

Instructions for use and maintenance



GEA Niro Soavi Leading Pressure

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Translation of the original instructions

GEA Niro Soavi S.p.A.



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This manual is property of GEA Niro Soavi S.p.A. and no part of it may be reproduced.



1.1 Declaration of Conformity

The document shown below is a FACSIMILE of the "**Declaration of Conformity**". The official copy will be completed and delivered with the machine.

GEA Niro Soavi S.p.A. Via A.M. Da Erba Edoari Tel +39 0521 965411 - F e-mail: info.geanirosoav	29 - 43123 PARMA - ITALY ax +39 0521 242819 ri@geagroup.com		
DE	CLARATION OF	CONFORMITY	
	C	E	
MACHINE:		HOMOGENIZER ARIETE	
	Model:	ONE 7TS	
	Serial Number:		
	Max Press. (MPa): Rotod Elow (dm³/b		
	Year		
The undersigned	DECLAR	ES	
under his own respo declaration,	nsibility that the above men	tioned Machine, object of this	
with the precepts of 2006/42/CE 2006/95/CE 2004/108/CE	the following EC directives a	and standard norms:	
Name and address o Marco Gandini - Via	of the person authorised to c A.M. Da Erba Edoari 29 - 4	compile the technical file: 3123 PARMA - ITALY	
The above identified has been submitted.	Machine has successfully p	passed all the trials and tests to which it	L.
Place Date		GEA Niro Soavi S.p.A. Legal Representative Managing Director Signature	

FACSIMILE OF CE DECLARATION OF CONFORMITY



GEA Niro Soavi S.p.A. is also certified to UNI EN ISO 9001 regulations for the Design, Construction and Servicing of High Pressure Piston Pumps and Homogenizers, therefore the machines supplied are designed and constructed in compliance with the approved quality procedures.

The following figure shows the UNI EN ISO 9001 Quality System Certificate.





1.2 Introduction

This manual is addressed to operators and specialized staff to enable correct use of the machine.

The manual provides instructions and indications regarding:

- correct machine installation
- functional description of the machine and of each part of it
- adjustments during setting up and startup
- correct scheduled maintenance
- basic safety and accident prevention rules

This will enable operators to find information about any problems connected with the machine and the processed product.

For better comprehension of this manual, some basic terms are described below:

- DANGER ZONE:

Any zone within or around the machine in which an exposed person is subject to a risk to his health or safety.

- EXPOSED PERSON:

Any person wholly or partially in a danger zone.

- OPERATOR:

Person in charge of installing, operating, adjusting, cleaning the machine and performing ordinary maintenance procedures.

- QUALIFIED TECHNICIAN:

Qualified person who has been specifically trained and authorized to perform extraordinary maintenance procedures or repair hob requiring particular knowledge of the machine, its operation, safety systems and triggering conditions.



Accident prevention rule for operators

• WARNING: Possibile damage to machine and/or machine components.

PRECAUTION: Additional information about current operation.

NOTE: Provides useful information.



1.3 Warranty e general test

Unless otherwise specified in the order confirmation, the warranty will be governed by the following terms and conditions:

1.3.1 Warranty

GEA Niro Soavi S.p.A. guarantee the good quality and workmanship of their machines and undertake, for the period specified by the warranty, to repair or repair free of charge any parts whose failure or early wear is caused by bad material quality, manufacturing defects or imperfect assembly.

The warranty will not cover parts whose failure or wearing out results from:

- user negligence with respect to level checks, filter cleaning, auxiliary services, insufficient feed pressure;
- use of the machine outside the conditions specified in the contract, in particular with respect to maximum
 pressure, capacity, product treated, operating and washing temperature, feed pressure, specifications of
 utilities
- use of inadequate tool for ordinary and extraordinary maintenance;
- failed or incorrect maintenance;
- tampering or alterations performed without specific approval from **GEA Niro Soavi S.p.A.**;
- failure to comply with the instructions contained in the OPERATION AND MAINTENANCE INSTRUC-TIONS;
- improper use of the machine, incorrect operating conditions and procedures
- incorrect installation of the machine or inadequate feed line design
- use of inadequate components upstream and downstream of the machine, and in particular use of inadequate feed pump.

For this reason it is fundamental to become familiar with the instructions contained in this manual and to implement them in order to ensure correct and efficient machine use.

Use of the machine and reading of the OPERATION AND MAINTENANCE INSTRUCTIONS imply integral acceptance of Warranty conditions.

For further information about application of the Warranty, please refer to the General Sales Conditions.

1.3.1.1 Warranty period

The warranty is valid for 12 MONTHS starting from the date of delivery, unless otherwise specificed in the order confirmation.

This term is fixed and may not be extended following the replacement of components or repairs during that period.

1.3.1.2 Application method

In order to determine the cause of the problem and applicability of the warranty, it is indispensable for **GEA Niro Soavi S.p.A.** to receive the parts for which replacement under warranty is requested.

Shipping costs shall be borne by the customer.

Repair work or replacement under warranty shall be carried out, at the discretion of **GEA Niro Soavi S.p.A**, either in their own workshop, in other workshops or on site.

The costs of shipping materials to the site shall be borne by the customer, especially in the case of urgent shipment of materials and spare parts.

For work performed on site the customer shall provide energy sources, extraordinary equipment, any auxiliary personnel needed and shall bear the costs for travel, meals and accommodation of **GEA Niro Soavi S.p.A** staff.



1.3.1.3 Exclusions and limitations

The warranty shall not cover materials and parts that are subject to normal wear such as, for example, all the gaskets used on the machine, transmission belts, plunger gaskets and associated anti-extrusion washers and support washers, safety valve seat, filters, etc., and the parts whose lifetime cannot be determined beforehand, such as lamps, fuses, plunger pistons and their coating, plunger valves and their seats, homogenizing valve, pressure gauges.

For components and accessories purchased from external suppliers, **GEA Niro Soavi S.p.A** shall apply to the Customer the same warranty conditions granted to them by the manufacturer.

1.3.1.4 Returned material

Before returning to **GEA Niro Soavi S.p.A.** the parts for which you request replacement or repairing under warranty, you must send a written notice to the Spare Parts Department for approval.

The parts must be properly packaged to prevent damage during transport and they must be accompanied by:

- reference to purchase order;
- serial number of machine;
- spare part code number;
- accurate description of fault and of the way in which it occurred.

The parts accepted in warranty are delivered ex-origin; the parts replaced become the property of **GEA Niro Soavi S.p.A.** and must be delivered ex your factory.

1.3.2 General test

This machine has been accurately inspected in the premises of **GEA Niro Soavi S.p.A.** before shipment, with operating test simulating normal working conditions.

The test was performed with cold water to verify match between machine characteristics and design characteristics, calibration of safety, regulation and control systems, efficiency of seals and general operation with no abnormal noise or vibrations, parametrization of any instruments or programmable equipment.

Testing of machine performance (flow rate at the maximum operating pressure, noise level, power absorption) was carried out with water at 20 °C approx., so it was possible to verify that the deviation of actual machine flow rate with respect to the rated value is \pm 5% depending on the different temperatures and viscosity values of the product treated.

After installation, at the time of startup, it is still necessary to run a final general test on site with the presence of technicians from **GEA Niro Soavi S.p.A**



1.4 Preliminary remarks

The employer must inform personnel about the following safety-related issues in the use of the machine:

- Risks of injury.
- Devices designed for operator safety.
- General safety rules or regulations laid down by international directives and by the laws of the country where the machine is installed.

Operators, maintenance staff, cleaning staff, etc. are required to strictly comply with the safety regulations in force in the country where the machine is installed.

WARNING:

Before operating the machine, the operator must be familiar with the position and operation of the customized controls and with the characteristics of the machine, and must have read every part of this manual.

The instructions, warnings and general safety rule contained in this manual must be complied with. Alteration or replacement of machine parts without the prior authorization of **GEA Niro Soavi S.p.A.** can create risk of injury and relieves **GEA Niro Soavi S.p.A.** from all legal responsibility.

1.5 How to use this manual

A list of contents has been included in the first page for easier reference and to quickly find the subject that you are interested in. The chapters are organized with a special structure to facilitate the search for information. Each chapter starts with an index. A statement at the beginning of the chapter indicates that the chapter deals with topics and contains information of specific interest for the operaton.

1.6 Reproduction limits and copyright

All rights reserved to GEA Niro Soavi S.p.A

No part of this manual or of its structure may be reproduced unless expressly authorized by **GEA Niro Soavi S.p.A.** It is also prohibited to store the information on any type of support (magnetic, magnetic-optical, microfilm, photocopies, ecc.).

1.7 Revisions

Subsequent revisions of this manual will be issued following alterations or functional replacement in the machine.



1.8 Retaining manual

Compulsory conservation

Retain this manual and all attached publications in an easily accessible place, near the machine and inform all users (operators and maintenance personnel) of its location.

In every situation operators and maintenance technicians must be able to quickly access the manuals and attachments for easy reference.

OWARNING:

The manual is an integral part of the machine for safety purposes.

Therefore this manual:

- must be kept in good condition (in every part);
- must be left with the machine until decommissioning (even in case of moves, sale, hire, etc.);
- must be updated and any alteration must be indicated.

1.9 Aspects to be arranged by the customer

The customer must prepare, at his expense, the installation site and provide all the electrical and pneumatic supplies required for operating the machine as detailed below:

- Prepare premises.
- Provide power supply up to machine inlet in accordance with current regulations.
- Provide auxiliary services required by the machine (e.g. air mains).
- Any safety devices upstream and downstream of the power supply lines (such as switches, leakage breaker, earthing system, etc.) as may be required by current regulations.
- Adequate hoisting means for handling the machine

All the above aspects, even when not indicated, must comply with the regulations in force in the country where the machine is installed.

1.10 Instructions for requesting technical support

Requests for assistance from the Technical Support Department should be sent by fax to the following address: **GEA Niro Soavi S.p.A.** Via Da Erba Edoari, 29/A - 43100 - PARMA (Italy) – Phone no. +39 0521 965411,Fax +39 0521 242819, e-mail: <u>niro-soavi@niro-soavi.it</u>, http://www.niro-soavi.it, indicating:

- machine type, serial number, year of installation
- reported defects
- exact address of factory where the machine is installed



1.11 Instructions for ordering spare parts

All requests for spare parts should be sent by fax to the following address:

GEA Niro Soavi S.p.A. Via Da Erba Edoari, 29/A - 43100 - PARMA (Italy) – Phone no. +39 0521 965411,Fax +39 0521 242819, e-mail: <u>niro-soavi@niro-soavi.it</u>, http://www.niro-soavi.it

For quick, reliable identification of spare parts please include the following information:

- machine type and serial number
- description of part
- components code
- quantity required

If you are sending an executive order for spare parts, you should also indicate the required delivery date, the address for shipment and address for invoicing and any special shipping instructions. Please include name, telephone number and fax number of person normally in charge of all aspects relating to

After receiving the order, **GEA Niro Soavi S.p.A.** will send an order confirmation with an indication of prices, final delivery date and sales conditions.

spare parts.

We wish to point out that the Customer is required to purchase original spare parts. Removal and fitting of parts must be performed by qualified technicians.

The use of non-original spare parts and incorrect fitting will relieve the manufacture of all responsibility.



Particular care should be taken with the replacement of safety components where it is important to match the safety class of the original part and any calibration requirements.



1.12 Characteristics of operators and language used

To understand the instructions in this operation manual (text and illustrations) machine operators must have (or acquire, through adequate training) at least the following characteristics:

- Sufficient general and technical knowledge to allow them to reand and understand the parts of this operation manual that concern them and to correctly interpret drawings and diagrams.
- Ability to understand and interpret symbols, pictograms and video messages.
- Familiarity with basic safety, hygienic and technological rules.

THE SAFETY MANAGER in the customer's factory must:

- verify that operators actually have sufficient knowledge to read and fully understand the manual;
- provide adequate practical training and test the operators to ensure that they are able to correctly and safely operate the machine, both under normal conditions and in emergency situations.



Operators must not perform any of the procedures reserved to maintenance staff or qualified technicians.

The manufacturer shall not be liable for damage resulting from the failure to comply with this requirement.



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2.1 General description

The **GEA Niro Soavi S.p.A.** homogenizer consists of a positive-displacement piston pump, with automatic suction and delivery spring-loaded valves, and a homogenizing section connected to it where the product undergoes high-pressure micronization to reduce the size of the particles suspended in the fluid and achieve homogeneous dimensional distribution.

This process can be applied to a great variety of products, with different viscosity, making it possible to obtain stable suspensions through micronization and particle dispersion, depending on the pressure applied.

As regards specific machine configuration, model, technical data, accessories and optional features, please refer to the TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual.

The machine should not be used for purposes other than those indicated in chapter 3.1 of this manual. The manufacturer shall not be liable for damage or injury caused by improper machine use.

2.1.1 Operating principle

The operating principle of the Machine is shown in the diagram below.



FIG. 2- 1



2.2 Main machine components

The main components of the machine are shown in the figures below, for "**Homogenizer**" type machine (standard and optional versions)



COMPONENTS OF HOMOGENIZER TYPE MACHINE (STANDARD VERSION/ GREEN – OPTIONAL VERSION/RED) FIG. 2- 2

NOTE: The asterisk (*) in the figure indicates some components in the standard and optional versions that are not shown in the drawing



List of machine components shown in Figure 2.2 (Homogenizer type)

STANDARD LAYOUT

	Assembly	HOMOGENIZER		
1)	Compression head	std		
2)	Homogenizing assembly 1 st Stage	std		
3)	Head Pressure gauge 1 st Stage	std		
4)	Head safety valve	std		
5)	Manifold assembly	std		
6)	Water system	std		
7)	Pneumatic system	std		
8)	Transmission body	std		
9)	Motordrive	std		
10)	Casing	std		
11)	Control panel	std		
OPTIONS				
12)	Electrical system on machine	opt		
13)	Homogenizer assembly 2nd stage	opt		
14)	Suction pressure gauge	opt		
15)	Suction pulsation damper	opt		
16)	Delivery pulsation damper	opt		
17)	Head transmitter	Opt		
18)	Tri-clamp connectors	Opt		
19)	Lubrication water circuit on-off solenoid	Opt		
20)	Pneumatic circuit air intake on/off solenoid	Opt		



2.2.1 Monoblock compression head

The Head (1) is the main part of the machine, where the product is pumped at high pressure, i.e. first sucked up and then forced out by the pistons, which are driven by the crank gear system, with connection rods and crankshaft.

The product enters the compression chamber of the Head, pushed by a special external pump, initially at low pressure around 5 / 6 Bar; according to the operating pressure for which the machine is designed, pressure is gradually increased until it reaches 250 bar. In the first processing phase, the product enters the compression chamber through the opening suction valves (2) located inside the head, and then the pressure generated by the action of the piston (6), pushes out the product so the suction valves close while the delivery valves (3) open to let the product out towards the Homogenizer assembly.

The head is also equipped with pressure gauge whose function is to measure head pressure.





- 1) Full forged block cross section
- 2) Suction pump valve assembly
- 3) Delivery pump valve assembly
- 4) Plunger gasket
- 5) Removable bottom and top flanges
- 6) Plungers



2.2.2 Homogenizer assembly

The Homogenizer assembly (1) has the function of homogenizing the product, i.e. reducing the size of particles with the high pressure applied by a special valve.

The homogenizing valve is the central element of the process. Thanks to this adjustable high-pressure valve, the product is transformed by a combination of the following effects:

- turbulence
- local cavitation
- shear stress
- high velocity

This ensures uniform particle size distribution after the micronization obtained thanks to the high pressure in constantly dynamic conditions.

To create the pressure, it is necessary to apply a force "F" in order to partially close the passage of the liquid flow through the homogenizing valve. The valve is never completely closed, a small gap is left where the flow goes through: under the same flow conditions, the higher the pressure the smaller the gap will be.

NOTE : the type of valve installed on the machine described in this manual, is indicated in detail in the technical data sheet enclosed in chapter 11.



HOMOGENIZING UNITS FIG. 2- 4









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2.2.3 Pressure gauge



The pressure gauge installed on the machine is a very important component because it measures the operating pressure of the machine and thus makes it possible to monitor its efficiency.

A faulty pressure gauge means the machine cannot be operated at the required pressure, so we recommend you keep in store a spare pressure gauge in case of need.

The type of pressure gauge installed can vary depending on the machine model or optional configuration.

The basic pressure gauge is analogue with Bourdon spring, with sanitary-design membrane and connection with specific design and dimensions for **GEA Niro Soavi S.p.A.**; it is also equipped with a separator whose function is to filter the normal pulsations caused by the pistons to enable stable reading of the operating pressure.

The pressure gauge must always be kept together with the separator.

Other types of pressure gauges are available as an alternative:

 analogue pressure gauge with signal transmitter: equipped with a 4÷20 mA output for remote transmission of pressure signal





HEAD PRESSURE GAUGE IST STAGE FIG. 2- 5



2.2.4 Compression head safety valve

The safety valve (1) is installed on the compression head to protect machine and operators from accidental overpressure that could cause hazard situations.



SAFETY VALVE FIG. 2- 6



2.2.5 Manifold assemblies

By Manifold assemblies we mean the set of pipes and flanges designed to received the product on the infeed side (1) and send it through the outfeed flange (2) to the production line.



- 1) Suction flange
- 2) Outfeed flange



2.2.6 Water system for sanitary machine

The function of the water system is to lubricate the pistons of the Compression head. The water is conveyed to the rear of the Head and sprayed on the pistons, to keep their surface wet and cool it down, to prevent damage to the gaskets of the piston inside the Head.



FIG. 2-8



2.2.7 Pneumatic system

The function of the Pneumatic system is to pneumatically control the homogenizing valve of the machine, Ist STAGE and IInd STAGE (if present) by adjusting air pressure.

The machines equipped with pneumatic control of the homogenizing assembly will feature an oil pulsation damper.

The strength needed to close the homogenizing valve and reach operating pressure is applied by a pneumatic cylinder with compressed air in the upper chamber.

The lower part of the pneumatic cylinder is connected to the pressurized oil damper circuit.

The actuator does not require periodic maintenance, but it is a good rule to protect it from excessive temperatures (that could damage the gaskets) and from corrosive fluids, as it is made of aluminium and not of stainless materials.

In case of actuator failure we recommend replacing it immediately.

The figure below shows a basic layout with one stage and local manual regulation on the machine's control panel.

The layout of the system actually installed on the machine is enclosed in chapter 11 of this manual



PNEUMATIC DIAGRAM FIG. 2- 9

The following parts, shown in figure 2-9, are included:



- an air treatment and shut-off assembly (4) with pressure gauge (5);
- a manual control valve (6) to send pressure to the actuator;
- a manual pressure regulator (7);
- one-way chokes (8) to achieve sensitive and stable operation of the system and control of homogenizing pressure increase speed;
- a tank containing air and oil.



Dampening of the vibrations induced on the homogenizing valve, due to the normal pulsations caused by the reciprocating motion of pumping pistons, is ensured by an oil/air pressure accumulator connected to the lower chamber of the homogenizing unit's actuator

The accumulator is pre-charged with air at 0.5 bar.

The pre-charge pressure can be checked on the gauge and the quick connector can be used to bring pressure to the correct value.

Frequent checking of the dampening system will prevent the problem of vibration and resonance which, in addition to producing a high noise level, will cause damage to the machine and affect homogenizing efficiency



U T

ONE 7TS – Description of the machine and technical data



Pneumatic system with local manual regulation

The pneumatic system with local manual regulation enables adjustment of homogenizing pressure from the front control panel of the machine, by means of two pneumatic regulators (1) and (2) and two pneumatic switches (3) and (4). These components do not need maintenance, and should be replaced in case of malfunction.









NOTE: The image gives an example of a standard panel, the panel layout can change depending on the components included.



2.2.8 Transmission body

The Transmission body the part of the machine that encloses the crankshaft (1), connecting rods, crank gear, and its function is to transfrom the rotaty motion of the crankshaft in the reciprocal motion of the pistons.

The following drawing shows a generic system.

The type of construction, the high quality materials used and accurate assembly by highly specialized personnel guarantee excellent reliability and durability.

Correct lubrication is a fundamental requirement for durability of the transmission body and its components, so it is absolutely necessary to observe the replacement intervals indicated, as well as the level and type of lubricant used.

Under normal conditions, no maintenance is required on the crank gear. In case of abnormal noise level or irregular machine operation, please contact the Technical Support Department of **GEA Niro Soavi S.p.A.** for technical assistance.



TRANSMISSION BODY FIG. 2- 11



2.2.9 Motordrive

This part of the machine includes the main electric motor (1) the pulleys (2) and drive belts (3) that enable the conversion from motor speed to crankshaft speed.



MOTORDRIVE FIG. 2-12



2.2.10 Casing

The Casing consists in the frame of the machine and the panels (1) protecting internal parts; it is fitted with handles (2) and its function is to contain all the transmission part and the various systems serving the main assemblies, as shown in the figure below.

On the bottom there are 4 adjustable feet (3) that support the casing.





2.2.11 Operator control panel

The front part of the machine has a control panel (1), which can be used to start the machine in local/manual mode, or to adjust the homogenizing pressure value, by means of the pneumatic control devices. (For further details about its operation and use, see chapter 6 in this manual).



OPERATOR CONTROL PANEL FIG. 2- 14



2.2.12 Electrical system

The standard version of the machine is supplied without the electrical panel, which is designed and constructed on the basis of the machine's specifications as an optional system; in any case on the rear side of the machine there is a terminal box that encloses all the connections of the electrical equipment installed on the machine, except for the motors, and a local control panel **(2)** (fig. 2-15).

If the panel is supplied, it will be contained inside the stainless steel electrical box, (1) in figure 2-15, located on the rear of the machine.

The room where the machine is installed should be as clean and dry as possible, ventilated, away from steam, suspended dusts, corrosive fumes and in any case its characteristics in terms of protection from external agents must suit the actual place of installation.

It is also necessary to keep the machine away from heat sources, to prevent local overheating and enable adequate cooling of electrical equipment.

As regards type, overall dimensions, weight and installation requirements of the panel, if supplied by **GEA Niro Soavi S.p.A.**, you can refer to the TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual.

The size of the power supply line to the panel must be based on the length, laying system, room temperature, nature of the load, and always in compliance with the regulations in force in the country of installation.

Unless otherwise agreed in writing with **GEA Niro Soavi S.p.A.** the user shall be responsible for determining size of power supply line and grounding wire up to the terminal block of the panel, as well as for choosing the devices for protection against shortcircuit and contact voltage.

If the electrical panel is supplied by **GEA Niro Soavi S.p.A.** we will provide a list of cables whose size is based on a length of 50 meters, laying in enclosed duct system with three-pole cables and 40 °C room temperature.

For power supply characteristics and connection diagrams, please refer to the electrical specification and WIRING DIAGRAMS enclosed in chapter 11 of this manual.





ELECTRICAL SYSTEM FIG. 2- 15






2.3 Technical specifications of the machine

The data sheets enclosed in chapter 11 of this manual list the technical data of the machine.



2.4 Regulations, certifications, limits of use, ergonomics, ecology

2.4.1 Applicable technical reguations

EC regulations

Reference	Title
2006/42/EC	Machinery Directive
2006/95/EC	Low Voltage Directive
2004/108/EC	Electromagnetic Compatibility Directive

Regulations and plans for harmonized regulations, national technical regulations

Reference	Title
EN 12100	Safety of machinery – Basic concepts; general design principles
EN 60204-1	Safety of machinery – Electrical equipment of machines
EN 13849-1	Safety of machinery – Safety related parts of control systems, General principles for design



2.5 Environmental conditions

The machine does not require special environmental conditions for operation.

The machine should be installed in a fairly large, illuminated, ventilated, industrial building with a strong, level floor designed able to support the concentrated weight of the machine.

Temperature:	from + 5° to + 40°C.
Relative humidity:	30% - Max. 90% with no condensate
Max Altitude	1000 m above sea level

NOTE: Unless otherwise indicated in the technical data sheet.

2.6 Atmosphere with risk of explosion and/or fire



The machine is not designed for use in explosive atmospheres. It is therefore prohibited to use the machine in explosive or partially explosive atmospheres.

2.7 Lighting

The premises must have sufficient natural lighting and be equipped with devices to provide adequate artificial lighting for the safety and health of workers.

Lighting in the room must comply with the laws in force in the country where the machine is installed and must be uniform and ensure good visibility in every part of the machine to prevent hazardous glare and enable operators to clearly read the calibration and control panels and to locate the emergency push-button.

2.8 Vibrations

When the machine is used in accordance with the indications provided in this manual, vibrations will not cause hazardous situations.

Should excessive vibrations develop, the operator must immediately stop the machine and report the event to GEA Niro Soavi S.p.A.

2.9 Noise

The equivalent continuous A-weighted sound pressure level in the position occupied by the operator (at a distance of 1 m and height of 1.69 m), measured during the final testing of the machine, was above **70db**.



2.10 Residues and environmental contamination

Oil residues can be contained in the water discharged by the machine, and these residues must be disposed of in compliance with current regulations.

2.11 Dismantling and disposal of materials

For the disposal of materials, you should comply with the requirements laid down by the laws and authorities in the country where the machine is installed.

The machine must be dismantled by specialized personnel. Before starting, leave a tidy, clear area around the machine so that people can move freely without creating additional environment-related hazards.

- Drain out lubricant and hydraulic oils for separate disposal;
- dismantle the electrical system (components, cables and sheathing) and all the plastic parts for separate disposal.

The machine is constructed with varying amounts of the following materials:

- stainless steel;
- construction steel and steel alloys;
- alluminium;

We recommend disposing of these materials in accordance with the regulations in force in the country at the time of disposal.

During dismantling operations you must strictly comply with safety-related precautions.



2.12 Disposal

Disposal will require different procedures depending on the type of material to be disposed of. The following is a list of the materials used for the construction of the various parts of the machine so that the correct disposal procedure may be selected in compliance with the regulations in force in the country where machine is installed.

1. The machine is made with varying amount of the following materials:

- Aluminium Parts.
- Stainless steel Parts and machine frame.
- Rubber and plastic materials for components.

2. Other construction materials in smaller quantities:

- Hardened materials Pinions, shafts.
- Steel Nuts, bolts.
- Alloys.
- Cast iron
- Copper (electrical cables).
- **3. The machine contains lubrication oil:** drain oil out for separate disposal

4 Electrical components:

dismantle the electrical system (components, cables and sheathing) and all the plastic parts for separate disposal.

5 Plastic components:

All plastic parts must be disposed of separately.

All these materials should be disposed of in accordance with the regulations in force in the country where disposal is taking place.

For instructions and procedures please contact the competent authority.



ONE 7TS – Safety and accident prevention

CHAPTER 3

Safety and accident prevention

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3.1 Applications

The GEA Niro Soavi S.p.A. homogenizer consists of a positive-displacement piston pump, equipped with automatic suction and delivery valves, and a connected homogenizing section where the products undergoes high-pressure micronization with consequent size reduction of the particles suspended in the fluid and uniform size distribution.

This process can be applied to a large variety of products, with different viscous levels, producing suspensions that are more stable through micronization and particle dispersion, depending on the pressure applied.

As regards the specific machine layout, model, technical data, accessories and optional features, please refer to the Technical Specification enclosed in chapter 11 of this manual.

3.2 Intended use

WARNING:

Any use other than that for which the machine was designed and described in this manual shall be considered improper and shall relieve GEA Niro Soavi S.p.A. of all responsibility.

A ATTENTION:

- The machine is not designed for use in explosive environments.



3.3 Work zones, control zones, danger zones

To enable correct comprehension of the topics discussed in this paragraph, the following definitions are provided from Machine Directive 98/37 CEE :

- "Work areas"

means the areas where operators can stand during startup and normal operations.

From these areas they can quickly intervene in case of need or emergency, always in accordance with the limits of their duties and with the specified procedures.

The work areas are located around the system in the areas that may be accessed during the operation phase.

"Control zones"

are the areas where the operators can perform system control and regulation operations by acting on the special control panels.

- "Danger zones"

'danger zone` means any zone within and/or around machinery in which an exposed person is subject to a risk to his health or safety

- "Exposed person"

'exposed person` means any person wholly or partially in a danger zone

- "Operator"

means the person or persons given the task of installing, operating, adjusting, maintaining, cleaning, repairing or transporting machinery.

Machine control and operation under normal work conditions must take place strictly in the area designed for operation machine.

Control zones, work zones and danger zones are indicated in the figure in the next page.



ONE 7TS – Safety and accident prevention



CONTROL WORK ZONES FIG. 3- 1

A) CONTROL AND WORK ZONE



The following points give important information to put the above indications into practice.

ATTENTION:

Before starting the work process, the operator must be thoroughly familiar with:

- the position, function and use of all electric and pneumatic controls;
- the position, function and use of all safety features;
- the characteristics of the machine;
- the content of this manual and its organization.

The operator must also:

- be adequately trained on site by technicians sent by the manufacturer or from an authorized technical support centre;
- have had practical experience of using the machine under the supervision of Niro Soavi technicians.

NOTE for the operator

The operator is required to instruct assistants who perform some work during the productive cycle as to their precise duties as well as to the regulations requiring them to wear suitable clothes as shown in the following pages.



CLOTHING

The operators in charge of operation and maintenance must wear work clothing (with tight fitting sleeves), personal protection equipment (gloves, glasses) in compliance with current laws and safety regulations.

The figures below show the personal protection gear that should be worn by maintenance personnel who need to access danger zones.



ONE 7TS – Safety and accident prevention



CAL-015

WEAR SAFETY SHOES FIG. 3 - 2



USE PROTECTIVE GLOVES

Fig. 3 - 3 **ATTENTION:** Adequate protective gloves must be worn in high temperature zones, such as the compression head





CAM/008

OVERALLS MUST BE IN PERFECT CONDITION FIG. 3 - 4



NO LARGE OBJECTS MUST BE KEPT IN THE POCKETS FIG. 3 - 5



ONE 7TS – Safety and accident prevention



JEWELRY AND WATCHES SHOULD NOT BE WORN FIG. 3 - 6

The work area MUST NEVER be cluttered with tools or other objects that could be in the way. Nothing must hinder the movement of operators.

More importantly, in case of emergency, personnel must be able to freely and quickly access the line. It is the duty of operators to ensure that this requirements is complied with and report instances of non compliance to the supervisors.



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PROTECTIVE MUFFLERS AND/OR EAR PLUGS MUST BE WORN FIG. 3 - 7



ONE 7TS – Safety and accident prevention





NO ACCESS BY UNAUTHORIZED PERSONNEL IN WORK AREA FIG. 3 - 8

Unauthorized personnel are not allowed to access the work area or to stand in work areas during machine operation.

Maintenance operators can operate around and inside the machine only after it has been set to "maintenance mode".

The set the line to maintenance mode follow the detailed instructions at the beginning of chapter 7 "Maintenance".



3.4 Risks, hazards and residual risks in the environment

3.4.1 General safety

Information and training requirements

This manual does not describe general safety aspects which should already be in place in the factory in compliance with workplace safety regulations.

It is however useful to recall some of the main points to ensure they are taken into consideration in the factory safety plan.

"Protection from risk starts by informing and training workers".

Informing workers

The Employer shall ensure that each worker receives adequate information about :

- safety and health risks connected with the activities of the company in general;
- the protection and prevention measures implemented;
- the specific risks to which the worker is exposed in relation with the duties performed, safety regulations and related company rules;
- procedures regarding first aid, fire prevention and evacuation.

Training workers

The employer shall ensure that operators and maintenance technicians receive adequate training in safety and health-related issues with particular reference to their specific place of work and to their duties.

3.4.2 Residual risks and hazards of the machine

The residual risks in the machine are:

- noise level (personal protection devices must be worn, e.g.: ear plugs, gloves)
- risk of burning from contact with hot parts of machine (protective gloves must be worn) in high temperature zones such as compression head.



3.5 Safety features

The machine is equipped with safety devices to avoid reaching critical conditions that would result in the risk of sudden failure and danger for users.

The machine features intrinsic safety characteristics thanks to the careful design with sizing well within safe margins, to take into account the high pressure levels that can be reached in case of incorrect operation by users or as a result of failures in the line where the machine is included.

An overpressure valve in the compression head, electric protections on the main motor, the emergency push-button are the main safety features of the machine and they are described below.

If the machine is equipped with an electrical panel that can be switched off, the padlockable switch is located on the fron door.

If the machine is supplied without an electrical panel, the user is required to provide a padalockable safety switch on the power supply line.

3.5.1 Overpressure valve

The pressure relief valve (1) has been designed and constructed by GEA Niro Soavi S.p.A. to protect the machine from overpressure that may be created inside the compression head with the pumping action of the machine.

A ATTENTION:

The safety valve is used to protect the machine; only an in-line valve will protect pipes downstream of the machine.



The valve protects only the high pressure zones on which it is installed.



It offers the following features:

- reduced maintenance;
- automatic closure in case of overpressure discharge, to enable immediate restarting of production;
- enables precise calibration and perfect repeatability.
- designed in conformity with 3A regulation, suitable for C.I.P. (Cleaning in Place)



POSITION OF OVERPRESSURE VALVE FIG. 3 - 9



Operation

The valve consists of a ball which is kept in position by a spring that lets it open when pressure exceeds the value entered during the final testing phase.

This preload must not be altered to avoid changing the valve opening value. Failure to comply with this requirement affects the safety conditions and shall immediately invalidate the warranty; for this reason a seal has been placed on the spring preload regulation nut.

If the preset pressure value is exceeded the valve opens automatically and discharges the product from the outlet pipe; the valve will close once the pressure is back within the required value, so the pressure regulator must be adjusted to reduce the pressure value in the compression head until the valve closes, or in the case of piston pumps the speed must be reduced.

Once the overpressure valve is closed, you can increase the homogenizing pressure back to the required working level, unless the event that cause the valve to open has caused damage to it and immediate stop is required.

You should ALWAYS point the discharge pipe down, to avoid hazard for operators; the customer is required to place a funnel for collecting outfed product and convey it to a drain

A ATTENTION:

Ensure that the discharged product is disposed of in compliance with current regulations in force in the country where the machine is installed.

Repeated triggering of the overpressure valve leads to damage of the seal with consequent reduction of the opening value entered in the calibration phase. It is therefore important to periodically replace the seat and ball to restore the original operating conditions.

Washing

Washing of the part in contact with the product will normally take place during the machine washing procedure (C.I.P.).

A ATTENTION:

Every time the value is triggered because the preset pressure value is exceeded, you MUST ALWAYS remove the value from its position and wash it manually.

Do not disassemble the valve body nor remove the plastic cover. It is prohibited to alter the setting of the safety valve without prior written authorization from Niro Soavi as this will affect the safety of machine, components and operators; failure to observe this instruction will invalidate the guarantee.



3.5.2 Protections on main motor

The machine is equipped with electrical protections to suit the power of the motor, the type of starting and operating conditions; they use magnetic circuit breakers, fast-acting fuses or automatic switches against shortcircuits, automatic switches or inverter for protection against overheating.

3.5.3 Emergency push-button

The emergency stop push-button (1) is located on the front panel of the machine, highlighted with the specific colours required by current regulations.

When pressed, this button stops the machine instantly in case of hazardous situations such as: operating failures, unusual noise level, possibility of breakage.



EMERGENCY PUSH-BUTTON FIG. 3 - 10



In case of danger the master switch (2) located on the electrical panel can also be used as an emergency stopping device, as shown in the picture below.



MASTER SWITCH FIG. 3 - 11

ATTENTION:

When positioning the machine and connecting it to the product line, adequate space must be allowed to enable to enable operators to reach the emergency push-button promptly without any obstacles.



3.5.4 Machine casing

The machine is completed by an outer casing (1) made of satin-finish stainless steel sheet for:

- protection of internal components of the machine from dirt, water or product splashes;
- external cleanliness;
- protecting operators from moving parts, live parts or high-temperature parts that could put the safety of staff at risk, in conformity with CE regulations and with the safety standards in force in the country where the machine is installed.

During machine operation the casing or covers must ALWAYS be completely closed, to avoid the risk of personal injury; it is therefore prohibited to open the above protections while the machine is switched on.

The panels can be removed for maintenance or installation purposes. The side panels have handles (2) and screws to access the machines during maintenance phases.

Ensure that ALL the closures have been locked before starting the machine, to prevent accidents; use only the handles provided to handle the panels. Depending on the size of the panels, two people may be needed to remove or install the panels.

Before removing the protection panels the persons in charge of installation and maintenance should disconnect the power mains by means of the master switch which must be locked with a padlock.





CASING FIG. 3 - 13



3.6 Safety signs

A set of warning signs have been placed on the machine to attract the attention of operators and exposed persons to hazards.

WARNING:

The warning signs affixed on the machine play an important role with respect to safety; operators and specialized maintenance technicians are required to comply with the instructions given by these signs.

The safety signs are applied on the machine as indicated in the figure below.

A ATTENTION:

It is forbidden to remove the warning signs which play an important safety-related role. Failure to comply with this rule shall invalidate the guarantee and transfer all responsibility on the buyer. The use is required to restore the plates if they have been removed accidentally or if they have moved from their position.



POSI5TION OF SAFETY SIGNS FIG. 3 - 14





1	PROHIBITION SIGN No access for unauthorized personnel
24	DANGER SIGN Live parts
3	OBLIGATION SIGN Protective mufflers must be worn
•	DANGER SIGN Danger of burning due to high temperature of compression head



CHAPTER 4

Installation

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4.1 Transport

Depending on the method of transport, **GEA Niro Soavi S.p.A**. will provide packing, as agreed with the buyer, to ensure optimal protection of the machine during transport.

WARNING:

Packing, transport and storage.

The operations of packing, lifting, handling, transporting and unpacking the machine and its components must be performed exclusively by personnel experienced in this type of procedures (crane operators, forklift operators, etc.) assisted by personnel who are familiar with the machine.

A ATTENTION:

During the above operations personnel must wear personal protection gear: gloves, safety shoes, overalls.

ATTENTION:

Personnel must follow these general rules:

- keep clear of loads before lifting and lowering;
- do not stand under suspended loads;
- do not allow access to unauthorized persons

If the load needs to be guided during hoisting, use suitable tools to maintain a safe distance from the suspended machine.

ATTENTION:

Failure to comply with these precautions may lead to serious damage and personal injury.

Transport must also be performed by qualified personnel who will be given precise instructions regarding the storage of the machine on the means of transport.

Once on the vehicle, the machine must be fastened with straps or other suitable means to prevent it from tilting over.

The machine can be shipped in one of these ways, depending on the destination:



4.1.1 Transport on land for medium and long distances

A ATTENTION:

Make these instructions available to all personnel involved in the transport and installation of the machine.

The machine is normally shipped to the customer in a protective wood crate (1) wrapped with a protective plastic film, unless otherwise specified in the order confirmation.

The packing crate makes it possible to move the machine using a forklift truck, crane or bridge crane, by placing steel ropes under the crates in the positions indicated by the red arrows (2) and marked on the crate; the black cross (3) indicates the centre of gravity of the crate/machine.



PACKING CRATE FIG. 4-1



If the machine is shipped without packing, a forklift truck (3) or pallet truck, with the head positioned towards the operator; the forks must be in the position indicated by the pictographs (4) and their length but be sufficient to support the entire base of the frame to prevent damage to the structure of the machine or to the panels.

The side panels can be removed during transport to ensure they are not damaged.



ONE-018

MOVING MACHINE WITH FORKLIFT TRUCK FIG. 4- 2



All movements must be performed very slowly by authorized personnel to prevent sudden loss of balance which could damage the machine or create situations of hazard for personnel; personnel must wear personal protection gear and comply with safety regulations.



Before you start moving the machine, make sure there are no obstacles on the way and that the area of installation has been cleared.

Use only tested hosting devices designed to withstand the weight of the machine. The weight is indicated in the installation drawing enclosed in chapter 11 of this manual.

ATTENTION:

The floor where the machine is installed must be designed to support at least 150% the machine weight.

The weight is indicated in the installation drawing enclosed in chapter 11 of this manual.



4.2 Reception and inspection

When you receive the machine you should check:

- that the Packing List actually matches the contents of the crate;
- that the package is intact, so that any damage may be identified;





PACKING LIST

FIG. 4-3



4.3 Storage

4.3.1 Storage before installation

While awaiting installation, the machine and associated equipment must be stored in a closed, clean environment to prevent deterioration and preserve full efficiency.



N-017

FIG. 4-4

If you have no option and you have to store the machine outdoors, use the necessary measures to prevent dust, humidity, rain from coming in direct contact with the machine, using a waterproof cover.

Take special care with electrical panels and electronic equipment which are very sensitive to humidity and low temperature.

If separate, they should be stored indoors or packed with special humidity absorbers.



4.3.2 Storage for periods exceeding 6 months

If the machine is to be stored for more than 6 months before installation it is important to store it indoors, sheltered from the weather, dust or corrosive fumes, according to the above indications, also with respect to electrical components.

In case of storage and inactivity for more than 6 months, contact our customer support department to arrange for inspection, resetting and extraordinary maintenance procedures to be carried out before the machine is started up.



FIG. 4-5



4.4 Preparing the installation area

The customer is responsible for preparing the premises in accordance with the requirements set forth in European Directives regulating workplace safety.

The premises must:

- have emergency exits;
- be easy to clean to ensure adequate hygienic conditions;
- properly ventilated (good air circulation);
- have good natural and artificial lighting for the safety, health and wellbeing of workers, pursuant to regulation EN 60204-1
- grounding system in conformity with current regulations.



FIG. 4-6

During the installation and disposal operations, the customer must provide the technical means and personal protection gear to guarantee the safety of people, goods and premises.



The user must ensure that the premises where the machine will be installed comply with safety requirements.

Adequate ventilation must be provided.

Installation must take place in an area clear of obstacles to enable normal operations (inserting parts, making adjustments on the machine) and safe maintenance procedures and to ensure that access and exits are unobstructed in case of emergency.

ATTENTION:

The area of installation must be free from flammable materials such as petrol, solvents, etc. or slippery substances such as oil, grease, etc.

The activities described in this paragraph must be performed by qualified personnel.



4.5 Connections and cabling

4.5.1 Connections

The machine is normally connected to the product line with connectors of the type, size and position specified in the drawing enclosed in chapter 11 of this manual.

The machine also features:

- cooling and packing lubrication water connection (max. hardness 8 °dH / 15 °fH; recommended chlorides
 < 25 mg/liter, max. 200 mg/liter);
- water discharge;
- compressed air connection (if required);
- steam connection (if required);
- condensate drain from lubrication circuit (inside machine lubrication circuit);
- cooling air discharge grille.

See type of connections and fluid characteristics for the specific requirements of each machine in the technical data sheet and installation drawing enclosed in chapter 11 of this manual.

As regards connection with utilities it would be important to provide, upstream of the machine (if not already available on the machine) shutoff solenoid valves that open at startup.

In particular the manual valves of the lubrication water circuit must always remain open, adjusted to a quantity of water sufficient for lubrication and condensate production (aseptic version).

You should also bear in mind that an excessive amount of lubrication water could lead to flooding of the water collection sump, with the risk of water flowing inside the transmission part and polluting lubrication oil; for this reason you should regularly drain out any condensate or water that may be present in the lubrication circuit, as described in chapter 7 "MAINTENANCE".

You must comply with the regulations in force in the country where the machine is installed regarding the treatment of drainage and cooling waters.

Cooling water is discharged through grilles located on the side of the machine.

Do not use any device that totally or partially closes the delivery pipe, as this can cause dangerous overpressure.

The machine is designed to withstand outfeed counterpressure not exceeding the value indicated in chapter 2 of this manual, but the positive-displacement pump can create dangerous overpressure due to the resistance of pipes downstream of the machine if the passage is closed.



For safety reasons it is ALWALYS recommended to install a safety valve downstream of the machine to protect the line and users. It is also important for all of the valves downstream of the machine to be of the NORMALLY OPEN type, to prevent closure in case of accidental stopping of the system in case of emergency or power removal. The machine will continue to pump, induced by inertia, even after the main motor has been switched off.



FIG. 4-7


4.5.2 Electrical connection

The size of the power supply line to the panel must be based on the length, laying system, room temperature, nature of the load, and always in compliance with the regulations in force in the country of installation.

Unless otherwise agreed in writing with **GEA Niro Soavi S.p.A.** the user shall be responsible for determining size of power supply line and grounding wire up to the terminal block of the panel, as well as for choosing the devices for protection against shortcircuit and contact voltage.

If the electrical panel is supplied by **GEA Niro Soavi S.p.A.** we will provide a list of cables whose size is based on a length of 50 meters, laying in enclosed duct system with three-pole cables and 40 °C room temperature.

For power supply characteristics and connection diagrams, please refer to the electrical specification and WIRING DIAGRAMS enclosed in chapter 11 of this manual.



The indications provided about the characteristics of the cables refers to standard laying and environmental conditions; the values shown are purely indicative and must ALWAYS be verified by the user depending on actual operating conditions.

The electrical connections between machine and panel and between panel and power mains must be arranged by the customer who will also be responsible for verifying that they have been set up correctly and in conformity with the diagrams provided before the machine is started.

GEA Niro Soavi S.p.A. shall not be liable for damage or personal injury caused by incorrect connection of electrical appliances; the electrical connections must always be inspected by specialized personnel.

In case of doubt about the connections, contact the Technical Support Department of GEA Niro Soavi S.p.A.

WARNING:

Power supply must be adequate to support the maximum absorption of the machine, as indicated in the Wiring Diagrams enclosed in chapter 11 of this manual.

4.5.3 Grounding system (provided by customer)

Grounding of the metal frame must be arranged by the customer.

The precise characteristics are defined by **Regulation CEI 1713/1 and Regulation CEI 44/5**. According to these regulations, safety grounding of all the machine parts and operation grounding of circuits and equipment must be made by connecting the various parts to a single grounding system.

Ensure that the materials used in the grounding system are sufficiently solid or mechanically protected. The main grounding connector must be as short as possible; ensure that grounding conductors are not subjected to mechanical stress and danger of corrosion.





4.6 Installation and assembly

4.6.1 Indications for installation

The following indications enable correct installation and use, to guarantee long life and efficiency for the machine and for its components, and to prevent hazardous situations for the operators.

• a high-pressure positive displacement pump or homogenizer ALWAYS require a minimum feed pressure for correct operation without cavitation effects which can damage the machine. The minimum values indicated in the technical data sheets enclosed in chapter 11 of this manual should be observed strictly; depending on viscosity and process temperature, it is necessary to ensure there is constant and sufficient feed pressure to prevent cavitation and underfeeding of the machine.

For explanations or special requirements you should ALWAYS contact GEA Niro Soavi S.p.A.

- for feeding the machine a pump must be provided by the customer; the pump should be designed for a flow rate 1.2 times the rated output in case of machines with 3 or more pistons, and at least 1.5 times. The output of the pump must be calculated with at least the minimum pressure required for feeding.
- if a positive displacement feed pump (lobe, single screw, etc.), or diaphragm pump is used, you must provide a by-pass pipe regulated with modulating valve on the feed pump and/or a system for changing the feed pump speed, to enable correct feeding of the machine
- if the products treated have very different viscosity values, or you need to use a positive-displacement pump for viscous products and washing water, a pump speed adjustment system regulated by feeding pressure must be used in order to obtain correct machine feeding in any condition, even during production transition phases
- a feed pump must be used for each machine; do not install two or more machines in parallel with a single feed pump to prevent dangerous pulsation interferences
- the feed line between the feed pump and the homogenizer must be direct, possibly without bends, with dimension equal or greater than that of the homogenizer / piston pump, without changes in section, to limit loss of load; the radius of any curves must be as large as possible to prevent loss of load especially on the infeed and noise problems on the outfeed
- it is always a good idea to install a pressure gauge on product infeed into homogenizer to check feed pressure; this pressure gauge can be supplied as an optional by **GEA Niro Soavi S.p.A.** and it can be of a simple type, with minimum level contact or continuous analogue signal for remote control
- if filters need to be installed on the feed line, you must leave a clear area at least 3 times the size of the pipe used; in addition a pressure gauge must be installed after the filter to check the actual feed pressure and prevent clogging up of the filters and the risk of cavitation in the machine. For cleaning we recommend installing parallel filters to be used alternatively.
- every homogenizer features pulsating operation: for this reason, depending on the type of system and output of the machine it may be useful to install a pulsation dampener, both on infeed and outfeed (up to a maximum of 20 bar conterpressure on the line)



- the pulsation dampener on the suction side must be installed as close as possible to machine infeed, while on the delivery side on a horizontal pipe section at a minimum distance of approx. 1 meter from each adjacent bend. For technical details about size and installation contact **GEA Niro Soavi S.p.A.**
- the pulsation dampener must be installed in a vertical position; do not install the dampener with the direction of flow directly entering the dampener, to avoid it filling up with liquid quickly and therefore loosing its effectiveness because there is no air trapped in the top of it
- if the feed pump is connected to a tank, make sure that the suction inlet will not take in air through the formation of vortex, using internal baffles; the suction inlet must always be under head
- it is always recommended to install downstream of the homogenizer a safety valve to protect the system from any instances of overpressure caused by incorrect use of the system downstream of the machine; the safety valve installed on the machine is designed to protect the machine and not the system to which it is connected from dangerous overpressure
- the machine should never be used to empty out the feed tank completely, to avoid sudden lack of product during operation under pressure, but include at least one level sensor to remove pressure (in the case of the homogenizer) and stop the machine before product runs out at infeed
- the product treated must contain no air or gas, to prevent cavitation problems. If the product contains air because it is very viscous or due to previous processing phases, the air must be removed by means of a special equipment
- if the processing temperature is above 90 °C, it is absolutely necessary to increase feed pressure because of the increase in steam tension which can generate cavitation effects.

Feed pressure should therefore be increased by 1 bar for every 5 °C of temperature increase over 90 °C above the minimum feed pressure indicated in the - TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual.

This value must be doubled for products with a viscosity exceeding 500 cP.

For special products and special processing temperatures contact GEA Niro Soavi S.p.A.

The machine is equipped with automatic spring-operated pumping valves, whose load is based on the characteristics of the product. This means that if the machine is stopped or is inactive, the feeding line is open and under pressure, there can be a flow of product through the machine. To be sure that there is no product flowing through the machine when the machine is inactive, the user should procide a valve for closure for the feeding line upstream of the machine.



4.6.2 Positioning

Correct positioning of the machine in the customer's production line will enable optimal operation and easy access for ordinary maintenance procedures.

For this reason, considering its dimensions, it is important to keep a clear area around the machine for maintenance activities, as shown in the figure below.

In particular, sufficient space should be allowed to enable replacement of the main motor using adequate hoisting equipment (bridge crane, or forklift truck).

The front part and head require regular maintenance; you should leave enough space to enable complete removal of the head.

The machine should also be installed away from heat sources which could affect the cooling process, and ensure that no objects are obstructing the flow of air.

Water drainage must be provided to prevent flooding in the area where the machine is installed and prevent water from entering through the ventilation openings.

A ATTENTION:

The floor on which the machine is installed must support at least 150% its weight.

The weight is shown in the installation drawing enclosed in chapter 11 of this manual.







4.6.3 Levelling the machine

To ensure regular machine operation, without excessive vibrations, the machine must be levelled and the suuport feet must rest firmly on the ground.

The support feet are height-adjustable.

To level the machine proceed as follows:

- lift the machine
- adjust height from ground by turning the feet clockwise/anticlockwise, and level the machine using the head surface for reference;
- ensur that the weight of the machine rests on all four feet;
- lock the feet with the nut (1).

If you want to prevent vibrations from cause the machine to move, and press against the pipes, you can fix on the floor some steel rings inside which you can fit the support feet.



FIG. 4-9



4.6.4 Positioning electrical equipment

The standard version of the machine is without an electrical panel, which will be designed and constructed based on the specific characteristics of the machine; in ance case inside the macine there will be a terminal box containing all the connections of the electrical equipment installed on the machine, except for the motors.

If an electrical panel is supplied, and as a general advice, the cabinet containing the electrical control and power equipment, if separate from the machine, must be kept in a room that is as clean and dry as possible, well ventilated, away from steam, suspended dust, corrosive fumes; its characteristics of protection from the weather must match those of the installation area, and its specifications must be considered by the customer before placing the oder.

Ensure there are no heat sources that could cause local overheating and prevent adequate cooling of the electrical equipment.

As regards type, dimensions, weight and installation requirements for the panels supplied by **GEA Niro Soavi S.p.A.**, please refer to the wiring diagrams and technical specifications enclosed in chapter 11 of this manual.

WARNING:

If the electrical panel is supplied by the customer, the customer will be responsible for providing a padlockable disconnection device between the machine and the power mains.



CHAI	PIER 3	
Setti	ng up and first startup	Page
5.1	Description of operations	2



5.1 Description of operations

Before starting up the machine a few checks and inspections must be carried out.

ATTENTION:

Every operation that requires the removal of safety panels should be performed with the MACHINE OFF; disconnect power by means of the master switch (1) and block it with a padlock so that no person may accidentally connect power.



FIG. 5- 2

The machine develops high pressure, so it is important to perform accurate inspections to prevent personal injury or damage to the machine.

The inspections described below refer to the first startup or after periods during which the machine is not used continuously.

- Check the connections with the auxiliary services and the product line with reference to the Technical Data Sheets enclosed in chapter 11 of this manual.
- Check the pipes before and after the machine to ensure they are clean, with no scaling or welding residues which could damage the machine seriously.

A ATTENTION:

Do not use the machine to discharge impurities from pipes upstream and downstream of the machine!



a) Check the belt drive (2). For inspection of alignment and tensioning of belts please refer to chapter 7-MAINTENANCE.



FIG. 5-3

b) Check the level of lubricaiton oil through the sight glass which should be covered up to 3/4, or to the level indicated on the specific visual indicator. This operation should be carried out exclusively when the machine is off, as the level will normally go down when the machine is started because the circuits are filled up. To top up, use only oil of the type indicated in chapter 7 - MAINTENANCE.

A ATTENTION:

For safety during transport, the machine is supplied WITH NO LUBRICATION OIL inside the drive body. Before every operation fill up according to the instructions provided in Chapter 7 "MAINTENANCE", in Data Sheet F "Lubrication system".





FIG. 5-4



c) Ensure that the high pressure flanges, connectors and all the nuts in the compression head (3) have been tightened properly to the values indicated in the Table "Tightening torque values " in chapter 7 of this manual (data sheet 00[C]).



FIG. 5- 5

d) Check tightness of plungers (4) and the presence of seal packings, if they have been removed for storage or machine inactivity of over 3 months.



FIG. 5-6



e) Check rotation of motor (5) to ensure it is correct. Proceed as follows.

ATTENTION:

Check direction of rotation by starting the motor ONLY WITH PULSE MODE.

Perform the operations in compliance with safety regulations, and do not allow anybody to get close to the internal parts of the machine that are moving.

Remove ONLY the panels on the left side of the machine.

ALWAYS fit back the protections on the right side (drive side) before starting the machine.

The direction of rotaiton is indicated by adhesive arrows positioned on the motor and pulleys.



FIG. 5-7

f) Check that all the casing panels (6) are in position and properly fixed.



FIG. 5-8

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ATTENTION:

Failure to comply with this last instruction may cause, in case the machine is started, serious injury to personnel operating near moving or rotating parts.



g) Ensure that the homogenizing pressure control devices located in the panel on the machine (pneumatic switch A and reducer B 1st STAGE and switch C and reducer D 2nd STAGE) are completely loosened or set to OFF.





- h) Check that all the safety devices and guards are efficient.
- i) Ensure that any valves and system parts downstream of the homogenizer are open to avoid generating overpressure in the pipes when the homogenizer is started up.





CHAPTER 6

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6.1 Role of operator in charge

During the work phases of the machine, the operator must:

A) Always operate the machine with the safety devices required. Check:

- correct position of safety devices;
- compliance with individual safety regulations.

B) Verify that the work cycle is performed efficiently, ensuring maximum productivity. Check:

- intergrity and efficiency of main machine parts;
- that optimal work parameters have been applied;
- uniformity of all the material prepared for processing.



6.2 Electrical panel and control push-buttons

The machine can be equipped with an electrical panel supplied by **GEA Niro Soavi S.p.A.** or by the customer.

For information about the actual characteristics of the machine refer to the TECHNICAL DATA SHEET enclosed in chapter 11 of this manual.

If the electrical panel is supplied by **GEA Niro Soavi S.p.A.** the actual panel will be shown in the wiring diagrams, also enclosed in chapter 11.

In both cases, the electrical panel will be equipped with two important devices which the operator uses for safe Startup and Maintenance procedures.

An example of these devices are shown in the figure below.



ELECTRICAL CONTROL PANEL (EXAMPLE) FIG. 6- 1



No.	Description	Function
1 (QF)	Master switch	Enables electrical supply to the machine
2 (HL-L)	Lamp	Signals live panel

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ONE 7TS – Operation and use

6.2.1 Control panel on machine

The control panel is on the front part of the machine.

There is a single panel for the various langauges and it shows the symbols and instruments for machine control (see fig. 6-2), namely:

- Emergency push-button (1) for immediately stopping the machine in case of emergency
- Start (2) and Stop (3) buttons.
- Pneumatic controls for regulation of state 1 and stage 2 homogenizing pressure, (no. (5) in the first case, no. (6) in the second case) including a pneumatic switch for connecting or disconnecting pressure (7) and the associated pneumatic regulator (8) whose function is to increase or decrease pressure.
- Pressure gauges for control of the pressure of air (9) sent to the pneumatic head to reach homogenizing pressure.



CONTROL PANEL FIG. 6- 2





6.3 Startup procedures

6.3.1 Position of operator

To use the machine in safe conditions, the operator must take the position indicated in the figure below during startup and adjustment procedures.

The control panel (1) is on the front part of the machine and is designed to the customer's specifications; the emergency push-button is always included.

A ATTENTION:

The area in front of the machine must be left scrupulously clear to enable immediate action on the emergency push-button and starting/stopping or adjustment devices.

Before proceeding with Startup procedures the following checks must be performed:

- 1. Check that all the protection panels on moving parts are closed
- 2. Check that the emergency mushroom button is released





FIG. 6- 3

pag 6.6





pag 6.7

6.3.2 Starting the machine

ATTENTION:

The lubrication oil indicated in the specifications is suitable for operating temperatures between $+5^{\circ}$ C and $+40^{\circ}$ C: DO NOT START the machine if the room temperature is below $+5^{\circ}$ C, to prevent the risk of breakages in the lubrication system.

Contact the Technical Support Department of **GEA Niro Soavi S.p.A.** who will indicate the type of lubricant suitable for the specific environmental conditions.

Do not start the machine if the room temperature is below +5°C without first checking the integrity of the piston lubrication water system and any water heat exchangers.

Once the pre-start checks have been performed you can start the machine as follows:

1) Open all the shutoff valves for the auxiliary services (water, air, steam) and if needed adjust their flow (adjustments are usually made at the factory during the final testing of the machine)

A ATTENTION:

NEVER start the machine if there is no lubrication water for the plungers, or serious damage may be cause to seal packings and plungers.

An excess of cooling water can cause flooding of the water collection sump, or excessive splashing of water on the guide pistons, and thus cause water to enter in the drive body. You should therefore monitor the flow of water after you have adjusted it to an indicative flow rate of at least 30 l/h per piston. The lubrication circuit should be drained regularly to discharge any water that may have gone into the oil.

2) Keep product feed at the flow rate and pressure values indicated in the TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual.

A ATTENTION:

Feed pressure below the limits indicated in the specification will cause CAVITATION effects in the machine with the typical mechanical noise in the head, causing serious damage to the whole machine. **GEA Niro Soavi S.p.A.** shall not be liable for damage or malfunctions caused by CAVITATION even during the 12-month warranty period.

3) Connect power by means of the master switch in the panel.





- 4) Press the start button. If the electrical panel is supplied by GEA Niro Soavi S.p.A. this operation will will enable the machine to be started according to the correct sequence, depending on the type of machine and of the optional equipment:
 - opening solenoid valves for utilities (optional);
 - starting main motor.

If the electrical panel is supplied by the customer, the correct operating sequence will be provided (See TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual), and this sequence should be observed scrupulously.

6.3.3 Operation and adjustment

For a few minutes after the machine is started do not increase homogenizing pressure and check regular operation and, in particular, the value of feed pressure and its stability within the limits indicated in the TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual.

You can now use the controls to set the homogenizing pressure to the required value.

To find out whether the system includes the second homogenization stage see the TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual.

6.3.3.1 Adjustment of homogenization pressure - 1 stage

This type of adjustment uses a servosystem which by means of a pneumatic cylinder acts on the position of the homogenizing valve to determine homogenization pressure.

On the front panel of the machine (see figure 6-4 below), there is a pneumatic switch (A) and a pressure reducer (B).

The adjustment operations are:

- check that the pressure reducer (B) is completely loosened
- pull the pneumatic switch to the ON position;
- rotate the reducer to obtain the required homogenization pressure; this value can be checked on the pressure gauge located on the head.

A ATTENTION:

Slowly rotate the pressure regulator and check that the homogenization pressure is actually increasing up to the operating value.



Check the increase of air pressure on the pneumatic head on the pressure gauge installed on the control panel; this makes it possible to verify the slow increase of homogenization pressure. It is also possible to use the air pressure gauge as a reference if the pressure gauge on the head is not working correctly.

Once the homogenization pressure has been set to the required value you can block the reducer knob (B) by pressing it.



If the pressure entered is normally used in production, you can connect and disconnect pressure by acting ONLY on the pneumatic selector switch (A), leaving the reducer blocked in the adjusted position.

This procedure is allowed ONLY for machines with operating pressure up to 250 bar, to prevent overstress on the machine and an excessively rapid pressure increase which could cause the safety valve to open.



FIG. 6-4





6.3.3.2 Adjustment of homogenization pressure - 2 stages

Pressure adjustment is performed in the same way as for the one-stage machine. For adjustment procedures, refer to paragraph 6.3.3.1, with particular attention to the warnings.

The pressure to be applied with the second stage corresponds to 1/10 of the maximum homogenization pressure.

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Pressure adjustment must be made FIRST on the 2nd stage, applying the desired value, and THEN on the 1st stage to reach the total pressure required.

Using a different operating sequence involves SERIOUS RISKS because it can inadvertently bring the machine to pressure levels exceeding the values for which the machine is designed.

The adjustment operations are:

- check that the pressure reducer (B, D) is completely loosened
- rotate the reducer knob of the second stage (D), rotate it to obtain the required homogenization pressure; check value with pressure gauge.
- pull the pneumatic switch of the first stage (A) to the ON position;
- rotate the reducer knob of the first stage (B) to obtain the required homogenization pressure; check value with pressure gauge.

The pneumatic adjustment system is designed with a degree of inertia to enable slow, gradual pressure increase.

Adjust the pressure knob slowly checking the actual increase of homogenization pressure up to the work value.

Once the homogenization pressure has been set to the required value you can block the reducer knob (B) by pressing it..

If the pressure entered is normally used in production, you can connect and disconnect pressure by acting ONLY on the pneumatic selector switch (A), leaving the reducer blocked in the adjusted position









FIG. 6- 5

This procedure is allowed ONLY for machines with operating pressure up to 250 bar, to prevent overstress on the machine and an excessively rapid pressure increase which could cause the safety valve to open.

To remove homogenization pressure in a 2-stage system, you need to proceed with reverse sequence with respect to the pressure increase procedure.

Therefore frist remove pressure from stage 1, then remove pressure from stage 2.



6.4 Stopping the machine

To ensure operating safety, the electrical system has been designed with particular care for potential "NORMAL STOPPING" and "EMERGENCY STOPPING" situations.

6.4.1 Normal stopping

The following procedure must be used to stop the machine:

- remove homogenization pressure, by setting the pneumatic switch to the OFF position;
- press the stop button (if present in the machine's control panel) or give a stop signal through the control
 system. For machines with electrical panel supplied by GEA Niro Soavi S.p.A. this operation makes it
 possible to stop any auxiliary electric motors and the main motor according to a correct sequence, indicated in the TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual for customer who design their own panel when it is not supplied by GEA Niro Soavi S.p.A.
- disconnect power by means of the master switch.

6.4.2 Emergency stopping

In case of hazardous situations or serious malfunction, the machine can be stopped immediately by pressing the emergency push-button located on the front panel (see figure below). Then remove pressure according to the procedure described above.

A ATTENTION:

Before restarting the machine, eliminate the cause that determined the emergency stop.

Resetting the emergency push-button to normal condition will not start the machine directly but it enables starting of the machine through the normal procedure.



EMERGENCY STOP FIG. 6- 6



6.5 Washing

Accurate washing ensures the machine is maintened in clean, sanitary or aseptic conditions to prevent deterioration or undesired harmful contamination of the product treated.

In designing the parts that come into contact with the product, great importance was given to ease of cleaning and washing (C.I.P.) avoiding as much as possible the creation of stagnation points.

In any case, we suggest you observe the following precautions:

- washing must be performed IMMEDIATELY after production, without keeping the product in the machine after it has been switched off, and without leaving the machine empty but unrinsed to prevent the formation of a film on internal surfaces;
- depending on the characteristics of the product, washing can be performed with hot water or with acid or basic solutions; types and compositions are specified in the Table on the following pages;
- the final rinse must be thorough in order to remove any trace of chemical solutions;
- in case of solutions obtained from concentrated or powder products, they need to be prepared separately nel case di soluzioni ottenute da prodotti concentrati o in polvere, occorre prepararle separatamente curandone the dissoluzione in modo da evitare the presenza di grumi o particelle solide non disciolte.

Washing operations must be performed with closed cycle (C.I.P.), with the machine on and homogenization pressure equal to zero.

This prevents unnecessary energy waste and avoids damage to the homogenization valve.

For machines with variable or multiple capacity, perform washing at the maximum speed allowed, which should never be more than 20% of the maximum operating capacity (see Section 1 - TECHNICAL SPECIFICATIONS).

Use solutions containing ONLY the products specified below.

Even the smallest trace of CHLORINE and IODINE, together with high temperature and pressure, is very damaging for the materials with which the machine is constructed as it can cause "corrosive stress" that would very shortly lead to a collapse of the structure.

PRODUCT	max concentr.(%)	max temp. (°C)
Caustic soda (NaOH)	3	90
Nitric acid (HNO ₃)	1	70
Phosphoric acid (H ₃ PO ₄)	3	85
Boiling water	-	90
Superheated water /steam	-	150



A ATTENTION:

Ensure that washing water and stagnation waters are disposed of properly in compliance with the regulations in force in the country where the machine is installed.



6.6 Inspections following machine startup

After one full day of work, a general inspection of the machine should be carried out.

- Check for abnormal noise such as metal friction or vibrations.
- Check whether any screws have loosened after the first cycle.



CHAPTER 7

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7-1 General

7.1.1 Definition of STAFF DUTIES.

It is compulsory to assign maintenance procedures according to the following indications

The manufacturer shall not be liable for damages resulting from failure to comply with these indications.

DUTIES of the operator in charge of machine operation (operator)

This operator is authorized only to use the controls and instruments in the panel and control board. The operator is not allowed to perform any other procedure on mechanical and electrical equipment. In particular he is not authorized to:

- · remove mechanical components and access internal parts
- · open electrical panels and access equipment installed inside them
- remove protections from live parts installed on the machine, such as: terminal block covers of shunt boxes, etc. valve covers, local panels, valve covers.

All these operations are to be carried out by maintenance technicians and electricians.

DUTIES OF ELECTRICIAN AND MAINTENANCE TECHNICIAN



The adequately trained and experienced technician is in charge of machine maintenance and of the electrical system. He is responsible for the key needed to access live parts.

The maintenance technician resets safety devices and guards and performs repairs on the machine withing the limits and with the methods indicated by this manual.

The new components replacing faulty ones must have the same technical characteristics and performance level; in the case of safety components they must be certified and belong to the same class as the original.

The regulation of new components must be made using the same values that had been used to adjust the component replaced.

Any alterations to the Machine and complex repair procedures must be previously agreed with the AFTERSALES SUPPORT SERVICE of GEA Niro Soavi S.p.A.

The manufacturer shall not be liable for damage resulting from failure to comply with these indications.



7.2. Instructions for correct maintenance

7.2.1 For good maintenance:

Use only original spare parts and appropriate tools in good condition.

Comply with the service frequencies indicated in the preventive and periodic maintenance; the interval (indicated in time or work cycles) between procedures is meant as the maximum period and should not be exceeded. If needed the interval can be shorter.

Correct preventive maintenance requires constant attention and continuous supervision of the machine. Promptly check the cause of problems such as excessive noise level, overheating, leaking , etc. and find a solution.

In case of doubt contact the manufacturer.

To perform maintenance procedures corrects, refer to the documents attached, and.g.:

1) – Functional diagrams for electrical and auxiliary equipment, with indications of power connections.

2) – List of possible failures and recommended solutions (chapter 8 del manuale).

7.2.2 Maintenance plan

From a construction point of view the procedures regard mechanical, electrical, (fluidic) parts. For practical reasons, the procedures are grouped according to time and complexity criteria. Each procedure or group of procedures can deal with mechanical, electrical, (fluidic) aspects.

Ordinary maintenance can be divided in two categories:

- ordinary scheduled maintenance (or preventive).
- ordinary maintenance according to condition .

Ordinary scheduled maintenance (also referred to as periodic or preventive) includes inspections, checks and procedures, to prevent shutdown and failures, to systematically verify:

- machine lubrication condition
- condition of parts subject to wear.

Ordinary maintenance according to condition regards machine components that are not subject to periodic checks and previously quantifiable wear. They must be checked or replaced depending on their condition.

All procedures must be performed by qualified technicians after setting the machine to maintenance mode, i.and. with MACHINE OFF and the master switch BLOCKED (with padlock) ON OPEN POSITION, for personnel safety.



Access to inside of machine and maintenance operations must be allowed only to personnel who are familiar with the instructions contained in this manual, which must be made available to all operators.



The only operations allowed are the ones described in these INSTRUCTIONS; for any extraordinary operation contact the Technical Support Service of **GEA Niro Soavi S.p.A.**

The following pages show the lists of procedures, divided by category. These are followed by description and illustrations of the procedures with associated precautions.



7.3 Safety, precautions and maintenance mode

7.3.1 General safety precautions

The safety of the machine and of the operator depends also on the maintenance procedures regularly carried out in accordance with the instructions contained in this manual.

Ordinary and straordinary maintenance procedures must be performed only by specialized technicians,



with the qualifications indicated in the introduction of the manual.



- RISK OF ELECTROCUTION by direct contact with the electrical panel and to the supply cable of the machine. It is prohibited to open the panel when the system is switched on;
- AFTER EVERY MAINTENANCE PROCEDURES ENSURE YOU FIT BACK AND RESTART THE PROTECTION SYSTEMS that may have been removed or switched off to perform the operation.



ATTENTION

All maintenance operations must be performed in accordance with the procedures described in 7.3.3 "maintenance mode".


7.3.2 Safety symbols

The symbols below indicate precautions that MUST be observed by maintenance technicians during procedures.

Prohibitions



It is prohibited to lubricate, repair or adjust parts while machine is moving

No access allowed to unauthorized persons.



Do not use naked flames



Do not remove safety devices

Do not use water to put out

fire.



No smoking.

Type of inspection and procedure



Visual inspection.



Lubrication with oil.



Auditive inspection.



Lubrication with grease.



Procedure requires use of tools.

Personal protection gear



Protective helmet del caschetto protettivo.



Protective gloves must be worn.



Protective goggles must be worn.



Safety boots must be worn.



Overall must be worn.



Ear mufflers must be worn.



Protective mask must be worn.



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7.3.3 Maintenance mode

Before performing any maintenance operation disconnect the machine from power and adopt the necessary precautions to prevent the risk of accidental starting and/or electrocution. This conditions is obtained by setting the machine to maintenance mode.

WARNING:

If the electrical cabinet is not supplied by **GEA Niro Soavi S.p.A.**, refer to the manufacturer's instructions to find out about the above procedure.

SETTING MACHINE TO MAINTENANCE MODE

This procedure is performed by the qualified technician **a** follows:

- Set master switch in electrical cabinet to "0" (OPEN), then lock it in this position with the special padlock.
- The padlock key is kept by the maintenance technician in charge throughout the procedure.









- The emergency pushbutton located on the control pushbutton panel, must be pressed, as shown in the figure below



PRESS EMERGENCY PUSHBUTTON FIG. 7- 2

Place sign on machine indicating that maintenance work is being carried out





WARNING At the end of the procedure remove the sign



7.4 Maintenance during run-in phase

The machine has been tested and checkd in the premises of the manufacturer, so it is ready for commissioning.

However the following run-in activities need to be carried out in the customer's premises:

Data sheet no	Frequency of maintenance	Location	Activity
00-[a]	After 50 hours in run-in phase	Machine in general	 Check abnormal noise and vibra- tions
00- [b]			 Check protections and safety de- vices
F [a]	After 500 hours in run-in phase	Lubrication system	 Check oil level and and top up if needed
L [a]	After 200 hours in run-in phase	Motordrive	 - Check belt tightness

7.5 Ordinary scheduled maintenance during operation

7.5.1 General

The tables below describe the periodic maintenance activities required to maintain the machine efficient and safe.

The values indicated are valid for normal machine use; harsh conditions or particularly abrasive/aggressive products can sensibly reduce the lifetime of some parts which will therefore need to be checked more frequently.

In case of abnomal machine operation or abnormal noise level, you should try to identify the components that can be causing the noise and verify that they are correctly mounted and tightened and if worn out replace the part.

WARNING:

The Periodic Maintenance tables below refer to normal operating conditions and are in no way to be considered as a guarantee for minimum lifetime of the components indicated, but are merely an indication of the average lifetime.

Particular conditions such as high temperature, sterilization with steam and frequent washing, incorrect operating procedures, can significantly affect the lifetime of the machine and of its components, and thus also vary the intervals between maintenance procedures on components of the compression head.

Scheduled maintenance procedures are performed with the following intervals:

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Daily inspection (every 8 hours)

Daily machine inspections are needed to detect possible failures. They can be performed by a maintenance technician or delegated to the operator.

Inspection	(every 40 hours)	
Inspection	(every 160 hours)	
Inspection	(every 1500 hours)	(*
Inspection	(every 3000 hours)	(*
Inspection	(every 4500 hours)	(*
Inspection	(every 5000 hours)	(*
Inspection	(every 6000 hours)	(*
Inspection	(every 7500 hours)	(*
Inspection	(everv 9000 hours)	(*
Inspection	(every 10500hours)	(*
Inspection	(every 12000hours)	(*
Inspection	(every 13500hours)	(*
Inspection	(every 15000hours)	(*

(*) These general inspections of mechanical parts must be performed during a "**Scheduled**" machine stop to enable inspection and possible revision, cleaning or replacement of components.

The symbols contained in this manual give the following indications:

- frequency of procedure;
- resources and equipment required;
- estimated time required to perform procedure;

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7.6 Frequency of maintenance procedures

DATA SHEET	Location of procedure	After run-in	Every start-up	After every maintenance procedure	In case of failure or malfunction	40 hours	100 hours	200 hours	500 hours	1500 hours	3000 hours	5000 hours
00	General machine											
00-[a]	Checking noise level and vibra- tions		•									
00-[b]	Checking safety devices and guards		•									
00-[c]	Tightening nuts and stud bolts	•		•				•				
Α	Compression head											
A[a]	Visual inspection for leaks in seals and gaskets		•									
A[b]	Replacing of plunger gaskets				٠							
A[c]	Checking tightness of plunger nuts	•		•				•				
A[d]	Checking wear and replacing of plungers if needed									•		
A[e]	Checking/replacing plunger valves									•		
A[f]	Visual inspection for leaks from head gaskets and packings		•									
A[g]	Checking plungers valves seats and replacing if needed									•		



DATA SHEET	Location of procedure	After run-in	Every start-up	After every maintenance procedure	In case of failure or malfunction	40 hours	100 hours	200 hours	500 hours	1500 hours	3000 hours	5000 hours
В	Homogenizing assembly 1st stage											
B[a]	Checking/replacing Homoge- nizing valves								•			
С	Pressure gauge compres- sion head											
C[a]	Checking condition and effi- ciency									•		



DATA SHEET	Location of procedure	After run-in	Every start-up	After every maintenance procedure	In case of failure or malfunction	40 hours	100 hours	200 hours	500 hours	1500 hours	3000 hours	5000 hours
D	Head safety valve											
D[a]	Checking operation				•							
D[b]	calibration											•
E	Manifold assembly											
E[a]	Checking gaskets									•		
F	Lubrication system											
F[a]	Changing oil	500								•		
F[b]	Checking oil level and top up if needed		•									
G	Water plant											
G[a]	Cleaning/replacing filters									•		
G[b]	Checkin cooling water pipes, checking water flow		•									



DATA SHEET	Location of procedure	After run-in	Every start-up	After every maintenance procedure	In case of failure or malfunction	40 hours	100 hours	200 hours	500 hours	1500 hours	3000 hours	5000 hours
н	Pneumatic plant											
H[a]	Cleaning/replacing filters				•							
I	Transmissioin Body											
l[a]	Checking of components				•							
L	Motordrive											
L[a]	Checking tightness and main- tenance of belts					•					•	
L[b]	Checking tightness of drive elements										•	
L[c]	Checking wear of v-belts and replacing if needed				•						•	
L[d]	Checking alignment of pulleys			•								



DATA SHEET	Location of procedure	After run-in	Every start-up	After every maintenance procedure	In case of failure or malfunction	40 hours	100 hours	200 hours	500 hours	1500 hours	3000 hours	5000 hours
м	Cabinet											
M[a]	Visual inspection											•
N	Electrical system on machine											
N[a]	Checking of Electrical system on machine										•	



When (hours)	Description of maintenance procedures performed	Mach. hours	Operator	Date



7.7 Maintenance data sheets

The data sheets that follow provide instructions for correct and punctual maintenance of the machine.

J and maintenance technicians T The operator will find in these data sheets procedures and suggestions to maintain the machine efficient and productive.

Í 🜒

ATTENTION:

In addition to the description of the maintenance procedures, the maintenance data sheets contain indications about the "SAFETY" precautions that all operators MUST COMPLY WITH.



	DATA SHEET LIST						
DATA SHEET	Location of procedure						
00	General machine						
00-[a]	Checking noise level and vibrations						
00-[b]	Checking safety devices and guards						
00-[c]	Tightening nuts and stud bolts						



DATA SHEET 00[a]:

GENERAL MACHINE Checking noise level and vibrations



RESOURCES AND EQUIPMENT

FREQUENCY

TIME REQUIRED

:OPERATOR/MAINTENANCE

: AT EVERY STARTUP

: 5 MINUTES

DESCRIPTION:

In case of abnormal machine operation or abnormal noise level, you should try to identify the components that can be causing the noise and verify that they are correctly mounted and tightened and if worn out replace the part

If the problem persists despite the procedure, contact the Technical Support Service of **GEA Niro Soavi S.p.A**



FIG. 7-4



DATA SHEET 00[b]:

GENERAL MACHINE Checking safety devices and guards



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

: MAINTENANCE TECHNICIAN

: BEFORE EVERY STARTUP

: 5 MINUTES

RESOURCES AND EQUIPMENT

FREQUENCY

TIME REQUIRED

DESCRIPTION:

Check that safety devices and guards have been installed correctly and are efficient.



FIG. 7- 5



DATA SHEET 00[c]:

GENERAL MACHINE Tightening nuts and stud bolts



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

RESOURCES AND EQUIPMENT TECHNICIAN

FREQUENCY:

:OPERATOR/MAINTENANCE

:BEFORE THE START UP+EVERY 200 HOURS + AFTER EVERYMAINTENANCE PROCEDURE

TIME REQUIRED

: 30 MINUTES

DESCRIPTION:



For safety reasons it is absolutely prohibited to replace the stud bolts in the high-pressure head with non original spare parts, which could not be suitable for the kind of stress applied with very serious risks for people.

As indicated in the table "FREQUENCY OF MAINTENANCE OPERATIONS" in paragraph 7.6, check tightening of screws and bolts, bearing in mind that all the stud bolts in the compression head are subject to pulsating stress and, in addition to being manufactured with special highly-resistant materials and accurate working cycles, they require specific tightening of the nuts to the values indicated in the table below.

It is also necessary to frequently check tightening of screws and bolts to prevent loosening. **GEA Niro Soavi s.p.A.** supplies with the maintenance kit the spanners needed for the nuts used on the machine.

A dynamometric spanner (not supplied) should be used to check tightening torques as specified in the table.



stud bolt size	Wrench type	tightening torque (n*m)	tightening torque (lb.*ft.)
M 8	WRENCH 13	8 ÷10	6 ÷8
M 10	WRENCH 17	15 ÷ 20	11 ÷ 15
M 12	WRENCH 19	25 ÷ 30	19 ÷22
M 16	WRENCH 24	60 ÷ 70	44 ÷52
M 20	WRENCH 30	120 ÷ 140	89 ÷104
M 24	WRENCH 36	210 ÷ 230	155 ÷ 170
M24x2	WRENCH 36	235 ÷ 260	174 ÷ 192
M 27	WRENCH 41	310 ÷ 340	229 ÷251
M27x2	WRENCH 41	350 ÷ 390	258 ÷ 288
M 30	WRENCH 46	410 ÷ 450	304 ÷ 332
M 33	WRENCH 50	560 ÷ 600	413 ÷ 445
M33x2	WRENCH 50	635 ÷ 680	469 ÷ 502
M39	WRENCH 60	880 ÷ 960	650 ÷709

TABLE 00.1



DATA SHEET LIST						
DATA SHEET	Location					
Α	Compression head					
A[a]	Visual inspection for leaks in seals and gaskets					
A[b]	Replacing of plunger gaskets					
A[c]	Checking tightness of plungers nuts					
A[d]	Checking wear and replacing of plungers if needed					
A[e]	Checking/replacing plunger valves					
A[f]	Visual inspection for leaks from head gaskets and packings					
A[g]	Checking ball valves and replacing if needed					





DATA SHEET A:

COMPRESSION HEAD

GENERAL

ATTENTION:

All maintenance procedures on the compression head can be performed after setting the machine to maintenance mode as indicated in paragraph 7.3.3 of this manual.

A ATTENTION:

Maintenance procedures on the head require the removal of components fixed with stud bolts and nuts.

After assembly back the components removed, stud bolts and nuts must be tightened to the torque values indicated in the DATA SHEET 00[c], to prevent abnormal stress that would limit resistance.

Before describing the maintenance procedures on the compression head, we need to point out that coupling in the high pressure seal areas are made with o-rings made of synthetic material, suitable for contact with the product treated and able to withstand the temperatures that can be reached by the machine.

It is a good rule to replace the seals not only in case of leaks or breakages, but also every time you perform maintenance procedures that involve their removal.

When assembly back the gaskets, they should be lubricated with food-grade vaseline or other suitable lubricant, without using sharp tools which could damage them, and taking care not to force them in or fit them incorrectly as this could affect their lifetime and seal.

To identify and position the gaskets refer to the disassembly drawings for the compression head and its components, and to the list of components in the SPARE PARTS CATALOGUE enclosed in chapter 10 of these instructions.





DATA SHEET A[a]:

COMPRESSION HEAD Visual inspection for leaks in seals and gaskets



ATTENTION:

This procedure must be performed while the machine is operating. Use great care.

FREQUENCY

TIME REQUIRED

: OPERATOR

: AT EVERY STARTUP

: 5 MINUTES

DESCRIPTION:

DESCRIPTION.

To look for leaks from seals and gaskets proceed as follows:

• during machine operation, check for product leaks in the areas of contact between head components





LOCATION OF PROCEDURE FIG. 7- 6



DATA SHEET A[b]:

COMPRESSION HEAD Replacing of plunger gaskets



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

RESOURCES AND EQUIPMENT	: MAINTENANCE TECHNICIAN
FREQUENCY	: IN CASE OF FAILURE
TIME REQUIRED	: 60 MINUTES
DESCRIPTION:	:/

General

The lifetime of compression head components is influenced by the following factors:

- condition of plunger surface;
- processing temperature;
- type of product;
- underfeeding of machine (insufficient feed pressure), see **technical data sheet** enclosed in chapter 11 of this manual);

Some of these factors, such as wearing out of piston surface and underfeeding of the machine, lead to early deterioration of gaskets.

Gaskets should be replaced when you notice product leaks in the sump; the work cycle can be completed without the risk of pollution provided machine feeding is correct.

ATTENTION To avoid stopping production due to leaks from plunger gaskets of plungers, we recommend preventive replacement of gaskets based on estimated average lifetime.

A ATTENTION:

before proceeding with maintenance operations and replacement of gaskets, make sure that you have all the spare parts and equipment you need.



To perform a visual inspection of the condition of plunger gaskets, proceed as follows:

Instructions for removing plungers

- With reference to figure 7-7, loosen the clamp (1) which fastens plunger (2) and guide piston (3) with the spanner supplied (14x14) and move the plunger away from the guide piston by manually adjusting the pulley installed on the shaft, taking the guide piston to the outmost point.

PLEANE NOTE:

To facilitate removal, you should always start from the central piston.



FIG. 7-7





- With reference to figure 7-8, loosen the nuts (1) and remove the packing housing flange (2) together with the piston (3) checking the centering pins between Head (4) and flange (2);



FIG. 7- 8

Pull piston from packing housing flange.



Instructions for pistons assembly

Before assembly the plunger, insert the plunger gaskets as described below.



FIG. 7-9

- With reference to figure 7-10, insert Piston (1) into Packing housing flange (2) with already assembled packing, and fix it to the Head (4) with the centering pins and nuts (3).





FIG. 7- 10

To assemble the packing, follow the instructions further on in this chapter.



- Fix the Plunger to the guide piston using the clamp and make sure you abut plunger against guide piston with the special tooth.



FIG. 7- 11

IMPORTANT NOTE:

During assembly make absolutely sure that the piston and clamp are in the correct position, and there are no interferences between the various clamps during the reciprocating movement of the pistons. We therefore suggest you manually rotate the multiple groove drive pulley to check plunger movement.



Instructions for removing packing

With reference to fig. 7-12, after removing the pistons (1), use the supplied extractor to extract the packing (2), according to the following procedure:

- insert the extractor in the Packing housing flange (3).
- rotate it to widen the expander
- extract the packing (2).





Instructions for packing assembly

To fit the plunger gaskets (packings) proceed as described below with reference to figure 7-13:

- place the packing holding flange on the bench (1) _
- _ first insert the support ring (2) in the flange. The energizing ring (4), assembled on the sealing body (3), will then be inserted in the direction indi-cated. We recommend the use of a "FOOD GRADE" lubricant to correctly and easily instal the gasket.
- Put the packing in position using the special packing intruder (you may need to use a rubber hammer).
- Make sure you do not damage or deform the packing during assembly: _



FIG. 7-13



DATA SHEET A[c]:

COMPRESSION HEAD Checking tightness of plungers nuts



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

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RESOURCES AND EQUIPMENT		

FREQUENCY

: MAINTENANCE TECHNICIAN

BEFORE THE START UP+EVERY 200 HOURS + AFTER EVERYMAINTENANCE PROCEDURE

TIME REQUIRED

: 20 MINUTES

DESCRIPTION:

To check tightness of nuts and plungers proceed as follows:

- Tighten the compression head nuts with a dynamometric spanner, using the torque values indicated in TABLE 00.1
- Tighten the piston clamp buts with a spanner.



DATA SHEET A[d]:

COMPRESSION HEAD Checking wear and replacing of plungers if needed



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

	Ť	T
RESOURCES AND EQUIPMENT		

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY 1500 HOURS

: 30 MINUTES



GENERAL

The plungers are subject to normal wear, which can increase in particular operating conditions, such as:

- insufficient lubrication water;
- washing with inadequate solutions;
- non perfect alignment, caused by loose fixing with guide piston.

The type of piston installed on the machine is indicated in the TECHNICAL DATA SHEET enclosed in chapter 11 of this manual.

The chrome pistons must be replaced when they show deep scratching or peeling on the surface as this prevent optimal seal on packings and lead to faster wearing out.

- It is absolutely necessary to avoid dry operation of the pistons even for a limited period of time; the temperature generated on the surface of the piston by friction can lead to breakage when the cooling water is opened
- Rapid passage from hot to cold fluid must be avoided also in the compression head, where the piston moves alternatively
- The temperature of the water must be in the specified range (+10÷+25 °C).– TECHNICAL SPECIFICATIONS enclosed in chapter 11 of this manual.
- Temperature variation over time must be of 70 °C in 15 minutes (approximately 5 °C per minute).

The use of inadequate washing solutions, or incorrect concentrations and temperatures, can lead to corrosion of piston surfaces and thus cause early wear of packings.

Piston surface damage caused by corrosion is not covered by the manufacturer's warranty .

In case of serious wearing out or breakage of the plungers, they need to be replaced as follows:



Instructions for removing pistons

- With reference to figure 7-14, loosen the clamp (1) which fastens plunger (2) and guide piston (3) with the spanner supplied (14x14) and move the plunger away from the guide piston by manually adjusting the pulley installed on the shaft, taking the guide piston to the outmost point

IMPORTANT:

To facilitate removal, you should start with the central piston.





- With reference to figure 7-15, loosen the nuts (1) and remove the packing housing flange (2) together with the Piston (3) checking the centering pins between Head (4) and Flange (2);





FIG. 7- 15 Then pull out the piston from the Packing housing flange.



Instructions for assembly pistons

Before assembly the plunger insert the plunger gaskets as described below.



FIG. 7-16

- With reference to figure 7-17, insert the Piston (1) in the Packing housing flange (2) with preassembled packing already installed, and fix it to the head (4) using the centering pins and nuts (3).



FIG. 7- 17

To fit the packing, follow the instructions provided further on in this chapter



- Fix the Plunger to the Guide piston using the clamp and make sure you abut plunger against guide piston with the special tooth



FIG. 7-18

IMPORTANT NOTE:

During assembly make absolutely sure that the piston and clamp are in the correct position, and there are no interferences between the various clamps during the reciprocating movement of the pistons. We therefore suggest you manually rotate the multiple groove drive pulley to check plunger movement.

WARNING:

Periodically and regularly check tightness of pistons, to avoid the possibility of the piston becoming loose or disconnected during machine operation.



DATA SHEET A[e]:

COMPRESSION HEAD Checking plunger valves and replacing if needed



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

RESOURCES AND EQUIPMENT

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY 1500 HOURS

: 20 MINUTES

DESCRIPTION:

GENERAL

Suction and delivery valves must always be in good condition for correct machine operation, as poor seal causes product reflux and instability of pressure and flow rate.

The valve assembly consists of a ball shutter, a valve cover and valve seat.

The ball needs to be replaced when it has cuts or dents on the sealing surface.

The suction valve assembly has a spacer in the bottom part.

The method for replacing the valve assembly is shown below:



Suction valve assembly

Delivery valve assembly

FIG. 7- 19


Instructions for removal

With reference to figure 7-20, proceed as follows:

- Loosen the nuts (5) and remove upper flanges (6), and lower flanges (7), the gasket usually stays on the flange.
- For the delivery valves, from the upper part of the head, pull out the valve cover (1) the ball (2), and the valve seat (3) with gaskets.
- For the suction valves, before pulling out the spacer (4), then in this order, valves seats (3), ball (2) and cap (1).



FIG. 7-20



Assembly

Once you have made the replacement, fit back the valve assemblies (with reference to figure 7-21):

- insert the valve seat (3) with its gaskets, the ball (2) and the cap (1), in the order for the delivery assembly. For a suction assembly insert in the order, cap, ball, seat with gasket and spacer (4).
- Fit back the flanges, tighten in a cross patterns, to the values in table 001.



Suction valve assembly

Delivery valve assembly

FIG. 7-21

The head nuts must be tightened to the torque values indicated in Table 00.1 using a dynamometric spanner (not supplied).

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DATA SHEET A[f]:

COMPRESSION HEAD

Visual inspection for leaks from head gaskets and packings

ATTENTION:

This procedure must be performed while the machine is operating. Use great care.

FREQUENCY

: AT EVERY STARTUP

TIME REQUIRED

: 5 MINUTES

: OPERATOR

DESCRIPTION:

To visually check for leaks from head gaskets proceed as follows:

- Look for product leaks from areas of contacts between flanges and compression head.

To visually check for leaks from **packings** proceed as follows:

- Look for product leaks from packing housing flange towards sump area (area behind the compression head).



FIG. 7-22



DATA SHEET A[g]:

COMPRESSION HEAD Checking plunger valves seats and replacing if needed



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

	i	Y
RESOURCES AND EQUIPMENT	I	

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY1500 HOURS

: 20 MINUTES

DESCRIPTION:

GENERAL

The valve seats are of the inserted type and made in stainless steel to ensure long lifetime and wear resistance.

Slight prick marks on their surface will not affect valve seal.

The lifetime of the seats will depend on the type of product and on machine operation conditions.

For particularly abrasive products it may be necessary to reface or replace the seats.

IMPORTANT:

The valve seats are reversible. Before replacing them they can be used on both sides.



Instructions for removal

IMPORTANT:

The equipment needed for removing the valve seats is NOT included in the maintenance kit. The head nuts must be tightened to the torque values indicated in the DATA SHEET 00[c]; use a dynamometric spanner (not supplied).

To remove the suction seats simply remove the bottom flanges.

To remove the delivery seats you can use the extractor supplied.

Alterntively, to remove the delivery seats you need to prepare the tools required (available on request from **GEA Niro Soavi S.p.A.**) to perform the procedure described belot, with reference to figure 7-23:

- remove the bottom and top flanges
- pull the plunger back to the inner dead centre
- remove the suction valve seat (6)
- to remove the delivery valve seat (1) use a bar made of soft material, such as bronze or aluminium: insert the bar in the head through the hole in the suction valve; the diameter of the bar should be as large possible and to improve support, a conical surface can be made to match the bottom part of the seat
- with a hammer pound on the bar until the seat has been removed



Fig. 7-23



Instructions for assembly

To fit back proceed as follows, with reference to figure 7-23:

Delivery valve assembly

- insert the seat (1) in position, complete with gaskets
- Insert first the ball (2) then the cap (3).
- instal the flanges and tighten the nuts in a cross pattern, to the values in table 001.

Suction valve assembly

- Insert valve cover (4), ball (5), seat (6) with gaskets, spacer (7) all of them already placed on one another.
- close from below with the bottom flanges.



DATA SHEET LIST			
DATA SHEET	Location		
В	Homogenizing assembly 1st stage		
B[a]	Checking/replacing homogenizing valves		



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DATA SHEET B: HOMOGENIZING ASSEMBLY

GENERAL

The homogenizing valve consists of 3 parts (with reference 7-24):

- passage head (1)
- impact head (2)
- impact ring (3).

Homogenization takes place during the passage between the opposite surfaces of the two heads, which takes place at very high speed and is completed with the impact against the outer ring.

The phenomena that take place at very high pressure inside the homogenizing valve are very complex; in general the micronization of the particles contained in the liquid can be described as the combination of turbulence effects, cutting, localized cavitation and impact.

The three parts of the homogenizing valve, made of very hard, abrasion-resistant material, are normally subject to wear, the extent of which will depend on the type of product treated; on the surfaces we can see the signs left by these phenomena:

- radial grooves starting from the inner diameter (4);
- small craters near the outer diameter (5);
- large craters and wear near the inner diameter (6).

When the grooves due to wear become marked and reach the outer diameter, homogenizing efficiency is reduced.

Therefore you should replace the components when the groove reach approximately 3/4 of the dimension or when you feel that homogenizing efficiency is reduced.

In some cases components wear may make it impossible to reach the required operating pressure, so the homogenizing valve has to be replaced.

Localized cavitation phenomena can create craters and marked grooves on the surfaces of the valve; in this case too you should replace the worn components.

As regards the impact ring (3), it has the dual function of completing homogenization by impact and protecting the body of the Homogenizing assembly from erosion.

Wear causes the formation of a groove (7) on its inner surface which affects homogenization. We recommend replacing the ring when the groove reaches a depth of approx. 1 mm.





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FIG. 7-24

WARNING:

The impact head and passage head are made with very hard material to withstand the abrasive action of the product treated.

When there are signs of wear of an extent that can affect homogenization efficiency, you can reface the working surface by removing maximum 1 mm. of material; this can be done either in the premises of GEA Niro Soavi S.p.A. or in other workshops equipped for the purpose.

WARNING:

The above indications refer to normal operating conditions and provide an indication for ordinary and preventive maintenance procedures.

Bear in mind that wearing out of homogenizing valve components is NORMAL and depend on the phenomena that take place inside the valve.

If valve deterioration is too rapid, please contact for explanations and alternative solutions.



DATA SHEET B[a]:

HOMOGENIZING ASSEMBLY Checking/replacing homogenizing valves



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

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RESOURCES AND FOUIPMENT	Į		
			2

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY 500 HOURS (CHECK)

: 20 MINUTES

DESCRIPTION:

Instructions for removal

For maintenance operations of pneumatic-control Homogenizing assembly, proceed as follows (with reference to figure 7-25):

- remove connections for pneumatic control of piston on the front panel of the machine

The Homogenizing assembly block is heavy! When removing, handling and positioning the assembly use both hands and suitable personal protection gear to prevent accidents.

- remove the pneumatic control assembly (2), fastened with screws (4) to the support flange (3)
- loosen the nuts of the stud bolts that faster the support flange (3) and homogenizing chamber.
- to extract the complete impact head (6), remove first the passage head (10), the gasket (9) and the impact ring (5).
- in case of excessive vibrations you need to check the surface of the shaft of the impact head (6) and if needed replace the guide bushings (7) made of self-lubricating plastic material
- remove the homogenizing assembly block (8) and rest it on a workbench.





FIG. 7- 25

IMPORTANT:

The Homogenizing assembly is normally subject to high pressure and high temperature conditions that place considerable stress on seal gaskets.

For correct operation and to prevent product pollution or leaks it is very important to replace all the gaskets every time the assembly is removed.



Instructions for assembly

IMPORTANT: To facilitate insertion of gaskets they should be greased with food-grade lubricant.

With reference to figure 7-26

- insert from the top the guide bushings (7) inside the homogenizing chamber.
- Insert the gasket in the slot (1) of the homogenization chamber
- Rest the homogenization chamber on a side and insert, in this order: impact head (6), impact ring (5), gasket (9), passage head (10).
- check sliding of impact head in guide.
- insert the homogenization chamber on the stud bolts and move it close to the head
- position the gasket inside the seat obtained in the head and rest the block on the head.



FIG. 7-26



To fit the pneumatic-control assembly proceed as follows, with reference to figure 7-27:

- fit the flange (3) on the homogenizing chamber (8)
- tighten nut fully
- screw the head shaft extension (11) into the pneumatic control assembly (2).
- connect the pipes for the activation of the pneumatic control system
- secure the pneumatic control assembly (2) to the support flange (3) with the 4 screws (4).

In machines that feature two stages(optional), the above indications are valid for both the homogenizing stages.



FIG. 7-27



DATA SHEET LIST		
DATA SHEET	Location	
С	Head pressure gaurge 1st stage	
C[a]	Checking condition and efficiency	



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DATA SHEET C[a]:

PRESSURE GAUGE Checking condition and efficiency



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

	: OPERATOR
FREQUENCY	: EVERY 1500 HOURS
TIME REQUIRED	: 5 MINUTES
DESCRIPTION:	

GENERAL

The pressure gauge installed on the machine is a very important component because it measures the operating pressure of the machine and thus makes it possible to monitor its efficiency.

A faulty pressure gauge means the machine cannot be operated at the required pressure, so we recommend you keep in store a spare pressure gauge in case of need.

The type of pressure gauge installed can vary depending on the machine model or optional configuration. The basic pressure gauge is analogue with Bourdon spring, with sanitary-design diaphragm and connection with specific design and dimensions for **GEA Niro Soavi S.p.A.**; it is also equipped with a separator whose function is to filter the normal pulsations caused by the pistons to enable stable reading of the operating pressure.

The pressure gauge must always be kept together with the separator.

Other types of pressure gauges are available as an alternative:

 analogue pressure gauge with signal transmitter: equipped with a 4÷20 mA output for remote transmission of pressure signal

The pressure gauge will normally require no maintenance, but a periodic check is recommended to:

- check condition of the diaphragm in contact with the product; if the diaphragm is pierced or damaged the pressure gauge must be replaced
- for analogue pressure gauges, check the glycerin level inside the dial; if needed fill dial up to 3/4 with 99.5% pure glycerin
- replace the gasket between the pressure gauge and the head



For instruments equipped with electrical connection, please refer to the wiring diagram, which also shows the calbration range of the instrument.

Instructions for removal

To remove the pressure gauge (or pressure gauge with transmitter, or pressure transducer) proceed as follows, with reference to figure 7-28:

- loosen the nuts (7) and pull out the pressure gauge complete with flange (6).
- The pressure gauge (1) and the flange (6) can be separated once the half-rings (4) have been removed.



FIG. 7-28



Instructions for assembly

To remove proceed as follows, with reference figure 7-28:

- insert the gasket (5) on the stem of the pressure gauge (needed only for protection against soil)
- insert the gasket (2) into its seat in the flange or in the head; food-grade vaseline or we recommend using food-grade vaseline or another suitable lubricant to facilitate assembly operations
- insert the flange (6) on the body of the pressure gauge (1) and position the two half-rings (4) to keep the flange in position
- insert the prepared pressure gauge into its seat and position the flange (6) on the stud bolts (8)
- screw the nuts (7) manually before tightening them fully.



DATA SHEET LIST			
DATA SHEET	Location		
D		Head safety valve	
D[a]		Checking operation	



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DATA SHEET D[a]:

HEAD SAFETY VALVE Checking operation



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

	: MAINTENANCE TECHNICIAN
FREQUENCY	ONLY IF VALVE OPENS
TIME REQUIRED	: 10 MINUTES
DESCRIPTION:	:/

GENERAL

The safety valve is normally installed on the compression head to protect the machine and the operators from accidental overpressure that could lead to hazardous situations.

The maintenance procedure consists only in checking and, if needed, replacing the seal gaskets (7) and (8), of the ball (5) and of the seal seat (6). Refer to figure 7-29.

Instructions for removal

To remove the valve from its operating position:

- loosen the nuts (1) and extract the complete valve (2) and the flange (3), which can be separated after the half rings (4) have been removed.
- next remove the O-ring (8), the seat (6) containing the ball (5) and the O-ring (7).
- make sure you do not lose the ball (5), because the valve cannot work without it; we recommend keeping a seat and a spare ball in case of need.

The maintenance of the valve does NOT require the spring to be replaced.

- Accurately clean the seat (6) from any product residue, taking care not to damage the seal area.
- If the seal between the seat (6) and the ball (5) is damaged or worn out, this may cause product leaks or triggering of the valve at a pressure value below the valve's calibration value; we therefore recommend replacing the seat and, if needed, the ball.

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GEA

ONE 7TS – Maintenance

Instructions for assembly

Proceed as follows:

- insert the gasket (7) into its seat in the flange or head; we recommend using food-grade vaseline or another suitable lubricant to facilitate assembly operations
- preparare the seat (6) for assembly, with the ball (5) and o-ring gasket (8) inside it
- insert the flange (3) on the valve body (2) and position the two half-rings (4) on it to keep the flange in position
- insert the prepared seat (6) on the valve body, keep it in position with your finger and insert the whole valve on the seat flange
- insert the flange (3) on the stud bolts and manually screw the nuts (1), in order to correctly block the valve inserting the seat (6) on the o-ring gasket (7)
- when the valve is in a stable position, before tightening the nuts (1), correctly position the discharge pipe. For safety reasons the discharge pipe must always be open and directed towards the ground
- tighten the nuts (1) fully.



FIG. 7-29

GEA

ONE 7TS – Maintenance

It is absolutely PROHIBITED to change the calibration of the safety valve and break the warranty seal without prior written authorization from **GEA Niro Soavi S.p.A.**.

Unauthorized tampering with the valve will result in immediate invalidation of the warranty and sesrious risks for the safety of personnel, as the safety valve is a fundamental safety component designed in compliance with CE regulations.

It is absoluted PROHIBITED to close the discharge pipe of the safety valve with a valve. The valve discharge must always be free and directed towards the ground.



The relief valve is an important component for the protection of machine from overpressures. As a consequence it Is suggested to make the valve re-calibrated every 5000 hours. For that operation it is necessary to contact the personnel of GEA Niro Soavi S.p.A.



DATA SHEET LIST			
DATA SHEET	Location		
E	Manifold assembly		
E[a]	Checking gaskets		



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DATA SHEET E[a]:

MANIFOLD ASSEMBLY Checking gaskets



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

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RESOURCES AND EQUIPMENT		

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY 1500 HOURS

: 10 MINUTES

DESCRIPTION:

To remove the manifold assembly proceed as follows (riferendosi figure 7-30):

- Loosen the nuts located under the bottom flanges (1) and the suction flange screws (2)
- Extract the gaskets indicated with the arrow to check their integrity







DATA SHEET LIST		
DATA SHEET	Location	
F	Lubrication system	
F[a]	Changing oil	
F[b]	Checking oil level and topping up if needed	





DATA SHEET F: LUBRICATION PLANT

GENERAL

Correct lubrication is an essential requirement to ensure good machine operation. For this reason it is absolutely necessary to observe the lubrication intervals indicated below.

The lubrication system used is SPLASH lubrication.

ATTENTION:

Spent oil is highly polluting. Do not disperse in the environment but collect it in special containers for disposal.



FIG. 7-31



DATA SHEET F[a]:

IMPIANTO OF LUBRICATION Changing oil



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)



FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

. A 500 + EVERY 1500 HOURS

: 30 **MINUTES**

DESCRIPTION:

To change the oil proceed as follows:

Cambio oil

The frequency for oil change is indicated in paragraph 7.6 "FREQUENCY OF MAINTENANCE OPERATIONS"

Use only the type oil indicated in the DATA SHEET F[a] with reference to the figure below:

- prepare a basin big enough to contain the quantity of oil
- open the filler located on the body cover
- open the tap and the cap and allow the oil to drain out
- once completely drained out, close the tap and the cap and pour the fresh oil into the filler;
- check the oil level in the visual level or sight glass.



For oil change use one of the oil types indicated in the table below.

Class:		ISO VG 150	
		DIN 51524-2-HLP	
BRAND	ТҮРЕ	BRAND	ТҮРЕ
Agip	Oso 150	Техасо	Rando oil HD 150
IP	Hydrus Oil 150	Gulf	Harmony 150 AW
BP	Energol HLP-HM 150	Amoco	American industrial oil 150
Mobil	DTE 19M	Total	Azolla ZS 150
Mobil	DTE Extra Heavy	Fina	Hyidran 150
Chevron	AIO ISO 150	Арі	Cis 150
Castrol	Hyspin AWS 150	Kuwait Petr. Int.	Q8 haidn 150
Esso/Exxon	Nuto H 150	ELF	Olna DS 150
Shell	MORLINA Oil 150	ARAL	Degol CL 150T



The lubrication oil is suitable for operating temperatures between +5°C and +40°C:

For different temperatures, please contact the Technical Support Service of GEA Niro Soavi S.p.A. who will indicate the type of lubricant suitable for your environmental conditions.

A ATTENTION:

It is important to periodically check that a whitish water/oil emulsion due to water infiltrations is not present inside the body as a result of worn out gaskets on the guide pistons.

Spent oil is highly polluting. Do not disperse in the environment but collect it in special containers for disposal.



DATA SHEET F[b]:

LUBRICATION SYSTEM Checking oil level and topping up if needed



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

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RESOURCES AND EQUIPMENT		

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: BEFORE EVERY STARTUP

: 2 MINUTES

DESCRIPTION:

This must be performed daily with the machine off, before startup, checking that the oil reaches the OIL LEVEL mark on the sight glass located on the rear panel of the machine.

IMPORTANT

The oil level must be checked after the machine has been switched off for at least 15 minutes. Refer to figure 7-32.



FIG. 7-32



IMPORTANT

When the machine is started the circuits fill up and therefore oil level will normally be lower during operation.

If the level is below the required value, top up through the orange filler located inside the machine on the body cover.

To access the fillwer you need to remove the side panel of the machine.

IMPORTANT

If oil runs out or its level is too low, top up IMMEDIATELY to restore correct operating conditions.



DATA SHEET LIST		
DATA SHEET	Location	
G	Water system	
G[a]	Cleaning and/or replacing filters	
G[b]	Checking cooling water pipes, checking water flow	



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DATA SHEET G[a]:

WATER SYSTEM Cleaning and/or replacing filters



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

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	T	
RESOURCES AND EQUIPMENT		
		_

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY 1500 HOURS

: 15 MINUTES

DESCRIPTION:

To clean and replace filters proceed as follows:







FIG. 7-33



DATA SHEET G[b]:

WATER SYSTEM

Checking cooling water pipes, checking water flow



ATTENTION:

This procedure must be performed while the machine is operating. Use great care.

RESOURCES AND EQUIPMENT

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: AT EVERY STARTUP

: 1 MINUTE



DESCRIPTION:

To check cooling water pipes proceed as follows:

a) To check for leaks in the piston lubrication water circuit, carefully look for dripping under the bottom of the machine.



FIG. 7- 34





FIG. 7-35





DATA SHEET LIST		
DATA SHEET	Location	
н	Pneumatic system	
H[a]	Cleaning/Replacing filters	



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DATA SHEET H PNEUMATIC PLANT

GENERAL

The strength needed to close the homogenizing valve and reach operating pressure is applied by a pneumatic cylinder with compressed air in the upper chamber.

The actuator does not require periodic maintenance, but it is a good rule to protect it from excessive temperatures (that could damage the gaskets) and from corrosive fluids, as it is made of aluminium and not of stainless materials.

In case of actuator failure we recommend replacing it; a kit of spare gaskets can be supplied upon request by contacting our Spare Parts Service directly.

The figure shows a basic layout with one stage and local manual regulation on the machine's control panel.

The layout of the system actually installed on the machine is enclosed in chapter 11 "SPARE PARTS CATALOGUE"; Refer also to the flow-sheet (P&ID) enclosed in chapter 11 of this manual.



FIG. 7-36


The following parts, shown in figure 7-36, are included:

- an air treatment and shut-off assembly (4) with pressure gauge (5);
- a manual control valve (6) to send pressure to the actuator;
- a manual pressure regulator (7);
- one-way chokes (8) to achieve sensitive and stable operation of the system and control of homogenizing pressure increase speed;

a tank containing air and oil









Adjustment of the choker valve on the circuit **(8)** enables regulation of the speed for raising of homogenizing pressure.

The calibration is normally performed during the machine testing phase, to avoid excessively rapid pressure raising which could cause the overpressure valve to open.

Before changing the calibration value note down the value on the graduated scale so that you can restore it if the new value setting is not effective.

Closing the valve (8) slows down pressure raising, opening the valve makes it faster.

For the pneumatic system with local manual regulation there needs to be a pneumatic regulator and pneumatic switch on the front control panel.

These components do not need maintenance, and should be replaced in case of malfunction.

Dampening of the vibrations induced on the homogenizing valve, due to the normal pulsations caused by the reciprocating motion of pumping pistons, is ensured by an oil/air pressure accumulator connected to the lower chamber of the homogenizing unit's actuator

The accumulator is pre-charged with air at 0.5 bar.

The pre-charge pressure can be checked on the gauge and the quick connector can be used to bring pressure to the correct value.

Frequent checking of the dampening system will prevent the problem of vibration and resonance which, in addition to producing a high noise level, will cause damage to the machine and affect homogenizing efficiency.





DATA SHEET H[a]:

PNEUMATIC SYSTEM Cleaning/Replacing filters



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)



FREQUENCY

TIME REQUIRED

DESCRIPTION:

To replace filters proceed as follows:

a) If the pneumatic system is efficient no maintenance is needed on the gearbox-filter assembly.



FIG. 7- 37

: MAINTENANCE TECHNICIAN

- : IN CASE OF MALFUNCTION
- : 10 MINUTES



- b) In case of problems conected with filter clogging, replace the whole gearbox-filter assembly, as follows:
 - Loosen the ring
 - Disconnect air inlet and outlet pipes
 - Replace the gearbox-filter assembly.



FIG. 7-38



DATA SHEET LIST		
DATA Location SHEET N°		
I	I Body and crank gear	
l[a]	Checking of components	



DATA SHEET I [a]:

BODY AND CRANK GEAR Checking of components



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

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RESOURCES AND EQUIPMENT	

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: IN CASE OF FAILURE

: depends on actual condition of copnents to replace gaskets: 50-75 MINUTES

DESCRIPTION:

In case of faults we suggest you contact the Technical Support Service of GEA Niro Soavi S.p.A.

GENERAL

The reciprocal linear motion of the plungers is obtained with a system of sturdy, oversized crank gears (crankshaft, connecting rod, headcross).

The generic figure below shows the system





FIG. 7-39

The type of construction, the high quality materials used and accurate assembly by highly specialized personnel guarantee excellent reliability and durability.

Correct lubrication is a fundamental requirement for durability of the drive unit and its components, so it is absolutely necessary to observe the replacement intervals indicated, as well as the level and type of lubricant used.

Under normal conditions, no maintenance is required on the crank gear. In case of abnormal noise level or irregular machine operation, please contact the Technical Support Service of GEAGEA **GEA Niro Soavi S.p.A.** per un intervento tecnico.

Under normal operating conditions and with no malfunctions, with reference figure 7-39, we recommend you check the bushings of the crank gear (14), of the pin (11) and of the bushing on the connecting rod (13) at least every 10.000 hours of operation approximately, and of roller bearings (4) of the crankshaft at least every 20.000 hours of operation approximately. These procedures need to be carried out by specialized staff, so we recommend you contact the Technical Support Service of **GEA Niro Soavi S.p.A.** for information and support.

The only ordinary maintenance operations needed are the replacement of the gaskets of guide pistons (16) and (18), in case of lubricant leaks in the sump.

If the surface of the guide piston where the gasket slides is badly scratched you need to replace the guide pistons.

These procedures need to be carried out by specialized staff, so we recommend you contact the Technical Support Service of **GEA Niro Soavi S.p.A.** for information and support.

Spent oil is highly polluting. Do not disperse in the environment but collect it in special containers for disposal.

Drain at least part of the body oil to prevent accidental spilling.



To replace the gasket proceed as follows with reference to figure 7-40:



FIG. 7-40

Instructions for removal

- remove the plunger according to the procedure described in the data sheet A[d]
- loosen the screws (19) and pull out the flange (15) fron the guide piston (10)
- pull out the scraper ring (16) and the seal gasket (18)

Instructions for assembly

To fit back the above components proceed as follows:

- fit the scraper ring (16) and the gasket (18) inside the flange (15), in the seat
- check and clean the piston stem; if the surface is badly scratched or the chrome plating is damaged the whole piston needs to be replaced. The stem of the guide piston cannotg be supplied as a separate spare part
- insert the flange complete with O-Ring (17) on the guide piston (10) all the way in; during the assembly operations take care not to damage the lip seal of the gaskets, and use some lubricating grease to facilitate assembly
- tighten the screws (19).



DATA SHEET LIST			
DATA SHEET	Location		
L	Motordrive		
L[a]	Checking tightness and maintenance of belts		
L[b]	Checking tightness of drive elements		
L[c]	Checking wear of v-belts and replacing if needed		
L[d]	Checking alignment of pulleys		





DATA SHEET L: MOTORDRIVE

GENERAL

The machine is equipped with a drive system consisting in v-belts and pulleys between main motor and crankshaft.

In general the drive components require only a visual inspection, performed with the machine off, to check for lubricant leaks and loosening of nuts, bolts and belt tightening components. Excessive movement of drive components, due to loosening of blocking parts as a result of vibrations, can cause slack couplings and therefore breakage of elements during machine operation.



We recommend you regularly check tightness of nuts and bolts in the belt tightening system and in the pulleys. Any abnormal vibrations due to incorrect machine operation or conditions of cavitation can cause loosening of these components and damage to the drive.

The maintenance instructions for drive components are in the data sheets below.



DATA SHEET L[a]:

MOTORDRIVE

Checking tightness and maintenance of belts



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

RESOURCES AND EQUIPMENT

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

:AFTER 40 HOURS + EVERY 1500 HOURS

: 30 MINUTES 50 MINUTES (if pulleys replaced)



FIG. 7-41

GENERAL

Belt drive is an efficient and reliable way of transmitting power.

Described below are some simple precautions designed to ensure reliability and durability for the system.

Visually check for oil or grease on the belts, as this could cause early deterioration; excessive oil on supports and bearings can cause soiling of the belts, while insufficient oil can cause friction and therefore burning of the belts due to overload.

Listen to the sound made by the drive elements.

If you hear a squealing noise during motor acceleration or with full load operation, it means that belt tension is insufficient.

Once you have restored correct tension, if the noise persists try to identify a possible cause of drive overload (due to wearing out, seizure, insufficient lubrication....).

The presenza of a constant squeaking, similar to the noise made by a poorly lubricated bearing, does not result in particular damage to the drive and can be cause by the presence of dirt.

Do not attempt to solve this noise by greasing the belts.

Dirt and dust can accelerate wearing out of belts and pulleys and prevent efficient drive.

It is therefore necessary to regularly clean the drive system and avoid material becoming trapped between belts and pulleys.

Overloads shorten belts life.

Ensure that operation is occurring in the initial design conditions, that no overload is caused by wearing out, or slipping and surface burning.

The drive must always be protected with a cover, not only to prevent damage to people but also to keep out dust or dirt and prevent contact with foreign object that could seriously damage the system.

Check belt wear, look for cuts and cracks that indicate bad wearing out and need for replacement.

Check and maintain correct belt tension preventing abnormal vibrations.

Make sure that the belts are not exposed to heat sources; exposure to temperatures above 60°C will affect their lifetime.

Check condition of belt sides; abnormal wear may indicate slipping or excessive wearing out of pulley grooves.

Instructions for belt tightening

Ensure that the v-belt is correctly tightened; improve tension if needed.

ATTENTION: belt drive can cause crushing and catching hazards. Fixed guards should be used at all times and removed only after the machine has completely stopped.

The ideal tension is the lowest at which belts will not slip under the maximum load.

During the first 24/48 hours of run-in you need to check tension frequently; bear in mind that excessive tension reduces the lifetime of belts and support bearings.

The belts should be tightened immediately if slipping occurs.

Belt slipping can cause overheating and create hazard situations especially if the machine is designed for operation in dangerous zones.



By adjusting the slides on which the motor is positioned (shown in figure 7-43) you can change the distance between the centers of the bottom pulley and crankshart wheel, resulting in tightening of drive belts.



FIG. 7-42



Instructions for the belt maintenance

During installation and removal, the belts must never be forced with a tool inside the pulley grooves, to prevent the risk of damaging both and consequently reduce the lifetime of the drive. To facilitate this operation you simply need to reduce the distance between centers of the pulleys.



FIG. 7-43

Check the grooves of the belt pulleys to ensure they are not worn out. Correct belt position is shown in the figures below.

If the grooves are worn out the pulley must be replaced.



FIG. 7 – 44



DATA SHEET L[b]:

MOTORDRIVE

Checking tightness of drive elements



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)



FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY 1500 HOURS

: 10 MINUTES

DESCRIPTION:

To check tightness of drive elements proceed as follows:

To perform the check tighten nuts and screws using appropriate tools. This type of check must be performed on :

- Pulleys and bushings
- Body flanges





DATA SHEET I[C]: motordrive

Checking wear of v-belts and replacing if needed



This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

• 4

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RESOURCES AND EQUIPMENT	

FREQUENCY

: MAINTENANCE TECHNICIAN

: EVERY 1500 HOURS (check) + IN CASE OF DAMAGE (replacement)

TIME REQUIRED

: 30 **MINUTES**

GENERAL

Worn pulleys significantly reduce the lifetime of belts, which can touch the bottom of the grooves causing slipping and thus wearing out and burning of the surface.



FIG. 7-46

If the sides of the groove have caved in the contact between belt side and pulley is no longer uniform, so the bottom part of the pulley causes wearing out of the bottom of the belt leading to premature breaking. It is therefore important to check wear of pulleys and remove any rust, grease or oil present.



Check the v-belt for fraying.

If frayed replaced belt immediately.



FIG. 7-47

If the covers or fixed protections are removed, fit them back at the end of the maintenance procedure.



DATA SHEET L[d]:

MOTORDRIVE Checking alignment of pulleys



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)



FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY MAINTENANCE PROCEDURE

: 5 MINUTES

DESCRIPTION:

Correct alignment is essential for long life of drive belts.

This operation is performed during the installation phase by specialized personnel: in any case we recommend checking the alignment by resting a metal ruler on the two pulleys as shown in figure 7-49.



FIG. 7-4



If needed, the alignment can be corrected by loosening the retaining bolts of the tapered bushing and slightly move (by a few mm.) the driven pulley to optimal position.

To perform this operation it is better to also loosen the retaining nuts of the motor.

Once you have completed the operation, tighten the bushing and motor.



Belt coupling

Belts used simultaneously must be the same brand, same type and same batch, otherwise there could be differences in size and performance.

It is also important not to mix new belts and used belts, because they would be different in terms of lengthening, adaptation to pulley grooves and performance, and this would significantly affect the lifetime of the drivetrain.

To ensure correct performance and prevent early breakage, the belts must be stored without sharp folds and should not be exposed to excessively high or low temperature, nor high humidity.



DATA SHEET LIST			
DATA SHEET	DATA Location SHEET		
м	Cabinet		
M[a]	General visual inspection		



DATA SHEET M[a]:

CABINET General visual inspection



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

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RESOURCES AND EQUIPMENT			

FREQUENCY

TIME REQUIRED

: MAINTENANCE TECHNICIAN

: EVERY 5000 HOURS

: 1 MINUTO



Per effettuare the visual inspection dello stato of the cover proceed as follows:





UBICAZIONE INTERVENTO FIG. 7-41

- a) Carefully check the condition of the panels enclosing the machine's drive gear and systems.
 b) In case of bad denting that would affect safe entry, please contact our Technical Support Department.



DATA SHEET LIST			
DATA SHEET	DATA Location SHEET		
Ν	Electrical system on the machine		
N[a]	Checking of electrical system on the machine		





DATA SHEET N[a]:

ELECTRICAL SYSTEM A BORDO MACHINE Checking of electrical system on the machine



ATTENTION:

This procedure must be performed after setting machine to maintenance mode (see paragraph 7.3.3)

RESOURCES AND EQUIPMENT

FREQUENCY

TIME REQUIRED

: EVERY 3000 HOURS

: MAINTENANCE TECHNICIAN

: 10 MINUTES









8.1 Troubleshooting

This chapter lists the most frequent problems, possible causes and remedies suggested to restore normal operating conditions.

If the problem persists or is not included in this list, contact our Technical Support Department to receive all the information and means you need to achieve optimum results.

The following data sheets indicate Nelle schede seguenti sono indicate le "PROBLEMS", possible "CAUSES" and "REMEDIES".

PROBLEM	POSSIBLE CAUSE	REMEDY
1. The machine is not running	The main motor has not started	 Check electrical connections, fuses, resets, automatic switches
	Drive belts are broken or loose	Replace or tighten
2. No flow	 No feeding (flow rate and/or pressure) 	 Provide correct feeding (see TECHNICAL SPECIFICA- TIONS enclosed in chapter 11)
	Feed pipe clogged	Clean pipes and filters accurately
	By-pass valve (if any) open	Close by-pass valve
3. Insufficient flow	Insufficient feeding	Provide correct feeding
	 Faulty operation of suc- tion/delivery valve 	 Eliminate traces of dirt or for- eign matter between valve and seat (See chapter 7 "MAIN- TENANCE") Check wear of contact surfaces of valves and replace if needed



PROBLEM	POSSIBLE CAUSE	REMEDY
3. Insufficient flow	Belts slipping	Tighten (See chapter 7 "MAINTENANCE")
	Main motor speed too low	Check speed requirement pre- vista (see TECHNICAL SPECIFICATIONS enclosed in chapter 11)
	Leak from plunger gasket	Replace (See chapter 7 "MAINTENANCE")
	Air in product to be treated	Eliminate air
4. Noisy compression head	 Insufficient feeding or excessive pressure 	Provide correct feeding
	Worn valves	Replace (See chapter 7 "MAINTENANCE")
	Faulty valves	Check for dirt and foreign mat- ter; clean
	Air in product	Eliminate air
5. Noisy drive body	Worn bearings	Check, lubricate and replace if needed
	Piston not tightened	 Tighten (See chapter 7 "MAINTENANCE")
	Insufficient feed pressure	Provide correct feeding
6. Drive squeaks	Belts slipping	 Tighten properly (See chapter 7 "MAINTENANCE")



PROBLEM	POSSIBLE CAUSE	REMEDY
7. Machine vibrations	Weight does not rest on all four feet	Adjust support feet to level ma- chine
	Insufficient feed pressure	Provide correct feeding (see TECHNICAL SPECIFICA- TIONS enclosed in chapter 11)
	 Pulsations in suction or delivery 	 Insert pulsation dampener (contact GEA Niro Soavi S.p.A.)
8. No plunger cooling water	Water shutoff valve closed	• Open
	Water filter clogged	Remove and clean
	No pressure in water mains	 Check characteristics of water in table (see TECHNICAL DATA enclosed in chapter 11)
9. Oscillating pressure in delivery	Insufficient feed pressure	Provide correct feeding
	Damaged valves	Replace (See chapter 7 "MAINTENANCE")
	Unstrable counterpressure	Provide stable counterpressure



PROBLEM		POSSIBLE CAUSE	REMEDY
10.	No homogenization pres- sure	Insufficient flow	See problem 3
		 Homogenizing valve faulty or broken 	 Clean or replace (See chapter 7 "MAINTENANCE")
		 No pressure in pneumatic system 	 Check efficiency of pneumatic system (See chapter 7 "MAINTENANCE")
		Faulty pneumatic cylinder	Replace
11.	Homogenization pressure not reached	Insufficient feeding	Provide correct feeding
		Homogenizing valve blocked	Remove, clean (See chapter 7 "MAINTENANCE")
		Homogenizing valve worn	Replace (See chapter 7 MAINTENANCE)
		Faulty pressure indicator	Replace (See chapter 7 "MAINTENANCE")
		 Homogenizing unit shaft dam- aged 	Replace (See chapter 7 "MAINTENANCE")



PROBLEM	POSSIBLE CAUSE	REMEDY
12. Oscillating homogeniza- tion pressure	Air or steam in product	Eliminate
	Air in compression head	Remove pressure and then en- ter value again
	Insufficient or irregular feed pressure	Provide correct feeding
	Imperfect seal of suction or de- livery valves	Clean o replace (See chapter 7 "MAINTENANCE"
	Faulty pneumatic control	 Check the pneumatic system (See chapter 7 "MAINTE- NANCE")
	Unstable counterpressure	Provide stable counterpressure
13. Noisy homogenizing as- sembly	Homogenizing valve worn	Replace (See chapter 7 "MAINTENANCE")
	• Resonance in system	 Adjust counterpressure; add dampener on delivery; move existing dampener further down; contact GEA Niro Soavi S.p.A.



PROBLEM		POSSIBLE CAUSE	REMEDY
14	Oil level goes down quickly	Leaks from body	 Check and locate origin of leak; replace the gaskets; tighten connectors;
15.	Whitish foam forming in oil	Presence of condensate mixed with oil	• Stop the machine wait about 1 hour and discharge oil conden- sate (See chapter 7 "MAIN- TENANCE")
		 Excess of piston lubrication water 	 Adjust flow of water lubrication water to avoid excessive splashing and flooding of sump
16.	Oil overheats and turns dark	Overload	Eliminate overload conditions
17.	Excessive absorption by electric motor	Overload due to excessive homogenization pressure	Reduce pressure to operating value
		Wear and friction of mechani- cal parts	Check wear condition and con- tact GEA Niro Soavi S.p.A.
		Excessive belt tightness	Check belt tightness
		Faulty electric motor	Check or replace
18.	Lubrication oil in sump and in cooling water	 Leaks from guide piston gas- kets 	 Replace gaskets (See chapter 7 "MAINTENANCE")
		Guide pistons scratched or worn	Replace (contact GEA Niro Soavi S.p.A.)



ONE 7TS – Waste disposal

CHAPTER 9

Waste disposal

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9.1.1	Special waste	.2
9.1.2	Toxic-harmful waste	.2
9.2	Temporary storage	.2
9.3	Characteristics of the containers	.2
9.4	Registration requirements	.3
9.5	Disposal	.3



ONE 7TS – Waste disposal

9.1 Definition of waste

Waste means any substance or object generated by human activities or natural cycles that has been discarded or are about to be discarded.

9.1.1 Special waste

The following are considered special waste :

- residues from industrial processing, agricultural or commercial activities that cannot be considered urban waste because of quantity or quality
- deteriorated and obsolete machinery and equipment
- unserviceable motor vehicles and parts thereof

9.1.2 Toxic-harmful waste

Toxic-harmful waste means all the waste that contains or is contaminated by the substances indicated in the annexe to Pr.Decree 915/52 implementing directives 75/442/CEE, 76/403/CEE and 768/319/CEE and/or the laws or regulations in force in the country where the machine is installed.



SC-029

FIG. 9-1

9.2 Temporary storage

Temporary storage of toxic and harmful waste is allowed while awaiting for disposal with treatment and/or final storage. In any case environment protection laws in force in the country of installation must be observed.

9.3 Characteristics of the containers

Fixed and movable containers that are to contain toxic and harmful waste must have special characteristics depending on the chemical-physical properties and hazard characteristics of the waste contained. The containers where hazardous or harmful products or material are stored must bear indications and symbols to make the nature of their content known.



ONE 7TS – Waste disposal

9.4 Registration requirements

For the disposal of spent oil we recommend keeping in/out register for special or toxic-harmful waste generated by this machine processing.

9.5 Disposal

The waste substances products must be disposed of in conformity with the laws in force in the country where the system is installed.

The substances produced in the phase of maintenance and/or demolition of the machine are :

- spent lubricants
- recovered materials (covering materials, electric cables, etc.)
- plastic, rubber materials, ... (pipes, gaskets, connectors, etc.)
- iron materials (connectors, bearings, gears, ecc).

All polluting products must be disposed of following the indications set forth in the laws in force in the country where the machine is installed.



ONE 7TS – Spare parts

CHAPTER 10

Spare parts

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10.2	How to order spare parts3
10.3	Safety precautions4
10.4	List of components and assembly drawings6
10.5	Maintenance box7



ONE 7TS – Spare parts

10.1 Recommended spare parts list

To reduce downtime and maintenance time as much as possible we suggest you stock a set of spare parts to replace parts that are normally subject to wear.

The set of spare parts will depend on your production needs and on the importance of preventing long machine shutdowns due to the non availability of spare parts.

In particular, in the case of homogenizing valves, prompt replacement makes it possible to preserve homogenizing efficiency and therefore product quality.

The availability of spare parts in the central warehouse of **GEA Niro Soavi S.p.A.** or in the warehouse of distributors cannot be guaranteed all the time, and is subject to restrictions connected with the supply of materials and the possibility of shipment.

In addition, shipment cannot guarantee certain delivery, and delivery time must account for possible problems linked to customs clearance and loss of goods during carriage

In no case shall **GEA Niro Soavi S.p.A.** be held responsible for possible delays due to the shipment of spare parts.

The following is a list of spare parts that from our experience is important to keep in stock:

- a complete set of gaskets
- two sets of packings
- one or two plungers
- a homogenizing valve set for each stage (for homogenizers)
- a set of balls and valve seats
- a set of seats and pumping valves, if the machine is used with abrasive products
- pressure gauge for head
- seat and ball for safety valve
- oil filters
- set of gaskets for guide pistons
- crankshaft oil seal


ONE 7TS – Spare parts

10.2 How to order spare parts

Customers are required to buy original parts. Removal and fitting back procedures must be performed according to the instructions provided by the manufacturer.

ORDERING SPARE PARTS

To order the spare parts from our Technical Support Department the following details must be specified:

- TYPE OF MACHINE
- SERIAL NUMBER OF MACHINE
- YEAR OF MANUFACTURER
- DRAWING NO.
- POSITION
- DESCRIPTION
- QUANTITY

If you are ordering electric spare parts include:

- WIRING DIAGRAM NO.
- VOLTAGE

.

- Hz FREQUENCY



ONE 7TS – Spare parts

10.3 Safety precautions



The procedures for replacing spare parts must be carried out by qualified technicians in compliance with the instructions provided and WITH ALL THE SAFETY PRECAUTIONS indicated in chapter 7 "Maintenance" and in chapter 3 "Safety".

In particular the machine must be set to maintenance state with its functions completely blocked to prevent accidental starting of the machine during the procedures.

When you replace a safety component (sensor, photocell, etc.) make sure that the new component has the same safety class as the original component

To preserve the characteristics of quality and efficiency of the machine it is necessary to use exclusively original spare parts.

The use of non original spare parts will also immediately invalidate the warranty.

This catalogue includes the instructions for ordering spare parts, after selecting the parts in the enclosed drawings and list of codes.

The spare parts can be requested directly from **GEA Niro Soavi S.p.A.** Technical Support Department, or through the local **GEA Niro Soavi S.p.A.** Representative or Authorized Dealer who will provide advice and promptly send the request.

When placing an order Customers must indicate:

- SERIAL NUMBER of the machine
- code of component requested
- if needed, a brief description of the component to facilitate its identification
- requested quantity
- if needed, reference number from assembly drawing as shown in the SPARE PARTS CATALOGUE
- requested means of transport or shipment; if this is not specificed, **GEA Niro Soavi S.p.A.** will use the means of transport of their choice
- whether the shipment is urgent, this may affect the cost of shipment
- exact address for delivery and name of contact person

To request spare parts or a quotation, use the standard form below which can be photocopied and sent by fax.



NIRO SOAVI ORIGINAL SPARE PARTS INQUIRY FORM

То:	
Fax No.	
From:	
Name:	
Reply Fax No.	
e-mail:	

Model:	
Serial No.	

ORDER No.

Part CODE	Qty	Description

Shipping Specs.	



ONE 7TS – Spare parts

10.4 List of components and assembly drawings





4			~.,	
1	ASSIEME	ASSEMBLY DRAWING	1	0138021
2	TESTATA	COMPRESSION HEAD	1	0137820
3	ASSIEME	ASSEMBLY DRAWING	1	0129111-15
4	ASSIEME	ASSEMBLY DRAWING	1	0129111-16
5	PRIGIONIERO	STUD	16	0136867
6	DADO	NUT	16	760004
7	ORING	ORING	6	140209FB
8	FLANGIA	FLANGE	4	0137830
9	FLANGIA	FLANGE	2	0137894
10	PRIGIONIERO	STUD	8	0136869
11	DADO	NUT	8	760004
12	PRIGIONIERO	STUD	4	0137984
13	DADO	NUT	4	760006
14	SPINA	PIN	6	990015
15	VITE	SCREW	12	70TCE12X50
16	ORING	ORING	1	140031FB



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Item	Description	Description	Qty	Part Code
1	ASSIEME VALVOLA ASPIRAZIONE	SUCTION VALVE ASS.DRW.	1	0129111-15
2	COPERCHIO VALVOLA	VALVE COVER	3	0137979
3	SEDE VALVOLA	VALVE SEAT	3	0136832
4	SFERA	BALL	3	190029
5	COPERCHIO VALVOLA	VALVE COVER	3	0136833
6	ORING	ORING	6	140029FB
1	ASSIEME VALVOLA MANDATA	DELIVERY VALVE ASS.DRW.	1	0129111-16
2	SEDE VALVOLA	VALVE SEAT	3	0136832
3	SFERA	BALL	3	190029
4		VALVE COVER	3	0136833
5	ORING	ORING	6	140029FB
0				1400201 D

										MACCH. N.P.
							(4		FINE UNI EN 22768/1-F
			5					-(2)		DI TOLLERANZA CLASSE DI TOLL.
										QUOTE SENZA INDICAZIONE DI
• REF.	PAI	RT-CODE	_	PART-D	SCRI PTI ON	U. Q1	Г <u>Ү</u> . М	ATERI AL	M. CODE	NOTE
DESCRI	PTION	F	SPL GR VAL	V. PVB 1" M	IAND. 11TS I RM		MATERIAL		M. CODE	Δ4
DESI	IGNER	APPROV.	CHECKED	DATE		Nino Co	ovi C n A		SCALE 1: 2	
CN				04-12-2006			Edoari 20/A		SH 1 0E 1	
REV.		DESCRI PTI ON	SI GN.	DATE		43100 PAR	MA (ITALY)	DRAWI NG		
					PHONE:++39 (0)521 9	965411 - FAX ++	39.(0)521.242819	0129	111-16	
					1 IUNL.++39.(0)321.8		00.10/021.242013		10	

							(!	5		MACCH. N.P.
							(4		N 22768/1- F
				6			(3		DI TOLL. FINE UNI EN
							(2		ONE DI TOLLERANZA CLASSE
			CON	IGURA	ZIONE VALVC	DLA DI ASF	PIRAZIONE			quote senza indicazi
• REF.	PART-	-CODE		PART-DE	SCRI PTI ON	U. QTY.	МАТЕ	ERI AL	M. CODE	NOTE
DESCRI	PTI ON	ES	J SPL. GR. VAL	.V. PVB 1" A	SP. 11 TS LBM		MATERIAL		M. CODE	A4
desi CN	IGNER	APPROV.	CHECKED	DATE 04-12-2006		Niro-Soav	vi S.p.A.		SCALE 1: 2	
REV.		DESCRIPTION	SI GN.	DATE		via M. da Erba Edoa	ri, 29/A (ITALX)		SH. 1 OF 1	
					PHONE:++39.(0)521.	965411 - FAX:++39.(0	()521.242819	0129	111-15	1



Item	Description	Description	Qtv	Part Code
1			1	0138022
- I	ASSIEIVIE		1 0	0130022
2	FLANGIA		3	013/9/3
3	ORING	ORING	3	140041FB
4	PACCHETTO	PACKING	3	41513F9252
5	PISTONE	PLUNGER	3	0137975
				1





Item	Description	Description	Qty	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0133854
2	MANOMETRO	PRESSURE GAUGE	1	320241
3	RONDELLA	WASHER	1	0100036
4	FLANGIA	FLANGE	1	0138006
5	ORING	ORING	1	130031S
6	ORING	ORING	1	130027FB
			· ·	1000211.0
				1

	1		
		2	Ċ. Z
			MACCH.
		5	. FINE UNI EN 22768/1-F
		3	TOLLERANZA CLASSE DI TOLL
4			QUOTE SENZA INDICAZIONE DI
	· ·		
кег. РАКТ-DESCRIPTIO DESCRIPTION	N U. QTY.	MATERIAL	M. CODE NOTE
ESPL. CUNTR. PRESS. MANOM. Designer approv. checked date	NS3015		SCALE 1. F
CN	Niro-Soav	1 S.p.A. $ \overbrace{+} + (+) $	
REV. DESCRIPTION SI GN. DATE	」└───∠/ ∖_ via M. da Erba Edoar	i, 29/A	SH. 1 OF 1
	43100 PARMA		220E 4
	PHONE:++39.(0)521.965411 - FAX:++39.(0)	521.242819 UI.	55054

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Item	Description	Description	Qty	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0136876
2	ORING	ORING	1	140314FB
2	FLANGIA	FLANGE	1	0137078
J 1			2	60TE10Y25
5	ORING		2	120021ED
5			1	130031FD
0			1	110905
/	GIRELLA		1	110011
ļ				

	\bigcirc	
массн. N.P.	REF. PART-CODE PART-CODE DESCRIPTION ESPL. FL. ASP. ONE DESIGNER APPROV. CHECKED DATE . . CN . . REV. DESCRIPTION SIGN. DATE DESCRIPTION U. QTY. MATERIAL M.CODE NOTE 11TS LBM DIN MATERIAL M.CODE A4 Image: Scale for the state in



Item	Description	Description	Qtv	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0136878
2	ORING	ORING	1	140314FB
2	ELANGIA	FLANGE	1	0127079
3			1	0137970 COTE40X25
4			2	091E10A20
5	URING		1	130031FB
6	BOCCHEITONE		1	110905
1	GIRELLA	NUT	1	110011
	1			





Item	Description	Description	Qty	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0124720
2	ORING	ORING	1	130027FB
3	SEDE VALVOLA	VALVE SEAT	1	0123695
4	SFERA	BALL	1	190044-1
5	ORING	ORING	1	140017FB
6	RONDELLA	WASHER	1	0100036
7	ALBERINO	SHAFT	1	0126123-3
8	FLANGIA	FLANGE	1	0138006
9	CORPO	BODY	1	0126124-3
10	DADO	NUT	4	760004
11	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
12	TUBAZIONE	PIPE	1	0125932
13	VITE	SCREW	6	69TE6X15
14	ORING	ORING	2	140011FB
15	RONDELLA	WASHER	1	0124713
16	BRONZINA	BRONZE BEARING	1	0124714
17	CONTENITORE MOLLA	SPRING HOUSING	1	0124712
18	MOLLA	SPRING	1	0124716
19	DADO	NUT	1	0124943
20	ORING	ORING	1	140188FB
21	COPERCHIO VALVOLA	VALVE COVER	1	0126615
22	VITE	SCREW	1	0124711
23	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
24	DADO	NUT	1	0124943
26	ORING	ORING	1	130031S



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Item	Description	Description	Qty	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0138024
2	CAMERA OMOGENEIZZANTE	HOMOGENEIZING CHAMBER	1	0137989
3	TESTINA DI PASSAGGIO	PASSAGE HEAD	1	0125012
4	ORING	ORING	1	140029FB
5	ANELLO D'URTO	IMPACT RING	1	0126322
6	TESTINA D'URTO	IMPACT HEAD	1	0137992
7	ORING	ORING	1	140330FB
8	BOCCOLA	BUSHING	1	260358
9	PROLUNGA	EXTENSION	1	0137996
10	CILINDRO PNEUMATICO	PNEUMATIC ACTUATOR	1	350145
11	VITE	SCREW	4	69TCE8X50
12	PRIGIONIERO	STUD	2	0138111
13	DADO	NUT	2	760003
14	FLANGIA	FLANGE	1	0137995
15	SUPPORTO	SUPPORT	1	0138003
16	RACCORDO	CONNECTION	1	260119
17	RACCORDO	CONNECTION	1	261214
18	DISTANZIERE	SPACER	1	0138002
19	ORING	ORING	1	140205FB
20	ORING	ORING	1	140031FB
21	VITE	SCREW	2	69TCE10X25
22	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
23	CODICE NON PRESENTE	NOT EXISTING CODE	-	-



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Item	Description	Description	Qty	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0138024
2	CAMERA OMOGENEIZZANTE	HOMOGENEIZING CHAMBER	1	0137989
3	TESTINA DI PASSAGGIO	PASSAGE HEAD	1	0125012
4	ORING	ORING	1	140029FB
5	ANELLO D'URTO	IMPACT RING	1	0126322
6	TESTINA D'URTO	IMPACT HEAD	1	0137992
7	ORING	ORING	1	140330FB
8	BOCCOLA	BUSHING	1	260358
9	PROLUNGA	EXTENSION	1	0137996
10	CILINDRO PNEUMATICO	PNEUMATIC ACTUATOR	1	350145
11	VITE	SCREW	4	69TCE8X50
12	PRIGIONIERO	STUD	2	0138111
13	DADO	NUT	2	760003
14	FLANGIA	FLANGE	1	0137995
15	SUPPORTO	SUPPORT	1	0138003
16	RACCORDO	CONNECTION	1	260119
17	RACCORDO	CONNECTION	1	261214
18	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
19	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
20	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
21	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
22	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
23	CODICE NON PRESENTE	NOT EXISTING CODE	-	-



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Item	Description	Description	Qty	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0138026
2	CORPO DI TRASMISSIONE	TRANSMISSION BODY	1	0131400
3	ALBERO A GOMITI	CRANKSHAFT	1	0127073
4	CUSCINETTO	BEARING	2	220306
5	FLANGIA	FLANGE	1	0108927
6	VITE	SCREW	16	70TCE10X25
7	ORING	ORING	2	140109
8	FLANGIA	FLANGE	1	0120222
9	GUARNIZIONE	GASKET	1	180051
10	PISTONE DI GUIDA	GUIDING PLUNGER	3	0137812
11	SPINOTTO	WHRIST PIN	3	250006
12	RONDELLA	WASHER	6	0100119
13	BIFLIA		3	0109680
14	BRONZINA	BRONZE BEARING	3	0113175
15	FLANGIA	FLANGE	3	0134474-9
16	ANELLO RASCHIATORE	ROD SCRAPER	3	160138
17	ORING	ORING	3	140194
18	GUARNIZIONE	GASKET	3	160137
19	VITE	SCREW	12	70TE6X25
20	SPINA	PIN	2	990019
21	COPERCHIO	COVER	1	0137817
22	VITE	SCREW	8	70TE8X25
23	VITE	SCREW	4	70TE12X35
24		FEATHER KEY	1	810868
25	ТАРРО	PLUG	1	170001
26	GUARNIZIONE	GASKET	1	630005
27	ТАРРО	PLUG	1	120919
28	PORTAGOMMA	HOSE COUPLING	1	260010
29	MORSETTO	CLAMP	3	350903
30	LIVELLO OLIO	OIL LEVEL	1	170052
31	RUBINETTO	BALL TAP	1	580012
32	ТАРРО	PLUG	1	260904
33	CONVOGLIATORE OLIO	OIL CONVEIOR	2	0100155





Item	Description	Description	Qtv	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0138027
2	MOTORE PRINCIPALE		1	MB411241/F
2			1	610018
<u>з</u>	BUSSOLA	BUSHING	1	610618
5		BESTING	5	40SP71050X
5			1	403FZ1930A
7			1	60TE12V25
0			4	091212725
0			1	010014
9				0121433
10	RONDELLA	WASHER	I	0122157





ltem	Description	Description	Qtv	Part Code
1	SCHEMA IMPIANITO		1	0138273-2
2			1	260162
2	RONDELLA	WASHER	1	680045
4	RIDUTTORE PRESSIONE	PRESSURE REDUCER	1	390298
5	MANOMETRO	PRESSURE GAUGE	1	320081
6	INTERRUTTORE PNEUMATICO	PNEUMATIC SWITCH	2	390088
7	RIDUTTORE PRESSIONE	PRESSURE REDUCER	3	390301
8	DOSATORE	FLOW BATCHER	3	390046
9	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
10	GIUNTO	COUPLING	2	260313
11	GIUNTO	COUPLING	2	260310
12	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
13	GIUNTO	COUPLING	2	260310
14	GIUNTO	COUPLING	2	260314
15	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
16	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
17	OLIO	OIL	2	530006
18	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
19	SERBATOIO	TANK	1	880008
20	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
21	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
22	CODICE NON PRESENTE	NOT EXISTING CODE	-	-
23	CODICE NON PRESENTE	NOT EXISTING CODE	-	-





ltem	Description	Description	Qtv	Part Code
1	ASSIEME	ASSEMBLY DRAWING	1	0133601-76
2	FILTRO	FILTER	1	230014
2	RONDELLA	WASHER	1	6800/15
<u>л</u>			1	260162
5			1	300212
6			1	590212
7			1	260010
0			1	200010
0			1	790002
9			1	200102
10	RACCORDO		1	260484
11			1	260490
12	NIPPLO		1	261149
13	RACCORDO	CONNECTION	5	260488
14	RACCORDO		1	260489
15	RACCORDO A I	TEE CONNECTION	1	260474





ONE 7TS – Spare parts

10.5 Maintenance box



Item	Description	Description	Qty	Part Code
-	CHIAVE 10	WRENCH 10	1	810210
-	CHIAVE 14	WRENCH 14	1	810214
-	CHIAVE 19	WRENCH 19	1	810219
-	CHIAVE 24	WRENCH 24	1	810224
-	VITE	SCREW	1	69TE12X60
-	CHIAVE	WRENCH	1	810308
-	PINZA CURVA	PINCERS	1	810003
-	CHIAVE	WRENCH	1	810306
-	ESPANSORE	EXPANDER	1	810516
-	VITE	SCREW	1	69TE10X60
-	CHIAVE	WRENCH	1	810419
-	LEVA GOMME	PRY BAR	1	810612
-	GIRAVITE A CROCE	SCREWDRIVER	1	810010
-	ESTRATTORE	EXTRACTOR	1	810853
-	CHIAVE	WRENCH	1	810310
-	CHIAVE	WRENCH	1	810420
-	CHIAVE	WRENCH	1	810717
-	CHIAVE 14	CHIAVE 14	1	810214
-	BUSTA PORTA ATTREZZI	BAG FOR TOOLS	1	350467
-	ATTREZZO	TOOL	1	880010
-	ESPANSORE	EXPANDER	1	810520
-	INTRODUTTORE PACCHETTO	PACKING INTRODUCER	1	0114674
-	MANICO	HANDLE	1	0104613
-	ATTREZZO	TOOL	1	0120860
-	MANIGLIA	HANDLE	1	0105615
-	ORING	ORING	3	140041FB
-	PACCHETTO	PACKING	3	41513F9252
-	ORING	ORING	1	140029FB
-	ORING	ORING	1	140330FB
-	ORING	ORING	1	140205FB
-	ORING	ORING	1	140031FB
-	ORING	ORING	2	130027FB
-	ORING	ORING	2	130031S
-	ORING	ORING	1	140017FB
-	ORING	ORING	1	140031FB
-	ORING	ORING	13	140029FB
-	ORING	ORING	2	140314FB
-	ORING	ORING	6	140209FB
-	ORING	ORING	1	140330FB
-	ORING	ORING	2	130031FB
-	ORING	ORING	2	140011FB
-	ORING	ORING	1	140188FB



ONE 7TS – Enclosures

CHAPTER 11

Enclo	sures	Page
11.1	Technical specifications	2
11.2	Drawing and diagrams	3
11.3	CE declaration of conformity	4
11.4	Test Report	5



ONE 7TS – Enclosures

11.1 Technical specifications

01/10/2005 - Rev. 2.2

GEA NIRO SOAVI		M	ACHINE TECHNICAL DATASHEET	TT-0120C	
1 GENERAL SPECIFICATIO			DNS		
1.1	.1 Type of Machine		HOMOGENIZER		
1.2	1.2 Model		ONE 7TS		
1.3	I.3 Version		ARIETE		
1.4	Serial Number		9146		
1.5	1.5 Execution		SANITARY		
1.6	1.6 Special Features		1		
1.7	1.7 Revision Index		0		
1.8	Date		07/06/11		

2	WORKING CONDITIONS	
2.1	Product	ICE CREAM MIX
2.2	MAX Viscosity	<500 cP
2.3	MAX Working Pressure	210 bar
2.4	Flow Rate Type	F F = Fixed; V = Variable; M = Multi
2.5	MIN Flow Rate	/ L/h @ / Hz
2.6	MAX Flow Rate	700 L/h @ / Hz
2.7	MIN Feed Pressure	2-3 bar
2.8	MAX Backpressure	5 bar
2.9	MAX Product Temperature	<90 °C
2.10	MAX CIP / SIP Temperature	140 °C
2.11	Ambient Conditions	40°C MAX; R.H. 40%; 1000 m above sea level

3	TECH FEATURES - COMPRESSION HEAD	
3.1	Туре	MONOBLOCK
3.2	Material	SAF 2205
3.3	No. of Plungers	3
3.4	Plunger Material	AISI316+CR
3.5	Plunger Diameter	25 mm
3.6	Plunger Stroke	40 mm
3.7	Pumping Valve Type	PVB 1"
3.8	Pumping Valve Material	AISI 316L
3.9	Pumping Valve Seat Material	AISI 316L
3.10	Overpressure Valve Type	NSSRLV
3.11	Overpressure Valve Setpoint	250
3.12	Packing Material	HDD
3.13	Gaskets Material	NITRILE
3.14	Overpress. Valve Type/IN LINE	/
3.15	Overpr. Valve Setpoint/IN LINE	/ bar
GEA Niro Soavi S.p.A.

01/10/2005 - Rev. 2.2

GEA NIRO SOAVI		MA	CHINE TECHNICAL DATASHEET	TT-0120C			
4	TECH FEATURES - CO	ONN	ECTIONS & ACCESSOF	RIES			
4.1	Connection INLET		DN25 (DIN 11851)				
4.2	Connection OUTLET		DN25 (DIN 11851)				
4.3	Pulsation Dampener INLET	•	1				
4.4 Pulsation Dampener OUTLET		/					
4.5 Feeding Pump			/				

5	ECH FEATURES - PRESSURE GAUGES								
5.1	Pressure Gauge Inlet	/							
5.2	Pressure Gauge Compr. Head	MANO. D100 0-400BAR							
5.3	Pressure Gauge second Stage	/							
5.4	Pressure Gauge Outlet	/							

6	ECH FEATURES - HOMOGENIZING VALVES							
6.1	No. of Stages	2						
6.2	Type of Control	PNEUMATIC						
6.3	Homogenizing Valve Type	D11,9-30 ONE 7TS						
6.4	Homogenizing Valve Material	С9М						

7	TECH FEATURES - DRIVE END								
7.1	RPM Crankshaft MIN	/							
7.2	RPM Crankshaft MAX	218							
7.3	Stroke	40 mm							
7.4	Drive Type	DIRECT BELT							
7.5	Gearbox Speed Reduction Ratio	/							
7.6	Main Motor (frame/type)	132S/4P							
7.7	Main Motor Power	5,5 kW							

8	TECH FEATURES - LUBRICATION							
8.1	Туре	SPLASH SYSTEM						
8.2	Lubricating System	1						
8.3	Oil Cooling System	/						

9	FECH FEATURES - ELECTRICAL SUPPLY							
9.1	No. of Phases - MAIN	3						
9.2	Voltage - MAIN	400 V						
9.3	Frequency - MAIN	50 Hz						
9.4	Voltage - AUX	24 DC V						
9.5	Frequency - AUX	/ Hz						



ONE 7TS – Enclosures

11.2 Drawing and diagrams

- Installation drawing
- Flow sheet and legend
- Utility specificationElectrical documentation



		LEC	SPEC - 102 C							
Via M. da Erba Edoari, 29/A 43100 PARMA (ITALY)	TO COI	NCEP	I FLOV	VSHEET	DATE	REV.				
PHONE : +39.0521.965411 - FAX : +39.0521.242819		Page		SIG.	0					
1. INSTRUMENT SYMBOLS		5.	МАС	HINERY AND EQU	IPMENT					
			\bigcirc	AUTOMATIC ACTUATOR FOR REMOTE CONTROL, GENERAL						
			H 	MANUAL ACTUATOR CONTROL	NOT FOR REMOTE	Ē				
LIMIT VALUE H: HIGH OR OPEN L: LOW OR CLOSED			H	AUTOMATIC ACTUA MANUAL CONTROL I	TOR WITH INTEGR/ FACILITY	ATED				
	NT		\cap	DIAPHRAGM ACTUA	TOR					
	ATION		\square	SOLENOID ACTUATO	DR					
			Ц Т	PISTON ACTUATOR						
2. PROCESS LINES	ENERAL		$\begin{pmatrix} M \\ 3 \end{pmatrix}$	ELECTRIC AC MOTO	R					
SECONDARY FLOW LINE	E, GENERAL		n1 n2	ADJUSTABLE SPEED CONTROL						
——— MECHANICAL CONNECT	ION		\bigcirc	COMPRESSOR OR VACUUM PUMP, GENERAL						
			Å	FAN						
	5		\bigcirc	PUMP FOR LIQUIDS	GENERAL					
5. INSTRUMENT SIGNAL LIN	E3		\bigcirc	CENTRIFUGAL PUM	5					
ELECTRICAL			\bigcirc	HIGH PRESSURE PU	IMP					
-A-A- PNEUMATIC			4	1-STEP HOMOGENIZ	ΈR					
HYDRAULIC			₽ ₽	2-STEP HOMOGENIZ	ΈR					
- * x- CAPILLARY				FILTER, GENERAL						
4. FLOW LINE ABBREVIATIO	NS			HEAT EXCHANGER \ FLOW e.g. ELECTRIC	WITHOUT CROSS CHEATER					
AS AIR SUPPLY			->	LIGHT SOURCE						
CIP CLEANING IN PLACE CS CONDENSATE SUPPL CWS CHILLED WATER SUPI	Y PLY		\bigcirc	VALVE CLOSES (FC)						
ES ELECTRIC SUPPLY GS GAS SUPPLY			$\overset{\bigcirc}{\bowtie}$	VALVE OPENS (FO)						
NS NITROGEN SUPPLY OS OIL SUPPLY SS STEAM SUPPLY				VALVE RETAINS POS	SITION					
WS WATER SUPPLY . R RETURN			Fo	FAIL-OPEN INDICATI	ON FOR A 3-WAY \	/ALVE				



LEGEND TO CONCEPT FLOW SHEETS

SPEC - 102 C

DATE

SIG.

via M. da Erba Edoari, 29/A 43100 PARMA (ITALY) PHONE : +39.0521.965411 - FAX : +39.0521.242819

Page 2 of 2

. REV.

6. LETTER CODE FOR IDENTIFICATION OF INSTRUMENT FUNCTIONS

	FIRST LETTER MEASURED OR INITIATING VARIABLE	MODIFIER	SUCCEEDING LETTER (1) DISPLAY OR OUTPUT FUNCTION	
А			ALARM	
В			DISPLAY OF STATE	(2)
С			CONTROLLING	(4)
D	DENSITY	DIFFERENCE		
Е	ALL ELECTRICAL VARIABLES (5)		SENSING ELEMENT	
F	FLOW RATE	RATIO		
G	GAUGING, POSITION OR LENGTH			
н	HAND (MANUALLY INITIATED) OPERATED			
Ι			INDICATING	(3)
J		SCAN		
к	TIME OR PROGRAMMED TIME			
L	LEVEL			
М	MOISTURE OR HUMIDITY			
Ν	USER'S CHOICE		USER'S CHOICE	
0	USER'S CHOICE			
Р	PRESSURE OR VACUUM		TEST-POINT CONNECTION	
Q	QUALITY (5)	INTEGRATE OR TOTALIZE	INTEGRATING OR SUMMATING	
R	NUCLEAR RADIATION		RECORDING	
S	SPEED OR FREQUENCY		SWITCHING	(2)
Т	TEMPERATURE		TRANSMITTING	
U	MULTIVARIABLE		MULTIFUNCTION UNIT	
V	VISCOSITY		VALVE, DAMPER, ACTU, ELEMENT	
W	WEIGHT OR FORCE			
х	UNSPECIFIED (5)		UNCLASSIFIED FUNCTIONS	
Y	VIBRATION		COMPUTING RELAY, RELAY	
Z			EMERG. / SAFETY ACTING	(2)

EXAMPLE : (PDIRC)

DIFFERENTIAL PRESSURE INDICATION, RECORDING AND CONTROL FIRST LETTER P, MODIFIER D, SUCCEEDING LETTERS I,R,C

- 1) NORMAL SEQUENCE OF SUCCEEDING LETTERS : B.I.R.C.T.Q.S.Z.A.
- 2) SIGNAL TYPE : ON/OFF
- 3) SIGNAL TYPE : CONTINUOUS
- 4) SIGNAL TYPE : NORMALLY CONTINUOUS. IF ON-OFF, S IS ADDED

5) A NOTE SPECIFIES THE MEASURED PROPERTY. E.g. FOR LETTER E, I, U, P OR F



This drawing is property of NIRO-SOAVI, which will guard its rights by law terms.

Niro-Soavi S.p.A. via M. da Erba Edoari, 29/A 43100 PARMA (ITALY)			U	SPEC	FICA	CONS	umi <i>tion</i>					τŦ	-014	1				
PHONE : +39.0521.965411 - FAX : +39.0521.242819			_	0140				<u> </u>		P		10.06.11						
M				_	N°		DIE				G	10.06.						/
	MACHINE M	10DEL			SE	RIAL	No.			SI	G. G.	DATA			Ē		REV	· /
					C	ONSU	мі		ONSU	MDTI	21							
			Fluido		Ri	ch.		PRES	SIONE		Т	EMPE	RATUR	RA		CO	NSUM	1
			Liquid		Requ	uired		PRES	SURE		T	EMPE	RATUF	RE	с	ONSI	JMPTI	ON
								В	ar			٥	С				l/h	-
PIST						21	N	lin	M	ах	N	lin	M	ax	N	lin	<u> </u>	Max
PIST	ONS		WATER		YE	ËS		2	:	3	1	0	2	25	6	i0		
RIDUT	TORE																	
GEAR					N	0												
OIL EXCI	HANGER				N	0												
SCAMB. C	ONDENSA																	
CONDENSATE	EXCHANGER																	
Note: max. durezz	a < 15°fH, max. dir ess < 15°fH, max. p	nensioni p article size	e = 60 microns	cron , filtred wate	er													
ARIA COM	//PRESSA				5	SI		2	1	0							Τ	
COMPRE	SSED AIR				YE	ES		0		0						J		
Note : max. dimen	isioni particelle < 1	5 µm, max	c. concentrazio	one particell	e < 8 mg/i	m3, max.	termpera	tura di co	ndesazio	ne < 3°C,	max. co	ntenuto ol	io < 5 m.	g/m3 (Rif	. ISO 857	3)		
Note. max. partice	n size < 15 µm, ma	k. particer	concentration	< o my/ms,	max. pres	sure dew	001111 < 3	B	ar		5 mg/m3	0	C		[k	g/h	
PROD. CO	ONDENSA																Ĭ	
CONDENS	ATE PROD.																	
Il Cliente dovra ins The customer mus	stallare un riduttore st install a pressure	al punto d reducer a	t the steam in	apore per a let connectio	battare la	pressione	sure to t	jenze del he machi	a maccni ne's requi	na rements								
COMPENS	SAT. PULS.																	
PULSATIO	N DAMPER																	
valore di pressione	e sul tubo di alimen referred to the inlet	itazione de feeding ni	el prodotto															
		recarrig pr	V		h	lz	k	W		4					1	V		Hz
ELETT	RICITA'	3x	400		5	60		5	1	3	٦	ENS. AU	JSILIAR	IA	2	24		DC
Electrica	al supply	U.								•		Aux. Voltage						
						мото	RI	- M	OTOR	S								
TAG	Codice Code	;	Norme Standards	Collegamento	Connection	.M Marca Brand	⇔ <pre>Contract</pre> Contract	Frequenca R Frequency	Poli Poles	 Rated Output 	A Corrente	Corr. spunto P Start. current	O Fatt. potenza	Efficienza <i>Efficiency</i>	Forma Frame	et Grand.	D Protezione	NO Rulli / Edm NO R. bearings / Edm
M-O	MB4113A1/I	F IEC-	CENELEC	STA	R	FEL	400	50	4	7,5	15,7	107	0,83	87,3	B3	132	ov ov	2
																		NO NO
	SI					Qu	adro	Elettr	ico d									
Installazione	dentro	la Macch	nina Pos	. morset	tiera	Basso			correr	nte C.C		~	۲A	Protez	zione			5
Installation	Inside t	the mach	hine Teri	ninal po	S.	Bottom	ı		Short	circ.cu	rrent	9	кА	Prote	ction		IP 5	0
Materiale	INOX	ee etc al	Raf	freddamo	ento	NATU	RALE		Norm	e Iarda		IE	C	Pot. di	ssipata	or	0,045	kW
Vedere docu	mento dispos	ss sieel sizione e	esterna	iiiig		IVA I UI	VAL		N° Fo	arus ali				Peso	ai. pow	71		
Reference: e	external view	drawing	1		47_0	UQE7TS	540003	AD.pdf	N° Sh	eets			1	Weigł	ht		20÷30	kg

Gŧ	Nin Via 4310	r o-Soavi S.j M. da Erba Edoar 00 PARMA (ITAL'	p.A. ri, 29/A Y)		SPECIFICA CAN	/I				TT-014	2
PHONE : +3	39.0521.965411 -	FAX : +39.0521.2	42819						4	0.02.10	0
MC	DELLO MA			N°	DI SERIE		ALB 1 SIG.			DATA	REV.
	MACHINE N	NODEL		SE	RIAL No.		SIG.			DATE	REV.
* Usare c To use I	avo o impianto E EExd IIB T4 cable	e or plant ; Cables	PE) ; Pres gland su	ssacavi per cavo itable for UNARM	NON ARMATO ** OURED cables	Usare (<i>To u</i> se	cavo scherm blue screen	ato blu per in ed cable for E	npianto EExi pla	eExia (AD-I) ant	
				LIS	FA CAVI - CA	ABLE	LIST				
		ATTENZION	E > LA S	SEZIONE DEI C	AVI É CALCOLATA PEI			MASSIMA E	DI 50 M	IETRI	
Sigla	Тіро	Sezione	mm ²	Tens./Corr.	da	ECTON	TIL SO WET	a a	ICE	Descrizione)
Item	<i>Type</i> FG70R	Section		Volt./Curr. 380-415Va.c	from CLIENTE		Quadro e	to I. NIRO-SO	OAVI	Denominati Interruttore di	on alimentazione
CE1	0,6/1kV	4G x 2,	,5	440÷480Va.c.	CUSTOMER	2	NIRO-S	SOAVI E.P	. <i>B</i> .	Main switch	
CC7 (OPTIONAL)	FR2OHR 300/300V	2 x 1 + S	SC	4÷20mA	Quadro el. NIRO-S	Soavi P.B.	C CU	LIENTE STOMER		Feedback pre	ssione 1°stadio
,										g, p, or	









SCHEMA ELETTRICO *ELECTRICAL CIRCUIT DIAGRAM*

TIPO MACCHINA : MACHINE TYPE :	ONE7TS
NUMERO DI SERIE : SERIAL NUMBER :	STOCK
Codice NS : <i>NS code :</i>	K_QE7TS400
DATA : <i>DATE :</i>	19.02.2010

































1	2	3	4	5	6	7
	2	3 CANALA 25 KM PT G FR 25 COM 24V CA MORSETTIERE - (X1)	4 x 80 mm Q F 1 S x 80 mm Logol BASE 5 x 80mm GS1 S x 80mm GS1 XALA 25 x 8 TERMINAL BOAR (X2) TA / US S /NLE T	5 I I I I I I I I I I I I I I I I I I I	$\frac{1}{25\times80} (Clente) - (CUSTOMER)$	7
TITLE : DISPOS DESIGNER CHECK. ALB CHECK. REV. DESCRIPTIO O EMITTED	IZIONE TOPOC APPR. SCALE D/ 1:5 19.0 ON SIGN. D/ ALB 19.0	CRAFICA INTER ATE D2.10 ATE D2.10 PHONE:+39.05 This draving is propert	Niro-Soci via M. da Erba 43100 PARMA 21. 965411-TELEFAX:+38 y of NIRO-SOAV, which will guard	RICAL LAYOU7 vi S.p.A. Edoari, 29/A (ITALY) 9.0521.242819 OR Tta righte by low terme. OR	<u>EQUIPMENT</u> Drawing n 00QE7TS40 <u>der serial m</u> stock	IO. PAGE 1 002 OF ACHINE TYPE DIR. ONE7TS ARCH.



1	2	3	4	5	6	7	
			MAIN SWITCH				
	BIANCA HL-L	ARD ED	ELECTRICAL PROTECTIONS INTERVENTION	F PI F	DW INLET FEEDING RESSURE ROSSA RED HL-SPI		
TITLE : ELENCO T DESIGNER CHECK.	EL TARGHETTE – <i>PL</i> APPR. SCALE D/ 24.	ENCO TARGHE PLATES LIST ATES LIST	TTE SUL QUA ON SWITCHB	ADRO ELETTRI OARD FRONT	ICO DRAWING 1	Νο.	PAGE
REV. DESCRIPTI	0N SIGN. D/ CB 24.	Doc.09 December 2000 ATE 08.09 PHONE:+39.052 This drawing is property	Niro-Soc via M. da Erba 43100 PARMA 21.965411-TELEFAX:+36 v of NIRO-SOAVL which will aurord	VÍ S.p.A. Edoari, 29/A (ITALY) 0.0521.242819 Its rights by low terma.	00QE7TS40 der serial m	0004 IACHINE TYPE	OF 1 DIR.

1	2	3	4	5	6	7	
PANNELLO FRONTALE PULSANTIERA (OMOGENEIZZATORE NIRO-SOAVI) <i>PUSHBUTTONS FRONT PANEL</i> <i>(NIRO-SOA VI HOMOGENIZER)</i>							
	(Scatola G cod.	ewiss GW27101, FC0040)		(Scatola Gewis cod. FC	4 3 2		
D= CC1 E= CC2	PRESSACAVO PRESSACAVO (CABLE GLAND (M10 DI CAVO CAVO	CABLE 300/500V 300/500V	SEZIONE SEZIONE DEL CAVO 5 <i>ECTION</i> 2 mr 2 mr	n ² n ²			
	LEGENDA	– DESCRIF	PTION				
1(SB-EM)=	1(SB-EM)= PULSANTE DI EMERGENZA - EMERCENCY STOP PUSHBUTTON						
2(SB-A)=	2(SB-A) = PULSANTE DI ARRESTO MACCHINA - MACUNE STOP PULSUPLITION						
3(HL-M) = SEGNALAZIONE MACCHINA IN MARCIA -							
4(SB-M)= PULSANTE DI MARCIA MACCHINA - MACHINE START PUSHBUTTON							
TITLE : PANNE	LLO COMANDI	BORDO MACC	CHINA - CONT	ROL PANEL	ON THE MACH	INE FRONT	
ALB DESCRIPTION	AFFR. SUALE D 1:2 19. ON SIGN. D ALB 19.	ATE 02.10 02.10	Niro-Soa via M. da Erba 43100 PARMA	vi S.p.A. Edoari, 29/A (ITALY)	00QE7TS40	006 PAGE 006 0F 1 1	
		PHONE:+39. 05 This drawing is propert	21.965411—TELEFAX:+39 y of NIRO-SOAVI, which will guard	9. U521. 242819 OF	SERIAL M	ONE7TS ARCH.	



PROGRAMMA P.L.C. *P.L.C. SOFTWARE*

TIPO P.L.C. <i>P.L.C. TYPE</i>	: <i>:</i> LO	GO!	24RCo
LINGUAGGIO <i>LANGUAGE</i>	:	FU	Ρ
TIPO MACCHINA <i>MACHINE TYPE</i>	:	ONE [.]	7TS
NUMERO DI SERIE SERIAL NUMBER	:	STO	СК
DATA <i>DATE</i>	: : 1	9.02.	2010
(Pa	ssword :	NIROS	OAVI)

GEA Niro-Soavi S.p.A.		INGRESS	I - USCITE PL			
via M. da Erba E. 43100 PARMA (11 PHONE : +39.0521.965411 - FAX : +39.052	via M. da Erba Edoari, 29/A 43100 PARMA (ITALY) PHONE : +39.0521.965411 - FAX : +39.0521.242819		PLC INLET - OUTLET			C-10
	ONE7TS		STOCK	ALB	19.02.10	0
COMMESSA	MODELLO MACCHINA		N° DI SERIE	SIG.	DATA	REV.
JOB	MACHINE MODEL		SERIAL No.	SIG.	DATE	REV.

Ingresso	Sigla	Descrizione Ingresso
Inlet	ltem	Input description
14		INGRESSO DI EMERGENZA
L1	EIVI	EMERGENCY INPUT
12	SB-A	PULSANTE DI ARRESTO
		STOP PUSHBUTTON
13	SB-M	
14	KM-O	
		PROTEZIONE TERMICA MOTORE PRINCIPALE
15	FR-O	MAIN MOTOR THERMAL PROTECTION
10		TRASDUTTORE con SOGLIA DI MINIMA PRESSIONE IN ALIMENTAZIONE
10	5P-1	TRANSDUCER with FEEDING MINIMUM PRESSURE THRESHOLD
17		INGRESSO LIBERO
		FREE INPUT
18		INGRESSO LIBERO
		FREE INPU I

GEA Niro-Soavi S.p.A.		INGRESS	I - USCITE PL			
via M. da Erba Edoari, 29/A 43100 PARMA (ITALY) PHONE : +39.0521.965411 - FAX : +39.0521.242819		PLC INLET - OUTLET			37EC-10	
	ONE7TS		STOCK	ALB	19.02.10	0
COMMESSA	MODELLO MACCHINA		N° DI SERIE	SIG.	DATA	REV.
JOB	MACHINE MODEL		SERIAL No.	SIG.	DATE	REV.

Uscita Outlet	Sigla <i>Item</i>	Descrizione Uscita Output description
01	KMO	CONTATTORE PRINCIPALE
Q1	KM-O	MAIN CONTACTOR
00		INTERVENTO PROTEZIONI ELETTRICHE
Q2	HL-P	ELECTRICAL PROTECTIONS INTERVENTION
		BASSA PRESSIONE IN ALIMENTAZIONE
Q3	HL-SPI	LOW INLET FEEDING PRESSURE
04		ELETTROVALVOLA INGRESSO ARIA
Q4	YV-A	AIR INLET SOLENOID VALVE
#		
	1	


(Circuito di arresto macchina per errato inserimento contattore principale -

- Incorrect main contactor insertion STOP circuit)

Date:



Block Number (Type)	Parameter
B010(On-Delay) :	Rem = off 05:00s+
B011(Off-Delay) :	Rem = off 01:00s+
B012(On-Delay) :	Rem = off 02:00s+
B014(On-Delay) :	Rem = off 01:00s+
B016(Wiping relay (pulse output)) :	Rem = off 01:50s+
B018(On-Delay) :	Rem = off 01:00s+
B023(Latching Relay) :	Rem = off
B025(On-Delay) :	Rem = off 15:00s+
B065(Latching Relay) :	Rem = off

Creator:	ALB		Project:	P.Fix. , SP-I, YV-A	Customer:	
Checked:		GEA NIRO-SOAVI	Installation:	ONE7TS	Diagram No.:	QE7TS400AC
Date:	2/22/10 2:26 PM/2/22/10 2:26 PM		File:	QE7TS400AC.lsc	Page:	3

Connection		Label					
11		EM					
12		SB-A					
13		SB-M					
14		KM-O					
15		FR-O					
16		SP-I					
17		Available input					
18		Available input					
19							
l10							
l11							
l12							
l13							
l14							
l15							
l16							
l17							
l18							
l19							
120							
l21							
122							
123							
124							
C1▲							
C2▼							
C3◀							
C4►							
S1							
S2							
S3							
S4							
S5							
S6							
S7							
S8							
Creator:	ALB			Project:	P.Fix. , SP-I, YV-A	Customer:	
Checked: Date:	2/22/1	0 2:26 PM/2/22/10 2:26 PM	GEA NIRO-SOAVI	Installation: File:	ONE7TS QE7TS400AC.lsc	Diagram No.: Page:	QE7TS400AC 4

Connection	ion Label						
Al1							
AI2							
AI3							
Al4							
AI5							
Al6							
AI7							
AI8							
Q1		KM-O					
Q2		HL-P					
Q3		HL-SPI					
Q4		YV-A					
Q5							
Q6							
Q7							
Q8							
Q9							
Q10							
Q11							
Q12							
Q13							
Q14							
Q15							
Q16							
AQ1							
AQ2							
X1							
X2							
Х3							
X4							
X5							
X6							
X7							
X8							
X9							
X10							
Creator: Checked:	ALB	0.000 DM/0/00/00 DM	GEA NIRO-SOAVI	Project: Installation:	P.Fix. , SP-I, YV-A ONE7TS	Customer: Diagram No.:	QE7TS400AC
Date.	2/22/1	0 2.20 F W/2/22/ 10 2:20 MM		1 II C .	QL110400A0.150	i ayo.	3

Connection	Label
X11	
X12	
X13	
X14	
X15	
X16	

Creator:	ALB		Project:	P.Fix. , SP-I, YV-A	Customer:	
Checked:		GEA NIRO-SOAVI	Installation:	ONE7TS	Diagram No.:	QE7TS400AC
Date:	2/22/10 2:26 PM/2/22/10 2:26 PM		File:	QE7TS400AC.lsc	Page:	6

GEA Niro-Soavi S.p.A. via M. da Erba Edoari, 29/A		/i S.p.A. Edoari, 29/A	DISTINTA MATERIALE ELETTRICO					SPEC-DE	
PHONE : +39.0521.9	43100 PARMA (ITALY) ELECTRICAL EQUIPMENT LIST								
			QE7TS400	STOCK	ALB		19.02.10	0-a	
COMME	ESSA		MODELLO MACCHINA	N° DI SERIE	SIG.		DATA	REV.	
JOE	3		MACHINE MODEL	SERIAL No.	SIG.		DATE	REV.	
		1					-		
Sigla	N.ro		Descrizione	Codice	Marca	Тіро	Caratte	ristiche	
ltem	Q.ty		Denomination	Code	Brand	Туре	Charac	teristics	
OF	1	INTERRU	ITTORE AUTOMATICO GENERALE TRIPOLARE		SIEMENIS		16÷20 A ; 25 kA ; Imagn.	. = 200÷300 A	
G	1	THREE-F	POLES AUTOMATIC MAIN SWITCH		SIEMENS	5V11102-20050-0AA0	16 ; 20 A ; 25 kA ; Imagn	. = 200÷300 A	
	1	MANIGLI	A BLOCCOPORTA		SIEMENS	3VT9100-3HB20 +	Esecuzione di emergenz	а	
		DOORBL	OCK HANDLE		GIEMENO	3VT9100-3HH20	Emergency model		

	1		SI	SIEMENS	3/T9100-3HE20 +	
		DOORBLOCK HANDLE		olemento -	3VT9100-3HH20	Emergency model
		ALBERO DI PROLUNGA EXTENSION SHAFT SIEMENS		Lunghezza max. = 350mm		
	1			SIEMENS	3V19100-3HJ10	Max. lenght = 350mm
	2	CALOTTA COPRIMORSETTO		SIEMENIS	2)/T0100 90 420	In plastica
	2	PROTECTION FOR TERMINAL		SIEIVIEINS	3V19100-6CA30	Of plastic
KM-O	1	CONTATTORE DI LINEA		SIEMENS	3RT1026-18B40	24Vc.c. ; 11kW ; S0
KW-O	I.	LINE CONTACTOR		SILIMILING	3111020-10040	24Vd.c. ; 11kW ; S0
FR-O	1	RELÉ TERMICO DI LINEA		SIEMENS	3RB2026-1QB0	6 ÷ 25 A ; S0
114-0	1	LINE THERMAL RELAY		SIEMIENS		6 ÷ 25 A ; S0
	1	BLOCCO di CONTATTI AUSILIARI		SIEMENS	3RH1021-4E440	Contatti 4 N.A.
	1	AUXILIARY CONTACTS MODULE		SILIMILING	3K111921-41 A40	4 N.O. Contacts
681	1	ALIMENTATORE MONOFASE			AL2A	Ingr.=0-400-460V ±5% 50/60Hz ; Usc.=24Vc.c. ; 2A
651		SINGLE-PHASE POWER SUPPLY		J.LL.II	(speciale)	In.=0-400-460V ±5% 50/60Hz ; Out.=24Vd.c. ; 2A
OF-GS1	1	INTERRUTTORE AUTOMATICO UNIPOLARE		SIEMENS	5SV6101-7	1 A ; Caratteristica "C"
01-001	1	SINGLE-POLE AUTOMATIC SWITCH		SIEMIENS	5510101-7	1 A ; "C" characteristic

Sigla	N.ro	Descrizione	Codice	Marca	Тіро	Caratteristiche
Item	Q.ty	Denomination	Code	Brand	Туре	Characteristics
	4	INTERRUTTORE AUTOMATICO UNIPOLARE		SIEMENIS	ESV6100 7	2 A ; Caratteristica "C"
QF-1	1	SINGLE-POLE AUTOMATIC SWITCH		SIEIVIEINS	5516102-7	2 A ; "C" characteristic
	1	MODULO BASE LOGICO PROGRAMMABILE		SIEMENIS	LOGO! 24RC0	24Vc.c. ; Ingr.= 8 ; Usc.= 4 ; NO DISPLAY
LOGO	1	PROGRAMMABLE LOGIC CONTROLLER BASIC UNIT		SIEIVIEINS	6ED1052-2HB00-0BA6	24Vd.c. ; In.= 8 ; Out.= 4 ; NO DISPLAY
PT	1	CONTAORE ELETTRICO		MULLER	BG 7089-12:48\/cc	12÷48Vc.c.
		HOUR METER		MOLLER	DO 7009-12-40VCC	12÷48Vd.c.
ы л	1	SEGNALAZIONE LUMINOSA		SIEMENIS	35B3644-6B460	BIANCA ; 24Vc.a./c.c. ; LED
		LIGHT WARNING		SIEMENS	33D3044-0DA00	WHITE ; 24Va.c./d.c. ; LED
HI - P	1	SEGNALAZIONE LUMINOSA		SIEMENIS	35B3644-6BA20	ROSSA ; 24Vc.a./c.c. ; LED
116-6	I.	LIGHT WARNING		SILIVILING	33B3044-0BA20	RED ; 24Va.c./d.c. ; LED
	1	SEGNALAZIONE LUMINOSA		SIEMENIS	25B3644 6BA20	ROSSA ; 24Vc.a./c.c. ; LED
TIL-SFT	1	LIGHT WARNING		SILIVILING	5565044-06A20	RED ; 24Va.c./d.c. ; LED
	1	TARGHETTA INSERIBILE BIANCA			T 15/0 B	49x15mm
		INSERTABLE WHITE TAG		MODERNOTEONICA	1 1049 D	49x15mm
	1	VETRINO DI PROTEZIONE per targhette			T 15/9 V	49x15mm
		PROTECTIVE SLIDE for tags		MODERNOTEONICA	1 1343 V	49x15mm
	1	PORTA-TARGHETTE			P 1752 Δ	52x17mm ; Adesiva
		TAGS HOLDER		MODERNOTEONICA	1 1752 A	52x17mm ; Adhesive
	3	TARGHETTA INSERIBILE BIANCA			T 1527 B	27x15mm
	Ŭ	INSERTABLE WHITE TAG		MODERINOTEONIO/	1 1027 B	27x15mm
	3	VETRINO DI PROTEZIONE per targhette			T 1527 V	27x15mm
	Ŭ	PROTECTIVE SLIDE for tags		MODERINOTEONIO/	1 1027 1	27x15mm
	3	PORTA-TARGHETTE			P TAR 22	48x30mm ; diametro= 22,5mm
	5	TAGS HOLDER		MODERNOTEONICA	1 1711 22	48x30mm ; diameter= 22,5mm
	3	MORSETTI (per X1)		SIEMENS	8W/A1011-1DH11	6 mmq ; BEIGE
	5	TERMINALS (for X1)				6 mmq ; BEIGE

Sigla	N.ro	Descrizione	Codice	Marca	Tipo	Caratteristiche
Item	Q.ty	Denomination	Code	Brand	Type	Characteristics
	20	MORSETTI (per X2)				2,5 mmq ; BEIGE
	20	TERMINALS (for X2)		SIEIVIEINS	8WATUTI-IDFTT	2,5 mmq ; BEIGE
	2	MORSETTI DI TERRA (per X1)		SIEMENIS	9\A/A 1011 1DH00	6 mmq ; GIALLO-VERDE
	2	EARTH TERMINALS (for X1)		SIEIVIEINS	000A1011-1FH00	6 mmq ; YELLOW-GREEN
	2	MORSETTI DI TERRA (per X2)		SIEMENIS	9W/A1011 1DE00	2,5 mmq ; GIALLO-VERDE
	2	EARTH TERMINALS (for X2)		SIEIVIEINS	0WA1011-1PF00	2,5 mmq ; YELLOW-GREEN
		ARMADIO in ACCIAIO INOX			01 44/004	450 x 450 x 200 mm
	1	STAINLESS STEEL SWITCHBOARD		ILINOX	QL 44/304	450 x 450 x 200 mm
		PRESSACAVO + GUARNIZIONE + GHIERA IN METALLO			84372 + 86503AF	Filetto= M 25x1,5mm ; 9÷17 mm
	2	CABLE GLAND + GASKET + METAL THREADED RING		LEGRAND	+ 386633	Thread= M 25x1,5mm ; 9÷17 mm
		PRESSACAVO + GUARNIZIONE + GHIERA IN METALLO			84371 + 86502AF	Filetto= M 20x1,5mm ; 7÷13 mm
	1	CABLE GLAND + GASKET + METAL THREADED RING		LEGRAND	+ 386632	Thread= M 20x1,5mm ; 7÷13 mm
		PRESSACAVO + GUARNIZIONE + GHIERA IN METALLO			84370 + 86501AF	Filetto= M 16x1,5mm ; 4,5÷10 mm
	3	CABLE GLAND + GASKET + METAL THREADED RING		LEGRAND	+ 386631	Thread= M 16x1,5mm ; 4,5÷10 mm
		TAPPO DI CHIUSURA + GUARNIZIONE + GHIERA IN METALLO			86471 + 86501AF	Filetto= M 16x1,5mm
	4	CLOSING STOPPER + GASKET + METAL THREADED RING		LEGRAND	+ 386631	Thread= M 16x1,5mm
050		CAVO per il MOTORE PRINCIPALE				4G x 2,5 mmq
CE2	mt. 1,3	CABLE for MAIN MOTOR			FG/OR 0,6/1kV	4G x 2,5 mmq
074		CORDINA UNIFILARE dI TERRA MACCHINA				1 x 6 mmq ; GIALLO-VERDE
CIT	mt. 1,3	SINGLE WIRE for MACHINE EARTH			N07V-K	1 x 6 mmq ; YELLOW-GREEN
004		CAVO MULTIFILARE				2 x 1 mmq
001	mt. 2,3	MULTIPOLAR CABLE			FROR 300/500 V	2 x 1 mmq
000		CAVO MULTIFILARE				7G x 1 mmq
CC2	mt. 2,3	MULTIPOLAR CABLE			FROR 300/500 V	7G x 1 mmq
#						



ONE 7TS – Enclosures

11.3 CE declaration of conformity

This manual is property of GEA Niro Soavi S.p.A. and no part of it may be reproduced.



DECLARATION OF CONFORMITY



MACHINE:

LABORATORY HOMO	GENIZER One
Model:	ONE7TS
Serial Number:	9146
Max Press. (MPa):	21
Rated Flow (dm³/h):	700
Year:	2011

The undersigned

DECLARES

under his own responsibility that the above mentioned Machine, object of this declaration,

IS IN CONFORMITY

with the precepts of the following EC directives and standard norms:

- 2006/42/CE
- EN 12100-1 & EN 12100-2
 EN 60204-1
- 2006/95/CE
 2004/108/CE
- EN 13849-1

Name and address of the person authorised to compile the technical file: Marco Gandini - Via A.M. Da Erba Edoari 29 - 43123 PARMA - ITALY

The above identified Machine has successfully passed all the trials and tests to which it has been submitted.

PARMA, 05/07/2011

GEA Niro Soavi S.p.A. MARCO GANDINI Managing Director

Hace Budin



ONE 7TS – Enclosures

11.4 Test Report

		MP10M20
	MACHINE TEST REPORT	Rev. 02
NIRO SOAVI		Emesso da RSAQ data 10.04.07
		Appr. da RPR data 10.04.07





GEA Niro Soavi S.p.A.

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COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV = ISO 9001/2000=