

**INSTALLATION, OPERATION AND MAINTENANCE MANUAL
FOR
TUNNEL PASTEURIZER AND COOLER
MOD. PRA 2-24 (241472)**

Serial n° 148807AE17F6469-----0717

Item 2.2

Year: 2014

Client NG1ORI01 - ORIENTAL FOODS

Country Nigeria

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Declaration of conformity

In accordance with the annex IIA of the Machine Directive 2006/42/CE and its later amendments.

BUILDER
Zacmi SPA

MACHINE

TYPE:	TUNNEL COOLER	MODEL:	PRA 2-24
REGISTER:	(P2014-72) F6469-----0717	YEAR OF CONSTRUCTION:	2014

declares that the above machine conforms with Requirements of the European Machinery Directive EC.

2006/42/EC (89/392/CEE, 98/37/CEE)
 73/23/CEE,
 89/336/CEE, 92/31/CEE,

Machine Directive,
 Directive Low Tension.
 Directive Electromagnetic Compatibility.

APPLIED NORMS

The machine has been designed and built having the following norms as reference:

Mechanic risks: UNI EN ISO : 292-1 ; EN 292-2 ; EN 294 ; EN 349 ; EN 418 ; EN 811 ; EN 953 ; EN 1005

Thermal risks: EN 563 ; EN 563/A1

Voters risks: EN 292-1; EN 292-2; EN 60335-2-41; EN 60204-1

Other risks: CEE 89/392 Annex 1

Is in conformity with the requirements of this Machine Directive 'annex V 89/392CEE:

The CE marking is on the machine

CHAPTER 1

GENERAL INFORMATION

1.1 INTRODUCTION





The information and/or drawings included in this manual, related to materials, technology and processes, as well as the rights deriving from ideas, inventions and patents pending, are of exclusive property of **zanichelli meccanica s.p.a.**

Reproduction and diffusion to any third party of the drawings and information without prior authorisation in writing by **zanichelli meccanica s.p.a.**, is prohibited.

Photographs and drawings are supplied as examples, as the manufacturer follows a policy of constant development and update of their product, where modifications may be made without any preadvice.

1.2 SYMBOLS AND CONVENTIONS

The followings conventions are been adopted in the compilation of this manual:

	Danger - This message warns that the execution of a procedure or an operation, if effected in incorrect way, could cause physical damages to the operator. Don't continue further in the reading until the message content and the procedures to be followed have perfectly been understood.
	Attention - This message warns that the execution of a procedure or an operation, if effected in incorrect way, could cause damages to the equipments. Don't continue further in the reading until the content of the message and the procedures to be followed have perfectly been understood.
	Risk Of Electrocution - The symbol underlines that a dangerous voltage could be present. The installation and the maintenance of electric equipment must exclusively be submit to qualified personal.
	Note - Notes contain important information, <u>underlined in the text.</u>

Text	The bold type is used to underline some data and for the paragraph titles.
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1.3 MANUAL PURPOSE

This manual is written by the manufacturer and forms an integral part of the machine's kit.

The information contained in it is destined both for unqualified personnel with poor experience and qualified personnel.

The manual defines the scope for which the machine has been constructed and contains all the information necessary to guarantee its correct and safe use. This manual must be carefully read before proceeding in any operation on the machine.

The constant respect of the rules described in the manual, guarantees operators' and machine safety, economic running and a longer duration of the machine itself.

ANY PERSONALISATION RELATED TO IN-LINE CONNECTION OR THE TYPE OF PRODUCT HANDLED DO NOT AFFECT SAFETY.

1.4 PROBLEMS, DOUBTS AND SUGGESTIONS

Additional copies of this documentation may be ordered by filling in and sending to our Spare Parts Department the request form that can be found at the end of this manual.

For any further information that is not described in this manual, or for any problems or doubts related to the machine, Software or documentation, please do not hesitate to contact us.

Any remarks on this publication are a valuable contribution to the constant service zanichelli meccanica s.p.a. offers its customers.

1.5 BUILDER'S IDENTIFICATION

The machine and the relative accessories are produced from:

	Zacmi SPA via Mantova 65 43122 Parma Italy	
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1.6 MACHINE'S IDENTIFICATION

The model is identifiable from the plate on the front of the machine.

The plate has the followings data:

YEAR	TYPE (model)	Serial n.
2014	TUNNEL PASTEURIZER AND COOLER	Serial n. is in front cover page

1.8 REVISION NOTES

Document approval:

Written from	E.S.
Approved from	Zacmi technical dpt.
Date	2014 / 07

The notes of review of every edition of the manual are in the following list:

Edition	Date (month/year)	Note of revision
0.0	2014/07	First edition

1.9 CERTIFICATION

The machine has been realized in conformity of the pertinent and applicable Community Directives in the moment of its placing on the market.

1.10 GUARANTEE

The guarantee refers to all the machines included in the supply.

- Zanichelli Meccanica S.p.A., guarantees the machines of its manufacture, operating under regular working hours and conditions, for a period of 12 (twelve) months, starting from the running-test date or for a maximum of 18 (eighteen) months from the shipment date.
- During this period, Zanichelli Meccanica S.p.A. undertakes, according to the effective need or feasibility, to repair or replace free of charge any parts that may be defective (as a result of defective material being used, design or construction errors). The aforesaid is applicable on condition that the defect is produced or emerges from a normal operation and not in the case of operators' negligence, misuse or lack of adequate maintenance.
- It is in any case the user's obligation, to prevent the elimination of the guarantee, to promptly report malfunctioning to Zanichelli Meccanica S.p.A., indicating the nature of the malfunction. Hence the Buyer must promptly advise Zanichelli Meccanica S.p.A. of the malfunction in detail as well as the identification of the worn or broken part, by means of a registered letter or fax.
- The guarantee will not apply to any machine that appears altered, modified or other, without prior authorisation from Zanichelli Meccanica S.p.A.
- Zanichelli Meccanica S.p.A. declines from any responsibility arising from malfunction caused by normal wear and tear.
- The Seller reserves the right to inspect any defective parts before repairing or replacing them.
- In accordance with the agreement made between the Seller and any sub-suppliers, the guarantee is extended to all electric motors, electrical components and incorporated appliances.
- The installation of parts replaced under guarantee, is to be considered as excluded, unless otherwise agreed.

CHAPTER 2

PRECAUTIONS FOR THE SAFETY

2.1 INTRODUCTION

To ensure maximum safety for operators, it is recommended to read this section of the manual before doing any work on the machine or part of it.

2.2 INFORMATION ON THE TYPOLOGIES OF RISK

The aim of this paragraph is to inform the operators about the sign used of the builder and of the symbol used in this manual to call their attention.

We define precisely the purpose of communication that is the basis of the signs:



DANGER

Points out a danger with risk, also deadly for the operator



WARNING

Points out a danger with risk, also serious for the operator, besides it can cause serious damages to the machine component.



Points out one note on functions or useful information.

Attention: points out attention and notice on functions or useful information.

Signals Of Prescription

A signal of prescription imposes a determined behavior.

 <p>Protezione obbligatoria degli occhi</p> <p>WEAR EYE PROTECTIONS</p>	 <p>Protezione obbligatoria dell'udito</p> <p>WEAR HEARING PROTECTIONS</p>	 <p>Protezione obbligatoria della testa</p> <p>WEAR HEAD PROTECTION</p>
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Prohibition Signs

A prohibition sign has the function to forbid a behavior that could make to race or to cause a danger.

	 <p>Introdurre le mani</p> <p>DO NOT PUT HANDS</p>	
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Warning Signs

A warning sign informs about the presence of a risk or danger.

 <p>Pericolo scarica elettrica</p> <p>ELECTRIC SHOCK</p>	 <p>Pericolo di ustioni</p> <p>BURNING DANGER</p>	 <p>Pericolo schiacciamento</p> <p>CRUSHING DANGER</p>
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2.3 OPERATOR

GENERAL INSTRUCTIONS

The operator must carefully read the information shown in this manual, with particular attention to the safety precautions set out in this chapter.

It is also indispensable that the operator take the precautions listed below:

- Keep the machine and work area clean and tidy;
- Do not operate the machine when not in normal physical and mental condition;
- Wear appropriate clothes to avoid obstructions and/or dangerous entanglement toward or from the machine
- Wear the protective means individually prescribed by the instruction manual in accordance with the operations to be effected
- Do not remove or change the plates placed on the machine by the Constructor
- Do not remove or ignore the safety systems on the machine.

DEFINITION OF OPERATOR

So defines the European rules under UNI EN ISO 12100-1:

operator:	Person or persons appointed for installation, operation, regulation, cleaning, repair or transport of the machine.
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Further defined under the European rules:

skilled person: (in the electric field)	Person with a sound knowledge and experience such as to allow the perception of risk with the ability to avoid hazards that may arise from electricity.
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OPERATOR APPOINTED FOR THE MACHINE'S OPERATION

The machine has been conceived for use by a sole operator.


The personnel appointed to operate this machine must be in possession of (or acquire through adequate instruction and training) the following characteristics and must also be aware of all the contents of this manual as regards to safety:

- General and technical educational level that is sufficient to allow the understanding of the manual's contents and correctly interpret the relative drawings and diagrams;
- Knowledge of the fundamental hygienic, accident-prevention and technological standards;
- Overall knowledge of the line and premises where the machine is installed;

Knowledge of behaviour in case of emergency and where the individual protection means are found and their correct use.

The persons in charge of the machine's maintenance, must also have a suitable technical instruction as well as all the above characteristics.

2.4 ELECTRIC PANEL

 <p>Pericolo scarica elettrica</p> <p>Electric shock</p>	<p>Inside the electrical panel there is a voltage of 400VAC.</p> <p>In case of electric shock, remove the contact as safely and as quickly as possible.</p> <p>Call or send someone to look for immediate medical attention and call an ambulance.</p>
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Only an educated person (in electrical field) can access inside the electrical panel

Access to the inside of the panel is only possible after performing the following sequence of operations.

Remove power, using the main power switch;

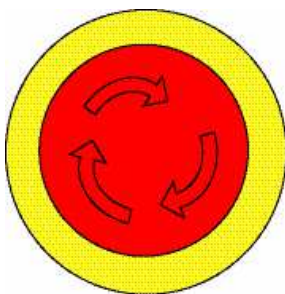
Open the cabinet door.

2.5 SAFETY DEVICES

On the machine there is an emergency stop button on the control panel.

Emergency stop button;

Emergency stop button




Individuate the location of the Emergency buttons in order to stop the machine immediately in case of danger to persons or for damage to the machine itself.

When the button is pressed the following energy sources are interrupted:

Compressed air;

water;

Electricity to the machine.

WARNING	The Emergency button does not cut the power to the electrical panel.
	Do not use this device for normal shutdown of the machine.

FIXED SAFEGUARDS

The machine is completely protected with covers, secured with bolts.

The upper part is closed with cover watertight.

WARNING	The covers are not equipped with safety switches
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Before starting, the operator must make sure that the covers are in place.

The covers are an integral part of the safety devices of the machine, so they are not to be:

removed;

made inoperative.

2.6 EQUIPMENTS FOR LIFTING AND HANDLING OF LOADS

For cargo handling operations mean:

transportation,

supporting a load, by one or more workers,

including actions to:


lift,

lay,

pull,

carrying or moving a load.

To perform, safely, these operations:

 Pericolo schiacciamento Danger of Crushing	Ensure that the scope of the lifting equipment is adequate and that the machine is in good working condition.
	If the additional handling equipment must be added to get the required length, make sure that the joints are safe and have the same scope of equipment additions
	Always attach the safety latch of lifting hooks to prevent slippage (release) of the additional equipment handling
	Use ropes or stakes to stop and maneuver loads. Do not use hands or feet
	Ensure that the load to be moved is in perfect balance, and that there are no components that can move during handling.
	Make sure that the road and the place of destination are free of obstructions before moving a suspended load.
	It must be possible, in case of an emergency, lay down the load quickly with maximum safety.
	When depositing the load keep the handling equipment on the spot until the load stability is verified.
WARNING	It's very important to follow strictly the rules and laws in force in the Country in which the machine is installed.

2.7 INFORMATIONS ON THE RESIDUAL RISKS

The risks for the operators have been reduced in the design stage, with the application of protective devices, but it was not possible to eliminate them completely.

Here below you find the identified residual risks and how to avoid them.

HANDLING MACHINE

Before handling the cooler disconnect it and divide it into modules.

At this point, you can move it using a forklift equipped with long brackets and inserting them under the supporting structure of the belt.




DANGER - Try to move the machine without previously consulting ZACMI could be very dangerous.

MACHINE INSTALLATION


In the installation phase, it should be noted, with the different colors, the conduits of fluids connected to the machine.

Color chart:

FLUID	COLOUR CHART
Water	Green (RAL 6032)
Steam heated water	Silver Grey (RAL 9006)
Air	Light Blue
Hazardous fluids (to be identified)	Yellow (RAL 1021)
Acids	Orange (RAL 2010)
Alkali	Light Violet
other fluids	Black
 DANGER - The lack of information on the type of fluid contained in the pipe, can cause injury to the operator.	


MACHINE MAINTENANCE

For certain maintenance operations, you need to access the inside of the protections (See chapter "6.1 Unscheduled maintenance" and chapter "6.2 Scheduled Maintenance").

	DANGER - Do not move the machine when performing maintenance with guards removed.
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When the operator should carry out adjustment, maintenance or other interventions that need to go up, from the floor of at least 500mm, it is necessary to provide suitable equipment (walkways, stairs, etc..) to allow the operator to perform tasks in the maximum security.

In addition, the operator must be provided with personal protective equipment.

	CAUTION - The internal part of the machine is not equipped with lighting. This constitutes a residual risk with possibility of minor injuries
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MACHINE WASHING

During the internal/external manual cleaning step, the condition of risk for the operators can arise, due to the structure of the machine.

	WARNING - Do not operate the machine without being in possession of the personal protective equipment, that must be appropriate according to the characteristics of the washing liquid (chemical cleaners, alkaline or basic).
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MATERIALS IN CONTACT WITH PRODUCT

The contact between food and parts of the machine is controlled by European Regulation (EC regulation : 1935/2004). To avoid pollution of the product, each machine part replaced, which is in direct contact with the product, must be of a type suitable and certificate.

	CAUTION: Always use original spare parts to replace those worn or damaged. The use of parts of non-original construction, or other sources could cause serious damage to equipment and / or danger to personnel.
	NOTE: At the end of maintenance, cleaning, and always before every start, make sure that all safety devices are in place and working.

Chapter 3

TECHNICAL DATA

3.1 TECHNICAL DATA


CONTAINERS CHARACTERISTICS

Type of container	Box
Dimensions and max. Volume	52xh.38 - 70 g 73xh.109 – 450 g

PRODUCT FEATURES

Product	Concentrated tomato 28° Bx Tomato Sauce 28° Bx
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PRODUCTION

Max. Production	600 cpm (can size 52xh.38) 200 cpm (can size 73xh.109)
Time of treatment	10' past/30' cooling (73x109) 6' past/18' cooling (52x38)
 NOTE - Speeds may vary according to container type.	

DIMENSIONS

Machine height	2900 mm
Width machine	2500 mm
Length of machine	26300 mm
Height of the work plan	1200 mm

MACHINE WEIGHT WITHOUT PRODUCT

Heads kg 900 x 2	1800 kg
Central Unit	8000 kg
Pumps, piping and other fittings accessories	1650 kg
Total weight	11450 kg

ENVIRONMENTAL LIMITS

Operating temperature on :electrical instruments with protection	+5°C e + 40°C
Operating temperature on: electrical instruments with outdoor appliance	+5°C e + 55°C
Atmospheric humidity	Between 30% e 95% (no condensing)

ELECTRICAL INSTALLATION

Description	Value	Amps.	Notes
Primary voltage	400 V		± 10%
Auxiliary voltage	24 VAC		
Frequency	50 Hz		± 3%
Motor protection degree	IP 55		
Pasteurizing pump	5,5 kW	12,5 A	
Cooling pump	9,2 kW	18,5 A	
Cooler conveyor belt	0,55 kW	1,49 A	
Blower e	3 kW	5.87 A	
Steam suction motors	2,2kW	4.9 A	
Total power installed	20.45 kW	43,26 A	

3.2 AUXILIARY SERVICES**COMPRESSED AIR**

Consumption	100 Nl/min.
Supply pressure	6 Bar
Connections	½ Gas F.

SWEETENED WATER HARDNESS

Consumption	33 lt/min
Supply pressure	3 Bar
Input connection	DN50

STEAM

Consumption	250 Kg/ h
Supply pressure	6 Bar
Steam quality	Saturated dry steam
Connection	DN 65

3.3+3.4 MACHINE DESCRIPTION

Tunnel Pasteurizer / Cooler– Mod. 0317-F-048

The machine is suitable to pasteurise and cool food products in: glass jars or bottles, tin-plate or aluminium cans and other types of container, at atmospheric pressure.

Composition:

Machine structure

- constructed entirely in tubular profiled AISI 304 stainless steel, complete with covers in the upper part
- vapour suction hood

Main conveyor

- composed of a net conveyor in highly resistant plastic material, with an automatic stretching device

Pasteurisation zone

- by means of hot water spraying nozzles
- water / steam direct heat exchanger

Cooling zone

- by means of showers with water spraying nozzles at decreasing temperature, constant level tanks, static filter and circulation pumps

Pre-drying zone

- by means of forced air piping, complete with electric fan

Container inlet conveyor belt

- The inlet is obtained by means of a stainless steel multiple slat chain conveyor belt, with speed adjustable through a frequency variator

Container discharge conveyor belt

- discharge is obtained by means of st.st. multiple slat chain conveyor belt, with differentiated speed driven by a frequency variator

Electric panel board

- AISI 304 st.st. cabinet containing the electrical and pneumatic instruments, constructed in accordance with the CE regulations
- Protection degree IP 54
- 24 V auxiliary circuits

Specification:

product handled	Tomato paste
Production capacity	Up to 36.000 cph with Ø 52 mm / 70 g Up to 12.000 cph with Ø 73 mm / 450 g
thermal cycle	Up to 45' min. (85°>95°>40°)

Dimensions:

work dimensions	2.000 x 24.000 mm
Net usable surface	48 m ²

3.5 PHONOMETRIC SURVEYS

DESCRIPTIONS OF THE INSTRUMENTS

The reports have been effected using the integration phonometer (type Bruel and Kjaer 2236C), class 1 in conformity with the procedure CEI 651 and CEI804, with the following positions:

- frequency weighting : A
- signal at its maximum peak: C
- integration time: F

OPERATING CONDITIONS

The machine was running without containers and product.

MEASUREMENT CONDITIONS

The measure has been generated in the factory property of Zacmi (PR) without significant sources.

In the same place several machines in post-production were present.

The machine has not a specific place for the operator, then, the measures have been taken close to the area, where the machine operation and control staff is usually present.

WARNING

During the normal functioning of the lines, in presence of containers and the relative lines of supply, the effective levels of noise will be superior to those given.

Detected value : Max 80 dBA

After the installation on line, the operator will have to repeat the phonometric surveys with the machine in normal conditions of functioning, to verify that the limits foreseen in accordance with the present rules are not exceeded

If the noise levels exceed those limits, the machine may be harmful to humans. If that is the case the user should:

- put the indications in the zone of work;
- If this is possible, limit access to the dangerous parts;
- Inform users of impairment of hearing they are exposed cause of the noise, and the protective devices they should use;
- provide employees with suitable protective devices, and verify that they are correctly employed.

3.6 OVERALL DIMENSIONS OF THE MACHINE

Machine height	3300 mm
Width of machine	3100 mm
Length of machine	26500 mm

CHAPTER 4

INSTALLATION

4.1 TRANSPORT



NOTE - The Transport must be carried out by professionally qualified personnel.

The machine is shipped disassembled for easy transport.

The components are placed on a platform and packed with impervious plastic material.

The machine must be transported in such a way as to avoid any damage to its components.

Take all possible precautions when lifting and transporting the machine.

Damage to the machine caused during transport and handling are not covered by warranty.

No person will be in the vicinity of the suspended load and / or within range of the forklift.

Upon receipt, the machine must be subjected to an inspection of its condition, visually check if the machine has obvious signs of damage due to transportation.

If so, notify the carrier immediately to the findings, followed by a letter.

If the yield of the machine involves the responsibility of our Company, please contact our shipping department immediately.

Up to the time of installation, store the machine in a dry place indoors.

4.2 HANDLING

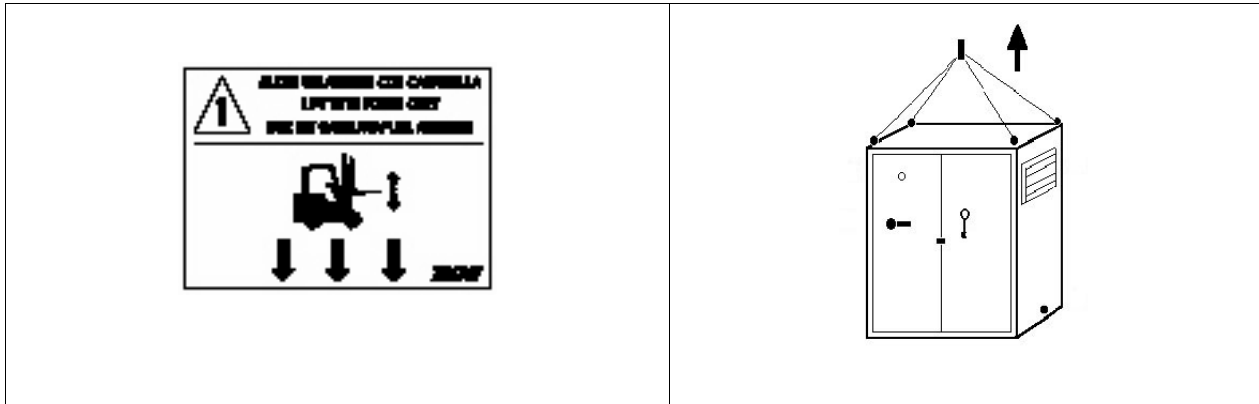
In order to move the machine it is necessary to disassemble it completely, moving the individual modules.

Before dismantling and moving the machine disconnect all power sources (electricity, water, air, product).






WARNING - This type of operation should be performed by qualified personnel.

The electrical panel is equipped with eyebolts, and must be lifted as shown in the figure below.



Before lifting, disassemble casing and / or any part, that may be damaged during lifting.

	WARNING - Make sure that the lifting equipment (bands, shopping cart, etc..) has suitable capacity to safely lift the load in question.
	WARNING – Use exclusively the built-in connector, and/or lift instruments indicated on the machine.
	WARNING - The dimensions of the machine and complexity, do not facilitate the handling. Before moving the machine it is recommended to contact our “Customer Support Center”

4.3 STORAGE

In case of prolonged inactivity, the machine must be stored with the precautions concerning the place and at the time storage:

Store the machine in a confined space;

Grease the unpainted parts;

Protect the machine from shocks and stress;

Keep the machine away from humidity and extreme temperature;

Do not allow the machine to come into contact with corrosive substances.

4.4 PREDISPOSITIONS

To respond to the characteristics of stability, the machines must be placed on a solid foundation (reinforced concrete).

The foundation must be designed and prepared borne by the customer and by qualified personnel.

It is important to make sure that the foundation is properly fixed in order to avoid any failure at the time of the laying of the machine.

4.5 ASSEMBLY

The assembly of the machine is carried out by our engineers, if indicated in the contract.

Otherwise Zacmi will provide all the information necessary to perform the correct installation of the machine.

4.6 POSITIONING IN LINE

For the positioning of the machine, respect the plant layout checking the alignment with the machines upstream and downstream.

It is important that the machine, and in particular the work plan, are perfectly leveled. To achieve this, adjust the height of each foot.

To adjust the foot height, loosen the nut, turn the bolt with the correct wrench until the desired level is reached. Then tighten the nut.

Check the leveling using the "water level" or a normal level, referring to the relative positions of the machines of the line.



NOTE - It is advisable to interpose vibration damping elements between the feet of the machine and the support surface, in order to reduce the vibrations and noise produced by the machine. Propagating through other structures, noise and vibrations could affect the proper functioning of other machines and / or sensitive equipment, and also be harmful to the health of staff.

After installation the machine must be stable and easy to access.

4.7 CONNECTIONS

MAINS

The electrical connection of the machine is made by the responsibility of the customer.

The machine must be connected to the power line, considering:

Laws and Technical Standards in the place and at the time of installation;

the information given on "plaque of the picture."

The power supply of the machine must be carried out through cable (4x.. Mm2), halogen-free and flame resistant.

The cable entry in the cabinet, is expected from the bottom through the cable clamp and connect directly to the main switch and PE (protective earth).



The power supply must not be interrupted or the voltage should not go to zero, for a time greater than 3 m / s.

Any voltage dips must not exceed 20% of the peak voltage and for more than one cycle.



NOTE - Correct electrical connection ensures maximum safety. Our Company disclaims any liability in the event that, at the time of connection is that during normal operation, are not complied with all the applicable accident prevention regulations.

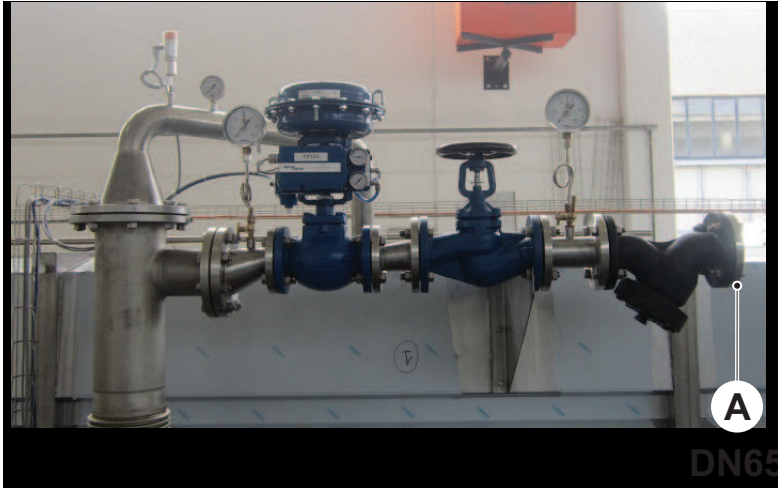


NOTE - It 'responsibility of the customer to create the equipotential bonding system of the earth system.

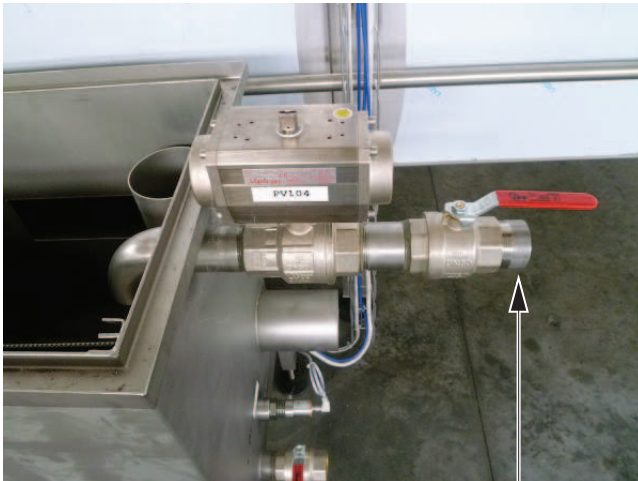
ZACMI disclaims any liability for any damage resulting from failure to connect, or a bad connection, or the low efficiency of the system grounding.

STEAM SUPPLY(Fig.below)

Connect steam main supply to the steam filter with connection item A (DN65), checking the steam flow capacity corresponds to the required value.

**SOFTENED WATER SUPPLY (Fig.below)**

Connect softened water supply to the water inlet valve B (DN50), checking the water capacity corresponds to the required value.

**B (DN50)**

COMPRESSED AIR SUPPLY (Fig.below)

Connect the compressed air supply to the inlet valve, with connection item A (1/2" G).







A (1/2" G)

Chapter 5A

STARTING

5A.1 PRELIMINARY CONTROLS

	DANGER - Any maintenance and / or adjustment /repair should be performed with the machine at rest, with power disconnected and machine put in safe status. At the end of each operation, do not restart if all safety devices are activated and functioning properly.
	WARNING - The machine service should be done by trained personnel only, under conditions of maximum safety, respecting the safety rules of law of the country of installation.
	WARNING - Only qualified personnel are authorized to install or work on electrical equipment.
	WARNING - Do not turn the main power switch to position "1" until all the items listed below have been checked.

Before the first commissioning, carefully check that:

the machine has been thoroughly cleaned, paying attention to all the moving parts;

all the locks might be used during transport have been removed and nothing prevents the machine to run freely;

all visible screws and bolts are well tightened, as it is possible that during the handling of the machine, some may be loose;

all protective devices, both fixed and removable, are in place;

the mains voltage is the same for which it was prepared the electrical panel;

all connections described above have been performed, and the values of service fluids are as indicated (see "Auxiliary services");

all greasing nipples have been greased;

the lubricant level in all components (gear-motors, reducers etc..) is correct;




all movements are correct, check the operation of the valves

electro-pneumatic valve operation;

all electrical movements are correct, checking the direction of rotation of the individual engines.

The parts of each section are properly positioned (about 10 mm) from the cover of the jar and properly fixed.


5A.2 FIRST STARTING

	WARNING - Before starting place all cover/guards back in place.
	WARNING - Before starting, make sure that the power supplies of all fluids (air, water, steam, etc..) are open.
	WARNING - Before starting, the user must check that all emergency devices are connected according to the wiring diagram and working.

For the first start-up of the machine and / or to restart after long stops you need to follow the following procedures:

Thoroughly clean the internal part of the machine, removing any residue of processing or foreign bodies.

Make sure all the checks described in the section "Preliminary checks 5A.1" have been carried out;

	WARNING - Check the connections between downstream and upstream equipments. This serves for the correct operation of the machine in the general context of the automation of the line.
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CHAPTER 5B

CONTROLS AND REGULATIONS

5B.1 OPERATIONAL SPEED VARIATION

The speed of the machine can be set via the operator panel .

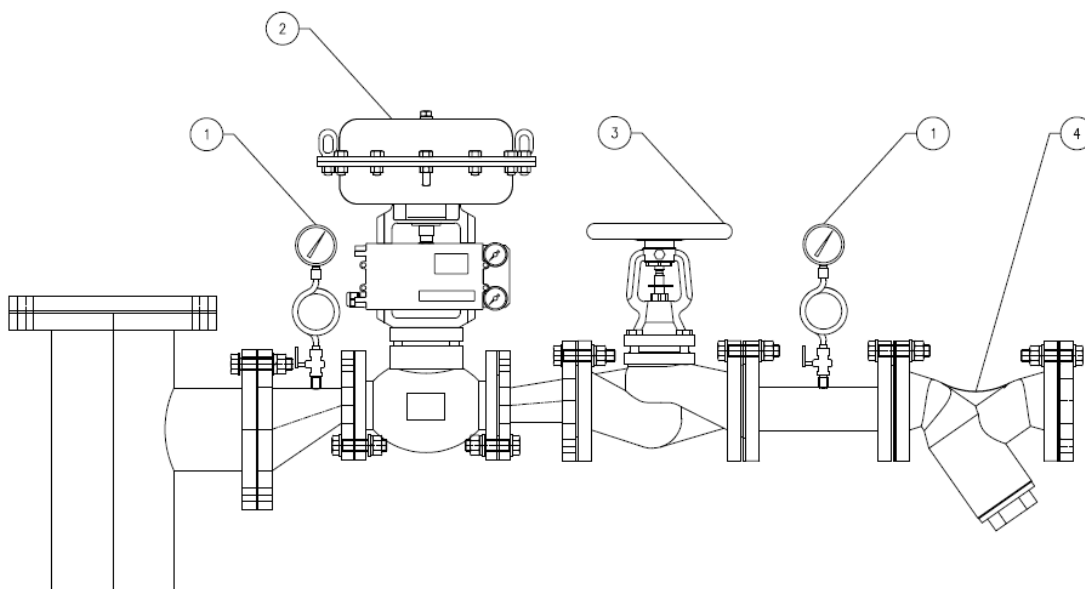
5B.2 STEAM UNIT

STEAM UNIT MAIN PARTS:

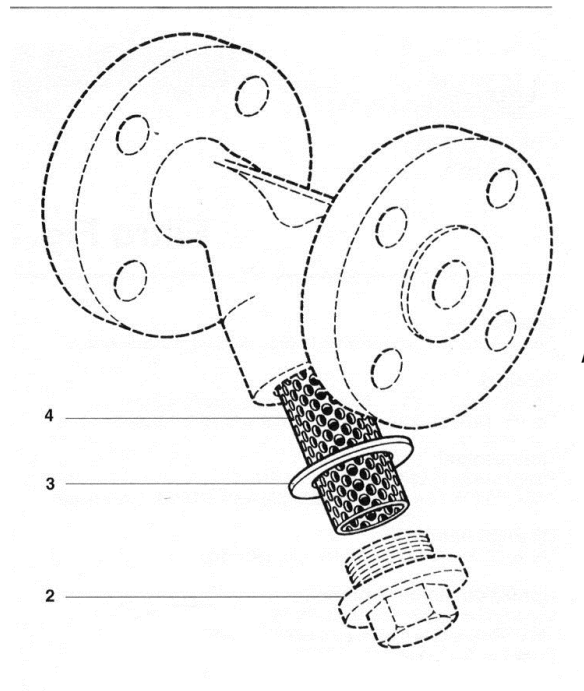
- 1 Manometer
- 2 Modulating Valve
- 3 Manual Valve
- 4 Filter

Check these parts at least once a year.

Before this maintenance, stop the machine and make sure the machine is completely cool.



5B.3 STEAM FILTER



Filter with Y form in cast iron and filtrating part in stainless steel.

A dirty filter may cause a steam pressure reduction in the downstream zone with respect to the upstream zone.

To restore the normal working condition of the filter it is necessary to dismount it in the following way:

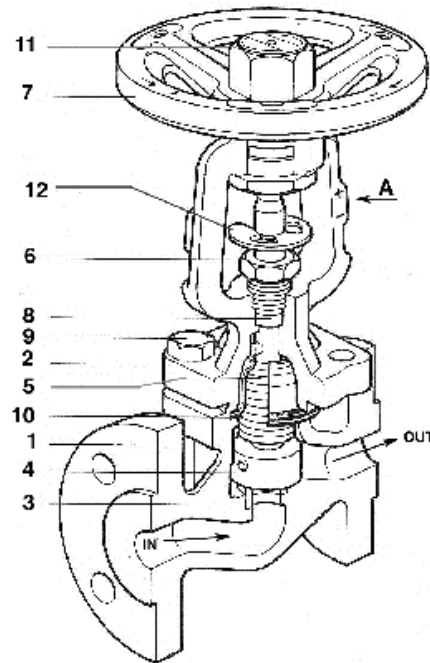
- close the steam feeding;
- check the components are cold before starting to dismount them;
- remove the plug 1;
- pull out the gasket 2;
- pull out the filter 3,
- clean the filter with a detergent if possible, otherwise replace it;
- remount the filter 3;
- replace the gasket 2;
- grease the plug 1 thread (grease: SHELL CASSIDA GREASE RLS1 CLASS H1)
- remount the plug 1;

Open gently the steam shut-off valve to prevent a thermal shock of the plant; check there are no leakage

5B.4 MANUAL VALVE

BELLOW SEALED ISOLATION VALVE

Isolation valve (type BSA) with cast iron casing and bellows seal for steam and gas.

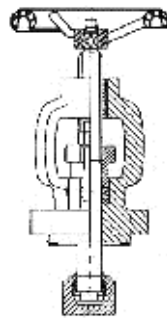


To regulate the passage of the fluids inside the valve turn the wheel 7;

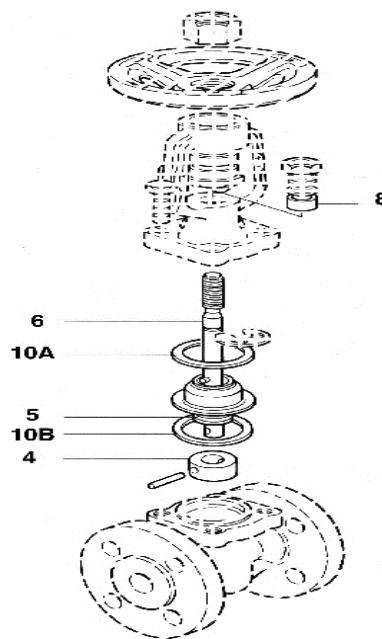
On the valve side there is a position indicator.

Periodically check that there are no leakages. In such case disassemble the valve in the following way:

- Close the steam feeding;
- Check the components are cold before disassembling;
- Remove the retaining ring 12;
- Remove the nut 11;
- Remove the cover screws 9;
- Remove the upper part of the valve casing.



- pull out the stop plate of the obturator 4;
- remove the obturator 4;
- remove the gasket 10B
- rotate the wheel 7 clockwise; the stem is unscrewed from the bushing 8;
- take out the group with the stem 6;
- remove the gasket 10A
- remove the bellow 5;
- remove the bushing 8 from the upper casing.



The spare parts available are:

ITEM	DESCRIPTION
4	Obturator
5 - 6	Bushing with the stem
8	Gasket for the guide bushing
10A - 10B	Gaskets

VALVE GROUP ASSEMBLY

Assemble the valve parts in the following way:

Check that the obturator's seat is perfectly cleaned;

Bushing 5 on the pin 6

Obturator 4 on the pin 6

Lubricate the obturator pin 4 using GULF SOVEREIGN LC grease, before assembling,

Insert the gasket 10A,

Insert the pin 6 inside the upper valve casing,

Insert the gasket of the casing 8 on the stem 6 up to its seat. Take care not to damage the gasket while sliding on the thread;

Insert the bushing's gasket pressure washer 8;

Bushing stop nut;

Proper retaining ring 12,

Insert the wheel 7 with the nut,

Insert the gasket 10B,

Insert the upper casing inside the lower valve casing,

Block the valve with bolts 9;

Open the steam feeding valves gently to avoid thermal shock of the plant;

Check there are no leakages.

5B.5 PNEUMATIC CONTROL MODULATING VALVE TYPE LE

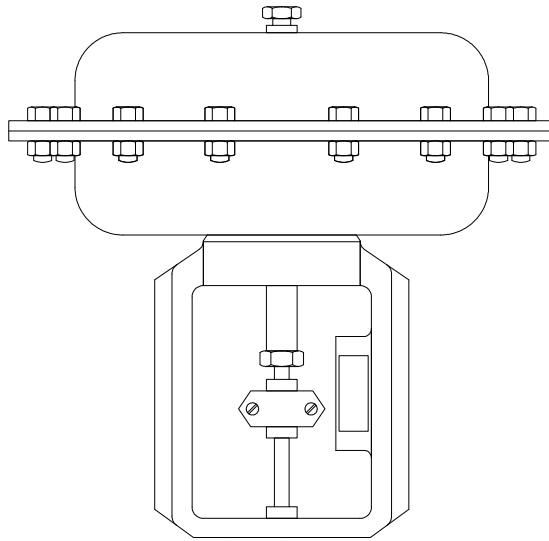
RISK OF BURNINGS	<p>Serious risk for the operator on maintenance. Before starting any maintenance check the steam supply valve is closed and that the various components of the plant are cold.</p> <p>Provide the operators with the adequate individual protection.</p>
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The pneumatic control modulating valve consists of two parts:

Pneumatic actuator 1

Valve casing 2

PNEUMATIC ACTUATOR (1)

The actuator or the pneumatic servomotor (1) is a device which allows the transformation of the pneumatic command signal into linear and even movement of valve opening or closure.

In case of malfunction it is necessary to replace the obturator's casing.

To replace it is necessary:

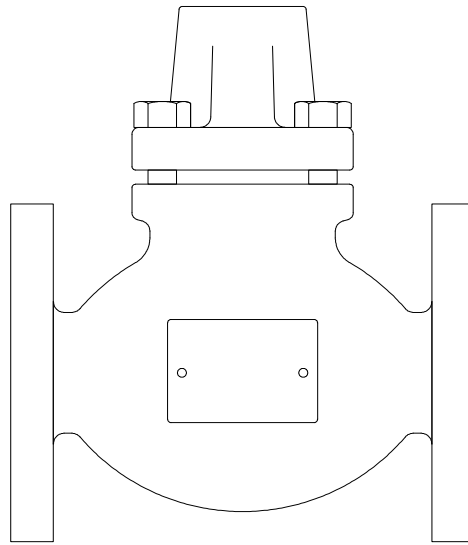
- Disconnect the air feeding to the obturator

- Unloose stop screws 1;

- Remove the pin 2;

- remove nut 3;

- remove housing 4.

VALVE CASING (2)**Valve casing (2)**

The valve casing (2) is in cast iron.

The seal on the stem with rings is in PTFE.

The opening and closure of the valve is done pneumatically.

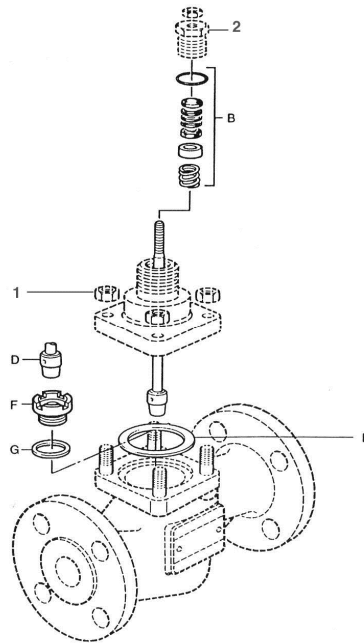
On the valve side a position indicator is present.

Check periodically there are no leakages from the valve; in such case it is necessary to dismount the valve in the following way:

- Close the steam feeding;

- Check the components are cold before dismounting;

- Disconnect the obturator stem from the pneumatic actuator (see previous chapter);



Remove the bolts 1;

Take out the valve central casing

Remove the screw from the gland 2

Take out the gland group B

When the valve is fully dismounted replace:

The gasket E;

The gasket G;

The gasket seat F

Obturator's stem D;

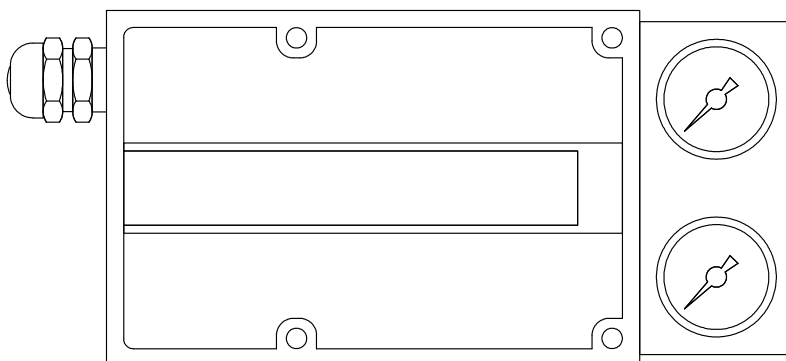
Gland group B;

Reassembly the group

Open gently the steam feeding valves in order to avoid thermal shock of the system;

Check there are no fluid leakages.

POSIZTIONER



5B.6 SPRAYING NOZZLES

To maintain the efficiency of the cooler, you need to periodically check the nozzles are not blocked.

Open the fitting with a suitable wrench into three pieces and remove the hose nozzle holders.

Unscrew the nozzles, clean them properly, if necessary, replace them.

Replace the hose nozzle holder by checking that the nozzle is perpendicular to the belt.

5B.7 RECOVERY WATER PIPE

The water recovery pipe must be inspected daily, to avoid the formation of deposits of material (glass) that, if sucked into the pump through the pipe can damage and clog the spray nozzle and the pump itself.

All inside of the tank there are two filters removed and mounted on slides, which should be cleaned every day.

To clean them, you must:

remove the first filter;

clean, insert it back into the tank;

remove the second filter;

clean, insert back into the tank.

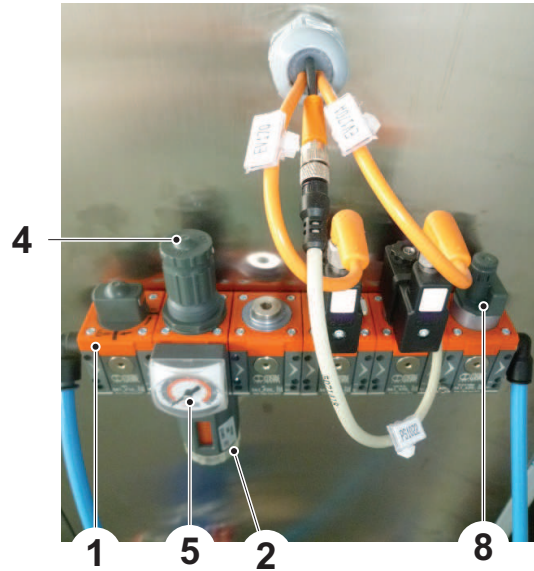
OVERFLOW PIPE

During operation of the machine there must be leakage of water from the drain, to maintain a constant water level in the cooler.

The tank is equipped with inspection door, to make a complete internal cleansing.

5B.9 CHECKING AND ADJUSTING THE PNEUMATIC UNIT SHUT-OFF VALVE (1)

This valve allows to completely close the air flow entering the plant.

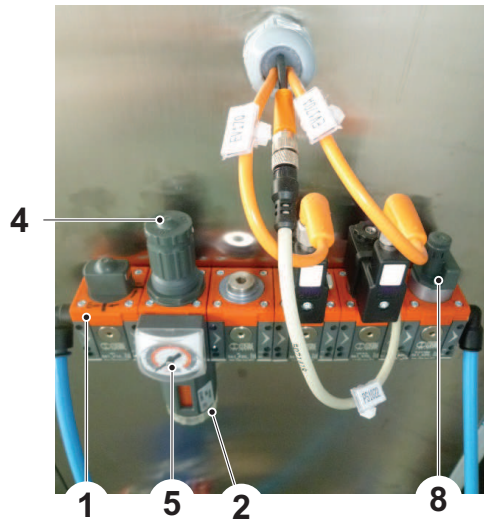


Maintenance:

Periodically check the operation of the valve operating it manually.

Air filter (2)

It purifies the air coming from the power supply of solid particles and water drops.



Maintenance:

Turn to remove the filter 2. Clean the air filter insert every six months



Clean the filter every 6 months.

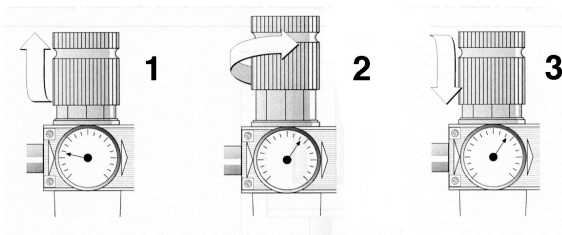
Never use solvent. Use soap suds.

Pressure reducer (4)

It maintains downstream constant working pressure, regardless of pressure fluctuations in the mains supply (upstream) and air consumption. The supply pressure must always be greater than the operating pressure.

To make the adjustment of the pressure:

- 1) Raise the knob 4, releasing it from the locked position;
- 2) Turn the knob until the pressure gauge indicates the pressure of 6 bar;
- 3) Lower the knob 4, locking it.



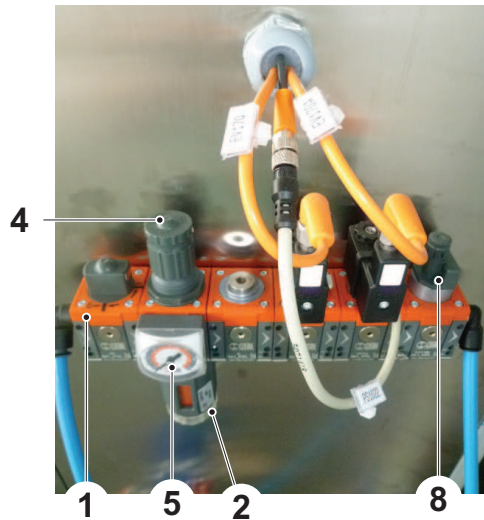
Never exceed the maximum pressure of 6 bar in the pneumatic units

Maintenance:

Periodically check the pressure gauge if the pressure is correct (Ex. 6 bar).

Manometer (5)

Serves for measuring and indicating the pressure in the pneumatic controls.



5B.10 REGULATIONS AND CONTROLS OF THE ELECTRIC EQUIPMENT

Regularly check the correct functioning of all light-warning devices.

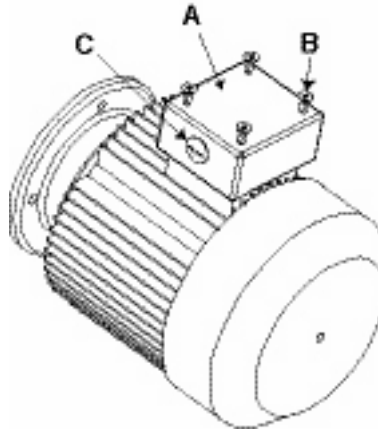
To do this, create the operating condition in which the lamp, in a normal test result, remains lit: for example, the lamp “Machine on” with operating machine, should be on.

Every six month and/or after long stop periods, check the electrical instruments, the tightening of the sensors, the correct operation of the safety devices and carry out the procedure of first start-up.

5B.12 CONNECTION ELECTRIC ENGINE

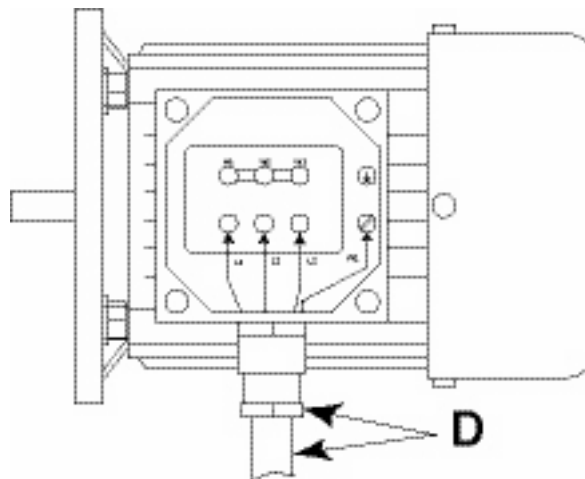
Motor connection:

- Remove the main circuit terminal block cover A;
- Remove the screws B;
- Remove the side cover. C;



Insert a line wire D, with the relative gland;

Connect the wires, as shown on the control wiring diagram;



Reassemble the main circuit terminal block cover A.

CHAPTER 5C

BREAKDOWNS RESEARCH

5C.1 BREAKDOWNS RESEARCH

This section identifies and discusses some of the problems that may be found in everyday use and some possible solutions to these problems



NOTE - This doesn't implicate in any way that you must have similar problems or that your problems must have the same causes. This is only a guide to assist you to individuate the possible breakdown.

BREAKDOWN	REASON	POSSIBLE SOLUTION
The engines do not start	Power failure.	Check that: <ul style="list-style-type: none"> - electric circuit is powered - the main power switch is in "I" or "ON" - Check whether the cables are plugged in correctly.
	Emergency stop switch.	Reset the button and the alarms
	Contact button down.	Check.
The machine does not start.	Operating mode selector is in the wrong position	Check that the button is in the position corresponding to the program selected (MAN-AUT).
	Intervention of a security device of the machine.	Check.

BREAKDOWN	REASON	POSSIBLE SOLUTION
Contact button down.	Excessive current.	To control: - Excessive hardness of plug connectors. - The material on the conveyor belt is excessive
Abnormal sounds	Possible lack of grease.	Lubricate/grease the machine where necessary
	Breakage of mechanical parts.	Immediately replace any machine parts which are not in a perfect state.
The water pressure and water flow are insufficient or non-present	Rotary pump speed too low.	If possible: - Increase rotation speed - Change the wheel with one for a larger diameter
	Wrong rotation direction.	Control and reset, if it is necessary, the correct rotation direction.
	injecting air from suction pipe	Check: - close the tubes. - The water level when enters. - Clean the filters.
	Wheels blocked by formation of calcium or foreign bodies.	Remove the wheel, freeing the possible fit and clean it.
	Air inclusion of closing system.	Adjust the setting of the closing system, or repair or replace the mechanical closure

	Pump is worn or the parts are moving.	Check the pump status.
High level of vibration and noise	Wheel imbalance due to wear, deposits or encrustations	

CHAPTER 6 MAINTENANCE

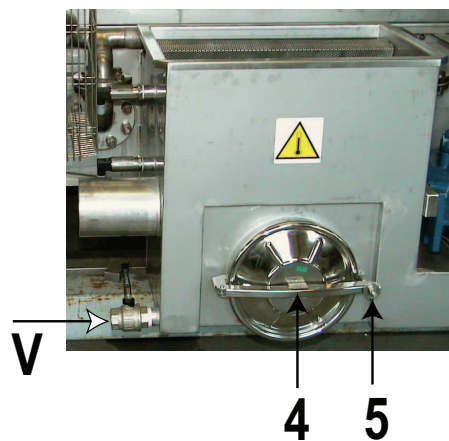
6.1 WASHING - CLEANING

PASTEURIZER-COOLER INTERNAL CLEANING TO BE DONE BY AUTHORISED PERSONNEL ONLY

WATER COLLECTION TANKS AND MODULE BOTTOM CLEANING.

At the end of every production week clean the machine:

- Empty the machine from containers.
- At the end, stop the machine.
- Open all drain valves (V), placed at the bottom of the tanks so as to drain all the water from the machine. The pasteurizer-cooler is automatically cooled down.
- At the end of the drainage open all the inspection doors 4 by the side of water collection tanks.



- Now go by the opposite side of the pasteurizer -cooler.
- Open the doors B on the bottom of the modules, one at a time.



- With the help of a jet of water under pressure clean the machine module internal side very carefully.

- The dirty water used for cleaning is discharged by the inspection doors 4 of the tanks by the other side of the pasteurizer -cooler.

PASTEURIZER-COOLER BELT CHAIN CLEANING

It is recommended to clean the pasteurizer-cooler belt chain following the same procedure used for machine in production but without the presence of containers.

The belt chain type Flattop Rexnord Marbett is the most critical part of the machine.

Recommended instructions by REXNORD MARBETT:

Do not use:

- Peroxides (H₂O₂).
- Chlorine Dioxide (ClO₂).

At normal concentrations the biocidal effects of peroxide are not great enough to destroy the bacteria within a pasteurizer, and chlorine dioxide is too volatile to control. They both are highly detrimental to polypropylene chains at elevated temperatures.

It is recommended the use of:



- Halogen – Based Oxidizing Biocides (such as Chlorine and Bromine).

They are some of the most commonly used within pasteurizers, However, they could damage polypropylene chains at elevated concentrations. A dosing range between 0.5 – 2.0 ppm is typically sufficient to keep biological growth in check, and reduces the premature aging effect on the chain. The lowest possible concentration that controls the biology should be used (determined through onsite testing), and ideally an online Chlorine analyzer or Redox Electrode should be used to guarantee the oxidizing agent is properly dosed

NOTE: At the end of the cleaning with detergent carry out a final thorough rinsing only with water.

6.2 LUBRICATION

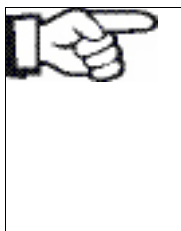
Proper lubrication is essential for the proper functioning of the machine and is therefore recommended to make scrupulously checks and replacements provided and to comply with the maintenance intervals indicated.

	WARNING - The lubricants must always be recommended quality.
	WARNING - Do not mix synthetic lubricants with mineral oils or synthetic lubricants of different brands in gear reducers and in any other component.

MANUAL LUBRICATION INTERVALS

Every 8 working hours, and in any case after each wash, grease all moving parts equipped with a special greasing nipple.

Recommended grease : SHELL CASSIDA GREASE RLS 1 CLASS H1.

	NOTE - Discharged in the environment or badly burned, the used engine oil can cause serious damage. By a correct collection the oil will not cause any damage to the environment. It is therefore necessary that waste oils are not mixed with non-regenerative oils or other harmful substances that are delivered to authorized disposal centers.
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6.3 MANUAL GREASING POINTS

The manual greasing points are the followings:

NAME

- 1 Supports of the driving shaft of conveyor belt
- 2 Supports of the transmission shaft of conveyor belt
- 3 Supports of the driving shaft of inlet belt
- 4 Supports of the driving shaft of the exit belt

6.4 RECOMMENDED LUBRICANTS

GENERAL INSTRUCTIONS ABOUT LUBRICANTS

The lubricants indicated in this manual are suitable for an ambient temperature between 0 ° C and +30 ° C.

For ambient temperatures higher than this value, use a degree immediately above the one on the table, for ambient temperatures below 0 ° C, immediately adopt a grade lower than indicated.

Synthetic lubricants can generally be used in a greater range of ambient temperatures; prior to use lubricants, ask the lubricant producer.

Recommended grease : SHELL CASSIDA GREASE RLS 1 CLASS H1.