

IV ATTACHMENT

MAINTENANCE AND FORMAT CHANGE SHEETS

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IV.1 MAINTENANCE

Maintenance is the series of programmed operations that have to be carried out on the line components periodically and systematically.

Routine maintenance consists of:

- 1) checking the working order of the various parts, including the checking equipment
- 2) eliminating or correcting faults, even those which, although not an immediate source of danger or technical disruption, can lead to problems if left to continue.

Extraordinary maintenance consists of the total replacement of line parts or components that have run their average lifetime, in order to prevent breakage which would lead to line and production breakdown.

For each routine or extraordinary maintenance operation the following are stated: the interval calculated in machine working hours, the operator enabled to carry out the operation, the average time necessary and a detailed description of the procedure to be followed.

The following table lists the routine maintenance operations recommended with reference to the relative descriptive sheet.

IV.1.1 MECHANICAL MAINTENANCE

MECHANICAL MAINTENANCE				
ITEM	CODE	OPERATION	OPERATOR	INTERVAL
1.	OM1	Greasing	M1	3 months
2.	OM2	Check belt conditions	M1	3 months
3.	OM3	Check nuts and bolts tightness	M1	6 months
4.	OM4	Guide wear	M1	6 months
5.	OM5	Check guard conditions	M1	12 months
6.	OM6	Check wear level in blades	M1	12 months
7.	OM7	Check belt conditions	M1	3 months
8.	OM8	Check structures	M1	6 months
9.	OM9	Check operation efficiency in pneumatic parts	M1	6 months

The values given in the OPERATOR column refer to the “**OPERATOR CLASSIFICATION**” table included in the USE AND MAINTENANCE INSTRUCTION MANUAL.

Perform an operation when it is necessary if the frequency is not specified.



Before performing any maintenance operation in the line, make sure safety conditions are provided using personal protective equipment.

Wait until temperature next to the areas where operations are performed is below values that are dangerous for health.

The mechanical maintenance sheets are explained below.

IV.1.1.1 Greasing

OM1

INTERVAL: 3 months

OPERATOR ENABLED: M1 – 1 Mechanical maintenance technician

TIME NECESSARY: 5 minutes

MATERIAL REQUIRED: Lubricant compatible with the presence of unwrapped food products

Proceed with the relative lubricator applying 2 or 3 pumps of lubricant into the lubricators.



(reference image)

Lubricate with a paint brush where greasing nozzles are not provided (for example chains and gear wheels).

The bearings used are sealed and do not require maintenance for loads, speeds, and temperatures normally used.

The user is free to proceed with greasing, in particular when the machine is used in dangerous environments with heavy work cycles (3 shifts at max. speed).

The chain is provided with a small amount of lubricant appropriate for the start-up requirements of the line after delivery and installation.

Perform the first lubrication operation with oil after the first start-up.

Lubricate the points indicated in the figure below.

Lubricating the machine, accessible with the guards open, requires 2 operators with this qualification: level 1 (maintenance operator).

Recommended tools:

- portable inspection lamp complying with current regulatory standards;
- equipment for lubrication as required and provided.

Lubricate the chain with an appropriate metering device. The first step (1) requires lubricant metering on the first section of the chain: the second step (2) requires to provide the command for manual operation with the JOG button panel.

Two maintenance technicians must perform the two steps, so that the procedure is safe. Both technicians must be out of the danger zone during the second step (2). The access to this zone must only be allowed after the machine has stopped.

This procedure allows the gradual metering of lubricant on the entire chain.
Repeat the chain lubrication procedure for every chain installed in the line.

Repeat the lubrication procedure at the indicated frequency.



Only specialized and qualified personnel, trained and informed regarding safety conditions must perform this procedure. This procedure might require the action of more than one mechanical maintenance technician.



**Turn the MAIN switch to “0” and secure it with a padlock so as to avoid accidental activation.
Follow the indications given for the internal procedure.**

IV.1.1.2 Check belt conditions

OM2

INTERVAL: 3 months

OPERATOR ENABLED: M1 - 1 Mechanical maintenance technician

TIME NECESSARY: 10 minutes

1. Check the conditions of the belts and make sure they are tight; replace them if they are too worn.

IV.1.1.3 Check nuts and bolts tightness

OM3

INTERVAL: 6 months

OPERATOR ENABLED: M1 - 1 Mechanical maintenance technician

TIME NECESSARY: 20 minutes

1. Make sure that bolts and nuts are not loose; in particular, check whether the vibration generated by vibrators does not loosen, either fully or partly, the bolts and nuts, especially in the fixing area between frame and dampening parts, between frame and vibrator and between equipment frame and module frame.

IV.1.1.4 Guide wear

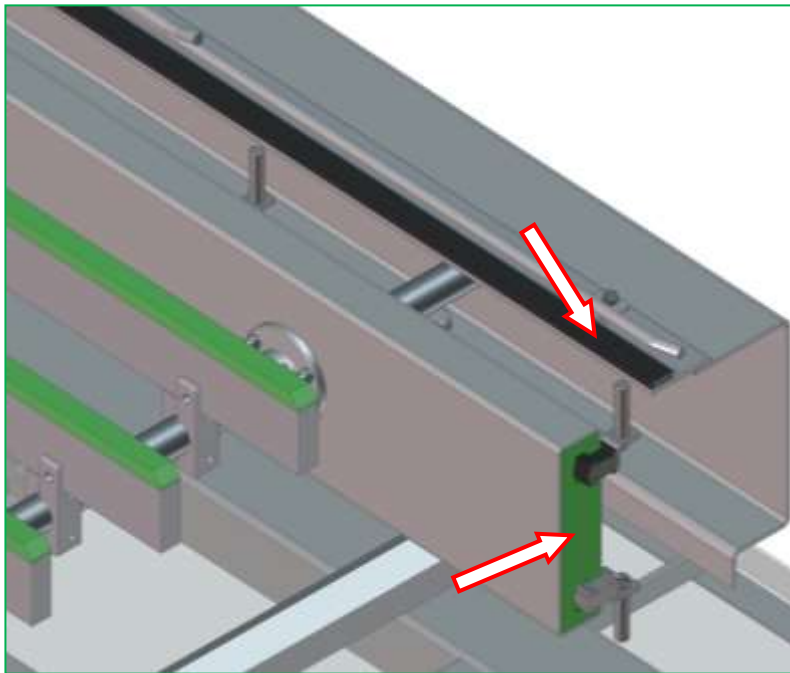
OM4

INTERVAL: 6 months

OPERATOR ENABLED: M1 - 1 Mechanical maintenance technician

TIME NECESSARY: 30 minutes

1. Make sure there are no scratches or signs of wear on the guides.



IV.1.1.5 Check guard conditions

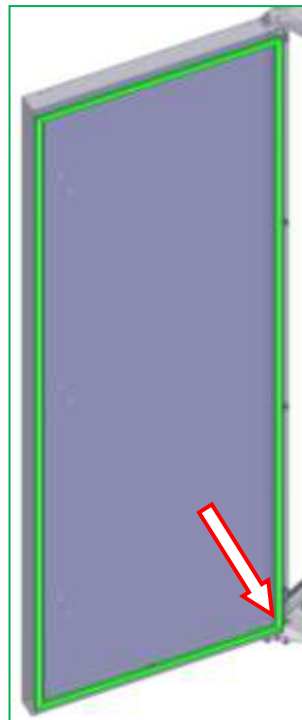
OM5

INTERVAL: 12 months

OPERATOR ENABLED: M1 - 1 Mechanical maintenance technician

TIME NECESSARY: 5 minutes

1. Make sure there are no signs of abrasions or cracks along the outside perimeter where the transparent guards are installed (operator side and drive unit side).
2. Check the wear level of the seals along the edges of the perimeter inside the insulated guards.



(reference image)

IV.1.1.6 Check wear level in blades

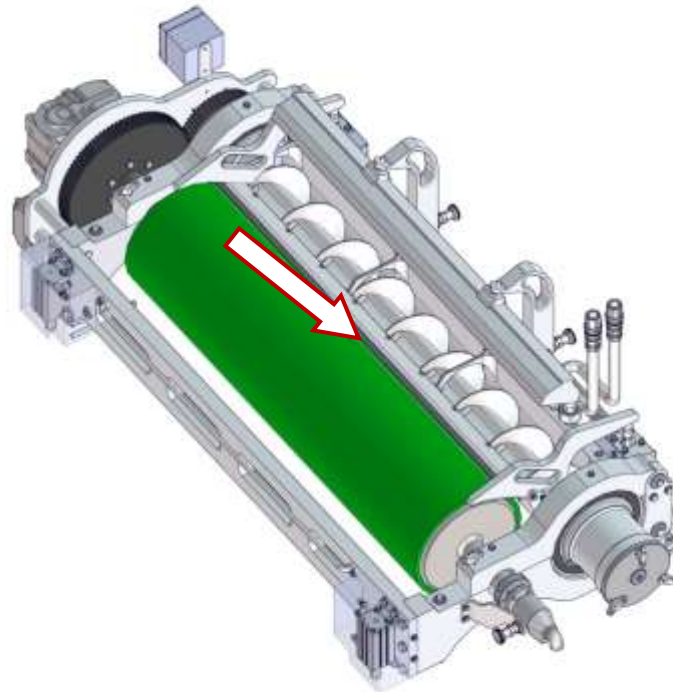
OM6

INTERVAL: 12 months

OPERATOR ENABLED: M1 - 1 Mechanical maintenance technician

TIME NECESSARY: 30 minutes

1. Check the wear level of the scraping blade.



IV.1.1.7 Check belt conditions

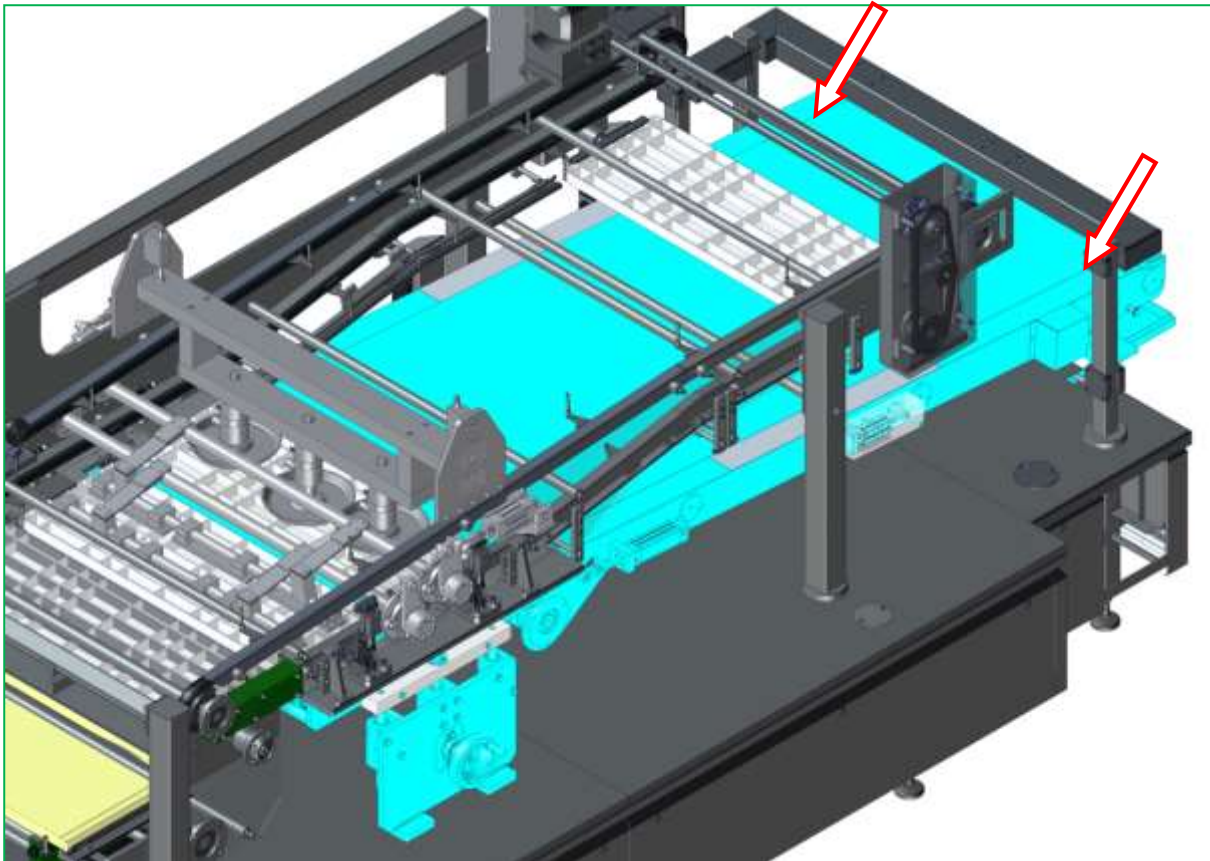
OM7

INTERVAL: 3 months

OPERATOR ENABLED: M1 - 1 Mechanical maintenance technician

TIME NECESSARY: 15 minutes

1. Check the conditions of the conveyor belt edges.



IV.1.1.8 Check structures

OM8

INTERVAL: 9 months

OPERATOR ENABLED: M1 – 2 Mechanical maintenance technicians

TIME NECESSARY: 120 minutes

The moulder consists of a number of frameworks used to sustain the mould transfer system and the equipment used for production.

1. Make sure the frameworks are stable and in good conditions, in particular in the sections subject to vibrations.

IV.1.1.9 Check operation efficiency in pneumatic parts

OM9

INTERVAL: 6 months

OPERATOR ENABLED: M1 - 1 Mechanical maintenance technician

TIME NECESSARY: 30 minutes


1. Make sure the pneumatic parts operate efficiently, in particular the cylinders that raise the mould.

IV.1.2 ELECTRICAL MAINTENANCE

ELECTRICAL MAINTENANCE				
ITEM	CODE	OPERATION	OPERATOR	INTERVAL (hours)
1.	OE1	Inspect photocells	M2	500
2.	OE2	Check differential is working properly	M2	120
3.	OE3	Check contactors for wear	M2	1000
4.	OE4	Check protection circuit	M2	1000
5.	OE5	Check PLC battery	M2	1000
6.	OE6	Check efficiency of all safety functions	M2	8760

The values given in the OPERATOR column refer to the “**OPERATOR CLASSIFICATION**” table included in the USE AND MAINTENANCE INSTRUCTION MANUAL.

For the electrical operations that are not listed, specific maintenance is required only in the event of faults.



Disconnect the **MAIN** switch and close it with a padlock when local disconnectors are not provided and the operation involves, either directly or indirectly, electrically-powered functions or parts.

Turn the **MAIN** switch to “0” and secure it with a padlock so as to avoid accidental activation.

Follow the indications given for the internal procedure.

The electrical maintenance sheets are explained below.

IV.1.2.1 Inspect photocells

OE1

INTERVAL: 500 hours

OPERATOR ENABLED: M2 – 1 Electrical maintenance technician

TIME NECESSARY: 1 hour



The frequency at which maintenance takes place depends a lot on the environment in which the machine is used, if it is especially dirty or dusty then the intervals should be shortened.

1. Clean carefully the optical system of all the photocells on the machine.
2. Remove the filter and clean it out with compressed air.

(If, when placing a hand between the emitter and the receiver, the photocell checking LED comes on and the feeder turns off, then it is correct).

IV.1.2.2 Check differential is working properly

OE2

INTERVAL: 120 hours

OPERATOR ENABLED: M2 – 1 Electrical maintenance technician

TIME NECESSARY: 5 minutes

1. Open the electrical switchboard.
2. Restore power to the electrical switchboard by turning the main switch.
3. Press the test button found on the differential.
4. Check that the differential relay is triggered.
5. If the relay does not trigger then replace the differential with a new one of the same type.
6. Re-arm using the relative button.

IV.1.2.3 Check contactors for wear

OE3

INTERVAL: 1000 hours

OPERATOR ENABLED: M2 – 1 Electrical maintenance technician

TIME NECESSARY: 15 minutes

1. Open the electrical switchboard containing the contactors.
2. Restore power to the electrical switchboard by turning the main switch.
3. Put the machine into automatic running mode and watch the contactors as they work.
4. Replace any contactors that "spark" with contactors of the same type.

IV.1.2.4 Check protection circuits

OE4

INTERVAL: 1000 hours

OPERATOR ENABLED: M2 – 1 Electrical maintenance technician

TIME NECESSARY: 30 minutes

1. Visually check all ground connections, inside the electrical switchboard and between the various parts of the machine, making sure they are in order.
2. Test the protection circuit using instruments, with methods and equipment conforming to those prescribed by the Regulating Standards in force in the country where the machine is used.
Where no such standards exist refer to CEI 17-13/1 par.8.3.3.

IV.1.2.5 Check PLC batteries

OE5

INTERVAL: 1000 hours

OPERATOR ENABLED: M2 – 1 Electrical maintenance technician

TIME NECESSARY: 30 minutes

1. Open the electrical switchboard containing the PLC.
2. Check that the “battery low” LED

IV.1.2.6 Check efficiency of all safety functions

OE6

INTERVAL: 8760 hours

OPERATOR ENABLED: M2 – 1 Electrical maintenance technician

TIME NECESSARY: 60 minutes

Activate all the safety functions of the machine and make sure they are efficient at least once a year (every 6 months is the length of time recommended).

Press every emergency stop button and open every guard one at a time for the test procedure. Make sure the machine/line reaches an alarm condition displaying the fault related to that emergency stop button or guard, then RESET and make sure the machine/line is able to restart.

IV.2 FORMAT CHANGE

The machine is set up to handle a single format.

IV.3 CLEANING



Before cleaning the machine/line, carefully read the “**4.1 RESIDUAL RISKS**” paragraph.

All cleaning operations must be carried out with the supplies disconnected (electrical and pneumatic power supplies turned off).

Use protective clothing for cleaning operations (overalls, heavy-duty gloves, safety glasses. etc.).

Wear heavy-duty gloves and/or appropriate clothing for the protection of the upper limbs in the cleaning operations with risks of being cut.

Clean the machine/line with neutral detergents that are non-abrasive, non-aggressive, and do not contain solvents (gasoline or petroleum products).

Clean metal parts (steel, aluminum, miscellaneous) with detergents used on food machines that may contain a percentage of alcohol which has antibacterial functions.


Use non-abrasive cloths and lukewarm water can be enough. Dry the parts.

IV.3.1 CLEANING PROCEDURES

The procedures for cleaning the surfaces of the machine/line follow the indications given in chapter “**7.1 INDICATIONS FOR CLEANING THE MACHINE/LINE**” included in the USE AND MAINTENANCE INSTRUCTION MANUAL.

CLEANING OPERATIONS				
ITEM	CODE	OPERATION	OPERATOR	INTERVAL
1.	PU1	Conveyor belts	C2	24
2.	PU2	Depositor	M1	168
3.	PU3	Tanks for operating liquids	M1	168
4.	PU4	Tanks for liquid collection and recovery	C2	24
5.	PU5	Collection devices	C2	24

The values given in the OPERATOR column refer to the “**OPERATOR CLASSIFICATION**” table included in the USE AND MAINTENANCE INSTRUCTION MANUAL.



Before performing any cleaning operation in the machine/line, make sure safety conditions are provided using personal protective equipment.

Wait until temperature next to the areas where operations are performed is below values that are dangerous for health.

The cleaning sheets are explained below.

IV.3.1.1 Conveyor belts

PU1

<i>INTERVAL:</i>	<i>24 hours</i>
<i>OPERATOR ENABLED:</i>	<i>C2 – 1 Operator</i>
<i>TIME NECESSARY:</i>	<i>-</i>

For belt conveyors for solid products:

remove product residues from the conveyor: first use a suction device, then clean the conveyor belt with a cloth. Be careful in the ends and sides of the conveyor.

For belt conveyors for liquid products:

remove, clean the surface of the conveyor with cold or lukewarm water and a sponge. Then dry with care. In the event of difficult build-ups, use a solution of detergent with neutral soap and lukewarm water. Dry with care after cleaning.

Carefully inspect the surface of the conveyor but also the surfaces next to it, so as to identify and remove any dirt build-up that may be present.



Do not use solvents with hydrocarbons or aromatic compounds: they are not allowed for cleaning parts that come into contact with food.

IV.3.1.2 Depositor

PU2

INTERVAL: 168 hours

OPERATOR ENABLED: M1 – 1 Mechanical maintenance technician

TIME NECESSARY: -

Remove the CORE that will not be used in the next production cycle for properly performing the operation.

Cleaning is performed on the work table only and requires the cleaning of the surfaces in contact with the material used for food production.

The CORE must be usually cleaned before every production cycle and every time the recipe of the ingredients loaded into the hopper is replaced.

Then perform a final inspection of the cleaned surfaces (for ex. pouring plate, pistons, rotary valves, hopper and stirrers) to make sure they are clean.

IV.3.1.3 Tanks for operating liquids

PU3

INTERVAL: 168 hours

OPERATOR ENABLED: M1 – 1 Mechanical maintenance technician

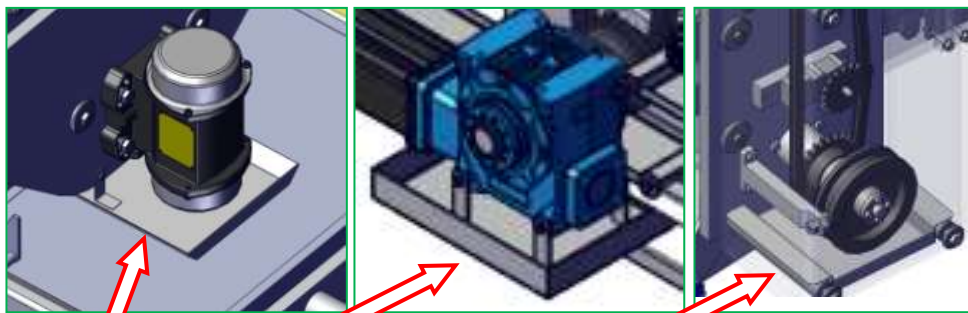
TIME NECESSARY: -

For the **devices which contain operating liquids:**

Make sure there are no traces of operating liquid in the device.

If it is not so, perform specific maintenance operations.

Clean the checked container so as to ensure the conditions appropriate for the next inspection.



(reference images)

IV.3.1.4 Tanks for liquid collection and recovery

PU4

<i>INTERVAL:</i>	<i>24 hours</i>
<i>OPERATOR ENABLED:</i>	<i>C2 – 1 Operator</i>
<i>TIME NECESSARY:</i>	<i>-</i>

For collection and recovery devices for liquid products:

close the valve and release the pipe that connects to the output duct of the liquid. Remove the auger.

Clean with cold or lukewarm water and equipment appropriate to the removal of dirt residues. Dry with care after cleaning.
Carefully inspect the surface of the auger before inserting the part into the collection device.

Clean the surface of the collection device with cold or lukewarm water and equipment appropriate to the removal of dirt residues. Dry with care after cleaning.
Carefully inspect the surface of the device (in particular the output duct), before inserting the auger.



Check and inspect. Clean more carefully if the liquid that was previously used must be changed.

In the event of difficult build-ups, use a solution of detergent with neutral soap and lukewarm water. Rinse with cold or lukewarm water (even several times) and dry with care.

IV.3.1.5 Collection devices

PU5

<i>INTERVAL:</i>	<i>24 hours</i>
<i>OPERATOR ENABLED:</i>	<i>C2 – 1 Operator</i>
<i>TIME NECESSARY:</i>	<i>-</i>

For **build-up devices which can be disassembled or removed**:

remove the device and remove the solid residues from the surface. Clean with a cloth lightly soaked in a mild detergent solution.
Visually check to make sure residue or dirt build-ups are present before reinstalling the device.



Properly reinstall the build-up devices which can be disassembled or removed before using the machine.