off Time for Powder Loader 2 Motor after level Reach at Hopper 3

BOTTLE SENSOR ON TIME

HEAD 1: Sensing on Time for Commanding PLC input at Filling Station 1
HEAD 2: Sensing on Time for Commanding PLC input at Filling Station 2
HEAD 3: Sensing on Time for Commanding PLC input at Filling Station 3

EJECTOR VALVE ON DELAY: On Time for Ejector Valve after Sensing Bottle at Outfeed of Conveyor
EJECTOR VALVE OFF DELAY: Off Time for Ejector Valve

NITRO ON DELAY: On Time for Nitrogen Valve after Sensing Bottle at Outfeed of Conveyor
NITRO OFF DELAY: Off Time for Nitrogen Valve

Note: msec / ms = milli second

VFD FREQ

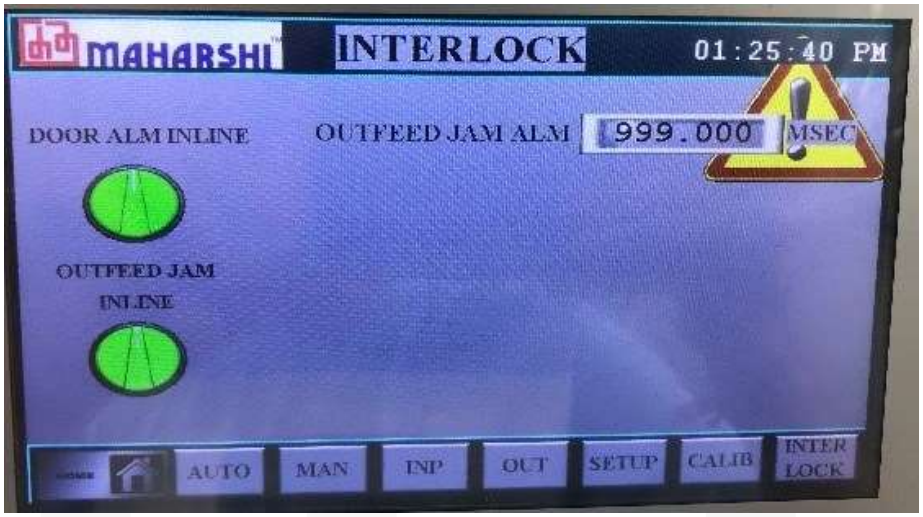
CONVEYOR VFD FREQ: Speed of Bottle Conveyor Motor

H1 STIRRER VFD FREQ: Speed of Head 1 Stirrer Motor
H2 STIRRER VFD FREQ: Speed of Head 2 Stirrer Motor
H3 STIRRER VFD FREQ: Speed of Head 3 Stirrer Motor

POWDER LOADER 1 FREQ: Speed of Powder Loader 1 Motor
POWDER LOADER 2 FREQ: Speed of Powder Loader 2 Motor

POWDER STIRRER 1 FREQ: Speed of Powder Sieve 1 Motor
POWDER STIRRER 2 FREQ: Speed of Powder Sieve 2 Motor

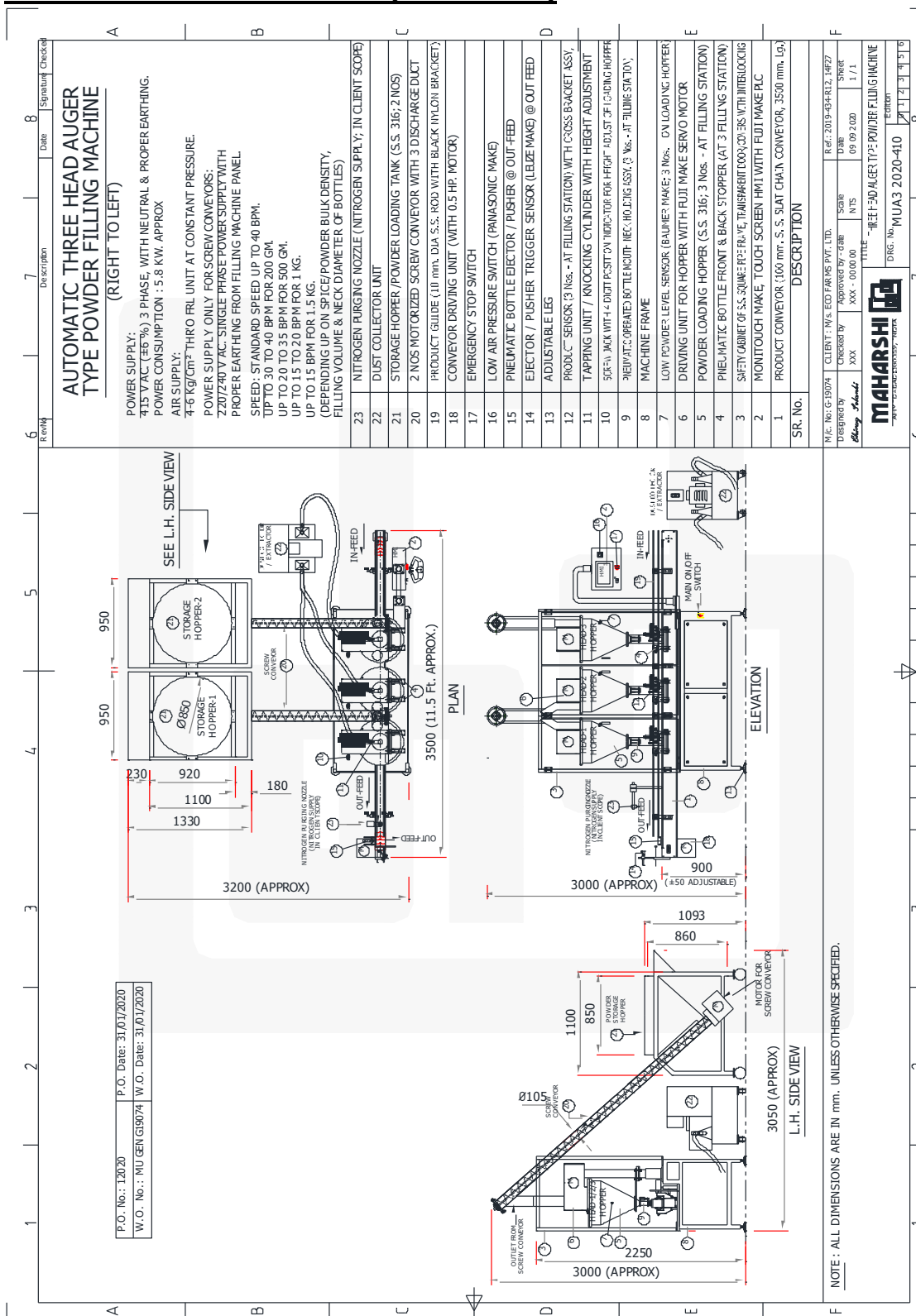
INTERLOCK



DOOR ALM INLINE: Alarm Inline / Bypass Selection of Safety Door
OUTFEED JAM INLINE: Alarm Inline / Bypass Selection of Outfeed Jam
OUTFEED JAM ALM: Time Setting of Outfeed Jam.

Note: msec / ms = milli second

DESIGN OF THE SYSTEM (GA. DWG.)



TECHNICAL DATA

Equipment Name & Model	**Automatic Three Head Augur Type Powder Filling Machine, Model: 3-Head**
Machine Sr. No.	**G-19074**
Machine Speed	Standard Speed Up to 40 BPM Up to 30 to 40 BPM for 200 gm. Up to 20 to 35 BPM for 500 gm. Up to 15 to 20 BPM for 1 kg. Up to 15 BPM for 1.5 kg. (Depending up on spice/powder bulk density, filling volume & neck diameter of bottles)
Filling size	100 gm. to 2.5 Kg.
Filling accuracy	+/- 2% to 3% depending on powder at controlled humidity below 30% Rh.
Volume adjustment	With help of PLC
Filling system	Auger Screw Based (Servo Controlled High Resolution)
Bottle Neck Diameter Requirement	Minimum 40 mm and Above
Number of Filling Head	3 Head
Design (Conveyor Direction)	Right → Left (From Operator Side)
Product Conveyor	**100 mm. S. S. Slat Chain Conveyor of Approx 3000 mm Length.** & Conveyor Operating Ht. 900 ± 50 mm. Adjustable
Driving Unit	Hanging Type Driving unit Covered with S. S. Box; Direct Coupled Motor & Suitable Size Gear Box to Conveyor Drive Shaft.
Conveyor Motor	'**Rotomotive**' Make, **0.5 HP.** (0.37 Kw), 3 Phase AC Motor
Conveyor Gear Box	'**Rotomotive**' Make, Type: Box-040, Pam: 71B5, Ratio (i): 20: 1
Variable Frequency Drive (VFD) for Conveyor	'**Fuji**' Make, Model: FRN0004C25-7A, 0.5 HP.
Touch Screen HMI for Operating & Programming with PLC	'**Monitouch**' Make 7" Color Touch Screen HMI, with '**Fuji**' Make PLC
Loading Hopper	S.S. Loading Hopper having Top Cover, inside Agitator, funnel & Servo Driven auger for filling powder in bottle.
Servo Motor for Auger	'**Fuji**' Make Servo Motor (3 Nos.) Model / Type: GYB751D5-RC2
Servo Drive for Auger	'**Fuji**' Make Alpha 5 Smart Drive (3 Nos.)
Motor for Agitator / Stirrer (3 Nos.)	'**Rotomotive**' Make, **0.5 HP.** (0.37 Kw), 3 Phase AC Motor
Gear Box for Agitator / Stirrer (3 Nos.)	'**Rotomotive**' Make, Type: Box-040, Pam: 71B5, Ratio (i): 20: 1
Variable Frequency Drive (VFD) for Agitator / Stirrer Motor	'**Fuji**' Make, Model: FRN0004C25-7A, 0.5 HP. (3 Nos.)
Pneumatic Bottle Stopper	Pneumatic Operated Front & back Bottle Stopper having '**SMC**' Make, cylinder and Solenoid Valve for hold the Bottle during filling operation (Qty: 6 Nos.)

Pneumatic Bottle holder	Pneumatic Operated Bottle holder (Change Part, as per Neck/Mouth) for hold the Bottle from Neck during filling operation @ Each / Three Filling Station ('**Janatics**' Make, cylinder & '**SMC**' Make, Solenoid Valve, 3 Nos.)
Knocking cylinder	**Janatics**' Make, Knocking cylinder & '**SMC**' Make, Solenoid Valve with height adjustment bracket assy for maintain powder level in the bottles during powder filling Operation
Pneumatic Ejector	Pneumatic Operated Bottle Ejector having '**Janatics**' Make, cylinder & '**SMC**' Make, Solenoid Valve for eject the filled Bottle at exit end of conveyor and transfer to another machine
Trigger Sensor for Pneumatic Ejector Cylinder	'Leuze' Make
No Bottle, No Fill Sensor (Product Sensor)	'Leuze' Make (3 Nos.)
Powder Level Sensor	'Baumer's clever level (3 Nos.)
Over all Measurements (L x W x H)	As Per Dwg. No. 2020-410
Safety Cabinet	Safety Cabinet of S.S. Square Pipe frame & transparent Acrylic covers/ doors with Interlock.
Emergency Stop Switch & Inching P.B.	Provided on S.S. box of HMI, for stop the machine; In case of any emergency; and Inching P.B. for run the Machine in inching mode.
Low Air Pressure Alarm	'**Panasonic**' Make, Digital Air Pressure Switch, in case of low air pressure (if pressure goes bellow to set pressure), Machine will Stop and alarm display on screen of HMI.
Nitrogen Purging Nozzle	Nitrogen Purging Nozzle provide at exit end of conveyor for nitrogen supply (**in client scope**)
FRL Unit	'SMC' Make

Change Parts	Agitator & funnel (change part as per bottle Neck/ Mouth Size/ dia.) of loading Hopper

Dust Collector Unit after Filling Station	Single Dust Collector unit has 2 Nos. Dust Collector Bag for collect dust powder will be sucked and clean the bottle/jars.
Motor of Dust Collector	'Miracle' Make, Motor Brand: MMIRACAL, 2 KW, 3 Phase AC Motor
Starter	DOL Starter 3.50 A – 6.50 A

Utilities:

Power supply	415 (+/- 6%) V AC, 50/60 Hz. Three Phase with Neutral and Proper earthing to Control panel
Power Consumption	5.8 KW Approx.
Air Supply (For Pneumatic Operation)	4 To 6 Kg/Cm² Thro' FRL at Constant Pressure.

Note: Since our policy is of continuous development and improvement, we reserve the right to supply product, which may differ from those illustrated & described in this publication.

TECHNICAL DATA OF SCREW CONVEYOR WITH HOPPER

Equipment Name	**Screw Conveyor With Hopper**
Screw Conveyor Quantity	**2 Nos**
Over all Dimensions of Screw (Dia x Length)	Dia. 105 x 3000 mm. Length (Approx.)
Loading Hopper	S.S. Loading hopper at ground level 2 Nos.
Vibrator Motor (2 Nos.)	'**Oli**' Make, 2 Nos. Vibrator seiver MVE Series Electric Vibrator
Variable Frequency Drive (VFD) for Vibrator	'**Fuji**' Make, Model: FRN0004C25-7A, 0.5 HP. (2 Nos.)
Screw with pipe	S.S. Screw fitted inside 105 OD pipe with Drive Shaft, Both end Bearing Support and Driving Unit
Main Drive Motor for 2 Nos. Screw Conveyor	'**Bonfiglioli**' Make, 1 HP. AC. Motor 2 Nos.
Gear Box for 2 Nos. Screw Conveyor	'**Bonfiglioli**' Make, Ratio: 10: 1, Type: W 63 U 10 P80 B5 B3 2 Nos.
Variable Frequency Drive (VFD) for Screw Conveyor	'**Fuji**' Make, Model: FRN0006C25-7A, 1.0 HP.; 2 Nos.

Utilities

Power supply	220/240 V AC, 50 Hz, Single Phase Power Supply with proper earthing from Filling Machine panel
Air Supply (For Diverter Valve)	4 To 6 Kg/Cm² Thro' FRL at Constant Pressure.

MAINTENANCE

DAILY:

i. The machine should be kept clean and free from dust.

ii. Check the product guide & make sure for proper bottle transfer, if required set properly.

iii. Check Proper Pressure of Air Supply & all Connector, if found loose, tighten the same to prevent Air Leakage.

iv. Check the all sensor are clean and at proper position.

v. Check The Positions of All Sensors & Stoppers daily.

WEEKLY:

i. Checks the surfaces of slats of product conveyor are clean and not contaminated.

ii. Check the tightness of all bolts & nuts to avoid misalignment or accident.

iii. Please apply the grease to all gear drives. (do not apply grease/oil to timing pulley, belt drive)

iv. To increase life of change parts of filling machine – wash with warm soft soap solution and rinse once a week.

MONTHLY:

i. Check the slats of product conveyor, conveyor green wear strip guide and nylon back guide for sign of wear and replace if require.

ii. Blow the low-pressure air from a distance to control panel to remove dust without damaging wiring connections.

iii. Always check the connectors, if found loose, tighten the same.

iv. Check the oil level in gearbox. (Note: 'Rotomotive' make gearbox is supplied with

long-life lubrication and they do not require any maintenance.)

v. Every three months replace the oil in the gear box.

vi. Check the drive belt for tension and sign of wear.

vii. Regularly clean the stored water in FRL.

viii. Check the all air line & wiring connectors, if found loose, tighten the same.

ix. Check Air line filter Cartridge inside filter once a week; and change when necessary or after 6 months.

x. Power must be cut when the Machine put in Maintenance.

NEVER DO

- Never put hands between rotating/ moving parts.
- Never put grease or oil on timing belt, pulley drive.
- Never Switch ‘ON’ the machine, during Maintenance.
- Never over tighten any mounting parts or hardware.

CHECK

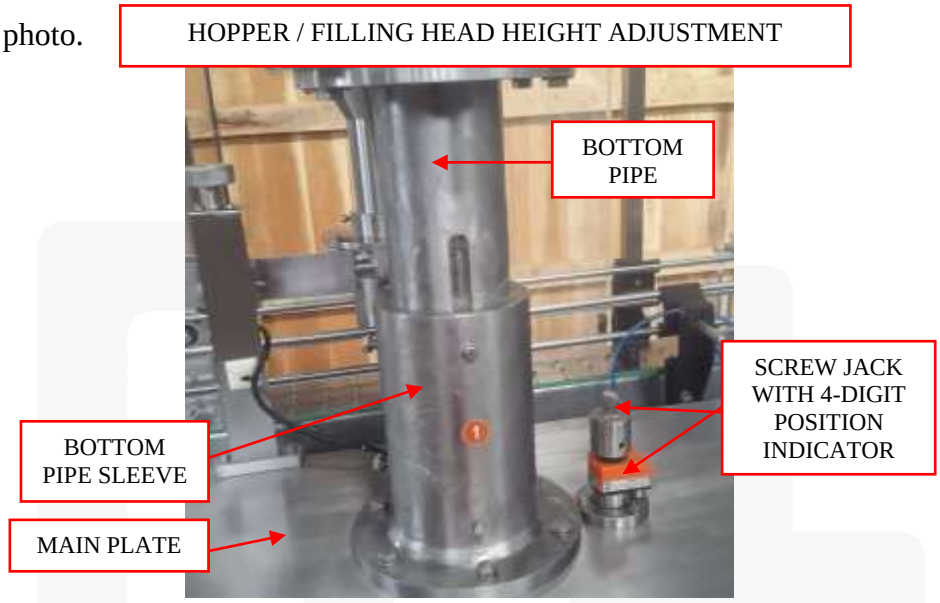
- Always Check for Proper Bottle Transfer before put Machine for Production.
- Check that all moving, rotating drive parts are getting lubrication.
- Use sufficient and correct type of lubricant to reduce wear.
- The variable speed should be operated through the entire speed range at least once per week to ensure even distribution of lubrication to prevent sticking.

SALIENT FEATURES

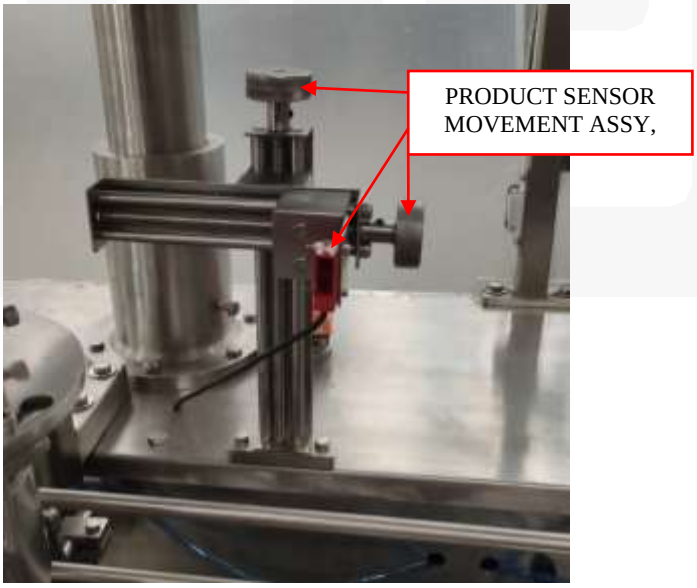
- PLC Controlled.
- 7" Touch Screen Panel to access all settings.
- Stainless Steel Construction.
- All contact parts S.S. 316 & non-contact parts S.S. 304, Aluminum, Silicon, SS frame structure with SS cladding.
- Three head auger filling with conveyor for fast production.
- Filling weight easily sets by Revolution and speed of auger.
- Filling and conveying speed adjustable through variable speed drives.
- Pneumatic operated bottles holding system.
- Individual Stirrer system for powder hopper.
- Auger Drive with Servo Motor.
- Adjustable height of Slat conveyor, to align with other machine of the line.
- Minimum change over time from one size to another container.
- Accurate and repeatable performance.
- Variable speed drive ensures instant synchronization with other machines of the line.

ADJUSTMENTS: SET UP AND CHANGE OVER

Powder filling head height adjustment is up and down type, with the help of ratchet spanner rotate the screw jack located beside the main pillar of hopper as per shown below photo.



Bottle sensor adjustment is provided up and down including left and right movement of sensor according to bottle size and shape.



SET UP OF AUGER AND FUNNEL

The Funnel is fixing with two SS stud with know, pull the funnel, Auger is fixing with the two hex bolts, where loose the bolt and remove the Auger.

(Auger & funnel require as a change part, in case of Bottle neck/ mouth dia/size change)

NOTE

Once the proper settings have been produce this machine will continue to adjustment, providing the density of the material remains constant. It is obviously desirable the sample weights be taken whenever a new batch of material is placed in the upper and from time to time during a production run. After completion of production run, the fill sizes obtained and the depth required to obtain these should be entered in to a log book for future reference. In this way, set up of the will be greatly expedited in subsequent runs.

SETTING FOR FREE FLOW PRODUCT

1

2

3

SETTING FOR NON FREE FLOW PRODUCT

SAFETY PRECAUSTIONS

No one should attempt to work on or repair the machine without first making sure that all power sources are off.

CLEANING

It is absolutely necessary to clean the machine from outside and inside every day, as the dusty powder will settle on the surface and same is carried inside the machine which will clog the various assemblies of the machine and will jam in due course.

Further, day to day oiling and greasing of rotating parts and absolutely cleaning at every week end is must for in uninterrupted performance and long trouble free life.

REGULAR SERVICE

Regular service, correct adjustments, and repair or replacement of worn components are necessary for the equipment to function efficiently, economically and safely.

WARNING

The equipment user is cautioned against the use of other than genuine replacement parts or repairs. Our parts have engineered and tests for their particular application. The use of any others parts may give unsatisfactory or poor performance. Resulting in damage to the machine.

Before doing any work on this machine, shut off all power.

REMOVAL OF THE POWDER HOPPER

Remove the two M8 x 20 hex bolt which secure the hopper to the self aligning mounting back.

Grasp hopper with two hands till it forward to disengage the universal joint then lift the hopper upward and clear.

CLEANING

Frequent rather daily cleaning of the chain and frame is advised. Such agent as steam, warm water and soap are used when excessive amount of powders, broken glass or debris accumulate. Cleaning will be required to remove these materials.

POWDER HOPPER CLEANING

The entire hopper assembly with the exception of the hopper bushes may be cleaned properly.

WARNING

The hopper top seals may be autoclaved, but they must be removed from the hopper assembly to eliminate the possibility of permanent distortion.

CONVEYOR MAINTENANCE

During inspection of chain certain malfunction such as chain pulsation, jerky action, excessive wear and raised hinges may be noticed.

Replacement of chain and sprockets should be place when

- The chain jumps with sprocket
- The top plates have worn to about ½ of the original thickness
- The conveying surface becomes uneven through wear.
- The conveyor chain drive sprocket is normally consideration worn out when the sprocket teeth develop a hooked profile and the chain tends to hand up on the sprocket teeth.
- Periodically examine sprocket for sings of excessive wear or dirt build up in tooth pockets.
- Check dead plate for clearance.
- Inspect for excessive gap between flights due to jam up or overload.

LUBRICATION

The machine is to be kept free of external grease or oil unless indicated for maintaining sanitary conditions and avoiding dust or dirt cleaning to areas that come in to contact with the product.

POWDER FILLING HEAD AND CONVEYOR DRIVE ROLLER CHAIN

Keep chains as clean as possible.

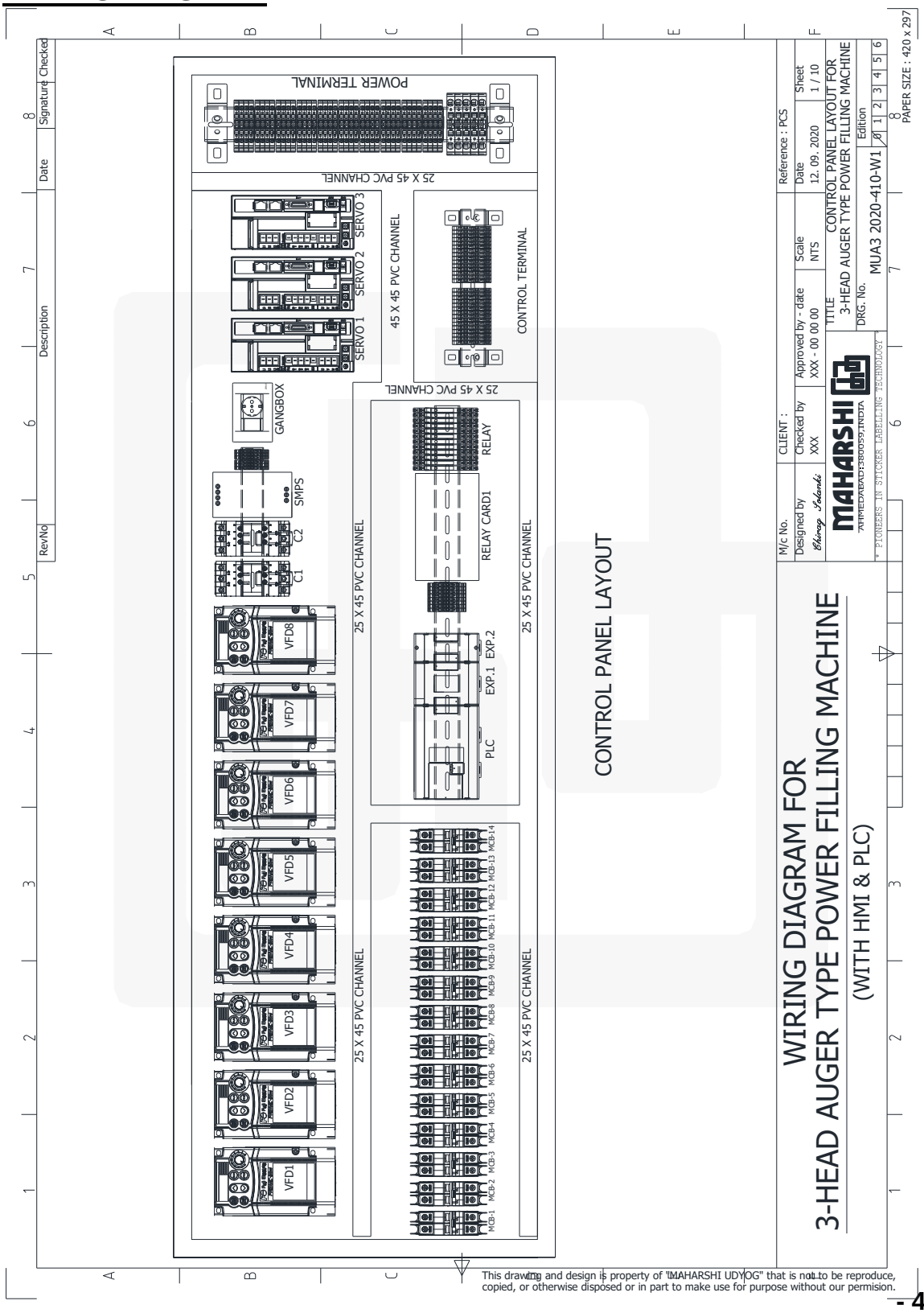
Use heaviest grade of mineral oil that will penetrate chain or at room temperature. Use the brush or oil can to apply lubricant to the inside of the chain at the edges of the side plates. Volume and frequency should be determined by periodic inspection.

CONVEYOR AND POWDER FILLING HEAD BEARINGS

A lithium base grease conforming to proper consistency is used for lubrication. This light viscosity low torque grease is rust inhibited and water resistance with wide temperature range. For best results bearings should be relubricated wheel in operation. The grease should be pumped in slowly until a slight bead forms around the seals. The bead indicates the correct amount of relubrication added and also serves to protect against dust and grime. The greasing interval at 250 rpm is 2 to 6 months.

Every three months replace the oil in the gear box.

WIRING DIAGRAM



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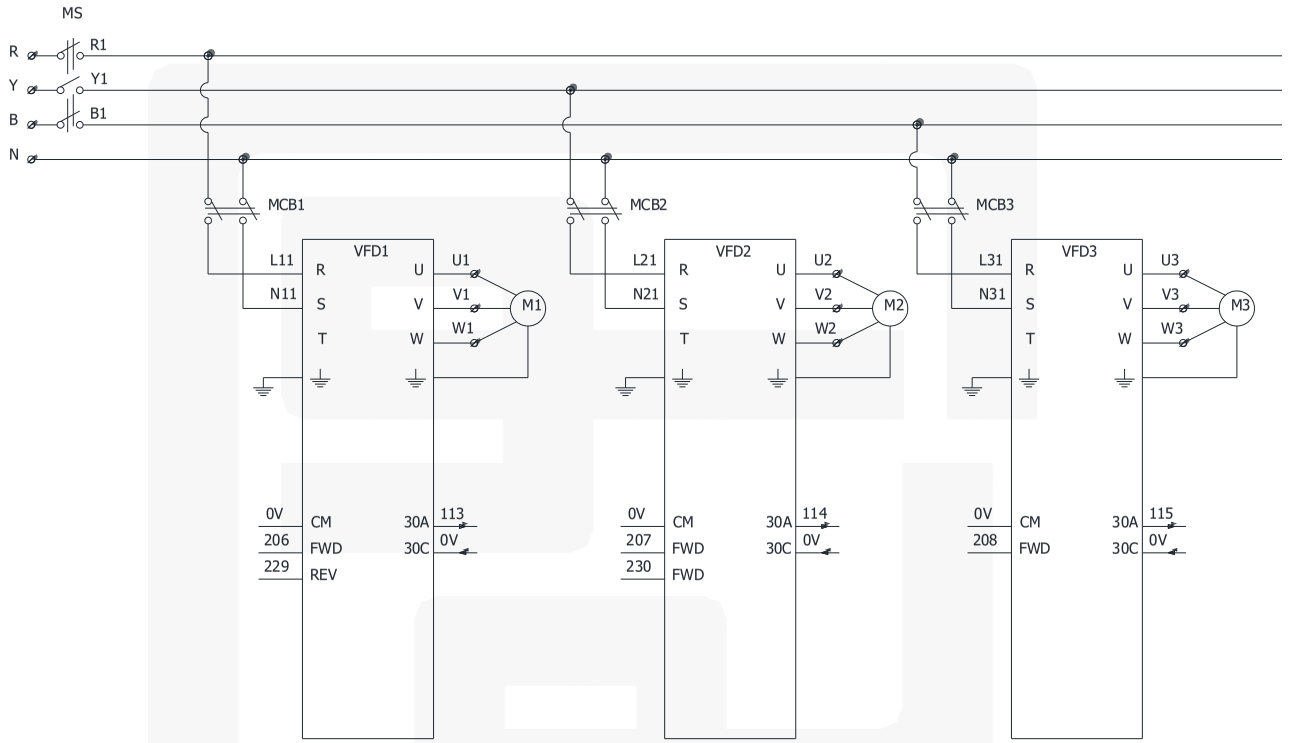


WIRING DIAGRAM FOR
3-HEAD AUGER TYPE POWER FILLING MACHINE

(WITH HMI & PLC)

M/c No.	CLIENT :			Reference : PCS	
Designed by	Checked by	Approved by - date	Scale	Date	Sheet
Chirag Solanki	XXX	XXX - 00 00 00	NTS	12. 09. 2020	2 / 10

MAHARSHI
AHMEDABAD:380059,INDIA
* PIONEERS IN STICKER LABELLING TECHNOLOGY

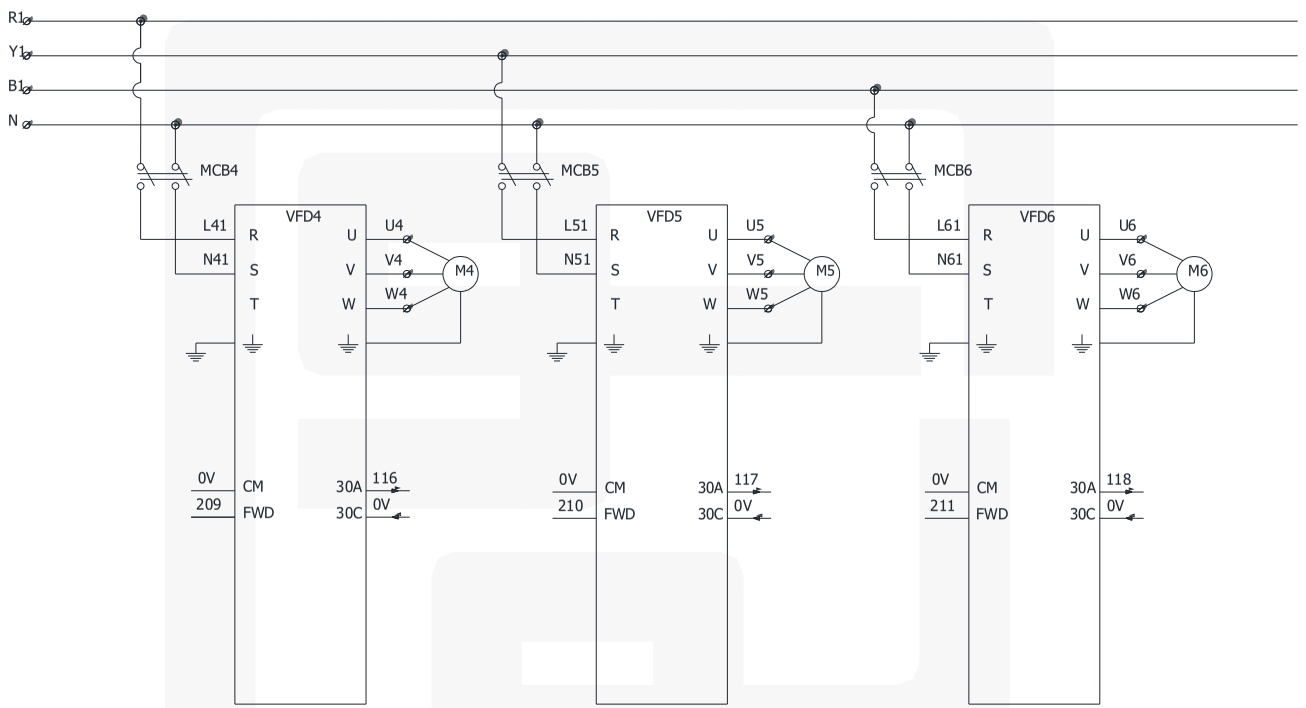
TITLE: POWER WIRING DIAGRAM-1 FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

DRG. No. MUA3 2020-410-W2

Edition: 0 1 2 3 4 5 6

PAPER SIZE : 420 x 297

RevNo	Description	Date	Signature	Checked



WIRING DIAGRAM FOR
3-HEAD AUGER TYPE POWER FILLING MACHINE
(WITH HMI & PLC)

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TITLE: POWER WIRING DIAGRAM-2 FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

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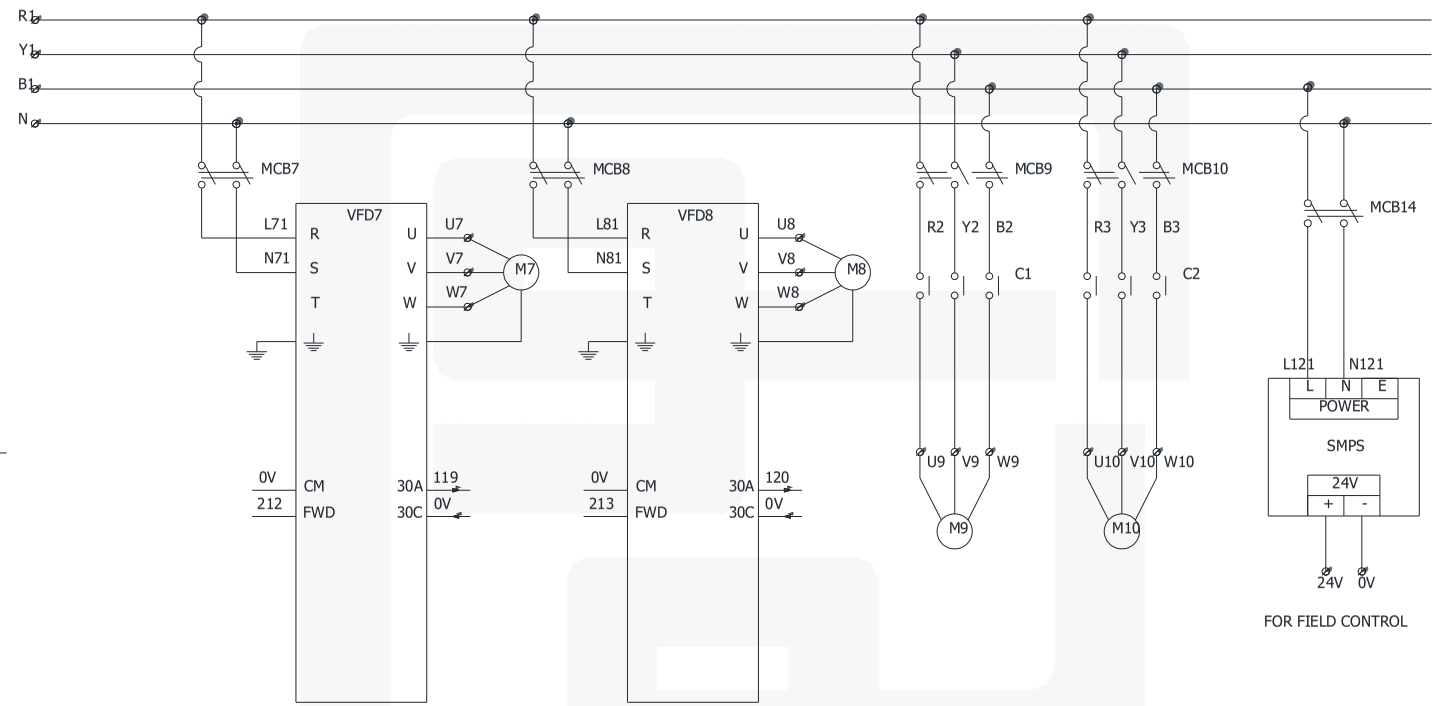
PAPER SIZE : 420 x 297

RevNo	Description	Date	Signature	Checked



WIRING DIAGRAM FOR
3-HEAD AUGER TYPE POWER FILLING MACHINE

(WITH HMI & PLC)

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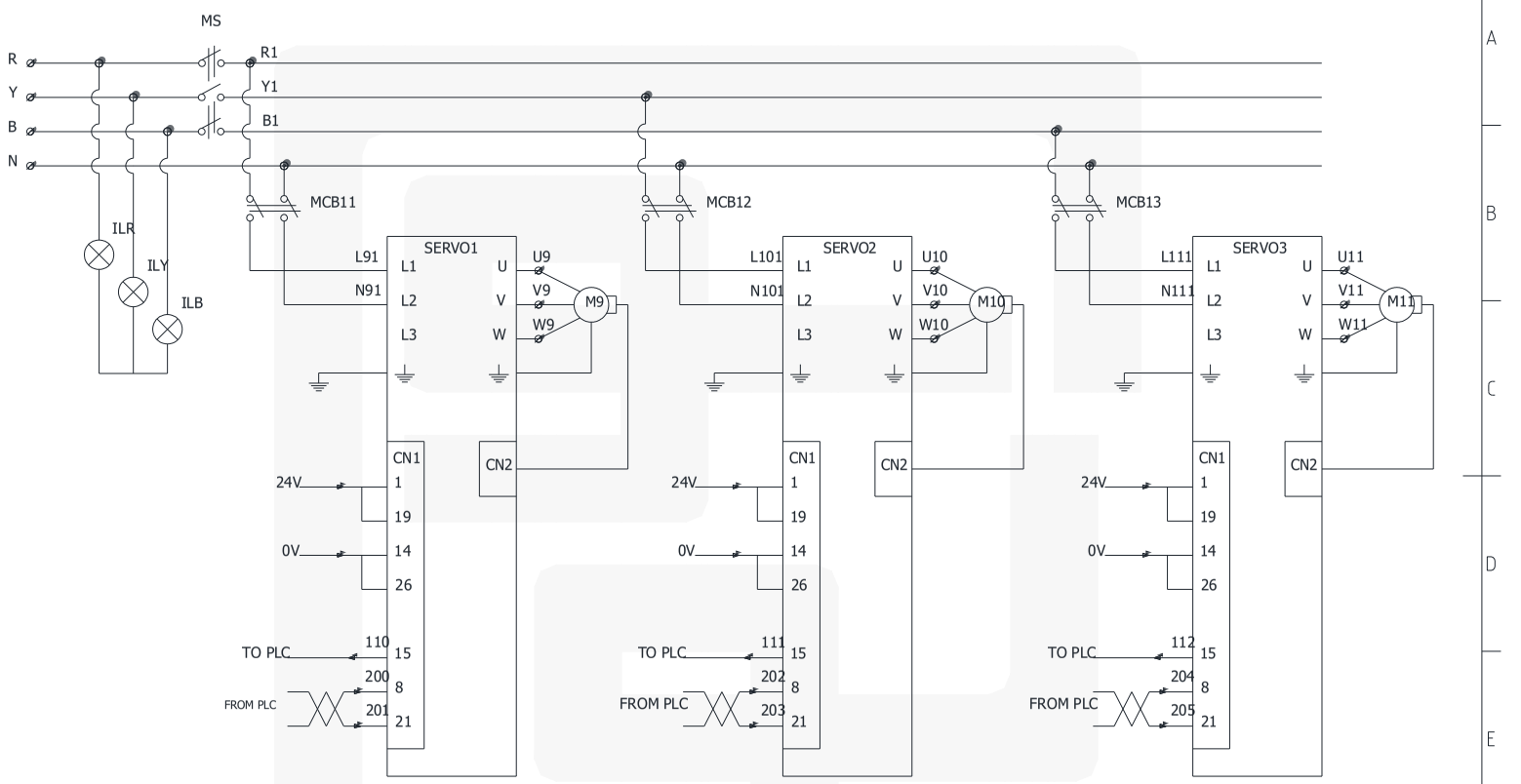
TITLE: POWER WIRING DIAGRAM-3 FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

DRG. No.: MUA3 2020-410-W4

Edition: 0 1 2 3 4 5 6

PAPER SIZE : 420 x 297



WIRING DIAGRAM FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

(WITH HMI & PLC)

RevNo	Description	Date	Signature	Checked

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TITLE: POWER WIRING DIAGRAM-4 FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

DRG. No. MUA3 2020-410-W5

Edition: 0 1 2 3 4 5 6

PAPER SIZE : 420 x 297

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PANEL TERMINATION

R	Y	B	N	E	E
3 Ø, 415V AC INPUT SUPPLY WITH NUETRAL				EARTHING	

U1	V1	W1	U2	V2	W2	U3	V3	W3	U4	V4	W4	U5	V5	W5	U6	V6	W6	U7	V7	W7	U8	V8	W8	U9	V9	W9	U10	V10	W10
MOTOR M1			MOTOR M2			MOTOR M3			MOTOR M4			MOTOR M5			MOTOR M6			MOTOR M7			MOTOR M8			MOTOR M9			MOTOR M10		

				X0	X1	X2	X3	X4					X5	X6	X7	X8	X9
24V	24V	0V	0V	100	101	102	103	104	24V	24V	0V	0V	105	106	107	108	109
24 VDC FOR SENSOR				PLC INPUT					24 VDC FOR SENSOR				PLC INPUT				

	Y16		Y17	Y18	Y19	Y20		Y21	Y22	Y23	Y24		Y25	Y26	Y27	Y28	Y34	Y35
COM1	316	COM2	317	318	319	320	COM3	321	322	323	324	COM4	325	326	327	328	334	335
DIGITAL O/P (NO)		DIGITAL O/P (NO)					DIGITAL O/P (NO)					DIGITAL O/P (NO)						

WIRING DIAGRAM FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

(WITH HMI & PLC)

M/c No.	CLIENT :			Reference : PCS	
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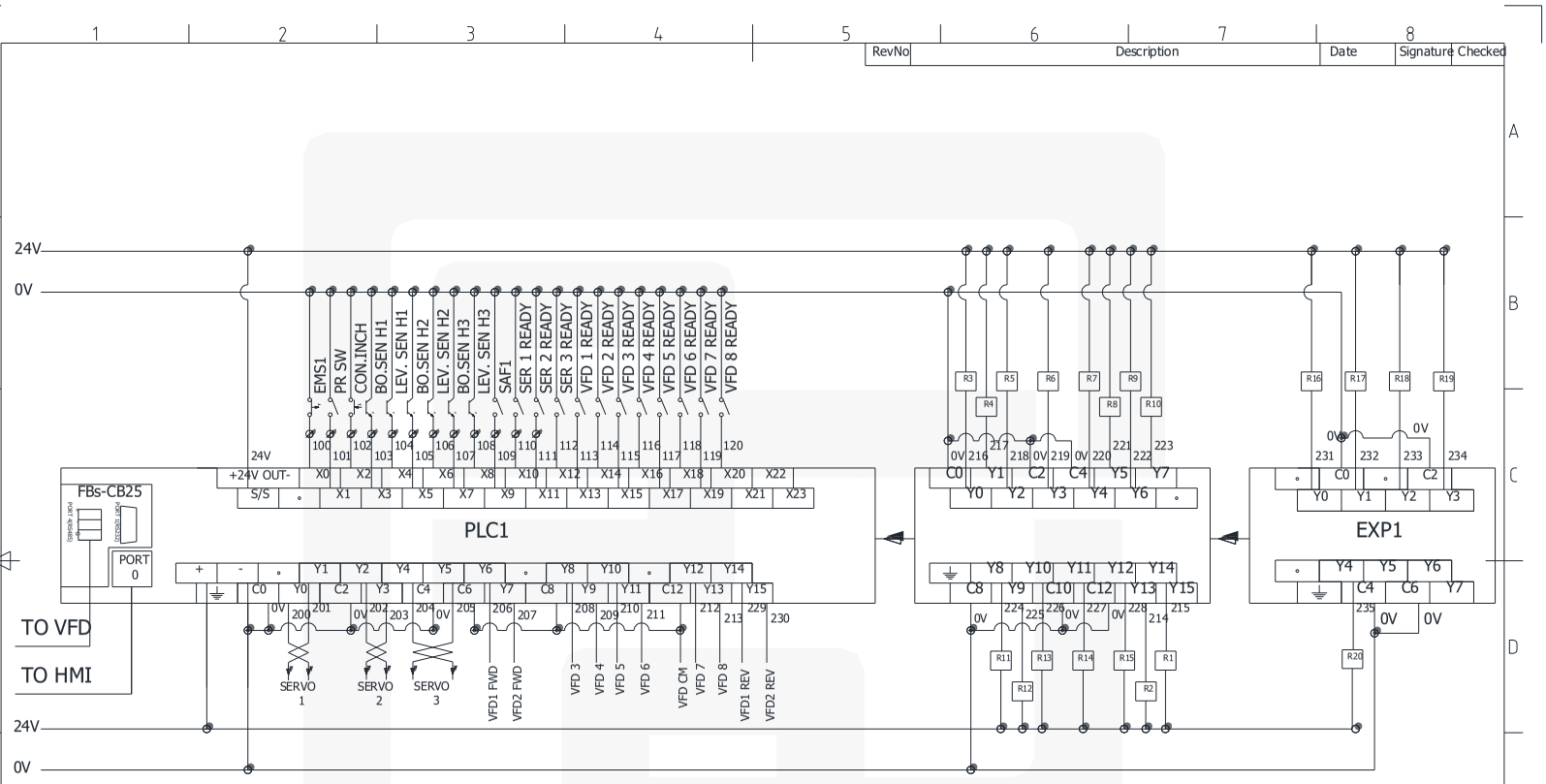
MAHARSHI UDYOG
AHMEDABAD:380059,INDIA
* PIONEERS IN STICKER LABELLING TECHNOLOGY *

TITLE: MAIN CONNECTOR STRIP DETAIL FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

DRG. No.: MUA3 2020-410-W6

Edition: 0 1 2 3 4 5 6

PAPER SIZE : 420 x 297



WIRING DIAGRAM FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

(WITH HMI & PLC)

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MAHARSHI
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* PIONEERS IN STICKER LABELLING TECHNOLOGY *

TITLE: PLC WIRING DETAIL FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

DRG. No.: MUA3 2020-410-W7

Edition: 0 1 2 3 4 5 6

PAPER SIZE : 420 x 297

RevNo	Description	Date	Signature Checked

INPUT / OUTPUT LIST

INPUTS

X0	:	EMERGENCY STOP PB
X1	:	HEAD1 INFEED SENSOR
X2	:	HEAD2 INFEED SENSOR
X3	:	HEAD3 INFEED SENSOR
X4	:	PRESSURE SW
X5	:	SAFETY DOOR
X6	:	CONVEYOR INCH
X7	:	HEAD1 LEVEL SENSOR
X8	:	HEAD2 LEVEL SENSOR
X9	:	HEAD3 LEVEL SENSOR
X10	:	SERVO 1 READY
X11	:	SERVO 2 READY
X12	:	SERVO 3 READY
X13	:	VFD 1 READY
X14	:	VFD 2 READY
X15	:	VFD 3 READY
X16	:	VFD 4 READY
X17	:	VFD 5 READY
X18	:	VFD 6 READY
X19	:	VFD 7 READY
X20	:	VFD 8 READY
X21	:	SPARE
X22	:	SPARE
X23	:	SPARE

OUTPUT

Y0	:	SERVO 1 PULSE
Y1	:	SERVO 1 DIRECTION
Y2	:	SERVO 2 PULSE
Y3	:	SERVO 2 DIRECTION
Y4	:	SERVO 3 PULSE
Y5	:	SERVO 3 DIRECTION
Y6	:	POWDER LOADER1 FWD VFD
Y7	:	POWDER LOADER2 FWD VFD
Y8	:	CONVEYOR VFD
Y9	:	HEAD1 STIRRER VFD
Y10	:	HEAD2 STIRRER VFD
Y11	:	HEAD3 STIRRER VFD
Y12	:	POWDER LOADER STIRRER1 VFD
Y13	:	POWDER LOADER STIRRER2 VFD
Y14	:	POWDER LOADER1 REV VFD
Y15	:	POWDER LOADER1 REV VFD

NA0E16T-0 EXP.OUTPUT

Y0	:	SOL.VALVE POWDER LOADER 1
Y1	:	HEAD1 INFEED SOL.
Y2	:	HEAD1 OUTFEED SOL.
Y3	:	HEAD1 TAPPING SOL.
Y4	:	HEAD1 POWDER SOL.
Y5	:	HEAD2 INFEED SOL.
Y6	:	HEAD2 OUTFEED SOL.
Y7	:	HEAD2 TAPPING SOL.
Y8	:	HEAD2 POWDER SOL.
Y9	:	HEAD3 INFEED SOL.
Y10	:	HEAD3 OUTFEED SOL.
Y11	:	HEAD3 TAPPING SOL.
Y12	:	HEAD3 POWDER SOL.
Y13	:	DUST COLLECTOR MOTOR 1
Y14	:	DUST COLLECTOR MOTOR 2
Y15	:	SPARE

NA0E08T-0 EXP.OUTPUT

Y0	:	TOWER LIGHT GREEN
Y1	:	TOWER LIGHT YELLOW
Y2	:	TOWER LIGHT RED / BUZZER
Y3	:	INJECTOR VALVE
Y4	:	NITROGEN VALVE
Y5	:	
Y6	:	
Y7	:	

WIRING DIAGRAM FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

(WITH HMI & PLC)

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* PIONEERS IN STICKER LABELLING TECHNOLOGY *

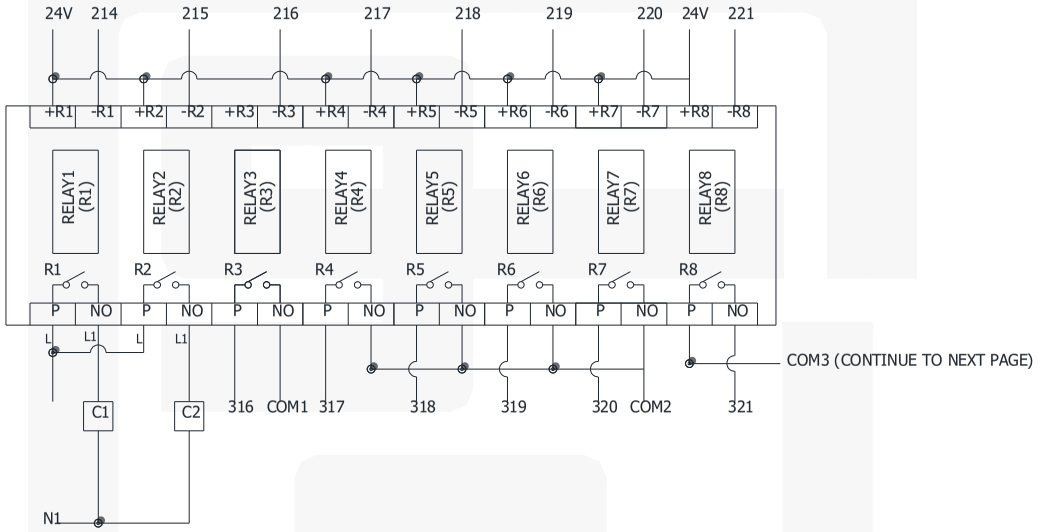
TITLE: I/O LIST FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

DRG. No.: MUA3 2020-410-W8

Edition: 0 1 2 3 4 5 6

PAPER SIZE : 420 x 297

RevNo	Description	Date	Signature Checked



RELAY INTERFACE

WIRING DIAGRAM FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

(WITH HMI & PLC)

M/c No.	CLIENT :			Reference : PCS	
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TITLE RELAY INTERFACE CARD DETAIL FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

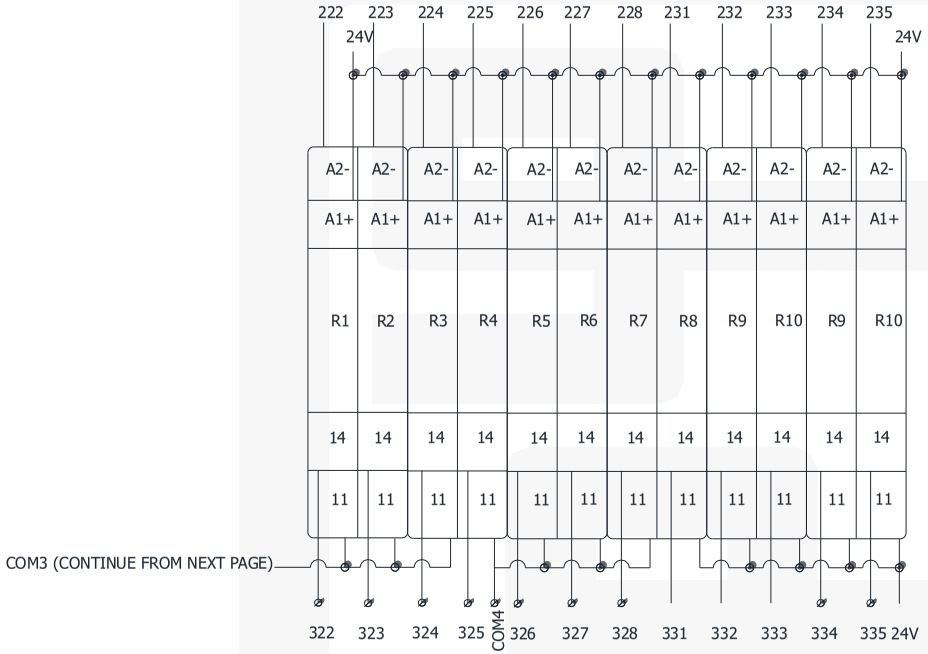
DRG. No. MUA3 2020-410-W9

Edition 0 | 1 | 2 | 3 | 4 | 5 | 6

PAPER SIZE : 420 x 297

RevNo	Description	Date	Signature	Checked

OUTPUT FROM PLC



WIRING DIAGRAM FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

(WITH HMI & PLC)

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Designed by	Checked by	Approved by - date	Scale	Date	Sheet
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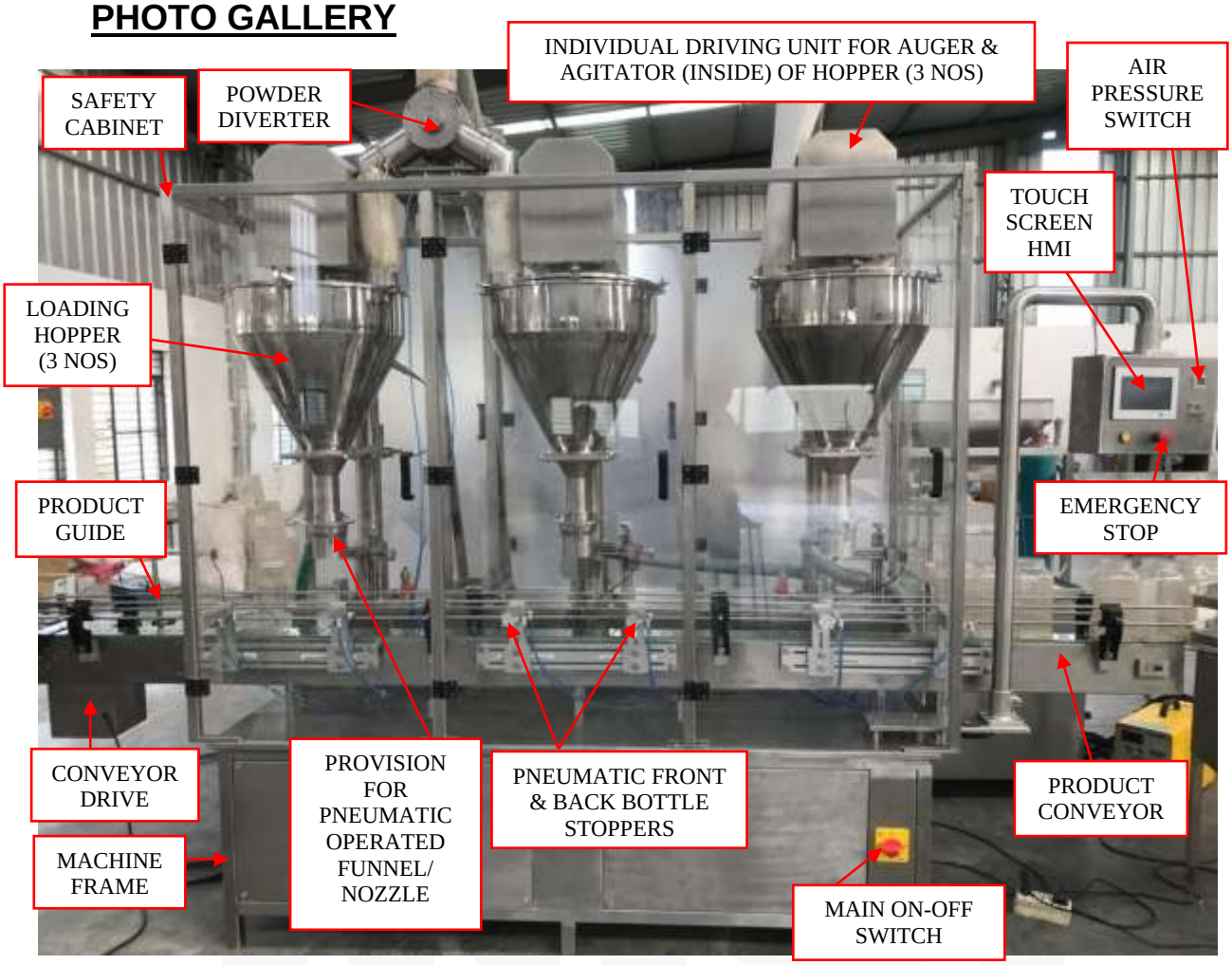
TITLE: POWER RELAY DETAIL FOR 3-HEAD AUGER TYPE POWER FILLING MACHINE

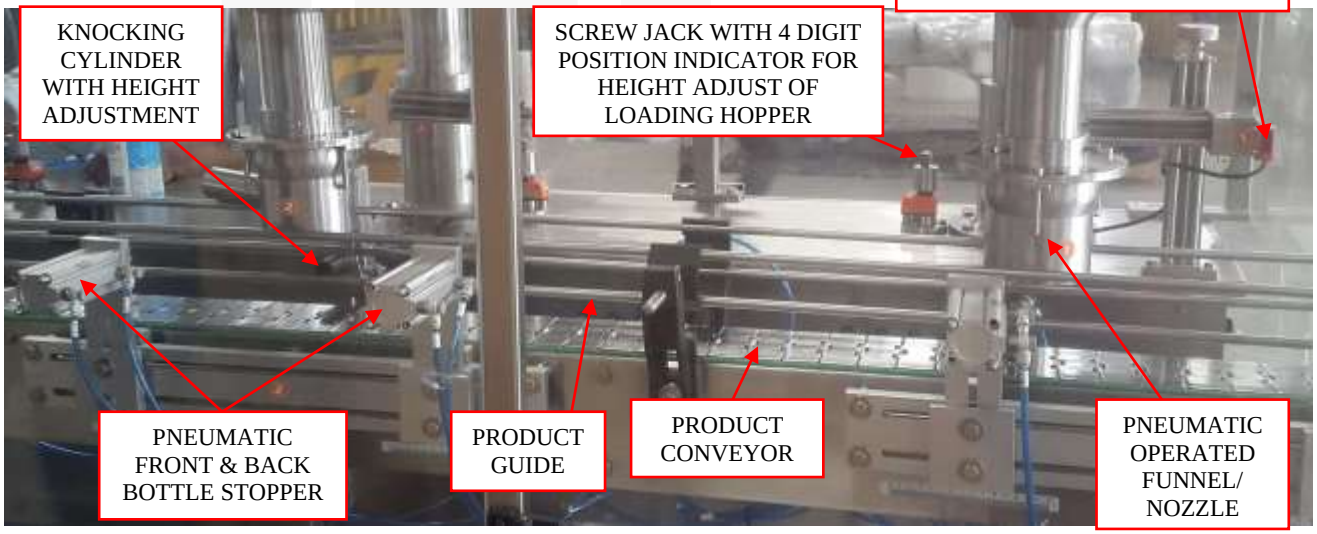
DRG. No.: MUA3 2020-410-W10

Edition: 0 1 2 3 4 5 6

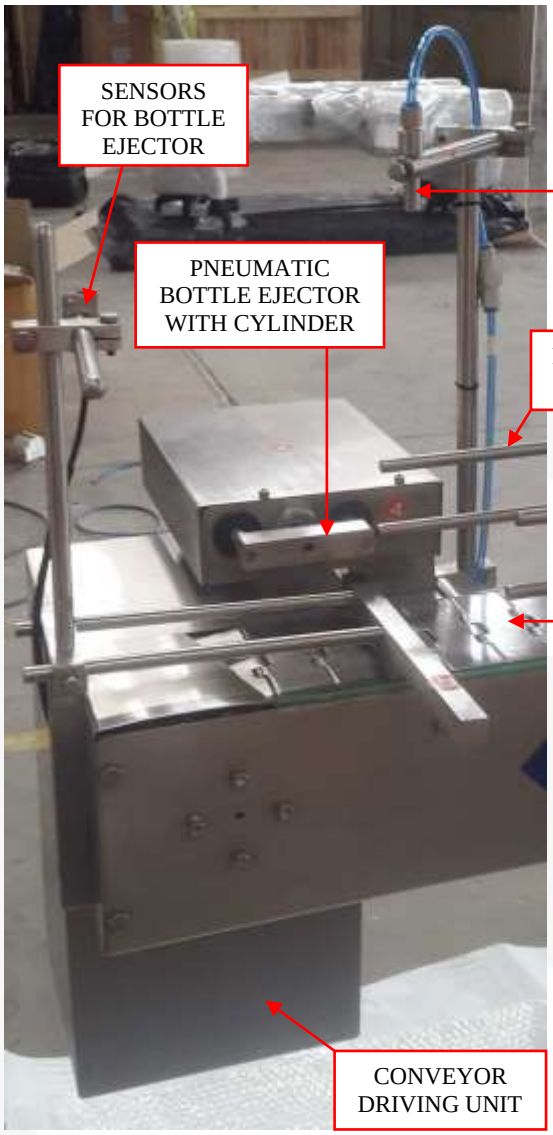
PAPER SIZE : 420 x 297

PHOTO GALLERY






DRIVING UNIT FOR AUGER & AGITATOR (INSIDE OF THE FRAME)
TOP COVER
POWDER LEVEL SENSOR
LOADING HOPPER
PROVISION FOR PNEUMATIC OPERATED FUNNEL/ NOZZLE
NO BOTTLE, NO FILL SENSOR (PRODUCT SENSOR)
SCREW JACK WITH 4 DIGIT POSITION INDICATOR FOR HEIGHT ADJUST OF LOADING HOPPER
PNEUMATIC FRONT & BACK BOTTLE STOPPER @ ALL / 3 STATION
PRODUCT CONVEYOR


SENSORS FOR BOTTLE EJECTOR
NITROGEN PURGING NOZZLE (NITROGEN SUPPLY; IN CLIENT SCOPE)
PNEUMATIC BOTTLE EJECTOR WITH CYLINDER
PRODUCT GUIDE
PRODUCT CONVEYOR
CONVEYOR DRIVING UNIT


DUST
COLLECTOR
UNIT
START & STOP
PUSH BUTTON

NOTES

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