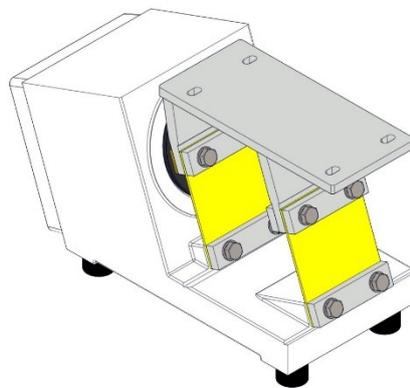


# AL SERIES LINEAR FEEDER

## AL1 AL3 Models

### Use and maintenance instruction manual

#### ORIGINAL INSTRUCTIONS



**Models to which this manual can be applied: AL1 / AL3**

Original title: Manuale di istruzione uso e manutenzione di: ALIMENTATORE LINEARE SERIE AL  
Translation of the original title: Instruction manual use and maintenance of: AL SERIES LINEAR FEEDER  
All rights reserved, including translation rights.  
No part of this publication may be reproduced without the permission of Gasco group S.r.l.

# AL SERIES LINEAR FEEDER USE INSTRUCTIONS

## AL1 AL3 Models



**GASCO group s.r.l.**  
**Uffici e Stabilimento: Via Alla Costa 18**  
**17047 VADO LIGURE (SV) – ITALIA**

---

Tel 39 019 886188 r.a. - [gasco@gascogroup.it](mailto:gasco@gascogroup.it)

---



## INDEX

<b>1</b>	<b>INTRODUCTION.....</b>	<b>7</b>
1.1	MANUAL SYMBOLS.....	7
1.2	TESTING, WARRANTY AND LIABILITY.....	8
1.3	DEFINITIONS AND GLOSSARY.....	9
1.4	CLASSIFICATION OF OPERATORS.....	10
<b>2</b>	<b>GENERAL FEATURES.....</b>	<b>11</b>
2.1	MANUFACTURER DATA.....	11
2.2	INCORPORATION STATEMENT.....	12
2.3	GENERAL DESCRIPTION OF THE PARTLY COMPLETED MACHINERY AND EXPLANATORY DRAWINGS.....	13
2.4	GENERAL INFORMATION AND DIAGRAMS.....	16
2.4.1	GENERAL INFORMATION.....	16
2.4.2	DIAGRAMS.....	17
2.5	TECHNICAL CHARACTERISTICS.....	18
<b>3</b>	<b>FEATURES OF THE PARTLY COMPLETED MACHINE.....</b>	<b>21</b>
3.1	DESCRIPTION OF THE PARTLY COMPLETED MACHINE.....	21
3.1	PERSONAL PROTECTIVE EQUIPMENT.....	22
3.3	OPERATING PRINCIPLE.....	24
3.4	CONTROL PUSHBUTTONS.....	24
<b>4</b>	<b>OPTIONAL.....</b>	<b>25</b>
4.1	CONTROL UNIT.....	25
<b>5</b>	<b>TRANSPORT AND COMMISSIONING.....</b>	<b>27</b>
5.1	TRANSPORT AND HANDLING.....	27
5.2	STORAGE.....	28
5.3	INSTRUCTIONS FOR THE ASSEMBLY OF PARTLY COMPLETED MACHINERY.....	28
5.3.1	INCORPORATION.....	28
5.3.2	INSTALLATION.....	32
5.3.3	COMMISSIONING.....	33
5.3.4	CONNECTIONS.....	34
5.4	REINSTALL.....	36
5.5	DEMOLITION AND DISPOSAL.....	37
<b>6</b>	<b>SAFETY.....</b>	<b>39</b>
6.1	FURNITURE PROTECTIONS.....	40
6.2	FIXED PROTECTIONS.....	40
6.3	ADDITIONAL SAFETY DEVICES.....	40
6.4	WARNING DEVICES.....	41
6.5	LIGHTING.....	41
6.6	ELECTRICAL SYSTEM SAFETY.....	41
6.7	EMERGENCY STOP DEVICES.....	42
<b>7</b>	<b>RISKS.....</b>	<b>43</b>

7.1	INTRODUCTION.....	43
7.2	RESIDUAL RISKS.....	43
7.3	INSTRUCTIONS TO REDUCE NOISE.....	45
7.4.	INSTRUCTIONS TO REDUCE VIBRATIONS.....	46
<b>8</b>	<b>DESCRIPTIONS OF ADJUSTMENT, MAINTENANCE AND CLEANING OPERATIONS.....</b>	<b>47</b>
8.1	ADJUSTMENT PROCEDURES.....	47
8.2	MAINTENANCE PROCEDURES.....	48
8.2.1	<i>MECHANICAL INTERVENTION PROCEDURES.....</i>	<i>49</i>
8.2.2	<i>ELECTRICAL INTERVENTION PROCEDURES.....</i>	<i>59</i>
8.2.3	<i>OTHER INTERVENTION PROCEDURES.....</i>	<i>61</i>
8.3	INDICATIONS RELATING TO CLEANING THE PARTLY COMPLETED MACHINE.....	61
8.3.1	<i>CLEANING PROCEDURES.....</i>	<i>61</i>
<b>9</b>	<b>TROUBLESHOOTING.....</b>	<b>63</b>
<b>10</b>	<b>SPARE PARTS CATALOG.....</b>	<b>65</b>
10.1	SPARE PARTS LOCALIZATION.....	67
<b>11</b>	<b>ATTACHMENTS.....</b>	<b>77</b>

## 1 INTRODUCTION

This manual has been organised so that the user can easily and quickly find the information required for operation and maintenance.

**The operator must read it in its entirety and with great care, making sure to fully understand the information it contains, before taking any action concerning the partly completed machinery.**

The manual should also be used as reference documentation whenever it is necessary to recall a procedure or operation.

It must therefore always be kept available to personnel carrying out the various maintenance operations and to operators, so that it can be consulted at any time.

	<p>This symbol indicates that it is mandatory to consult the instruction manual</p>
	<p><b>In presence of this signal, the operators must consult the manual supplied with the equipment before undertaking any action involving the use of the partly completed machine itself.</b></p>

Gasco group S.r.l. reserves the right to make design changes, variations/improvements to the partly-completed machine and updates to the instruction manual without prior notice to customers and without the obligation to send any updated versions.

### 1.1 MANUAL SYMBOLS

Specific texts and symbols will be used in the manual to highlight particularly important indications, warnings and prohibitions:

	<p>It is used to highlight particularly important technical information that should not be overlooked. Always observe the information shown alongside this symbol.</p>
---	--

	<p>This symbol indicates important danger messages, essential for the safety of the operator and the partly completed machine. Carefully read the information shown alongside this symbol and acknowledge the danger.</p>
---	---

	<p>This symbol indicates the prohibition to carry out certain manoeuvres and/or operations with the partly completed machine which, under certain conditions, can threaten the safety of the operator and of the partly completed machine itself. Carefully read the information shown next to this symbol and respect the prohibition.</p>
---	---

## 1.2 TESTING, WARRANTY AND LIABILITY

### Testing

Each partly completed machine is sent to the customer prepared for installation, after having passed tests and inspections required by the manufacturer, in compliance with the laws in force

### Warranty

(Power and automation equipment produced by the company Gasco group S.r.l.).

Gasco group Srl guarantees its products and their accessories against material or construction defects for 12 months from the date of shipment. For this guarantee, the Gasco group undertakes to repair or replace those parts which will be recognized as defective. The repairs can only take place at the own factory and the return of the goods will be considered at the customer's expense, at the same time as reporting the defect found. The costs incurred for the disassembly and reassembly of the parts to be repaired or replaced, as well as the packaging and shipping costs, are charged to the customer. Deficiencies or defects due to natural wear and/or incorrect use of the goods are excluded from the guarantee. For the proper functioning of the equipment, the instructions supplied with the equipment must be strictly observed, since damage caused by incorrect use will not be recognized under warranty.

Gasco group Srl defines its liability exclusively for its product, excluding direct and indirect damages, especially if the aforementioned equipment is used incorrectly or in contrast with the instructions provided. Any tampering or modification of the equipment, carried out without the prior authorization of Gasco group Srl, will void the warranty right. Any modification carried out on the equipment by Gasco group Srl after the delivery date may be protected by the guarantee, provided that it is only in relation to the modification itself, not entailing any extension of the expiry terms of the guarantee for the basic equipment. The warranty is to be considered void if the Client fails to communicate the defects found within 8 days from the date of their discovery. As regards the parts that Gasco group Srl purchases from third parties, the warranty conditions provided by the respective manufacturers are automatically transferred to the purchaser. In any case, the guarantee will be given only on condition that the methods and terms of payment of the equipment are respected.

### 1.3 DEFINITIONS AND GLOSSARY

<b>Dangerous area</b>	Each area inside and/or near the partly completed machinery in which the presence of an exposed person poses a risk to the safety and/or health of personnel.
<b>Exposed person</b>	Anyone who finds themselves, either completely or partially, in a dangerous area.
<b>Operator</b>	Person in charge of installing, operating, adjusting, carrying out maintenance, cleaning, repairing, transporting the equipment and all other activities necessary for its correct use. The different operators will have to be defined according to the operator qualifications.
<b>Operator qualification</b>	Minimum level of knowledge and skill that the operator must possess to correctly carry out the operating operations of the partly completed machine.
<b>Number of operators</b>	Number of operators sufficient and necessary to carry out the work operations with the partly completed machine in an optimal way. Therefore, a different number of operators could cause the failure to achieve the result or create dangers for the personnel involved in carrying out the operations.
<b>Safety components</b>	Component specially designed by the manufacturer and marketed separately from the partly completed machine in order to be able to perform the safety functions. Therefore, a safety component will be considered that mechanism whose failure to function jeopardizes the safety of exposed persons.
<b>Safety Stickers - Pictograms</b>	Signs, symbols and messages placed on the partly completed machinery, near the area where it is necessary to communicate the presence of a danger, a prohibition or particularly important indications and warnings.
<b>Assemblies</b>	Set of several parts or groups of the partly completed machine disassembled and tied together for transport.
<b>Electric</b>	Partly completed machinery or electrically operated device.
<b>Hydraulic</b>	Partly completed machinery or device operated by pressurized oil.
<b>Pneumatic</b>	Partly completed machinery or device operated by compressed air.

## 1.4 CLASSIFICATION OF OPERATORS

The operator must always be aware of the danger and warning signs and know how to operate in conditions of executive autonomy.

Each operator will only have to perform the pre-established tasks, based on the skills, training, qualifications and authorizations he possesses.

Operators are categorized as follows:

---

**CONDUCTOR OPERATOR**  
**C! Level**

Unqualified personnel, therefore without specific skills, able to operate the partly completed machine using the commands arranged on the push-button panel and to perform simple functions of starting or restoring production following a forced stop.  
**He is not authorized to intervene in the dangerous area.**

---

**CONDUCTOR OPERATOR**  
**C2 Level**

Unqualified personnel, therefore without specific skills, able to carry out the tasks of the **C1** qualification, able to carry out simple functions involving the partly completed machinery, such as cleaning the partly completed machinery and simple adjustment functions.  
**He is not authorized to carry out interventions involving mechanical and electrical parts.**

---

**MECHANICAL MAINTAINER**  
**M1 level**

Qualified technician able to operate the partly completed machine in normal conditions, to operate the format change, to intervene on the mechanical parts to carry out all the necessary adjustments, maintenance operations and repairs.  
**It is not authorized to work on the electrical system in the presence of voltage.**

---

**MECHANICAL MAINTAINERS**  
**M2 level**

Qualified technician capable of operating the partly completed machine under normal conditions, responsible for all electrical adjustment, maintenance and repair operations. He can also test the operating cycle of the partly completed machine using the programming case.  
**He is not authorized to work on mechanical parts.**  
**He is the only one authorized to operate in the presence of voltage inside the electrical cabinet and in the junction boxes.**

---

**GASCO GROUP TECHNICIAN**  
**M3 level**

Qualified technician made available by **Gasco group S.r.l.** or by one of its agents to carry out operations of a complex nature, installation and commissioning.

---

**EXTERNAL TECHNICIAN**  
**M1 or M2 level**

Qualified technician made available by the manufacturer or distributor of sophisticated commercial components, able to intervene for modifications, repairs or replacements.  
**Appointed technicians of the company operating the partly completed machine, the employer and the appointed installing company are required to verify that the safety conditions following any type of intervention and modification are respected, before the partly completed machine be used.**

---

## 2 GENERAL FEATURES



### 2.1 MANUFACTURER DATA

---



#### **GASCO group s.r.l.**

**Offices and factory: Via Alla Costa 18  
17047 VADO LIGURE (SV) – ITALIA**

---

Tel 39 019 886188 r.a. - [gasco@gascogroup.it](mailto:gasco@gascogroup.it)

---

## 2.2 INCORPORATION STATEMENT

The following image shows a facsimile of the declaration of incorporation.

**INCORPORATION STATEMENT**

**THE MANUFACTURER**

**under his sole responsibility  
DECLARES THAT THE PARTLY MACHINE**

Called: VIBRATING FEEDING SYSTEM

Description: Product to be Oriented

Serial number:.....

Year

Complies with the following essential requirements applied:

The relevant technical documentation has been completed in accordance with Annex VII B of Directive 2006/EC and the manufacturer undertakes to transmit, in response to a duly justified request from the national authorities, relevant information on the partly completed machinery

**PROHIBIT**

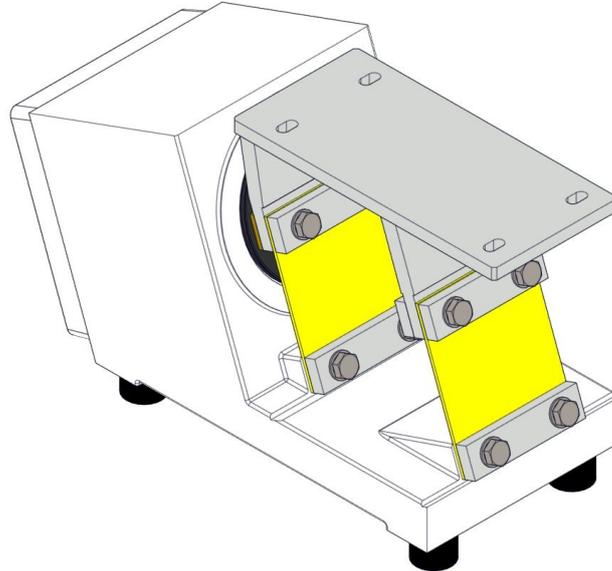
commissioning until the final machine into which it is to be incorporated has been declared compliant, where appropriate, with the provisions of Directive 2006/42/EC.

The legal entity authorized to compile the pertinent technical documentation is: GASCO GROUO Srl Based in Vado Ligure (SV), Via alla Costa, 18, Italy



## 2.3 GENERAL DESCRIPTION OF THE PARTLY COMPLETED MACHINERY AND EXPLANATORY DRAWINGS

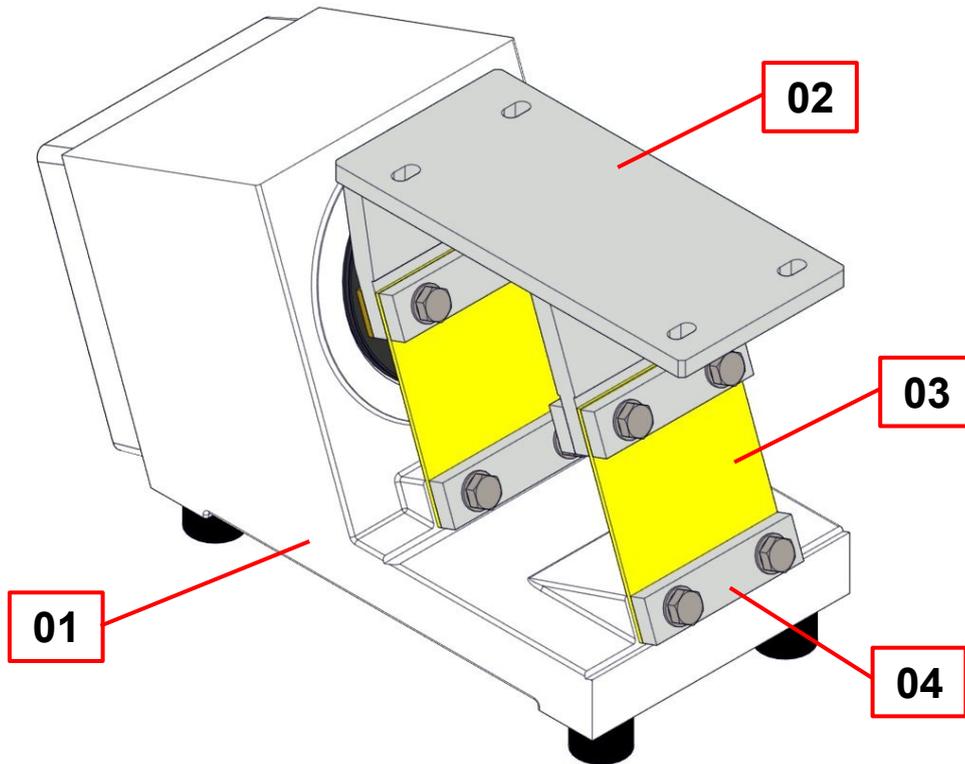
Linear power supplies are systems that transform electromagnetically produced vibrations into mechanical ones; these vibrations can be used to move components and products.



*Representative image linear feeder*

The following pages contain a general description of the partly completed machines for linear feeders belonging to the AL series.

The linear feeder essentially comprises two masses: a fixed mass **(01)** and a vibrating mass **(02)**; these masses are elastically joined by a series of leaf springs **(03)** made up of one or more sheets of synthetic fiber, fixed to the masses themselves by means of special clamping blocks **(04)**, with the purpose of distributing the tightening force of the screws along the entire leaf width.

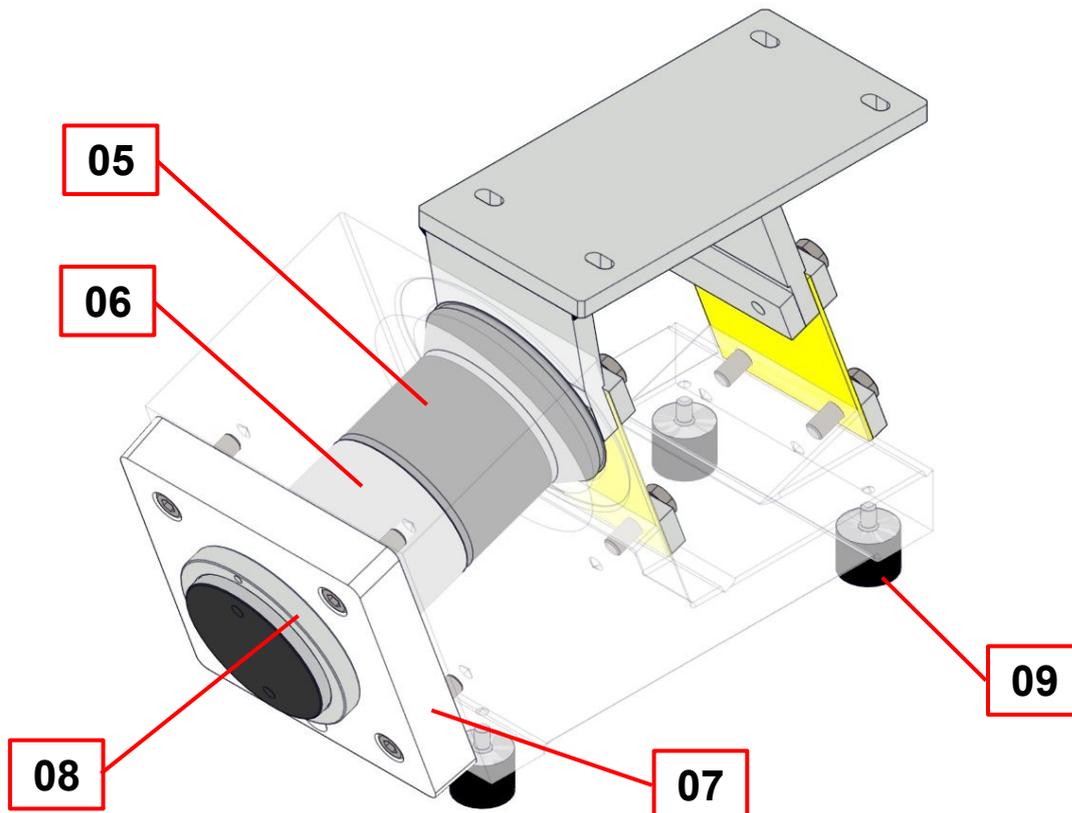


*Representative image linear feeder components*

The vibrating mass is operated by an electromagnet **(05)**, whose electromagnetic field acts on the threaded armature **(06)** coupled to it; the two elements are separated by the air gap.

The threaded armature is also equipped with a support plate **(07)** and an adjusting nut **(08)**.

The assembly described acts elastically isolated from the ambient environment by means of elastic anti-vibration supports **(09)**.



*Representative image linear feeder components*

## **2.4 GENERAL INFORMATION AND DIAGRAMS**

### **2.4.1 GENERAL INFORMATION**

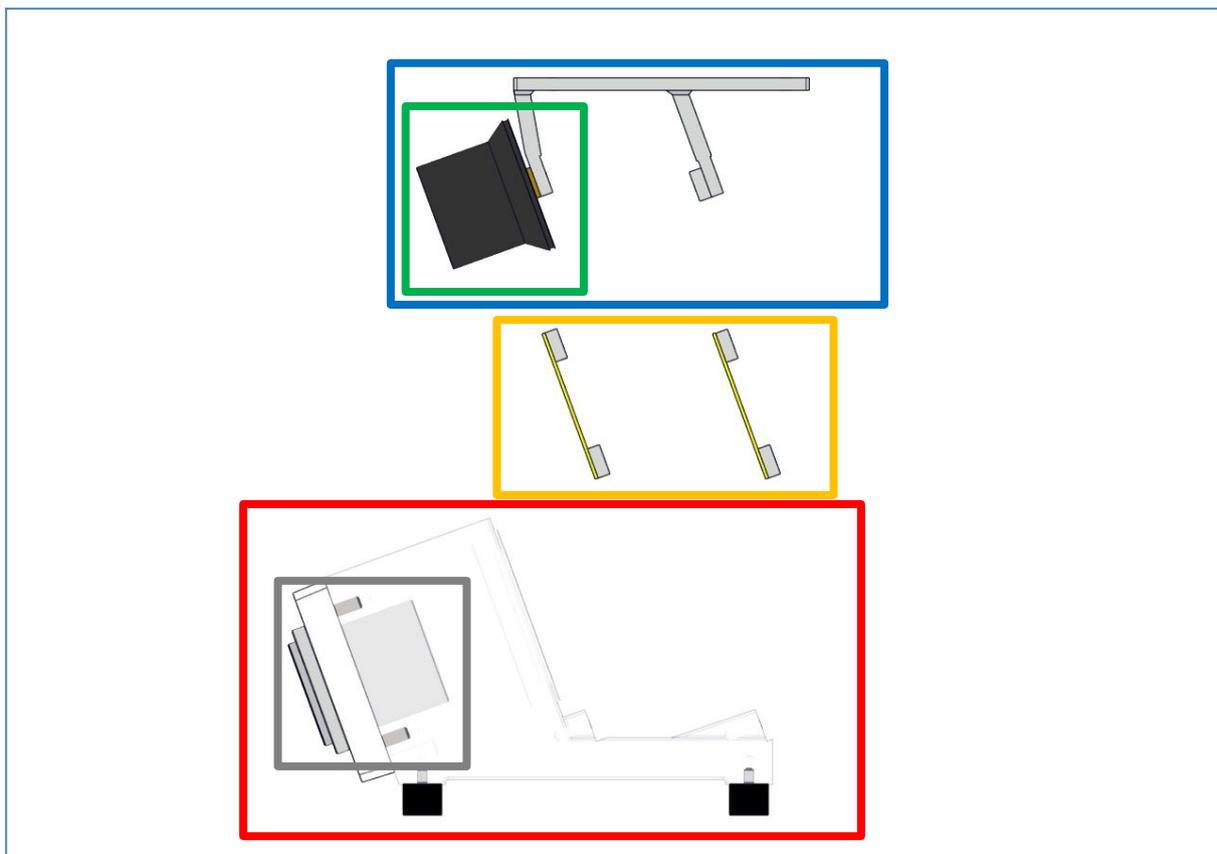
1. The vibrating system must be fixed to a rigid structure, so as not to have any dispersion of the vibrations.
2. Maximum load: see table below.

<b>MAXIMUM LOAD</b>	
<b>MODEL</b>	<b>LINEAR FEEDER MAXIMUM LOAD [Kg]</b>
<b>AL1</b>	<b>6,5</b>
<b>AL3</b>	<b>25</b>

## 2.4.2 DIAGRAMS

As already mentioned in the previous paragraph, the partly completed linear feeder machine is made up of the following main parts:

PART NAME	LOCATION SYMBOL
Higher mass	
Lower mass	
Elastic leaf springs	
Electromagnet	
Threaded armature	



## 2.5 TECHNICAL CHARACTERISTICS

The partly completed machine has the following main characteristics:

- PARTLY COMPLETED-MACHINE**

NAME	AL SERIES LINEAR FEEDER
MODELS TO WHICH THIS MANUAL APPLIES	AL1 / AL3
YEAR OF CONSTRUCTION	2022
REGISTER	...

- STANDARD WORK ENVIRONMENT THRESHOLD VALUES**

TEMPERATURE	(°C)	50
HUMIDITY	(%)	80

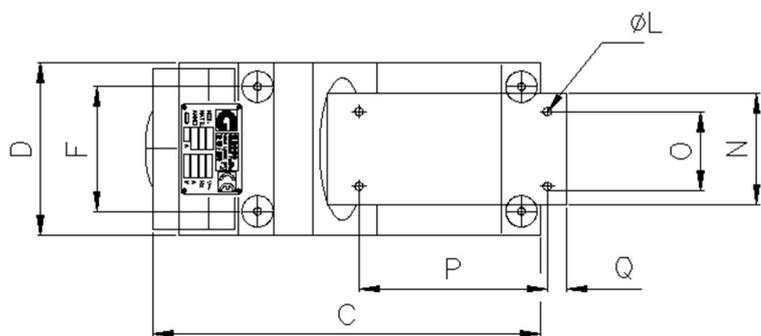
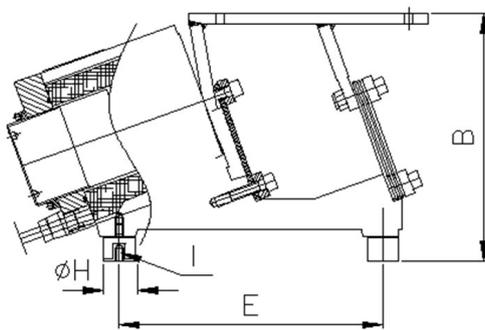
• **TECHNICAL DATA AND DIMENSIONS**

*Technical data*

Model	Vibration dampers [n°]	Weight [Kg]	Energy max consumption Amp.	
			50Hz osc./min. 3000	60 Hz osc./min. 3600
AL1	3	7	230V – 0,2    110V – 0,4	230V – 0,25    110V – 0,5
			50Hz osc./min. 3000	60 Hz osc./min. 3600
AL3	4	25	230V – 0,45    110V – 0,9	230V – 0,55    110V – 1,1
			50Hz osc./min. 3000	60 Hz osc./min. 3600

*Size*

Mod	B	C	D	E	F	H	I	L	N	O	P	Q
AL1	122	210	90	135	56	28	M6	6.5	50	/	43	28
AL3	200	310	140	210	100	25	M6	6.5	90	60	150	25





## 3 FEATURES OF THE PARTLY COMPLETED MACHINE

### 3.1 DESCRIPTION OF THE PARTLY COMPLETED MACHINE

Linear feeders are systems that transform the electromagnetically produced vibrations into mechanical ones, using them to advance parts of different sizes or materials.

For more information, refer to the paragraph "GENERAL DESCRIPTION OF THE PARTLY COMPLETED MACHINERY AND EXPLANATORY DRAWINGS".

The structure of the linear power supplies and the characteristics of the magnets allow their good use in different environmental conditions. However, in the case of special applications, it is advisable to consult the manufacturer.

In its intended use, during the normal work cycle, there are no interventions by the operator/s, employee/s, other than an external check on the correct functioning of the partly completed machine.



**The use of the partly completed machine for non-compliant purposes or in conditions other than those indicated in this manual can cause damage to the partly completed machine that is not easily foreseeable and constitute a danger to all operators involved in its use.**

### 3.1 PERSONAL PROTECTIVE EQUIPMENT

The personal protective equipment that the operators assigned to use the partly completed machinery must be provided with must comply with current legislation; it will be necessary to evaluate in advance the adoption of the various devices based on the operations that the staff will perform.

#### USE OF PARTLY COMPLETED MACHINERY

The personal protective equipment that the operator must wear when using the partly completed machine are as follows:

- gown;
- safety footwear;
- hair cap or disposable protective net;
- disposable beard cover (if necessary).



THE USE OF A  
HELMET IS  
MANDATORY



THE USE OF THE  
HAIR CAP IS  
MANDATORY

In support of the aforementioned devices, if necessary, it will also be mandatory to have:

- gloves;
- hearing protection devices;
- goggles;
- respiratory protection masks



#### CLEANING OPERATIONS

The personal protective equipment that the authorized operator must use in the cleaning phase are as follows:

- gown;
- safety footwear;
- hair cap or disposable protective net;
- disposable beard cover (if necessary);
- gloves;
- goggles



## MAINTENANCE OPERATIONS

The personal protective equipment that the authorized operator must use in case of maintenance operations are the following:

- overall;
- safety footwear;
- hair cap or disposable protective net;
- disposable beard cover (if necessary);
- gloves;
- protective helmet.

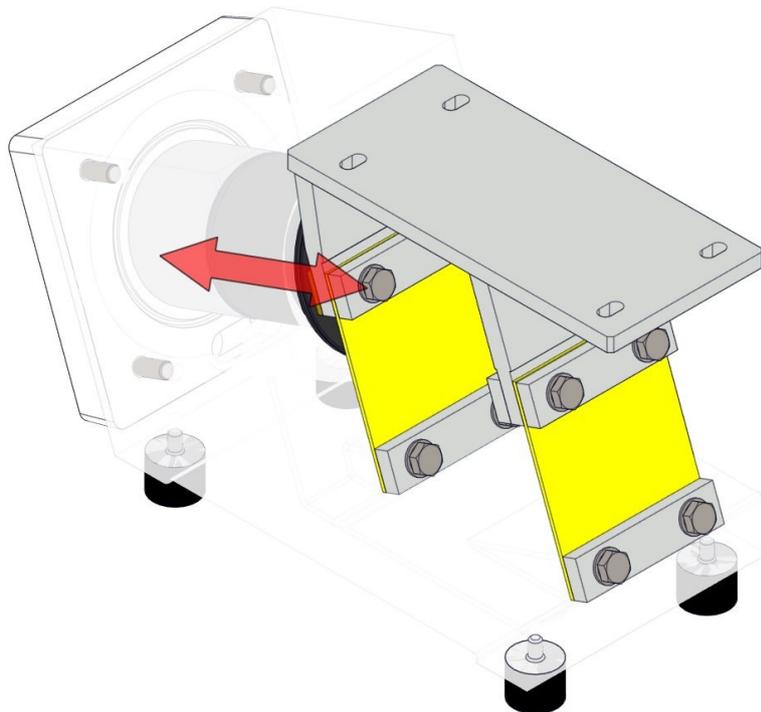


### 3.3 OPERATING PRINCIPLE

The linear feeder is equipped with an electromagnet which, when excited by a current, creates a magnetic field such as to produce a force of attraction which acts on the threaded armature coupled to it; this force causes the bending of the leaf springs which connect the fixed mass to the vibrating one.

The aforementioned leaf springs, between one impulse and another, return to their initial position; this succession of cycles determines a vibratory movement of the upper plate, capable of causing the advancement of the components along the devices which will be made integral with the plate itself during the incorporation phase.

The linear feeder has already been tested in the factory before shipment; however, it is good practice to check its functioning before use.



*Representative image of partly completed machine operation*

### 3.4 CONTROL PUSHBUTTONS

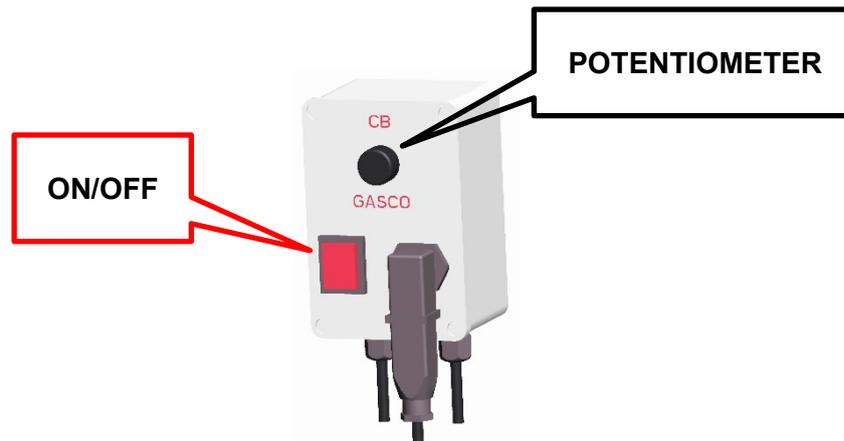
As regards the control panel of the linear feeder, refer to the appropriate manual.

## 4 OPTIONAL

### 4.1 CONTROL UNIT

The AL series linear power supplies covered by this manual are designed to be associated with the electronic control unit supplied by Gasco Group Srl.

The CB series of such control unit represent the standard used as a command; below is a reference picture of a CB4 / CB6 series electronic control unit.



*CB Series control unit reference Image*

As an alternative to the aforementioned control units, other models are available, both with fixed frequency and with variable frequency.



## 5 TRANSPORT AND COMMISSIONING

### 5.1 TRANSPORT AND HANDLING

The handling activities for the transport of the partly completed machinery must be carried out following the instructions given below, using the appropriate personal protective equipment.



The partly completed machine will be supplied in the appropriate packaging and can be handled with caution, so as not to damage the partly completed machine, in any of its components, and not to jeopardize the adjustments already made during the construction and testing phases.

In the event of an impact, check for any deformation and, if necessary, request the intervention of a Gasco group Srl technician who can verify the suitability of the partly completed machine before starting it up.



**It will be the handler's responsibility to check the stability of the load before lifting and handling it. Passing and standing under any suspended loads is prohibited.**

**Local personnel must be aware of the accident prevention rules.**

## 5.2 STORAGE

If it is necessary to store the partly completed machine, store it away from external agents, such as rain and wind, and possibly in a dry place and in a suitable environment; carry out the necessary maintenance operations to guarantee its subsequent functioning.

## 5.3 INSTRUCTIONS FOR THE ASSEMBLY OF PARTLY COMPLETED MACHINERY

All assembly and incorporation operations of the partly completed machine must be performed directly by the manufacturer or by qualified technicians, who must have read this manual.



**The assembly and incorporation of the partly completed machine must be carefully planned in ways and times, verifying logistics, availability of means and resources.**

**All the technical characteristics of the partly completed machine necessary for correct assembly and incorporation are given in this chapter.**

### 5.3.1 INCORPORATION

The partly completed machine must only be incorporated by qualified personnel and according to the following procedure:

- Position the partly completed machinery in the designated plant area;
- Proceed with the connection and fixing of the partly completed machinery with the other machines/partly-completed machinery;
- Connect to the electricity mains and proceed with the commissioning phase as described in chap. "COMMISSIONING";
- Assess the risks of incorporation (machine/partly completed machinery assembly);
- Carry out the CE certification of the machine-partly completed machine assembly before proceeding with use.

As regards the lifting and transport operations carried out during this phase, refer to the "TRANSPORT AND HANDLING" paragraph.

Before proceeding with the assembly and installation operations, consult the specific diagrams and technical drawings provided by the manufacturer.

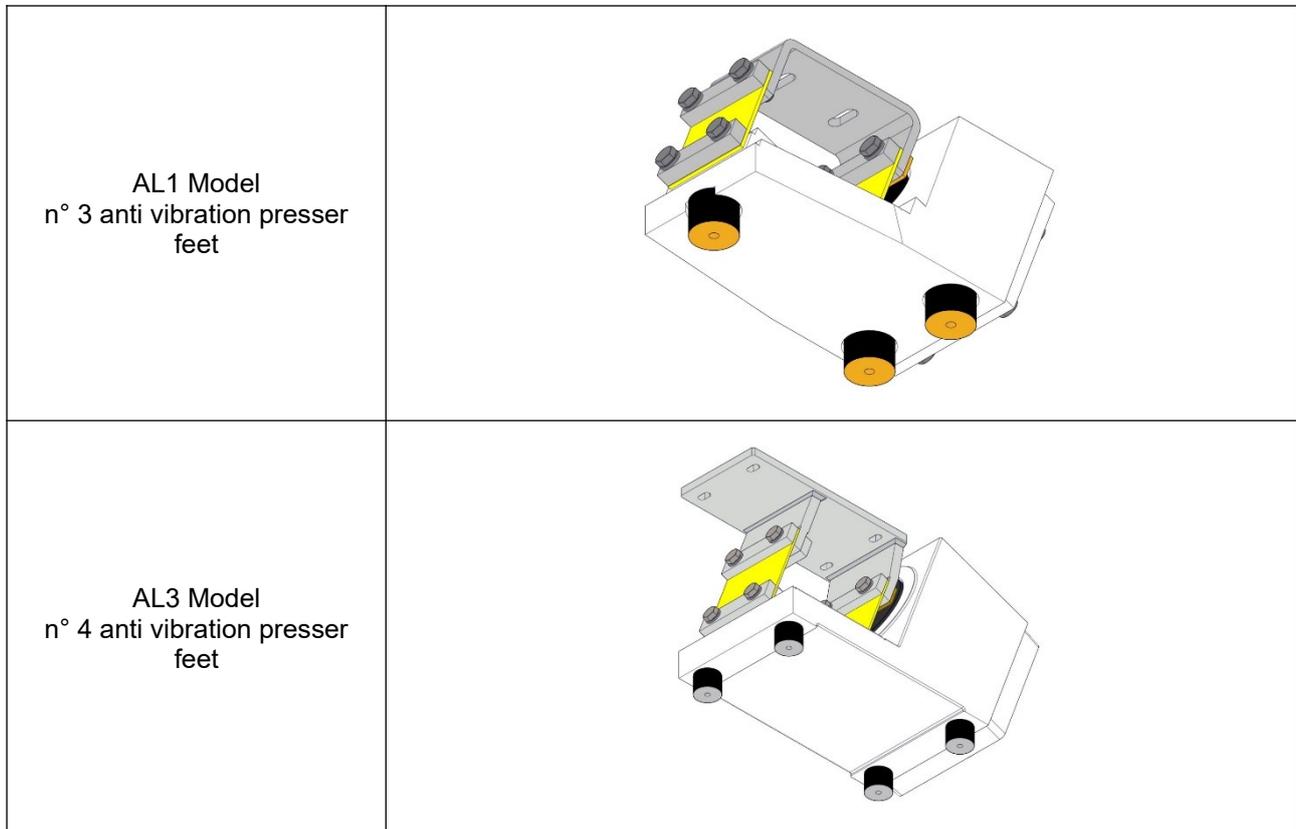
The information for correctly incorporating the partly completed machinery to other machines/partly completed machinery is given below.



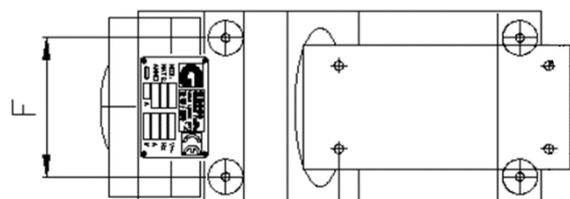
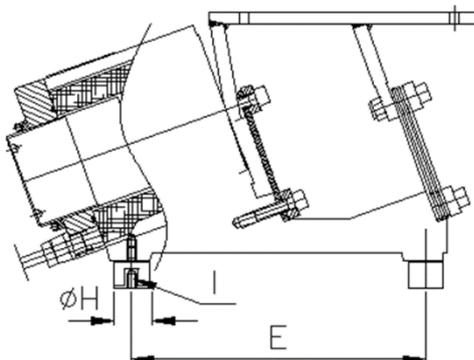
**The manufacturer declines all responsibility for damage caused by incorrect incorporation carried out without respecting the instructions contained in this manual.**

**LOWER FIXING BY ELASTIC FEET**

The linear feeder must be placed and fixed to a suitable rigid support using the appropriate anti-vibration elastic feet; to achieve this anchoring, only the special anti vibration presser feet supplied with the partly completed machinery must be used, the position of which can be seen from the following images.



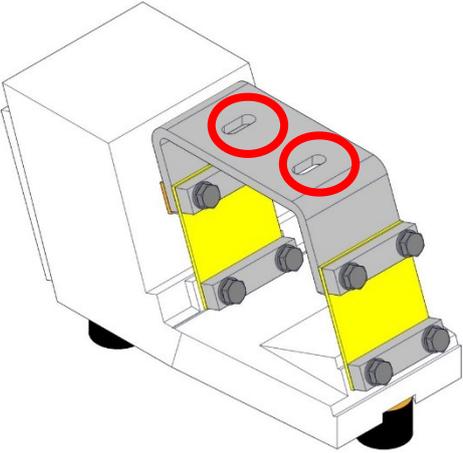
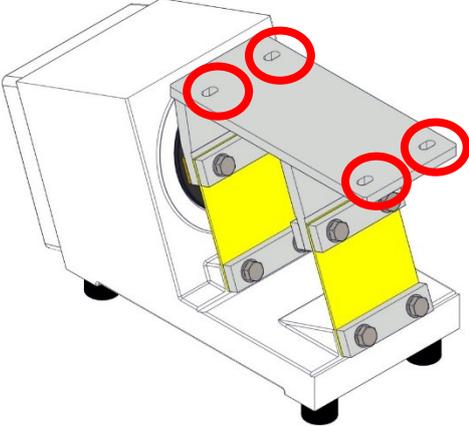
Mod	N° anti-vibration presser feet	E	F	H	I
AL1	3	135	56	28	M6
AL3	4	210	100	25	M6



**UPPER FIXING DEVICE TO OPERATE**

The partly completed machine covered by this manual is designed for fixing a device (for example a channel) in correspondence with the upper mass.

This operation must be carried out exclusively using the special upper holes, the shape and relative characteristics of which vary according to the linear feeder model itself.

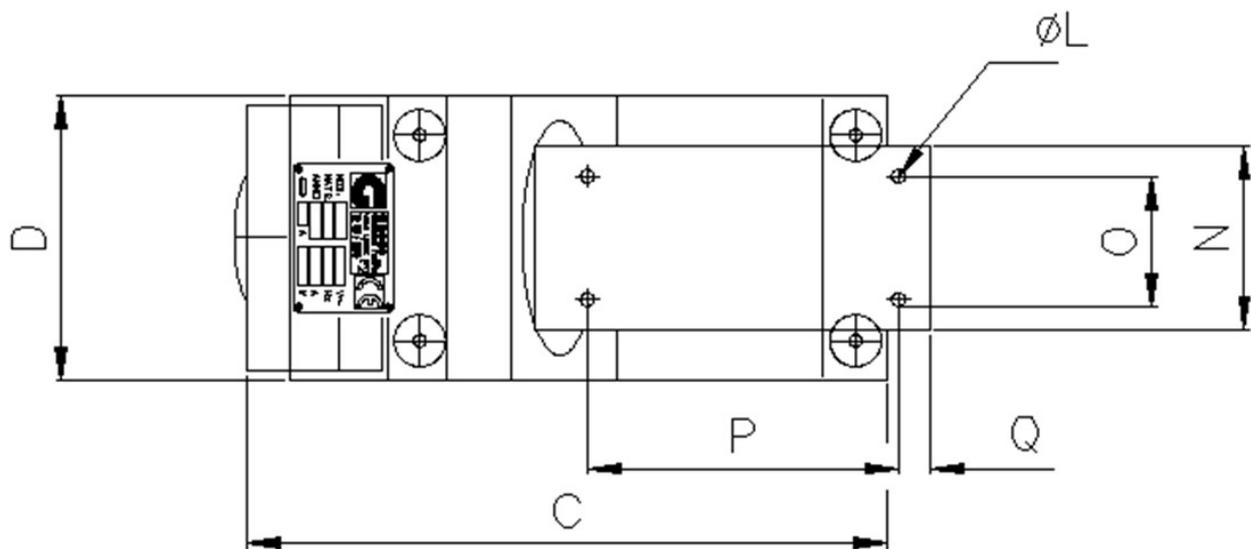
<p>AL1 Model</p>	
<p>AL3 Model</p>	
<p><b>MODEL</b></p>	<p><b>Nm *</b></p>
<p>AL1</p>	
<p>AL3</p>	



**\* Tighten the fastening nuts using a suitable torque wrench, respecting the specified tightening torque value (Nm).**

The following table shows an extract of the dimensional values relating to the upper fixing holes for the two models of linear power supplies of the AL series

Mod	C	D	L	N	O	P	Q
AL1	210	90	6.5	50	/	43	28
AL3	310	140	6.5	90	60	150	25



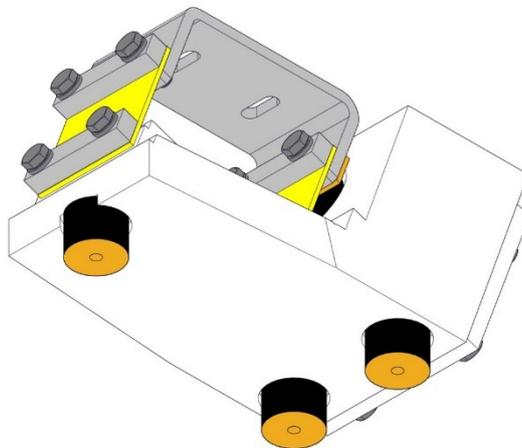
### 5.3.2 INSTALLATION

For correct operation, the partly completed machine must be positioned on a flat surface, which must be suitably sized taking into consideration the overall weight of the partly completed machine, complete with all the necessary components and accessories.

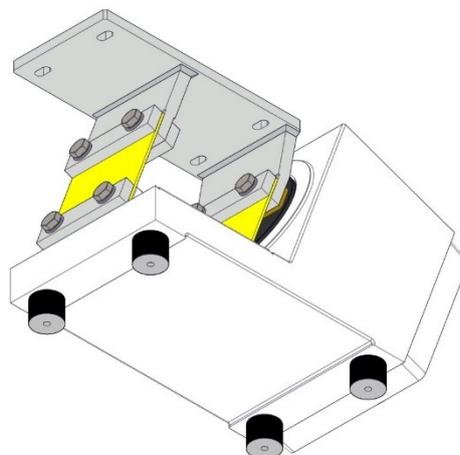


**If present, equip the support structure with all the protections necessary to ensure the safety of those who must access the partly completed machine in compliance with current accident prevention regulations.**

The linear feeder must be positioned and fixed using the special elastic feet on a suitable support (see the "INCORPORATION" paragraph); the vibrating system must in turn be anchored to a rigid structure, so as not to have a dispersion of the vibrations.



N° 3 anti vibration presser feet



N° 4 anti vibration presser feet

### 5.3.3 COMMISSIONING

These instructions refer to activities preliminary to commissioning and must be carried out by qualified personnel.

Before putting it into operation, carry out a general check of its main components:

- a) carry out a particularly accurate check of all the connections, fixings and tightening of the bolts which may have loosened during transport or during installation;
- b) check that the mains voltage corresponds to the input voltage of the transformer inside the electrical panel and that the screws of the electrical contacts are not loose;
- c) check that the vibrating system is correctly fixed to a rigid support structure;
- d) check all safety systems, protections and signs that may be present;
- e) check the correct functioning of all external energy sources;
- f) check that the partly completed machine has not been damaged during the assembly phase;
- g) check that all moving parts have freedom of movement;
- h) check the integrity of electric cables, control panels and switchboards (when supplied).

The partly completed machine, before being put into operation, requires a first start-up procedure; this is also necessary after a long period of inactivity.

Before starting up the partly completed machine, check for the presence of any obstacles to movement; when starting the partly completed machine for the first time, all movements must be checked, making it complete a complete cycle.

During the commissioning operations it is necessary to adopt the following prescriptions:

- Protective devices must never be removed or rendered ineffective; in particular, no safety switch must be tampered with.

When carrying out maintenance work on the partly completed machine, it may be necessary to temporarily deactivate the safety devices: this operation must only be carried out by authorized and adequately trained personnel.

- Do not put your hands near the moving parts of the partly completed machinery.  
Do not wear clothing that can get caught in moving parts (scarves, rings, bracelets, watches, etc.).  
For those with long hair, use clips or caps that enclose it.

- It is forbidden to carry out operations on live parts.

## 5.3.4 CONNECTIONS

### **ELECTRICAL CONNECTIONS**



**ATTENTION!**

The activities described in this paragraph must only be performed by qualified personnel, namely:

**trained technician who has attended specialization and training courses and has experience in installation, commissioning and maintenance of systems, and is aware of the rules on accident prevention.**

The partly completed machine covered by this manual is supplied with an electric power cable; make the connection by connecting the phase, the neutral and the earth.



**ATTENTION!**

**Check that the characteristics of the electrical network to which the partly completed machine will be connected correspond to those shown on the plate (voltage and frequency).**

### **PNEUMATIC CONNECTIONS**

The partly completed machine covered by this manual does not have pneumatic connections.

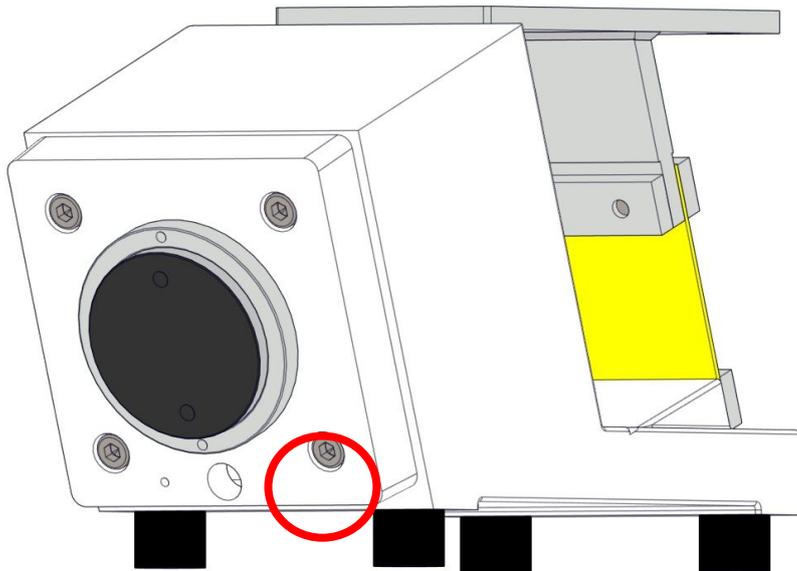
### **HYDRAULIC CONNECTIONS**

The partly completed machine covered by this manual does not have hydraulic connections.

## CONNECTION MAP

The partly completed machine is equipped with an electrical connection.

For more details, consult the specific documentation.



FILLIN "" FILLIN

Map of connections

POS. 1	Electric connection	
--------	---------------------	---

## 5.4 REINSTALL

To dismantle the partly completed machine, in case of sale, reinstallation or storage at the customer's premises, proceed according to the following general dismantling procedure:

- a) place the moving parts of the partly completed machinery in the most favourable position for transport;
- b) at the junction points, number all the parts that will eventually be separated, so as to make future reassembly more immediate;
- c) remove the electrical and pneumatic supply (if present);
- d) disconnect all the electrical cables as follows:
  - 1. remove the cables in the electrical panel;
  - 2. extract them from the ducts up to the group to which they are connected;
- e) possibly disassemble the partly completed machine by dividing it into the established parts;
- f) secure by means of mechanical locks or other devices all the parts that can move during transport;

For the new placement and connection, refer to the relative paragraphs of this manual. In the event of prolonged storage, leave the partly completed machine away from the rain and wind and possibly in a dry place.

Protect electrical parts particularly well, such as electrical panels, control consoles and all parts sensitive to humidity and temperature variations.

## 5.5 DEMOLITION AND DISPOSAL

At the end of the real life cycle, the user company must proceed with the alienation of the partly completed machine in compliance with current regulations, first of all providing for the emptying of the lubricating fluids and the general cleaning of the various elements and subsequently with the separation of the parts that make up the partly completed -machine.

After having disassembled the partly completed machine according to the procedure previously indicated, the various materials must be separated in accordance with the provisions of current legislation.

As far as disposal is concerned, bear in mind that the materials of which the partly completed machinery is made are not of a dangerous nature and essentially consist of:

1. painted, plasticized or galvanized ferritic steel;
2. polyethylene plastic material, filled or unfilled, or adiprene;
3. elastomers;
4. electrical cables with relative sheaths;
5. electronic control and actuation devices;
6. support feet and derived rubber materials.



### ATTENTION!

During the disposal process it will be necessary to comply with the regulations in force in the country.

Store polluting materials such as oils and solvents only in metal drums.



### With regard to the disposal of consumables, observe the following general rules:

- the PLC battery must be replaced by an electrician maintenance technician;
- used batteries must not be disposed of with common waste, but must be delivered to the appropriate disposal centres;
- exhausted oils, oily residues and oil-impregnated objects must be disposed of through the appropriate collection points, and not discharged into urban sewers.



## 6 SAFETY

All the partly completed machines of the Gasco group S.r.l. are made in accordance with the regulations in force on the matter.

The partly completed machine is equipped with safety devices which allow to prevent dangers to people working on it or present in its vicinity.

Failure to observe what is described in this manual, or incorrect installation or poor periodic maintenance, can cause problems with the partly completed machine and risks that are difficult to foresee for the operators.

The warnings given are intended to provide useful information on the partly completed machinery on a general level, to avoid danger to people and things.

Processing without accidents depends above all on all the personnel involved in the use, maintenance and repair of the partly completed machine, who must operate conscientiously and in full compliance with the safety standards, scrupulously complying with what is reported in this technical documentation.



**This symbol indicates the prohibition to disassemble the casings.**

**When faced with this signal, the operator must keep the guards always mounted.**



**Make sure that the safety instructions are known by all personnel involved in the use, cleaning and maintenance of the partly completed machine. Also make sure that the safety rules are respected.**



**It is the employer's obligation to inform the personnel on the following topics relating to safety in the use of the partly completed machinery:**

- **accident risks;**
- **irremovable residual risks present;**
- **devices designed for operator safety;**
- **general accident prevention rules established by directives.**

## 6.1 FURNITURE PROTECTIONS

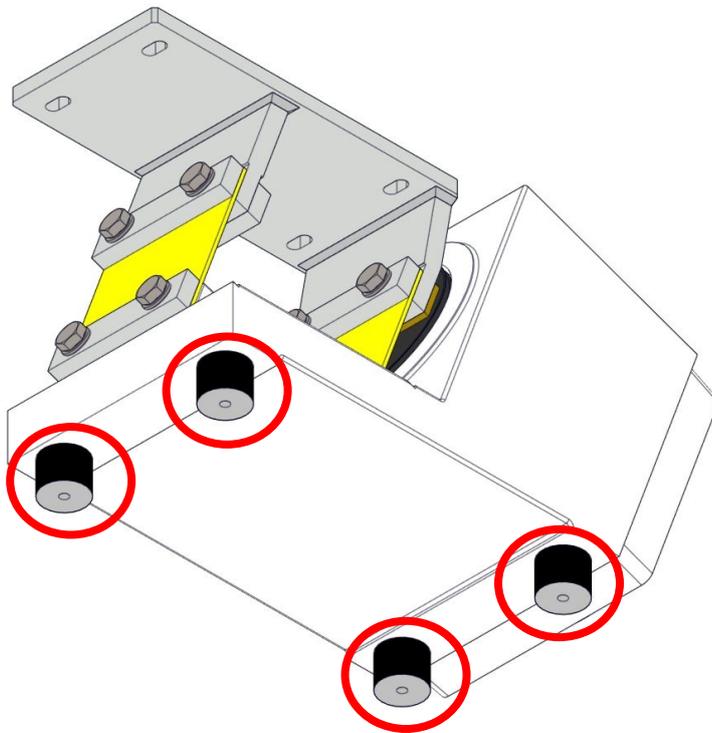
The partly completed machine LINEAR FEEDER, in the standard supply, does not provide for the installation of movable guards.

## 6.2 FIXED PROTECTIONS

The partly completed machine LINEAR FEEDER, in the standard supply, does not require the installation of fixed guards.

## 6.3 ADDITIONAL SAFETY DEVICES

The partly completed machine LINEAR FEEDER, in the standard supply, provides for the presence of anti-vibration devices (elastic feet) specially made to reduce the propagation of vibrations.



Depending on the model and load conditions, these feet can be present in 3 or 4 units.

For more information, refer to the "INCORPORATION" paragraph.

## 6.4 WARNING DEVICES

The partly completed machine LINEAR FEEDER, in the standard supply, does not require the installation of further warning devices.

## 6.5 LIGHTING

The partly completed machine is supplied without a lighting system, therefore it must be used in adequately lit environments and places; when the incorporation of the aforementioned with the set of machines/partly completed machines is carried out, it will be the task of the incorporator to carry out an analysis and, if necessary, evaluate the possible need for additional artificial lighting.

## 6.6 ELECTRICAL SYSTEM SAFETY

For the safe operation of the partly completed machine, it is essential that the electrical system is designed, built and installed in accordance with the applicable standards in force.

Check the correct connection of the power cable.



When the electrical panel is not included in the supply of the partly completed machine, it is the customer's responsibility to have the partly completed machine connected to an electrical panel designed and built in accordance with current regulations; this electrical panel must be equipped with a main switch with a manoeuvre device on the door which prevents it from opening in the presence of voltage.



**We decline all responsibility for damage caused to people, animals and things due to the connection of the partly completed machine to a non-compliant electrical panel, designed and built incorrectly or by unqualified personnel.**

## 6.7 EMERGENCY STOP DEVICES

The partly completed machine, in the standard supply, is supplied without emergency stop devices. The installation and subsequent connection of the necessary emergency stop devices must be carried out by qualified technicians after the partly completed machine has been incorporated into the whole in which it is incorporated.



**We decline all responsibility for damage caused to people, animals and things due to the installation and connections of emergency stop devices carried out incorrectly and/or by unqualified personnel.**



**Use only certified and compliant emergency stop devices.**

**We decline all responsibility for damage caused to people, animals and things due to the installation of non-compliant emergency stop devices.**

Therefore, refer to the documentation accompanying the incorporation of the machine/partly completed machinery.

Safety devices must be used in case of imminent danger or mechanical accident.

## 7 RISKS

### 7.1 INTRODUCTION

The partly completed machine has been designed and built with characteristics and appropriate precautions such as to guarantee the safety of the operator and eliminate or reduce risks as far as possible.

All necessary protective measures must be taken against risks that cannot be eliminated. It will also be mandatory to inform the users of the partly completed machinery about the residual risks due to the incomplete effectiveness of the aforementioned protective measures.



**It is the employer's responsibility to instruct operators and maintenance personnel, also by promoting training courses, in order to adequately train personnel on general risks and residual risks.**

**Since the greatest risks arise when an operator enters the dangerous area to adjust, clean, carry out maintenance on the partly completed machinery or perform other manual operations that are necessary, these operations must be carried out with the utmost care.**

### 7.2 RESIDUAL RISKS

The partly completed machinery was designed and built by the manufacturer to operate, once incorporated in a system of partly completed machinery or in a machine, at the highest level of safety.

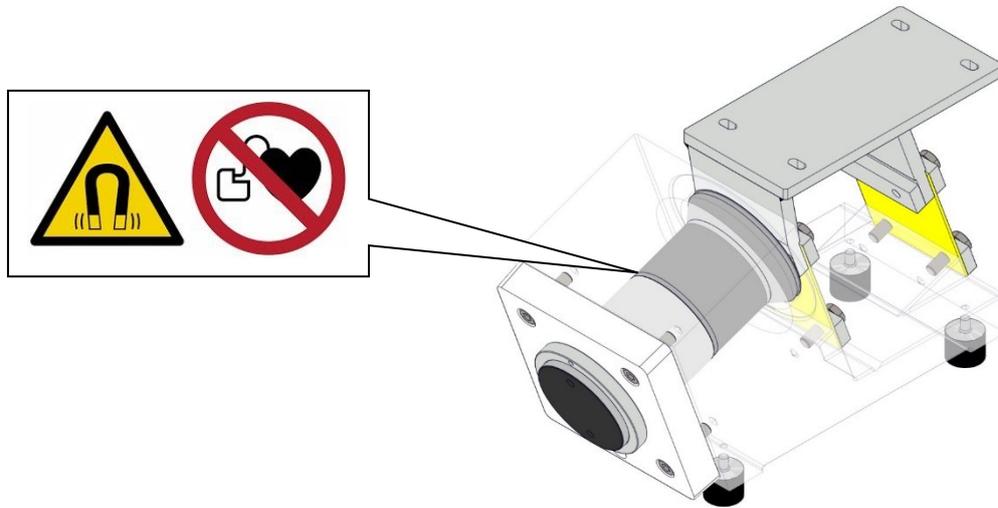
All moving mechanical parts and all components subject to the presence of electric voltage which may be a source of danger are equipped with protections which make them inaccessible and in any case positioned in such a way as to be unreachable during normal working conditions.

When incorporating the partly completed machinery with the set of other machines/partly completed machines, it will be necessary to carry out a risk assessment of the set itself.

Despite all the precautions taken in the design and construction phase of the partly completed machine, some residual risks must however be kept in mind:

**Residual risk of vibrations:** the linear power supplies covered by this manual generate vibrations during their operation; it will therefore be necessary to prepare suitable devices to dampen the vibrations (anti-vibration systems) if those supplied are not sufficient, so as to avoid damage to other devices present in the vicinity of the linear feeder or to the structures (resonance).

**Residual risk of magnetic field:** the partly completed linear feeder machine covered by this manual is equipped with an electromagnet which generates a magnetic field during operation.



It is important to respect the following indications:

1. Make all personnel aware that the magnetic field can interfere with pacemakers.
2. Personnel informed about the unavoidable residual risk must communicate the danger to uninformed people.
3. Warning and prohibition signs must be placed at a safe distance.
4. Do not get close to ferromagnetic components, as they may cause damage or crushing.
5. Do not approach electronic equipment, computers, measuring instruments, magnetic cards and precision mechanical components, as they may be damaged.

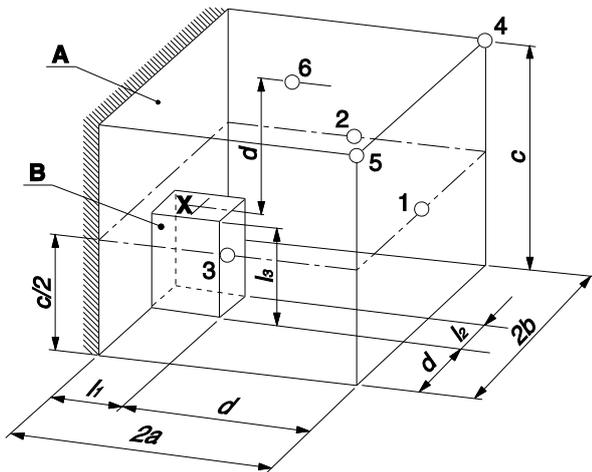


**Only adequately trained personnel with perfect knowledge of both the contents of this manual and the general rules on workplace safety must operate on the partly completed machine.**

### 7.3 INSTRUCTIONS TO REDUCE NOISE

The partly completed machine was designed and built in such a way as to reduce its noise at the source. Measurements carried out in the operator station relating to a partly completed machine belonging to the same series led to the determination of the following values:

- 1 A-weighted peak sound pressure level: LAp (see table below)



The measurement of the A-weighted equivalent sound pressure level is carried out in compliance with the EN ISO 3744 standard.

As required by this standard, the partly completed machinery is positioned concentrically with respect to the fictitious reference parallelepiped, having the longitudinal axis directed as the x axis and the front part facing point 1 (see figure).

The instrumentation used for the execution of the measurements is the following:

- Multifunction digital sound level meter Lafayette mod. DT-8820 class 1 to the requirements of the IEC 651 and IEC 804 standards
- 4230 class 1 sound level calibrator compliant with the requirements of the IEC 942 standards

MODEL	WEIGHTED PEAK SOUND PRESSURE LEVEL [dB(A)]
AL1	
AL3	

If the partly completed machinery is placed in a reverberant environment or in the presence of other sources of noise and the daily personal exposure level is higher than 80 dB(A), there is a condition of risk; therefore in this case it is the employer's obligation to provide the worker with special personal protective equipment.



**Based on the conditions of use (for example in the case of particular products that are placed in it) weighted acoustic pressure levels higher than 80 dB (A) could be generated.**

**In some cases, even if technical solutions are adopted to reduce the noise level (agreed and requested in the offer), the sound level could still exceed the value of 80 dB (A); in these cases it will be the end customer's responsibility to carry out all the appropriate risk analyses in order to adopt the appropriate protective measures before commissioning.**

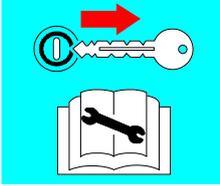
#### **7.4. INSTRUCTIONS TO REDUCE VIBRATIONS**

The partly completed machines LINEAR FEEDERS AL SERIES covered by this manual generate vibrations during their operation.



**It will be the customer's responsibility to carry out all the risk analyses upon final incorporation of the partly completed machinery in accordance with current regulations, in order to secure such equipment before putting it into service.**

## 8 DESCRIPTIONS OF ADJUSTMENT, MAINTENANCE AND CLEANING OPERATIONS

	<p>This symbol is of a mnemonic nature, in fact it indicates:</p> <p><b>the need to padlock the main switch and remove the key before carrying out maintenance.</b></p>
---	---

	<p>This symbol indicates the prohibition to lubricate moving parts.</p> <p><b>Faced with this signal, the operator will have to carry out maintenance on the partly completed machine when it is stopped.</b></p>
---	---

### 8.1 ADJUSTMENT PROCEDURES

The partly completed machine LINEAR FEEDER does not have particular adjustment procedures.

ADJUSTMENT AND FORMAT CHANGE PROCEDURES				
ITEM	COD.	INTERVENTION	OPERATOR	FREQUENCY
1.	OR1			
2.	OR2			
3.	OR3			
4.	OR4			
5.	OR5			
6.	OR6			

The values shown in the OPERATOR column refer to the "OPERATOR CLASSIFICATION" table in this manual.

## 8.2 MAINTENANCE PROCEDURES

Maintenance is the set of organized operations that must be performed on the parts of the partly completed machine in a periodic and systematic way.

**Routine maintenance** is divided into:

- 1) verification of the functioning status of the various parts;
- 2) elimination or correction of anomalies, even those which, while not constituting an immediate cause of danger or technical disservice, can lead to problems following their persistence.

**Extraordinary maintenance** consists in the complete replacement of parts or components of the partly completed machine that have reached their average life, in order to prevent breakages that cause stoppages of the partly completed machine and of production.

For each ordinary or extraordinary maintenance intervention, the frequency calculated in operating hours, the operator authorized to perform the operation, the average time required and a detailed description of the intervention procedure are reported.

The frequency calculated for each intervention and the time necessary to carry it out are purely indicative in order to allow maintenance programming. Only after a continuous maintenance service and its critical analysis, it is possible to determine the real needs in accordance with the main needs of the company.

Daily check, through a visual inspection, the general wear condition of the partly completed machinery; this inspection must take place to prevent any breakages or malfunctions due to the conditions of use in relation to the environment, for example use in an environment filled with steam, or, in the presence of particularly hot climates, etc.

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

	<p><b>For maintenance operations on the partly completed machine, it is necessary, if envisaged, to act as a precaution on the local disconnectors, blocking them in the power off position to interrupt, in any case and always, any possible power supply to the motors.</b></p> <p><b>In the absence of local disconnectors it is always necessary to act on the general disconnector</b></p>
---	--

	<p><b>ATTENTION!</b></p> <p><b>Before carrying out the operations indicated, it is necessary to disconnect the voltage from the partly completed machine "LINEAR FEEDER".</b></p>
---	---

## 8.2.1 MECHANICAL INTERVENTION PROCEDURES

MECHANICAL MAINTENANCE				
ITEM	COD.	INTERVENTION	OPERATOR	FREQUENCY
1.	OM1	Screw tightening check	M1	2 years
2.	OM2	Checking the state of wear of the vibration dampers	M1	2 years
3.	OM3/1	Air gap calibration	M1	2 years
4.	OM4	Leaf spring replacement	M1	Abnormal operation
5.	OM5	Threaded armature replacement	M1	Abnormal operation
6.	OM6	Electromagnet core replacement	M1	Abnormal operation
7.	OM7			

The values shown in the OPERATOR column refer to the "OPERATOR CLASSIFICATION" table in this manual.



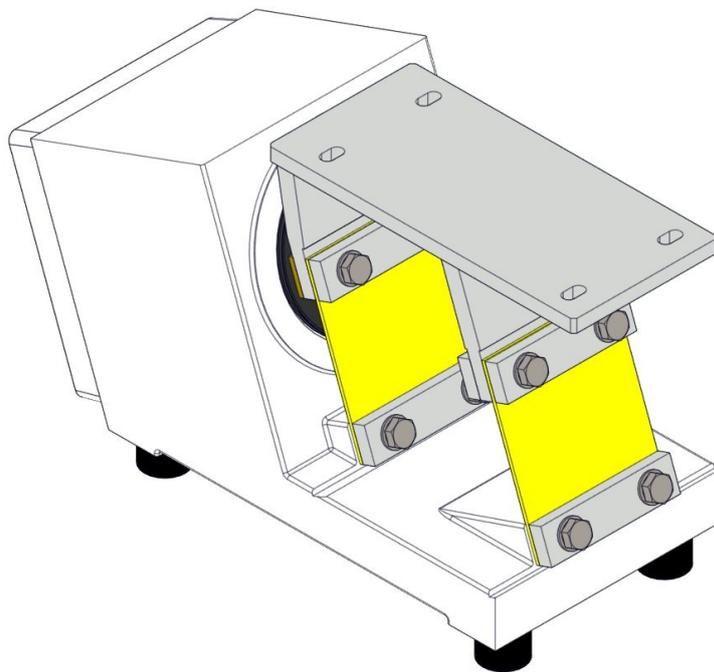
**The maintenance operations of the partly completed machine must be carried out after making sure that all the safety requirements are respected; if necessary, wear the appropriate personal protective equipment.**

**Refer to the manual for incorporating the partly completed machinery into the machine/partly completed machinery assembly.**



SCREW TIGHTENING CHECK		OM1
ENABLED OPERATOR	M1	
FREQUENCY	2 years	
NECESSARY TIME:	30 minutes	

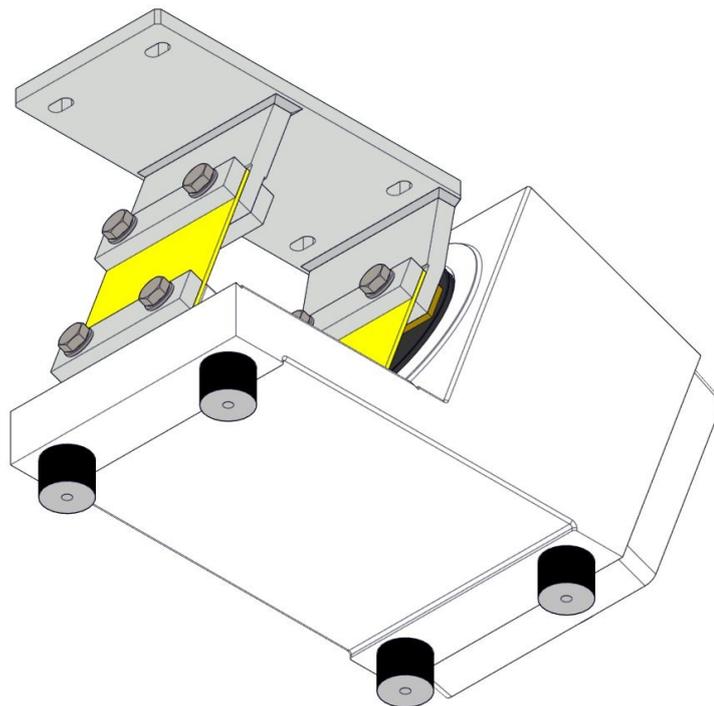
Carefully check the correct tightening of all the screws with which the partly completed machine is equipped (bolts, leaf springs, etc.; in particular, refer to the maintenance sheet "OM4 REPLACING LEAF SPRINGS" for the tightening torques of the leaf spring screws).



**Every ordinary and extraordinary maintenance operation must be carried out with the partly completed machine switched off.**

CHECKING THE STATUS OF WEAR OF THE VIBRATION MOUNTS		OM2
ENABLED OPERATOR	M1	
FREQUENCY	2 years	
NECESSARY TIME:	15 minutes	

Carefully check the state of wear of the anti-vibration elastic feet and their correct tightening.

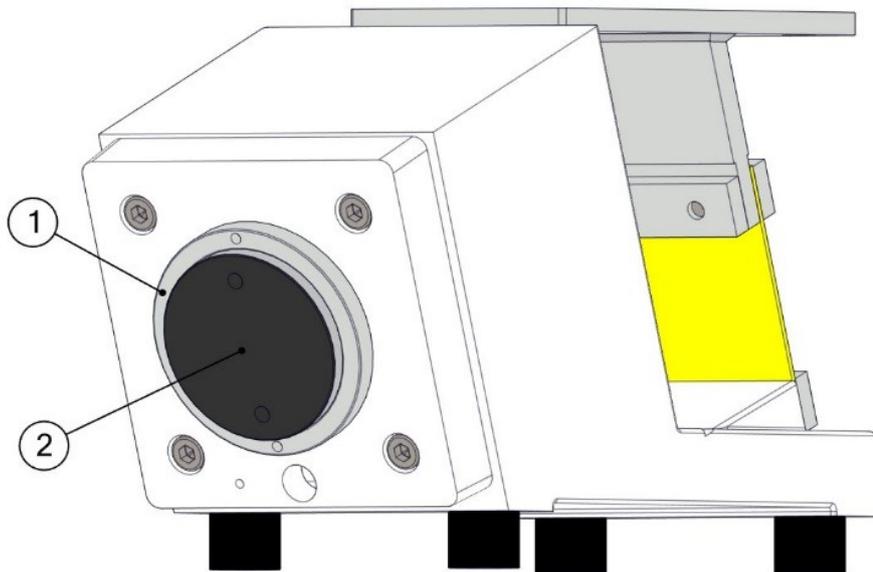


**Every ordinary and extraordinary maintenance operation must be carried out with the partly completed machine switched off.**

AIR GAP CALIBRATION		OM3/1
ENABLED OPERATOR	M1	
FREQUENCY	2 years	
NECESSARY TIME:	60 minutes	

Make sure that the gap between the two parts of the electromagnet (air gap) is free from impurities. If it is necessary to vary the size of the air gap, follow the procedure below:

- *Disconnect the linear feeder from the voltage;*
- *Loosen the rear locking ring nut (1), making sure that the threaded armature (2) does not rotate during the operation;*
- *Screw (to bring) or unscrew (to move away) the threaded armature using a compass wrench;*
- *Re-tighten the ring nut keeping the calliper wrench inserted in the appropriate threaded holes.*

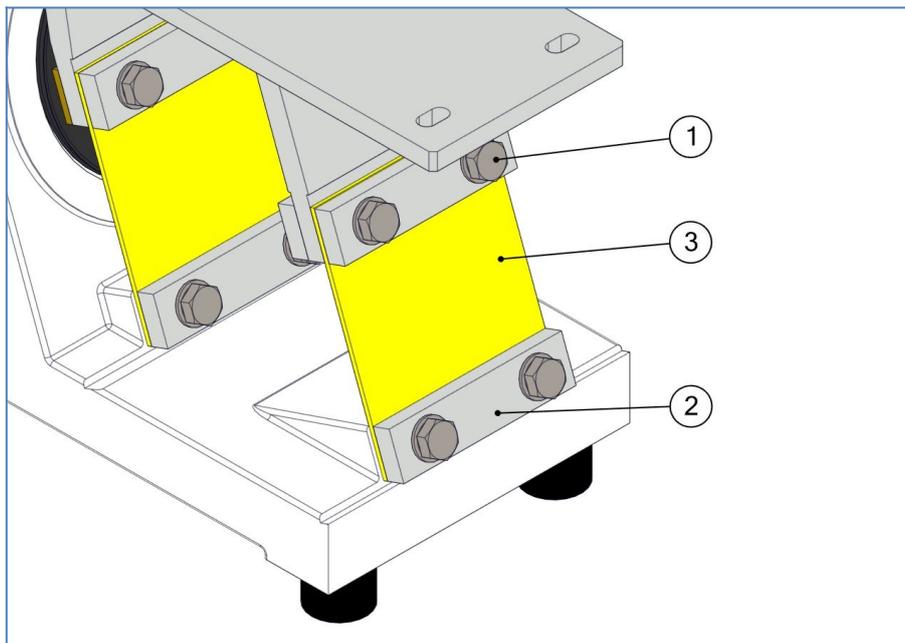


**Every ordinary and extraordinary maintenance operation must be carried out with the partly completed machine switched off.**

SPRING LEAF REPLACEMENT		OM4
ENABLED OPERATOR	M1	
FREQUENCY	In case of malfunction	
NECESSARY TIME:	60 minutes	

To replace a leaf spring, follow the procedure below:

- Disconnect the linear feeder from the voltage;
- Undo the fastening screws (1) of the leaf spring and remove them; ATTENTION: by removing the fixing screws of a leaf spring, the upper plate will be unstable, therefore it is necessary to guarantee its stability (fixing/supporting it with suitable means or supports) before completing this operation;
- At this point it will be possible to remove the fixing blocks (2), any spacers and the relative leaf spring (3) to be replaced;
- Position the new leaf spring and fix it by putting the fixing blocks and any previously removed spacers back in their correct position;
- Fix the leaf springs with screws and washers previously removed, tightening with the torque wrench, respecting the prescribed tightening torques.



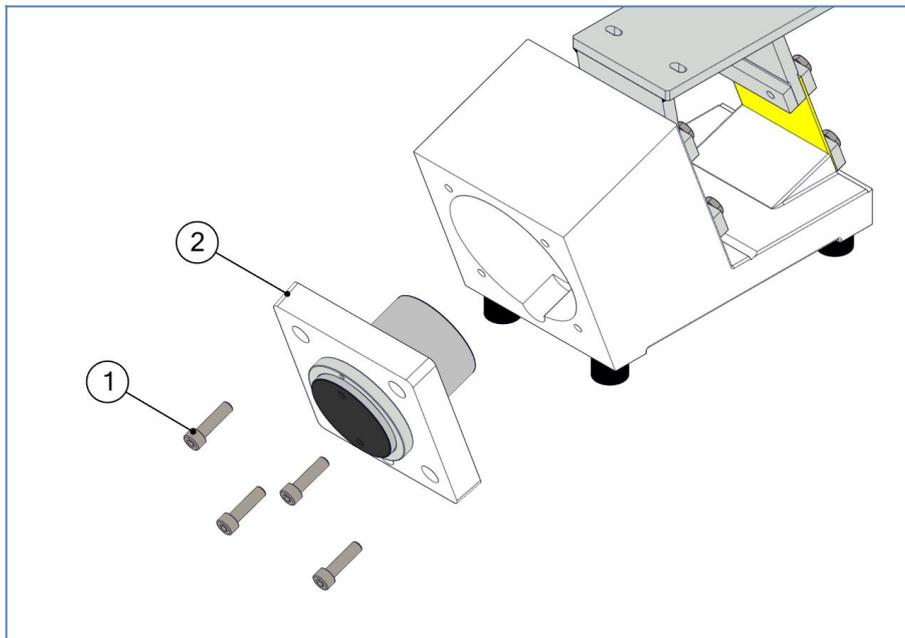
TIGHTENING TORQUE OF LEAF SPRINGS SCREWS	

**Every ordinary and extraordinary maintenance operation must be carried out with the partly completed machine switched off.**

REPLACING THE THREADED ARMATURE		OM5
ENABLED OPERATOR	M1	
FREQUENCY	REPLACE In case of malfunction ING THE THREADED ARMOR	
NECESSARY TIME:	60 minutes	

The procedure to be followed to replace the threaded armature is indicated below; it is advisable to accurately note the position of the components that will gradually be removed, since it will be necessary to reposition them correctly so as not to jeopardize the operation of the linear feeder.

- Disconnect the linear feeder from the voltage;
- Undo the fastening screws (1) of the support flange (2) and remove it;

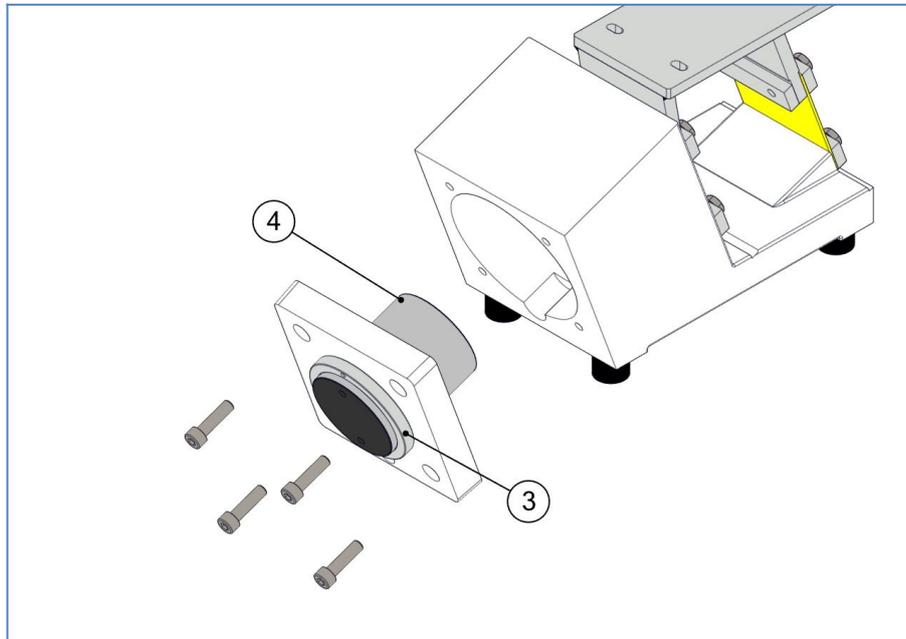


*Replacing the threaded armature – page 1/2*

REPLACING THE THREADED ARMATURE

OM5

- Unscrew the adjusting ring nut (3), unscrew the threaded armature (4) and replace it;



- Screw the new threaded armature and the relative fastening ring nut back onto the support flange;
- Reposition the block on the vibrating feeder and fix it with the special screws previously removed.



**ATTENTION!**

**Carry out air gap calibration (Refer to the appropriate maintenance sheet).**

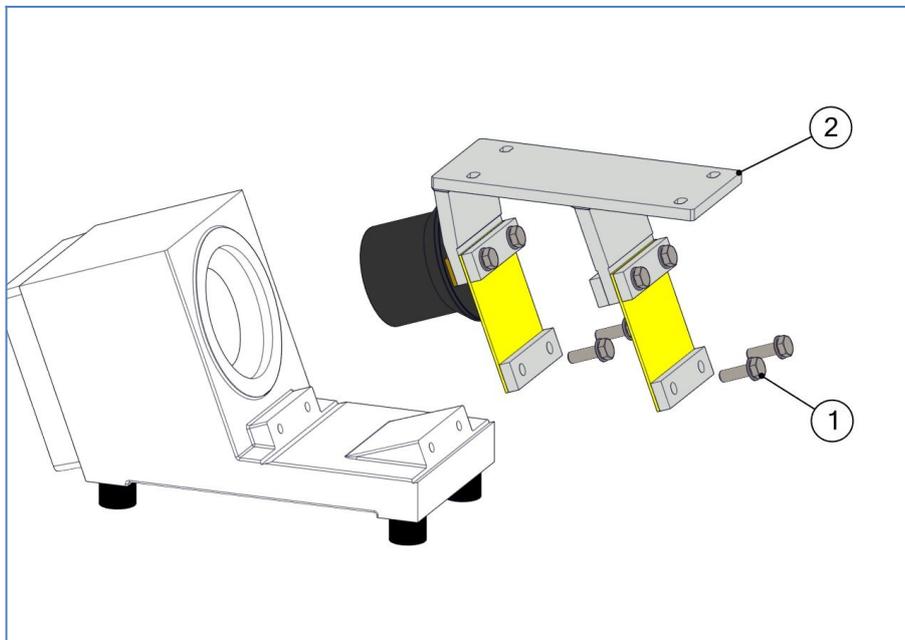
**Every ordinary and extraordinary maintenance operation must be carried out with the partly completed machine switched off.**

*Replacing the threaded armature – page 2/2*

ELECTROMAGNET CORE REPLACEMENT		OM6
ENABLED OPERATOR	M1	
FREQUENCY	In case of malfunction	
NECESSARY TIME:	60 minutes	

The procedure to be followed to replace the electromagnet is indicated below; it is advisable to accurately note the position of the components that will gradually be removed, since it will be necessary to reposition them correctly so as not to jeopardize the operation of the linear feeder.

- Disconnect the linear feeder from the voltage;
- Undo the screws and lower washers fastening the leaf springs (1) and remove them;
- Remove the block made up of the vibrating mass and leaf springs (2);

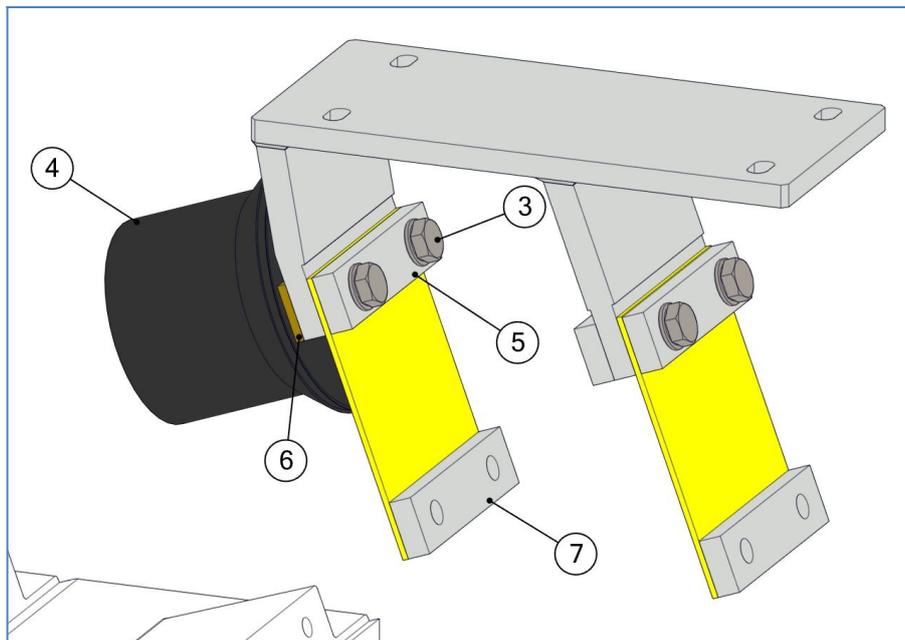


*Electromagnet core replacement – page. 1/2*

ELECTROMAGNET CORE REPLACEMENT

OM6

- Unscrew the fixing screws **(3)** of the core of the electromagnet **(4)**, remove it and replace it with the new core;
- Fix the new electromagnet to the vibrating mass, taking care to correctly reposition the leaf spring fixing block **(5)** and the core spacer **(6)**;
- Reposition the block made up of the vibrating mass and leaf springs in its original position and fix it with the previously removed screws, taking care to reposition the lower leaf spring fixing blocks **(7)** correctly (tighten the leaf spring screws with the torque wrench, respecting the specified in the table contained in the maintenance sheet "OM4 REPLACING LEAF SPRINGS").



**ATTENTION!**

**Carry out air gap calibration (Refer to the appropriate maintenance sheet).**

**Every ordinary and extraordinary maintenance operation must be carried out with the partly completed machine switched off.**

*Electromagnet core replacement – page 2/2*

## 8.2.2 ELECTRICAL INTERVENTION PROCEDURES

ELECTRICAL MAINTENANCE				
ITEM	COD.	INTERVENTION	OPERATOR	FREQUENCY
1.	OE1	Checking electrical cables and connections.	M2	2 years
2.	OE2			
3.	OE3			
4.	OE4			
5.	OE5			
6.	OE6			

The values shown in the OPERATOR column refer to the "OPERATOR CLASSIFICATION" table in this manual.

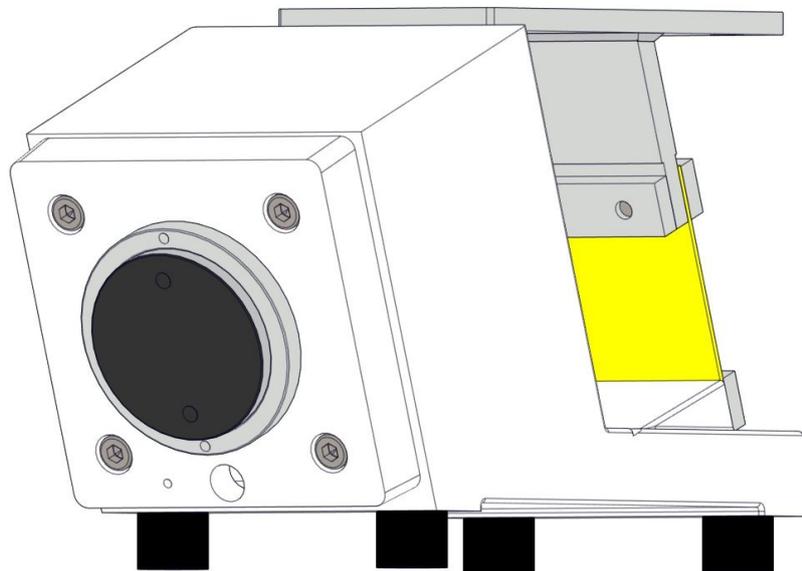


**The maintenance operations of the partly completed machine must be carried out after making sure that all the safety requirements are respected; if necessary, wear the appropriate personal protective equipment.**

**Refer to the manual for incorporating the partly completed machinery into the machine/partly completed machinery assembly.**

CHECK ELECTRIC CABLES AND CONNECTIONS		OE1
ENABLED OPERATOR	M2	
FREQUENCY	2 years	
NECESSARY TIME:	30 minutes	

Check the condition of the electric cables and their connections.



**Every ordinary and extraordinary maintenance operation must be carried out with the partly completed machine switched off.**

### 8.2.3 OTHER INTERVENTION PROCEDURES

The partly completed machine covered by this manual does not envisage other intervention procedures.

## 8.3 INDICATIONS RELATING TO CLEANING THE PARTLY COMPLETED MACHINE



Before proceeding with the cleaning operations of the partly completed machine, it is recommended to carefully read the paragraphs "RESIDUAL RISKS" and "PERSONAL PROTECTIVE EQUIPMENT".

The cleaning operations must be carried out with each partly completed machine disconnected from the energy sources (electrical and pneumatic supplies disconnected.)

### 8.3.1 CLEANING PROCEDURES

The cleaning procedures for the surfaces of the partly completed machinery follow the instructions given in the chapter "INDICATIONS RELATING TO CLEANING THE PARTLY COMPLETED MACHINE" of this manual.

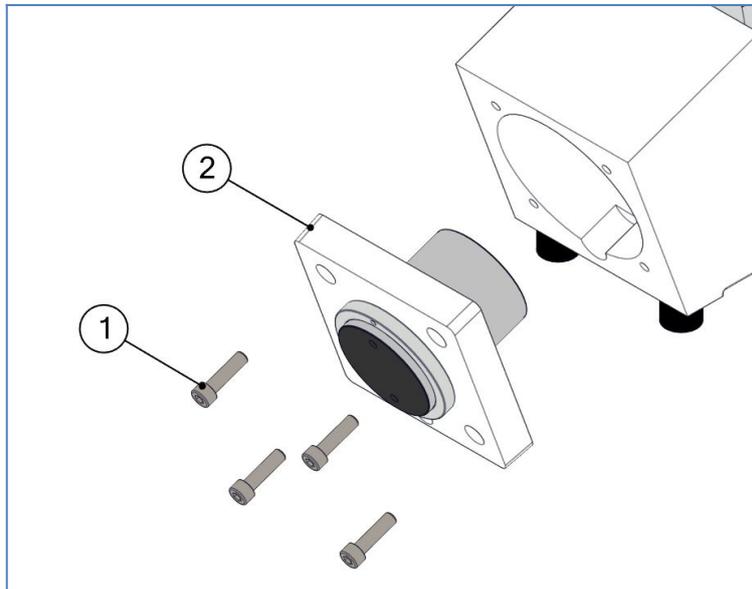
CLEANING OPERATIONS				
ITEM	COD.	INTERVENTION	OPERATOR	FREQUENCY
1.	PU1	Cleaning the linear feeder	C2	2 years
2.	PU2			
3.	PU3			
4.	PU4			
5.	PU5			
6.	PU6			

The values shown in the OPERATOR column refer to the "OPERATOR CLASSIFICATION" table in this manual.

Cleaning the linear feeder		<b>PU1</b>
<i>ENABLED OPERATOR</i>	C2	
<i>FREQUENCY</i>	2 years	
<i>NECESSARY TIME:</i>	60 minutes	

Clean the linear feeder with compressed air; do not use liquids but only filtered and dry compressed air. Perform the cleaning operation also inside the linear feeder:

- Undo the screws (1) of the support flange of the threaded armature (2) and remove it;



- Clean the inside of the linear feeder with compressed air; do not use liquids but only filtered and dry compressed air;
- Reposition the block on the vibrating feeder and fix it with the special screws previously removed.

Evaluate the frequency of the operation based on the working environment (presence of dust, etc.).

**The cleaning operation must be carried out with the partly completed machine switched off.**

## 9 TROUBLESHOOTING

Some probable causes of failure (anomalies due to the functionality of the partly completed machinery) and less probable causes (anomalies due to misuse of the partly completed machinery or manufacturing defects) are listed below.

### Absolute lack of vibration:

Causes:	Corrections:
Faulty electromagnet.	Replace the electromagnet.
No mains power to control unit or control unit to power supply.	Check connections.
Faulty fuse located inside the control unit.	Replace the blown fuse with an identical one.

### Insufficient vibration amplitude:

Causes:	Corrections:
Excessive spring leaf resistance.	Replace leaf springs.
Loosening of the leaf spring locking screws.	Tighten the leaf spring locking screws.
Unstable linear feeder support.	Make the partly completed machine support stable.
Loosening of the anti vibration presser feet located under the linear feeder.	Adjust the anti vibration presser feet.
Breakage of one or more leaf springs.	Replace damaged leaf springs.
Breakage of one or more leaf spring fastening screws.	Replace damaged screws.
Insufficient vibration amplitude, operating on the maximum value of the regulator (fatigue of the springs, fastening with insufficient tightening of the channel on the rectilinear vibrator);	Replace one or more springs and tighten correctly;
Insufficient vibration amplitude while operating on the maximum value of the regulator (breakage of one or several springs, breakage of one or several spring fixing screws, breakage of one or several adjustment studs of the electromagnet core).	Replace one or more springs; Replace one or more spring fixing screws; Before replacing the regulator, contact Gasco group Srl.

**Noisy Linear feeder:**

<b>Causes:</b>	<b>Corrections:</b>
The air gap does not conform to the nominal value.	After cleaning the opposing surfaces of the two parts of the electromagnets, correct the air gap value.
Loosening of the internal nuts and bolts of the partly completed machine.	Proceed to tighten all the screws.
Resonance effect (coincidence of the natural frequency value and the excitation frequency of the network), caused by: <ul style="list-style-type: none"> <li>• decrease in network frequency;</li> <li>• fatigue of incorrectly tuned springs (over-resonance);</li> <li>• self-tightening of the spring fixing screws..</li> </ul>	Consult our technical department to return to an equilibrium frequency.

## 10 SPARE PARTS CATALOG

Any request relating to spare parts must be sent to:

### **GASCO group s.r.l.**

**Uffici e Stabilimento: Via Alla Costa 18  
17047 VADO LIGURE (SV) – ITALIA  
Tel 39 019 886188 r.a. - [gasco@gascogroup.it](mailto:gasco@gascogroup.it)**

Specifying:

1. Model of the partly completed machine;
2. Badge number;
3. Code of the piece to order;
4. Required amount;
5. Shipping medium.



#### **ATTENTION!**

**The leaf springs mounted inside the linear feeders can be of variable thickness in order to better determine the mechanical frequency.**

**In the event of replacement, it is therefore essential to communicate the serial number shown on the plate of the partly completed machine, in order to replace it with one of the correct thickness.**

All the spare groups of the partly completed machine will be illustrated below, using the cards which include:

- identification of the reference group;
- spare and non-spare parts identification table;
- exploded views of the reference group, with relative identification of spare parts.

The following table illustrates the criteria used to define the priority of spare parts:

Risk level	
<b>F</b>	<b>High risk:</b> with possible machine/partly completed machine shutdown.
<b>S</b>	<b>Medium risk:</b> with possible slowdown in the operation of the machine/partly completed machinery.
<b>N</b>	<b>Low risk:</b> with low impact on the functioning of the machine/partly completed machinery.
Risk frequency	
<b>H</b>	Less frequently than <b>6 months</b>
<b>L</b>	With a frequency equal to or greater than 1 year.

Risk level	Risk frequency	CRITICALITY CLASS
F	H	A
S	H	A
F	L	A
S	L	B
N	H	B
N	L	C



Do not use non-original spare parts.

Not all spare parts may be available for immediate delivery in the warehouse, therefore to minimize the time required for stops for any replacements, it is advisable to always have some of the parts most subject to wear available in your warehouse.

## 10.1 SPARE PARTS LOCALIZATION

### INDEX

<i>I.1.1 SPARE PARTS GROUP N° AL1.....</i>	<i>69</i>
<i>I.1.2 SPARE PARTS GROUP N° AL3.....</i>	<i>73</i>





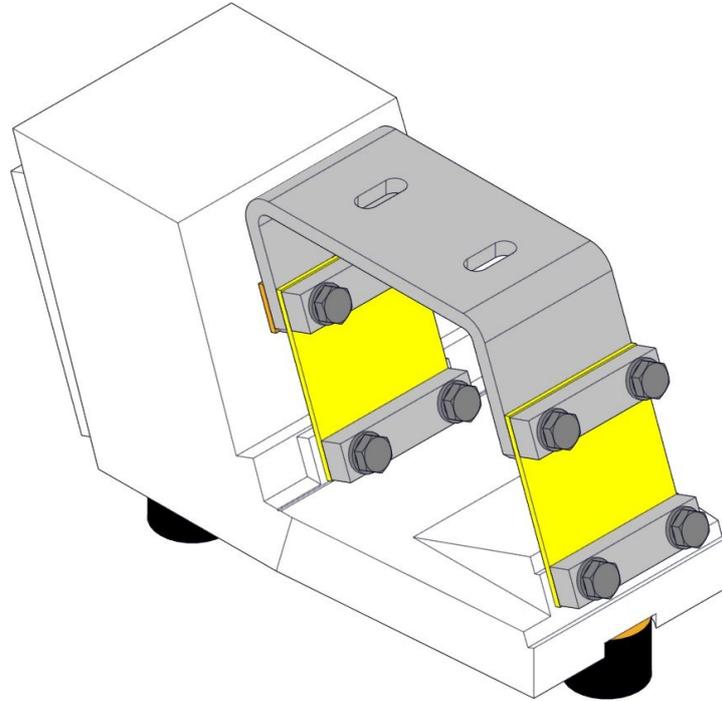
## **I.1.1 SPARE PARTS GROUP N° AL1**

Description

**LINEAR FEEDER**

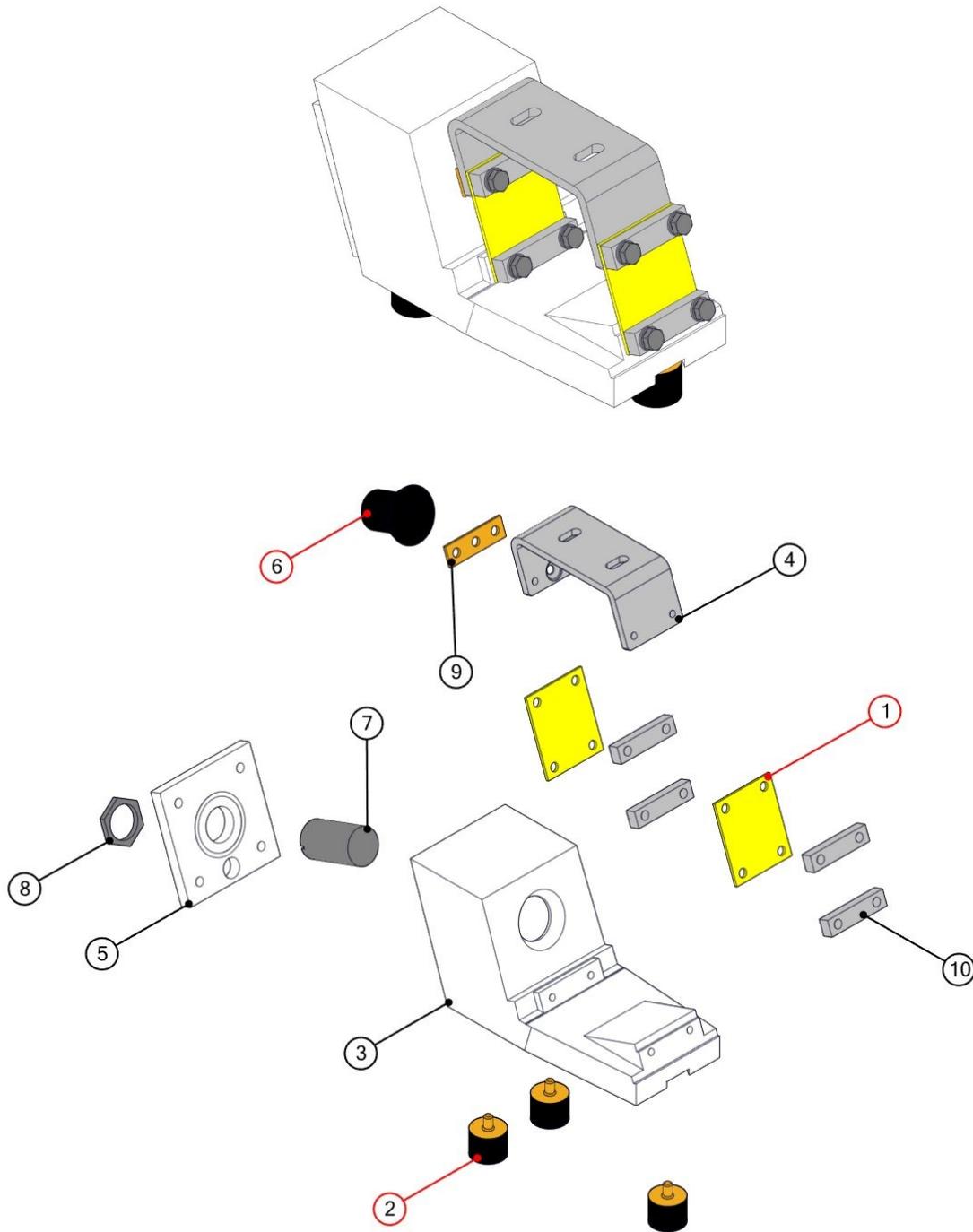
N. Chart

**AL1**



<i>Description</i>	<i>N. Chart</i>
<b>LINEAR FEEDER</b>	<b>AL1</b>

BOM ID	Q. tà	Codice	Descrizione	Priorità
1	2	LINEAR_AL1_SMALL_STP-1_-533660	Fiber spring leaf	B
2	4	LINEAR_AL1_SMALL_STP-1_-147262	Anti-vibration elastic foot	B
3	1	LINEAR_AL1_SMALL_STP-1_-221875	Linear feeder body	
4	1	LINEAR_AL1_SMALL_STP-1_-155938	Top shelf	
5	1	LINEAR_AL1_SMALL_STP-1_-175352	Armature support flange	
6	1	LINEAR_AL1_SMALL_STP-1_-395625	Electromagnet	C
7	1	LINEAR_AL1_SMALL_STP-1_-532183	Threaded armature	
8	1	LINEAR_AL1_SMALL_STP-1_-393549	Adjustment nut M70 armature	
9	1	LINEAR_AL1_SMALL_STP-1_-609624	Shelf spacer	
10	4	LINEAR_AL1_SMALL_STP-1_V-11192	Leaf spring fixing block	



<p><i>Description</i></p> <p><b>LINEAR FEEDER</b></p>	<p><i>N. Chart</i></p> <p><b>AL1</b></p>
---	--

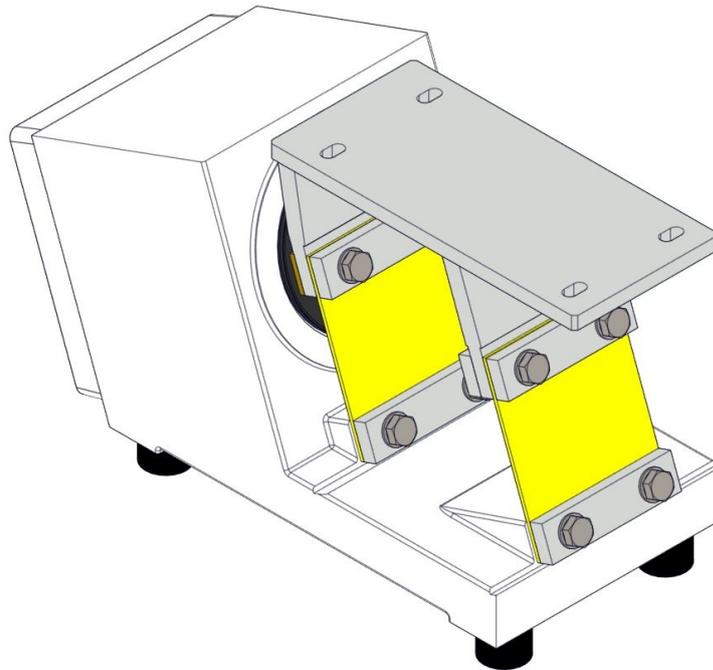
## **I.1.1 SPARE PARTS GROUP N° AL3**

Description

**LINEAR FEEDER**

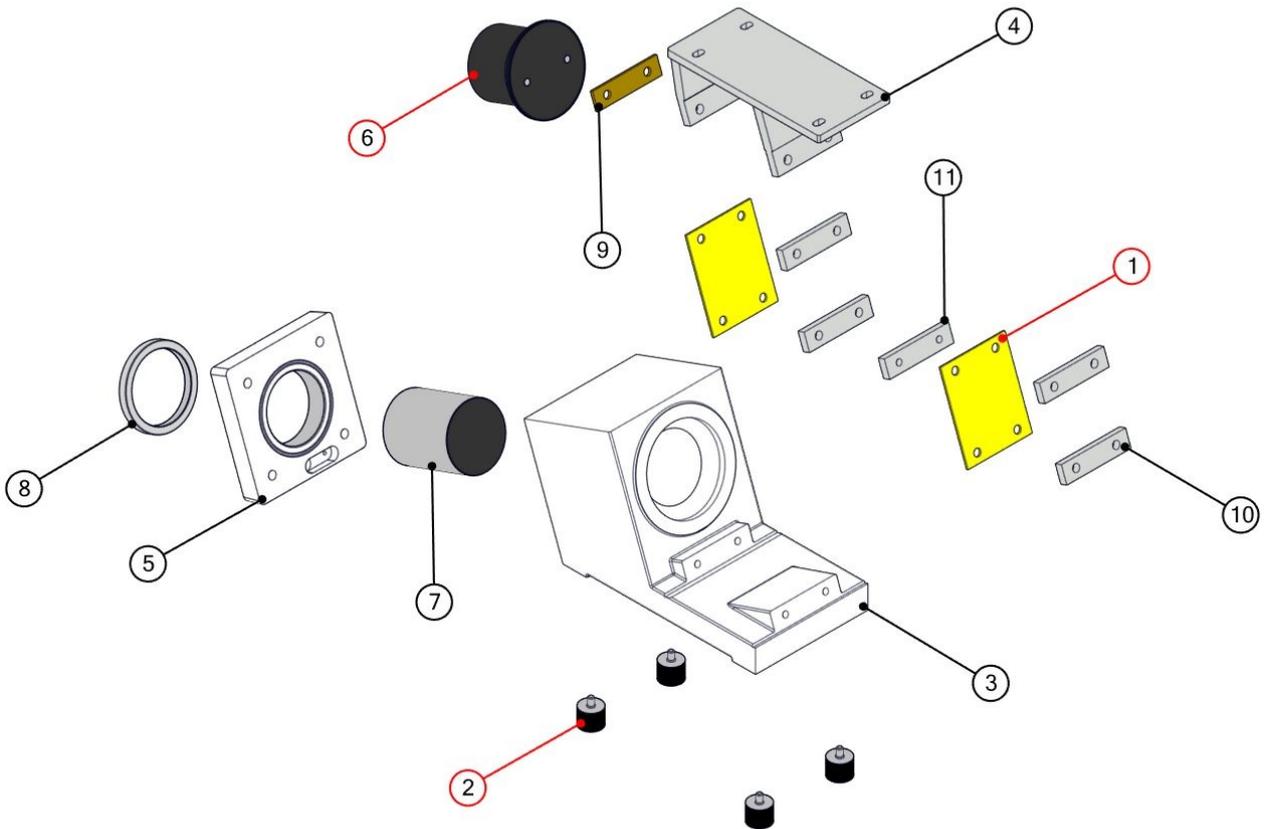
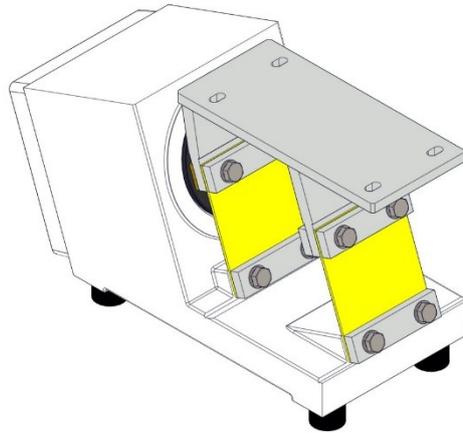
N. Chart

**AL3**



<i>Description</i>	<i>N. Chart</i>
<b>LINEAR FEEDER</b>	<b>AL3</b>

BOM ID	Q. tà	Code	Description	Priority
1	2	BLF8010020	Fiber spring leaf	B
2	4	PAVM6Ø25X20 30 SH	Anti-vibration elastic foot	B
3	1	VL3-PRT-01	Linear feeder body	
4	1	VL3-PRT-02	Top shelf	
5	1	VL3-PRT-03	Armature support flange	
6	1	VL3-PRT-04	Electromagnet	C
7	1	VL3-PRT-05	Threaded armature	
8	1	VL3-PRT-06	Adjustment nut M70 armature	
9	1	VL3-PRT-07	Shelf spacer	
10	4	VL3-PRT-08	Crossbow Fixing Block	
11	1	VL3-PRT-09	Crossbow Fixing Block 2	



<p><i>Description</i></p> <p><b>LINEAR FEEDER</b></p>	<p><i>N. Chart</i></p> <p><b>AL3</b></p>
---	--

## 11 ATTACHMENTS

The documentation, mentioned in the following table, is supplied as an attachment to this use and maintenance manual.

ATTACHMENTS			
File / Document	Title	Type	Supplier
DI.INC_AL	Declaration of Incorporation Linear feeder - AL Series	Incorporation statement	Gasco group S.r.l.

