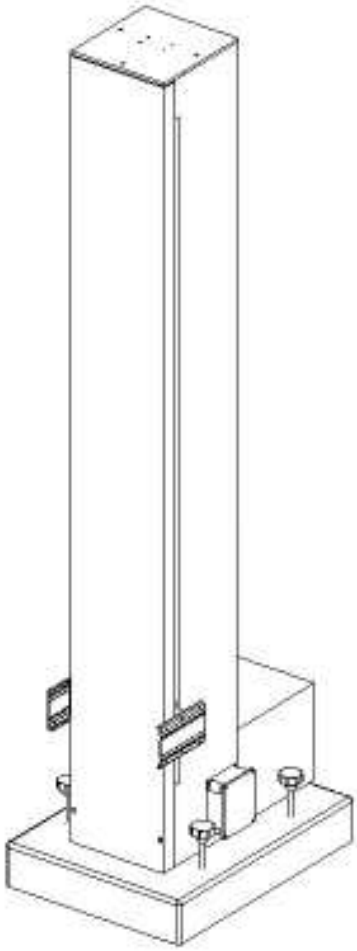
Nordson

Operating and maintenance manual

GB



Machine

RECIPROCATOR

Model

HAN _ _

Serial No./Year of manufacture

CE

UCIF

IMPORTER

CUSTOMER

.....
.....
.....
.....
.....
.....

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TITLE OF THE DOCUMENT :	NO. :
OPERATING AND MAINTENANCE MANUAL	ISSUE NO: **1.3**

CUSTOMER :	JOB ORDER NO.:
SERIAL NO. :	DATE :

REV.	DATE	DESCRIPTION
1.1	07/09/06	General revision
1.2	01/09/08	General revision
1.3	16/07/10	General revision

Prepared	Controlled	Approved	

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CHAPTER 7.0 MOVING AND TRANSPORT

CHAPTER 8.0 MACHINE INSTALLATION

CHAPTER 9.0 SETTING UP THE MACHINE

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CHAPTER 12.0 MAINTENANCE

Nordson	**INTRODUCTION**	*REV.* 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

0.0 INTRODUCTION

CHAPTER 0.0 INTRODUCTION

0.1 Document identification

The operating and maintenance manual is a document issued by ***Nordson***® against a specific job order and it is an integral part of the machine.
Such a document is marked with a serial number that corresponds to that of the machine, in order to permit tracing and identification.
All copy rights and distribution's rights of this manual and the relevant enclosed documents are reserved to *Nordson*®.

0.2 Object of the document

This manual sets out:

- To provide technicians, workers and maintenance people with instructions, information and advice on how to work in the best safety conditions.
- To put the worker in a position to use the machine correctly and safely and to maintain it in a good and efficient condition.
- To be able to prove, through the provided information, the compliance of the machine with the directives in force regarding industrial safety standards.

0.3 General conditions

During the drawing up of this document the following directives have been considered:

- UNI EN ISO 12100-1:2009, Safety of machinery - Basic concepts; general principles for design:
  Part 1 - Basic terminology, methodology (UNI EN ISO 12100-1:2009)
  Part 2 - Technical principles and specification (UNI EN ISO 12100-2:2009)
- UNI EN ISO 13849-1:2008, Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design
- UNI EN ISO 14121-1:2007, Safety of machinery - Principles or risk assessment - Part 1: Principles
- UNI EN ISO 13857:2008, Safety of machinery - Safety distances to prevent danger zones being reached by the upper and lower limbs
- UNI EN 349:1994 + A1:2008, Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
- UNI EN ISO 13850:2008, Safety of machinery - Emergency stop equipment - Functional aspects - Principles for design
- CEI EN 60204-1:A1:2009,Safety of machinery - electrical equipment of the machines - Part 1:General rules

ATTENTION : If this machine is an integral part of a plant , it is forbidden to start it unless the whole plant is in compliance with the **"Machine directive" 2006/42/CE** and those that follow.

0.4 Identification data of the manufacturer

The identification of ***Nordson***® as machine manufacturer, is in compliance with the legislation in force through these certificates:

- **Declaration of conformity** (see attached)
- **CE plate**
- **Operation and maintenance manual**

A special identification plate, applied to the machine, permanently carries information regarding CE mark. The copies of the identification plates **"CE MARK"**, applied on each single machine, and the relevant **"DECLARATION OF CONFORMITY"** are attached.

The machine has been manufactured by:

NORDSON CORPORATION

0.5 Nordson International

Europe

COUNTRY		PHONE	FAX
Austria		43-1-707 5521	43-1-707 5517
Belgium		31-13-511 8700	31-13-511 3995
Czech Republic		4205-4159 2411	4205-4124 4971
Denmark	*Hot Melt*	45-43-66 0123	45-43-64 1101
	Finishing	4543-66 1133	45-43-66 1123
Finleand		358-9-530 8080	358-9-530 80850
France		33-1-6412 1400	33-1-6412 1401
Germany	*Erkrath*	49-211-92050	49-211-254 658
	Lüneburg	49-4131-8940	49-4131-894 149
	Düsseldorf-Nordson UV	49-211-3613 169	49-211-3613 527
Italy		39-02-904 691	39-02-9078 2485
Netherlands		31-13-511 8700	31-13-511 3995
Norway	*Hot Melt*	47-23 03 6160	47-22 68 3636
	Finishing	47-22-65 6100	47-22-65 8858
Poland		48-22-836 4495	48-22-836 7042
Portugal		351-22-961 9400	351-22-961 9409
Russia		7-812-11 86 263	7-812-11 86 263
Slovak Republic		4205-4159 2411	4205-4124 4971
Spain		34-96-313 2090	34-96-313 2244
Sweden	*Hot melt*	46-40-680 1700	46-40-932 882
	Finishing	46 (0) 303 66950	46 (0) 303 66959
Switzerland		41-61-411 3838	41-61-411 3818
United Kingdom	*Hot Melt*	44-1844-26 4500	44-1844-21 5358
	Finishing	44-161-495 4200	44-161-428 6716
	Nordson UV	44-1753-558 000	44-1753-558 100

Distributors in Eastern & Southern Europe

DED, Germany		49-211-92050	49-211-254 658

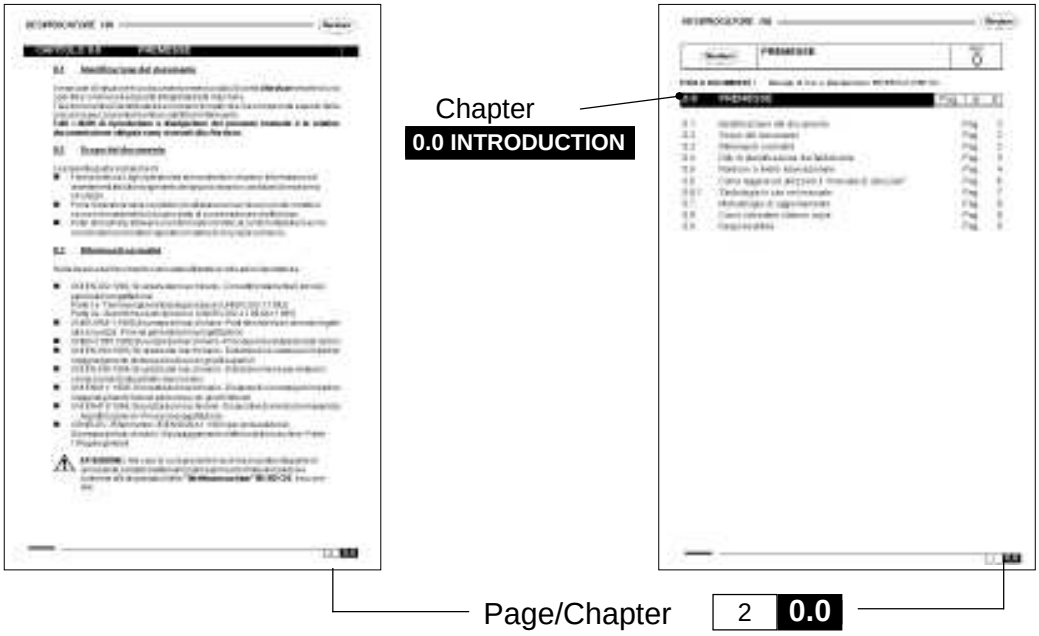
Outside Europe

For Your nearest **Nordson**® office outside Europe contact the Nordson offices below for detailed information.

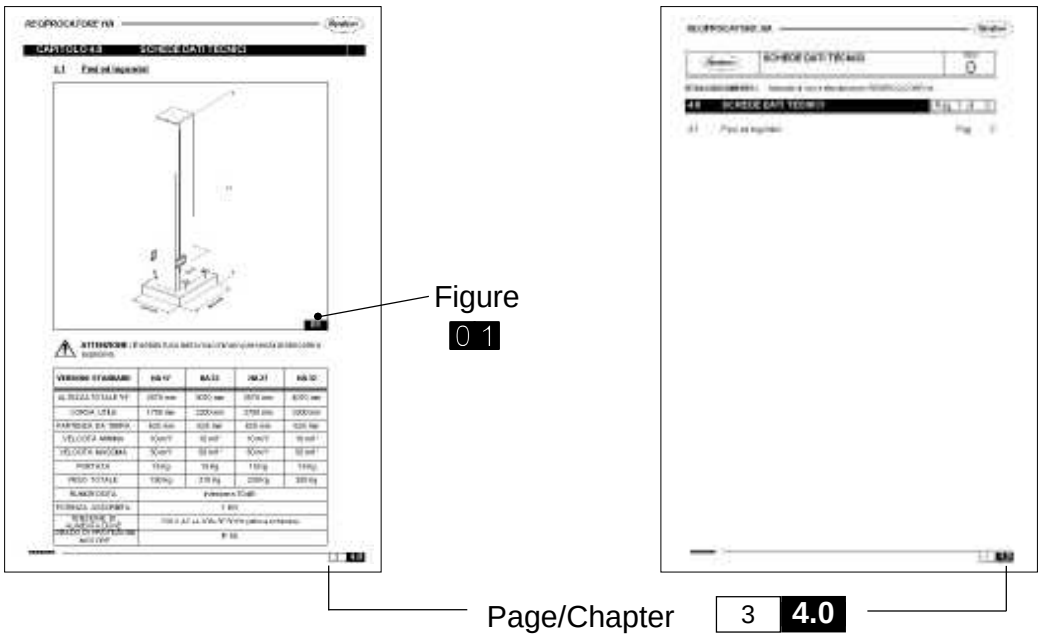
	CONTACT NORDSON		PHONE	FAX
Africa/Middle East	**DED, Germany**		49-211-92050	49-211-254 658
Asia/Australia/ Latin America	**Pacific South Division, USA**		1-440-988-9411	1-440-985-3710
Japan	**Japan**		81-3-5762 2700	81-3-5762 2701
North America	**Canada**		1-905-475 6730	1-905-475 8821
	USA	*Hot Melt*	1-770-497 3400	1-770-497 3500
		Finishing	1-440-988 9411	1-440-985 1417
		Nordson UV	1-440-985 4592	1-440-985 4593

0.6 How to read and use the "operating and maintenance manual"

This manual is an integral part of the machine, therefore it must be preserved and appropriately used for the whole operating life of the machine, also in case of transfer to outside parties.
The manual is subdivided into chapters each identified by a summarizing first page.
Each page reports its progressive number depending on the chapter and to the number of the chapter itself.



The graphic illustrations, reported in the manual, are identified by a progressive number depending on the chapter.



0.6.1 Symbols used in the manual

To make the reading and the understanding of this manual easier and immediate the following symbols have been used:

"Conductor": qualified and authorized person that has been instructed to start the machine with the necessary protections in place via the use of the commands on the push-button panel.

Mechanical maintenance person: a technician, qualified and authorized to install, repair and carry out special maintenance that is exclusively mechanical.

Electrical maintenance person: a technician, qualified and authorized to install, repair and carry out special maintenance exclusively electrical.

Manufacturer's technician with mechanical competences: for complex and/or special operations.

Manufacturer's technician with electrical or electronic competences: for complex and/or special operations.

0.7 Machine updates

In the case of technical changes made by ***Nordson***® during the operating life of the machine an appropriate revision of the document itself will be supplied with the essential data specified on the page "**DOCUMENT IDENTIFICATION**".

In the case that ***Nordson***® submits a copy of the document with revisions, the costumer should see to the elimination of the parts concerned and to the replacement.

0.8 How to ask for further copies

Further copies should be ordered from ***Nordson***® offices (see tables page 3 and 4).

0.9 Responsibilities

This manual reflects the technical state of the machine at the moment of sale and it is open to changes, depending on the firm opinion of the manufacturer.

In case of manual changes the manufacturer is not obliged to update those manuals that accompany machines already sold.

The manufacturer is released from any responsibility in any case of improper or incorrect use such as, for example:

- the use of the machine by not trained staff;
- use without following the regulations in force;
- incorrect installation;
- mains supply defects;
- serious lack of maintenance;
- not authorized modifications to the machine;
- the use of unsuited spare parts;
- inobservance of the "operating and maintenance manual";

It must be remembered that any total or partial reproduction of this manual is forbidden unless authorised by ***Nordson***®.

Nordson	TECHNICAL ASSISTANCE	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

1.0 TECHNICAL ASSISTANCE

Pge 1 to 2

CHAPTER 1.0 TECHNICAL ASSISTANCE

For any technical or commercial requirements, please contact:

Nordson	**GENERAL SAFETY INSTRUCTIONS**	*REV.* 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

2.0 GENERAL SAFETY INSTRUCTIONS — Page 1 to 6

CHAPTER 2.0 GENERAL SAFETY ADVICE

Each interaction between the worker and the machine has been carefully studied and analysed during the planning stages.
The choice in construction, the technical features of the machine and the indications reported in this document are intended to guarantee the greatest safety level to the exposed people and the worker.
According to the **"Machine directive" 2006/42/CE** it is useful to remember the following definitions:

“Dangerous zones”: every zone inside and/or in proximity to a machine where the presence of an exposed person is a danger to safety and health.

“Exposed person”: any person situated entirely or partially in a dangerous zone.

“Worker”: a person instructed to operate, regulate and carry out ordinary maintenance and/or clean the machine.

To better define the limit of operation, the relevant qualifications of the **"worker”** and to make the immediate reading and the understand of the manual easier, the following classifications have been used:

"Conductor":
qualified and authorized person that has been instructed to start the machine with the necessary protections in place via the use of the commands on the push-button panel.

Mechanical maintenance person:
a technician, qualified and authorized to install, repair and carry out special maintenance that is exclusively mechanical.

Electrical maintenance person:
a technician, qualified and authorized to install, repair and carry out special maintenance exclusively electrical.

Manufacturer's technician with mechanical competences:
for complex and/or special operations.

Manufacturer's technician with electrical or electronic competences:
for complex and/or special operations.

The employer should provide the necessary training to the staff regarding the risks of accidents, and safety devices to protect the worker, and must also insist on the observance of rules and company instructions about safety and protection measures.

The worker has to respect the instructions given by the employer or other authorised people and particularly:

- Use correctly the machine, equipment, tools, and safety's devices;
- Use correctly the individual protective devices;
- Notify immediately any dangerous conditions;
- Must not remove or modify safety devices or control signal;
- Follow scrupulously the indications in this manual;

The unauthorised tampering and substitution of one or more parts or groups of the machine, the use of equipment or normal wear material other than that indicated by ***Nordson***®, can pose a risk of accidents and hence release the manufacturer from civil or penal responsibilities.

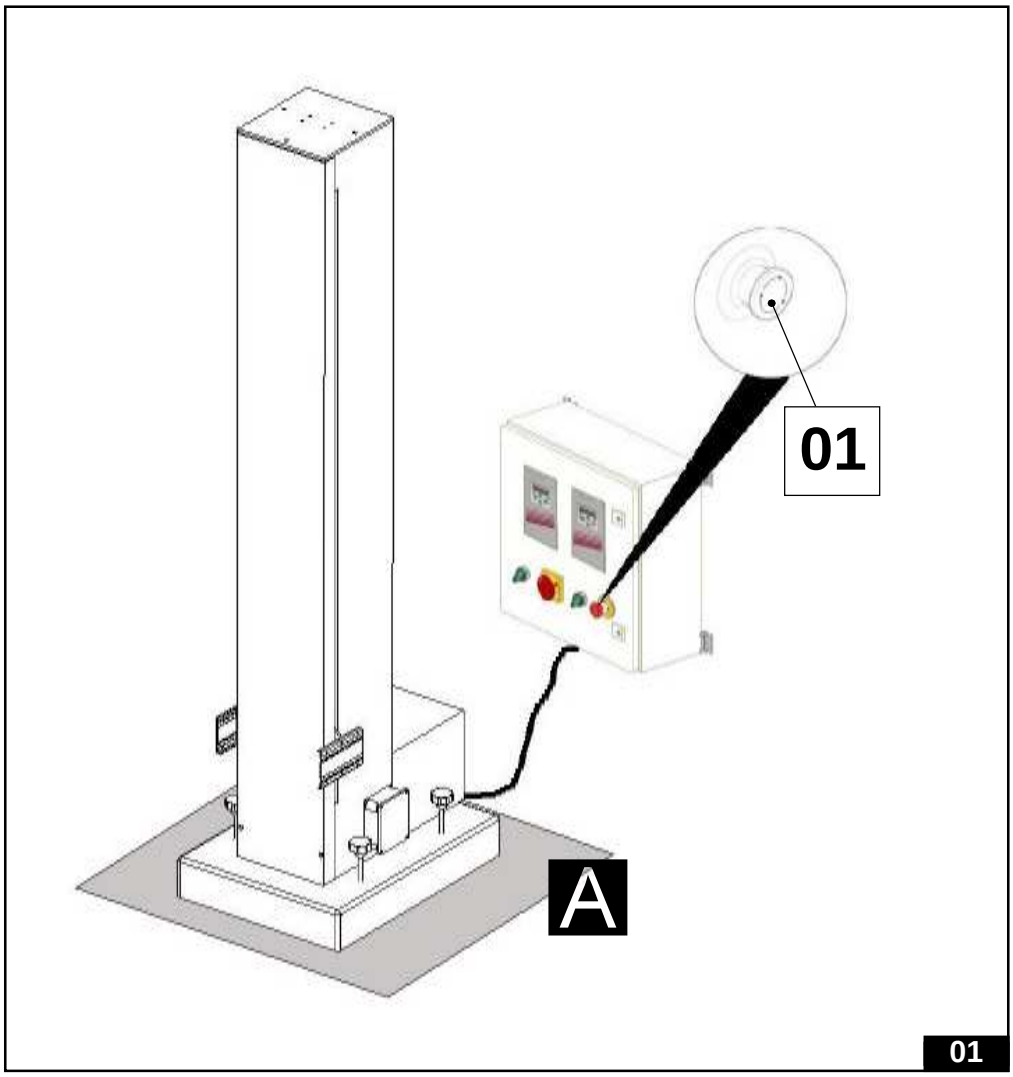
ATTENTION : Before starting up the machine and carrying out working operations, electric boards, control panels, and all protections, must be closed and the working area must be free and clean.

ATTENTION : If this machine is an integral part of a plant, it is forbidden to start it unless the whole plant is in compliance with the **"Machine directive" 2006/42/CE** and those that follow.

2.1 Dangerous areas and placing of safety devices

- Due to the structural typology of the machine that is integrated in painting plants, it is necessary to determine and fence an area **A** where the operator must not enter when the plant is in function.

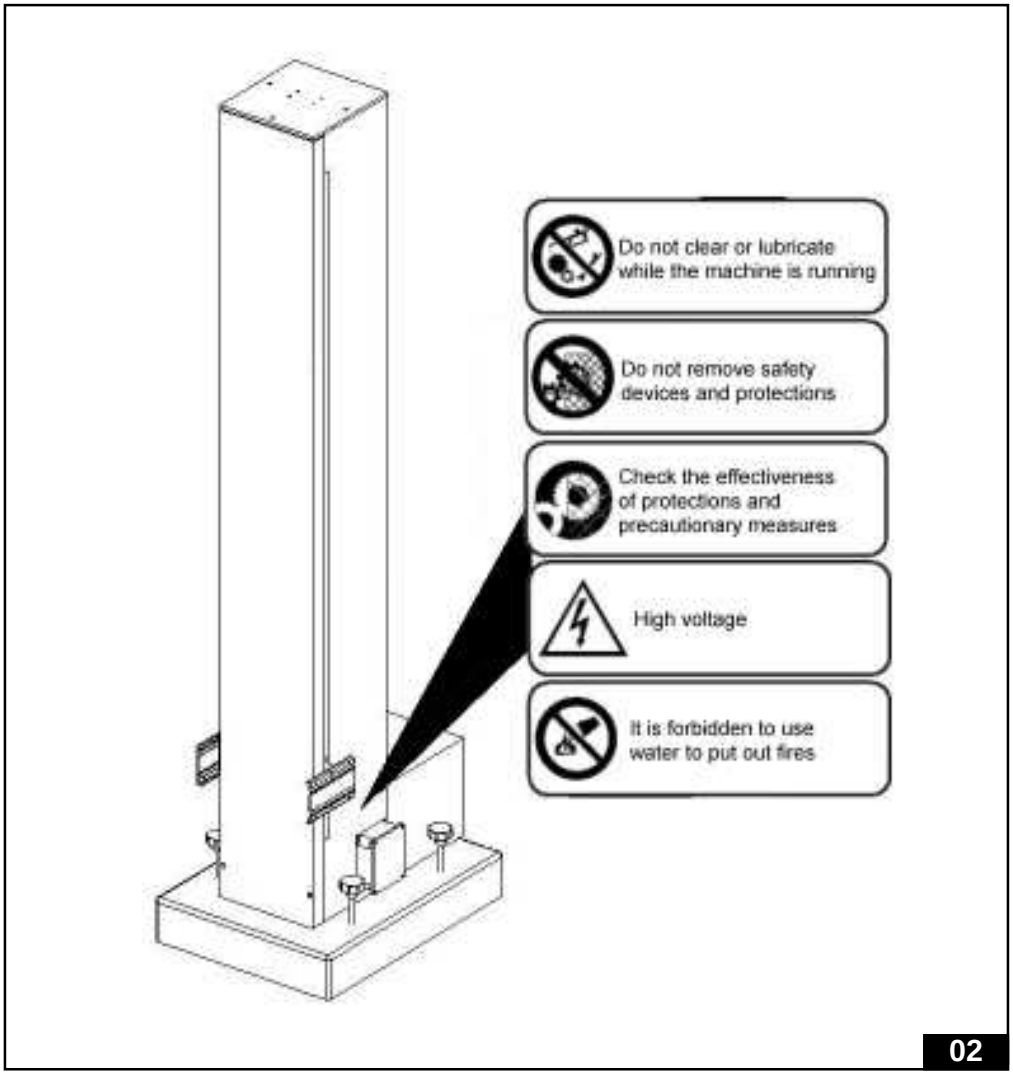
- Emergency stop: the position of the emergency/stop button **0 1 (01)** depends on the type of control module connected to the machine and it has to be integrated to the emergency circuit of the general plant (see the attached wiring diagrams)



2.2 Position of warning labels

The warning labels that are clearly visible and attached to the machine are additional and not alternative measures to the already foreseen protections.

Such labels further improve the operator's safety, in that they give correct information regarding requirements and cautions.



02

2.3 General prohibitions

Do not remove safety devices and protections.

Temporary removal of protections - protections and safety devices of the machine must NOT be removed during maintenance; it is necessary to adopt immediately measures to reduce risks, under the supervision of authorised people.

It is forbidden for any person, except the conductor, to access to the operating area of the machine.

Do not clear or lubricate while the machine is running.

It is forbidden to use water to put out fires.

2.4 General obligations

Switch off at the mains supply before unplugging electrical devices.

Check the effectiveness of protections and precautionary measures.

Notify immediately faults and lack of protections and precautionary measures and any dangerous situation.

2.5 Dangers

High voltage.

2.6 Advice about lighting

The machine is not provided with an autonomous lighting system, because a normal working environment condition, that is at least 300 lux, is sufficient.

The customer should supply a similar lighting value, to carry out the normal working operations.

For maintenance work a portable lamp is recommended.

Nordson	DESCRIPTION OF THE MACHINE	REV. 1.3

TITLE OF THE DOCUMENT: Operating and maintenance manual RECIPROCATOR HAN

3.0 DESCRIPTION OF THE MACHINE

Page 1 to 3

CHAPTER 3.0 DESCRIPTION OF THE MACHINE

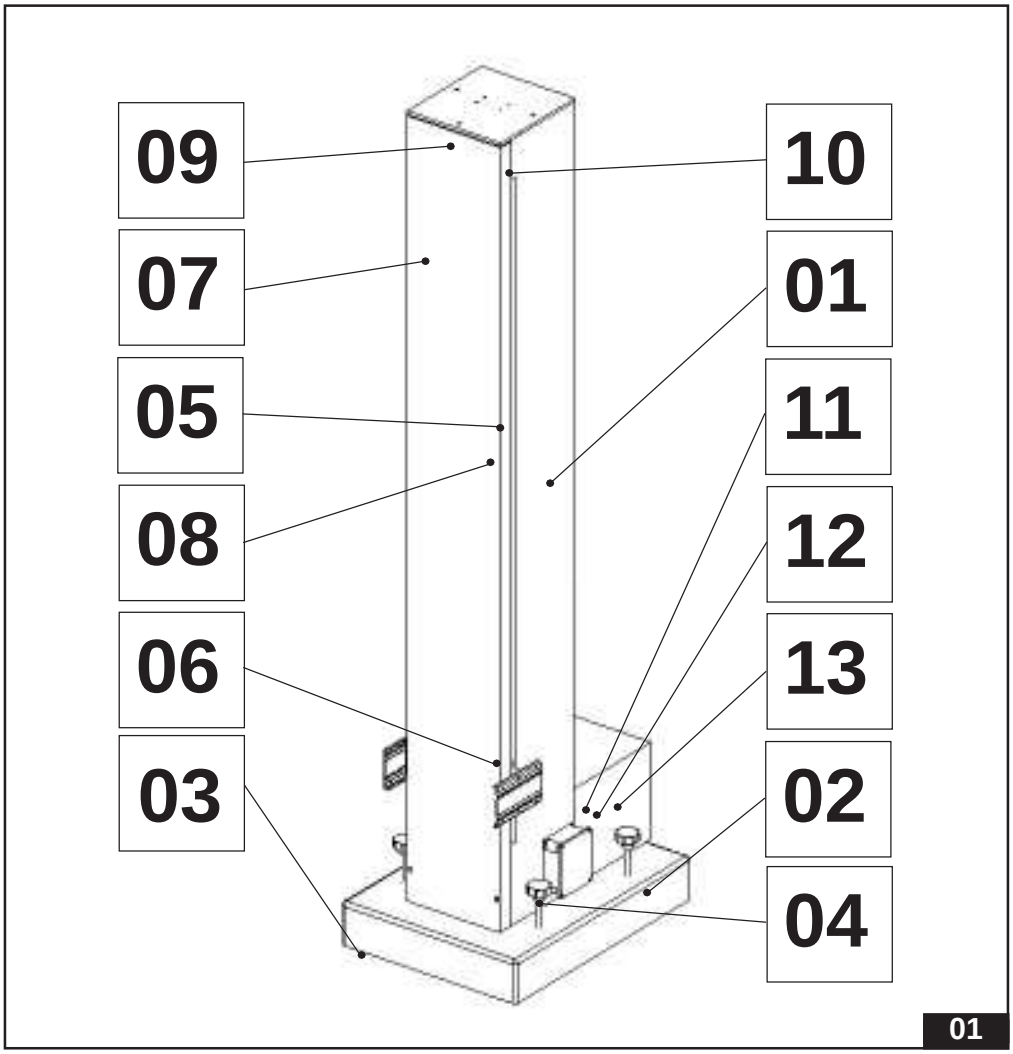
The ever-increasing need to produce automatically and to optimise the production cycles of spray-coating systems has led in these years to the development of reciprocators, that, replacing the operator during the most repetitive phases of working processes, eliminate errors caused by carelessness and inexperience.

The new generation of reciprocators by ***Nordson***® has been studied in order to increase the requirements of productions and, beginning from the simplest model, technical advanced solutions are used, that eliminate manual works carried out from the edge of machine, previously essential. In fact all adjustments are achieved directly from the control board via simple and immediate commands.

The **Reciprocators mod. HAN** are the most efficient solution in automated systems; they have been studied to support loads to 15 Kg.; they allow a great versatility in use, because they can be used individually as well as in integrated automation systems and automation systems with computerized control.

Description

The reciprocator HAN is a self-supporting structure 0 1 **(01)**, fixed on a base 0 1 **(02)** which assures total stability.
In order to help the positioning, the base is equipped with rotating wheels 0 1 **(03)**, while in order to achieve a correct levelling of the machine, also on uneven floors, adjustment blocks are provided 0 1 **(04)**.
A special guide 0 1 **(05)** which is fixed to the inner part of the structure, allows a trolley to slide via two pairs of wheels 0 1 **(06)**.
A second guide 0 1 **(07)** is placed near the counterweight 0 1 **(08)** in order to guide it in its movements; in this way noises and vibrations are reduced to the minimum.
The movement occurs via a pulleys system 0 1 **(09)** and a toothed belt 0 1 **(10)** and the stroke width is controlled by the control module.
The movement is guaranteed by a strong gear 0 1 **(11)** driven by an electric motor 0 1 **(12)** suitably protected by a safety guard 0 1 **(13)**.



01

3.1 Terminology used

- **TROLLEY:** used to move the arm of the spray-gun.
- **ARM:** part of the machine for fitting the spray gun.
- **GUN:** apparatus not supplied by ***Nordson***® suitable for the spraying of epoxidic powders or paints.

Nordson	TECHNICAL DATA	REV. 1.3

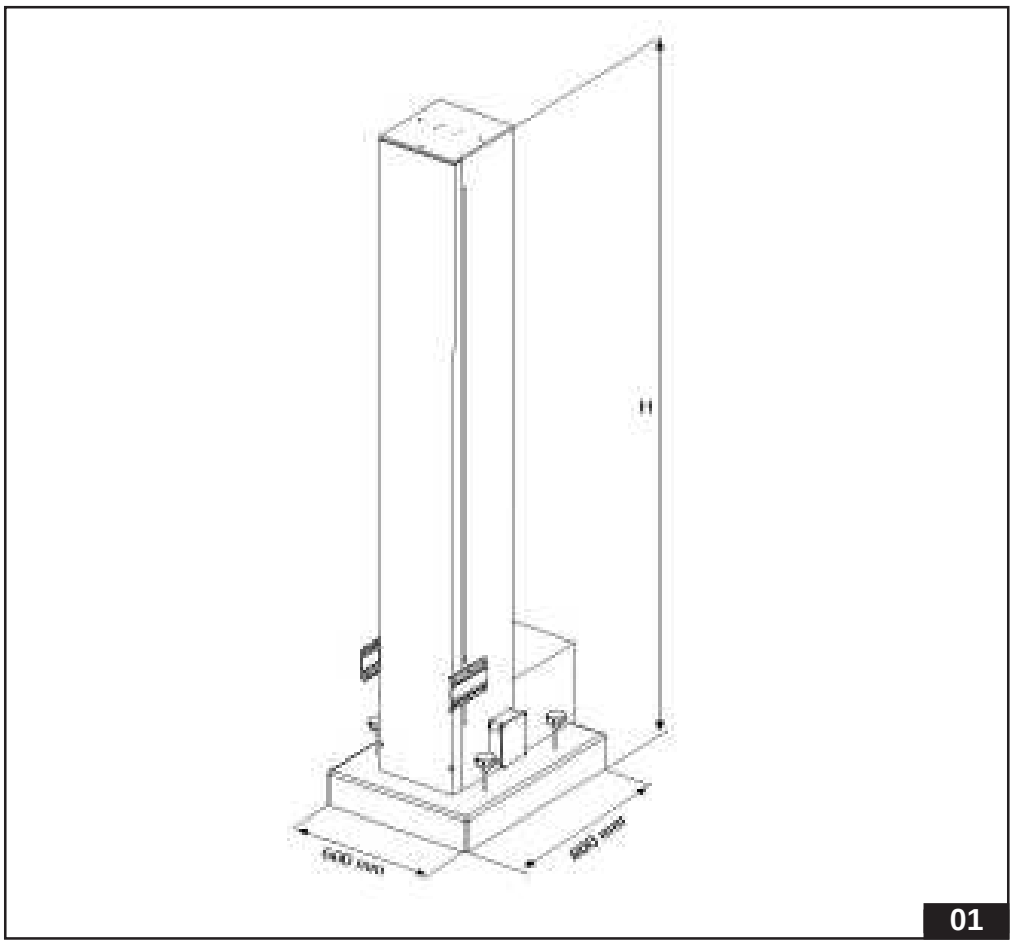
TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

4.0 TECHNICAL DATA

Page 1 to 2

CHAPTER 4.0 TECHNICAL DATA

4.1 Weights and overall dimensions



ATTENTION : It is forbidden to use the machine in the presence of explosive atmosphere.

STANDARD VERSION	HAN 17	HAN 22	HAN 27
TOTAL HEIGHT "H"	2570 mm	3070 mm	3570 mm
USEFUL STROKE	1700 mm	2200 mm	2700 mm
DISTANCE FROM THE GROUND	550mm	550mm	550mm
SPEED MIN.	10 m/1'	10 m/1'	10 m/1'
SPEED MAX.	50 m/1'	50 m/1'	50 m/1'
CAPACITY	15 Kg	15 Kg	15 Kg
TOTAL WEIGHT	190 Kg	210 Kg	230 Kg
NOISE	Inferior to 70 dB		
RATED POWER	1 kW		
POWER SUPPLY	230 V AC +/- 10% 3F 50 Hz (others on demand)		

Nordson	IDENTIFICATION OF THE MACHINE	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

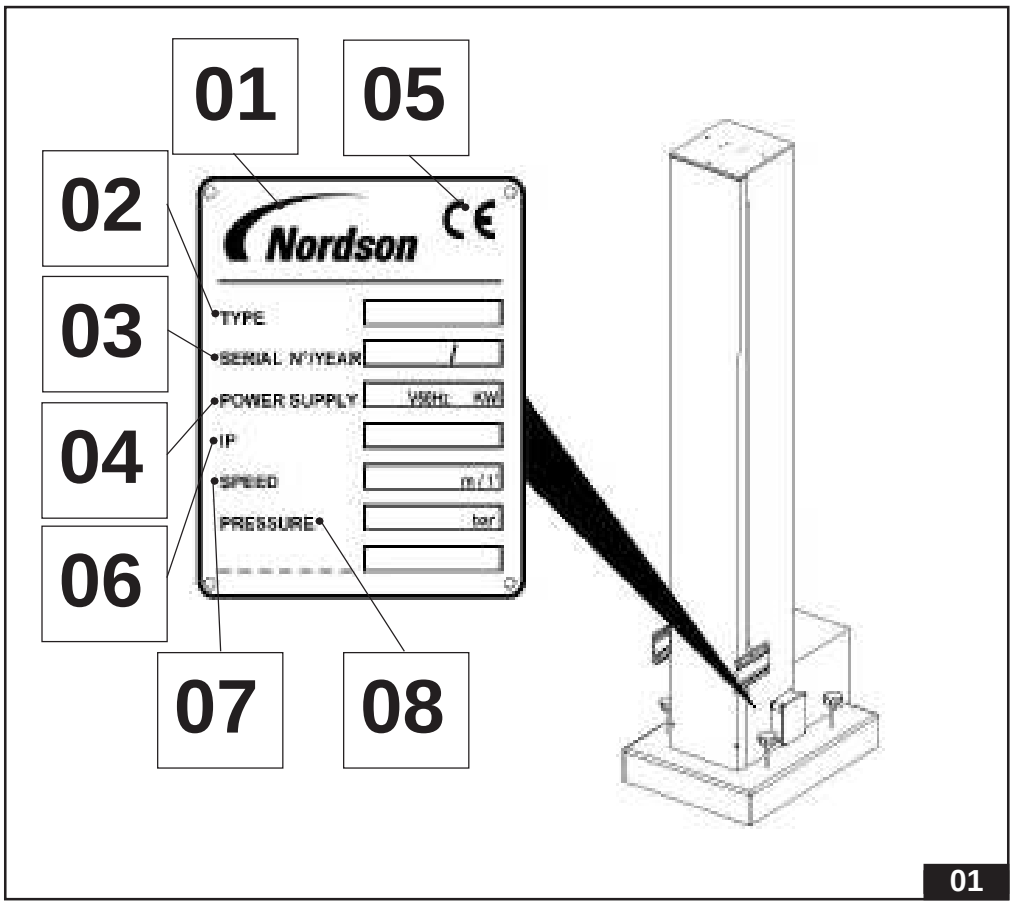
5.0 IDENTIFICATION OF THE MACHINE

CHAPTER 5.0 IDENTIFICATION OF THE MACHINE

5.0.1 - This manual contains the operating and maintenance instructions for the machine manufactured by ***Nordson***®.
The figure 01 shows the location of the identification plate of the machine, that specifies the following information:

- 01**(01)** Name of the manufacturer
- 01**(02)** Model
- 01**(03)** Serial No. and year of manufacture
- 01**(04)** Power supply
- 01**(05)** Certification mark
- 01**(06)** Protection level
- 01**(07)** Speed
- 01**(08)** Pressure (only for pneumatic releases)

ATTENTION : the serial no. 01**(03)** on the plate must be mentioned whenever contacting the Manufacturer for information or spare parts.



01

5.0.2 - Copies of the plates **"CE MARK"**, applied to each machine, and the relevant **"DECLARATION OF CONFORMITY"** are attached.

5.0.3 - If the plate **CE MARKING** is accidentally damaged , removed from the machine or simply the manufacturer mark is removed, the customer must inform ***Nordson***®.

Nordson	FORESEEN AND UNFORESEEN USE OF THE MACHINE	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

6.0 FORESEEN AND UNFORESEEN USE OF THE MACHINE

CHAPTER 6.0 FORESEEN AND UNFORESEEN USE OF THE MACHINE

The use of the **Reciprocator HAN** is foreseen **exclusively** in automatic systems of spray-coating with thermosetting powders or paints.
It has been planned for automatic guns that perform vertical and horizontal movements.

ATTENTION : If this machine is an integral part of a plant , it is forbidden to start it unless the whole plant is in compliance with the **"Machine directive" 2006/42/CE** and those that follow.

The use of the machine must be carried out **exclusively** by staff that knows its work and have acknowledged all that is described on this manual.

It is absolutely forbidden to use the machine for any use other than that for what it is intended unless a specific request has been made to ***Nordson***®.

The incorrect use of the machine could cause risks both to the operator and to the machine itself.

6.1 Risidual risks

The normal automatic modality of the machine does not forsee risks, on condition that the whole plant, where the machine is integrated, is in compliance with the **"Machine directive" 2006/42/CE.**

The only residual risk is the possibility to reach the movable sliding vertical parts with the upper limbs.
This risk can occur only during the maintenance operations where the operator is close contact with the machine.
In any case the risk has been limited by using special protections and safety plates that inform and make the reaching of the dangerous zone difficult.

	MOVING AND TRANSPORT	REV. 1.3

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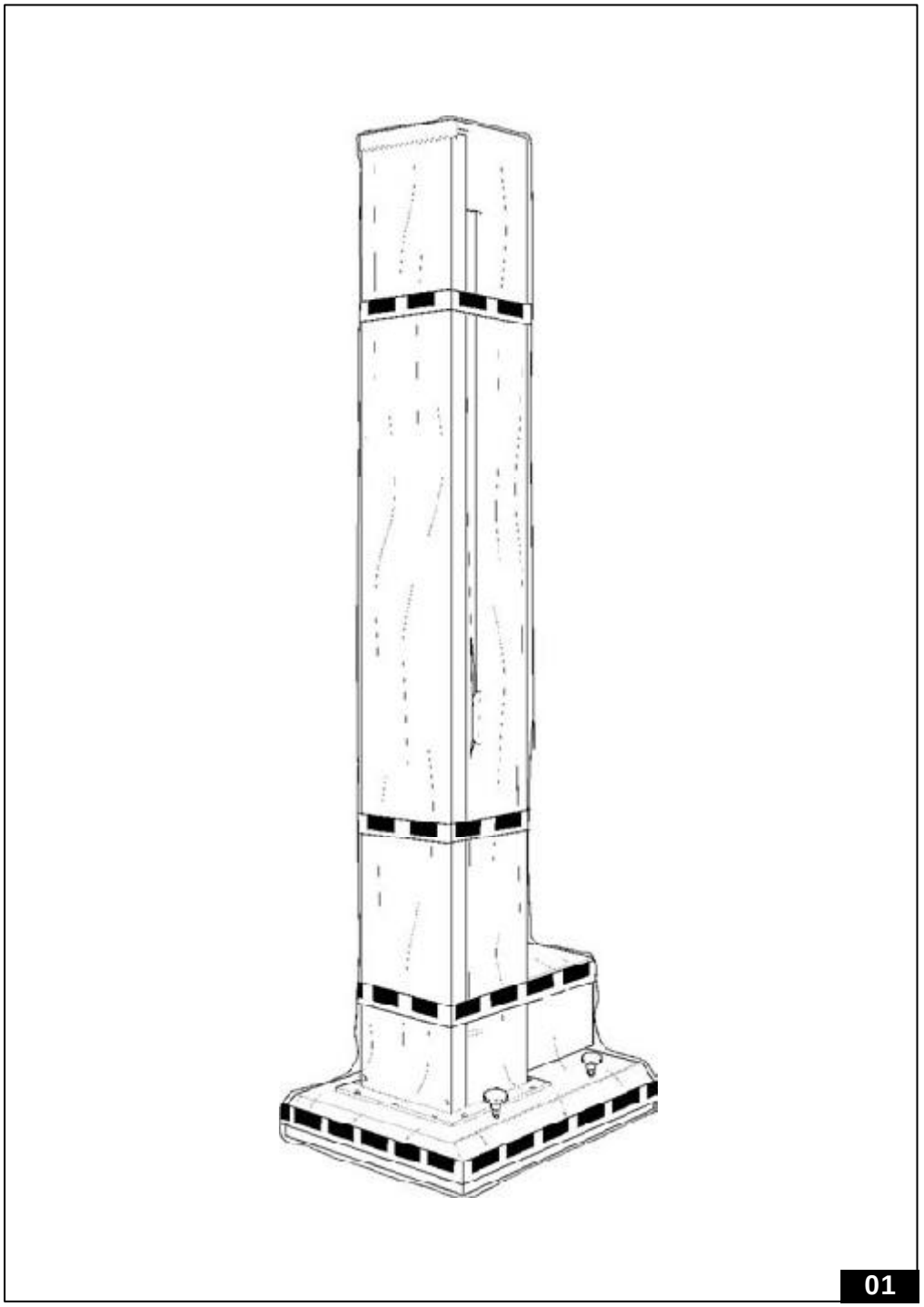
7.0 MOVING AND TRANSPORT

Page 1 to 5

CHAPTER 7.0 MOVING AND TRANSPORT

The machine is normally sent completely wrapped up with Pluriball, but depending on distance and type of contractual agreements it may be also blocked to a pallets or in a crate.



01

7.1 Staff qualification

B 0 ; 3

During the movement and unloading from the means of transport qualified staff for the use of fork lift trucks, cranes or hoists should be used.

7.2 Equipment and means to use

D **ATTENTION:** Before carrying out any moving operations of the machine, make sure there is nobody in the proximity.

Use chains and ropes and make sure that their characteristics are compatible with the weight and the overall dimension of the machine to move and in accordance with the regulations in force.

ADVICE

- Slings must be in accordance with the regulations ISO 4878 - ISO 9351.
- Only use slings, if the label, indicating all manufacturer's data, is attached and the capacity is clearly shown.
- Check slings before each lifting.
- Do not used in case of damage, cuts or wear.
- Follow the load factors indicated for each standard configuration.
- Use suitable protections to lift loads with sharp corners.
- Do not twist or knot the belt.
- Follow the instructions for use indicated by the supplier.
- Hook the other ends of the slings on to the hook of the lifting machineries.

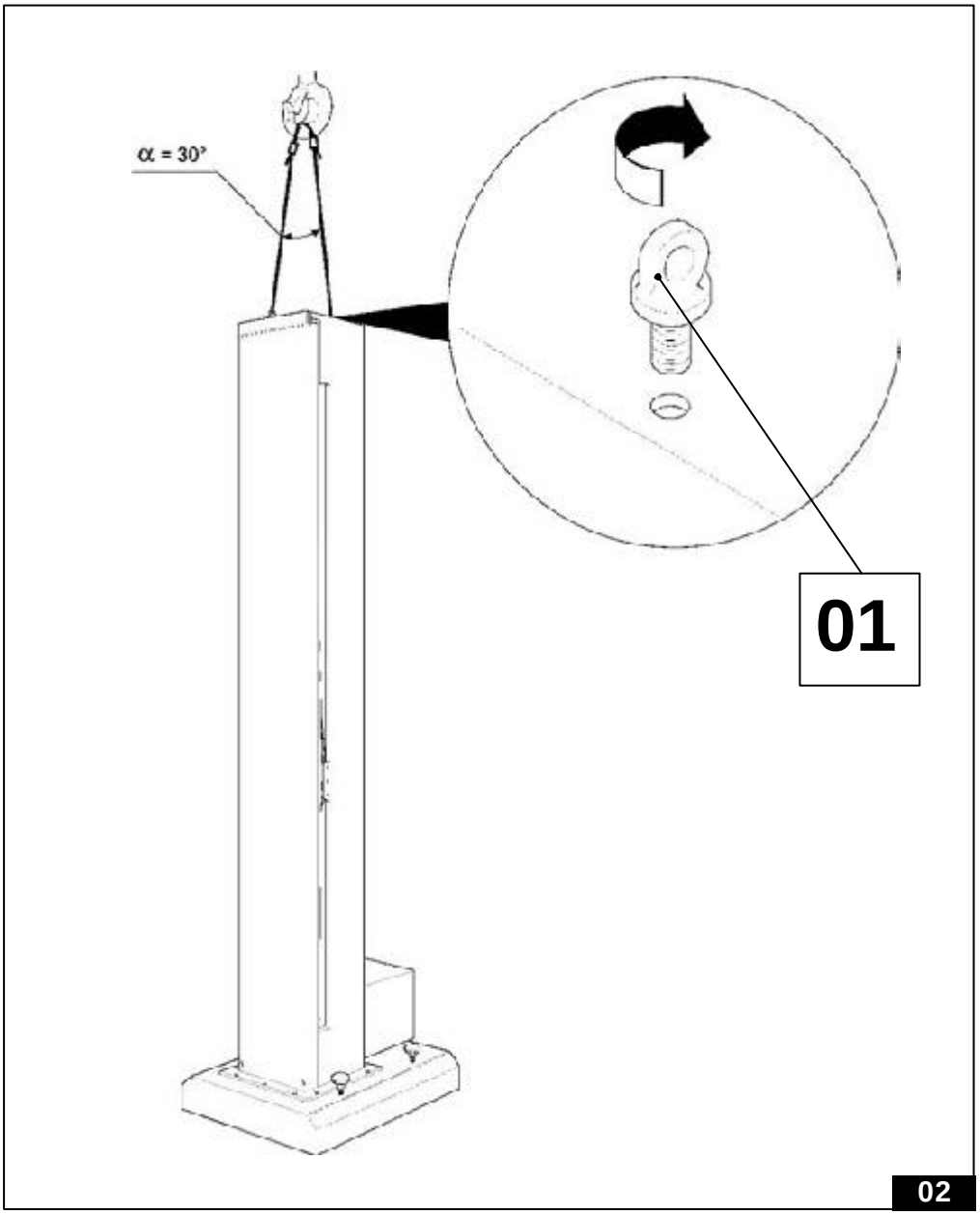
7.3 Advice about lifting

Depending on transport conditions, the reciprocator by ***Nordson*** ® can be moved by lifting with ropes or fork lift trucks.

7.3.1 Lifting with ropes

A 0 3

Place the special lifting eyebolts 0 2 **(01)** in the special hooking points as indicated in figure 0 2 using two ropes, with maximum corner α equal to 30° and rope characteristics adapted to the lifting of loads indicated.

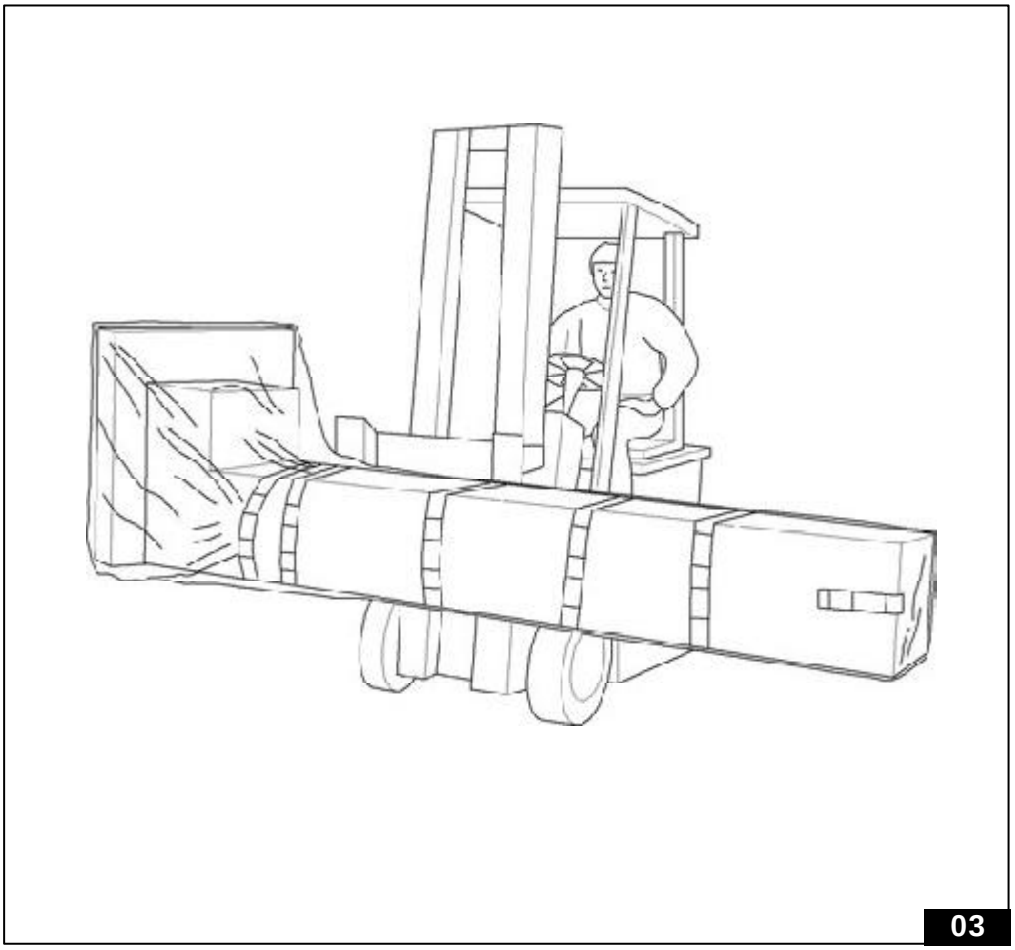


02

7.3.2 Lifting with machines

A 0 3

If the reciprocator by ***Nordson***® is moved horizontally, it is necessary to lay it down on the forks of the forklift truck paying attention to position the spray coupler facing down as in figure **0 3**.



03

7.4 Storage conditions

If the machine has already been installed and a storage period, during which the machine will not be used, is necessary, all precautions must be taken to avoid contact with dust dirt, humidity and all moving mechanical parts that are prone to rust must be covered with a layer of grease. If the machine has to be moved, wrap it up with Pluriball and follow the previous procedures in order to move it.

7.5 Checking the machine

When unpacking the machine, check immediately that during transport none of the parts have been damaged.

Any damage to the machine, loss of additional or supplied parts must be communicated immediately to ***Nordson***®**.**

	MACHINE INSTALLATION	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

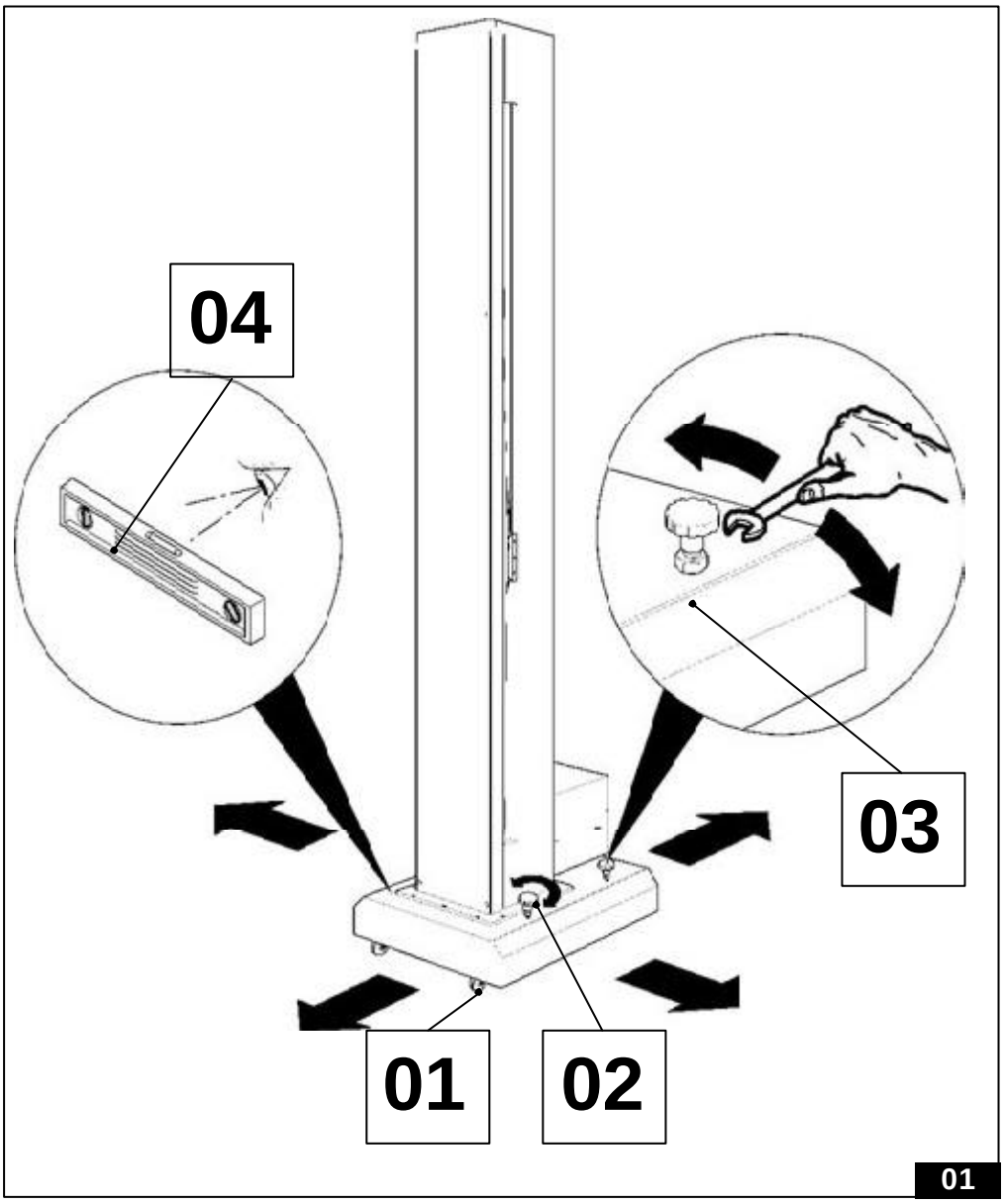
8.0 MACHINE INSTALLATION

Page 1 to 3

CHAPTER 8.0 MACHINE INSTALLATION

There is no particular advice or precautions to take during the installation of the machine that can be placed on a normal floor.

To place the machine in a paint plant, it is sufficient to let it slide on the wheels 0 1**(01)** of the base, up to the required position.
Turn the special gradual knobs 0 1**(02)** to level the machine and block the safety lock nut 0 1**(03)**.
N.B. check the correct vertical position of the machine 0 1**(04).**



8.1 Environmental conditions

The machine can work with the following environmental and climatic conditions:

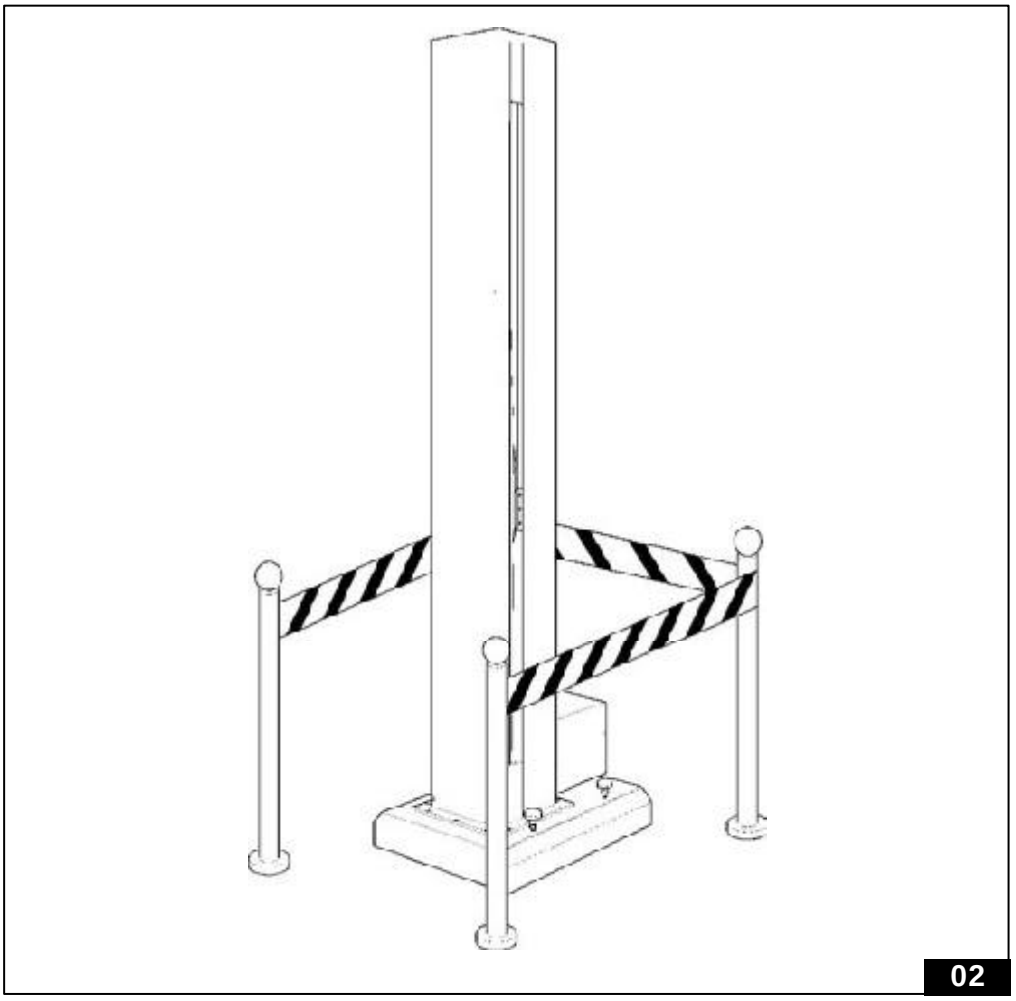
- Environmental luminosity **min.300 Lux.**
- Environmental temperature **+5°/+40° C**
- Relative humidity maximum **50%** at **40° C**
- Relative humidity maximum **90%** at **20° C**

D **ATTENTION :** It is forbidden to use the machine in explosive atmospheres.

D **ATTENTION :** In case of use in explosive atmospheres, it is possible to supply the version according to the ATEX directive (to advise during the order).

8.2 Need of free spaces

D **ATTENTION :** When the reciprocator is positioned, it is necessary to define the area, where the moving parts (gun supporting arm) have their range, according to the EEC laws regarding the security on working stations 0 2



02

Nordson	SETTING UP THE MACHINE	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

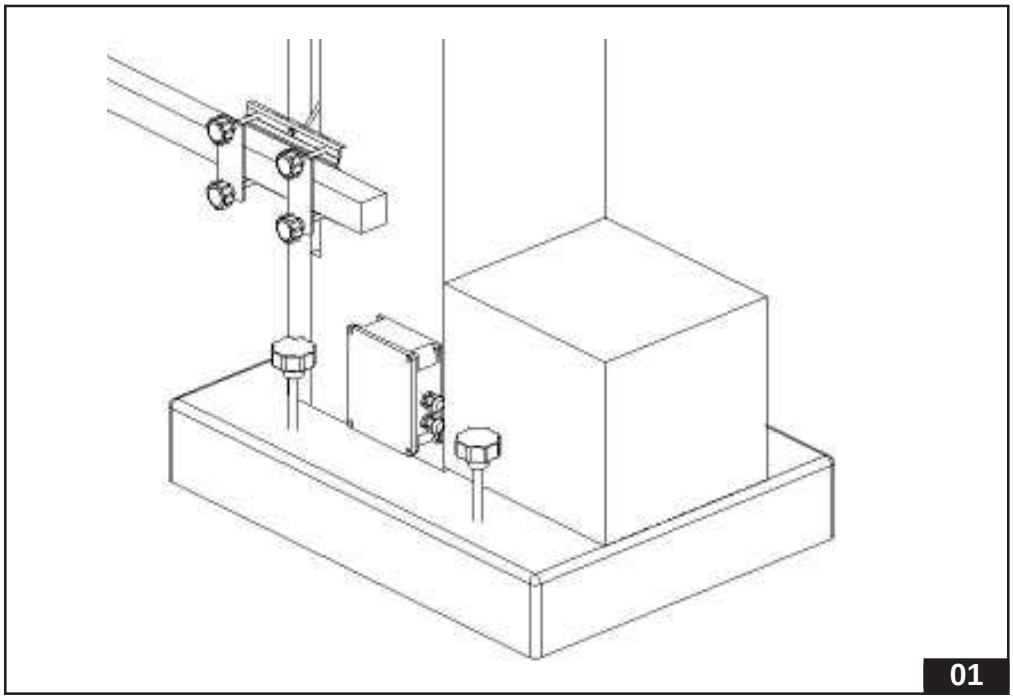
9.0 SETTING UP THE MACHINE

Page 1 to 5

CHAPTER 9.0 SETTING UP THE MACHINE

9.1 Connection of the reciprocator to the control module

Connect the machine with the control module, by using the cables already connected to the junction box located near the gear motor. 0 1



01

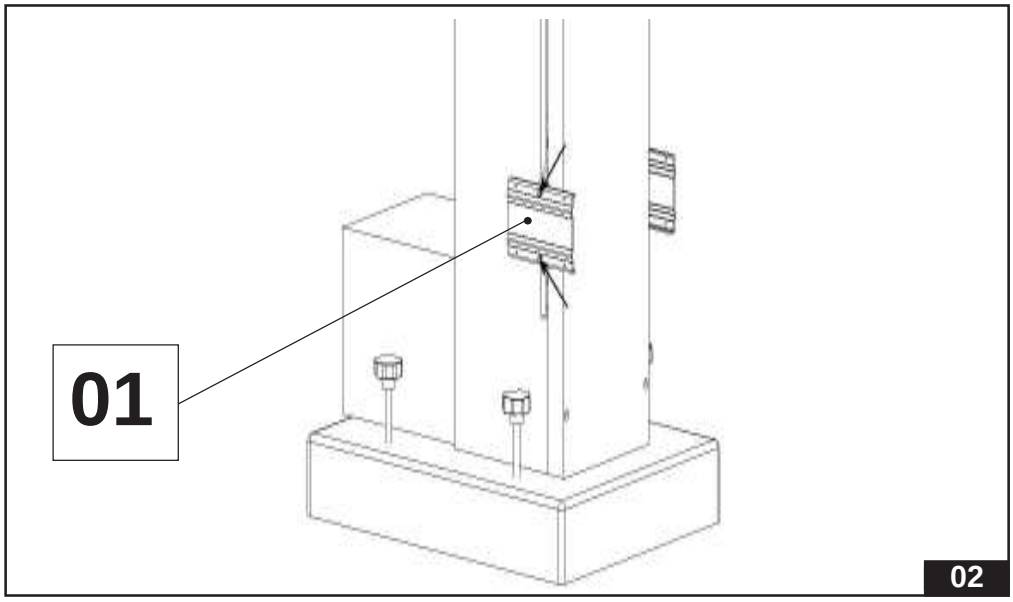
ATTENTION: The reciprocator HAN is projected to be connected to control module mod.HQA; for any other kind of connections, contact the ***Nordson***® technical office in advance.

N.B.: for the electrical connections, see the wiring diagram attached.

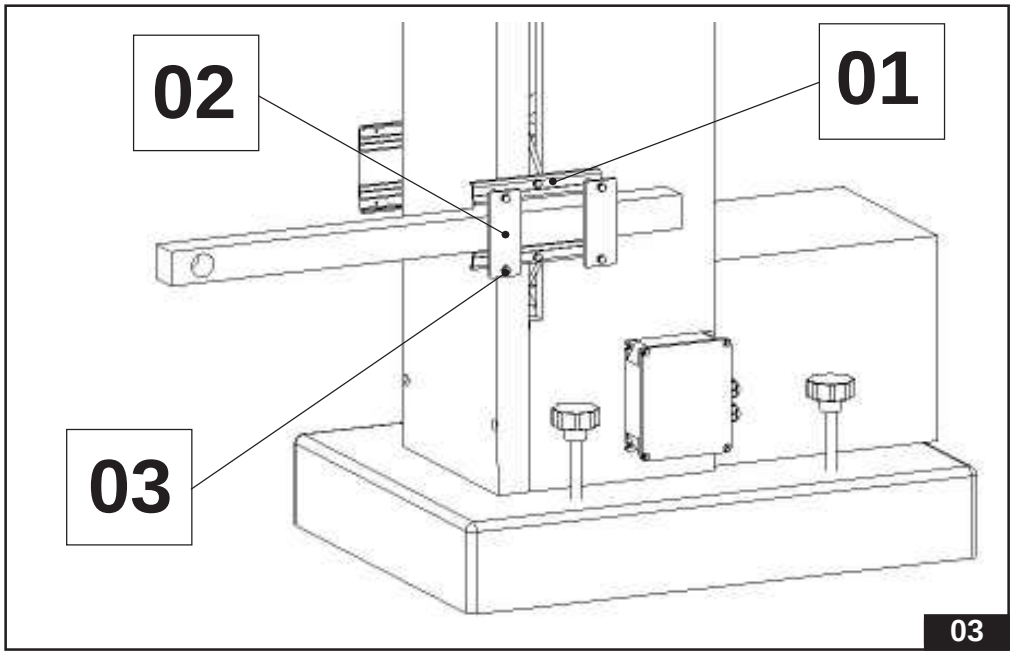
9.2.1 Assembly of dispenser supports

Two attachments are located on the reciprocator for fitting the gun supporting-arm.
To assemble do as follows:

- Assemble the plate 0 2 **(01)** on the special support using a screw.



- Position the two stopper plates 0 3 **(02)** fixing them to the plate 0 3 **(01)** with the special screws 0 3 **(03)**, then insert the gun and tighten the knob screws, at the same time setting the arm at the required distance.

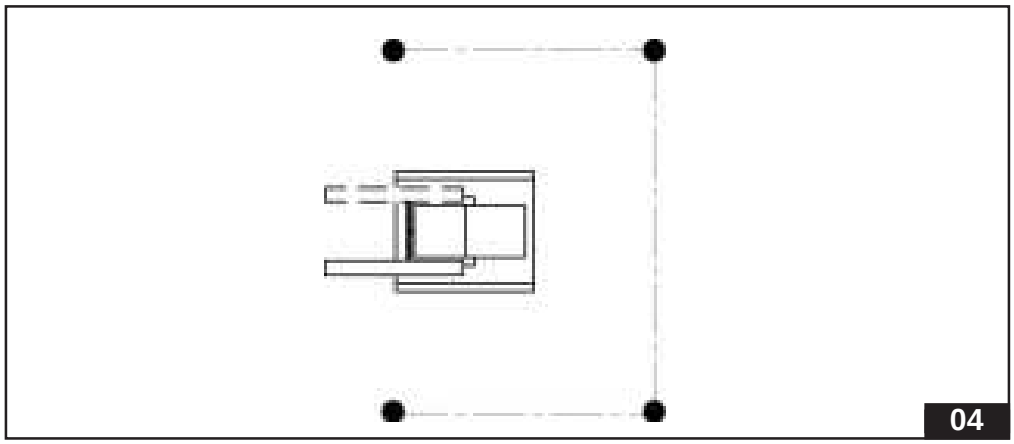


ATTENTION: The reciprocator HAN has a maximum capacity of 15 kg, this value reduces depending on the position; to determine the correct position see chapter 9.2.2 "Machine balancing".

ATTENTION: The arms must be earthed.

Example of assembly/use of gun supporting arm is now shown.

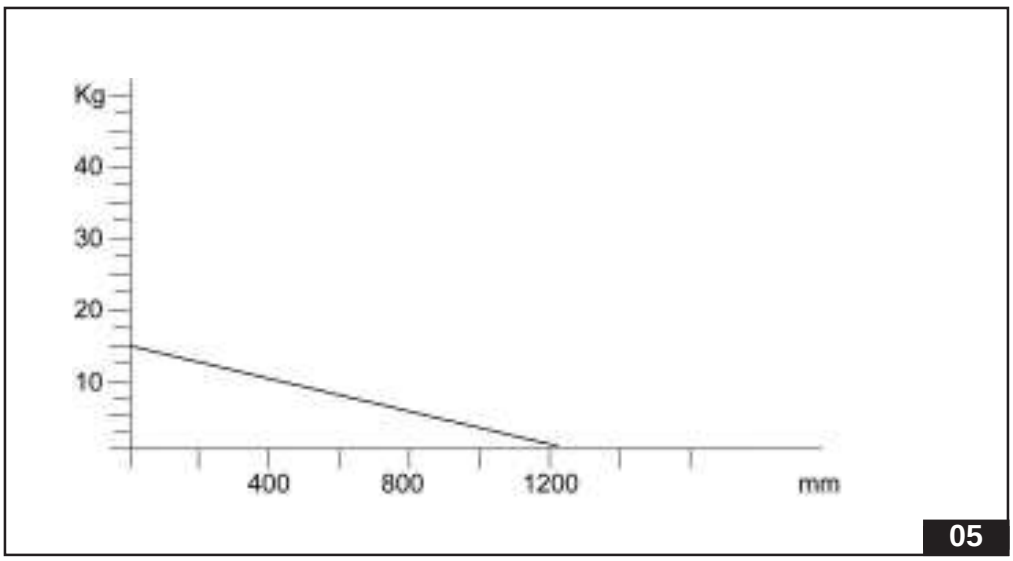
■ **Example n°1**



04

9.2.2 Machine balancing

The reciprocator HAN by ***Nordson***® can support a maximum capacity of 15 kg, this value reduces depending on the position of the gun supports as indicated in the graph in fig. 05.
The machine is supplied, if agreed in the order, already balanced.
In case of no specification the standard configuration is composed by 6 counterweights (with a total weight of 21 kg); further additions will be agreed upon with ***Nordson***®.



05

Nordson	**BEFORE START UP**	*REV.* 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

10.0 BEFORE START UP — Page 1 to 3

CHAPTER 10.0 BEFORE START UP

When starting the machine no particular preparatory procedures are necessary because the machine is tested and adjusted in all its functions by ***Nordson®'s***.

10.1 Staff qualification

The operator of the machine, before carrying out any kind of productive cycle, must know all the information, shown in this technical manual about the machine.

10.2 Foreseen control positions

The machine has been projected to be commanded and controlled in all its functions by one operator only.

The foreseen working position is in front of the control panel, integrated in the control system of the plant, from where the operator can verify the correct working of the plant.

10.3 Control boards

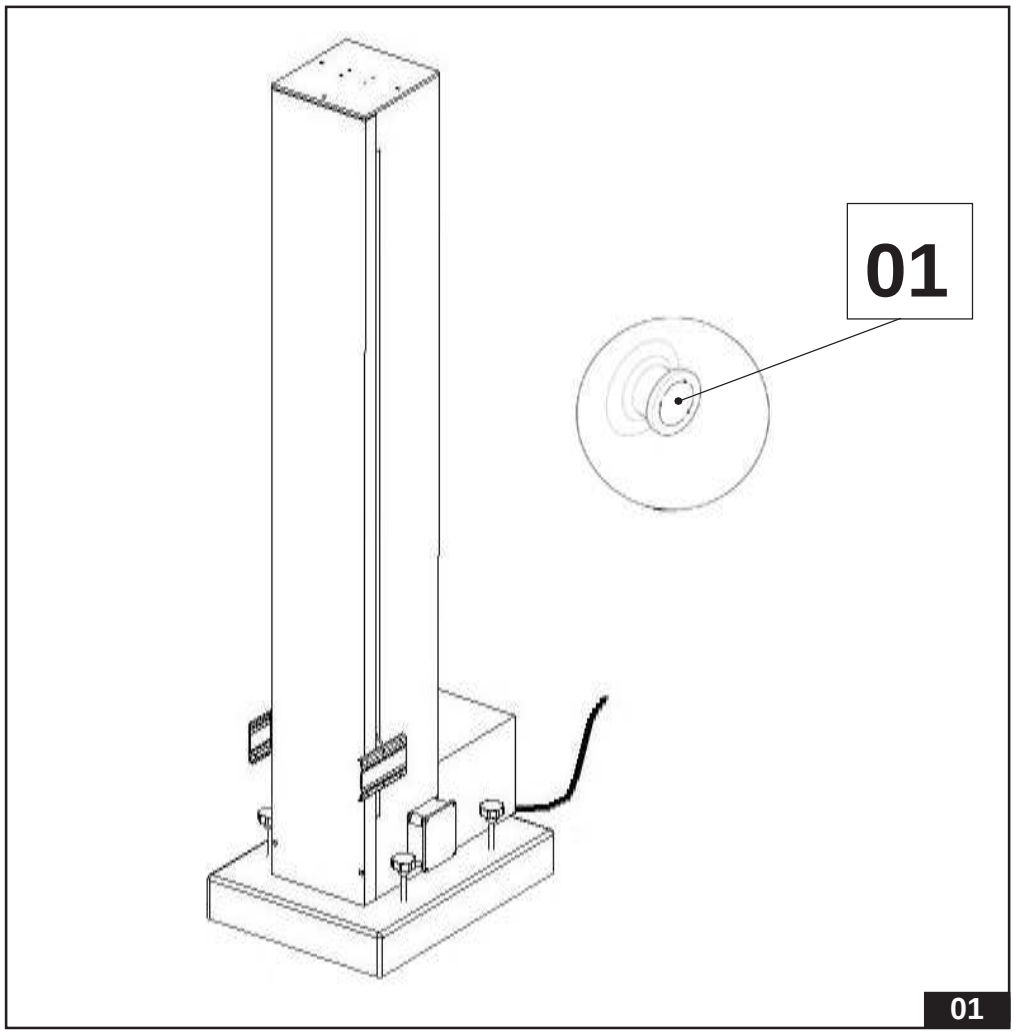
The **Reciprocator HAN** by ***Nordson®*** is projected to be connected to control modules mod. HQA.

For the descriptions of modules refer to the operating manual supplied.

10.4 Stop-commands and their placing

In case of danger, failure or any emergencies it is necessary to press the **EMERGENCY STOP** push button **01 (01)** common to the whole plant.

To reset press the **EMERGENCY** push button, with rotating it.



01

Nordson	USE OF THE MACHINE	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

11.0 USE OF THE MACHINE

CHAPTER 11.0 USE OF THE MACHINE

For a correct use and programming, see the operating manual of the control module.

Nordson	MAINTENANCE	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

12.0 MAINTENANCE

Page 1 to 26

CHAPTER 12.0 MAINTENANCE

In order to have a safe, efficient and reliable machine, careful and constant maintenance is essential.

12.1 General safety advice

It is compulsory, before any maintenance to turn off the power and use any protective devices necessary during all intervention phases.

12.2 Technical competences

There are three kinds of maintenance interventions:

A

INTERVENTIONS THAT REQUIRE SPECIFIC TECHNICAL COMPETENCES
Can be carried out by not specific staff and usually regard cleaning duties.

B C

INTERVENTIONS THAT REQUIRE SPECIFIC TECHNICAL COMPETENCES
Can only be carried out by staff qualified by customer and regard ordinary maintenances.
Mechanical or electric competences may be required.

□ □
w t

INTERVENTIONS THAT REQUIRE PARTICULAR TECHNICAL COMPETENCES
Can only be carried out by ***Nordson***® qualified mechanical or electrical technicians***.***

At the beginning of each paragraph, referring to the various maintenance subjects, the relative symbol referring to the necessary qualification of the operator is indicated.

12.3 Periodical maintenance table

PERIODICAL MAINTENANCE TABLE									
NOTE									
BIENNIAL									
ANNUAL									
SEMIANNUAL									
TRIMESTRIAL									
MONTHLY									
SEMIWEEKLY									
WEEKLY									
DAILY									
Check belt tension						A			The 1st time after one week
Check trolley adjustment						A			
Guide cleaning				A					

12.4 Summery table of suggested spare parts

The following components are subject to wear and so a suitable stock should be kept for spare parts.

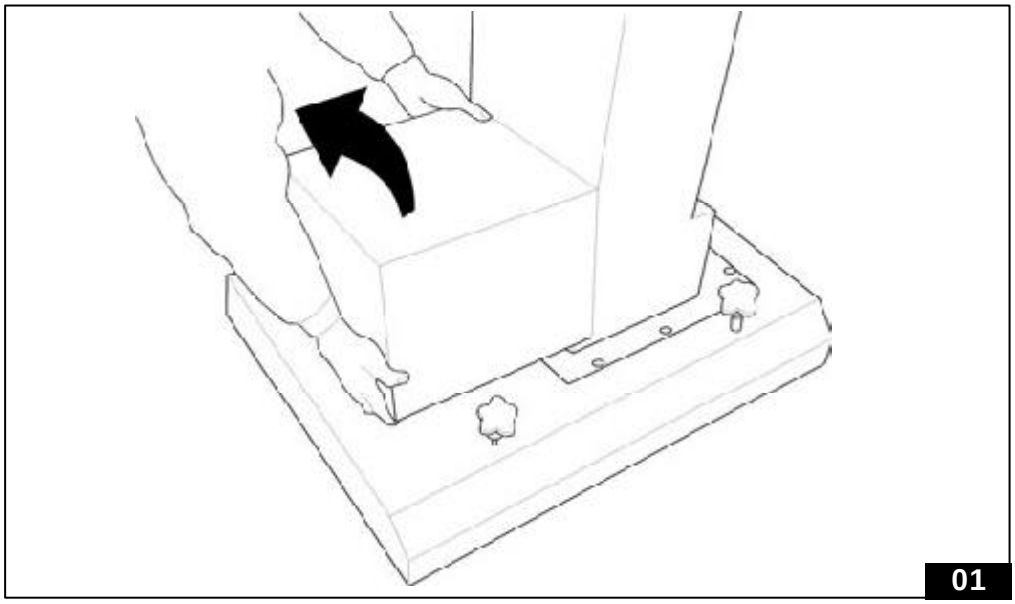
DESCRIPTION	PART NUMBER
120.1231 - Toothed belt	-
310.8207 - End of stroke sensor	736339
500.0001 - Kit sliding wheels	736296
400.0050 - Gear motor	736820
310.8208 - Central sensor	-
500.0052 - Kit protective strip	-

12.5 Replacing gear-motor

B C 4 ; 3

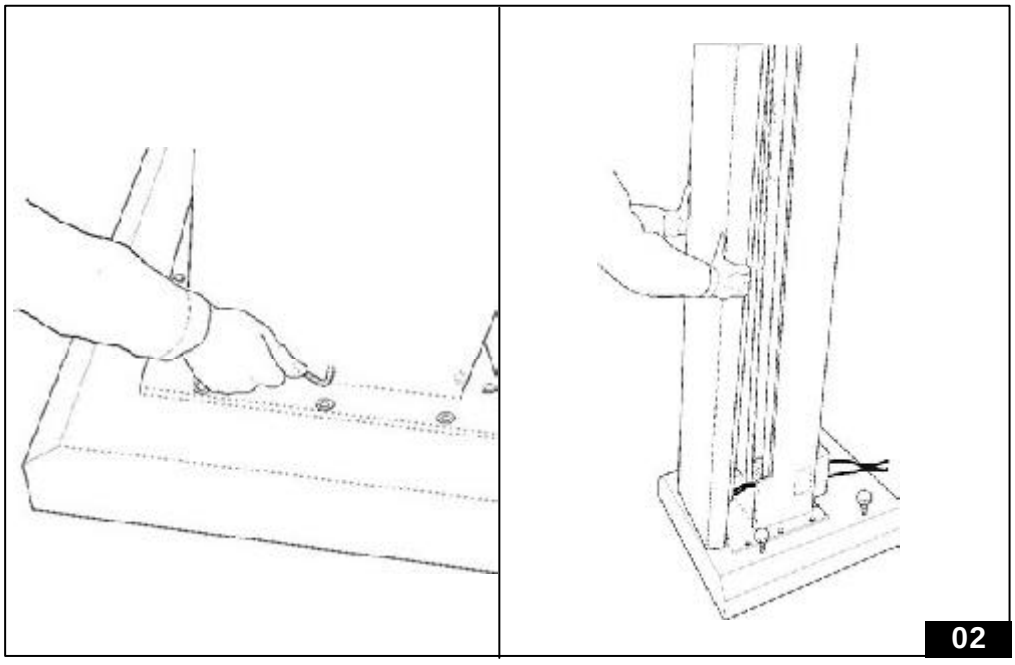
To replace the gear-motor do as follows:

- Turn off the power supply to the machine.
- Remove the gun supporting-arm.
- Remove the safety guard of the motor, lifting it as in figure 0 1.



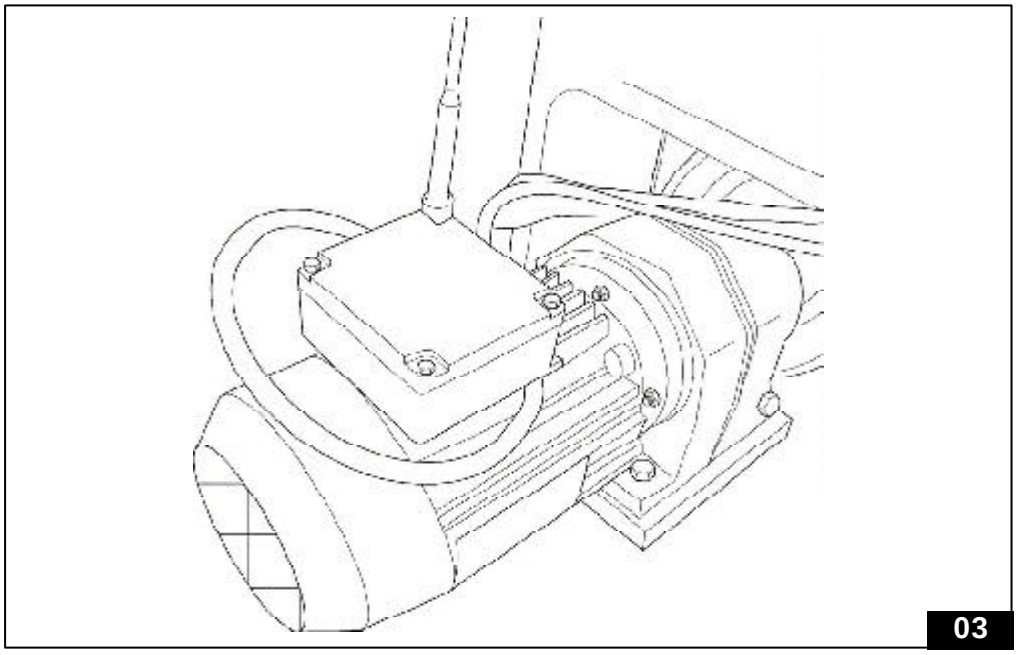
01

- Remove the upper safety guard using a setscrew wrench No. 5 taking care to remove it first at the base and then lifting it. 0 2

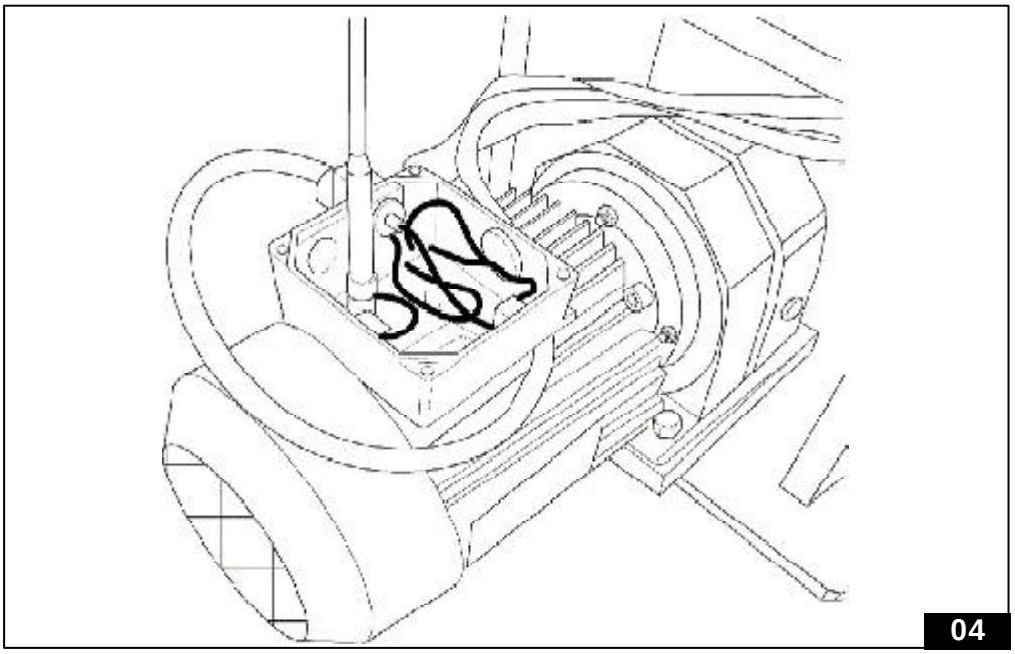


02

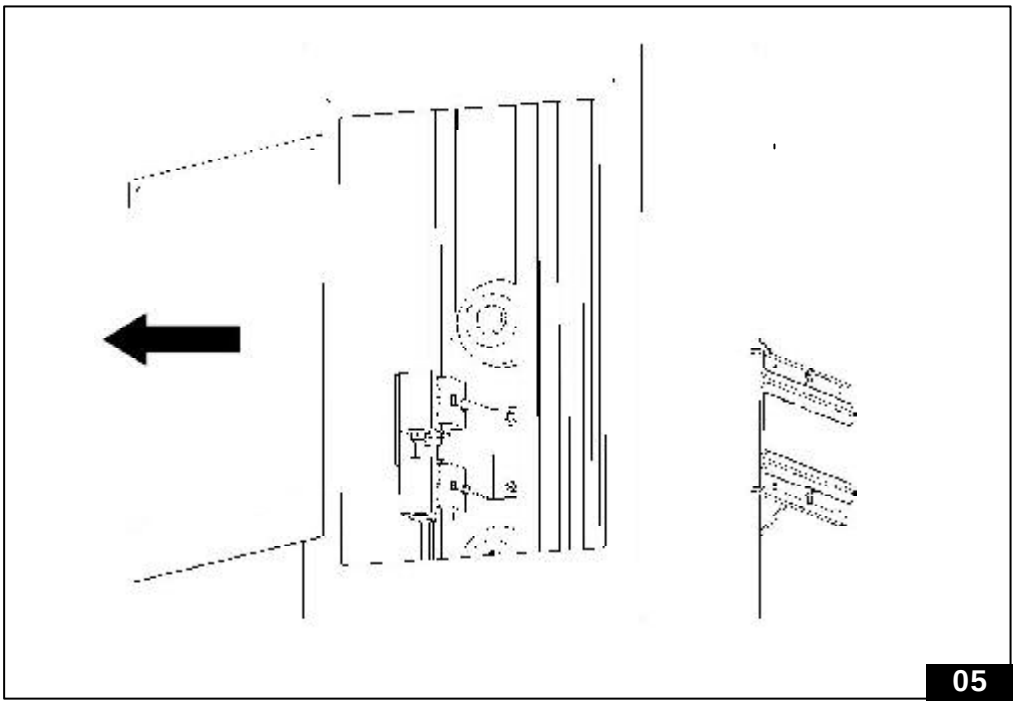
- Using a socket spanner open the electric box located on the motor. 03



- When the box is open, loosen the clamps with a socket spanner and remove the electric cable from the motor. 04

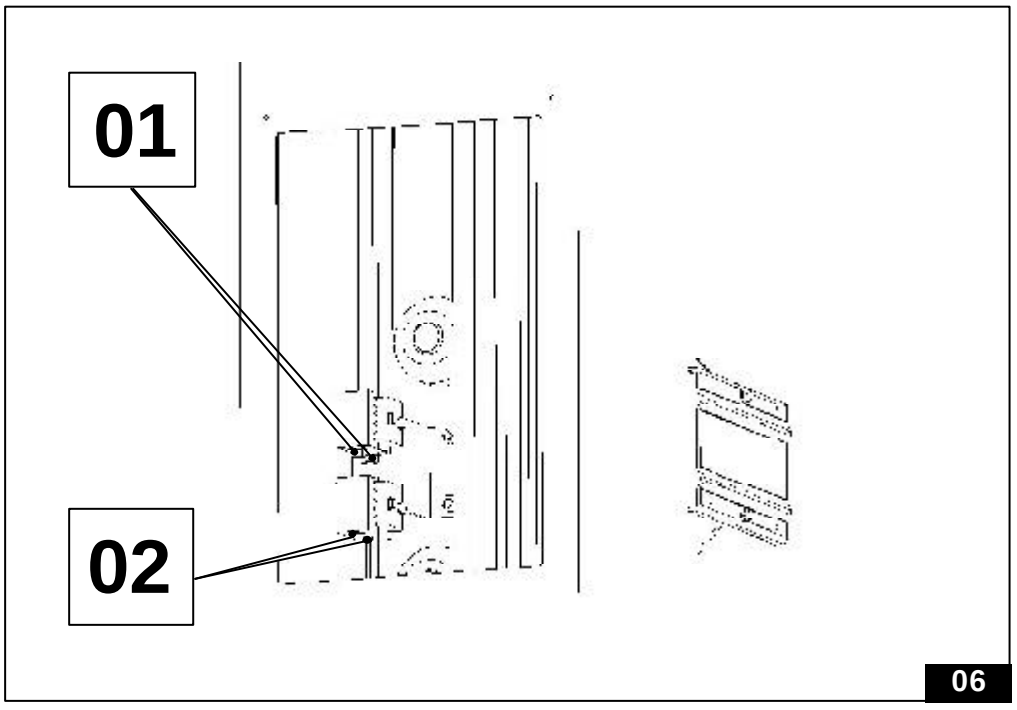


- Remove the cover of the rear window, lift the trolley by hand up to reach the window. 05



05

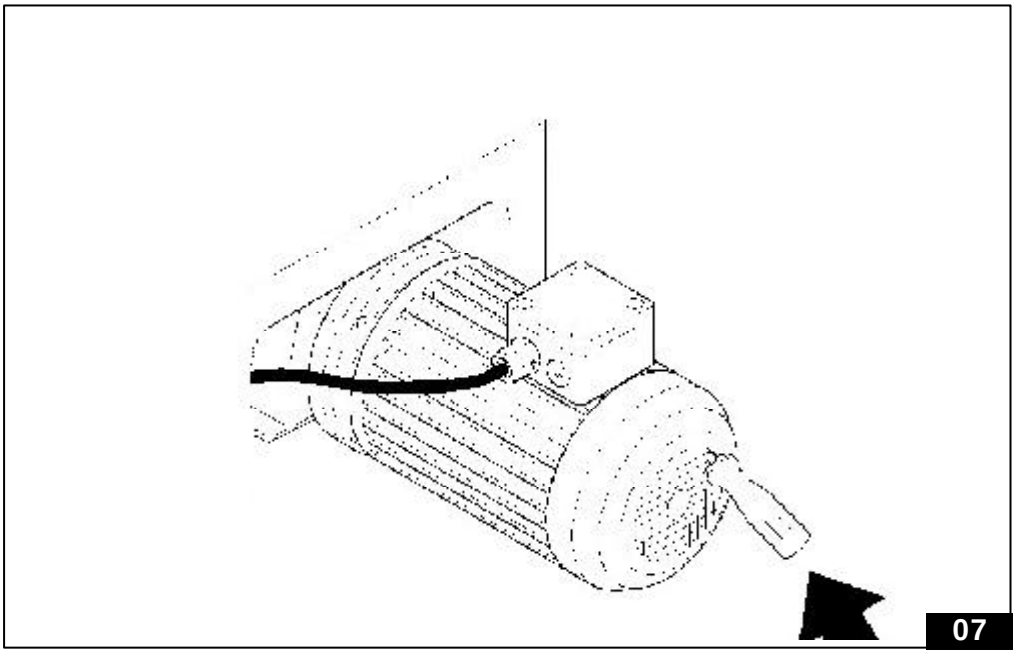
- Unscrew the two nuts of the stay bolt counterweight 06 **(01)** using a special spanner; unscrew the two screws 06 **(02)**, so as to slacken the belt and extract it from the pulley. 06



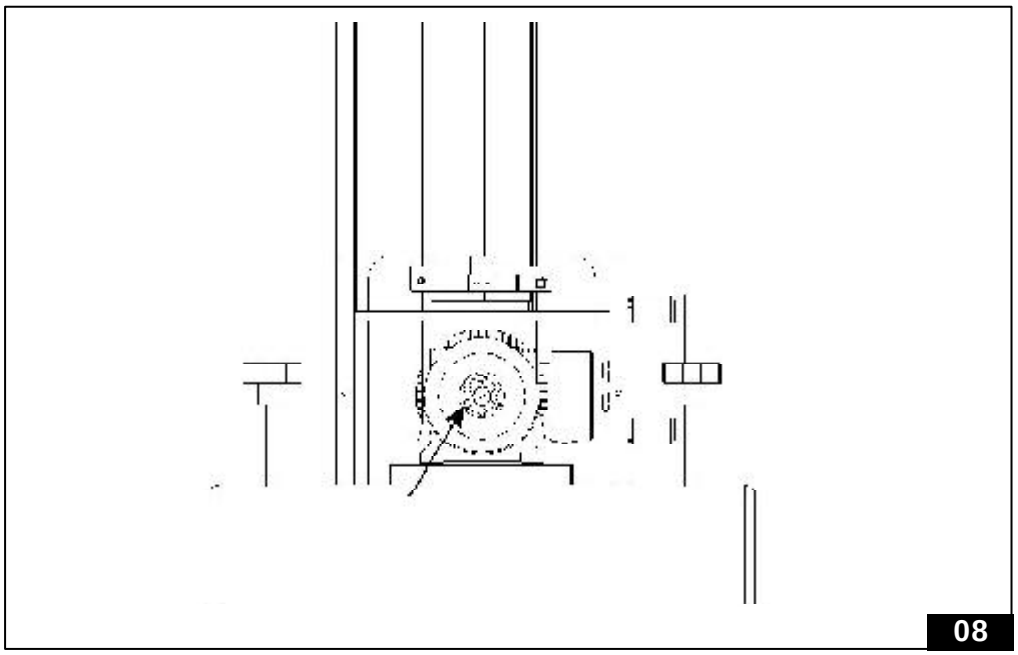
06

D **ATTENTION:** do not remove the screws completely so as to avoid that the belt fall.

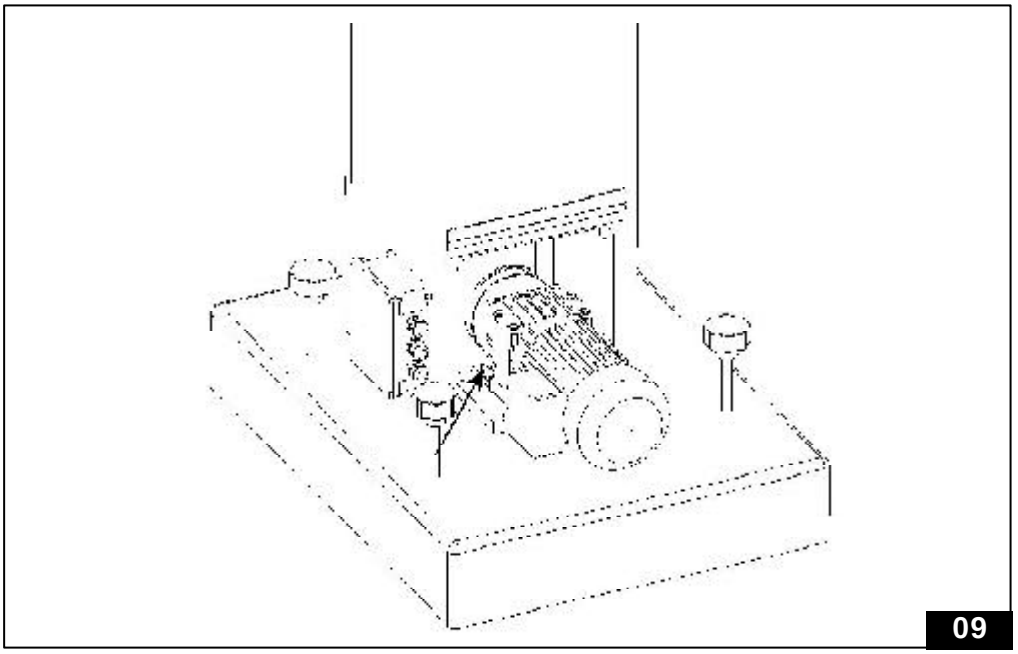
- Block the electric motor by inserting a screwdriver into the inner cooling fan. 07



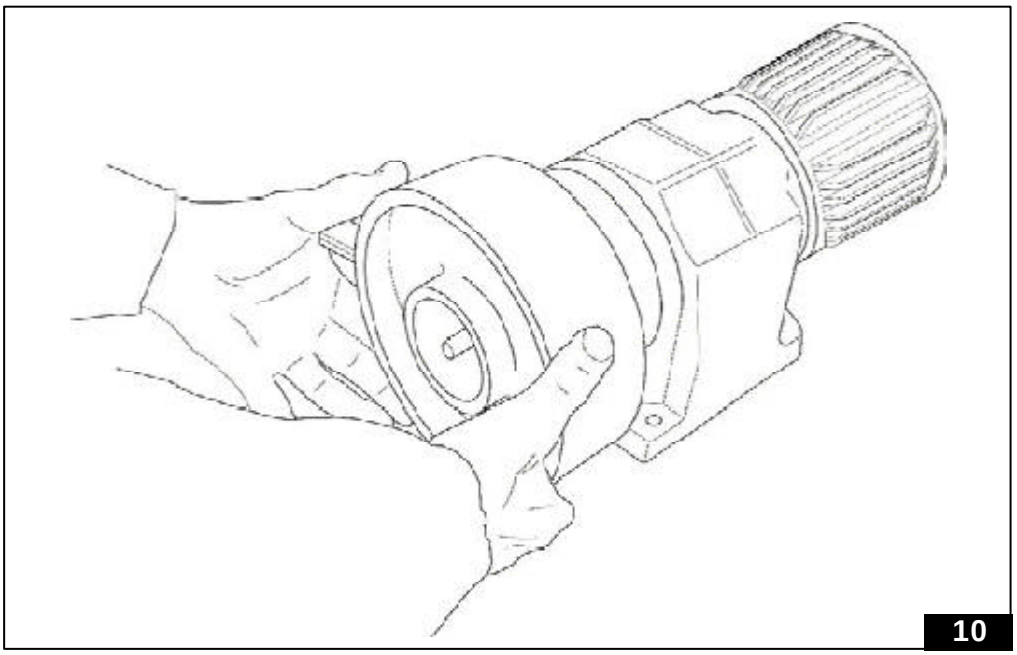
- Unscrew the screws of the ring block that fix the pulley, using a setscrew wrench. 08



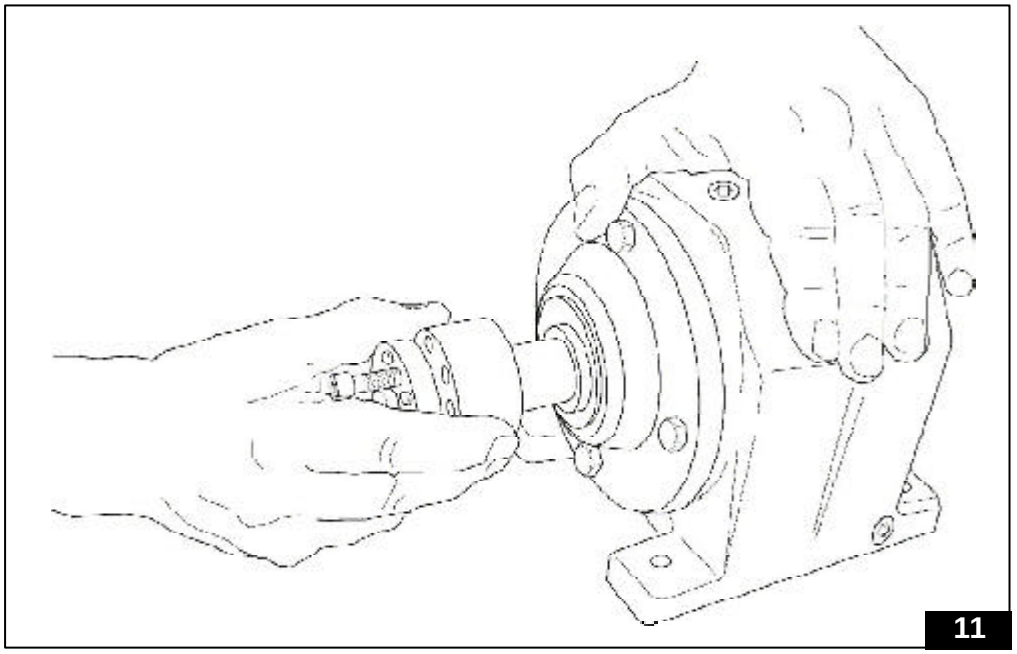
- Unscrew the 4 screws that fix the gear-motor to the base. 09



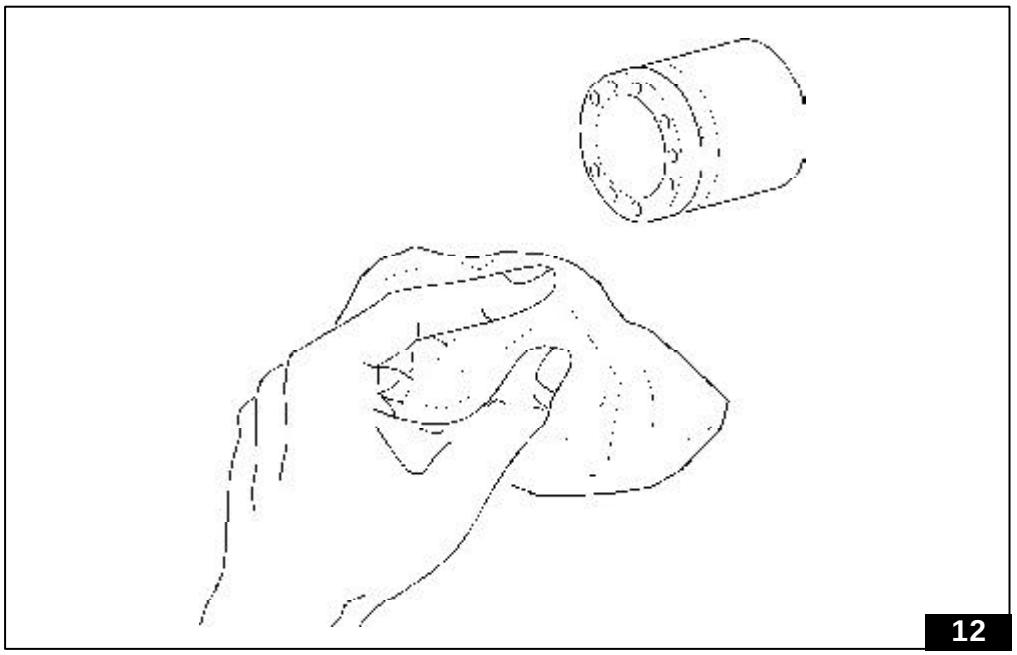
- Insert the screws, removed previously, into the special dismantle holes and screw them in to remove the pulley. 10



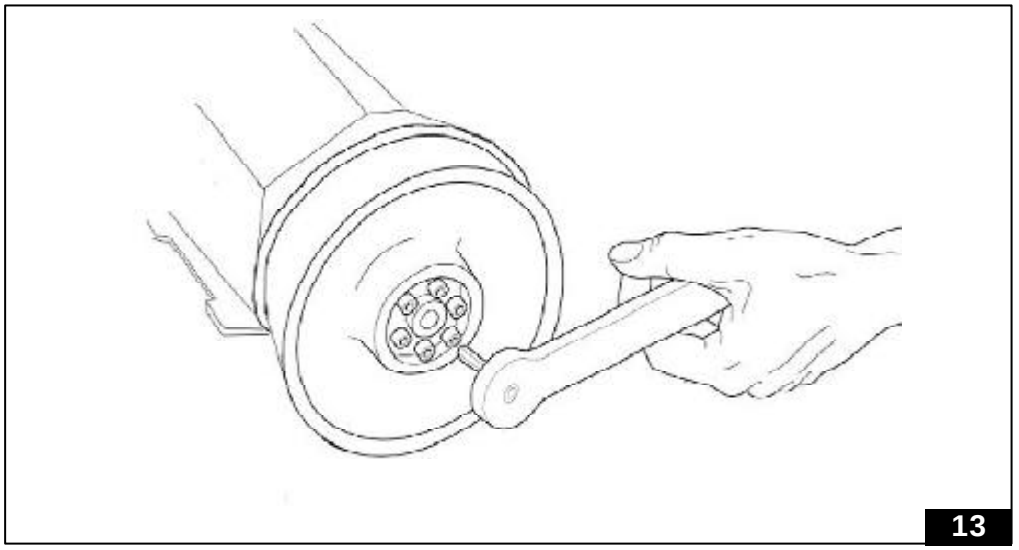
- Remove the ring block of the driving shaft. 11



- Clean the ring block with a cloth. 12
- Assemble the ring block on the new gearmotor, without closing the screws.

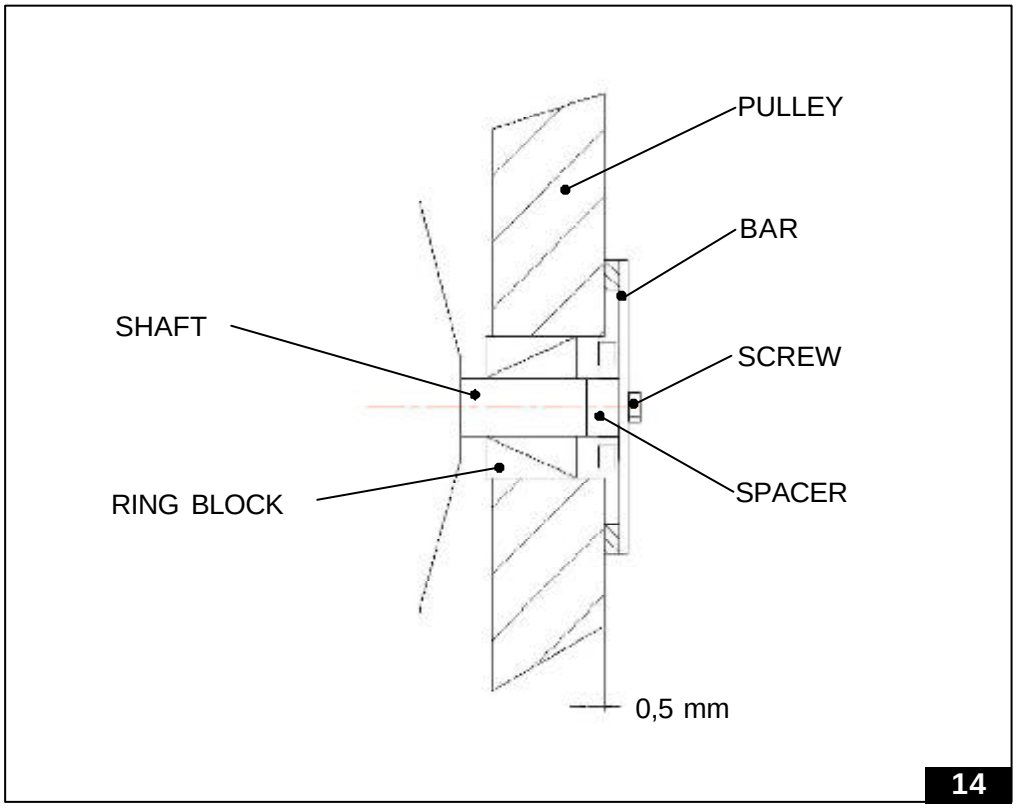


- Block again the electric motor by inserting a screwdriver into the inner cooling fan.
- Place the pulley on the driving shaft, then tighten the clamping screws of the ring block, cross ways, to avoid friction. The screws should be tightened to 1,7 Kg. 13



13

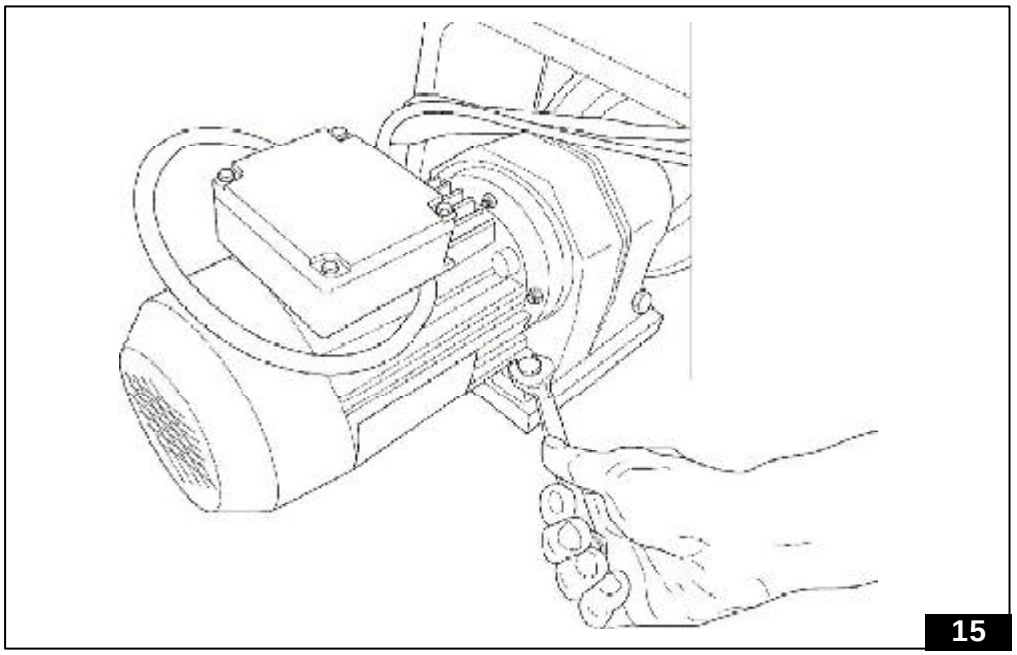
NB: to insert correctly the pulley on the ring block assembled on the driving shaft of the motor-gear, it is necessary to respect the distance between the hub of the pulley and the surface of the shaft shown in figure 14.



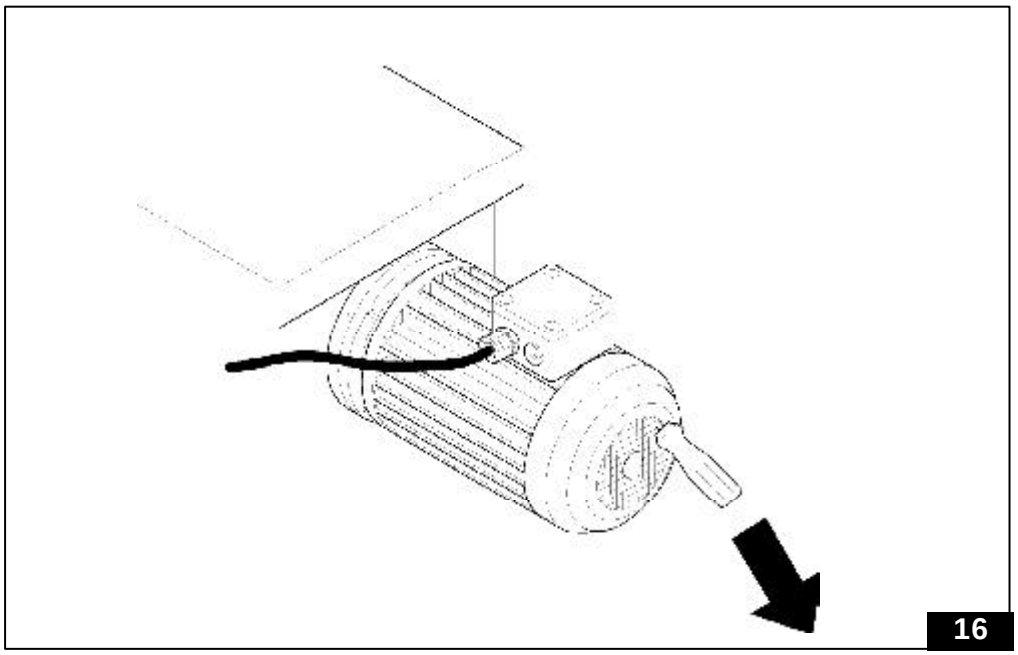
14

To carry out this operation a suitable spacer must be inserted inside the hole of the ring block to act as a spacer equal to the distance between the shaft and the hub of the pulley. Using a screw (with a thread equal to that of the hole in the gear shaft) and a metal bar with the necessary holes as shown in the drawing, it is possible to keep the pulley in position during the tightening of the screws in the ring block.

- Assemble the gear-motor on the reciprocator and block it. 15

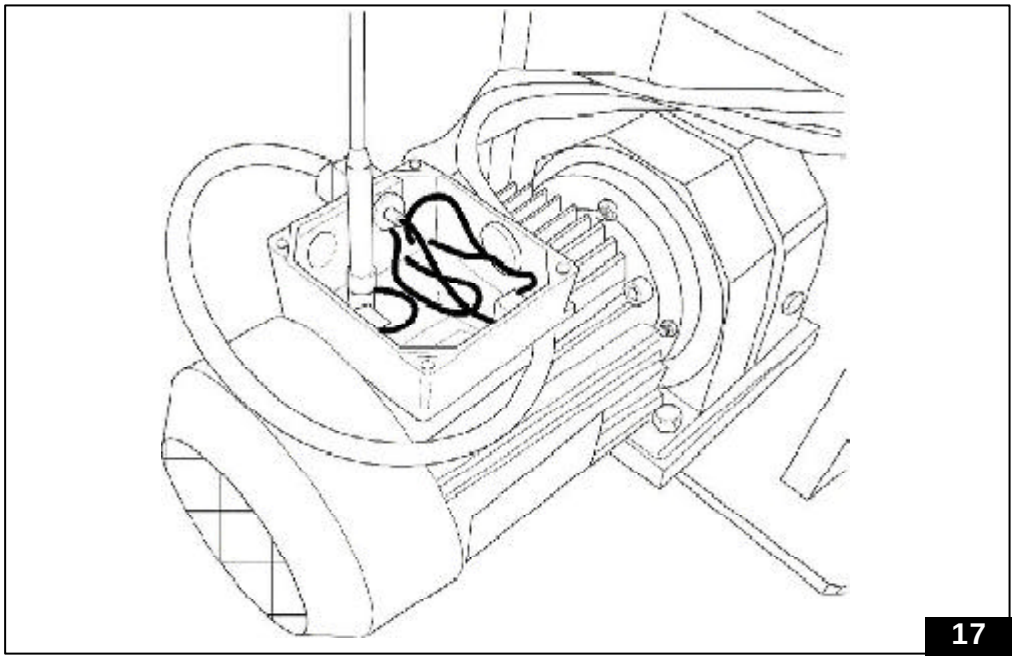


- Remove the screwdriver from the motor fan. 16



- Position the toothed belt.
- Tension the toothed belt see chapter 12.9.

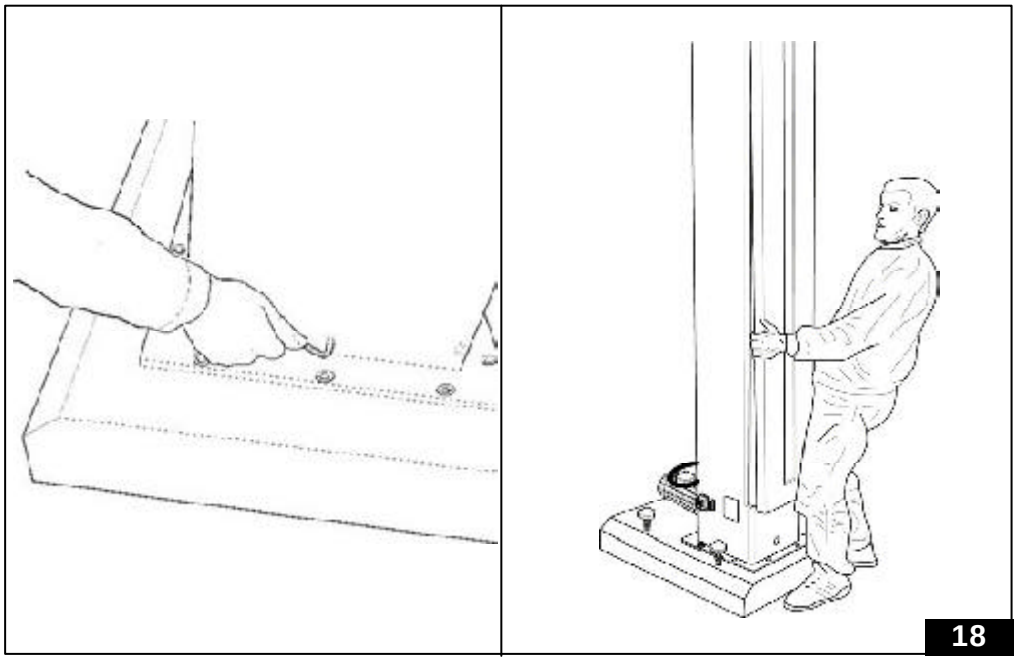
- Connect the motor and close the cover of the terminal board. 17



17

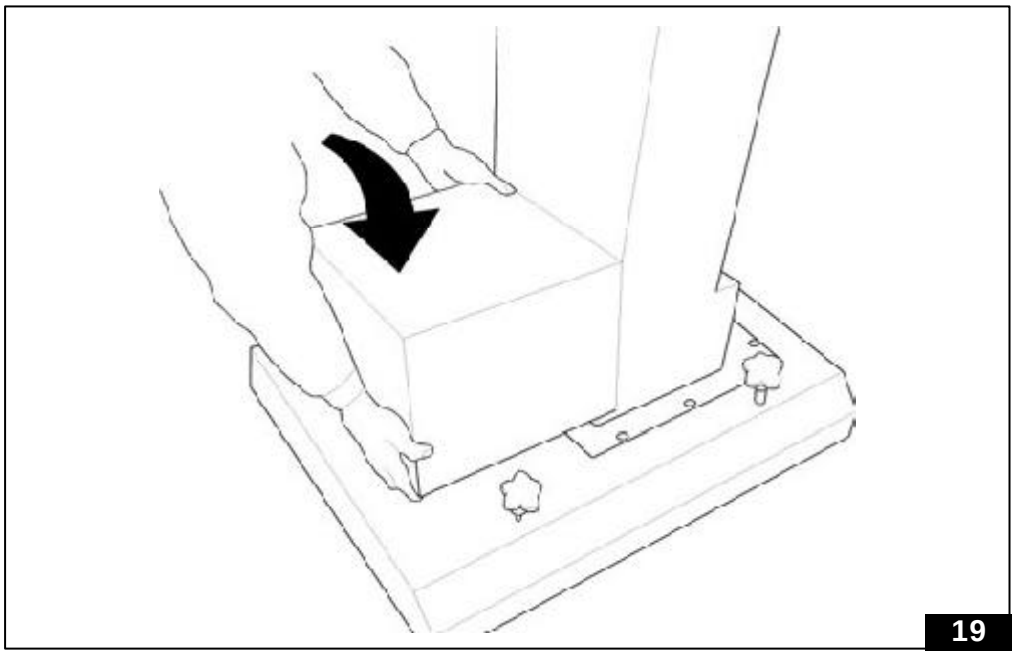
D **ATTENTION:** After the connection of the motor, check its correct direction of rotation.

- Close the front cover. 18



18

- Reassemble the safety guard. 19

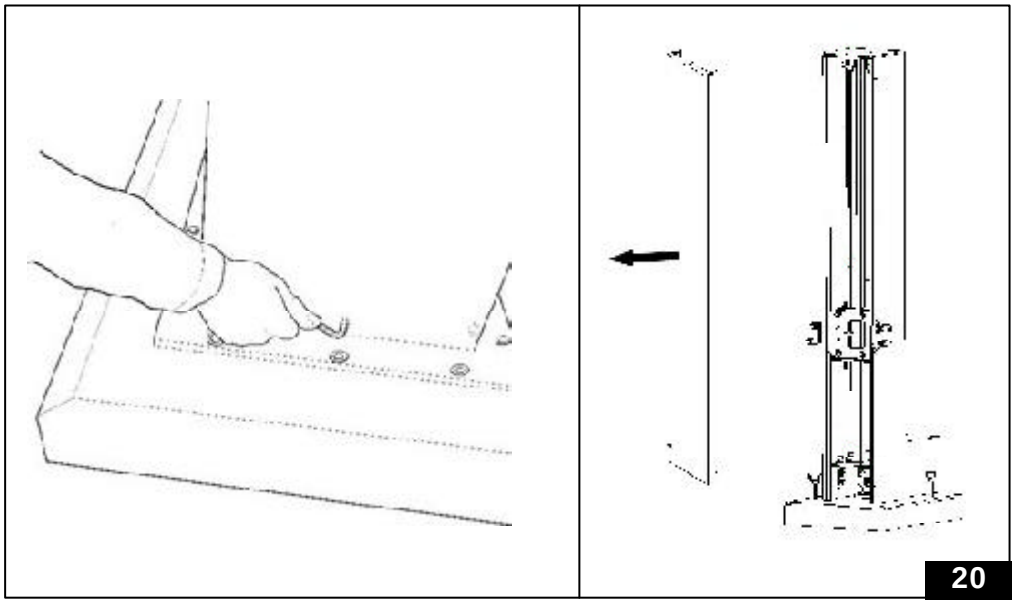


12.6 Trolley wheels adjustment

B 4 ; 3

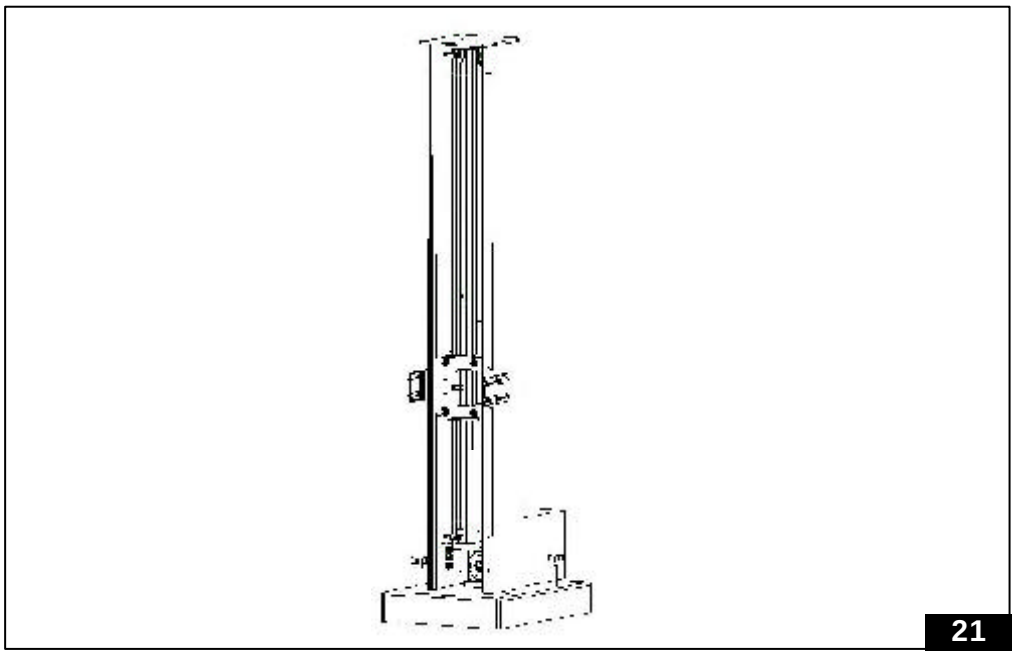
To adjust the supporting-gun trolley wheels do as follows:

- Turn off the power supply to the machine.
- With a setscrew wrench unscrew the two screws that secure the rear cover. 20



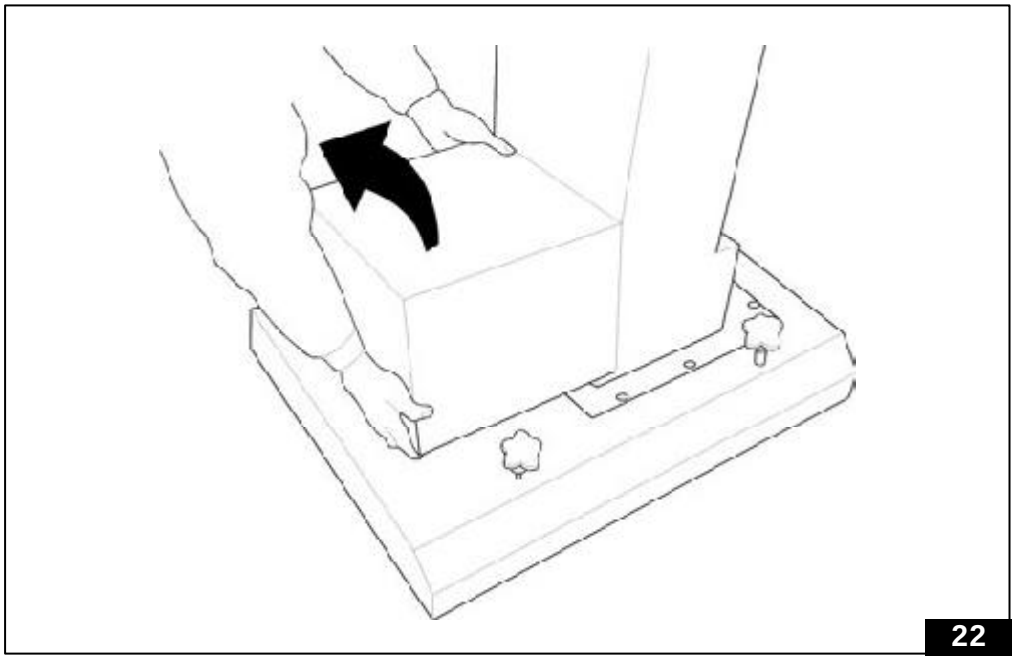
20

- Position the trolley to a position useful to operate. 21



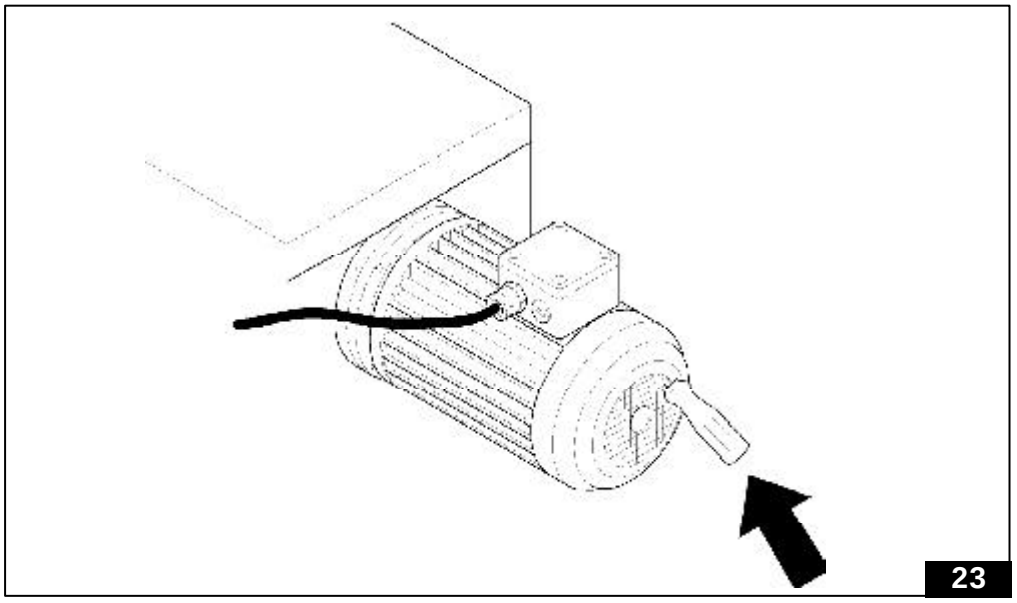
21

- Remove the safety guard of the motor, lifting it as in figure 22.



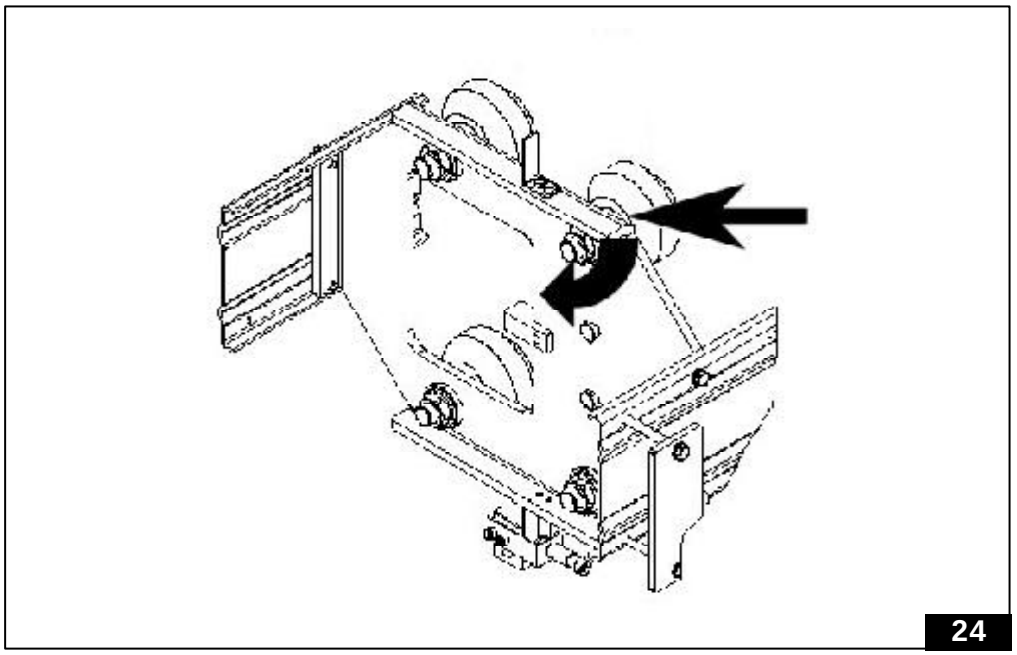
22

- Block the electric motor by inserting a screwdriver into the inner cooler fan. 23



23

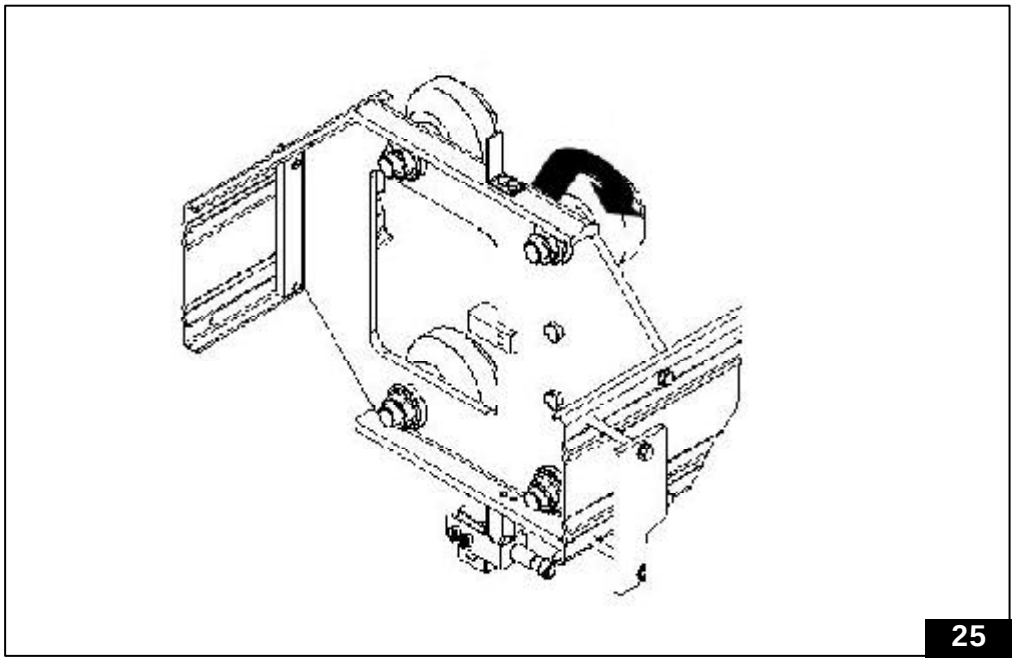
- Loosen the nut that blocks the eccentric pin of the wheels. 24



24

- With a spanner, turn the eccentric pin until the wheel is in contact with the guide. 25

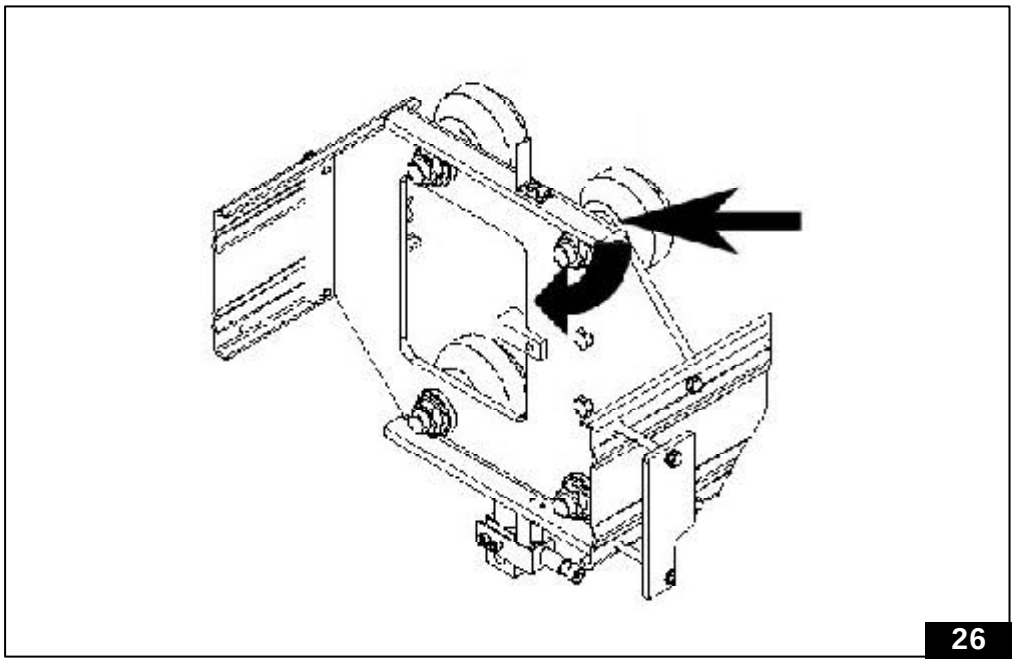
N.B.: When finished, the wheel must turn easily by hand but create a certain friction on the guide.



25

D **ATTENTION:** It is important that there is no play between the wheel and the guide but at the same time the wheel must not be blocked.

- Holding the pin with a spanner , tighten the lock nut with a suitable spanner.26



26

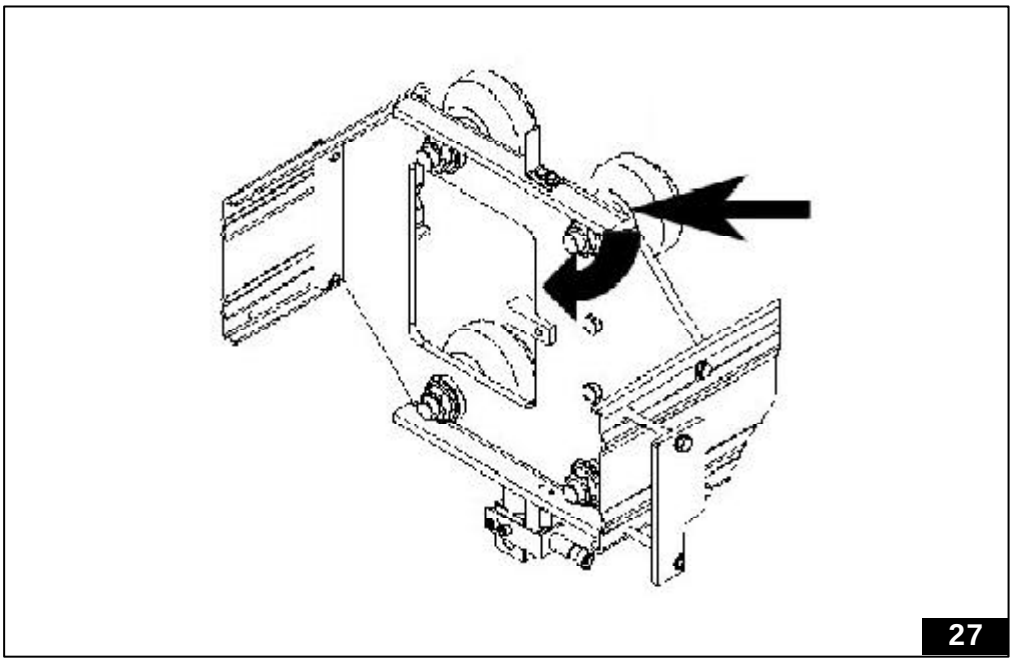
D **ATTENTION:** Avoid excessive loads on the wheels so as to damage the surface.

- Remove the screwdriver from the fan of the motor, then reassemble the safety guards.

12.7 Trolley wheels replacement

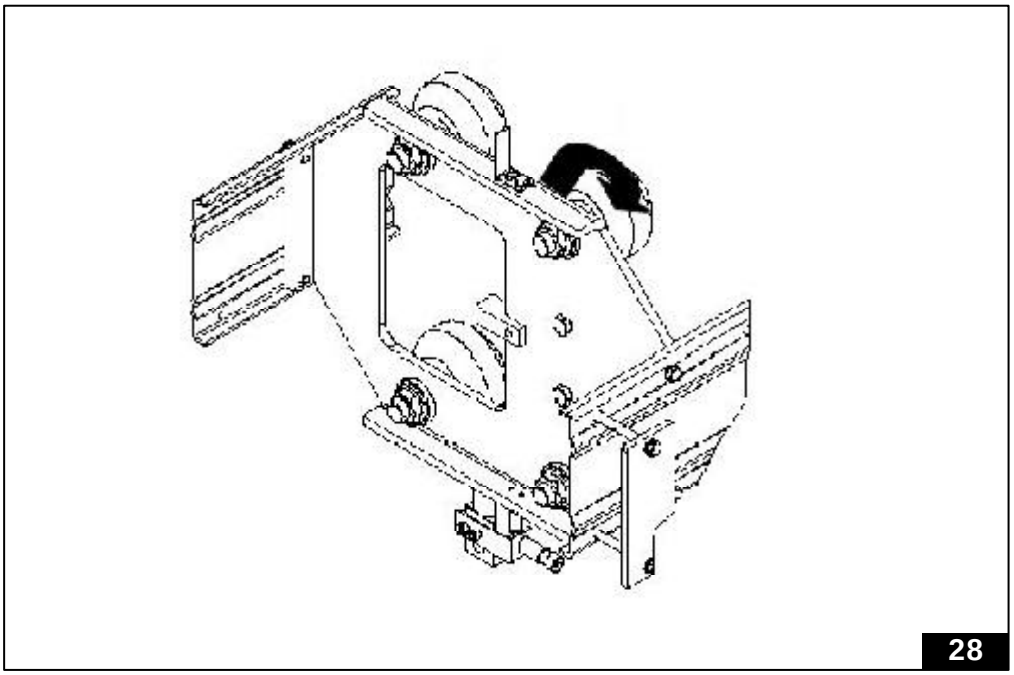
B 4 ; 3

- To replace the wheels of the supporting-gun trolley follow the operations described in the previous paragraph up to loosen the 4 nuts that block the pivots of the wheels, using a suitable spanner. 27



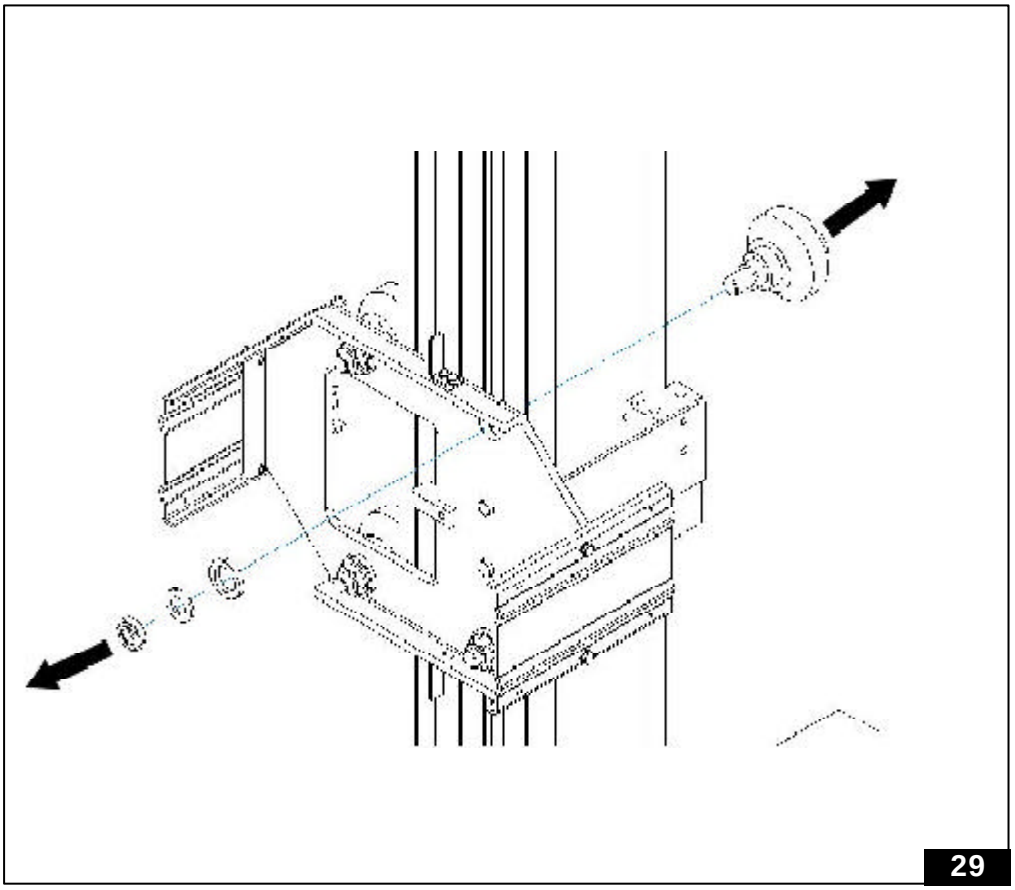
27

- Turn the eccentric pin, using a spanner CH 30, so as to increase the play between the wheel and the guide. 28

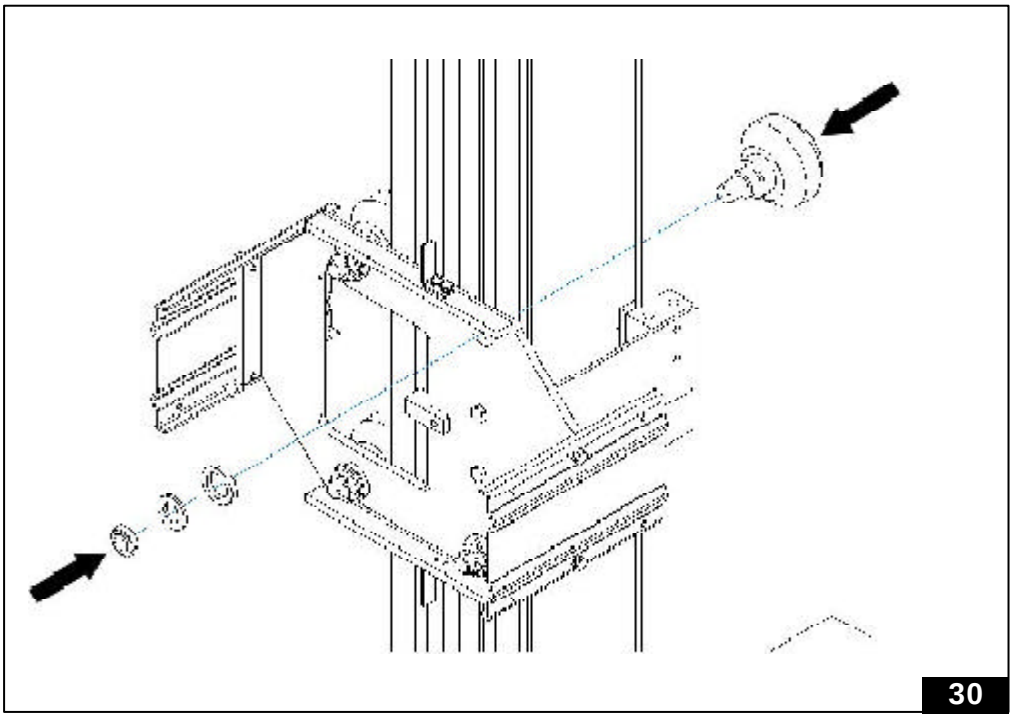


28

- Remove the 4 wheels (2 eccentric and 2 concentric) .29



- Assemble the 4 new wheels (2 eccentric and 2 concentric) keeping the same positions.30



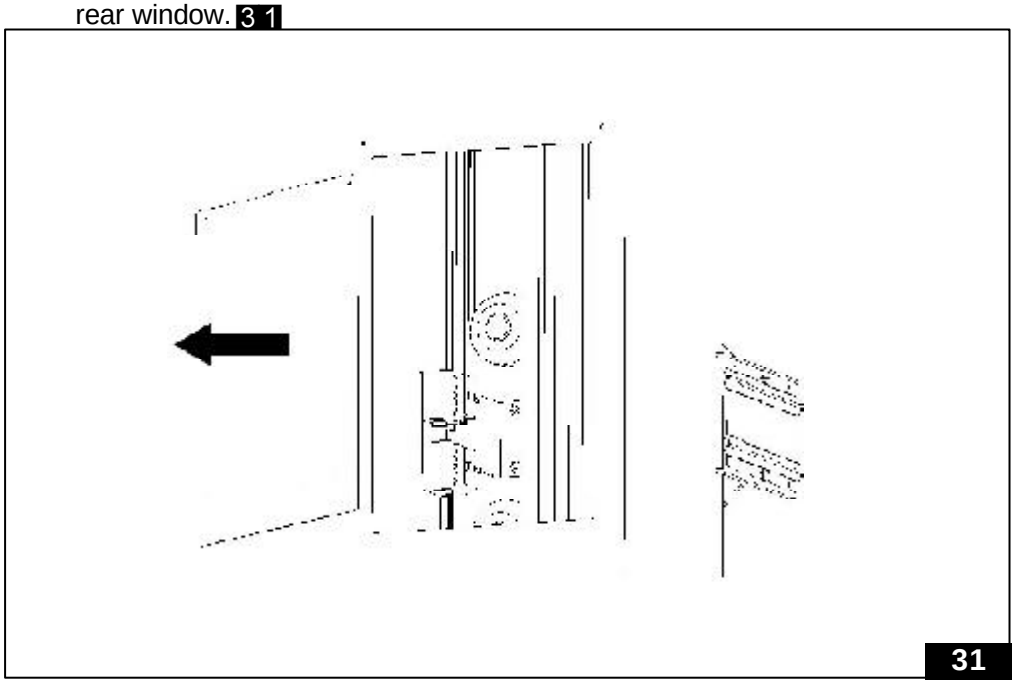
- Adjust the wheels following the operations described in the previous paragraph.
- To reassemble do the reverse operation.
- Before reassembling the safety guard, remove the screwdriver from the cooling fan.
- Assamble the front safety guard.

12.8 Counterweight modification

B 4 ; 3

To adjust the counterweight, do as follows:

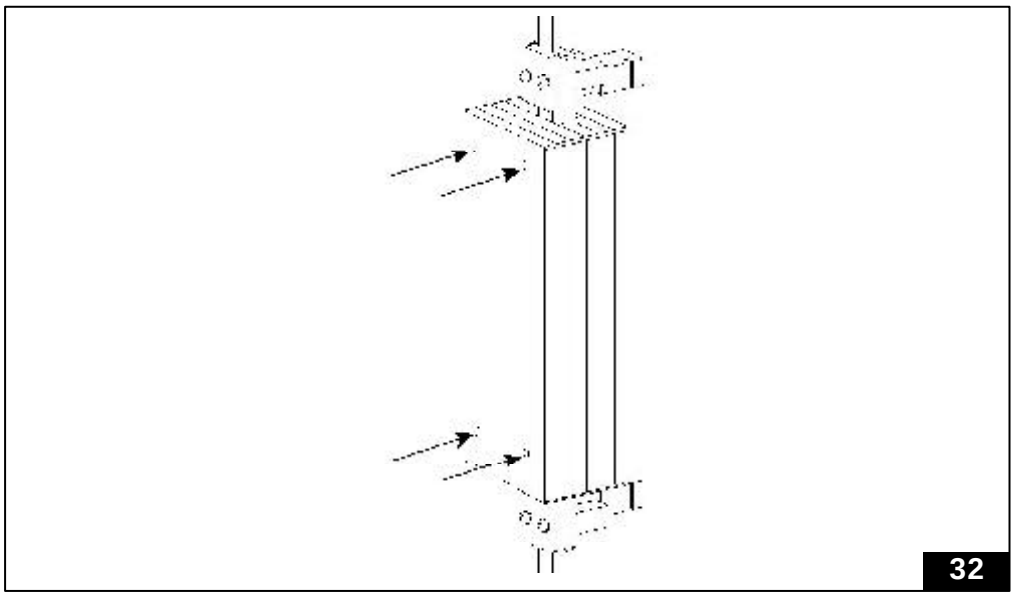
- Turn off the power supply to the machine.
- Remove the rear window and move the arm so that the counterweight slides up to the rear window. 3 1



31

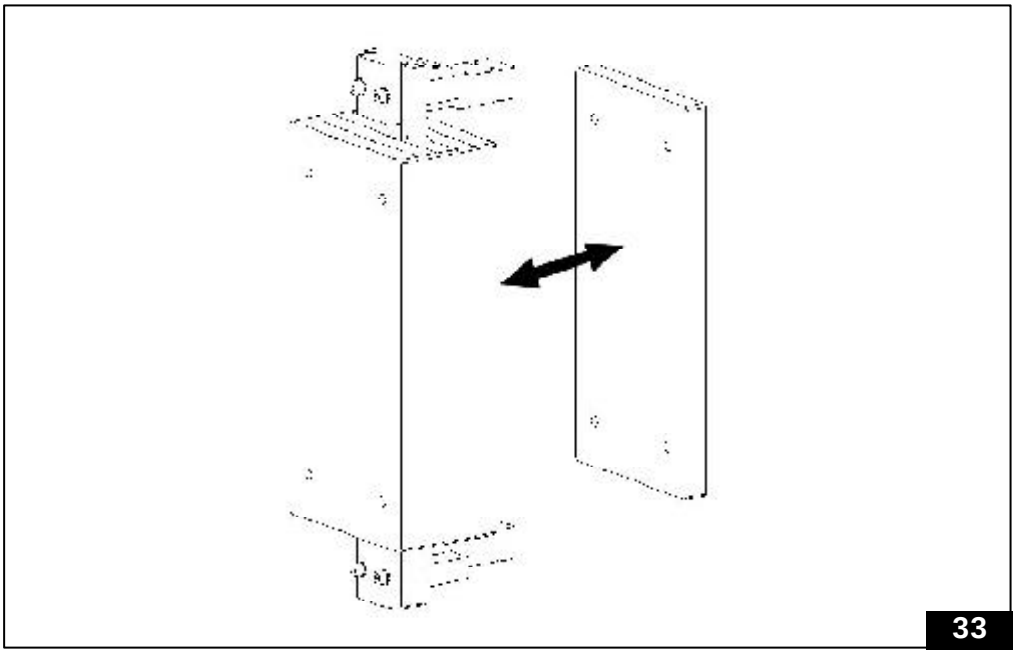
D **ATTENTION:** To make the work easier and for safety reasons, it is better that the following operations are carried out by two operators.

- Unscrew the nuts that block the counterweight, using a suitable spanner. 3 2



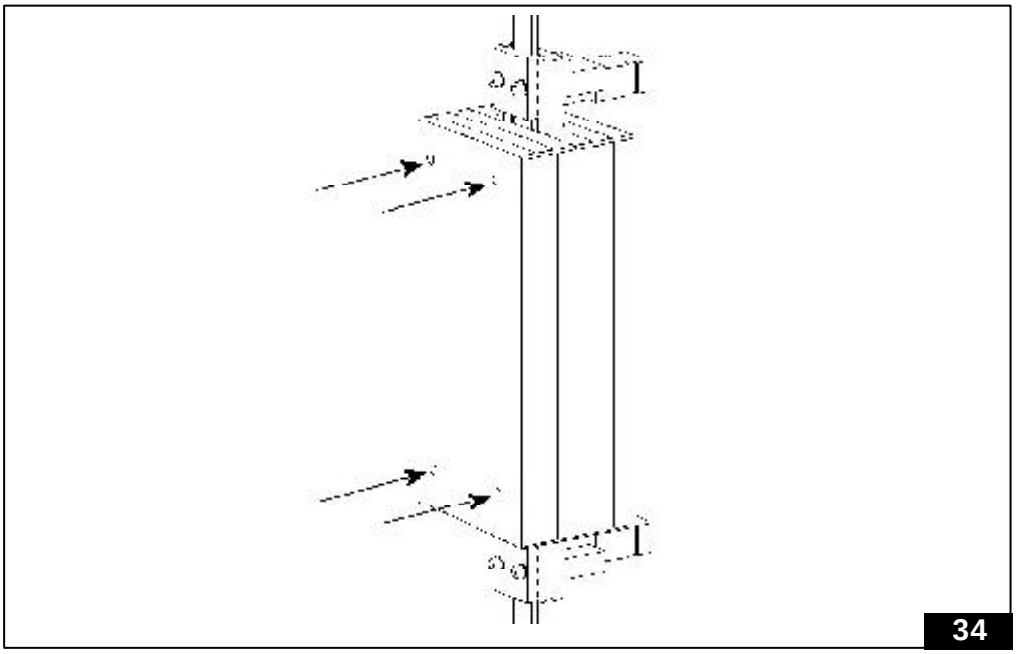
32

- Add or remove the disks of the counterweight so as to balance the arm 33.



33

- Block the counterweight, by screwing the nut removed previously.34



34

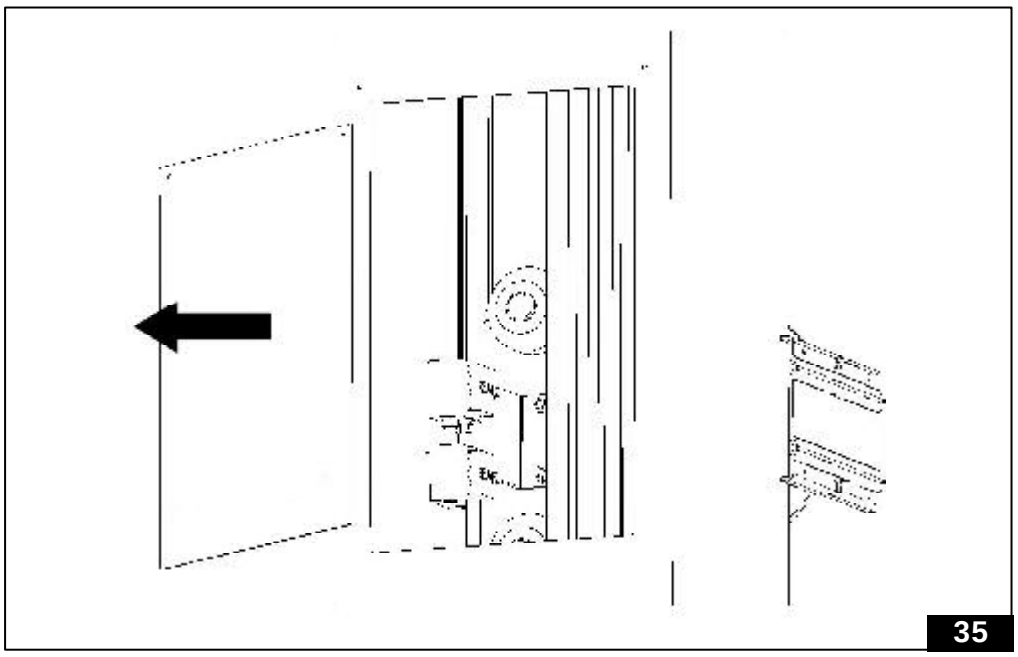
- Assemble the rear door.

12.9 Adjustment of the toothed belt tension

B 4 ; 3

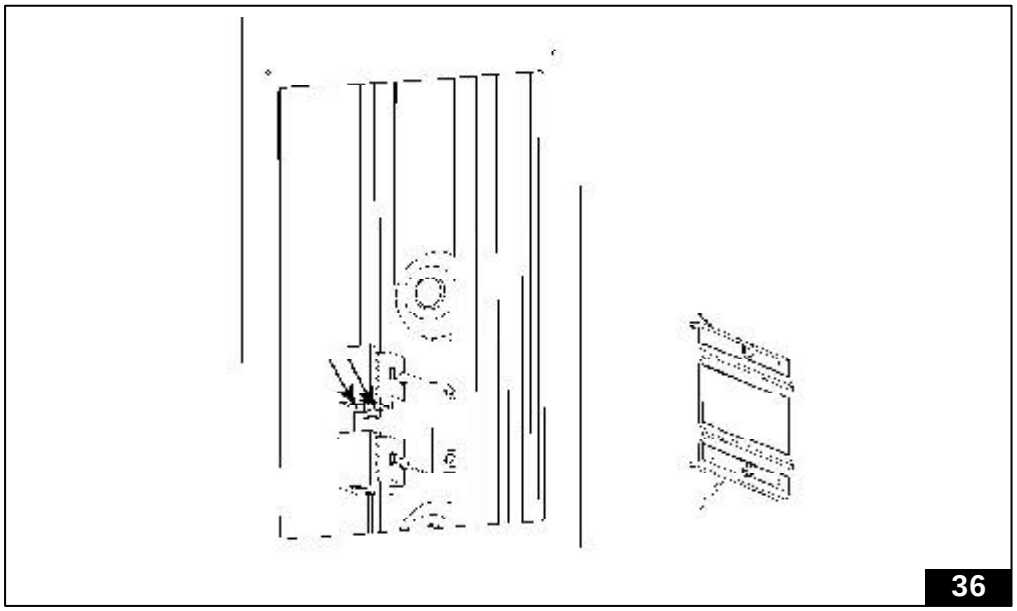
To adjust the belt tension do as follows:

- Turn off the power supply to the machine.
- Remove the rear door and shift the arm so as the trolley is in line with the rear window 35.



35

- Loosen the lock nuts under the plate that fixes the upper belt. 36

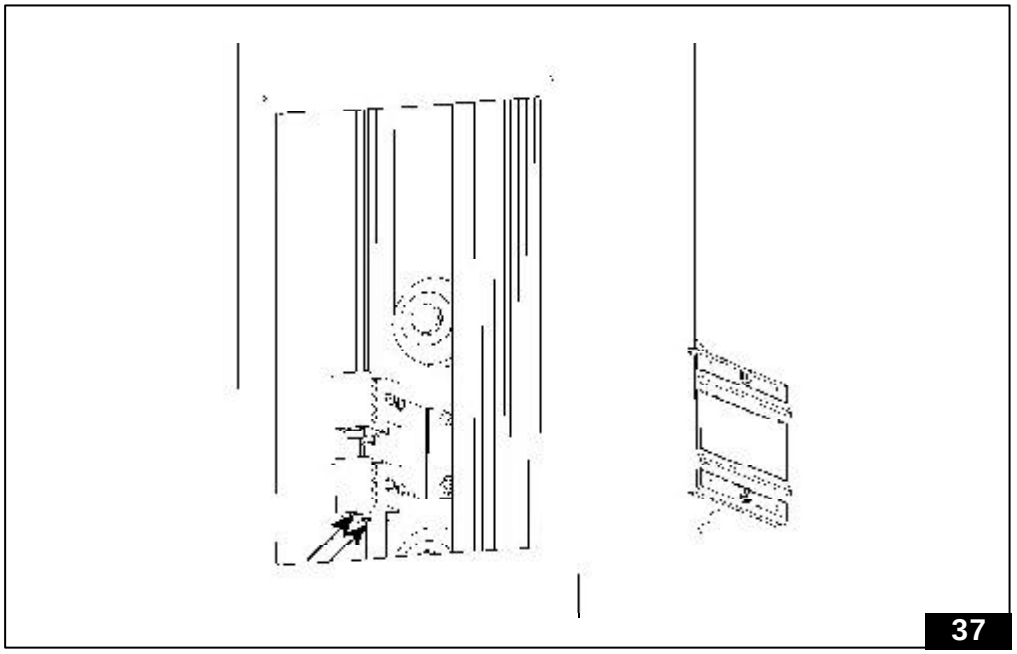


36

- Operate on the screws so as to slacken or tension the belt.

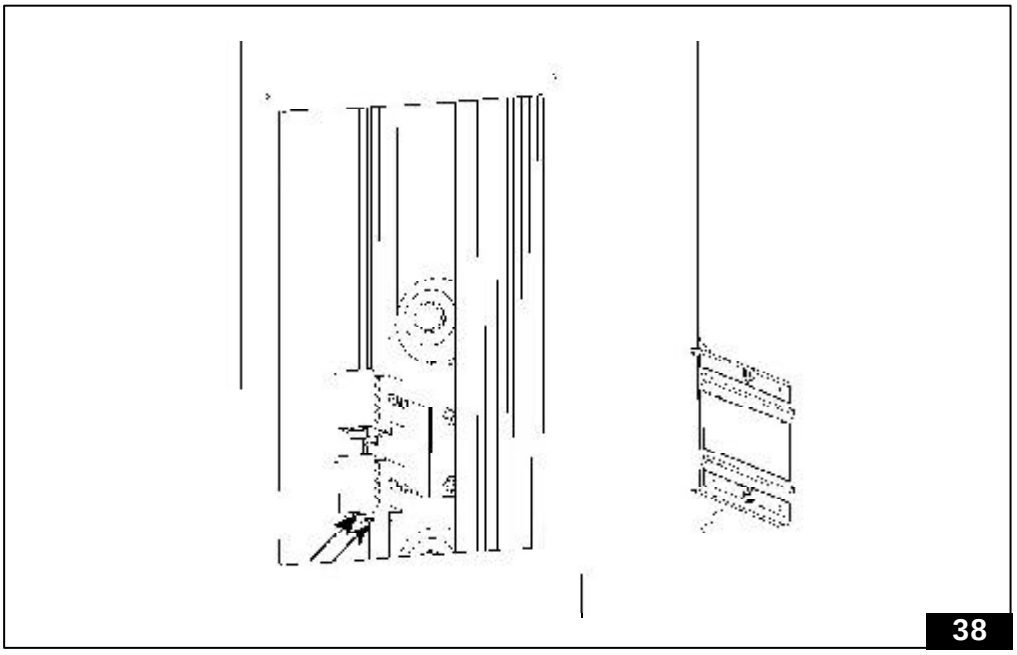
N.B. Once the operation is finished, check the parallelism between the plates. 37

- Per un corretto tensionamento della cinghia dentata fare riferimento allo schema



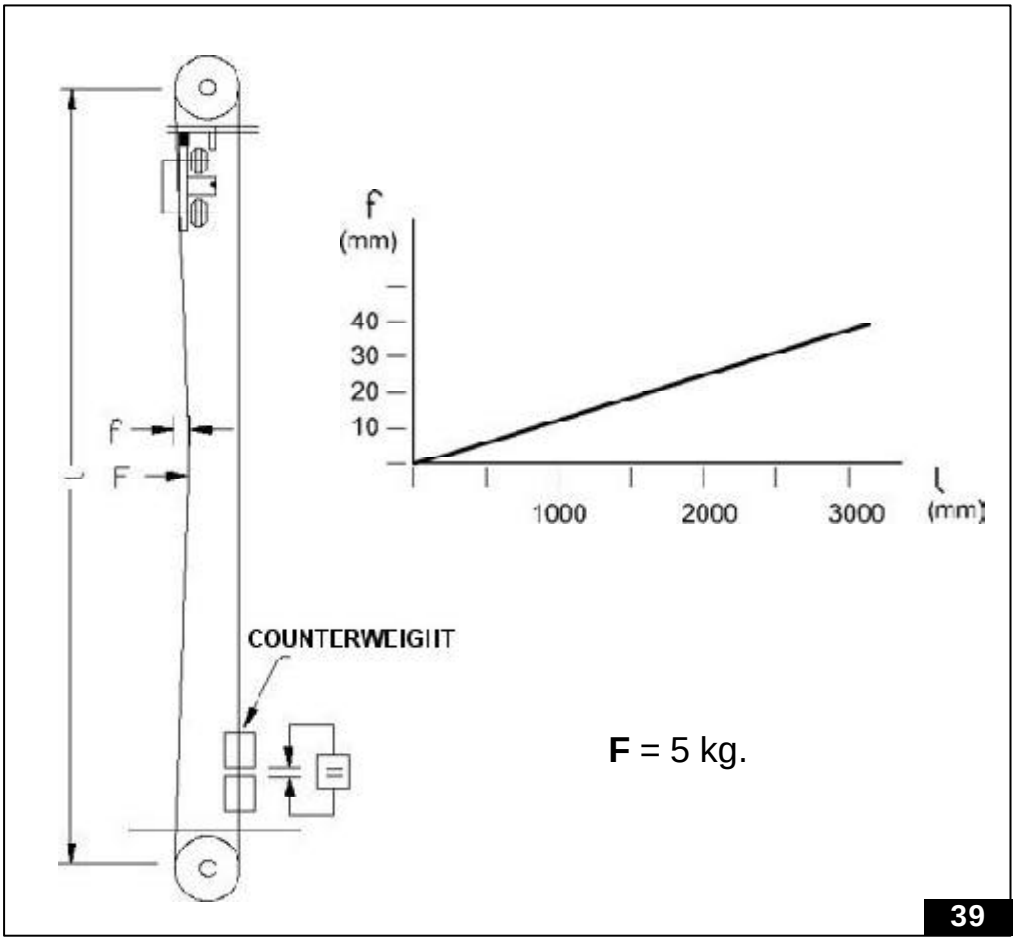
37

- Block the lock nuts under the plate that fix the upper belt 38



38

- For the correct belt tension see the diagram below **39**.



- Assemble the rear door.

Nordson	ALARMS	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

13.0 ALARMS

CHAPTER 13.0 ALARMS

ANOMALY	CAUSA	SOLUZIONE
NOISE AND VIBRATIONS DURING THE STROKE	■ Incorrect adjustment of trolley ■ Worn-out wheels of trolley ■ Dirty guide	■ Adjust trolley ■ Replace wheels ■ Clean guide
STRONG STROKES DURING MOVEMENT	■ Belt tension insufficient	■ Adjust belt tension
NOISE DURING REVERSAL	■ Play of reduction gear	■ Replace gear-motor
LOSS OF STROKE REFERENCES	■ Breaking of encoder	■ Replace the encoder
ELECTRIC ANOMALIES		■ See manual of control module

Nordson	SPARE PARTS	REV. 1.3

TITLE OF THE DOCUMENT: Operating and maintenance manual RECIPROCATOR HAN

14.0 SPARE PARTS

Page 1 to 3

CHAPTER 14.0 SPARE PARTS

14.1 General advice

- In order to optimise and address correctly the demand of spare parts and/or technical assistance, it is necessary to refer to ***Nordson®*.**
- If the customer uses, above all during the period of contractual guarantee of the machine, not original ***Nordson®*** spare parts, the guarantees about functional performances and above all accident prevention safeties are no more valid. Therefore ***Nordson®*** declines each possible responsibilities direct, indirect or consequential, about accidents occurred to staff, or about possible restrictions of productive performances of the machine.
- The safety, reliability and interchangeability of ***Nordson®*** spare parts is guaranteed by the using of the same technological/productive and qualitative processes used to the achievement of the machine.
- Before removing any components of the machine and replacing them with spare parts, it is necessary to look it up in the "**OPERATING AND MAINTENANCE MANUAL**" attached.
  This is necessary to identifyall information to adopt to guarantee safety during the interventions (safety and accident prevention measures).

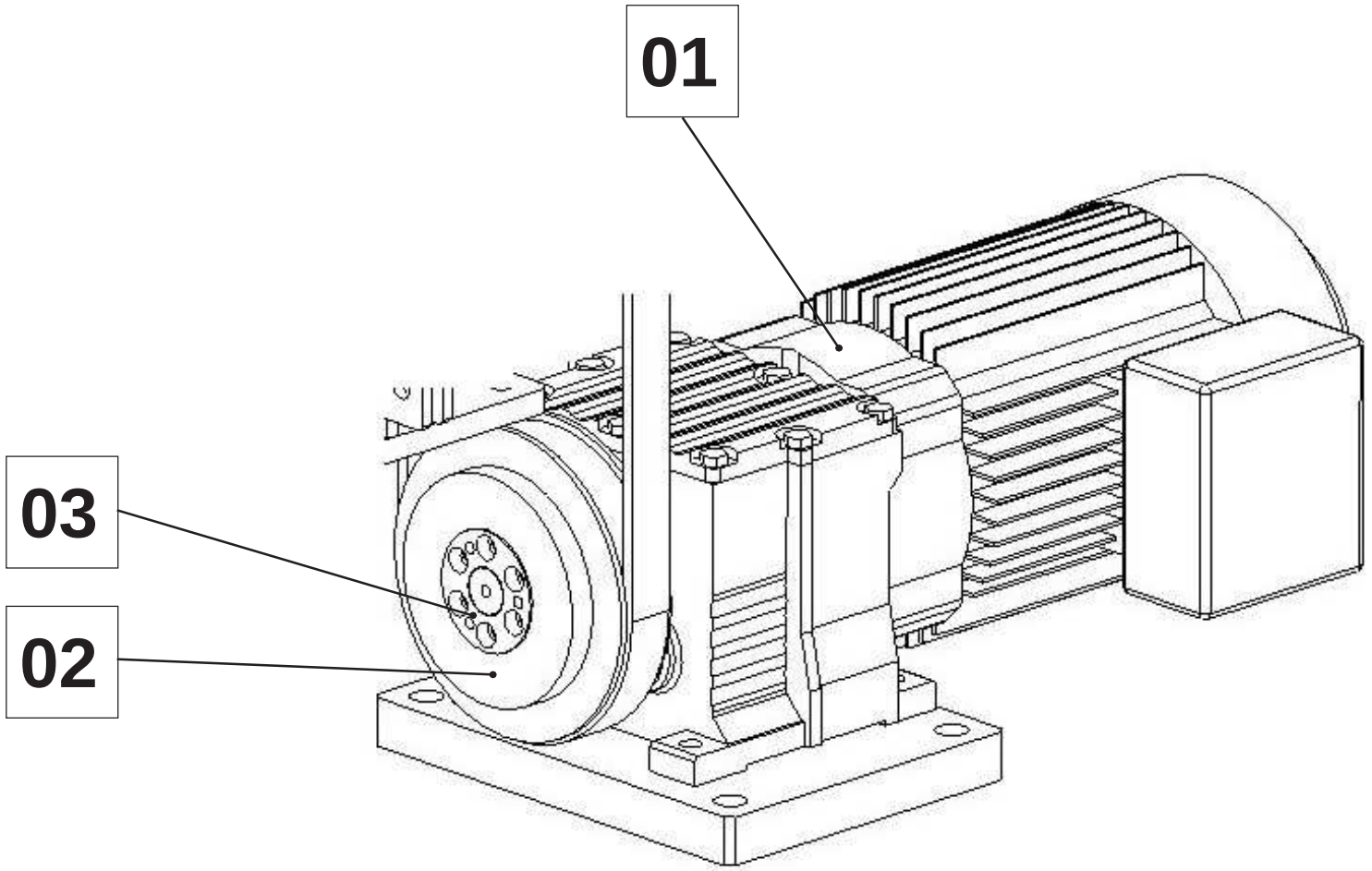
14.2 How to order spare parts

To order spare parts see the data on the CE plate.
The order will have to contain the following elements:

- Model/Type of machine
- Serial No.
- Table No.
- Position No. of spare part
- Description of spare part
- Code of spare part
- Quantity

Example:

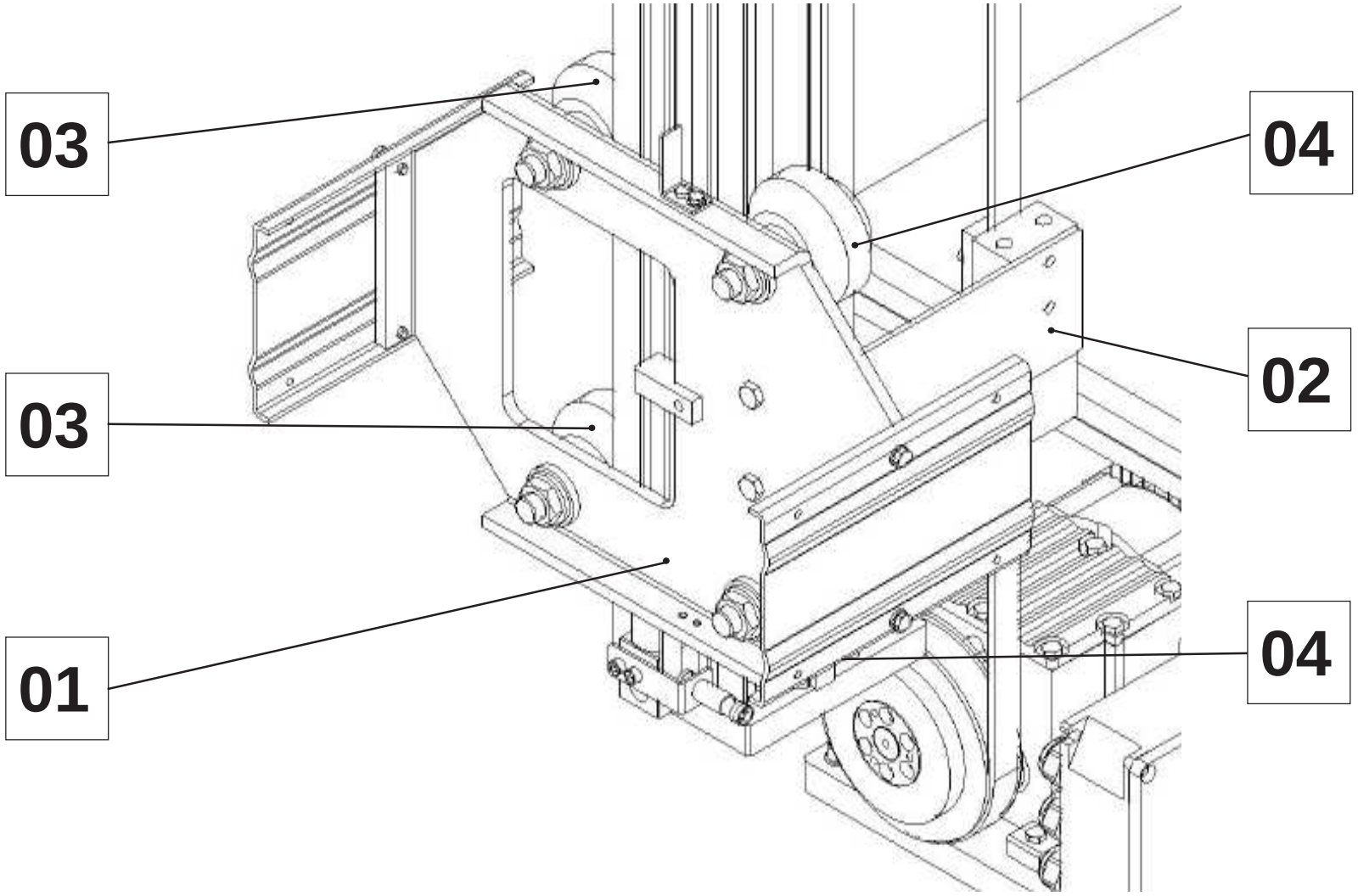
- Reciprocator HAN 17
- Serial No. 99999
- Table 2.0
- Position 02
- Concentric shaped black wheel
- 736410
- No. 2 pieces



Nordson	MOTOR-GEAR GROUP	CODE	TAB. 1.0

Nordson	MOTOR-GEAR GROUP	CODE	TAB. 1.A

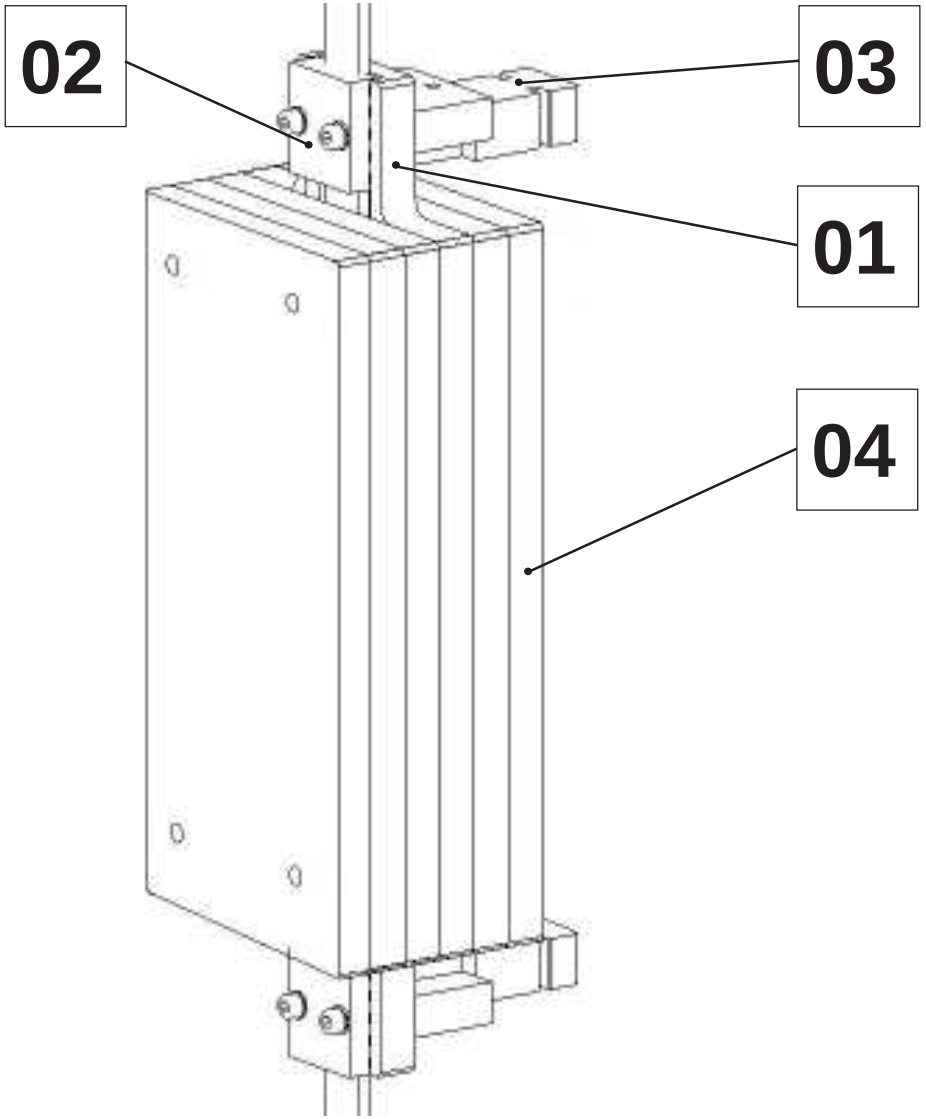
Pos.	Part Number	Mu	Q.ty	
1	736820		1	400.0050 - Gearmotor
2	-		1	220.1138 - Driving pulley
3	-		1	330.0503 - Ring block



Nordson	TROLLEY GROUP	CODE	TAB. 2.0

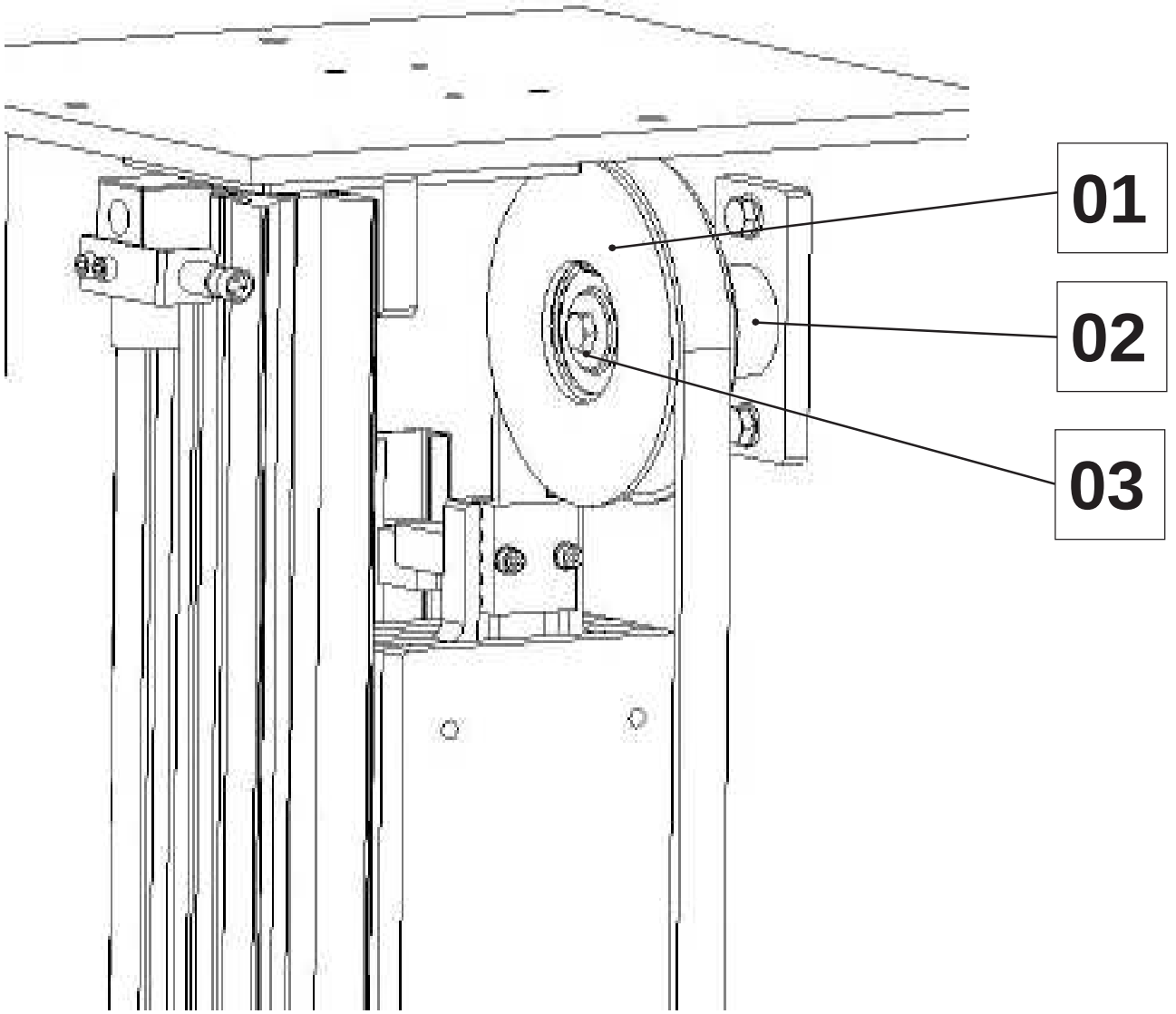
Nordson	TROLLEY GROUP	CODE	TAB. 2.A

Pos.	Part Number	Q.ty	
1	-	1	250.0162 - Trolley plate HAN
2	-	1	250.0163 - Junction plate for trolley/bel
3	736410	2	335.0015 - Concentric wheel
4	736411	2	335.0016 - Eccentric wheel


02
03
01
04

Nordson	COUNTERWEIGHT GROUP	CODE	TAB. 3 .A

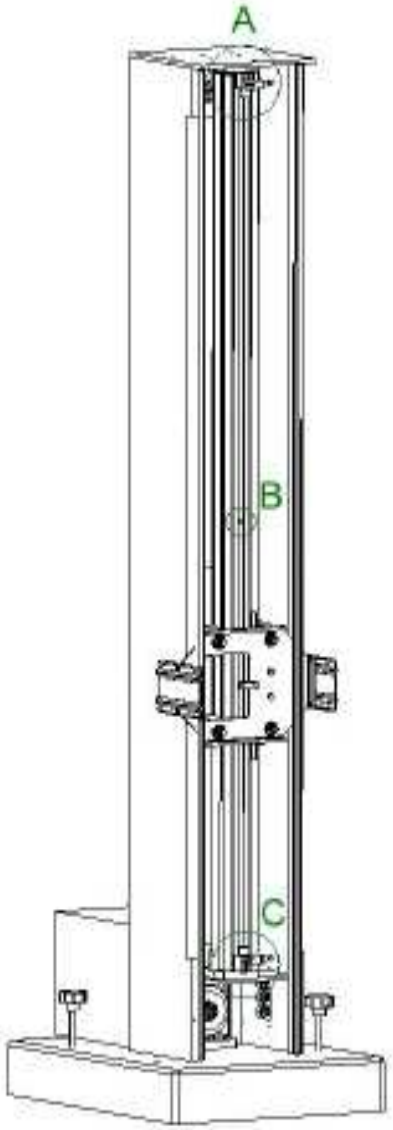
Pos.	Part Number	Q.ty	
1	-	1	250.0164 - Central counterweight plate HAN
2	-	1	220.1141 - Toothed block to fix the belt
3	736826	1	220.1132 - Lock for counterweight guide
4	-	(6)	250.0165 - Addition counterweight plate HAN



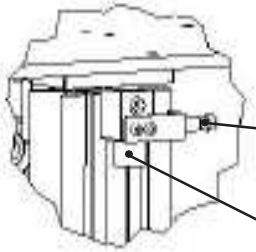
Nordson	SNUB PULLEY GROUP	CODE	TAB. 4.0

Nordson	SNUB PULLEY GROUP	CODE	TAB. 4 .A

Pos.	Part Number	Q.ty	
1	-	1	220.1139 - Snub pulley
2	-	1	220.1190 - Snub pulley support
3	-	1	330.0024 - Bearing

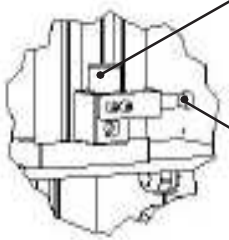


A (1:4)



B (1:4)

C (1:4)



Nordson	END OF STROKE GROUP	CODE	TAB. 5 .A

Pos.	Part Number	Q.ty	
1	-	1	310.8208 - Inductive sensor PNP NO ø 12 x CNT
2	736339	2	310.8207 - Inductive sensor PNP NC ø 12 x CNT
3	-	2	330.3005 - Buffer ES D 25x20 M6 M

Nordson	DRAINING OF HARMFUL SUBSTANCES AND DISMANTLING OF THE MACHINE	REV. 1.3

TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

15.0 DRAINING OF HARMFUL SUBSTANCES AND DISMANTLING OF THE MACHINE

CHAPTER 15.0 DRAINING OF HARMFUL SUBSTANCES AND DISMANTLING OF THE MACHINE

The user must remember that the harmful substances used, see lubricating oil, grease etc., must be drained in accordance with the local laws in force.

The dismantling of the machine and the removal of its components must be carried out according with the local laws or directives.

The machine is prevalently composed by:

- ferrous materials (structure and mechanical parts)
- materials derived from copper (electric wires and electric motor winding)
- Aluminium materials (mechanical parts)

Nordson	**ATTACHED**	*REV.* 1.3

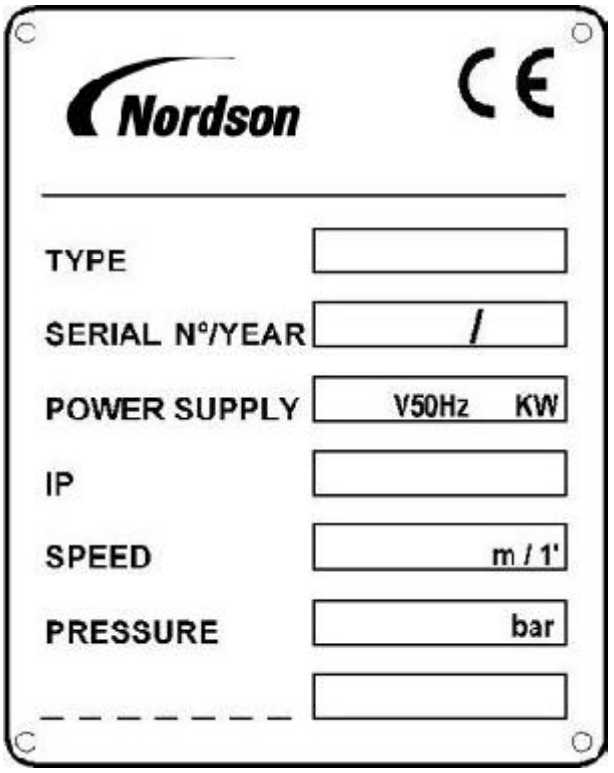
TITLE OF THE DOCUMENT : Operating and maintenance manual RECIPROCATOR HAN

16.0 ATTACHED

Page 1 to

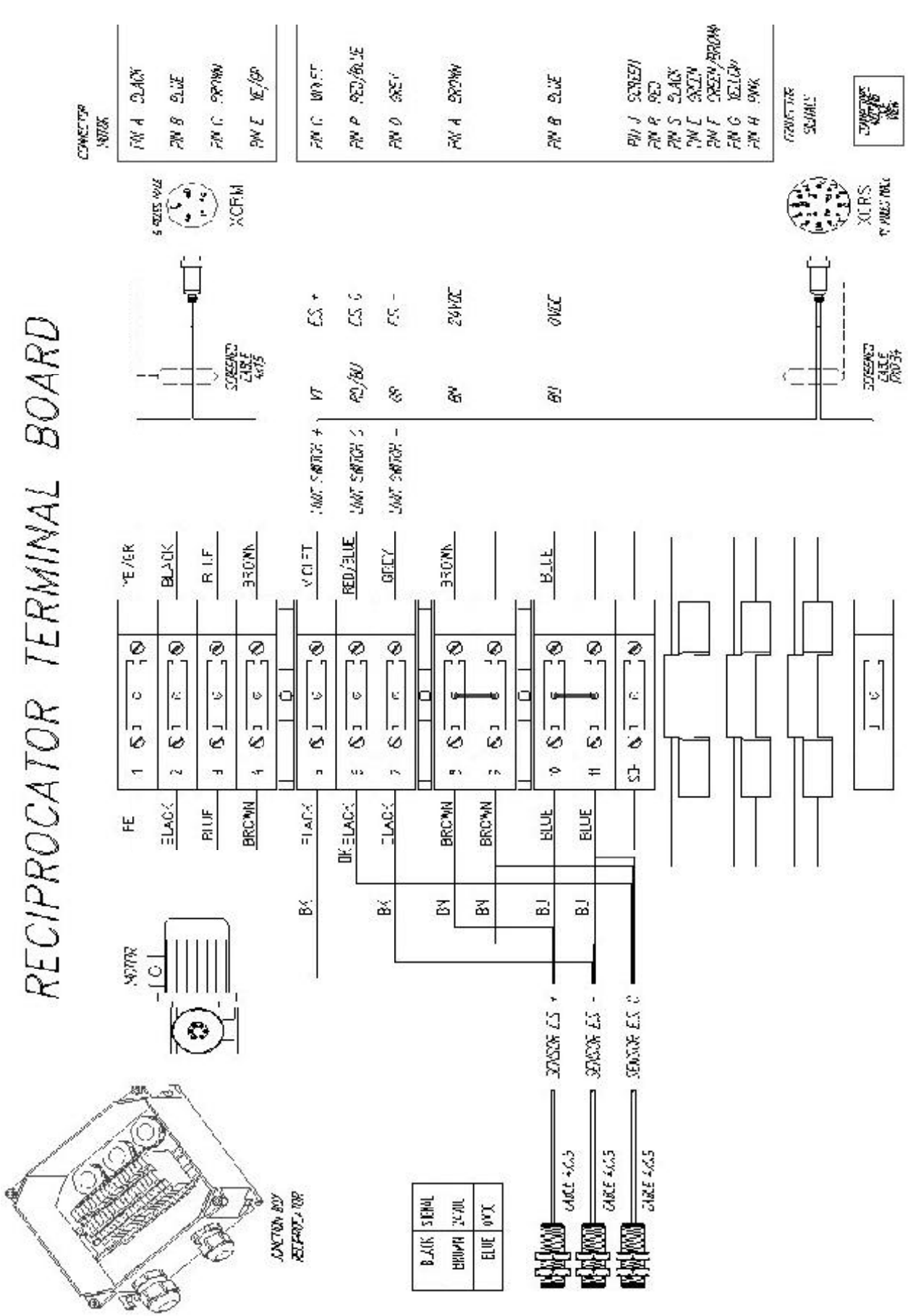
- ☐ CE plate
- ☐ Declaration of conformity
- ☐ Wiring diagrams
- ☐ Recommended oils

CE PLATE


Nordson
CE
TYPE
SERIAL N°/YEAR
/
POWER SUPPLY
V50Hz KW
IP
SPEED
m / 1'
PRESSURE
bar

DECLARATION OF CONFORMITY

WIRING DIAGRAMS


RECIPROCATOR TERMINAL BOARD

RECOMMENDED OILS

	6) °C -50 0 +50 +100	DIN (ISO)	ISO,NLGI	Mobil®	Shell		Aral	bp	TEXACO	Castrol Tribol	Castrol Optimol	FUCHS	TOTAL
R...	Standard -10 +40	CLP(CC)	VG 220	Mobilgear 600 XP 220	Shell Omala 220	Klüberoil GEM 1-220 N	Aral Degol BG 220	BP Energol GR-XP 220	Meropa 220	Tribol 1100/220	Alpha SP 220 Optigear BM 220	Renolin CLP 220	Carter EP 220
	-25 +80	CLP PG	VG 220	Mobil Glygoyle 30	Shell Tivela S 220	Klübersynth GH 6-220	Aral Degol GS 220	BP Enersyn SG-XP 220	Synlube CLP 220	Tribol 800/220	Alphasyn PG 220 Optiflex A 220		Carter SY 220
K...(HK...)	4) -40 +80	CLP HC	VG 220	Mobil SHC 630	Shell Omala HD 220	Klübersynth GEM 4-220 N	Aral Degol PAS 220		Pinnacle EP 220	Tribol 1510/220	Alphasyn T 220 Optigear Synthetic X 220	Renolin Unisyn CLP 220	
	4) -40 +40		VG 150	Mobil SHC 629	Shell Omala HD 150	Klübersynth GEM 4-150 N			Pinnacle EP 150		Alphasyn T 150 Optigear Synthetic X 150		Carter SH 150
	-20 +25	CLP (CC)	VG 150 VG 100	Mobilgear 600 XP 100	Shell Omala 100	Klüberoil GEM 1-150 N	Aral Degol BG 100	BP Energol GR-XP 100	Meropa 150	Tribol 1100/100	Alpha SP 100/150 Optigear BM 100	Renolin CLP 150	Carter EP 100
F...	-30 +10	HLP (HM)	VG 68-46 VG 32	Mobil D.T.E. 13M	Shell Tellus T 32	Klüberoil GEM 1-68 N	Aral Degol BG 46		Rando EP Ashless 46	Tribol 1100/68	Hyspin AWS 32 Optigear 32	Renolin B 46 HVI	Equivis ZS 46
	4) -40 +20	CLP HC	VG 68	Mobil SHC 626									
	-40 +10	CLP HC	VG 32	Mobil SHC 624		Klüber-Summit HySyn FG-32					Alphasyn T32 Optileb HY 32		Dacnis SH 32
	4) -40 -30	HLP (HM)	VG 22 VG 15	Mobil D.T.E. 11M	Shell Tellus T 15	Isoflex MT 30 RDT		BP Energol HLP-HM 15	Rando HDZ 15		Hyspin AWS 22		Equivis ZS 15
	Standard 0 +40	CLP (CC)	VG 680	Mobilgear 600 XP 680	Shell Omala 680	Klüberoil GEM 1-680 N	Aral Degol BG 680	BP Energol GR-XP 680	Meropa 680	Tribol 1100/680	Alpha SP 680 Optigear BM 680	Renolin SEW 680	Carter EP 680
	-25 +80	CLP PG	VG 680 1)		Shell Tivela S 680	Klübersynth GH 6-680		BP Enersyn SG-XP 680	Synlube CLP 680	Tribol 800/680	Optiflex A 680		
S...(HS...)	4) -30 +60	CLP HC	VG 460	Mobil SHC 634	Shell Omala HD 460	Klübersynth GEM 4-460 N			Pinnacle EP 460		Optigear Synthetic X 460		
	4) -40 +20		VG 150	Mobil SHC 629	Shell Omala HD 150	Klübersynth GEM 4-150 N			Pinnacle EP 150		Optigear Synthetic X 150		Carter SH 150
	-25 +10	CLP (CC)	VG 150 VG 100	Mobilgear 600 XP 100	Shell Omala 100	Klüberoil GEM 1-150 N	Aral Degol BG 100	BP Energol GR-XP 100	Meropa 150	Tribol 1100/100	Alpha SP 100/150 Optigear BM 100	Renolin CLP 150	Carter EP 100
	-25 +20	CLP PG	VG 220 1)	Mobil Glygoyle 30	Shell Tivela S 220	Klübersynth GH 6-220	Aral Degol GS 220	BP Enersyn SG-XP 220	Synlube CLP 220	Tribol 800/220	Alphasyn PG 220 Optiflex A 220		Carter SY 220
	-40 +20	CLP HC	VG 68	Mobil SHC 626									
	4) -40 0	CLP HC	VG 32	Mobil SHC 624		Klüber-Summit HySyn FG-32			Cetus PAO 46		Alphasyn T32		Dacnis SH 32
R...,K...(HK...), F...,S...(HS...)	4) -30 +40	HCE	VG 460		Shell Cassida Fluid GL 460	Klüberoil 4UH1-460 N	Aral Eural Gear 460				Optileb GT 460		
	-20 +40	E	VG 460			Klüberbio CA2-460	Aral Degol BAB 460			Tribol Bio Top 1418/460			
W...(HW...)	Standard -20 +40	SEW PG	VG 460 2)			Klüber SEW HT-460-5							
	4) -40 +10	API GL5	SAE 75W90 (~VG 100)	Delvac Synth. GearOil LS 75 W90									
	-20 +40	CLP PG	VG 460 3)			Klübersynth UH1 6-460							
R32 R302	-25 +60	DIN 51 818 5)	00	Glygoyle Grease 00	Shell Tivela GL 00	Klübersynth GE 46-1200			Multifak 6833 EP 00		Spheerol EPL 0		Marson SY 00
	Standard -15 +40		000 - 0	Mobilux EP 004	Shell Alvania GL 00		Aralub MFL 00	BP Energrease LS-EP 00	Multifak EP 000		CLS Grease Lanolene PG 00	Renolin NF T - 941	Multis EP 00

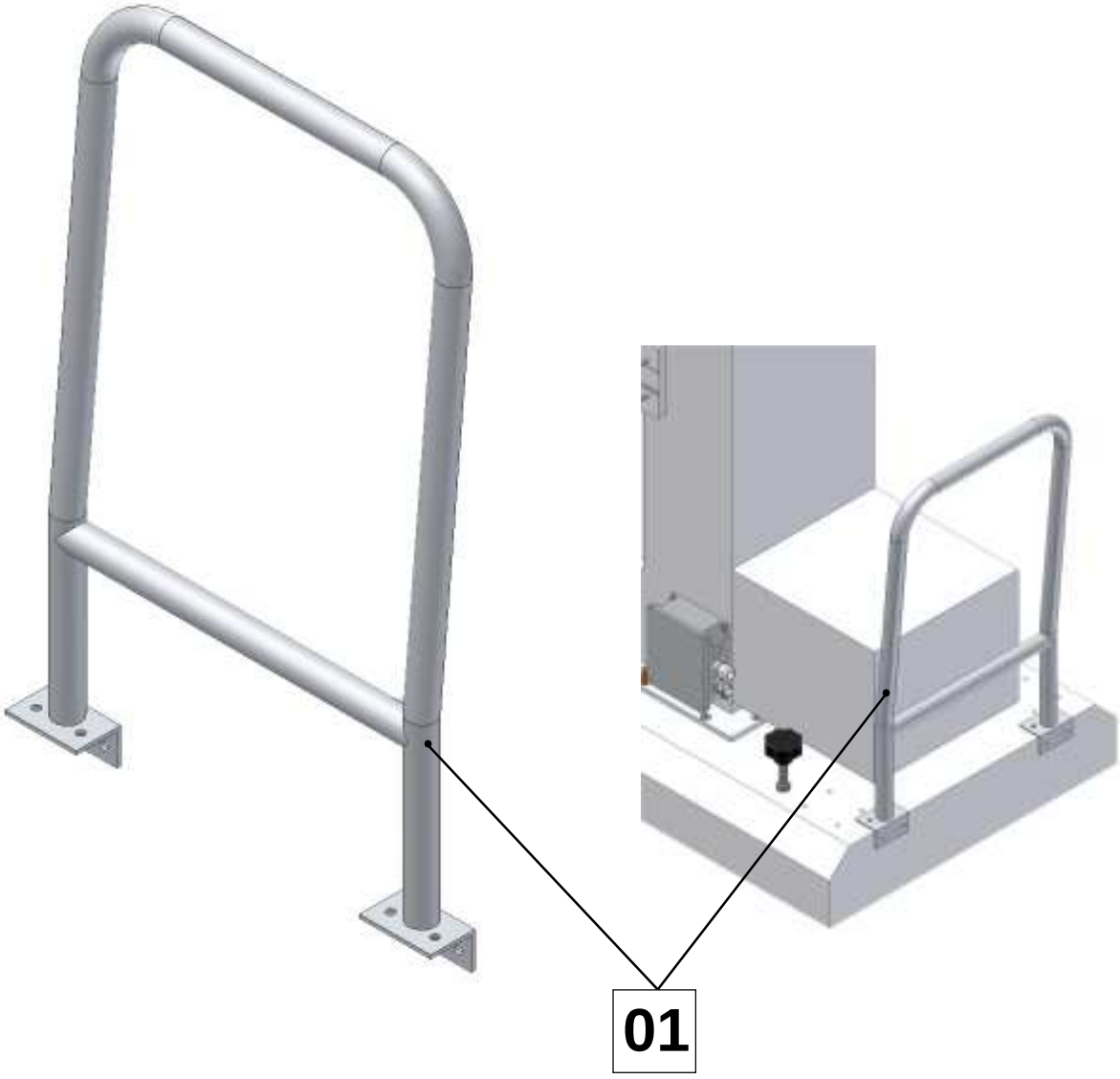
Nordson	PERSONALIZATION/SPECIAL EXECUTIONS	REV. 1.3

TITLE OF THE DOCUMENT: Operating and maintenance manual RECIPROCATOR HAN

17.0 PERSONALIZATION/SPECIAL EXECUTIONS

Page 1 to 2

CHAPTER 17.1 ADDITIONAL HANDLE FOR MANUAL MOVEMENT



Pos.	Part Number	Mu	Q.ty	Description
1	7033030	Nr.	1	500.0073 - Handle for manual moving


Nordson